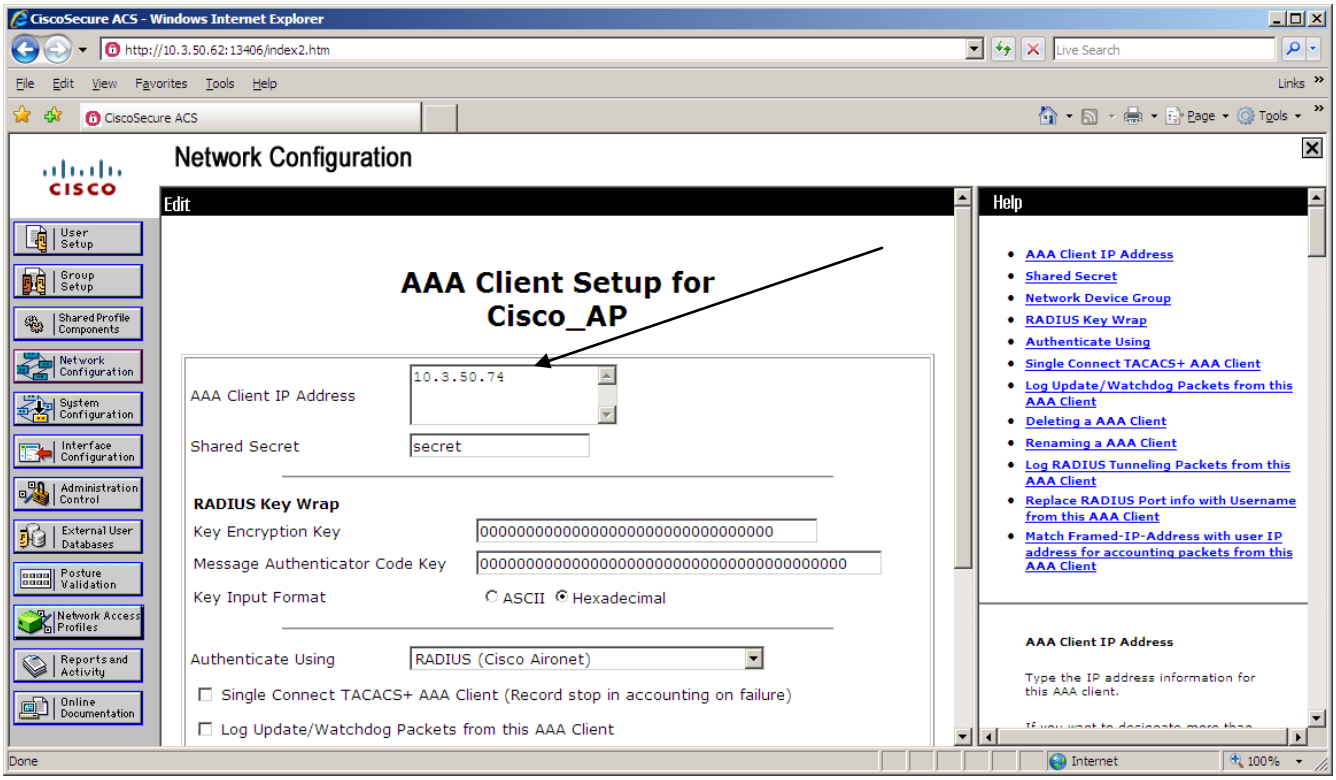
Zebra Setup Utility, Zebra Mobile Printer, Cisco ACS, Cisco Access Point, LEAP and WPA-LEAP

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.

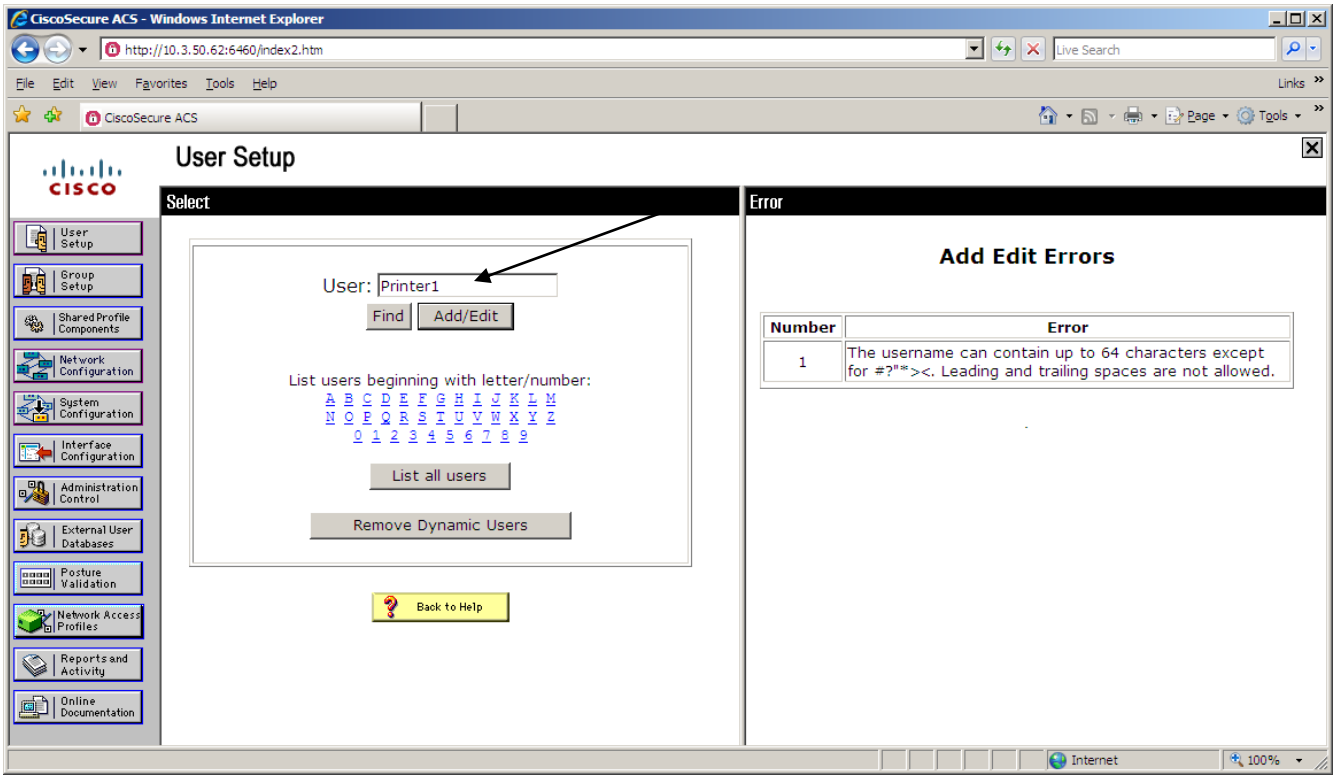
It is important to note that the setup on the ACS server did not differ when using WPA-LEAP or LEAP.

The first series of screenshots shows how a Radius client is added to ACS. In the screenshot below a Cisco Access Point with the IP address of 10.3.50.74 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.

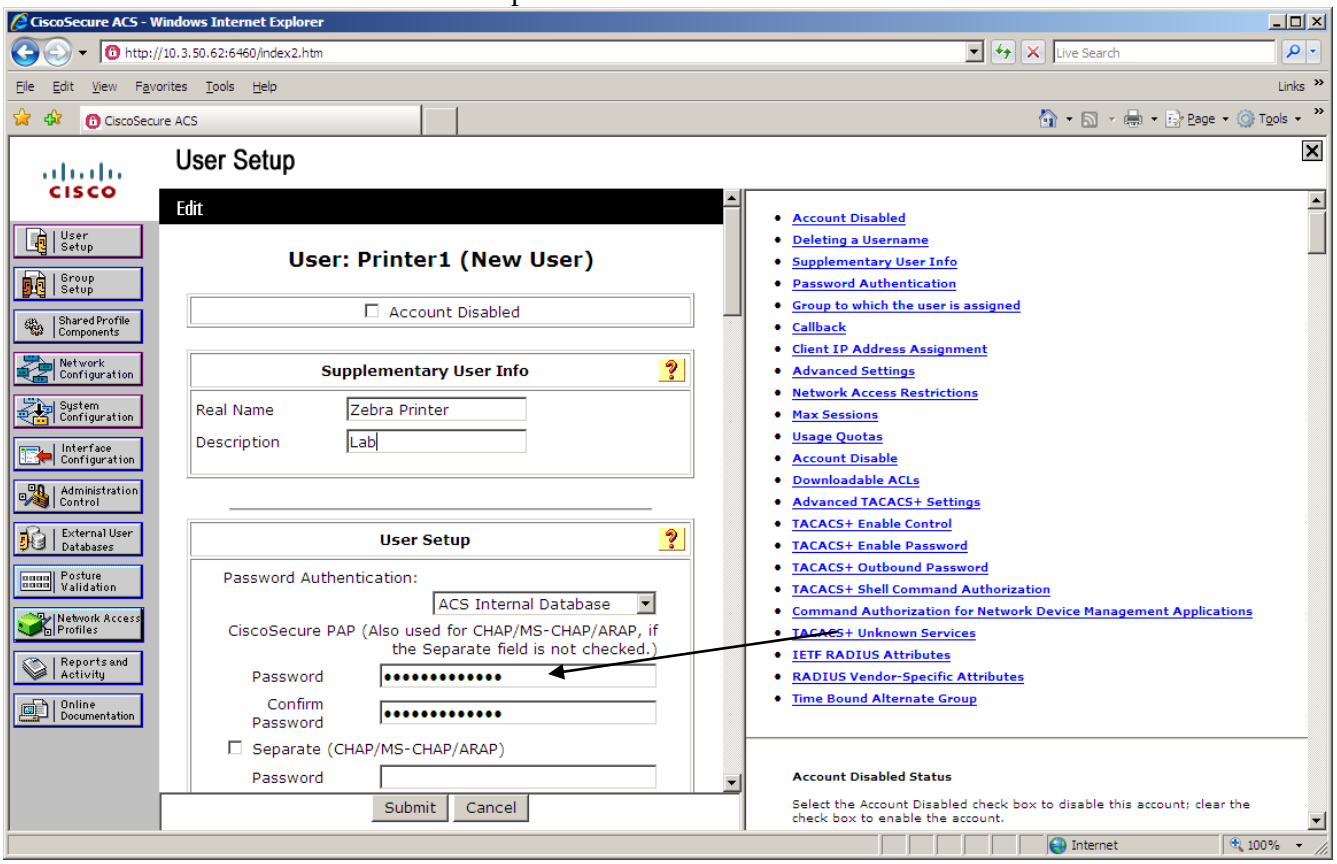


A secret key is entered on the ACS server. This secret key needs to match the secret key on the radius client (in this example the Cisco Access Point).

