Activity Configuring and Securing a Wireless LAN in Packet Tracer

Objectives:

- 1. Configure a Wireless Access Point (WAP) local IP address.
- 2. Configure a WAP with an SSID.
- 3. Change the administrator's password on a WAP.
- 4. Configure a WAP to use WPA encryption.
- 5. Configure the DHCP server on a WAP.
- 6. Configure a MAC filter on a WAP.
- 1. Open the file "Activity Configuring and Securing a Wireless LAN in Packet Tracer.pka"
- 2. Open PC1 and select the Desktop tab.
- Select the command prompt and check the current IP address with the **ipconfig** command. Record the address here: ______.

mask: _____.

- 4. What classification of IP address is this?
- 5. Close the command prompt and select the IP Configuration window.
- 6. Set the address to DHCP. What address does it obtain? _____.
- 7. What is the default gateway address? _____.
- 8. What device in the network is the default gateway?
- 9. Close the IP Configuration window.
- 10. Open the web browser and access the WAP by opening http://192.168.0.1
- 11. The default login information for the WAP is:

User Name: admin

Password: admin

12. You should now be at the configuration window for the WAP.

A Division of Casus Systems, Inc. A Division of Casus Systems, Inc. Firmware Version: v0.93.3 Wireless - N Broadband Router WRT300N Setup Basic Setup DDNS Access Applications Administration Status Administration Advanced Routing Internet Setup	
Basic Setup DDNS MAC Address Clone Advanced Routing Internet Setup	
Internet Connection type	
Optional Settings (required by some internet service providers) MTU:	

- 13. What is the Internet Setup IP address assignment?
- 14. What is this connection used for?
- 15. What is the default network setup IP address? _____.
- 16. Set the WAP Network Setup to the first IP address on the second private class C network with default subnet mask and record that address here:
- 17. Start the DHCP server on the 15-th IP address and set the maximum number of users to be 25.
- 18. What is the range of IP address that will be used for DHPC clients?

	through	
19.	9. List the four steps of the DHCP process:	
	Device Step name	
	client PC DHCP Discover	
20.	20. Scroll to the bottom and select Save Settings.	
21.	21. What happened to the connection?	
22.	22. What caused this to happen?	
23.	23. Close the web browser.	
24.	24. Open the command prompt on PC1 and request a new IP address assi	gnment from the DHCP server with
	the ipconfig /renew command.	
25.	25. What address did PC1 obtain this time?	

- 26. What is the default gateway address? _____.
- 27. Close the command prompt window.
- 28. Open the web browser on PC1 and access the WAP.
- 29. Select the Wireless menu.
- 30. What are the options for the network mode?
- 31. Select BG-Mixed.
- 32. Complete the following table for 802.11 wireless networks:

Wireless	Bandwidth	Frequency	Range
Standard			
IEEE 802.11a			
IEEE 802.11b			
IEEE 802.11g			
IEEE 802.11n			

- 33. Set the SSID to DHS001.
- 34. What does SSID stand for?
- 35. Disable the SSID broadcast.
- 36. If a WAP is not broadcasting its SSID, can clients still connect, and how?
- 37. Scroll to the bottom and select Save Settings.
- 38. Move back to the Packet Tracer main window and select Laptop1.
- 39. Open the laptop, select the physical tab, shut it down and remove the NIC and then add a Wireless NIC and turn the Laptop back on.
- 40. Repeat this for the remainder of the Laptop computers.
- 41. Access Laptop1, open the desktop and use the command prompt to determine the MAC addresses and record it here:
- 42. What command did you use?
- 43. What is the Block ID of Laptop1? ____:___:
- 44. What is the device ID of Laptop1? _____: ____:
- 45. Access Laptop2, open the desktop and use the command prompt to determine the MAC addresses and record it here:

- 46. Access Laptop3, open the desktop and use the command prompt to determine the MAC addresses and record it here:
- 47. Access Laptop4, open the desktop and use the command prompt to determine the MAC addresses and record it here:
- 48. Move back to the GUI for the WAP.
- 49. Select Wireless > Wireless MAC Filter.
- 50. Enable the Wireless MAC filter and select Permit PC's listed.
- 51. Enter the MAC addresses of the four laptops, be sure to follow the proper format for the MAC addresses, 2 digits followed by a colon..

