PRACTICAL LAB: WIRELESS NETWORK CONFIGURATION WITH WEP

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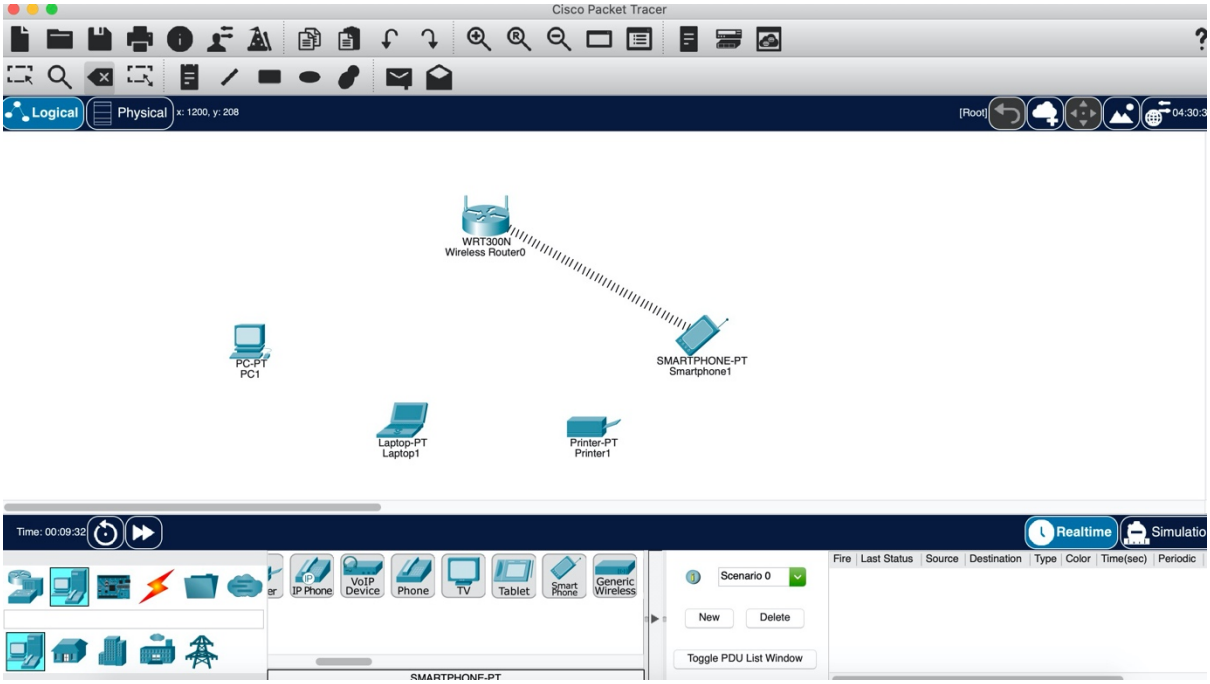
1 Introduction

For this practical we will be using *Cisco Packet Tracer (student edition)*, a tool provided by Cisco to build and test Cisco networks. We will be setting up a wireless network with multiple devices, and configuring them so that there is WEP.

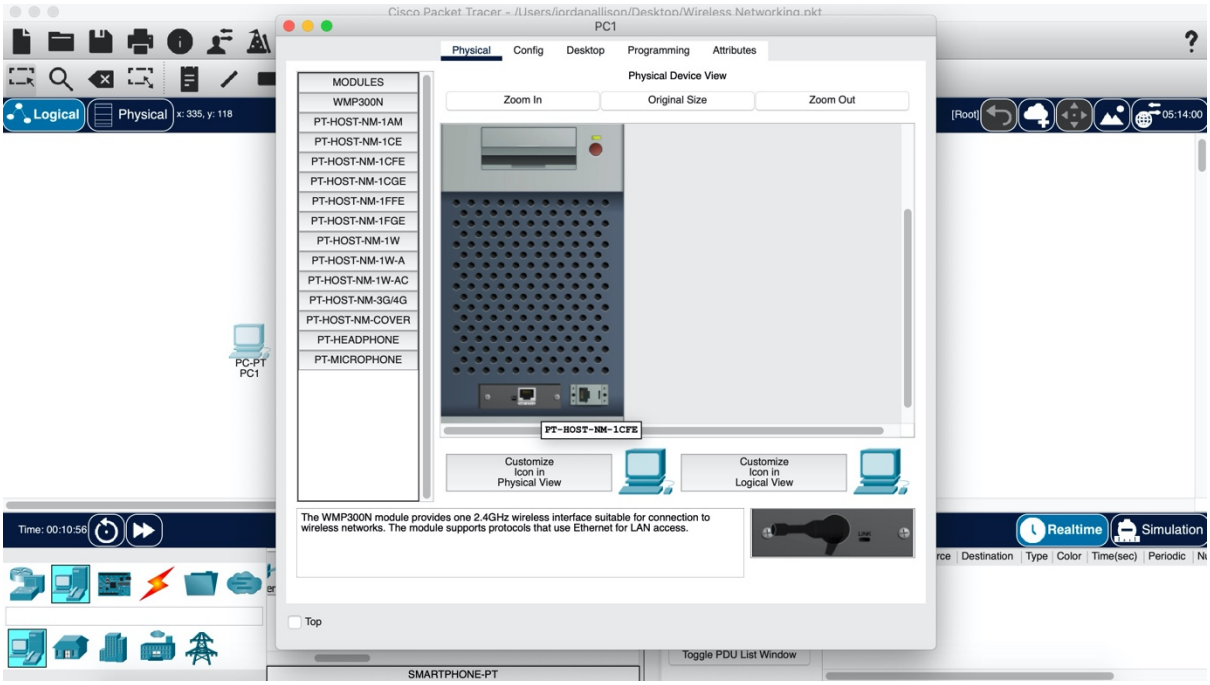
2 Setting Up Devices

Add one wireless router (WRT300N), a PC, a Laptop, a Printer, and a Smartphone. You should see how initially only the smartphone connects wirelessly.

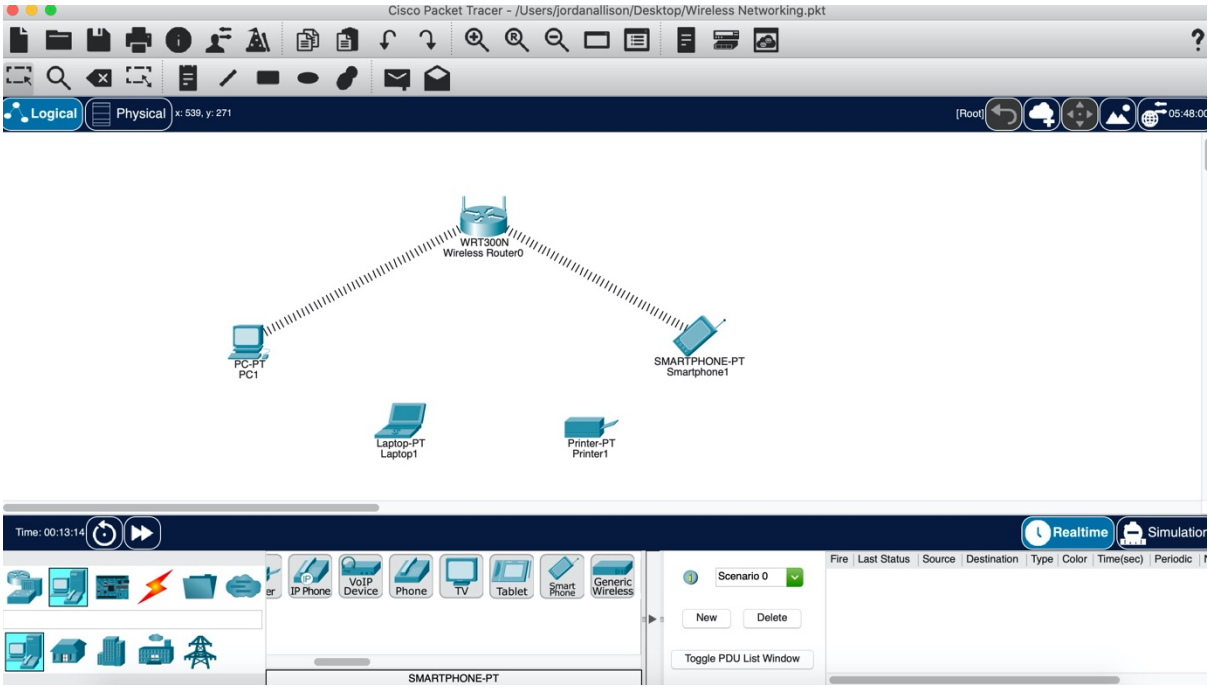


To connect the other devices, we need to look at the physical set-up of each device and change some modules.