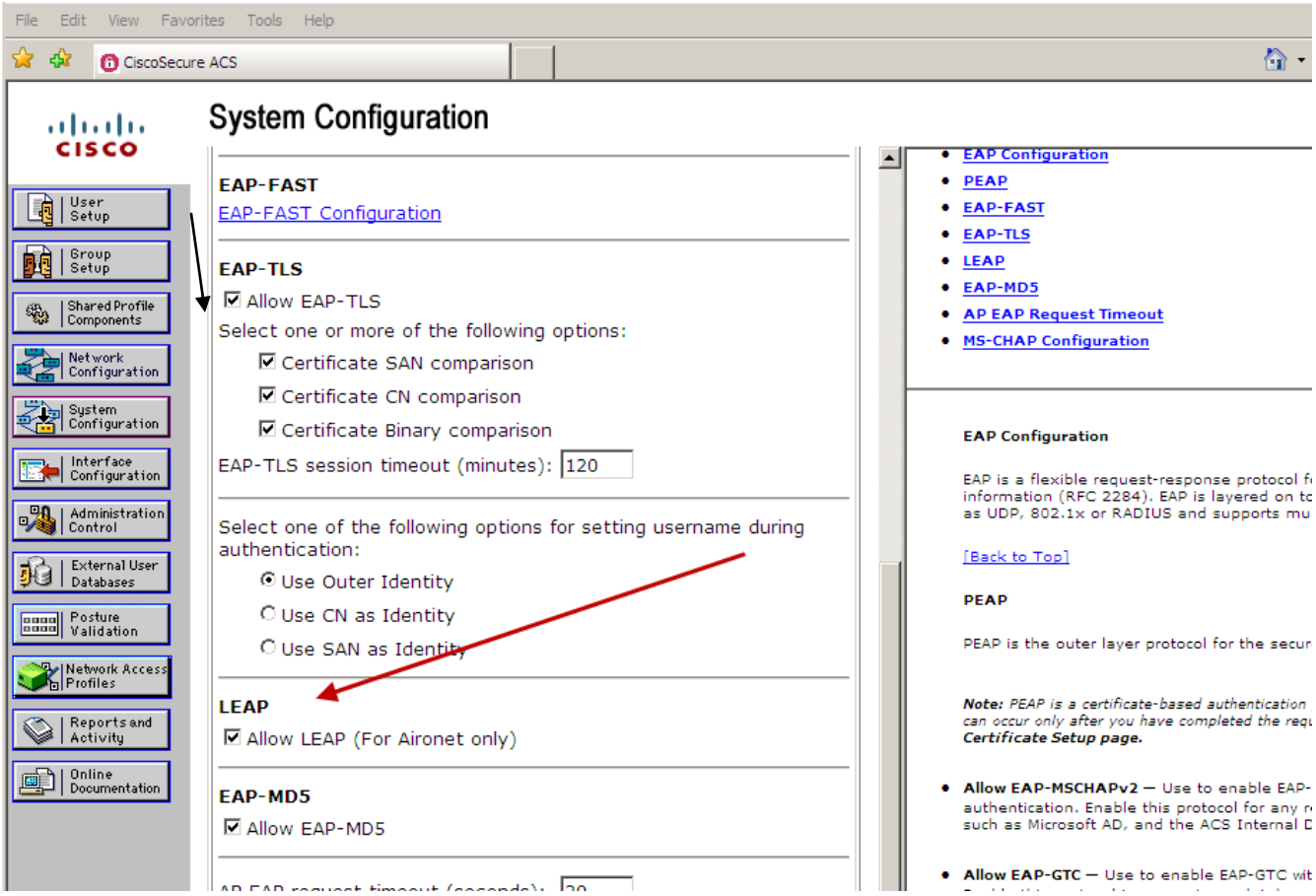
A username is entered for the printer and a password for the printer is also added. In this example the username is Printer1.



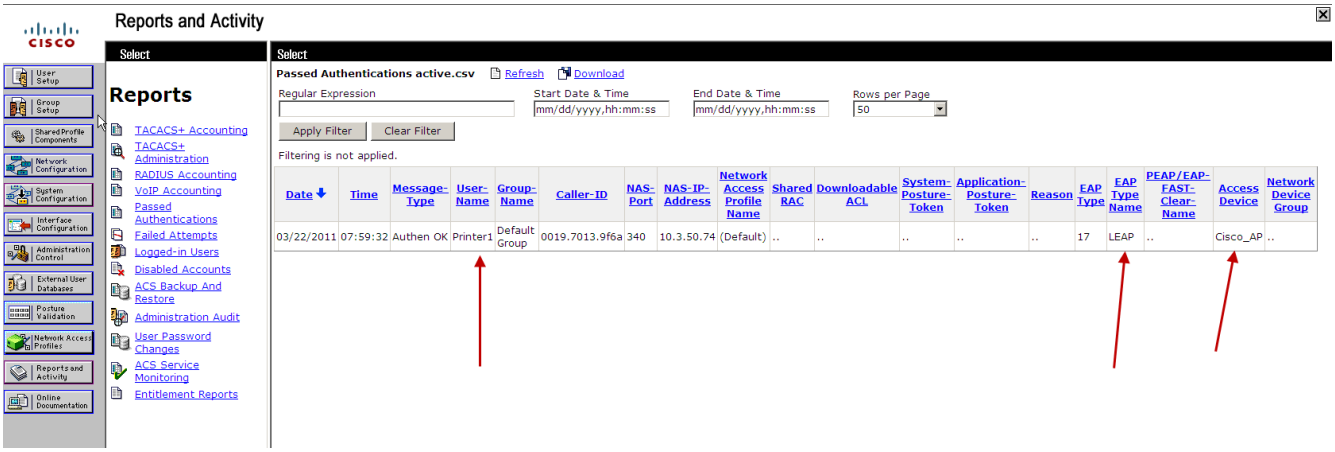
The screenshot below shows where the password is added.



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.



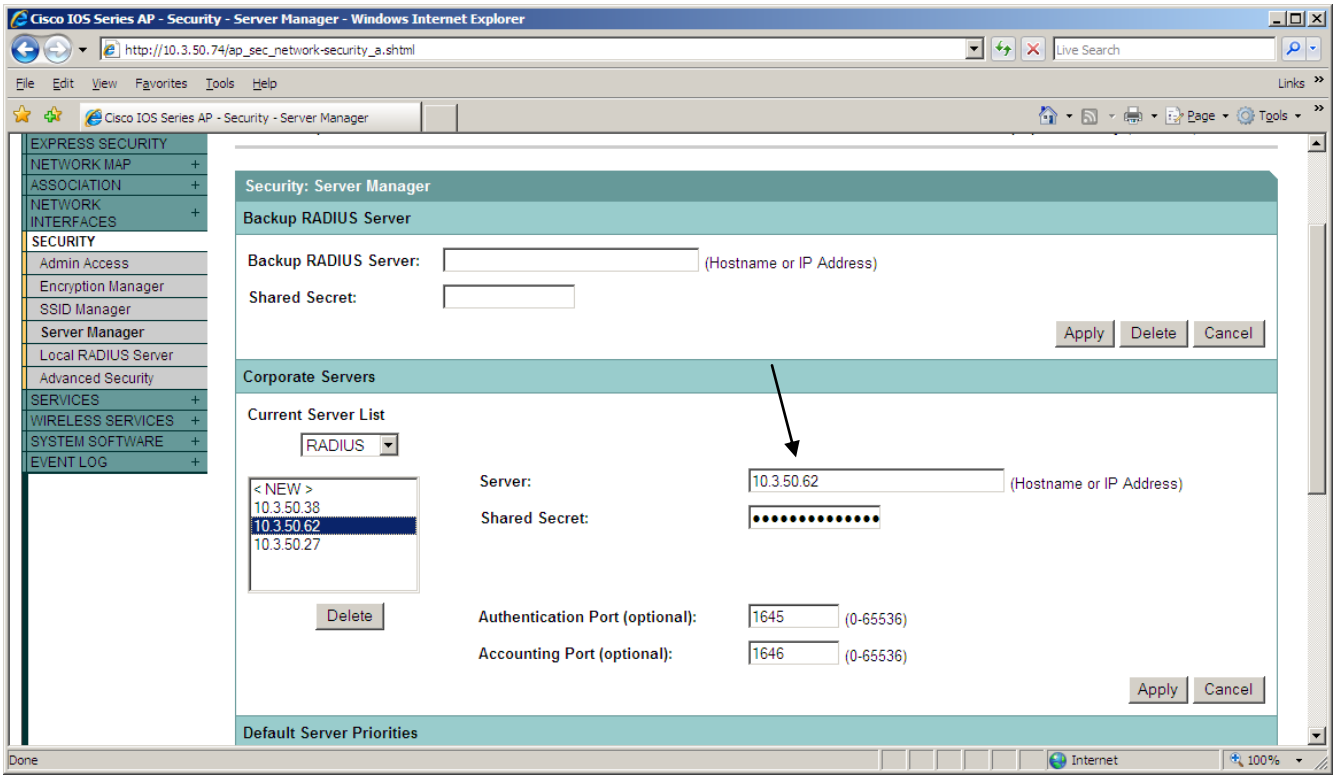
This section of the document illustrates a **Cisco Access Point**
This document is meant as an illustration only. Questions on the setup of your Cisco Access Point should be directed to Cisco. It should be Cisco that is used to determine if the illustration below is

