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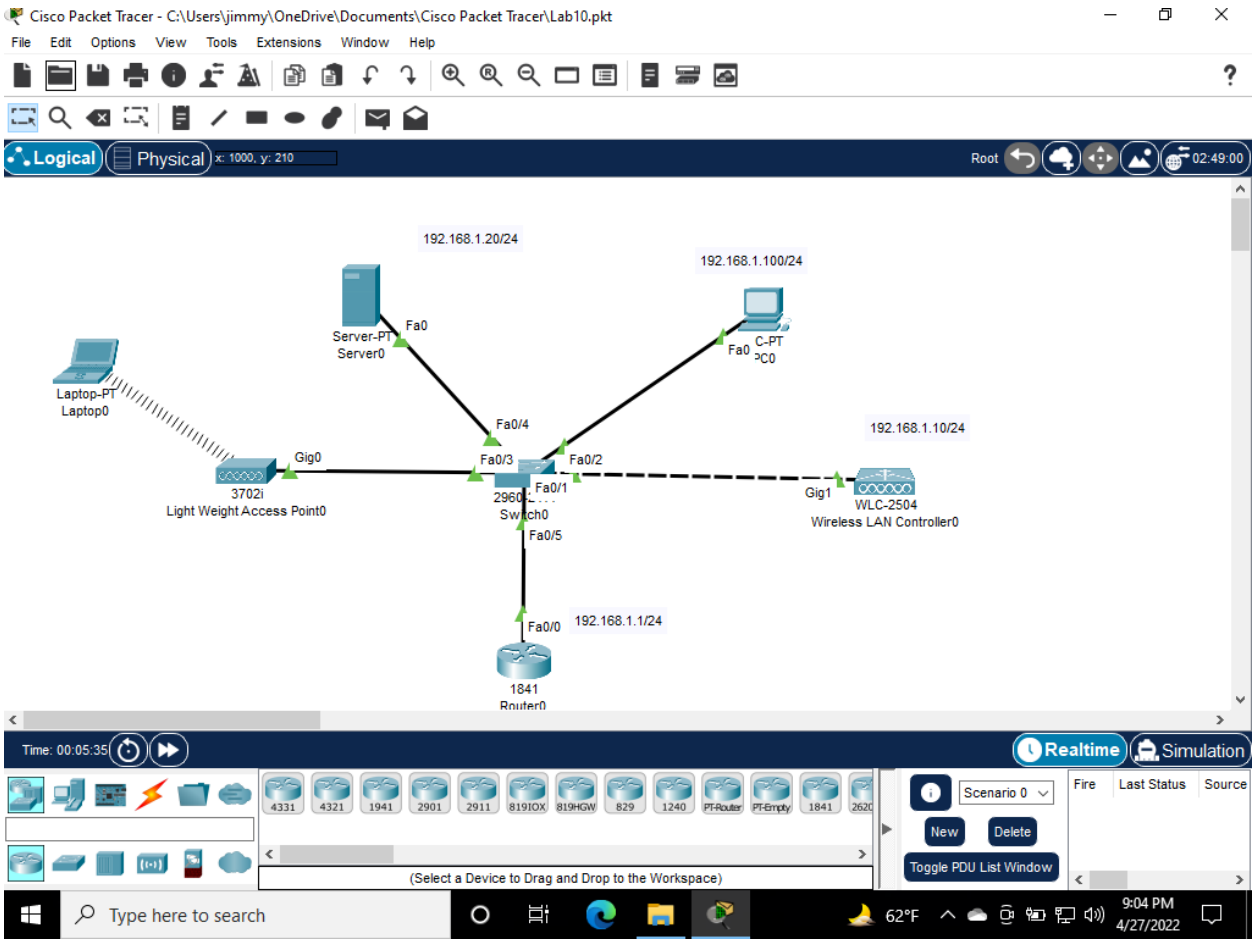
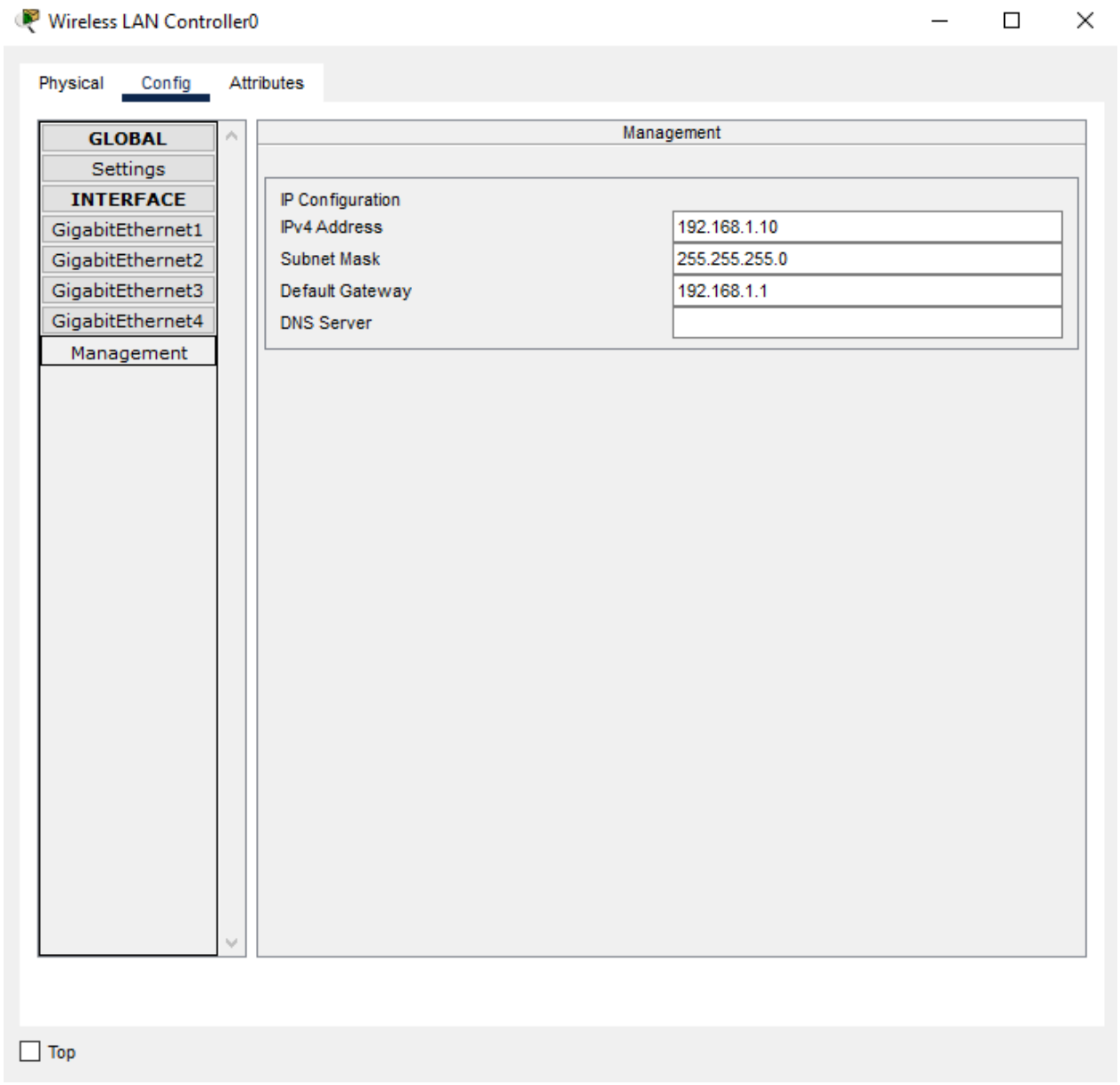
CS4471-01
April 27, 2022

Lab 10 - Wireless

1. Configure the network shown below comprising of a WLC-2504 Wireless LAN Controller, 2960 Ethernet switch, 3702i Lightweight Access Point, Server, 1841 Router, and PC computer interconnected by Ethernet cables. A laptop computer will be used to the network via WiFi. Submit a screenshot of this. (initial screenshot may not show that laptop is connected to wireless access point).

