

Zebra Setup Utility, Zebra Mobile Printer, Cisco ACS, Cisco controller, LEAP and WPA-LEAP

This section of the document illustrates the Cisco ACS radius server and how LEAP and WPA-LEAP was configured on this server.

This document is meant as an illustration only. Questions on the setup of ACS should be directed to Cisco. It should be Cisco that is used to determine if the illustration below is appropriate for your environment.

It is important to note that the setup on the ACS server did not differ when using WPA-LEAP or LEAP.

The first series of screenshots shows how a Radius client is added to ACS. In the screenshot below a Cisco controller with the IP address of 10.3.50.50 is added. The ACS server needs to have a client in the clients table to ensure that authentication requests are only being received from valid clients.

Network Configuration

Add AAA Client

AAA Client Hostname: Cisco_Controller

AAA Client IP Address: 10.3.50.50

Shared Secret: secret

RADIUS Key Wrap

Key Encryption Key: []

Message Authenticator Code Key: []

Key Input Format: ASCII Hexadecimal

Authenticate Using: RADIUS (Cisco Aironet)

Single Connect TACACS+ AAA Client (Record stop in accounting on failure)

Log Update/Watchdog Packets from this AAA Client

Log RADIUS Tunneling Packets from this AAA Client

Replace RADIUS Port info with Username from this AAA Client

Match Framed-IP-Address with user IP address for accounting packets from this AAA Client

Buttons: Submit, Submit + Apply, Cancel

Back to Help

Help

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- [AAA Client IP Address](#)
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- [Network Device Group](#)
- [RADIUS Key Wrap](#)
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- [Log Update/Watchdog Packets from this AAA Client](#)
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AAA Client Hostname

The AAA Client Hostname is the name assigned to the AAA client.

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AAA Client IP Address

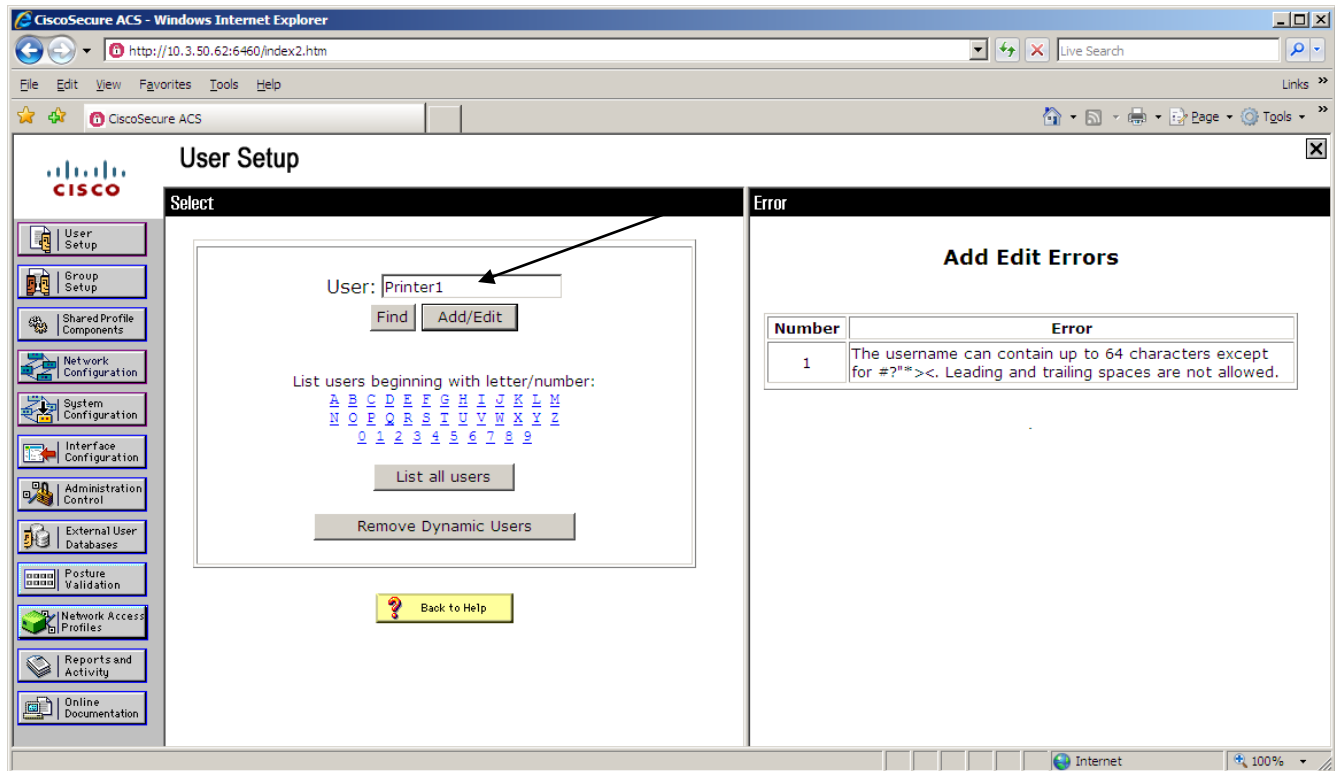
The AAA Client IP Address is the IP address assigned to the AAA client.

If you want to designate more than one AAA client with a single AAA client entry in ACS, you can specify the IP address for each AAA client to be represented by this AAA client entry. To separate each IP address, press **Enter**.