appropriate for your environment

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

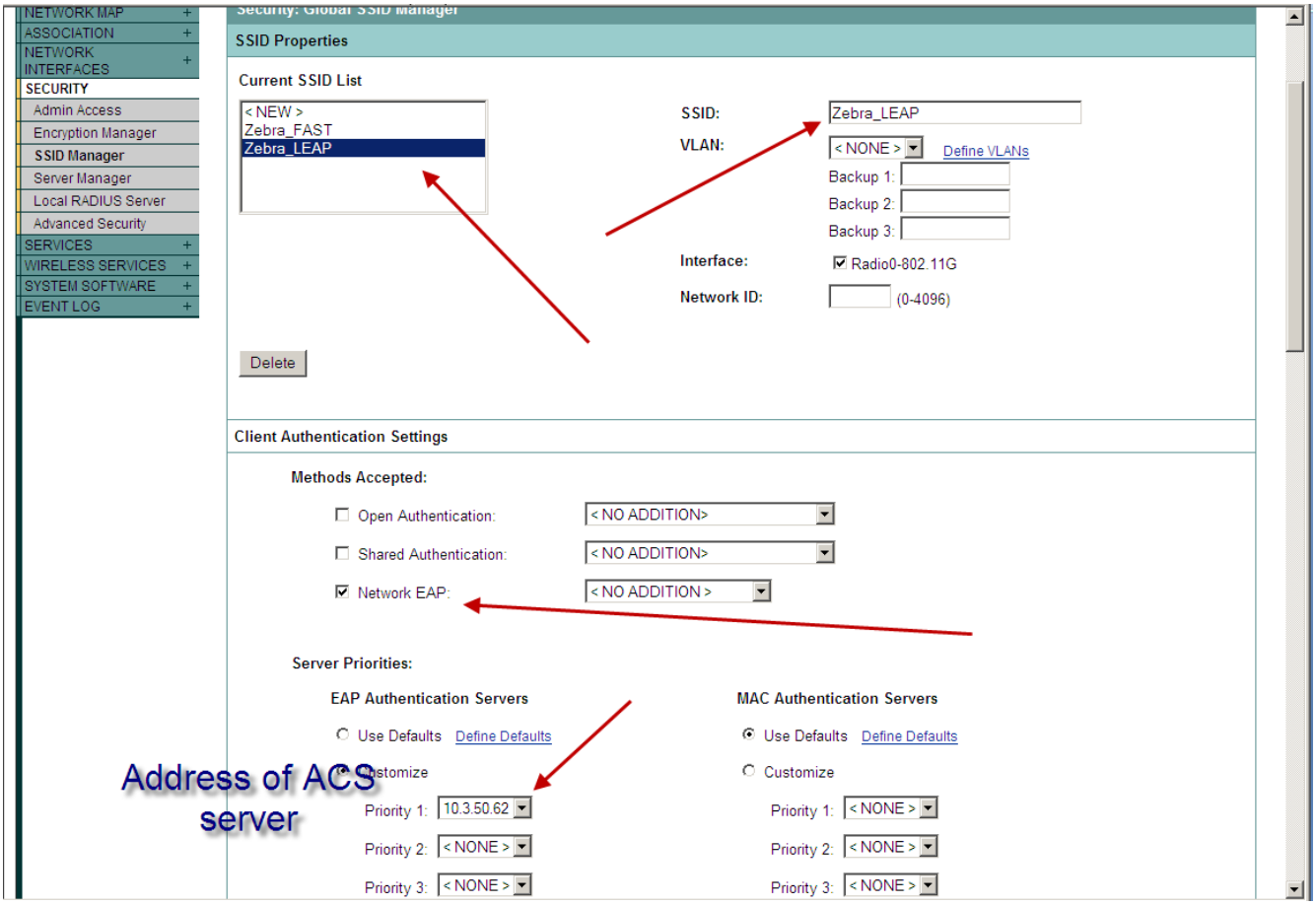
With LEAP or WPA-LEAP the authentication request is forwarded to a Radius server.
The following screenshots illustrate how a radius server can be added.

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.

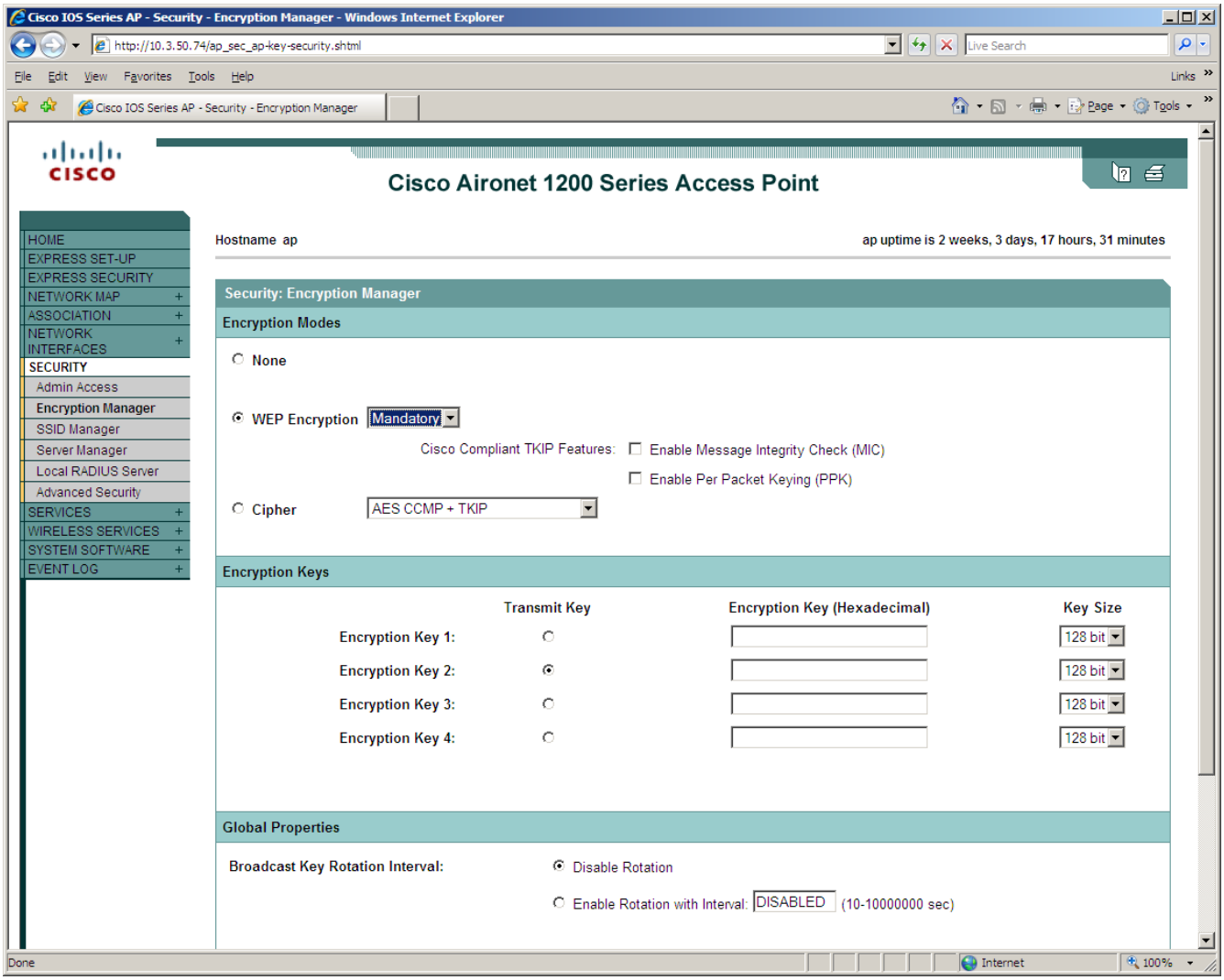


The first step illustrated here is how an ESSID is created. It also illustrates some of the configuration on the access point for LEAP.