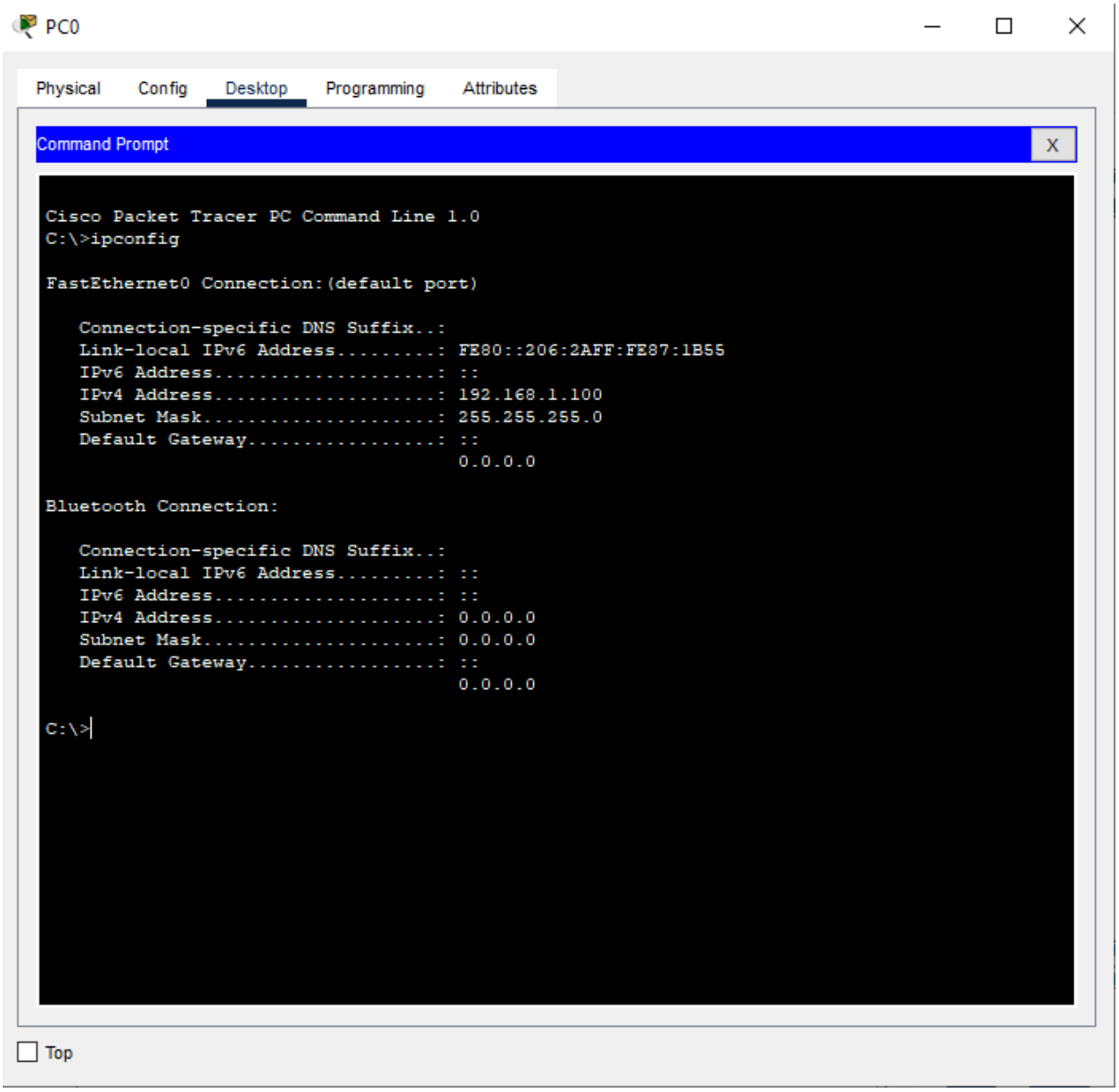


2. Click on the Wireless LAN Controller icon and go to the Config tab. Click on the Management interface and set the management IP address to 192.168.1.10, subnet mask to 255.255.255.0, and default gateway to 192.168.1.1. Submit a screenshot of these settings.

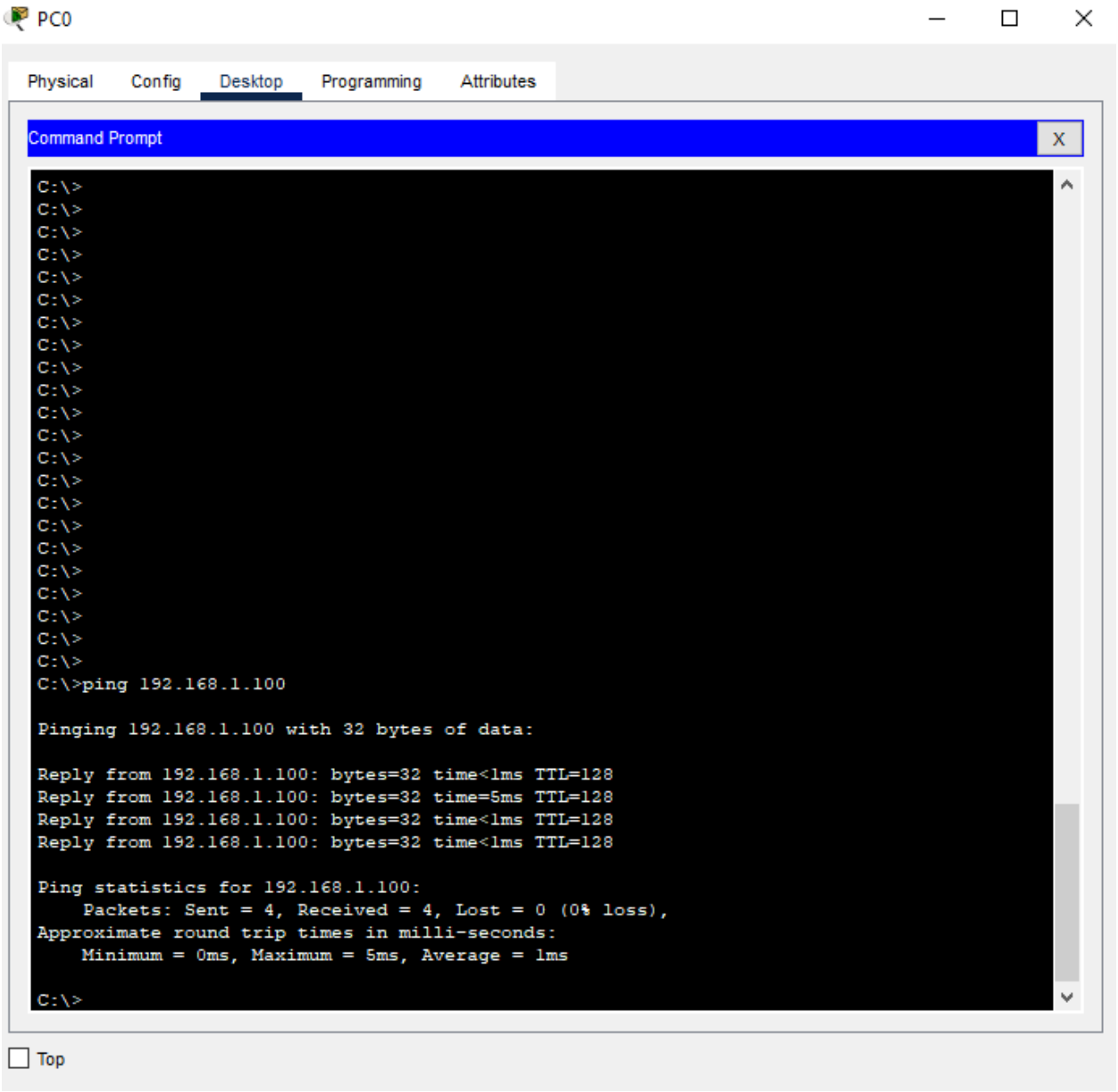


3. On computer PC0, configure IP address 192.168.1.100 and subnet mask 255.255.255.0. Submit screenshots of the following three verifications.