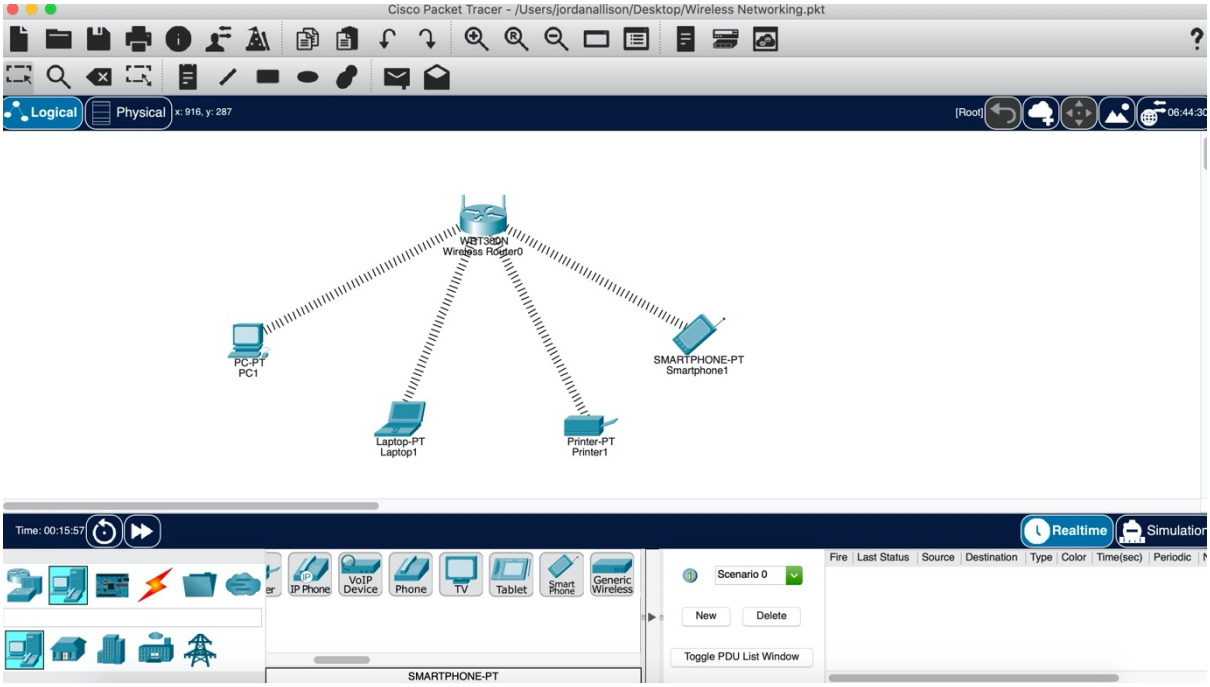
To start, click on the PC and choose the 'Physical' Tab, turn the machine off, and then drag and drop the PT-HOST-NM-1CFE (indicated below), to the left-hand side. Then drag and drop the WMP300N module into that slot on the PC. Then turn the machine on.



Once you have done this, a wireless connection should be shown between the wireless router and PC:



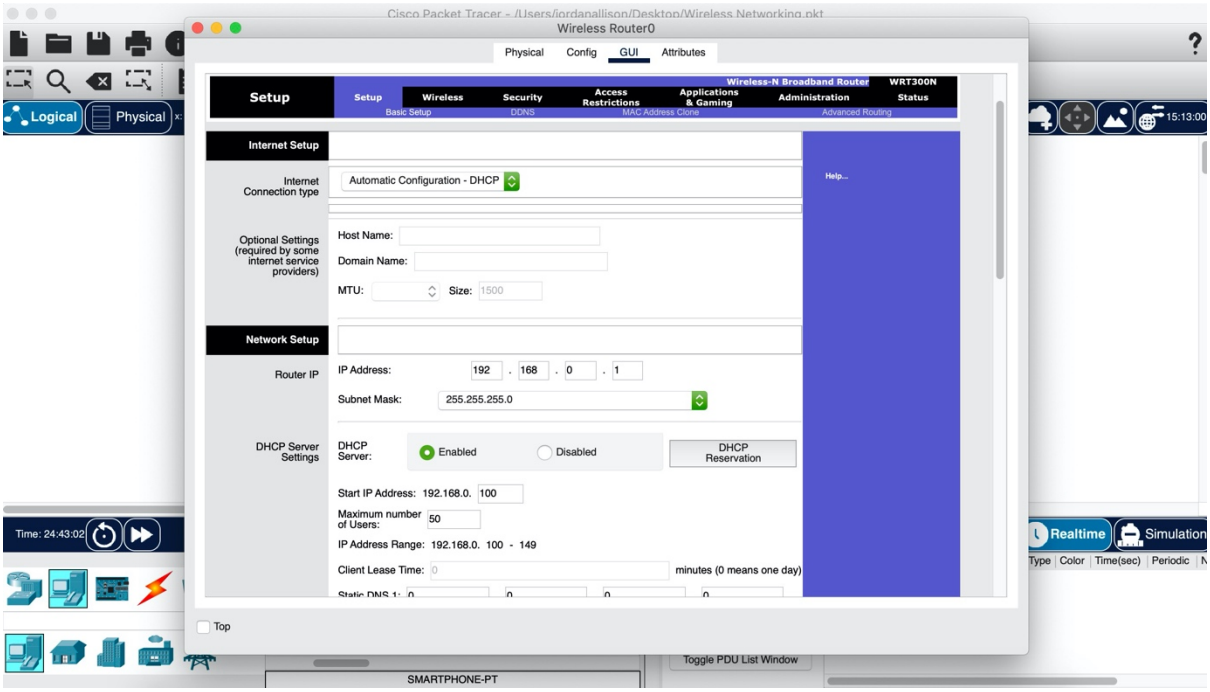
Now do the same for the Laptop and the Printer:



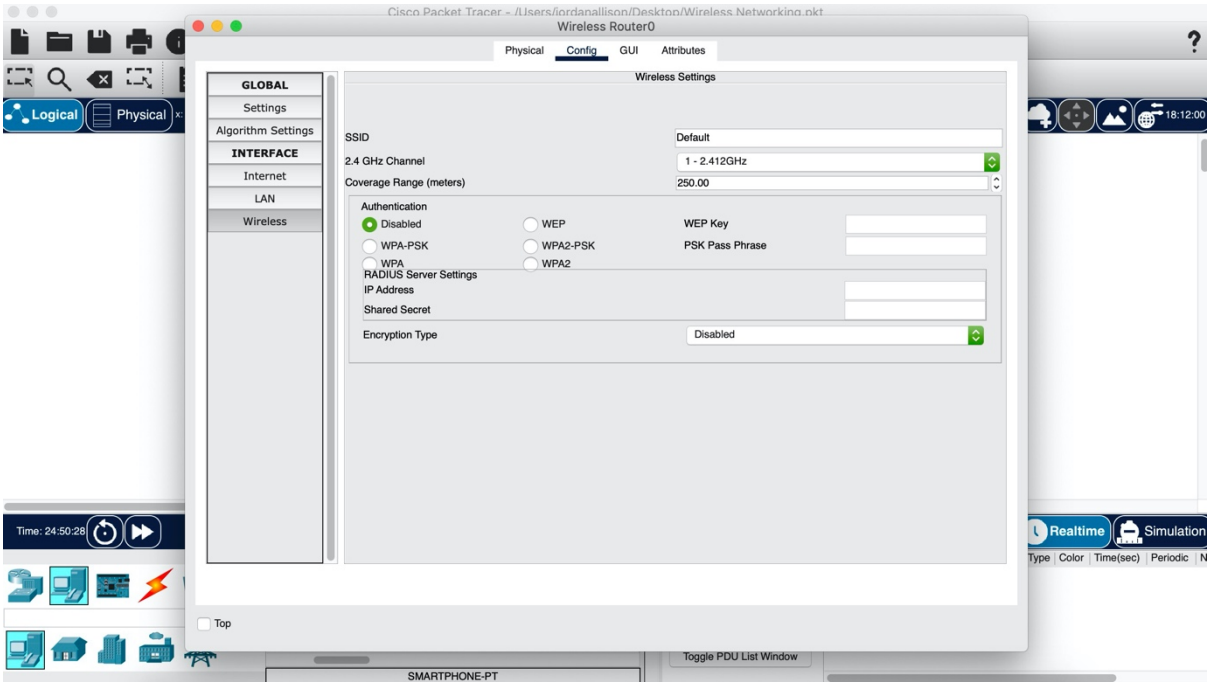
3 Check Current Settings

By default, the wireless router should have the following settings:

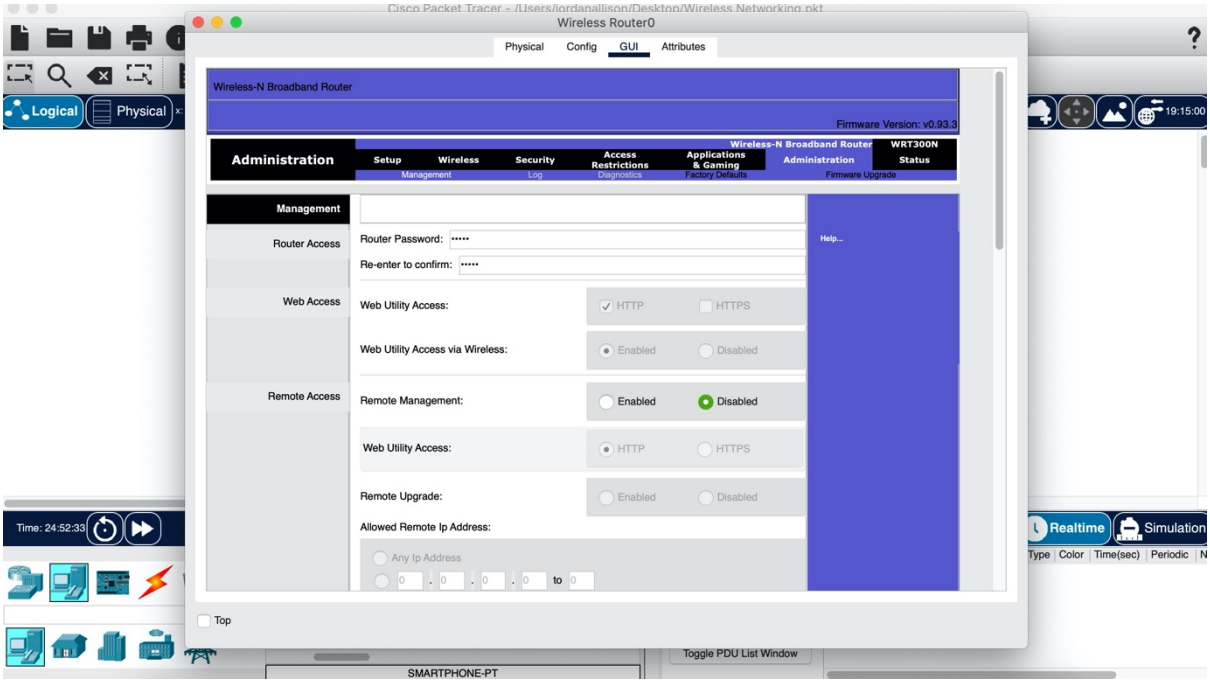
- DHCP is configured automatically and enabled on Wireless router
- Router IP Address of 192.168.0.1
- IP pool for the router is 192.168.0.100 to 192.168.0.149



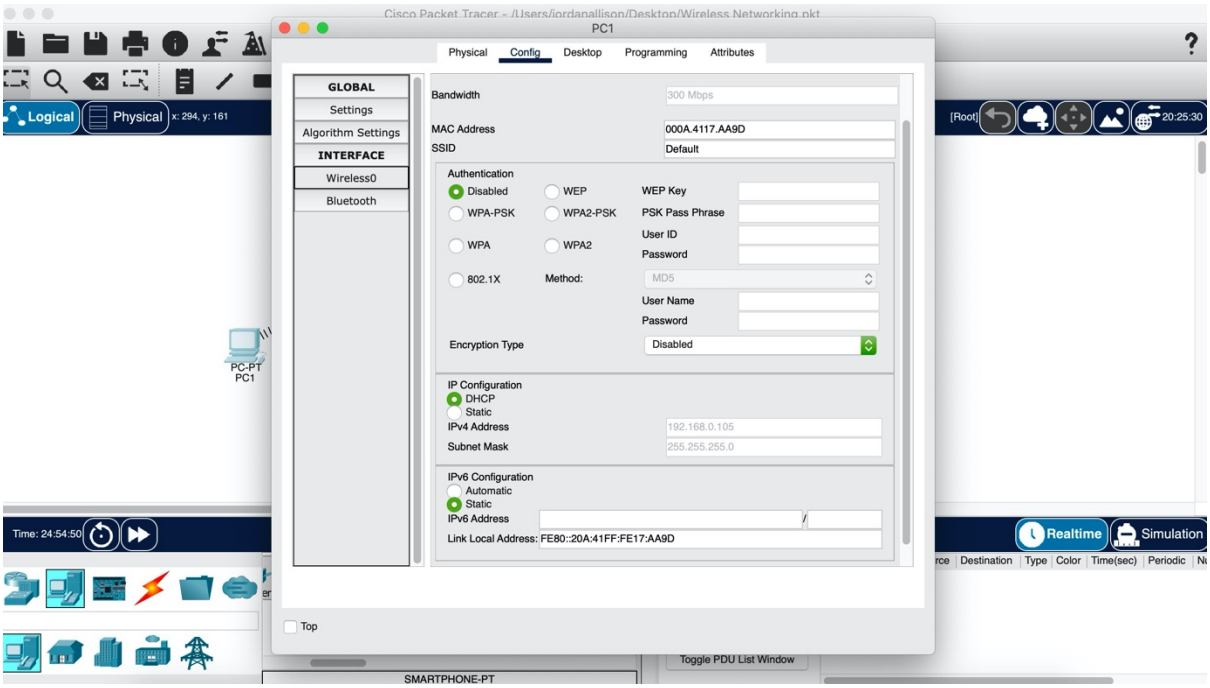
Further, no security should be configured, and the default SSID is configured to Default



There should also be an automatic password under the GUI tab, and more specifically the 'administration tab'. This will be blocked out as ***** but the default is 'admin' for both the username and password.



Finally click on one of the devices. Click on config, and then wireless. You will see that the devices are already configured to receive IP from the DHCP Server.