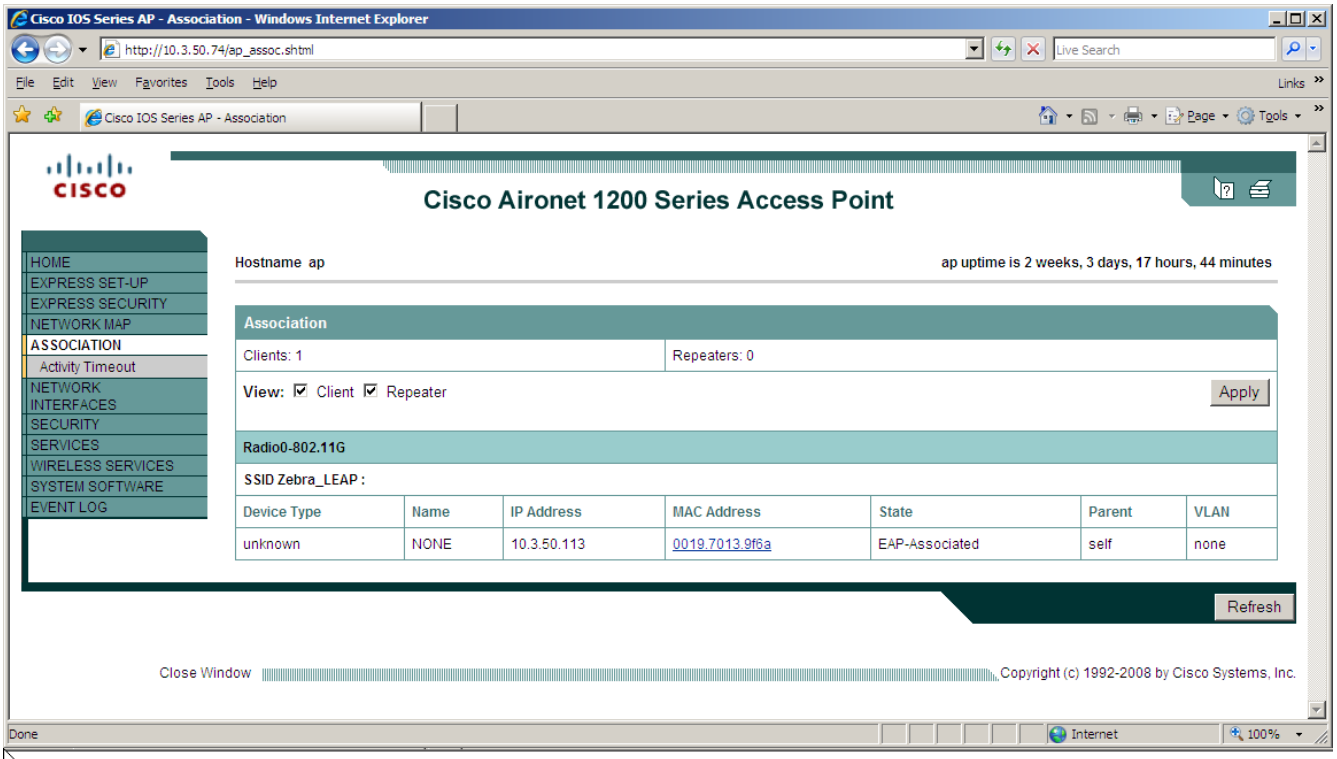
In this example the ESSID is “Zebra_LEAP” Please note that ESSID’s are case sensitive.

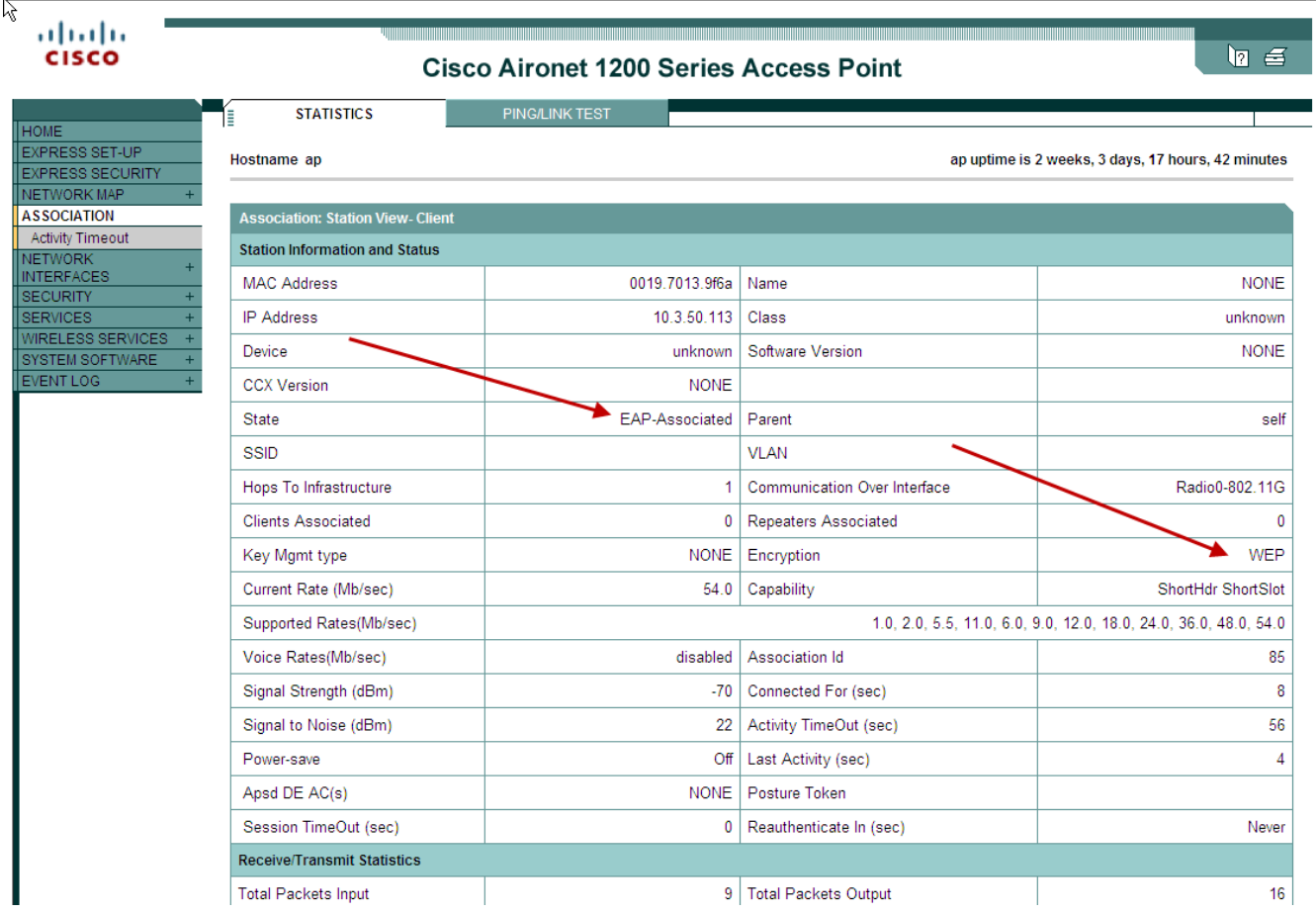


The screenshot below shows additional screenshots that were used to configure **LEAP**

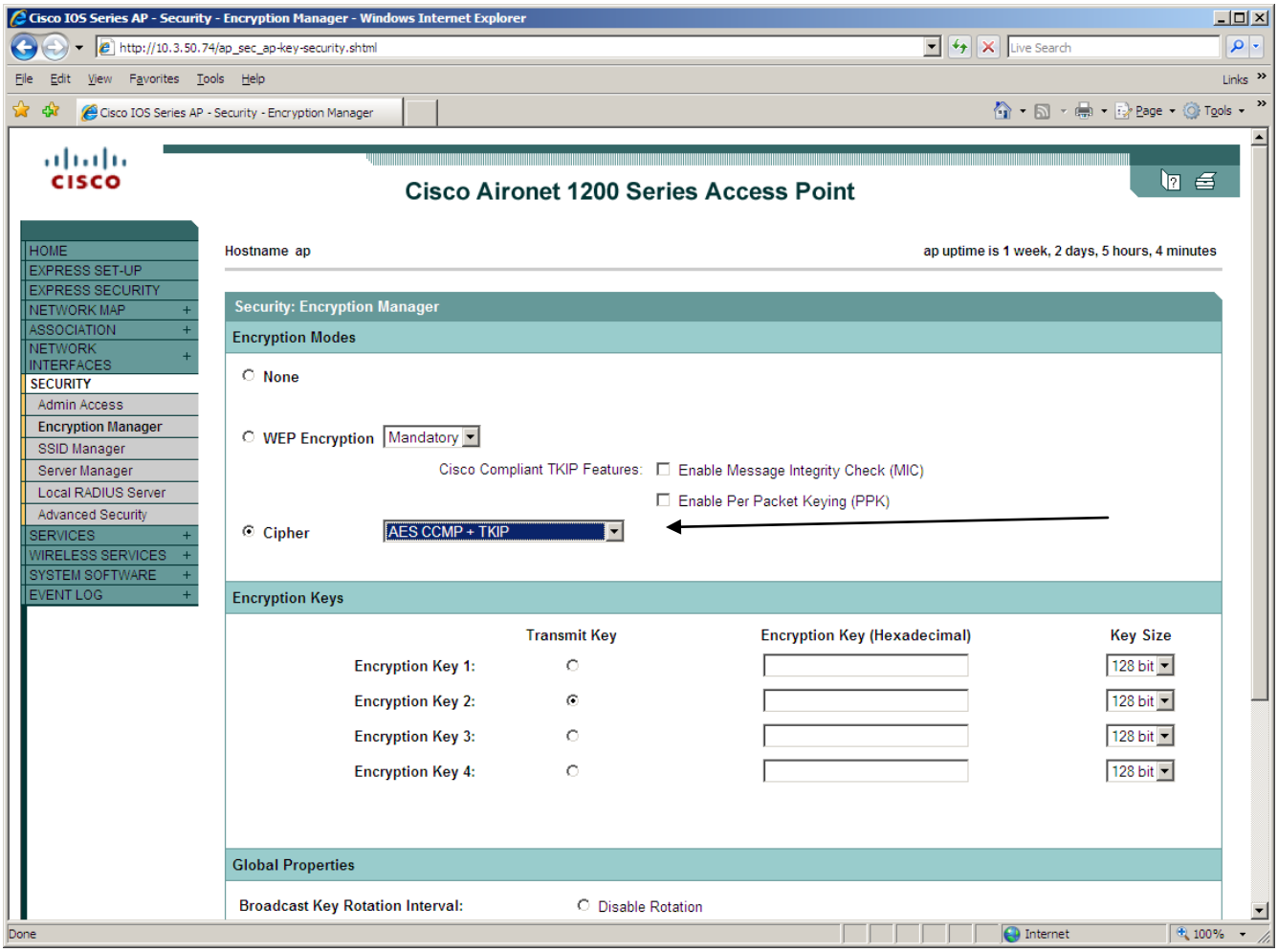


The screenshots below show views on the Access Point of a successful LEAP connection.