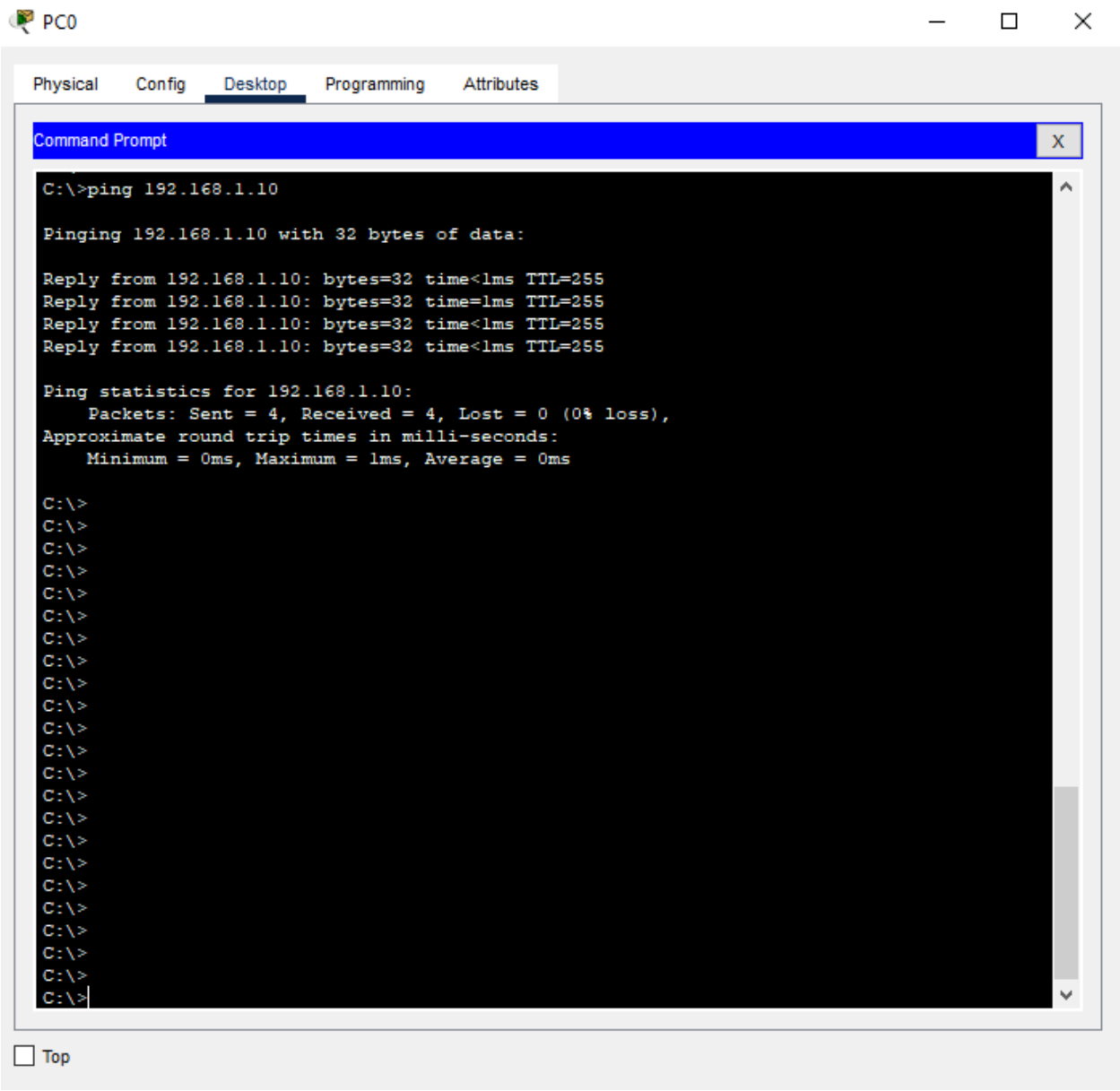
a. Open a command prompt window on PC0 and run command “ipconfig” to verify IP configuration settings.



b. Verify that computer PC0 can ping its own IP address by running command “ping 192.168.1.100”.

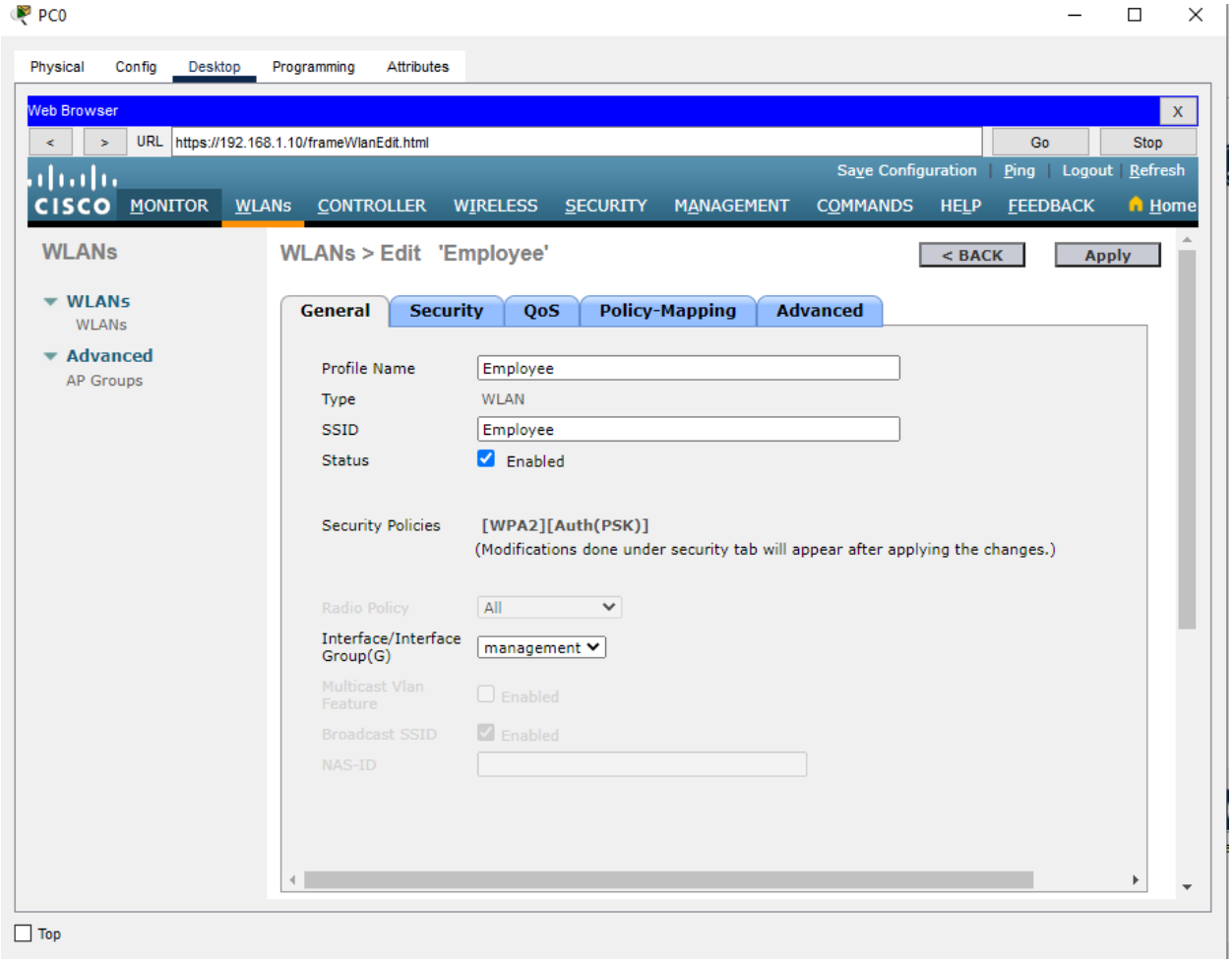


c. Also verify that computer PC0 can ping the IP address of the Wireless Lan Controller.