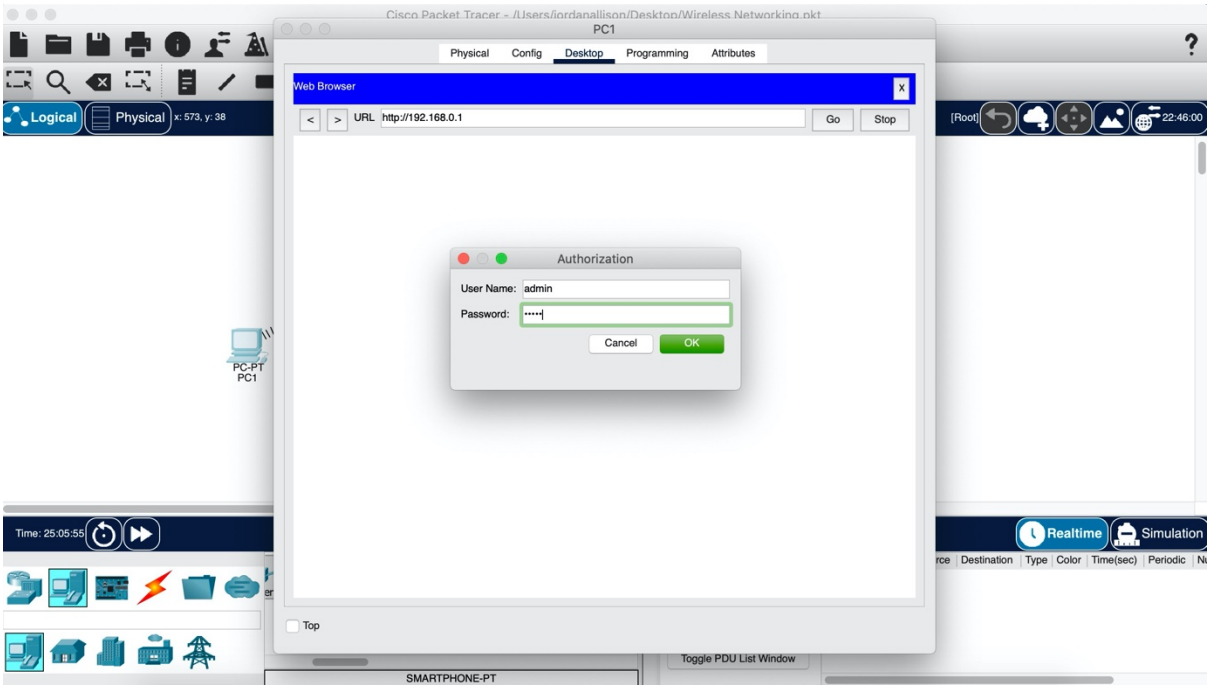


4 Disabling DHCP

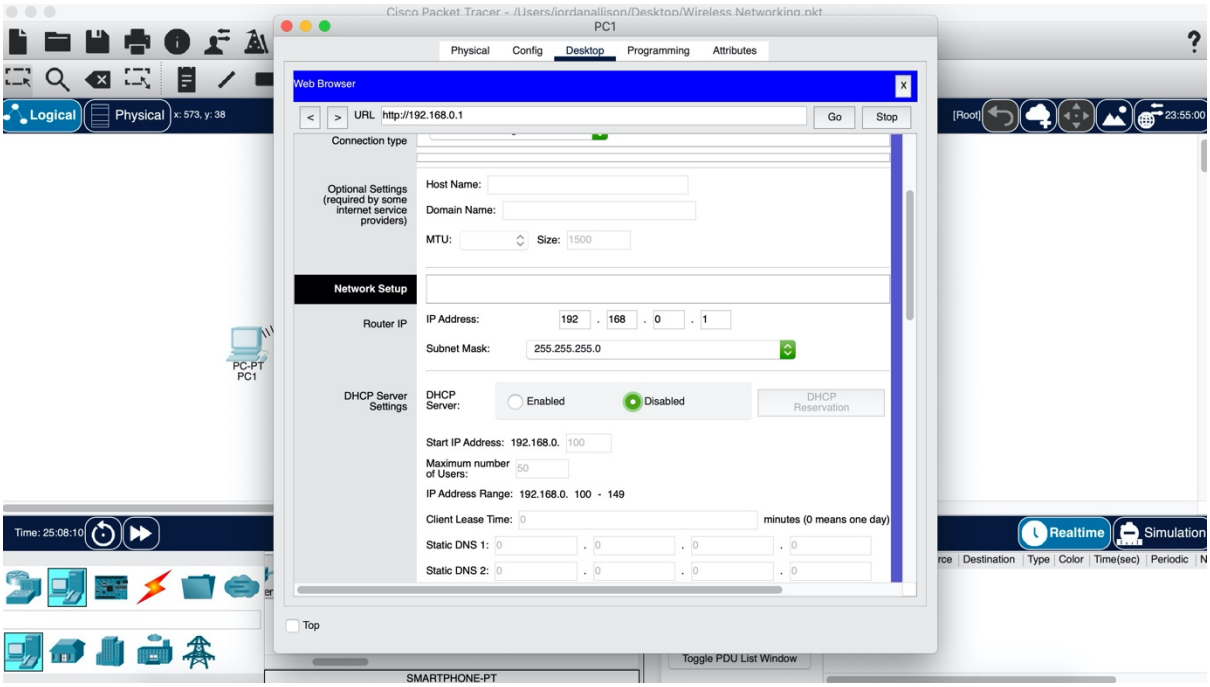
DHCP (dynamic host configuration protocol) is a network protocol used on IP networks where a DHCP server automatically assigns an IP address to each host on the network. While this does simplify address configuration, it does come with security concerns.

Our network is running on 192.168.0.0 network and all devices are DHCP clients and functioning properly. So first connect to the Wireless router from the PC and set the DHCP to disabled.

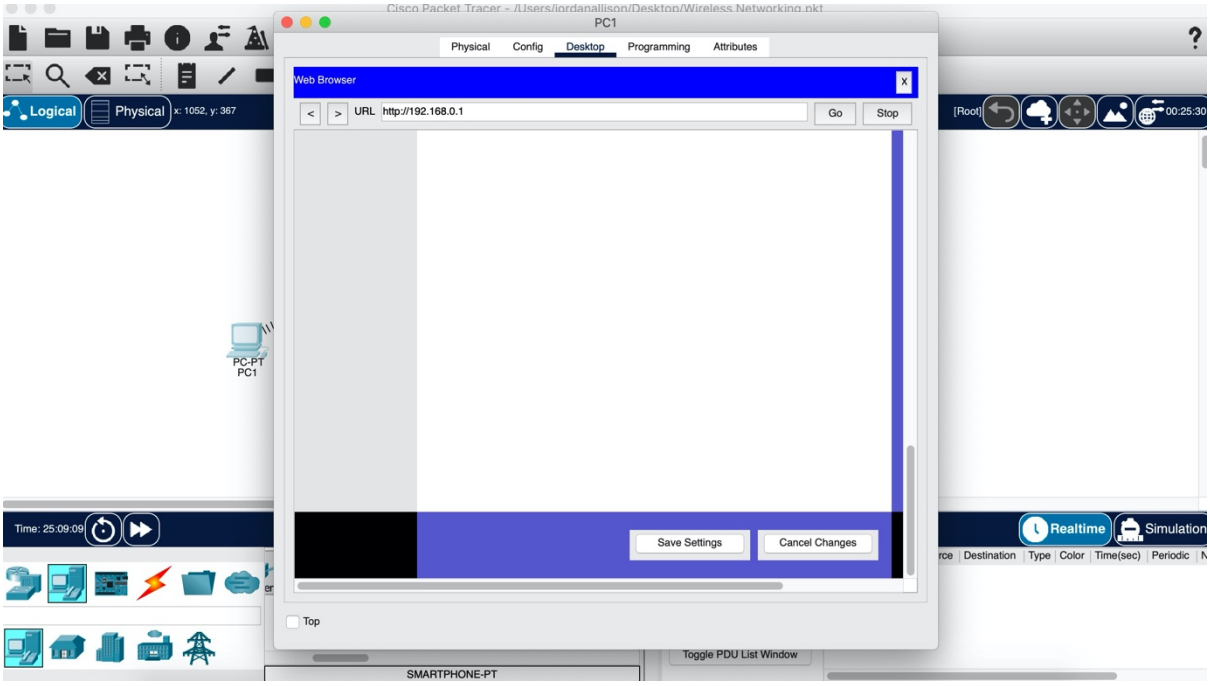
To do this, double click on PC and select Web Browser (under the Desktop tab). Enter the IP address of the wireless router (192.168.0.1) and press enter. It will then ask for authentication. Give the username: admin and password: admin