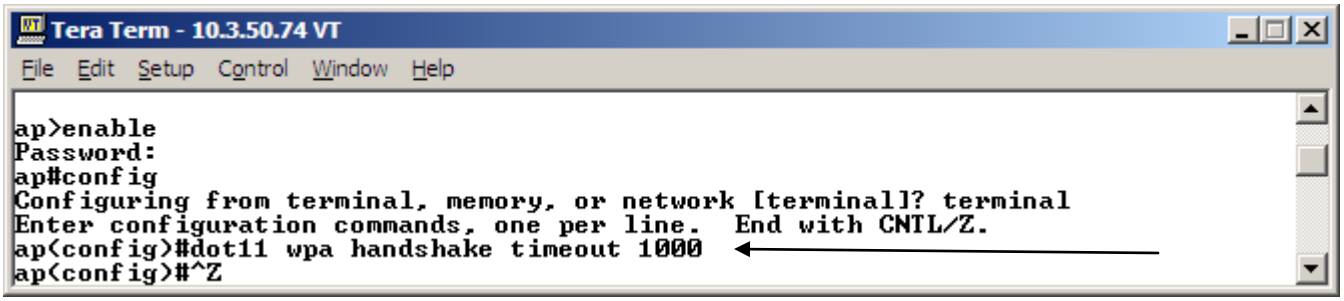

Cisco IOS Series AP - Association - Windows Internet Explorer
http://10.3.50.74/ap_assoc.shtml
Cisco IOS Series AP - Association
Cisco Aironet 1200 Series Access Point
HOME
EXPRESS SET-UP
EXPRESS SECURITY
NETWORK MAP
ASSOCIATION
Activity Timeout
NETWORK INTERFACES
SECURITY
SERVICES
WIRELESS SERVICES
SYSTEM SOFTWARE
EVENT LOG
Hostname ap
ap uptime is 2 weeks, 3 days, 17 hours, 44 minutes
Association
Clients: 1
Repeaters: 0
View: Client Repeater
Apply
Radio0-802.11G
SSID Zebra_LEAP :
Device Type
Name
IP Address
MAC Address
State
Parent
VLAN
unknown
NONE
10.3.50.113
0019.7013.9f6a
EAP-Associated
self
none
Refresh
Close Window
Copyright (c) 1992-2008 by Cisco Systems, Inc.
Done
Internet
100%


Cisco Aironet 1200 Series Access Point
HOME
EXPRESS SET-UP
EXPRESS SECURITY
NETWORK MAP
ASSOCIATION
Activity Timeout
NETWORK INTERFACES
SECURITY
SERVICES
WIRELESS SERVICES
SYSTEM SOFTWARE
EVENT LOG
STATISTICS
PING/LINK TEST
Hostname ap
ap uptime is 2 weeks, 3 days, 17 hours, 42 minutes
Association: Station View- Client
Station Information and Status
MAC Address 0019.7013.9f6a
Name NONE
IP Address 10.3.50.113
Class unknown
Device unknown
Software Version NONE
CCX Version NONE
State EAP-Associated
Parent self
SSID
VLAN
Hops To Infrastructure 1
Communication Over Interface Radio0-802.11G
Clients Associated 0
Repeaters Associated 0
Key Mgmt type NONE
Encryption WEP
Current Rate (Mb/sec) 54.0
Capability ShortHdr ShortSlot
Supported Rates(Mb/sec) 1.0, 2.0, 5.5, 11.0, 6.0, 9.0, 12.0, 18.0, 24.0, 36.0, 48.0, 54.0
Voice Rates(Mb/sec) disabled
Association Id 85
Signal Strength (dBm) -70
Connected For (sec) 8
Signal to Noise (dBm) 22
Activity TimeOut (sec) 56
Power-save Off
Last Activity (sec) 4
Apsd DE AC(s) NONE
Posture Token
Session TimeOut (sec) 0
Reauthenticate In (sec) Never
Receive/Transmit Statistics
Total Packets Input 9
Total Packets Output 16

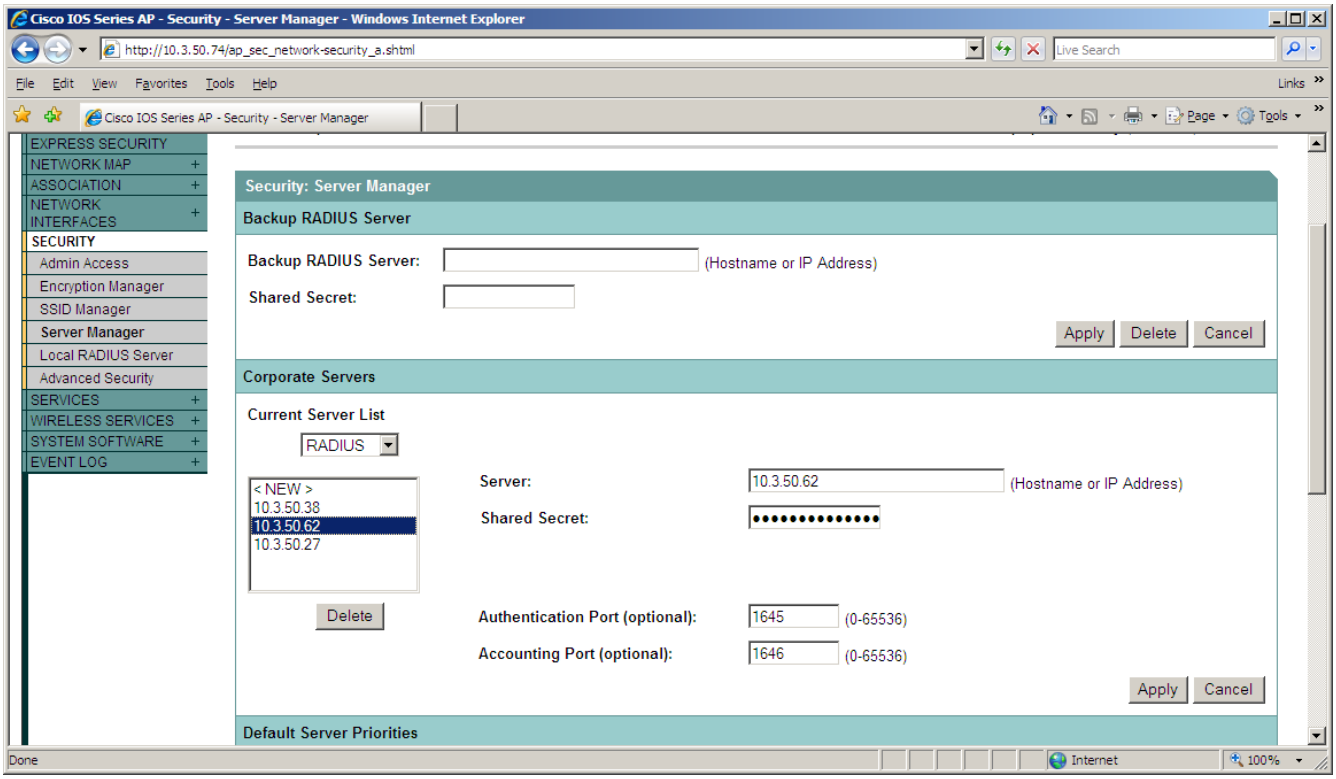
The next screenshots show how the Cisco Access Point was set for **WPA-LEAP.** In this example that I have enabled both wpa and wpa2 as shown below.