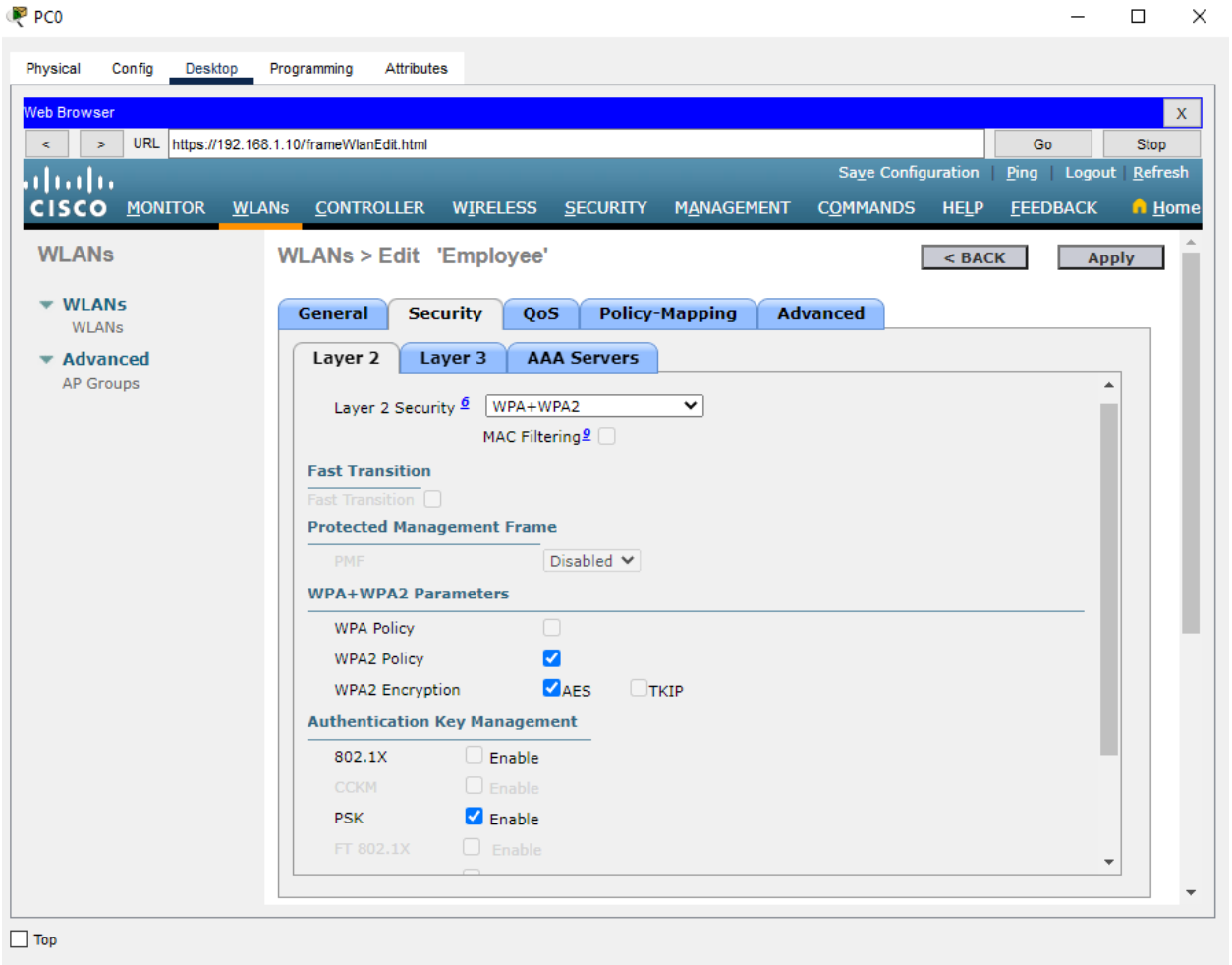


4. On computer PC0, open a web browser and go to URL http://192.168.1.10. Create an admin account with an appropriate password that you can easily remember (eg. admin or Wlc-2504). Set up your controller with an appropriate system name along with management IP address 192.168.1.10, subnet mask 255.255.255.0, default gateway 192.168.1.1, management vlan ID value of 0 (for untagged vlan). Click Next button. Create your wireless network by setting network name to Employee, security to WPA2 Personal, passphrase to Employee, vlan Management VLAN. Click Next button. Click Next button. Confirm settings and click Apply button. After waiting one minute for the controller to reconfigure itself with the new settings, log back into the wireless LAN controller via https://192.168.1.10 . Click on WLANs tab. A new Profile named Employee with an SSID of Employee should have already been created (if not, do

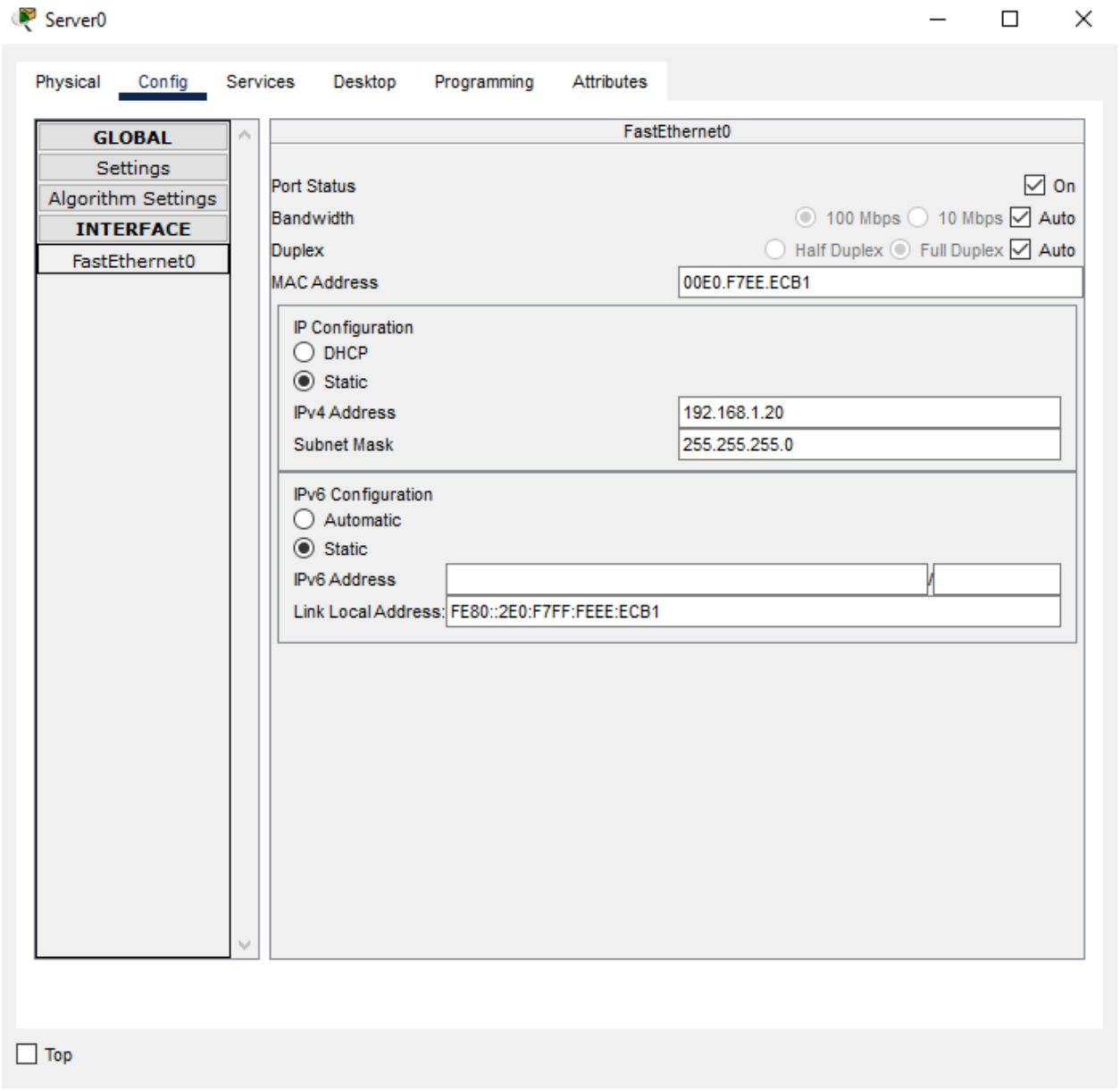
create this new Profile named Employee with an SSID of Employee and click button Apply to save these settings) Submit a screenshot that contains these settings.