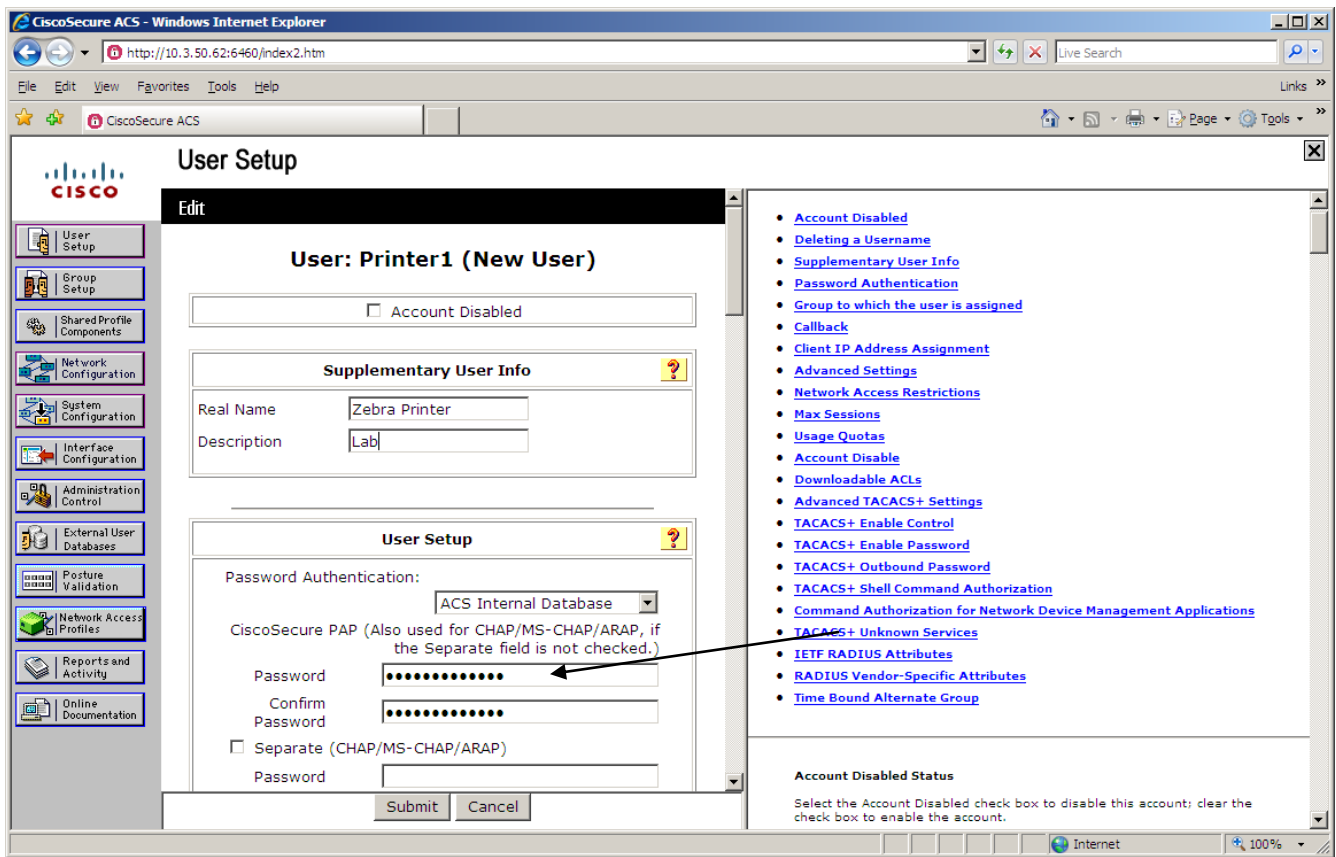
You can use the wildcard asterisk (*) for an octet in the IP address. For example, if you want every AAA client in your 192.168.13.1 Class C network to be represented by a single AAA client entry, enter

A secret key is entered on the ACS server. This secret key needs to match the secret key on the radius client (in this example the Cisco Controller).

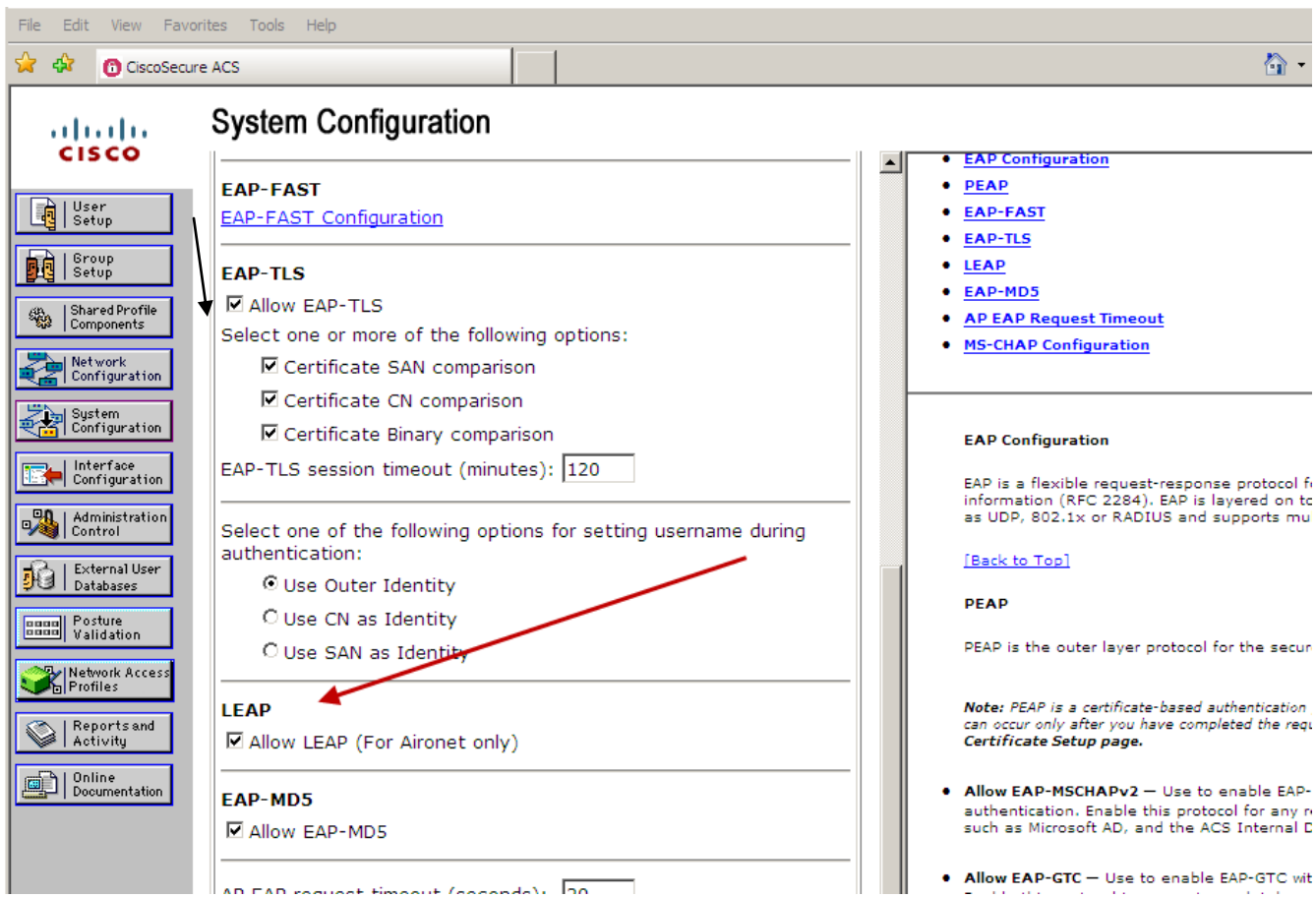
A username is entered for the printer and a password for the printer is also added. In this example the username is Printer1.