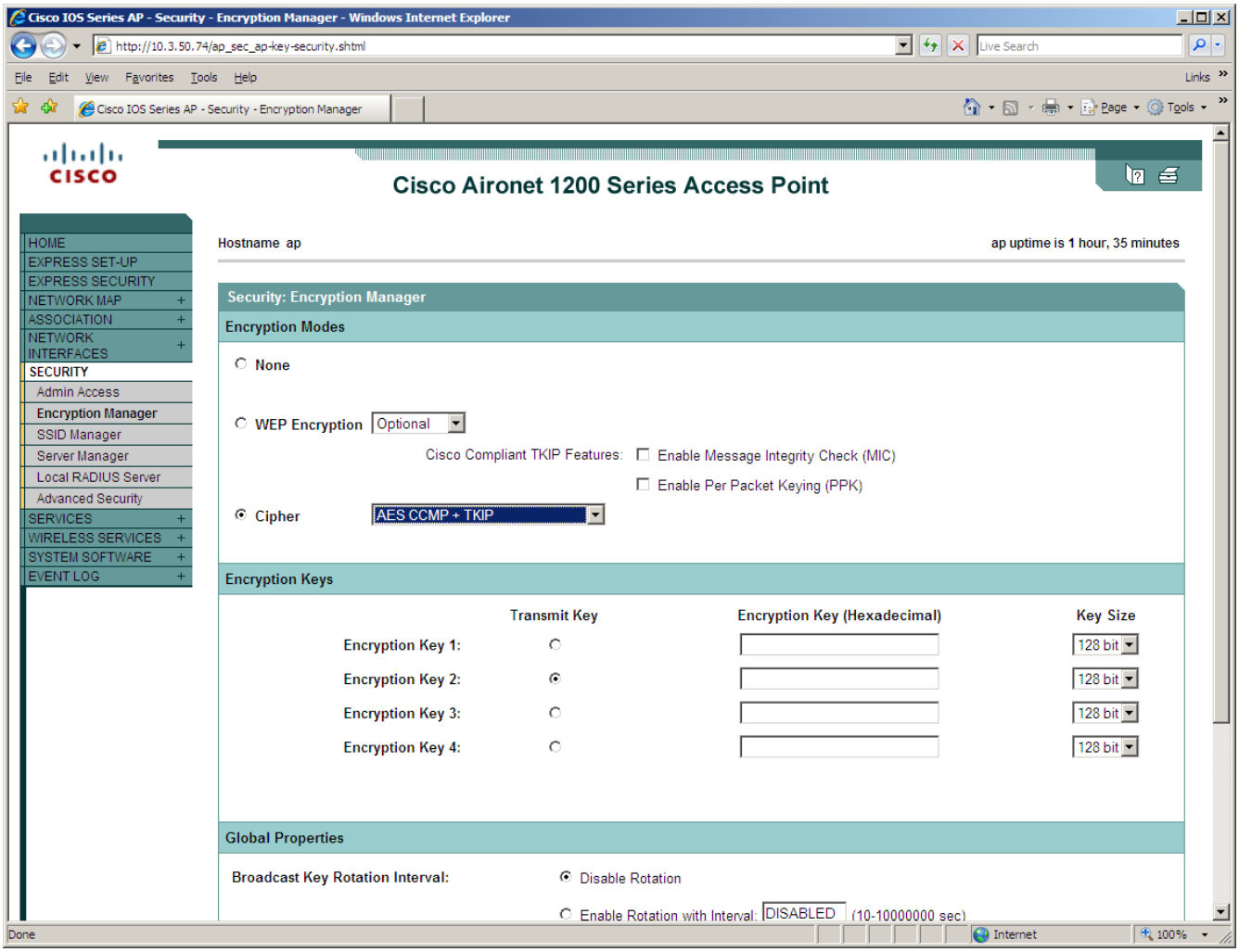
In this illustration, I have set the wpa handshake timeout to a value of 1000

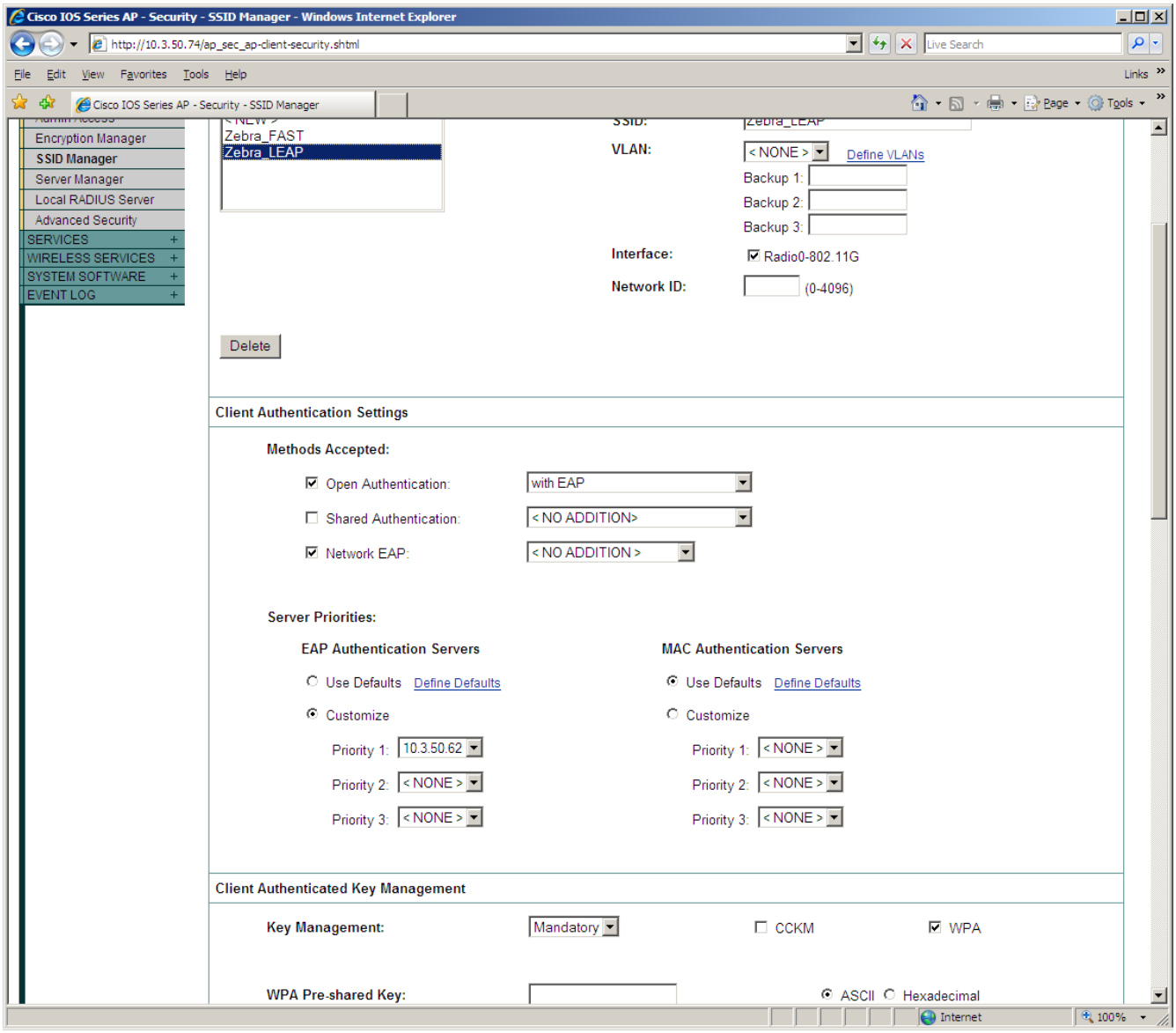


With WPA-LEAP, the authentication is often done by an external radius server.
In this example I have entered the ip address for the radius server as shown below.