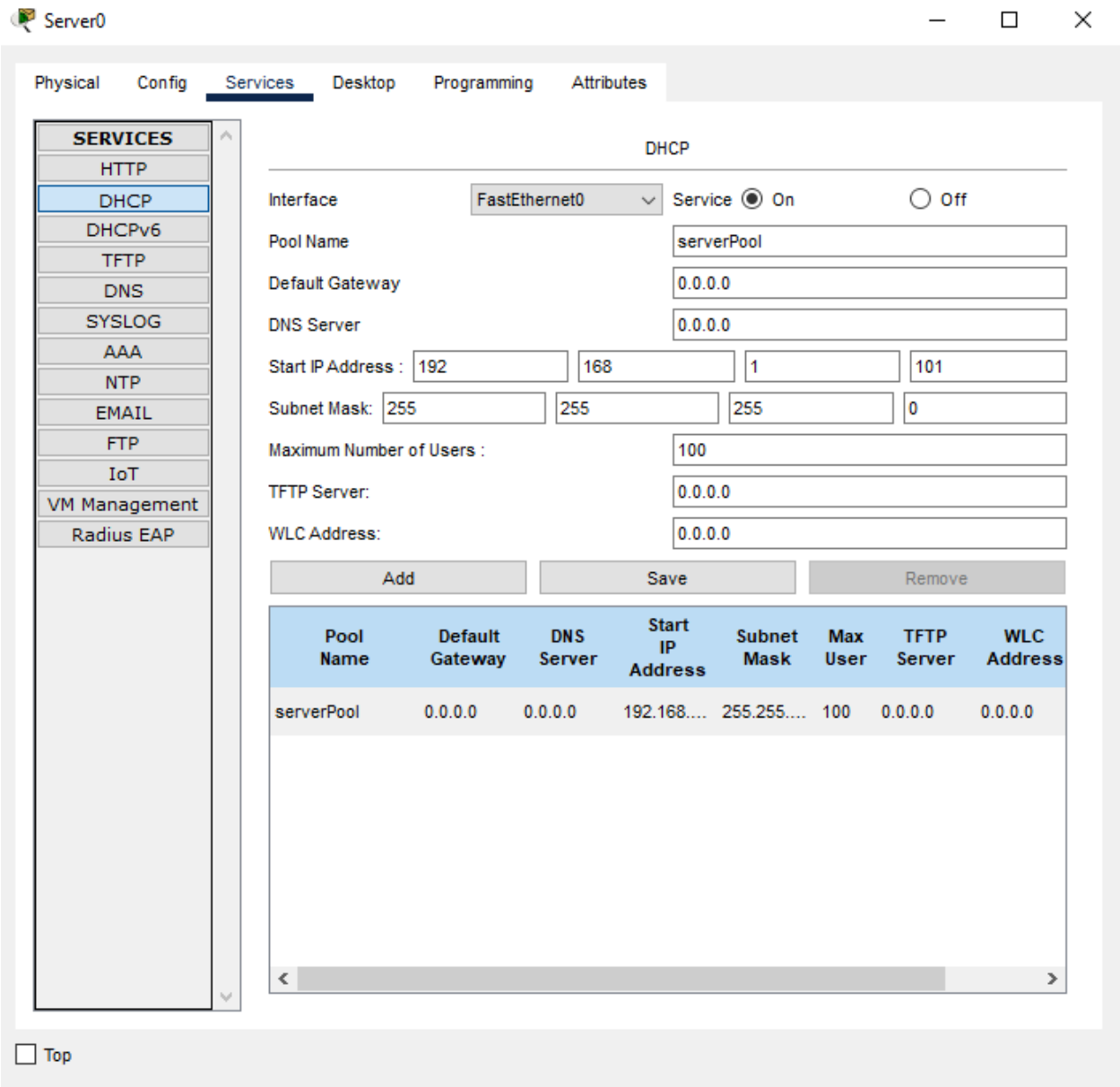
Click on the WLAN ID number of the newly created profile to edit its settings. Click on the Security tab. Within the Layer2 settings, verify that Layer 2 Security is set to WPA+WPA2 . WPA2 policy should be checkmarked , AES encryption should be checkmarked , and PSK authentication should be enabled . If not already configured, set PSK (Pre-Share Key) to a value that you can easily remember(eg. Employee). Submit a screenshot of these settings. Click Apply to save these settings.



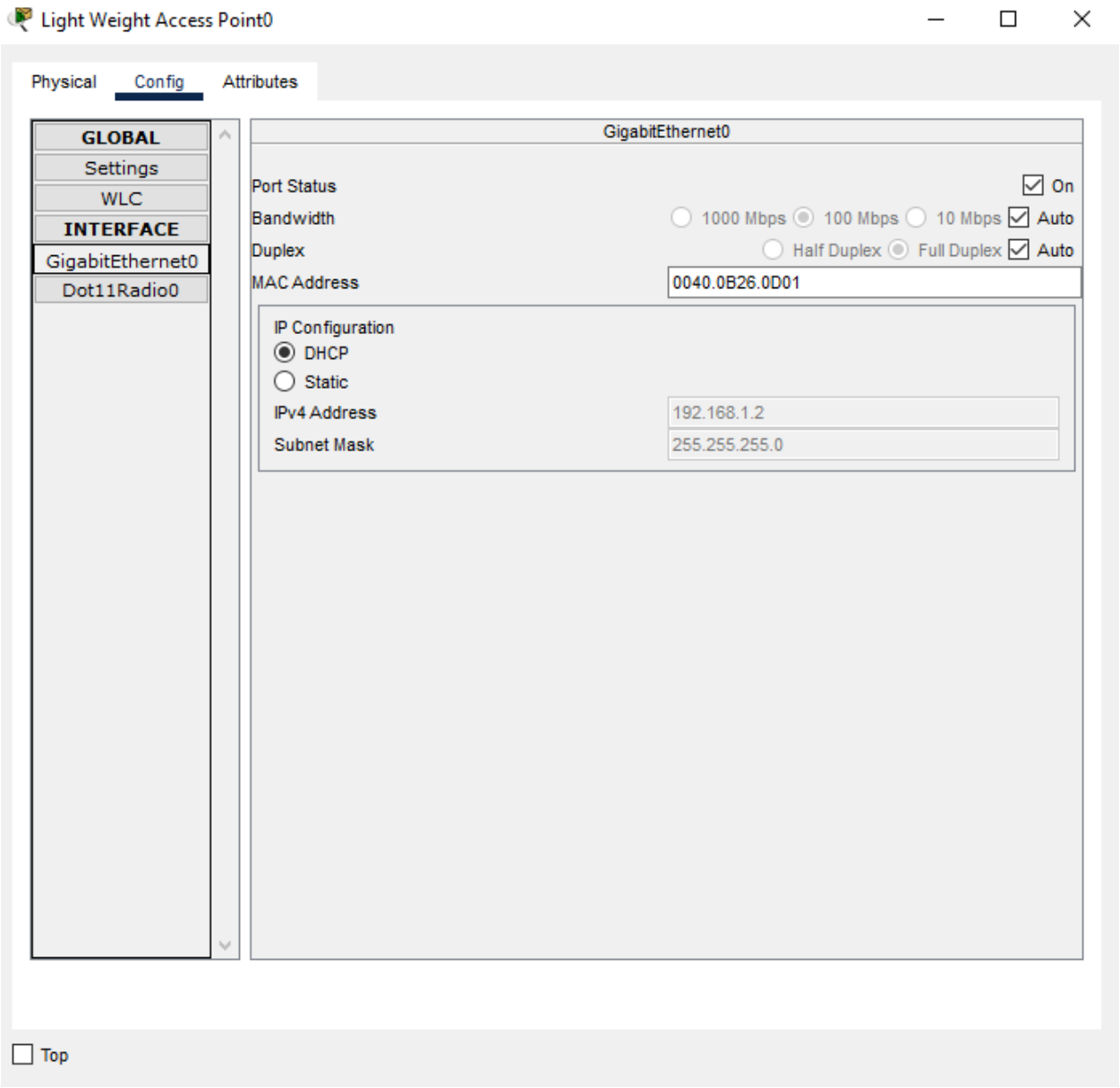
5. On Server0, go to Config tab and clock on interface FastEthernet0. Configure static IP address 192.168.1.20 and subnet mask 255.255.255.0 . Submit a screenshot of these settings for FastEthernet0 interface.