	2 2		Fi	rmware Version: v0.93.3
			Wireless-N Broa	dband Router WRT300N
Wireless	Setup Wireless	Security Restriction	Applications	Administration Status
	Basic Wireless Settings Wir	ireless Security Wi	eless MAC Filter	Advanced Wireless Settings
Wireless MAC Filter	Enabled	Disabled		Help
Access Resolution	 Prevent PCs lister Permit PCs listed 	ed below from accessing the	e wireless network network	
MAC Address filter list	Wireless Client List			
	MAC 01: 00:60:5C:	53:38:D2 MAC 26:	00:00:00:00:00:00	
	MAC 02: 00:00:00:	MAC 27:	00:00:00:00:00:00	

- 52. Scroll to the bottom and select Save Settings.
- 53. Open Laptop1 and select the Config tab.
- 54. Select the wireless button and enter the SSID of your WAP.
- 55. Close the window and connect to the WAP. **If you do not connect, begin to troubleshoot.
- 56. The last step in configuring a wireless network is to configure all encryption security.
- 57. Move back to the GUI for the WAP and select Wireless > Wireless Security.
- 58. What options are available for the Security Mode?
- 59. Which of the options is the LEAST preferred security mode?
- 60. Set security to WPA2 Personal.

- 61. What are the two options under Encryption?
- 62. Set encryption to AES.
- 63. What does AES stand for?
- 64. Set the Passphrase to WirelessSecurity.
- 65. Scroll to the bottom and select Save Settings.
- 66. Move back to the Packet Tracer window.
- 67. What happened to your connection between the Laptop and the WAP?
- 68. Open Laptop1 and select the Config tab.
- 69. Select the wireless button and under the Authentication select WPA2-PSK. What does PSK stand for?
- 70. Enter the PassPhrase that you configured.
- 71. Ensure that the Encryption Type is set to AES.
- 72. Move back to the Packet Tracer window.
- 73. What happened to your connection between the Laptop and the WAP? ______ **If your connection did not appear, begin to troubleshoot.
- 74. Move back to the GUI for the WAP and select the Administration section.
- 75. Set the router password to cisco.
- 76. Scroll to the bottom and select Save Settings.
- 77. Move back to the packet Tracer main window.
- 78. Connect Laptop2, Laptop3 and Laptop4 to the wireless network.
- 79. Set PC2 to obtain an IP address through DHCP.
- 80. Complete the following table:

PC Designation	IP Address
PC1	
PC2	
Laptop1	
Laptop2	
Laptop3	
Laptop4	

81. Verify full connectivity of each PC through PING:

<u>PC1</u>	PING successful, yes or no	<u>PC2</u>	PING successful, yes or no
ping PC2		ping PC1	

	ping Laptop1	
	ping Laptop2	
	ping Laptop3	
	ping Laptop4	
PING successful, yes or no	Laptop2	<u>PING successful, yes or no</u>
	ping PC1	
	ping PC2	
	ping Laptop1	
	ping Laptop3	
	ping Laptop4	
	 PING successful, yes or no 	ping Laptop1ping Laptop2ping Laptop3ping Laptop4PING successful, yes or noLaptop2ping PC1ping PC2ping Laptop1ping Laptop3ping Laptop4

82. Each device should be able to ping all other devices.

- 83. Turn this paper in to your Instructor.
- 84. Score: _____ / 20

Activity Configuring and Securing a Wireless LAN in Packet Tracer

Objectives:

- 1. Configure a Wireless Access Point (WAP) local IP address.
- 2. Configure a WAP with an SSID.
- 3. Change the administrator's password on a WAP.
- 4. Configure a WAP to use WPA encryption.
- 5. Configure the DHCP server on a WAP.
- 6. Configure a MAC filter on a WAP.
- 1. Open the file "Activity Configuring and Securing a Wireless LAN in Packet Tracer.pka"
- 2. Open PC1 and select the Desktop tab.
- Select the command prompt and check the current IP address with the **ipconfig** command. Record the address here: 169.254.1.1 mask: 255.255.0.0
- 4. What classification of IP address is this? Automatic Private Internet Protocol Addressing (APIPA)
- 5. Close the command prompt and select the IP Configuration window.
- 6. Set the address to DHCP. What address does it obtain? **192.168.0.100**
- 7. What is the default gateway address? **192.168.0.1**
- 8. What device in the network is the default gateway? The wireless access point
- 9. Close the IP Configuration window.
- 10. Open the web browser and access the WAP by opening http://192.168.0.1
- 11. The default login information for the WAP is:

User Name: admin

Password: admin

12. You should now be at the configuration window for the WAP.

Firmware Version: v0.93.3 Wireless - N Broadband Router WR1300N Setup Nireless - Security Access Applications & Gamin Marks Administration Status Internet Setup DDNS MAC Address Clone Advanced Routing Help Internet Setup Automatic Configuration - DHCP - Help Help Optional Settings required by some internet service providers) Domain Name: Internet MTU: Size: 1500	C > URL http:	/192.168.0.1		Go	Stop
Setup Wireless Security Access Restrictions Applications & Caming Administration Staus Internet Setup DDNs MAC Address Clore Advanced Routing Internet Connection type Automatic Configuration - DHCP + Help Optional Settings Domain Name: Domain Name: Internet service providers) MTU: + Size: 1500	LINKEYS [®] Division of Dato Systems, Inc.	Fi Wireless-N Bro	irmware Version: v0.93.3 adband Router WRT300N		
Internet Setup Internet Connection type Optional Settings Host Name: Domain Name: mtu: Size: Internet Setup	Setup	Wireless Security Access Restrictions Applications Basic Setup DDNS MAC Address Clone	Administration Status Advanced Routing		
Internet Connection type Optional Settings required by some internet service providers) Network Seture	Internet Setup				
Optional Settings Host Name: required by some Domain Name: internet service Domain Name: providers) MTU: Network Seture	Internet Connection type	Automatic Configuration - DHCP 👻	Help		
required by some internet service providers) Domain Name: MTU: Image: Size: Network Seture	Optional Settings	Host Name:			
Providers) MTU: Size: 1500	internet service	Domain Name:			
Network Setup	providers)	MTU: • Size: 1500			
Retwork Setup	Network Setup				
		Subnet Mask: 255.255.255.0 -			

- 13. What is the Internet Setup IP address assignment? DHCP
- 14. What is this connection used for? Connection to an ISP/Internet connection
- 15. What is the default network setup IP address? 192.168.0.1
- 16. Set the WAP Network Setup to the first IP address on the second private class C network with default subnet mask and record that address here: 192.168.1.1 / 24
- 17. Start the DHCP server on the 15-th IP address and set the maximum number of users to be 25.
- 18. What is the range of IP address that will be used for DHPC clients?

192.168.1.15 through 192.168.1.39

19. List the four steps of the DHCP process:

	<u>Step hame</u>
	DHCP Discover
DHCP server	DHCP Offer
client PC	DHCP Request
DHCP server	DHCP Acknowledgement

- 20. Scroll to the bottom and select Save Settings.
- 21. What happened to the connection? Timed out
- 22. What caused this to happen? PC and WAP now on different networks
- 23. Close the web browser.
- 24. Open the command prompt on PC1 and request a new IP address assignment from the DHCP server with the **ipconfig** /renew command.
- 25. What address did PC1 obtain this time? **192.168.1.15**

- 26. What is the default gateway address? 192.168.1.1
- 27. Close the command prompt window.
- 28. Open the web browser on PC1 and access the WAP.
- 29. Select the Wireless menu.
- 30. What are the options for the network mode?

Mixed	BG- Mixed
Wireless –G only	Wireless - B only
Wireless-N only	Disabed

- 31. Select BG-Mixed.
- 32. Complete the following table for 802.11 wireless networks:

Wireless	Bandwidth	Frequency	Range
Standard			
IEEE 802.11a	54 Mbps	5 GHz	25 m
IEEE 802.11b	11 Mbps	2.4 GHz	100 m
IEEE 802.11g	54 Mbps	2.4 GHz	100 m
IEEE 802.11n	>200 Mbps	2.4 / 5 GHz	> 250 m

- 33. Set the SSID to DHS001.
- 34. What does SSID stand for? Service Set IDentifier
- 35. Disable the SSID broadcast.
- 36. If a WAP is not broadcasting its SSID, can clients still connect, and how? Yes, the SSID of the network needs to be manually entered
- 37. Scroll to the bottom and select Save Settings.
- 38. Move back to the Packet Tracer main window and select Laptop1.
- 39. Open the laptop, select the physical tab, shut it down and remove the NIC and then add a Wireless NIC and turn the Laptop back on.
- 40. Repeat this for the remainder of the Laptop computers.
- 41. Access Laptop1, open the desktop and use the command prompt to determine the MAC addresses and record it here: Varies, a valid MAC address
- 42. What command did you use? ipconfig /all
- 43. What is the Block ID of Laptop1? First half of MAC address
- 44. What is the device ID of Laptop1? Second half of MAC address
- 45. Access Laptop2, open the desktop and use the command prompt to determine the MAC addresses and record it here: Varies, a valid MAC address

- 46. Access Laptop3, open the desktop and use the command prompt to determine the MAC addresses and record it here: Varies, a valid MAC address
- 47. Access Laptop4, open the desktop and use the command prompt to determine the MAC addresses and record it here: Varies, a valid MAC address
- 48. Move back to the GUI for the WAP.
- 49. Select Wireless > Wireless MAC Filter.
- 50. Enable the Wireless MAC filter and select Permit PC's listed.
- 51. Enter the MAC addresses of the four laptops, be sure to follow the proper format for the MAC addresses, 2 digits followed by a colon..