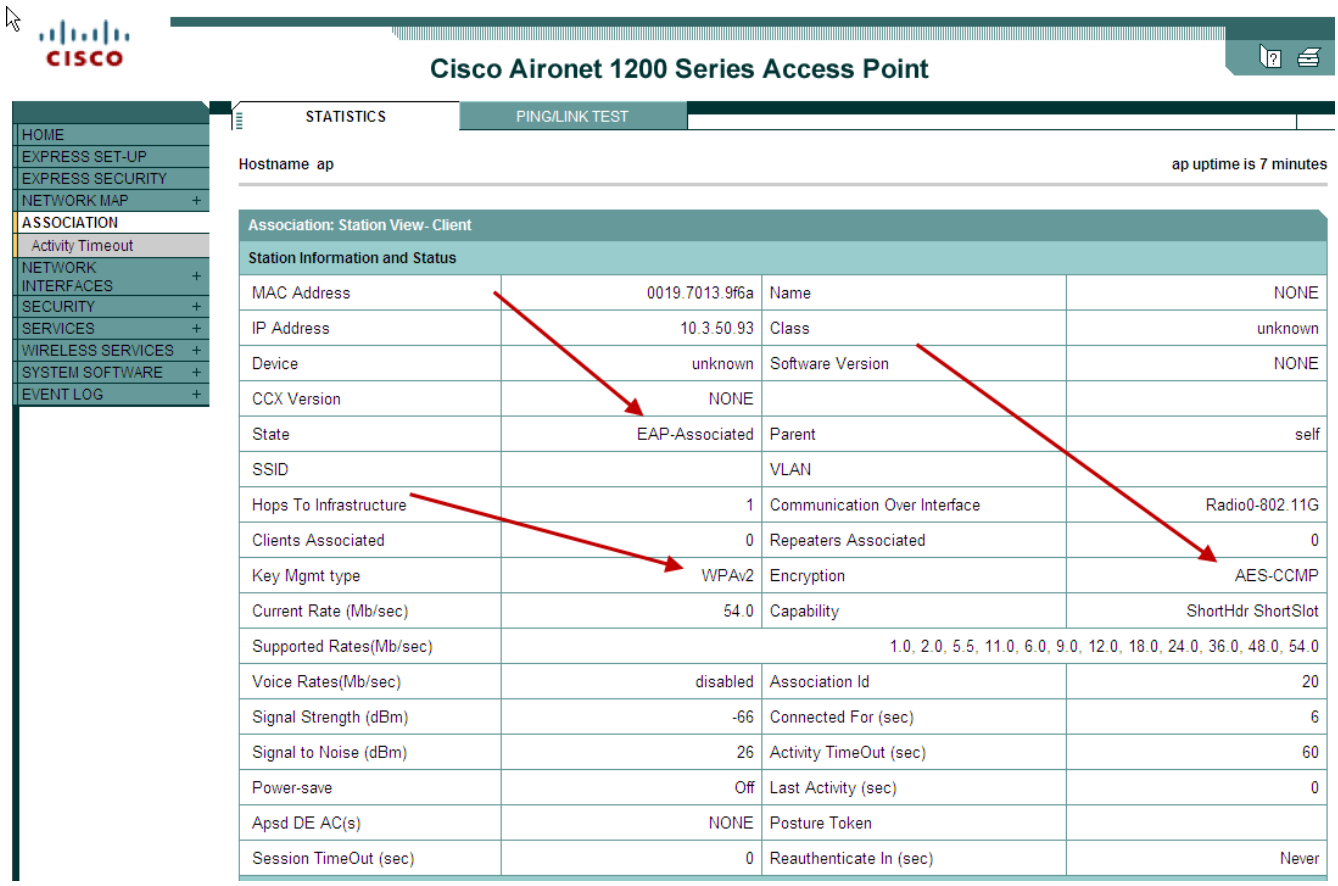


In this illustration, I have chosen both TKIP and AES CCMP

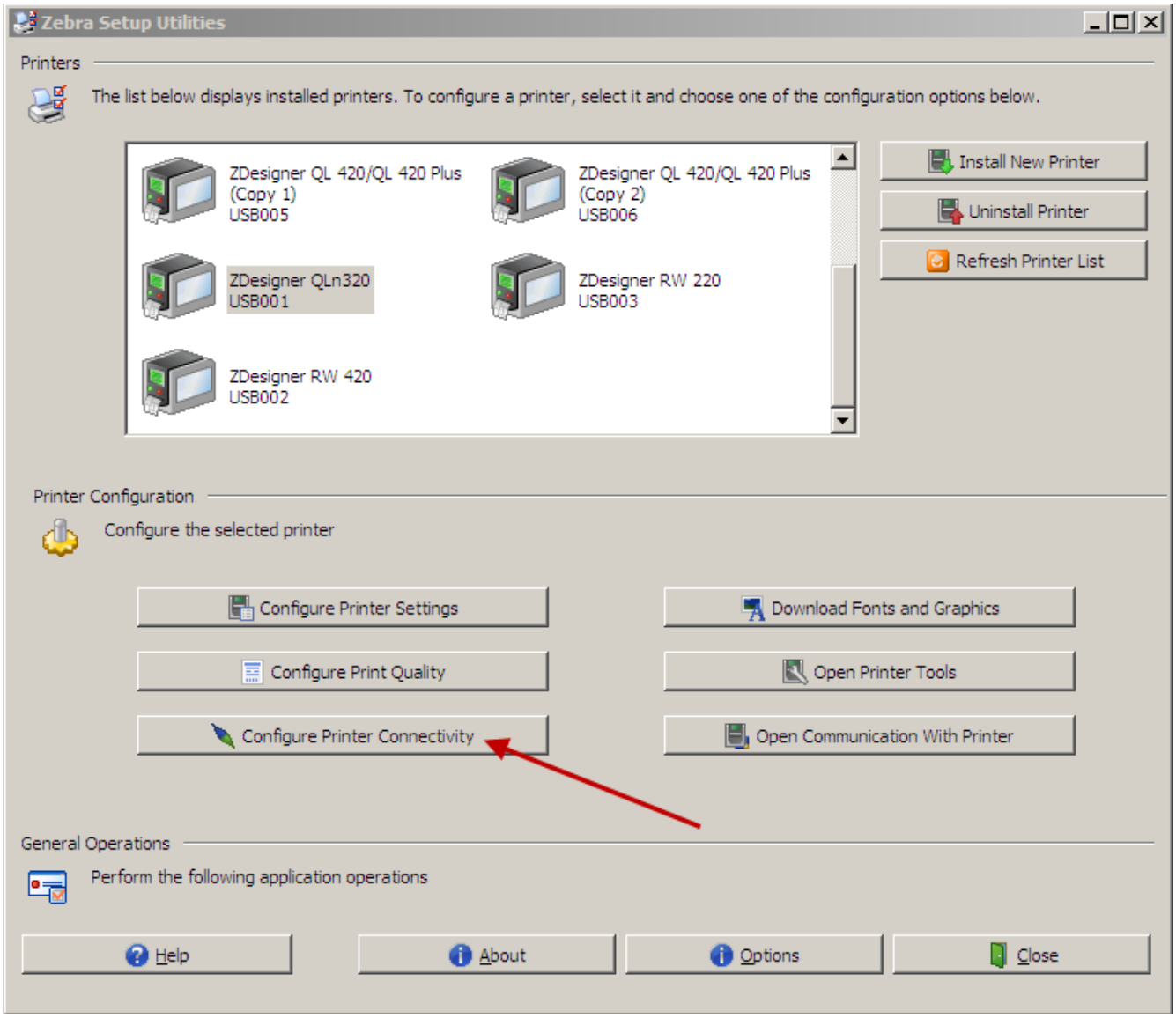

Cisco IOS Series AP - Security - Encryption Manager - Windows Internet Explorer
http://10.3.50.74/ap_sec_ap-key-security.shtml
Live Search
File Edit View Favorites Tools Help
Links
Cisco IOS Series AP - Security - Encryption Manager
Page Tools
Cisco Aironet 1200 Series Access Point
HOME
EXPRESS SET-UP
EXPRESS SECURITY
NETWORK MAP
ASSOCIATION
NETWORK INTERFACES
SECURITY
Admin Access
Encryption Manager
SSID Manager
Server Manager
Local RADIUS Server
Advanced Security
SERVICES
WIRELESS SERVICES
SYSTEM SOFTWARE
EVENT LOG
Hostname ap
ap uptime is 1 hour, 35 minutes
Security: Encryption Manager
Encryption Modes
None
WEP Encryption
Optional
Cisco Compliant TKIP Features:
Enable Message Integrity Check (MIC)
Enable Per Packet Keying (PPK)
Cipher
AES CCMP + TKIP
Encryption Keys
Transmit Key
Encryption Key (Hexadecimal)
Key Size
Encryption Key 1:
Encryption Key 2:
Encryption Key 3:
Encryption Key 4:
128 bit
Global Properties
Broadcast Key Rotation Interval:
Disable Rotation
Enable Rotation with Interval:
DISABLED
(10-10000000 sec)
Done
Internet
100%

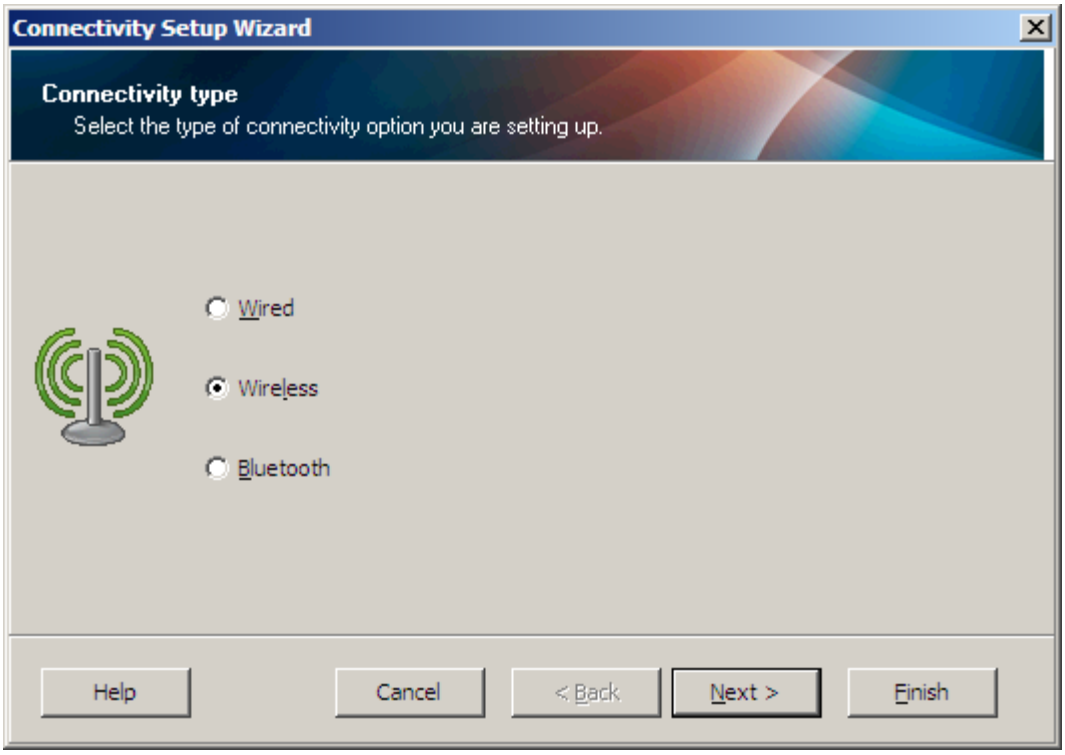


Below is an example of what the Cisco Access point shows for a successful WPA-LEAP authentication.