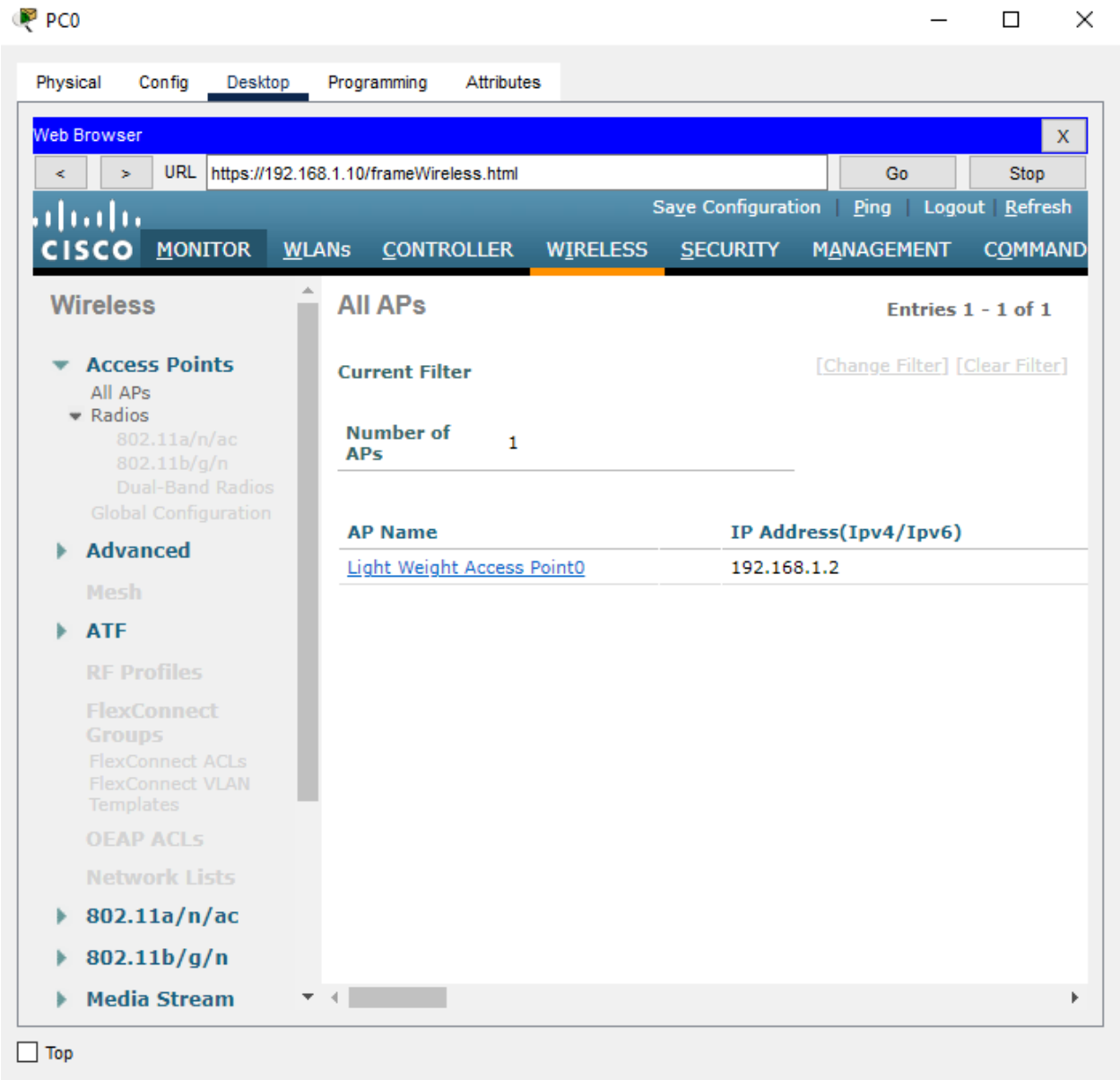
Configure Server0 as a DHCP server by going to Services tab and then click on DHCP. Verfiy that DHCP service radio button is on for FastEthernet0 interface. Create a DCHP pool to provide up to 100 DHCP addresses starting from IP address 192.168.1.101 . Click on Save button to save the settings. Submit a screenshot of these settings



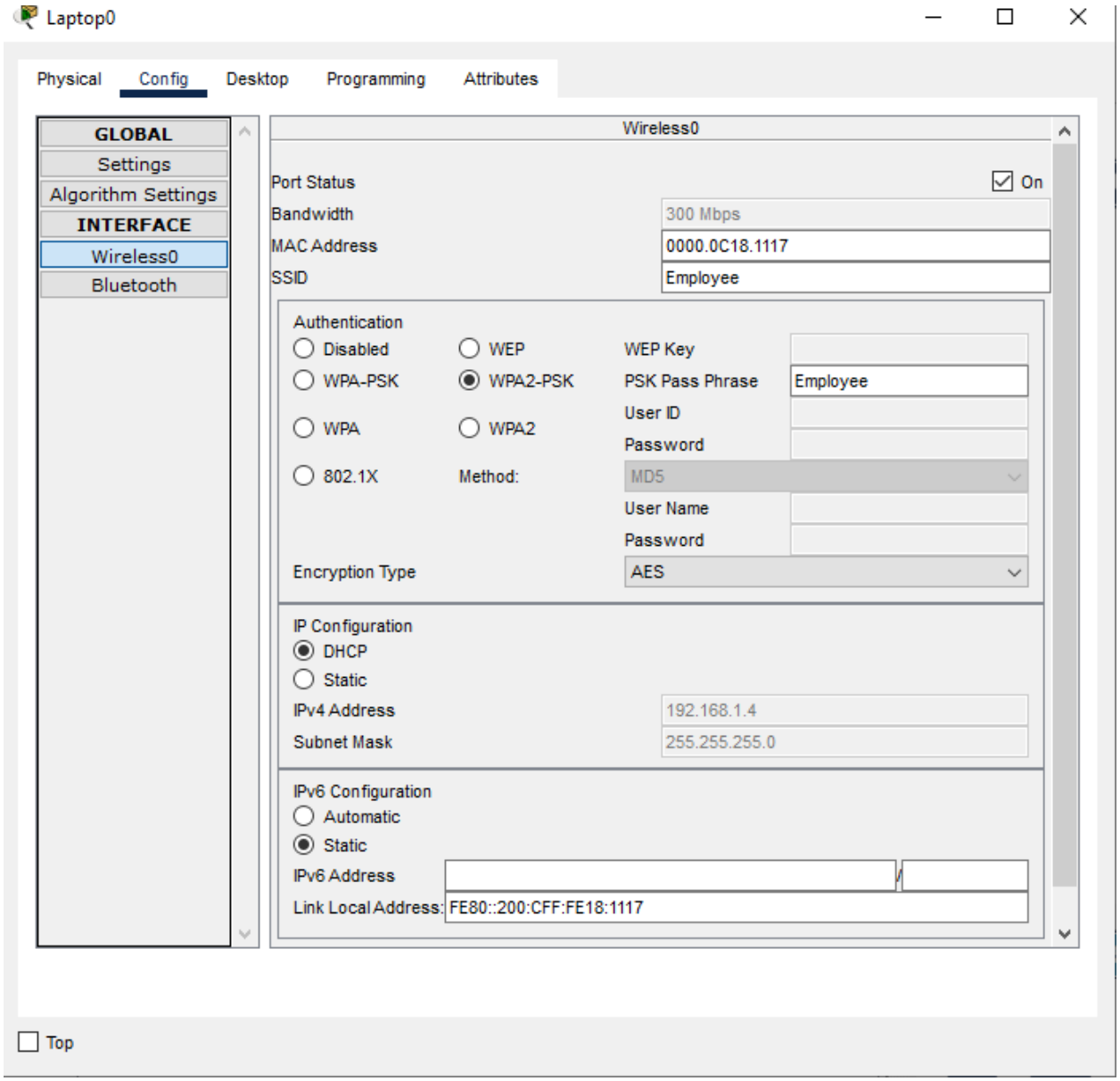
6. On the Light Weight Access Point 1, click on its Config tab and click on the GigabitEthernet0 interface. Submit a screenshot of the GigabitEthernet0 settings, which should show its DHCP configured IP address and subnet mask (Note: if DHCP address is not within range configured in DCHCP server, try to renew DHCP address on access point by clicking Static radio button followed by DHCP radio button).