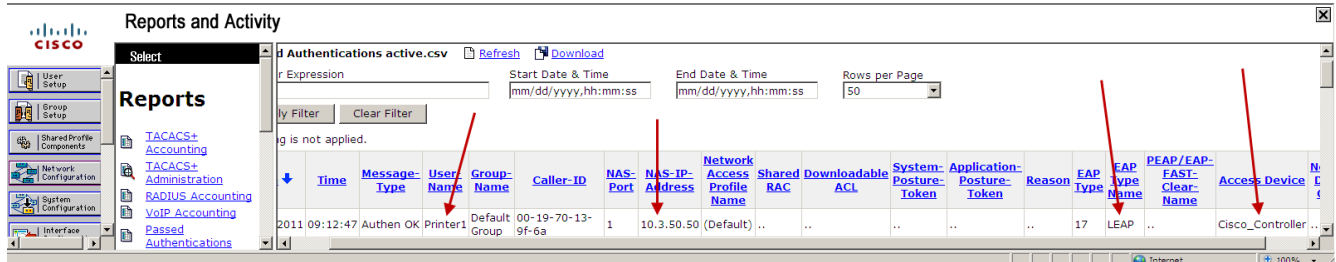
The screenshot below shows where the password is added.



In the system configuration on the ACS server, I have illustrated in the screenshot below that LEAP is enabled.



The screenshots below shows how a successful authentication for LEAP or WPA-LEAP appears on the ACS server.



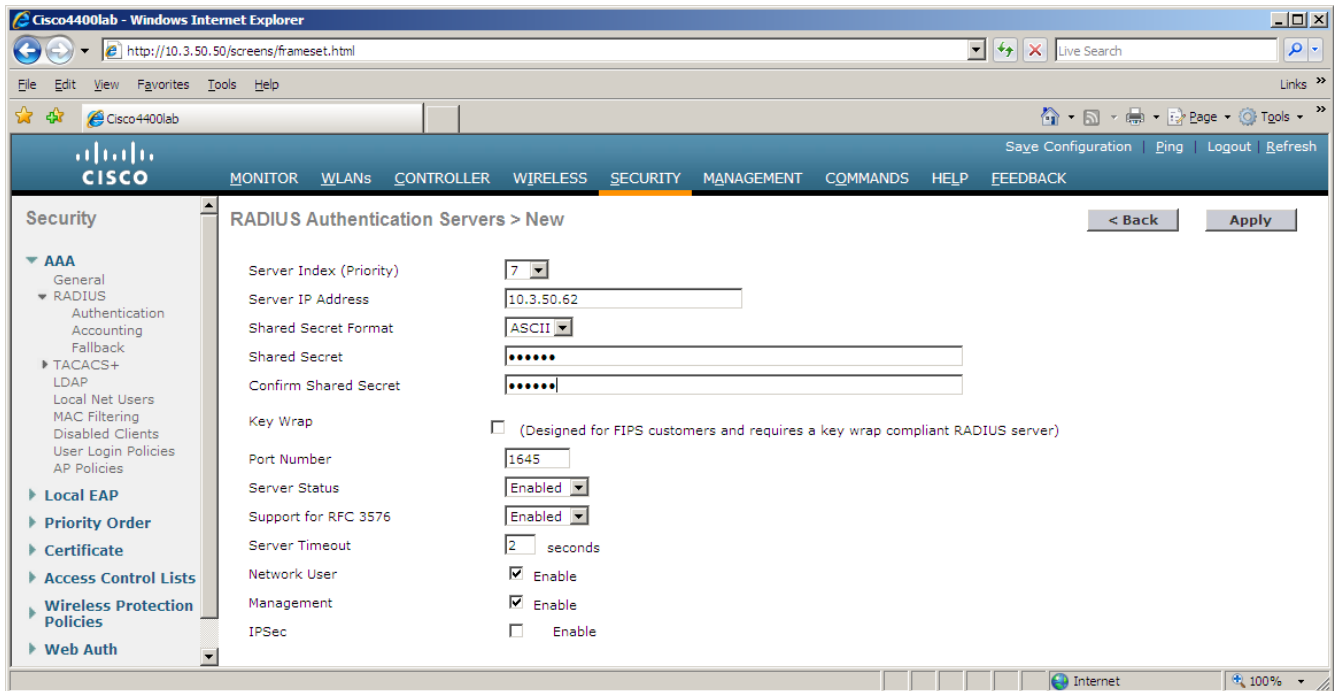
This section of the document illustrates a **Cisco Controller**

This document is meant as an illustration only. Questions on the setup of your Cisco Controller should be directed to Cisco. It should be Cisco that is used to determine if the illustration below is appropriate for your environment

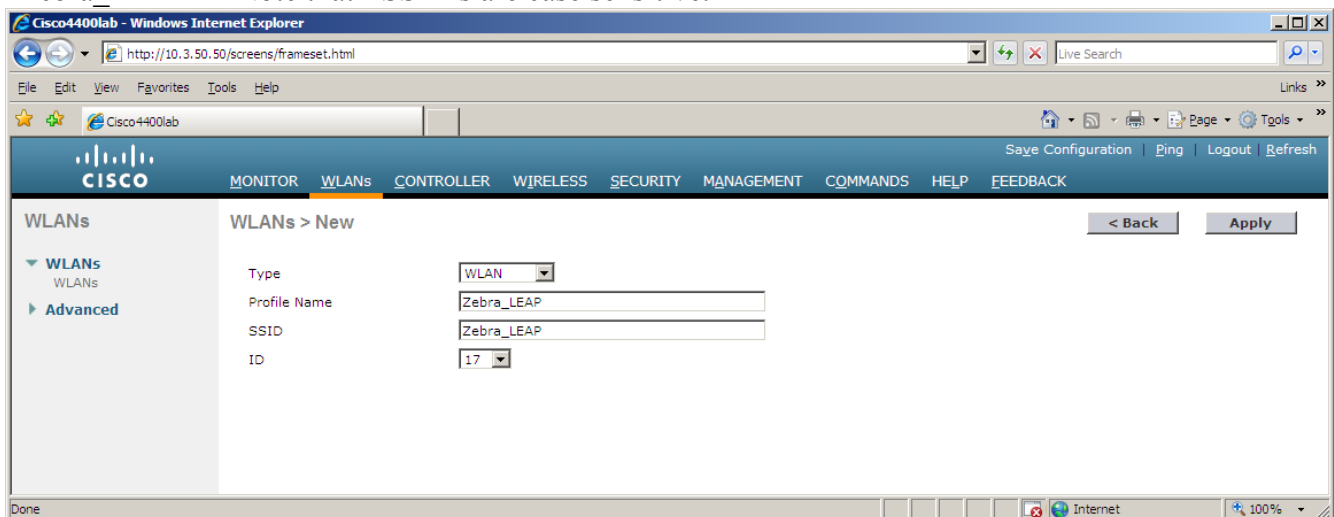
This illustration shows how the Cisco Controller was configured for LEAP initially and then WPA-LEAP.