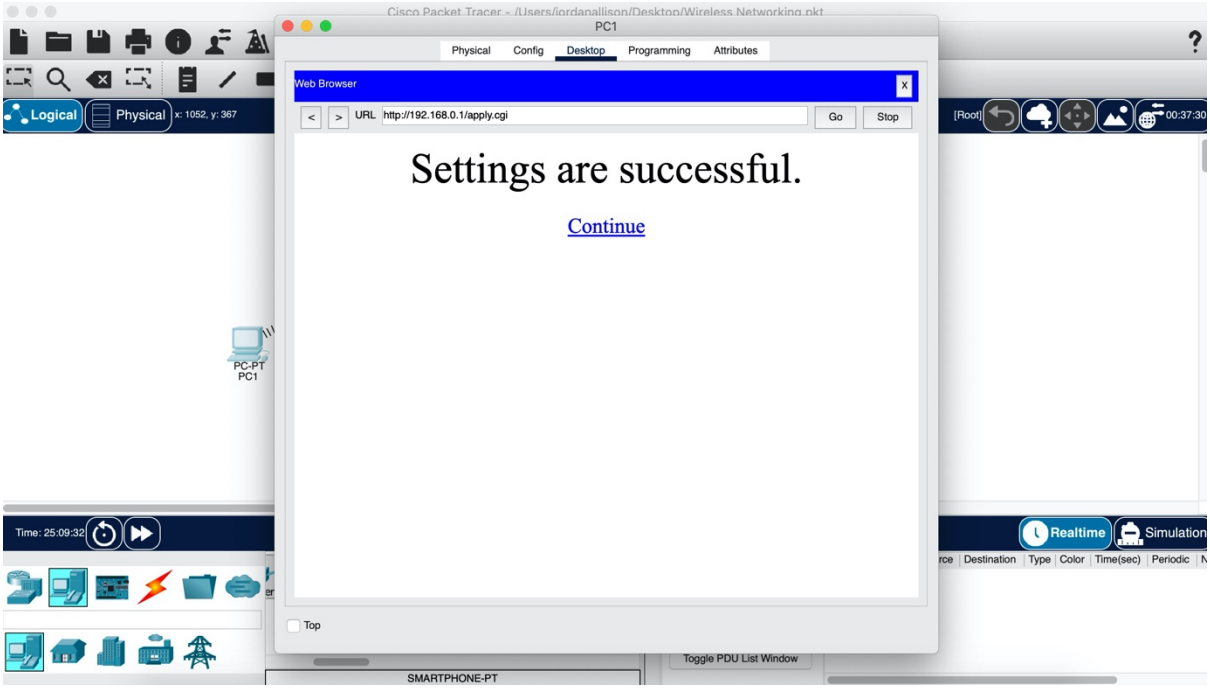
You should then gain access to the wireless router via the PC in GUI mode. Scroll down screen to 'Network Setup' and select disable DHCP.



Then scroll to the very bottom of the page and click on 'Save Settings'.

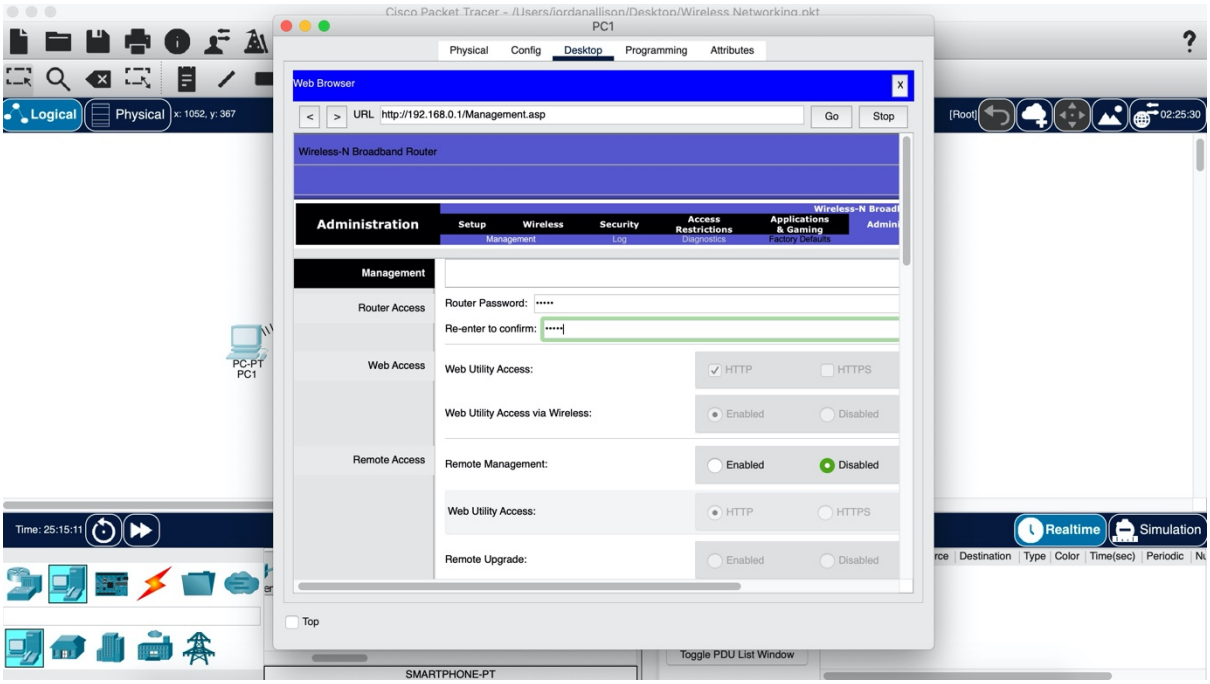


Then click continue

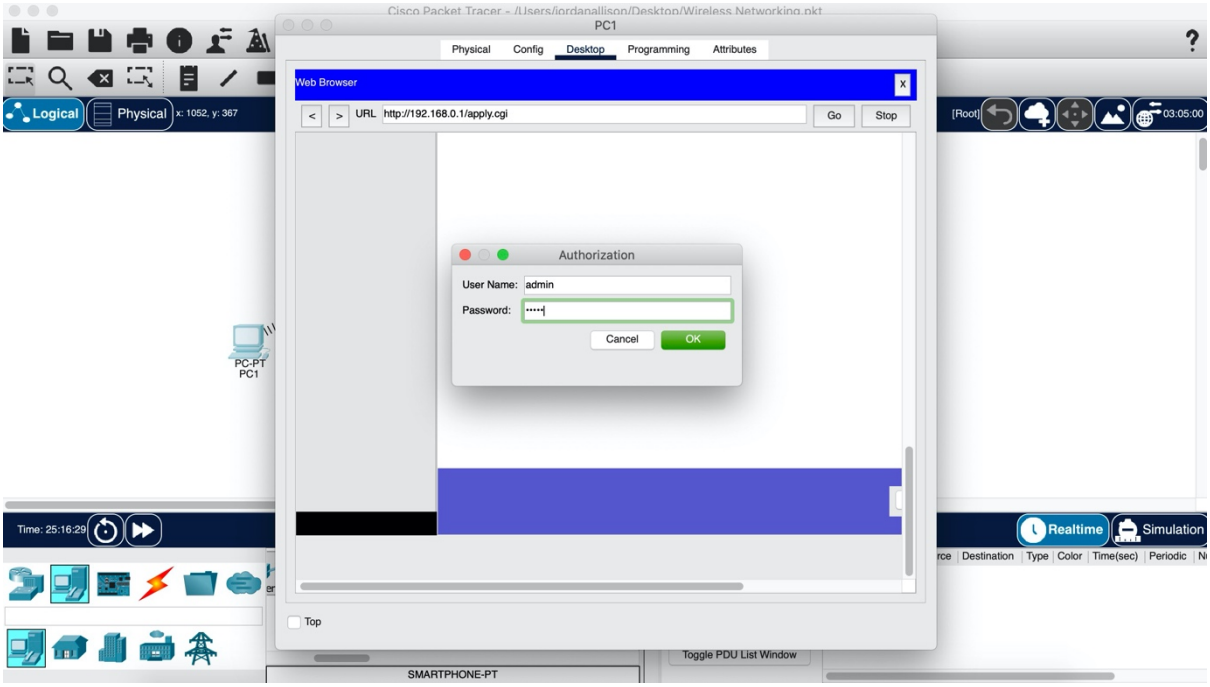


5 Changing Security Settings (Password, SSID, and WEP)

Now select Administration from the top menu and change password to ‘cyber’. Then go to the end of the page and click on ‘Save Settings’ again.