	3 2	Fir	rmware Version: v0.93.3
		Wireless-N Broa	dband Router WRT300N
Wireless	Setup Wireless Security Res	Access Applications strictions & Gaming	Administration Status
	Basic Wireless Settings Wireless Security	Wireless MAC Filter	Advanced Wireless Settings
Wireless MAC Filter	Enabled Disabled		Help
Access Resolution	 Prevent PCs listed below from access Permit PCs listed below to access with 	ing the wireless network eless network	
MAC Address filter list	Wireless Client List		
	MAC 01: 00:60:5C:53:38:D2 MA	C 26: 00:00:00:00:00:00	
	MAC 02: 00:00:00:00:00 MA	C 27: 00:00:00:00:00:00	

- 52. Scroll to the bottom and select Save Settings.
- 53. Open Laptop1 and select the Config tab.
- 54. Select the wireless button and enter the SSID of your WAP.
- 55. Close the window and connect to the WAP. **If you do not connect, begin to troubleshoot.
- 56. The last step in configuring a wireless network is to configure all encryption security.
- 57. Move back to the GUI for the WAP and select Wireless > Wireless Security.
- 58. What options are available for the Security Mode?

Disabled	WPA Enterprise	
WEP	WPA2 Personal	
WPA Personal	WPA2 Enterprise	

- 59. Which of the options is the LEAST preferred security mode? WEP
- 60. Set security to WPA2 Personal.

61. What are the two options under Encryption?

62. Set encryption to AES.

AES

63. What does AES stand for? Advanced Encryption Standard

TKIP

- 64. Set the Passphrase to WirelessSecurity.
- 65. Scroll to the bottom and select Save Settings.
- 66. Move back to the Packet Tracer window.
- 67. What happened to your connection between the Laptop and the WAP? It was lost
- 68. Open Laptop1 and select the Config tab.
- 69. Select the wireless button and under the Authentication select WPA2-PSK. What does PSK stand for? **Pre-Shared Key**
- 70. Enter the PassPhrase that you configured.
- 71. Ensure that the Encryption Type is set to AES.
- 72. Move back to the Packet Tracer window.
- 73. What happened to your connection between the Laptop and the WAP? It was reestablished **If your connection did not appear, begin to troubleshoot.
- 74. Move back to the GUI for the WAP and select the Administration section.
- 75. Set the router password to cisco.
- 76. Scroll to the bottom and select Save Settings.
- 77. Move back to the packet Tracer main window.
- 78. Connect Laptop2, Laptop3 and Laptop4 to the wireless network.
- 79. Set PC2 to obtain an IP address through DHCP.
- 80. Complete the following table:

PC	IP Address		
Designation			
PC1	In range of 192.168.1.15 – 192.168.1.39		
PC2	In range of 192.168.1.15 – 192.168.1.39		
Laptop1	In range of 192.168.1.15 – 192.168.1.39		
Laptop2	In range of 192.168.1.15 – 192.168.1.39		
Laptop3	In range of 192.168.1.15 – 192.168.1.39		
Laptop4	In range of 192.168.1.15 – 192.168.1.39		

81. Verify full connectivity of each PC through PING: All pings should be successful

<u>PC1</u>	PING successful, yes or no	<u>PC2</u>	PING successful, yes or no
ping PC2		ping PC1	

	ping Laptop1	
	ping Laptop2	
	ping Laptop3	
	ping Laptop4	
successful, yes or no	Laptop2	PING successful, yes or no
	ping PC1	
	ping PC2	
	ping Laptop1	
	ping Laptop3	
	ping Laptop4	
	 	ping Laptop1ping Laptop2ping Laptop3ping Laptop3ping Laptop4Successful, yes or noLaptop2ping PC1ping PC2ping Laptop1ping Laptop3ping Laptop4

82. Each device should be able to ping all other devices.

- 83. Turn this paper in to your Instructor.
- 84. Score: _____ / 20