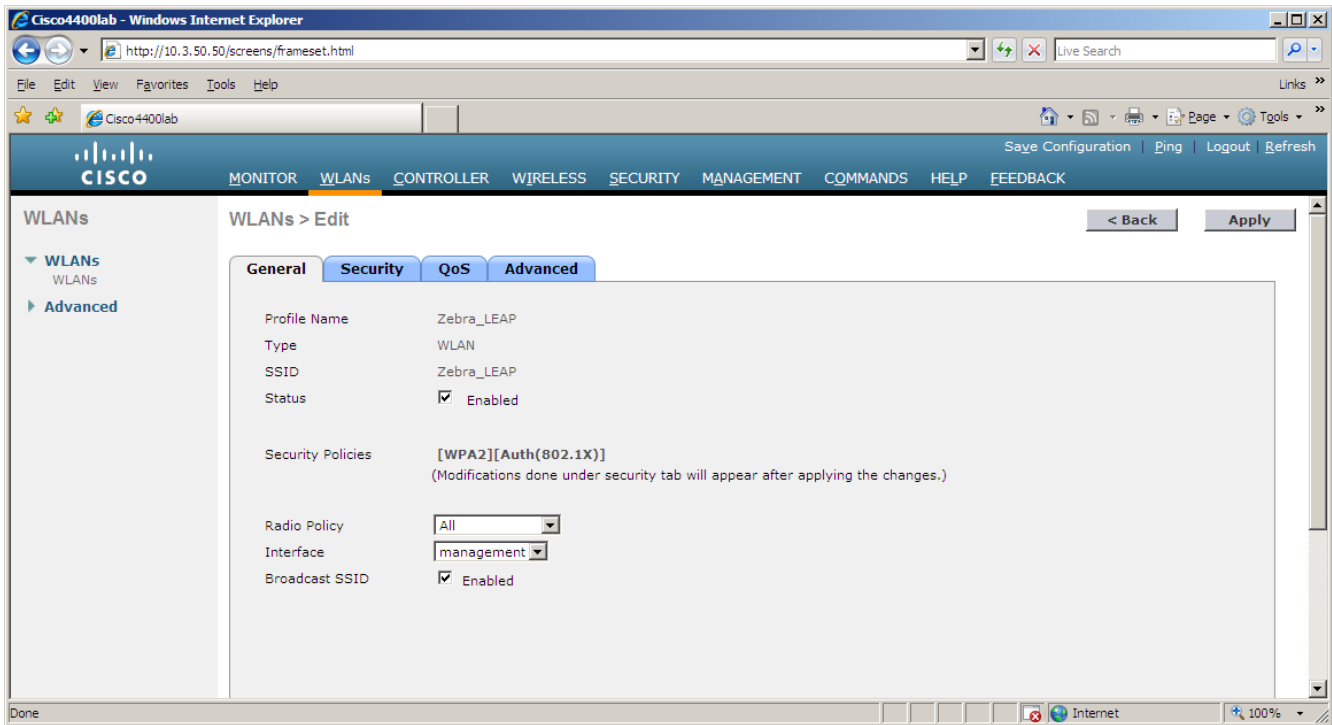
With LEAP or WPA-LEAP the authentication request is forwarded to a Radius server. The following screenshots illustrate how a radius server can be added.

The example below shows an entry of a radius server with an IP address of 10.3.50.62 and utilizing the port number of 1645. 1645 and 1812 are common port numbers used with the RADIUS protocol. A secret key is also entered. This secret key needs to match the secret key that is entered on the RADIUS server.