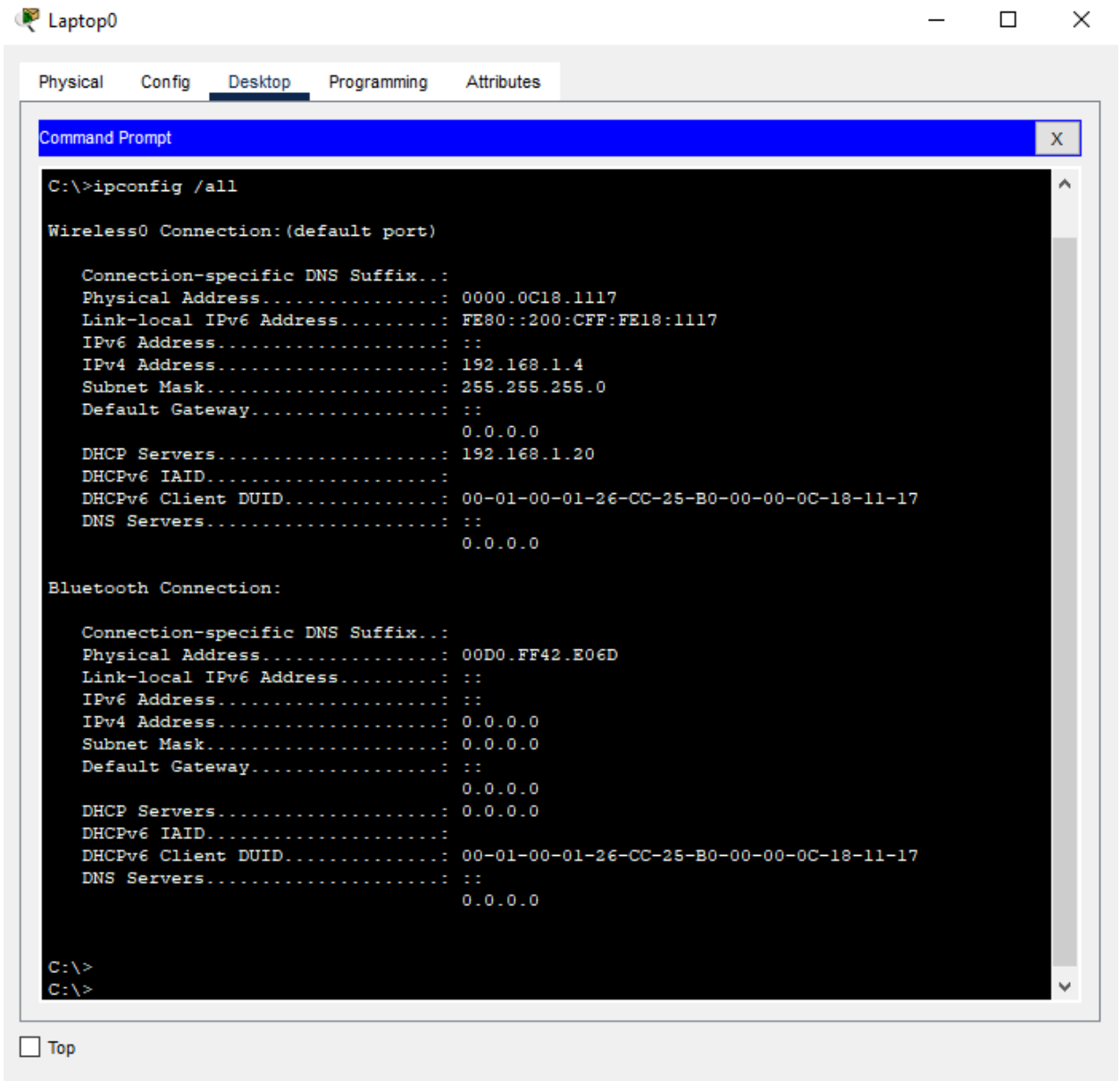
From PC0 web browser, connect to the web interface of the wireless LAN controller and click the menu tab labelled WIRELESS . Submit a screenshot of this display, which should show the access point (and its IP address) that has established connectivity to the wireless LAN controller.

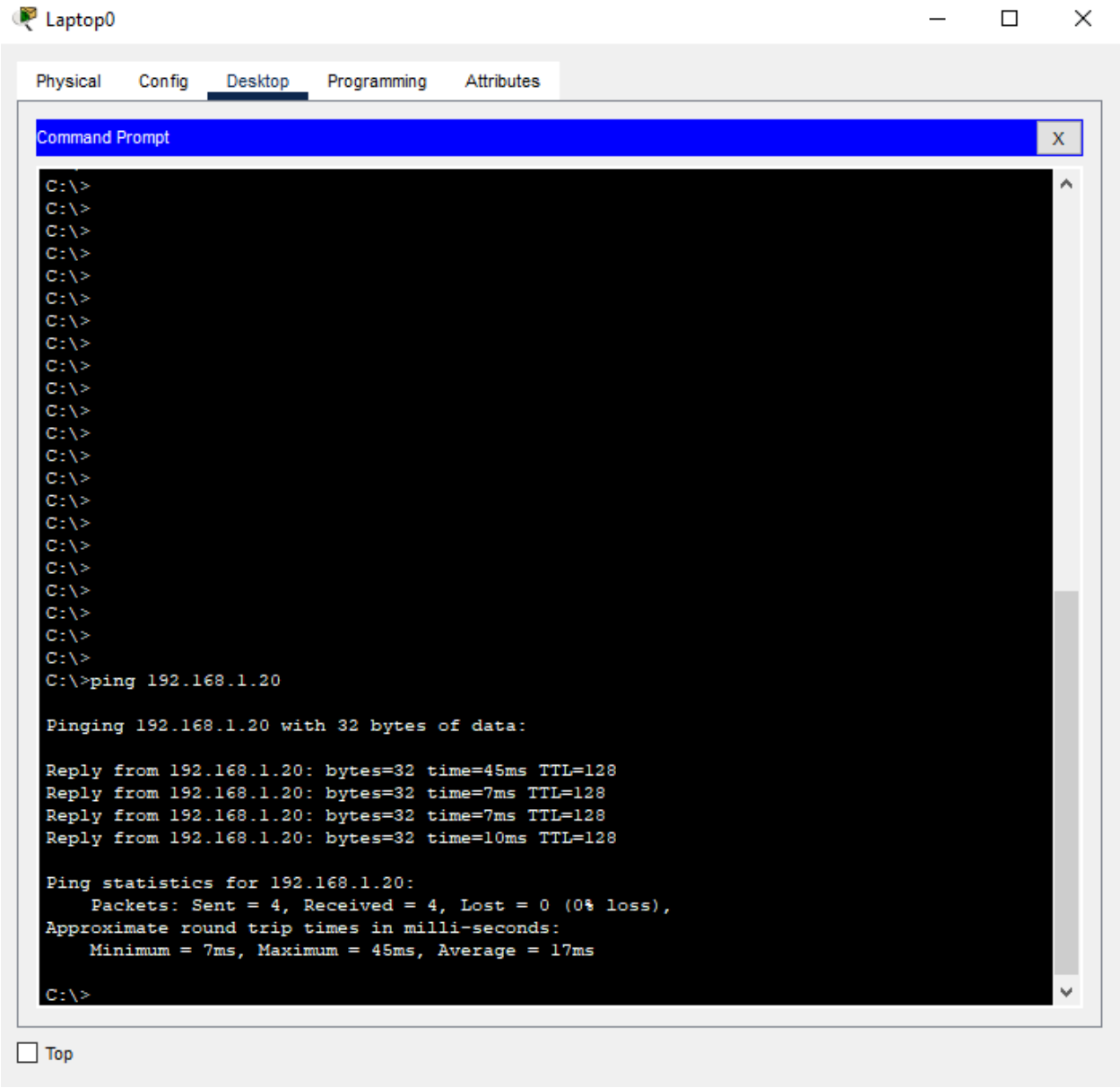


7. On Laptop0, go to Physical tab and turn off the power to the laptop. Afterwards replace its fast Ethernet network module with Linksys WPC300N wifi module. Turn on the power to the laptop. Go to Config tab and click on interface Wireless0. Configure the Wireless0 interface settings such that SSID is set to Employee , Authentication is set to WPA2-PSK , PSK Pass Phrase is set to Employee , Encryption Type is AES, and IP Configuration is set to DHCP. If the IP address obtained is not within the range configured on the DCHP server, try renewing the IP address by clicking on the Static and DHCP radio buttons. Submit a screenshot of these settings.



8. On Laptop0, verify that you can ping IP address of DHCP server. From a command prompt window on Laptop0, submit screenshots of output of “ipconfig /all” and “ping 192.168.1.20”.