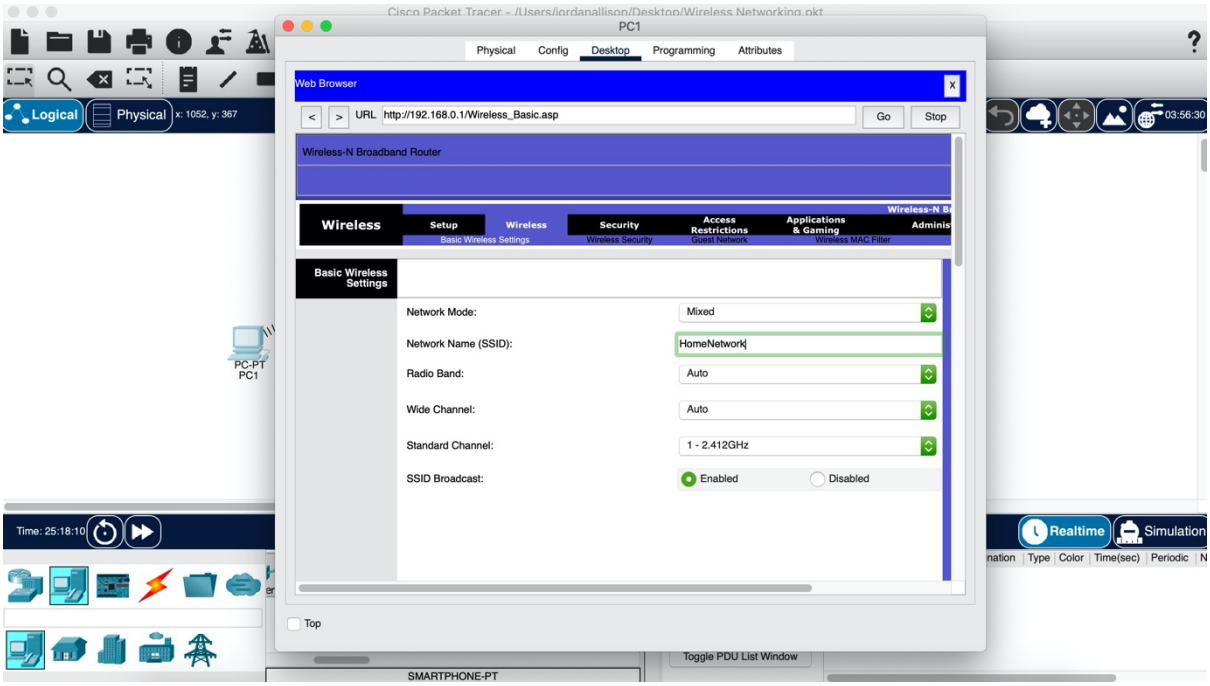


This time it will ask you to authenticate so give the new password ‘cyber’ this time.



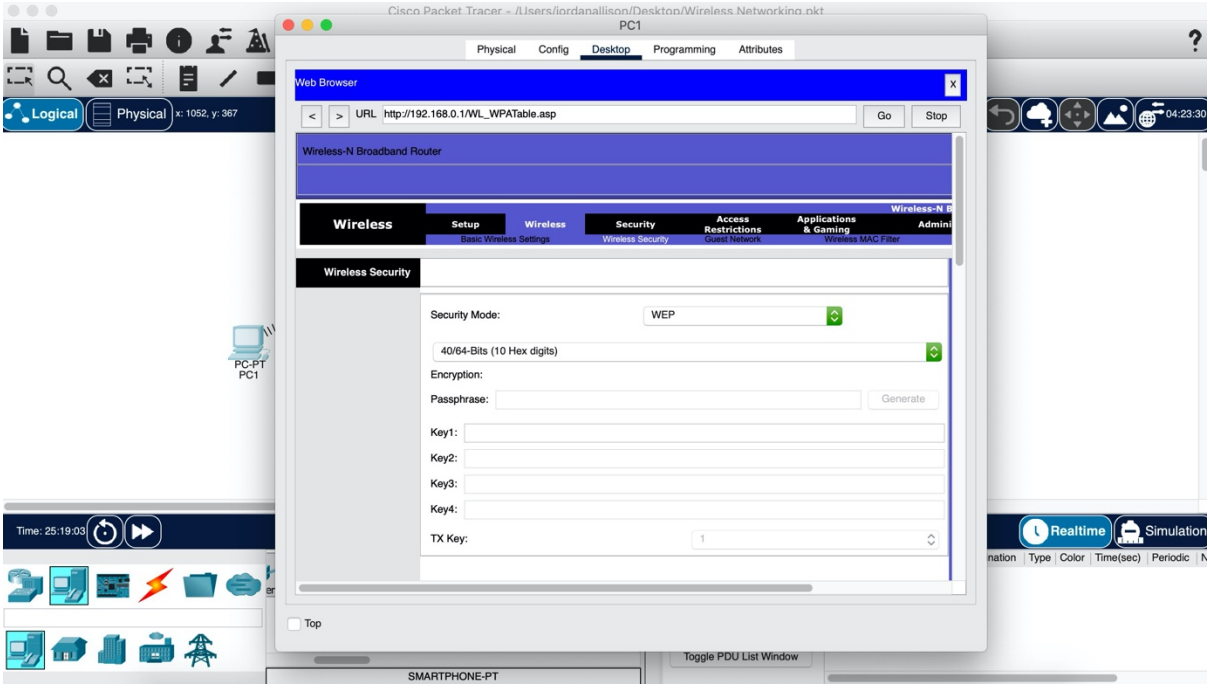
You will be show that ‘Setting are Successful’. Then click continue.

Now click on the wireless tab and set default SSID to HomeNetwork

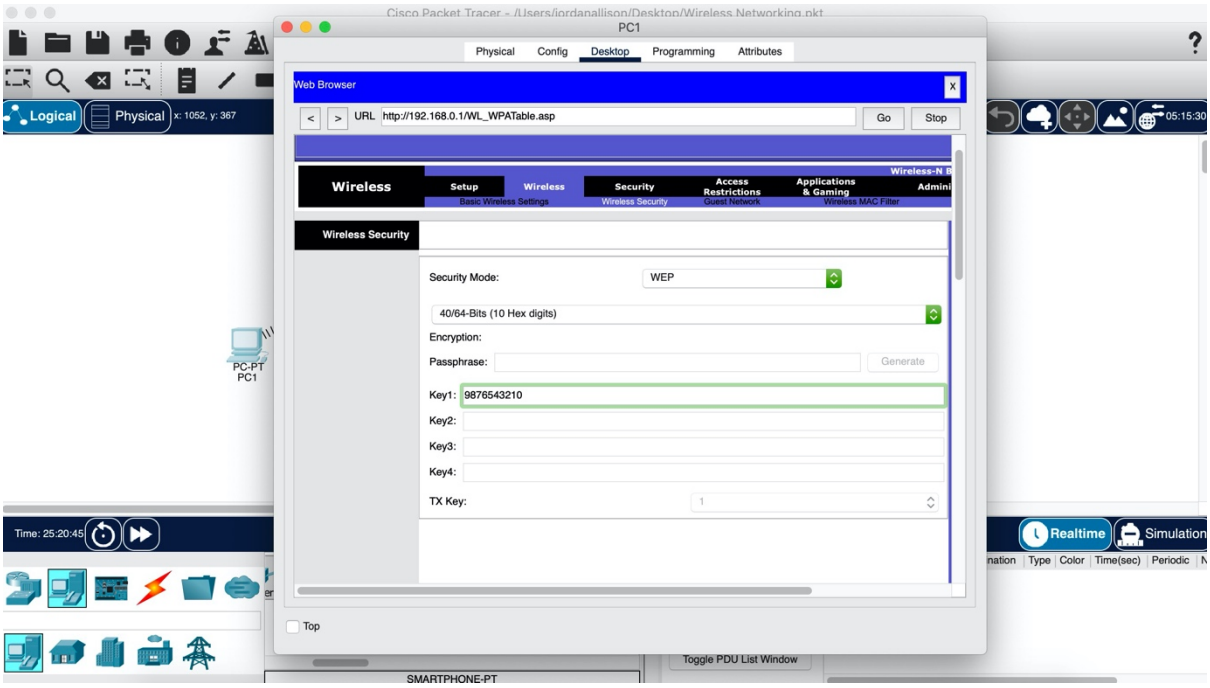


Then scroll to the very bottom of the page and click on ‘Save Settings’.