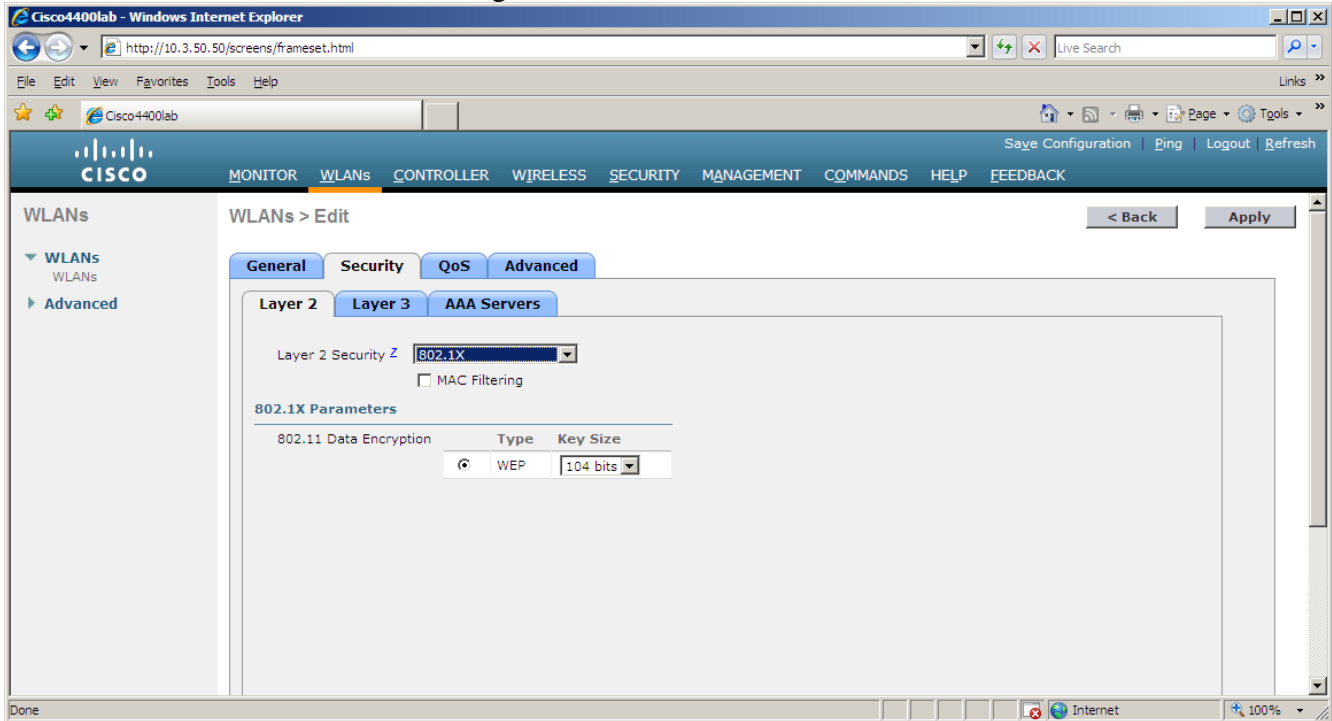


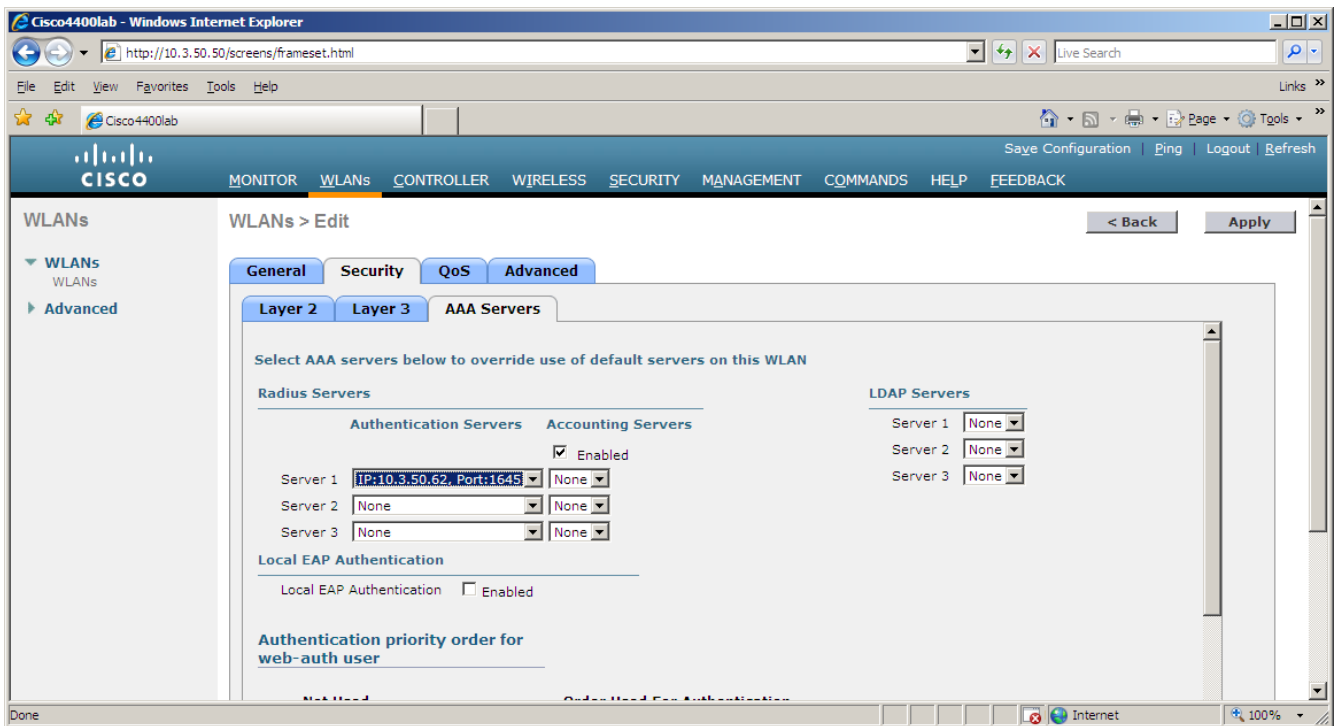
The next step illustrated here is how an ESSID is created. In this example I have entered the ESSID of "Zebra_LEAP" Note that ESSID's are case sensitive.





The screenshot below shows the configuration that was used for LEAP.



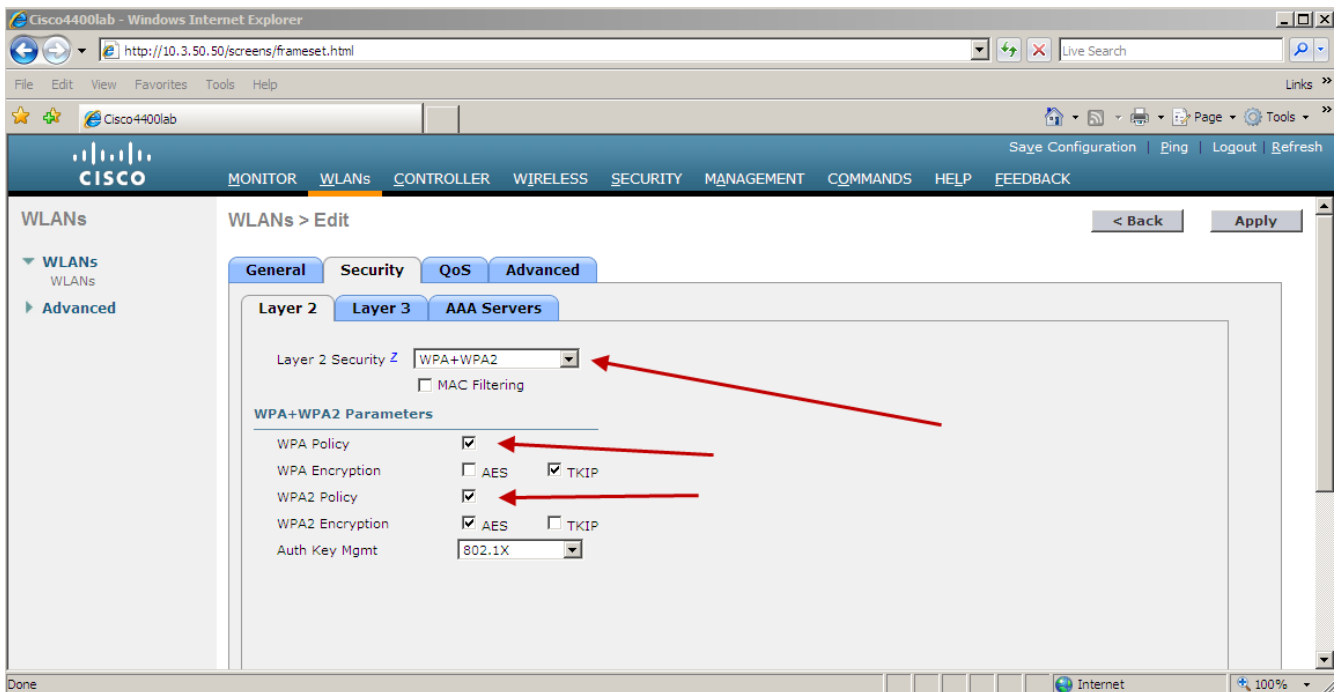


The screenshots below show views on the Cisco Controller of a successful LEAP connection.