Laptop0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
C:\>ipconfig /all
Wireless0 Connection:(default port)
Connection-specific DNS Suffix..:
Physical Address.....: 0000.0C18.1117
Link-local IPv6 Address.....: FE80::200:CFF:FE18:1117
IPv6 Address.....: ::
IPv4 Address.....: 192.168.1.4
Subnet Mask.....: 255.255.255.0
Default Gateway.....: ::
0.0.0.0
DHCP Servers.....: 192.168.1.20
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-26-CC-25-B0-00-00-0C-18-11-17
DNS Servers.....: ::
0.0.0.0
Bluetooth Connection:
Connection-specific DNS Suffix..:
Physical Address.....: 00D0.FF42.E06D
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
DHCP Servers.....: 0.0.0.0
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-26-CC-25-B0-00-00-0C-18-11-17
DNS Servers.....: ::
0.0.0.0
C:\>
C:\>
Top

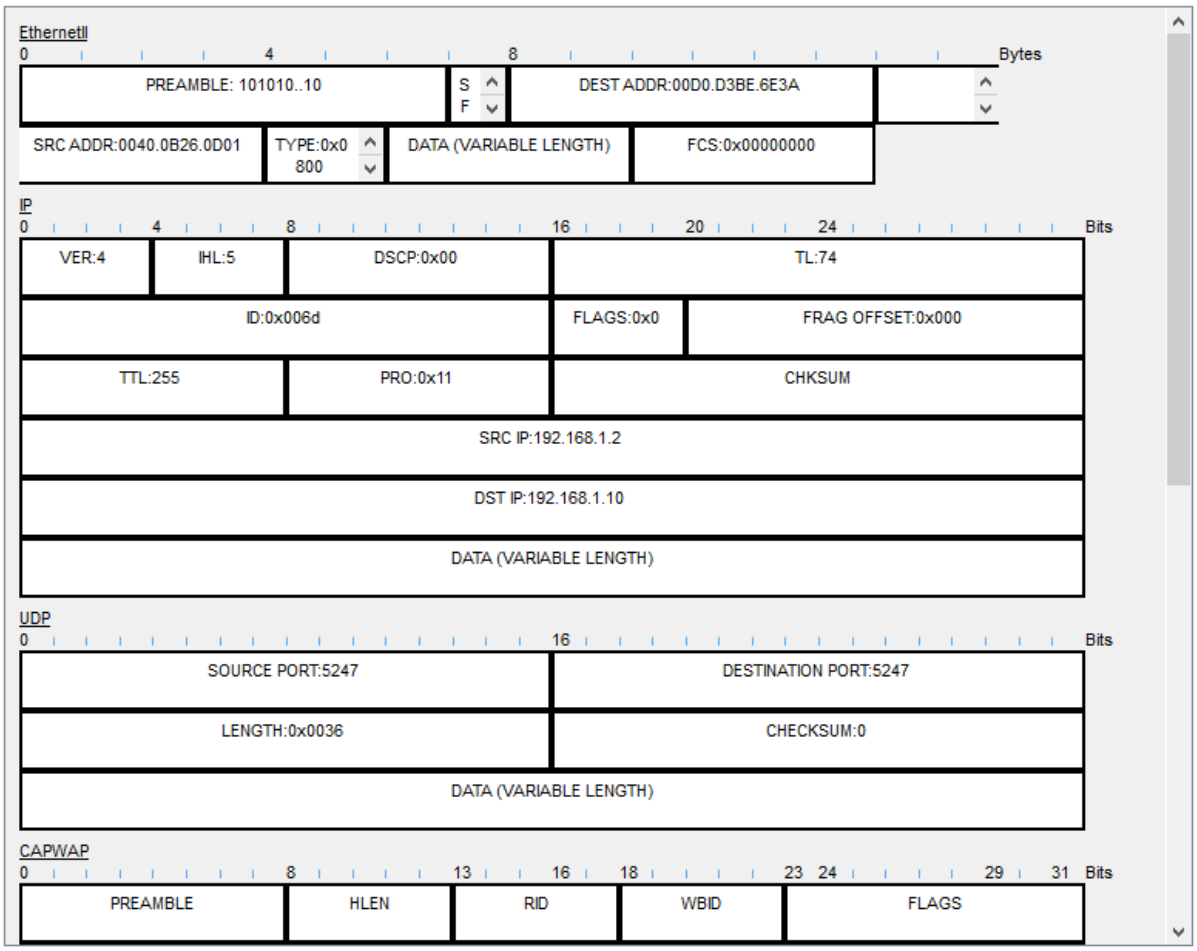


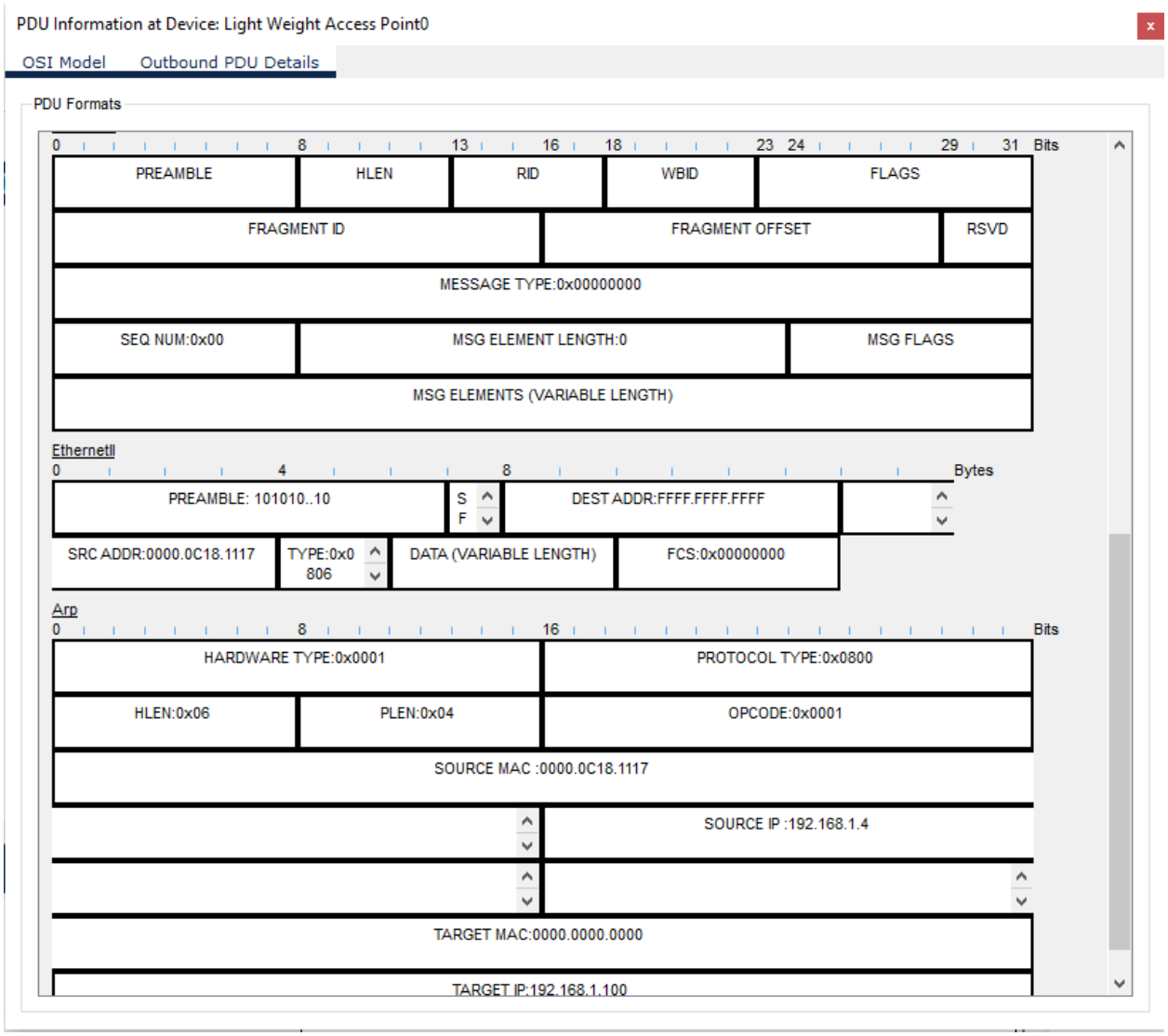
9. (2pts) In Simulation mode, capture and decode a CAPWAP packet while sending ping packets from wireless Laptop0 to wired desktop computer PC0. Submit a screenshot of a decoded Ethernet frame that also includes the CAPWAP packet decoded .

PDU Information at Device: Light Weight Access Point0

OSI Model | Outbound PDU Details

PDU Formats





What UDP port number is used to tunnel CAPWAP packets?
The UDP port numbers used to tunnel the CAPWAP packets is 5247.

What path does the ping packet take between Laptop0 and PC0 ?
The path the ping packet takes from Laptop0 and PC0 is 192.168.1.2 because the laptop is jumping to the light weight access point to the pc.