Now select the ’Wireless Security’ tab and change ‘Security Mode’ to WEP

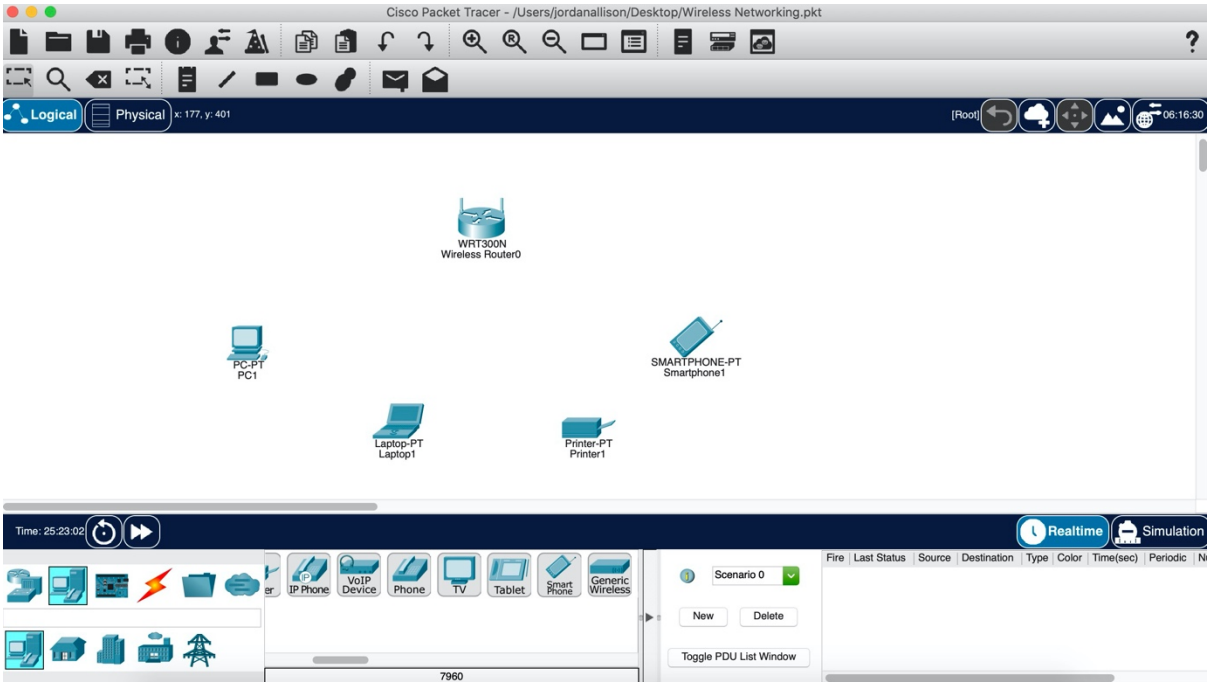


Set Key1 to 9876543210 (you can set this to whatever you like, but you just need to remember this key for later on).



Once more, go to the end of the page and click on ‘Save Settings’.

Now if you look at your network topology, none of your devices will be connected wirelessly. This is fine and shows we have successfully configured the wireless router.



6 Configure End Devices

Configure the static IP on all four devices as given below:

Device	IP	Subnet Mask	Default Gateway
PC1	192.168.0.2	255.255.255.0	192.168.0.1
Laptop1	192.168.0.3	255.255.255.0	192.168.0.1
Printer1	192.168.0.4	255.255.255.0	192.168.0.1
Smartphone 1	192.168.0.5	255.255.255.0	192.168.0.1

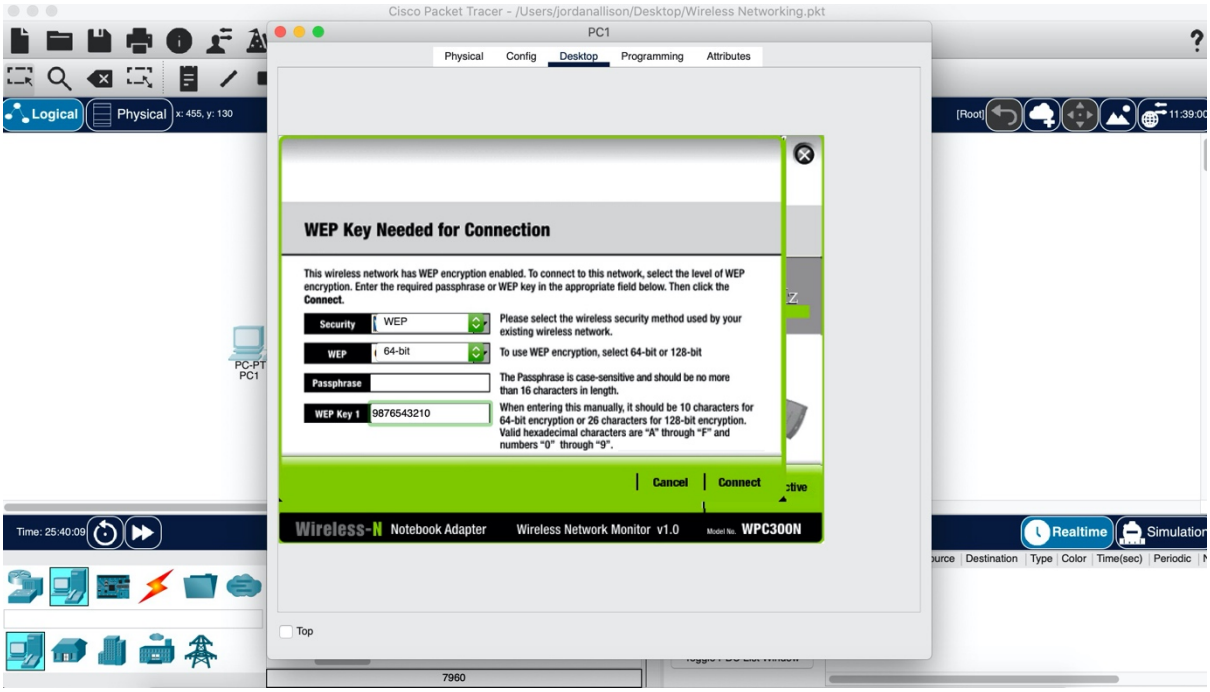
7 Connect Devices to Wireless Network

Now it's time to connect the devices to the Wireless router. To start click PC1 select Desktop and then click on PC Wireless. Click on the connect tab and click on the ‘Refresh’ button.