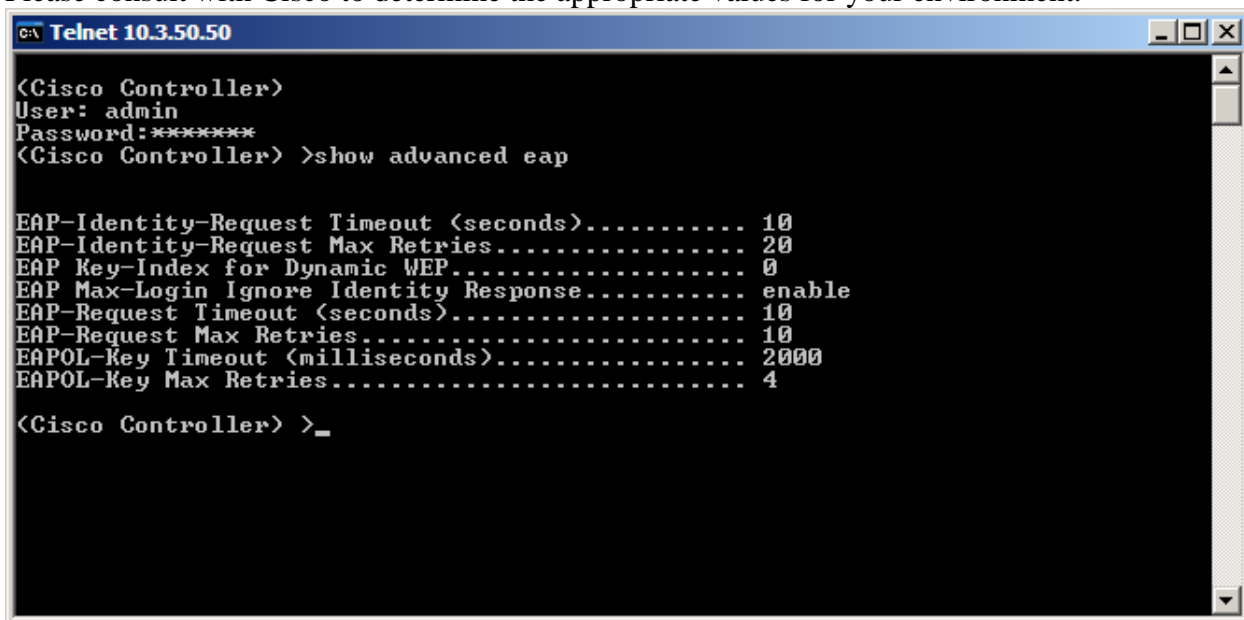
The screenshot displays the Cisco Controller GUI in Internet Explorer. The main content area is titled "Clients > Detail" and contains four sections: Client Properties, AP Properties, Security Information, and Quality of Service Properties. Red arrows point to specific values: "Printer1" in Client Properties, "Zebra_LEAP" in AP Properties, "WEP (104 bits)" in Security Information, and "LEAP" in Security Information.

Client Properties		AP Properties	
MAC Address	00:19:70:13:9f:6a	AP Address	00:15:c7:28:da:c0
IP Address	10.3.50.93	AP Name	AP0015.faa3.e1e8
Client Type	Regular	AP Type	802.11g
User Name	Printer1	WLAN Profile	Zebra_LEAP
Port Number	1	Status	Associated
Interface	management	Association ID	1
VLAN ID	0	802.11 Authentication	Open System
CCX Version	Not Supported	Reason Code	0
E2E Version	Not Supported	Status Code	0
Mobility Role	Local	CF Pollable	Not Implemented
Mobility Peer IP Address	N/A	CF Poll Request	Not Implemented
Policy Manager State	RUN	Short Preamble	Implemented
Mirror Mode	Disable	PBCC	Not Implemented
Management Frame Protection	No	Channel Agility	Not Implemented
Security Information		Timeout	0
Security Policy Completed	Yes	WEP State	WEP Enable
Policy Type	802.1X		
Encryption Cipher	WEP (104 bits)		
EAP Type	LEAP		
NAC State	Access		
Quality of Service Properties			
WMM State	Disabled		
OoS Level	Silver		

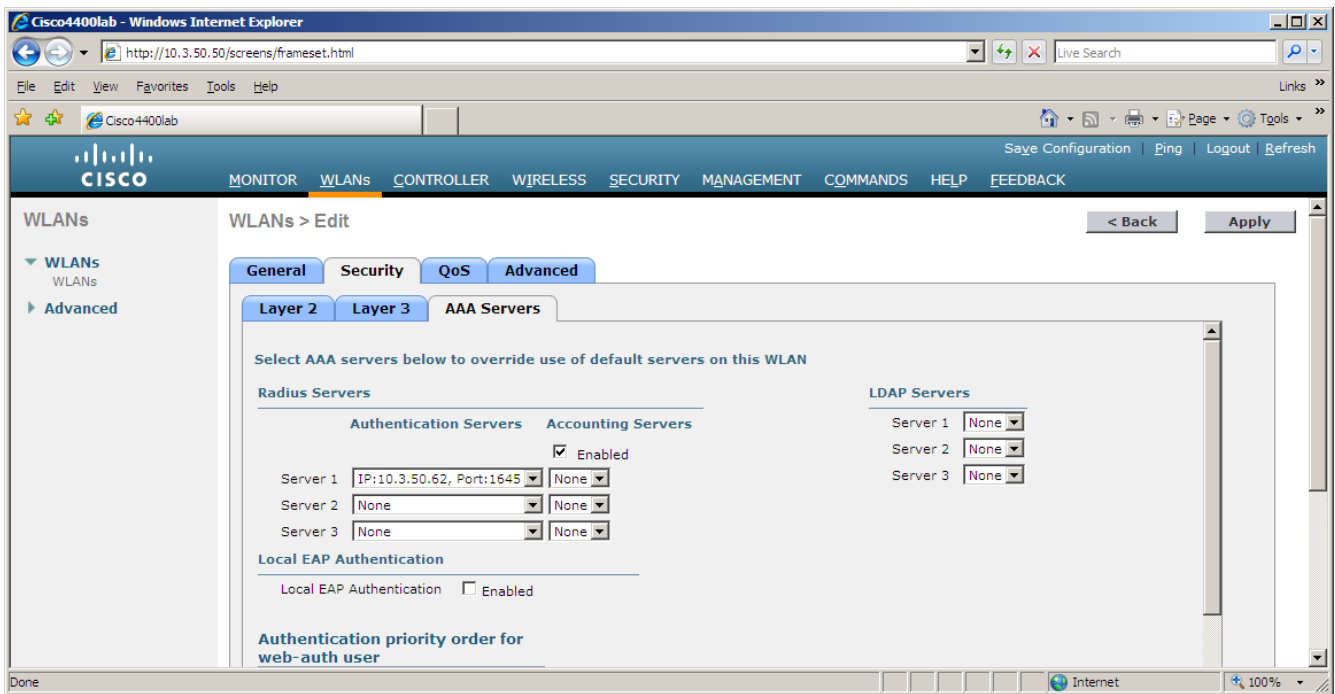
The next screenshots show how the Cisco Controller was set for **WPA-LEAP**. In this example that I have enabled both wpa and wpa2 as shown below.



The screenshots below show the advanced eap settings used in the illustration. Please consult with Cisco to determine the appropriate values for your environment.



With WPA-LEAP, the authentication is often done by an external radius server. In this example I have entered the ip address for the radius server as shown below.