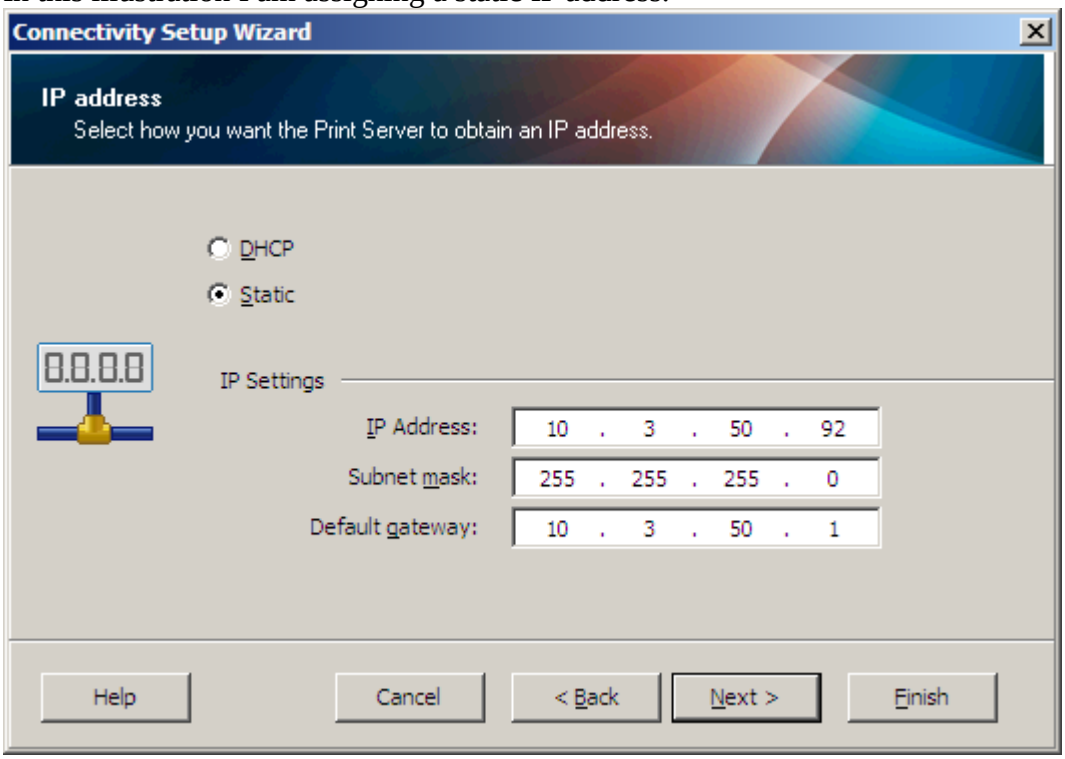


This section of the document illustrates how to configure the printer for LEAP and will continue by illustrating how to configure the printer for WPA-LEAP. The illustration will use the **Zebra Setup Utility** as the method for configuring the printer.


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
Install New Printer
Uninstall Printer
Refresh Printer List
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

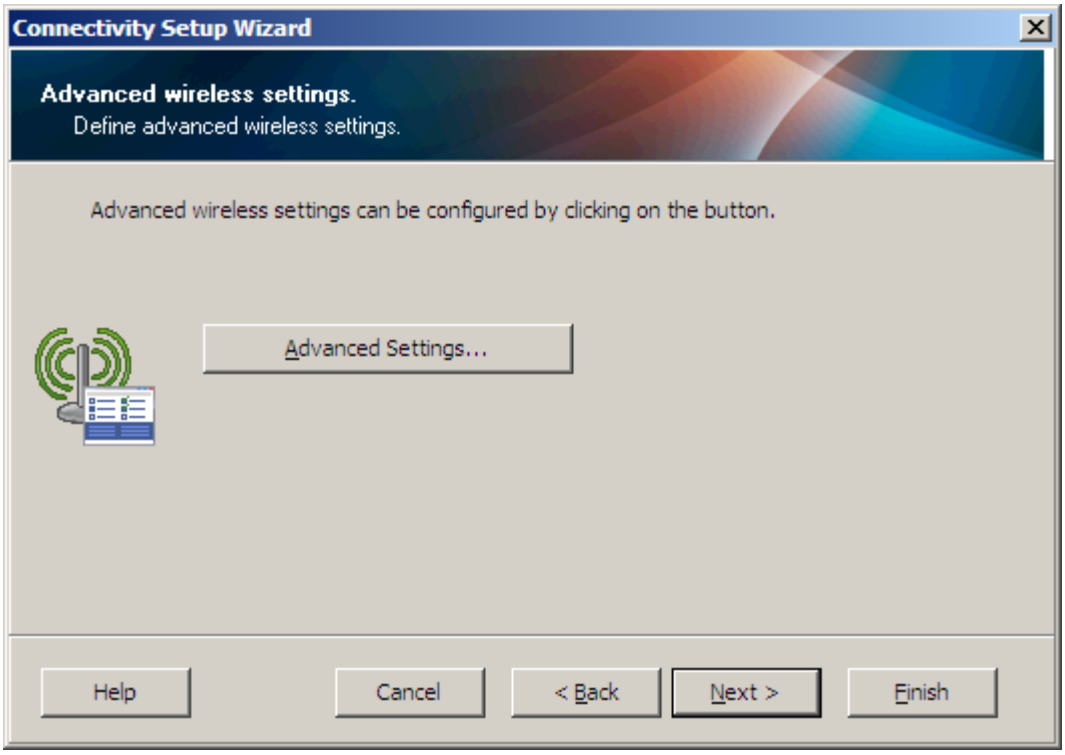


In this illustration I am assigning a static IP address.

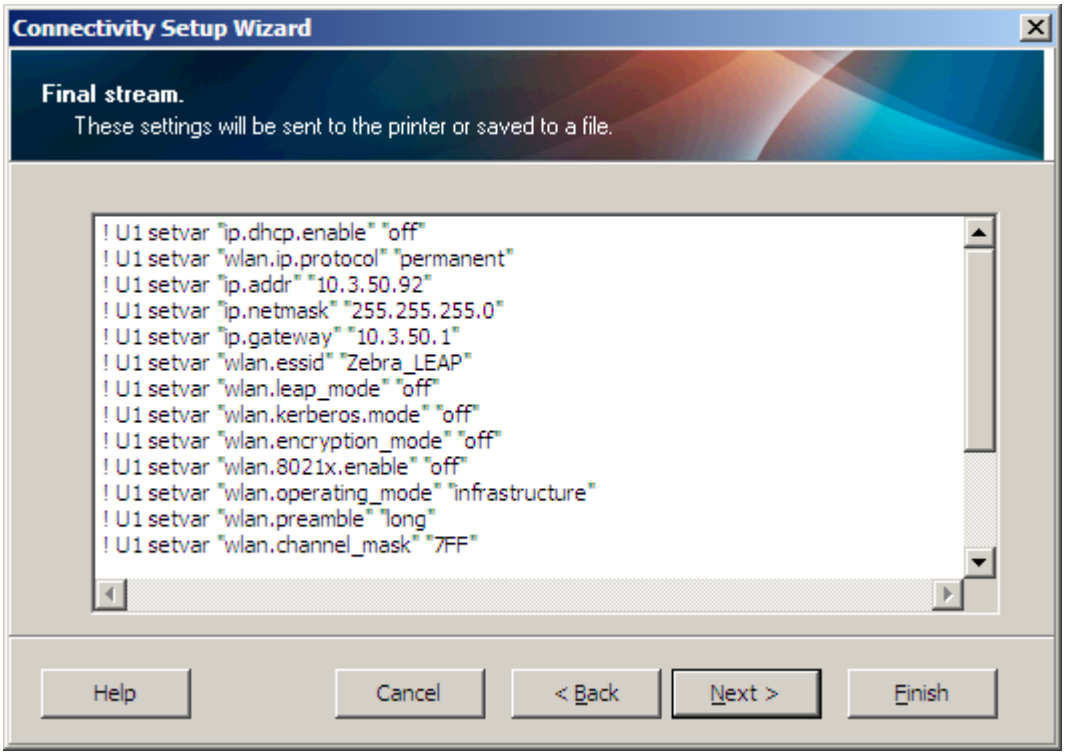


The screenshot below shows the security mode LEAP.

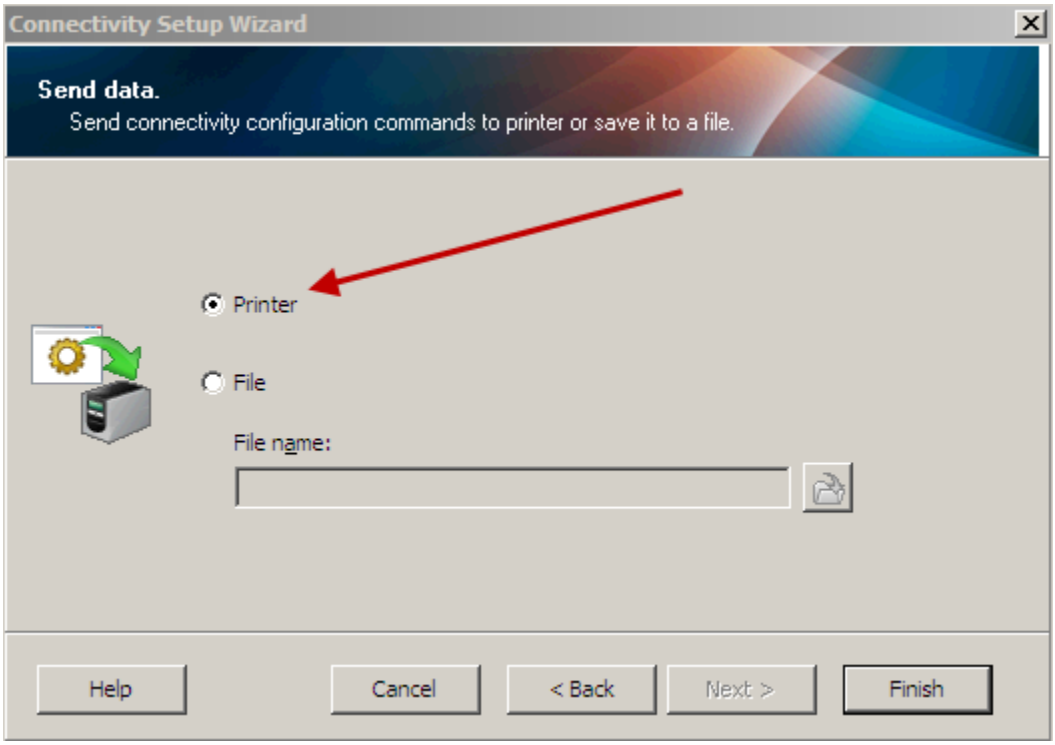
The screenshot below shows the security mode WPA-LEAP



Click Next



Click Next



The data will now be sent to the printer and the printer will reboot.