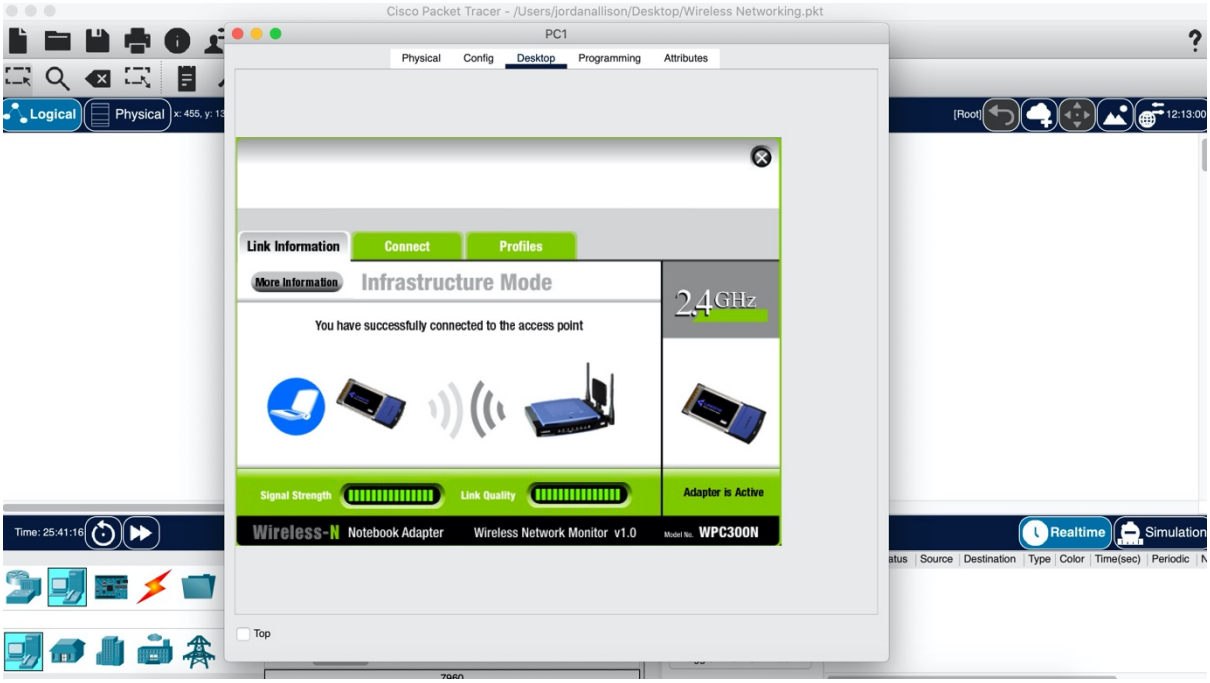
As you can in the screenshot above, the wireless device (PC1) is accessing the HomeNetwork on CH1 and the signal strength is 80%. On the right side you can see that WEP security is configured in network.

Now click on connect button to connect to the HomeNetwork.

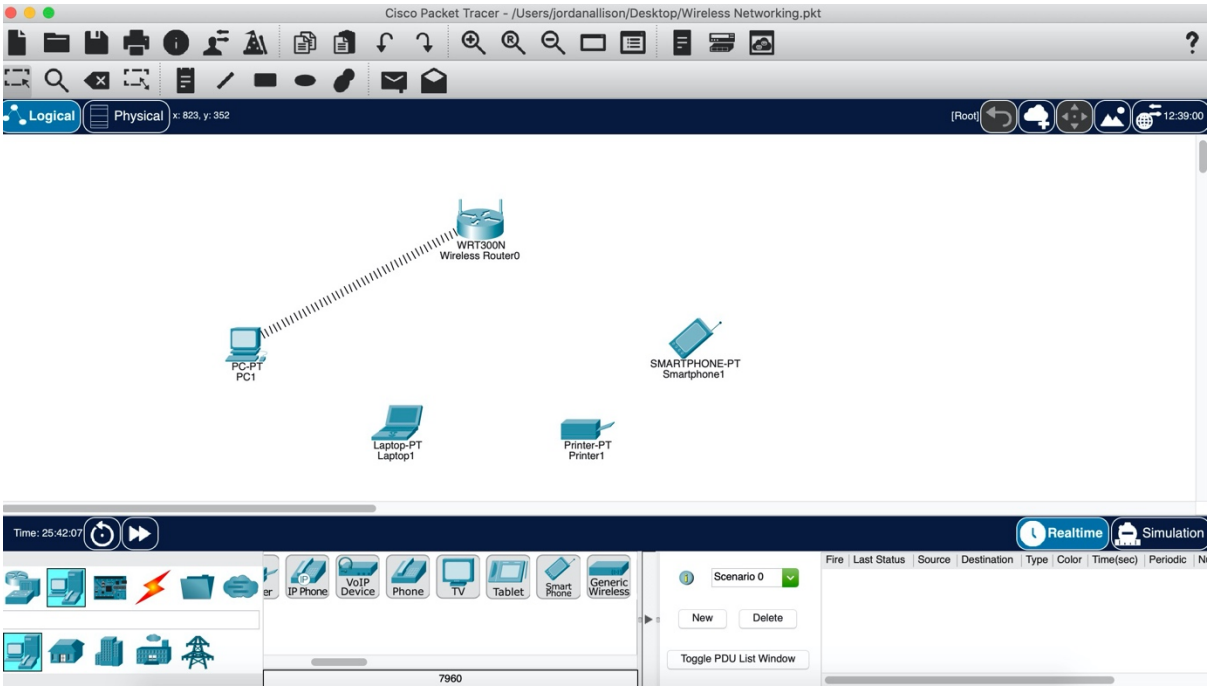
It will ask for the WEP key so type in 9876543210 and click connect.



It will now connect with the wireless router. If you click on 'Link Information', it will show how the devices are successfully connected.

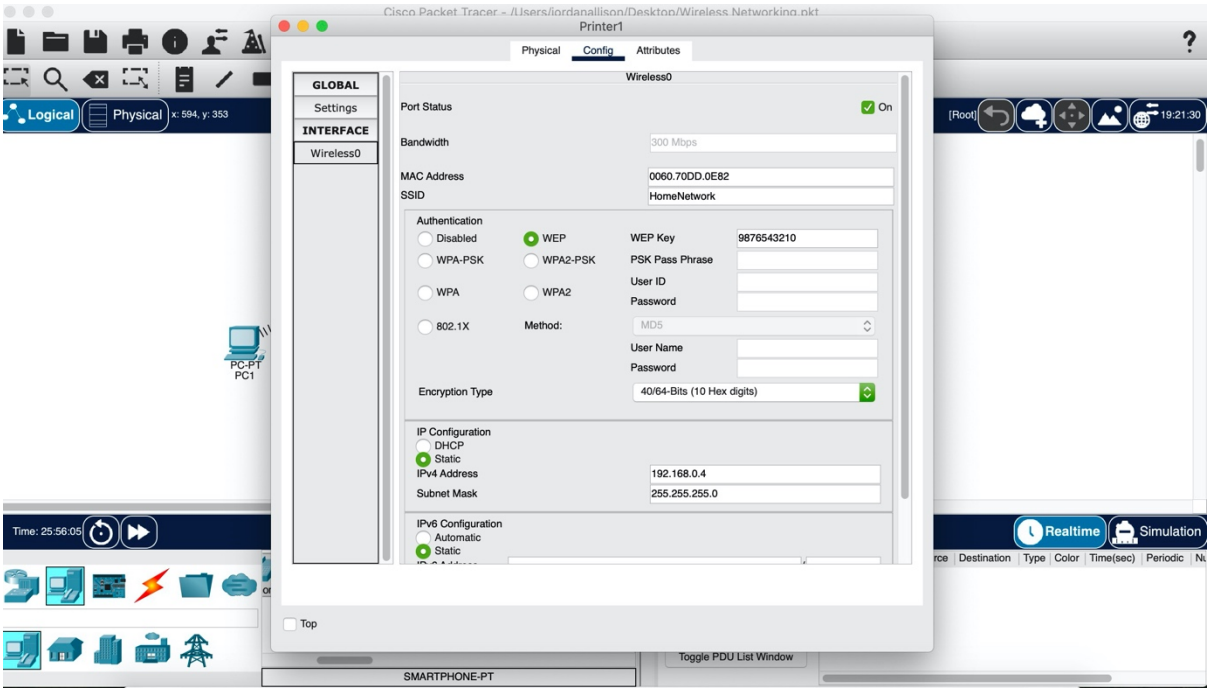


Have a look at your network topology as well to see that PC1 is connected to the wireless router:



Follow the same procedure to connect the Laptop. For the Printer and Smartphone, however, you need to do something a little different.

You will need to click on config, then wireless, and edit the settings here (including the SSID of the network, the authentication of WEP, and the key.



Finally, all of your devices should be connected with WEP security enabled:

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