Below is an example of what the Cisco Access point shows for a successful WPA-LEAP authentication.

CISCO MONITOR WLANs CONTROLLER WIRELESS SECURITY MANAGEMENT COMMANDS HELP FEEDBACK

Monitor

- Summary
- Access Points
- Statistics
- CDP
- Rogues
- Clients
- Multicast

Clients > Detail

Client Properties		AP Properties	
MAC Address	00:19:70:13:9f:6a	AP Address	00:15:c7:28:da:c0
IP Address	10.3.50.93	AP Name	AP0015.faa3.e1e8
Client Type	Regular	AP Type	802.11g
User Name	Printer1	WLAN Profile	Zebra_LEAP
Port Number	1	Status	Associated
Interface	management	Association ID	1
VLAN ID	0	802.11 Authentication	Open System
CCX Version	Not Supported	Reason Code	0
E2E Version	Not Supported	Status Code	0
Mobility Role	Local	CF Pollable	Not Implemented
Mobility Peer IP Address	N/A	CF Poll Request	Not Implemented
Policy Manager State	RUN	Short Preamble	Implemented
Mirror Mode	Disable	PBCC	Not Implemented
Management Frame Protection	No	Channel Agility	Not Implemented
		Timeout	0
		WEP State	WEP Enable

Security Information	
Security Policy Completed	Yes
Policy Type	RSN (WPA2)
Encryption Cipher	CCMP (AES)
EAP Type	LEAP
NAC State	Access

Quality of Service Properties

This section of the document illustrates how to configure the printer for LEAP and will continue by illustrating how to configure the printer for WPA-LEAP. The illustration will use the **Zebra Setup Utility** as the method for configuring the printer.

Zebra Setup Utilities

Printers

The list below displays installed printers. To configure a printer, select it and choose one of the configuration options below.

	ZDesigner QL 420/QL 420 Plus (Copy 1) USB005		ZDesigner QL 420/QL 420 Plus (Copy 2) USB006
	ZDesigner QLn320 USB001		ZDesigner RW 220 USB003
	ZDesigner RW 420 USB002		

Printer Configuration

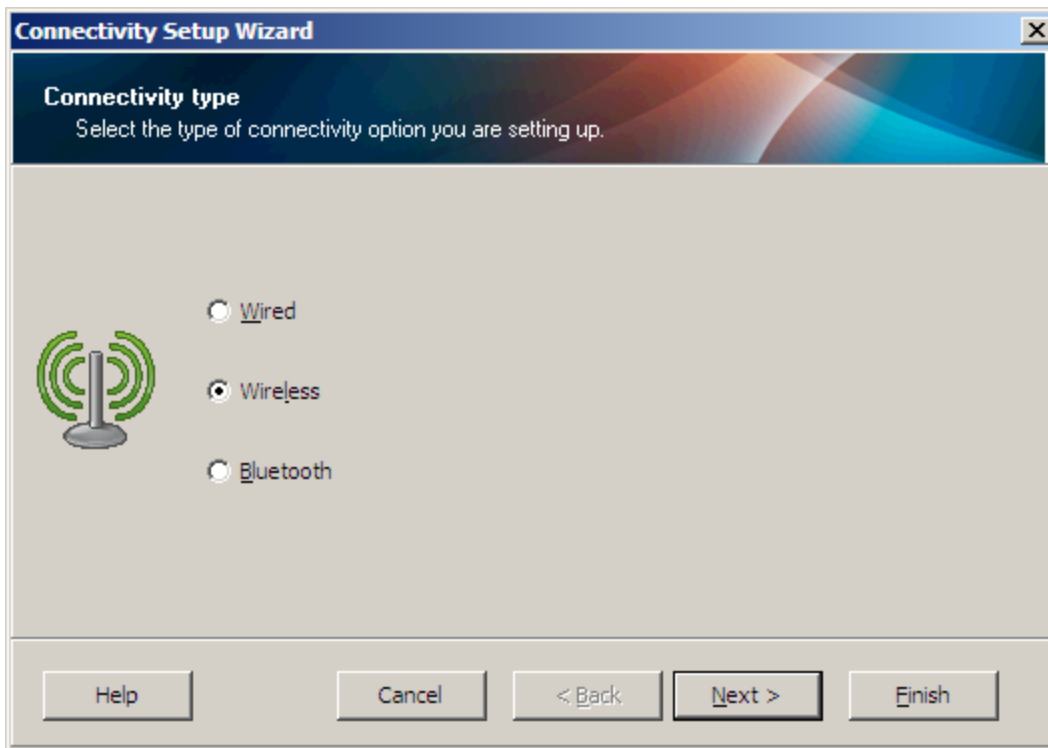
Configure the selected printer

	Configure Printer Settings		Download Fonts and Graphics
	Configure Print Quality		Open Printer Tools
	Configure Printer Connectivity		Open Communication With Printer

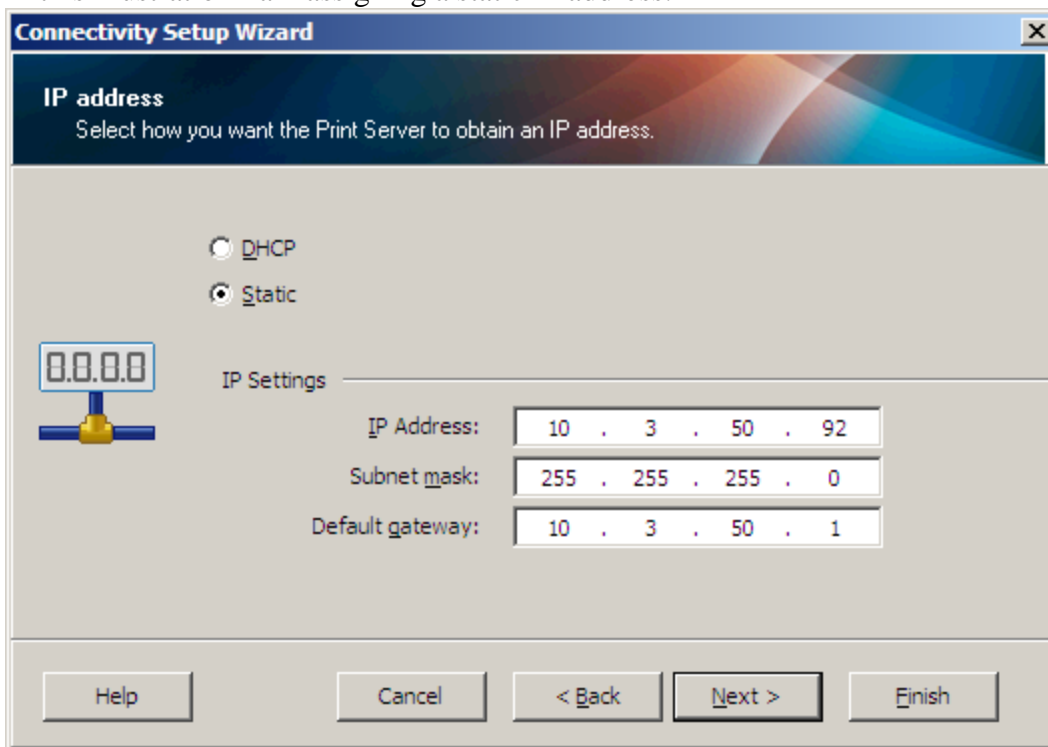
General Operations

Perform the following application operations

	Help		About		Options		Close
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In this illustration I am assigning a static IP address.




The screenshot below shows the security mode LEAP.

Connectivity Setup Wizard

Wireless settings.
Define wireless settings.

Please enter your wireless settings below. Settings for selected security mode will be configured on the following page.

 ESSID: Zebra_LEAP

Security mode: LEAP

Security username: Printer1

Security password: password12345

All security options may not be available in your printer. Please refer to the Wireless Print Server and Wireless Plus Print Server User Guide for supported security protocols.

Help Cancel < Back Next > Finish

The screenshot below shows the security mode WPA-LEAP

Connectivity Setup Wizard

Wireless settings.
Define wireless settings.

Please enter your wireless settings below. Settings for selected security mode will be configured on the following page.

 ESSID: Zebra_LEAP

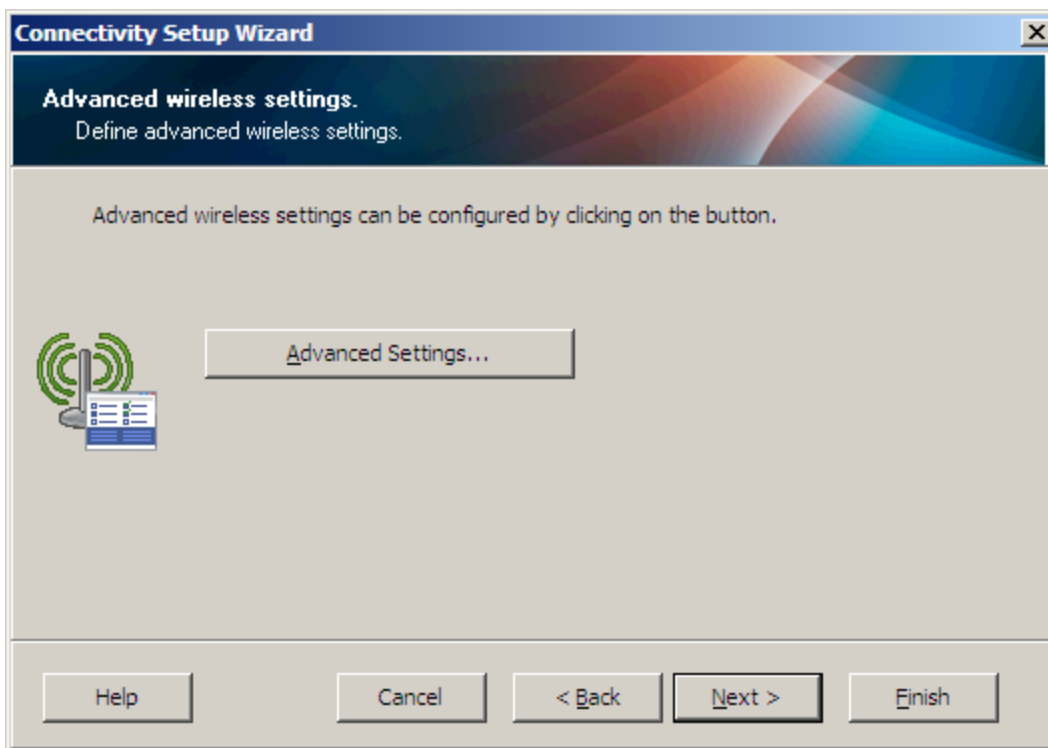
Security mode: WPA-LEAP/WPA2-LEAP

Security username: Printer1

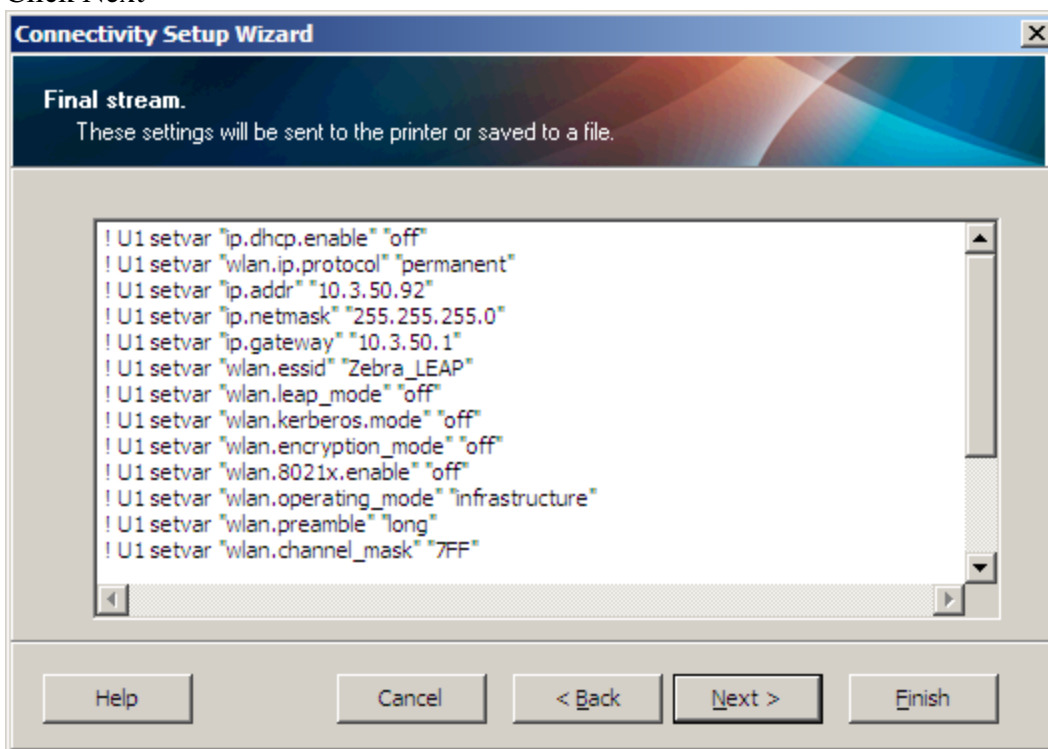
Security password: password12345

All security options may not be available in your printer. Please refer to the Wireless Print Server and Wireless Plus Print Server User Guide for supported security protocols.

Help Cancel < Back Next > Finish



Click Next



Click Next

