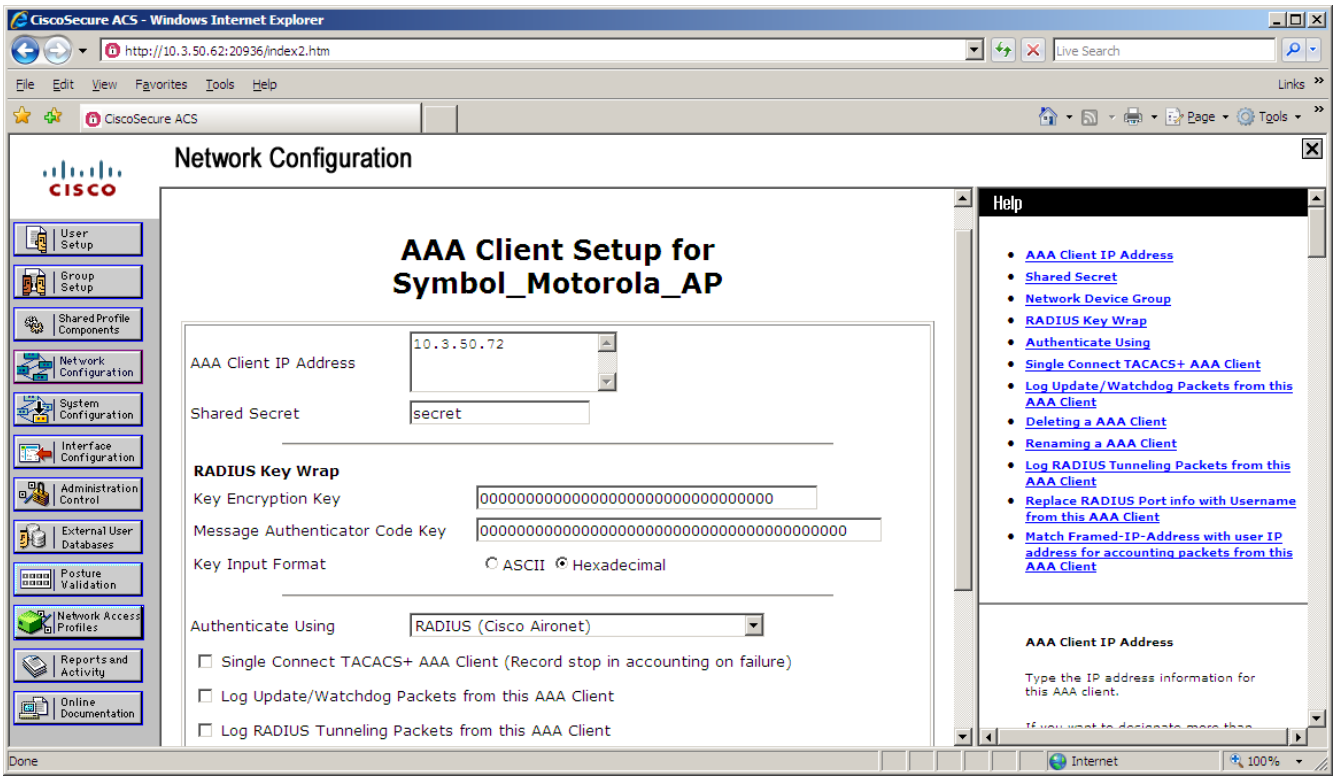
Zebra Setup Utility, Zebra Mobile Printer, ACS, Symbol / Motorola Access point, PEAP and WPA-PEAP

This section of the document illustrates the Cisco ACS radius server and how PEAP and WPA-PEAP 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.

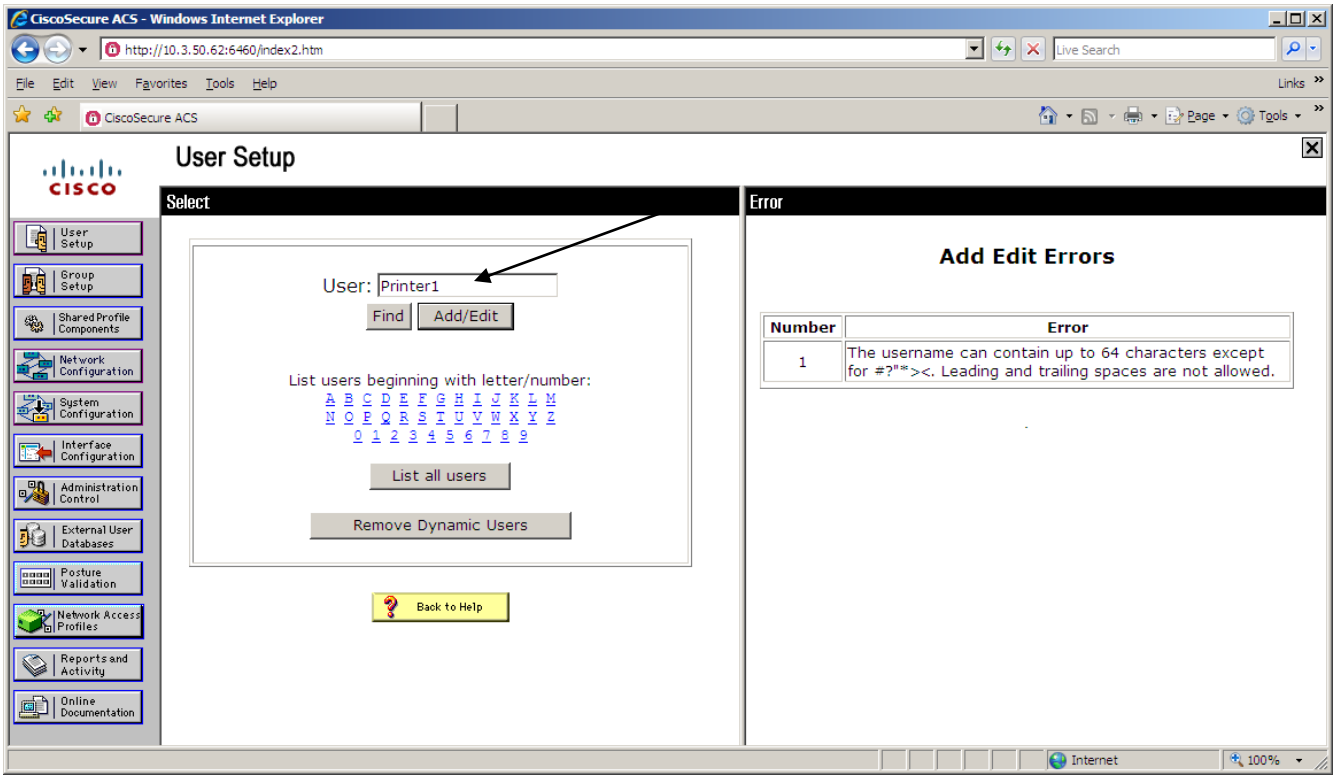
It is important to note that the setup on the ACS server did not differ when using WPA-PEAP or PEAP.

The first series of screenshots shows how a Radius client is added to ACS. In the screenshot below a Symbol/Motorola Access Point with the IP address of 10.3.50.72 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.

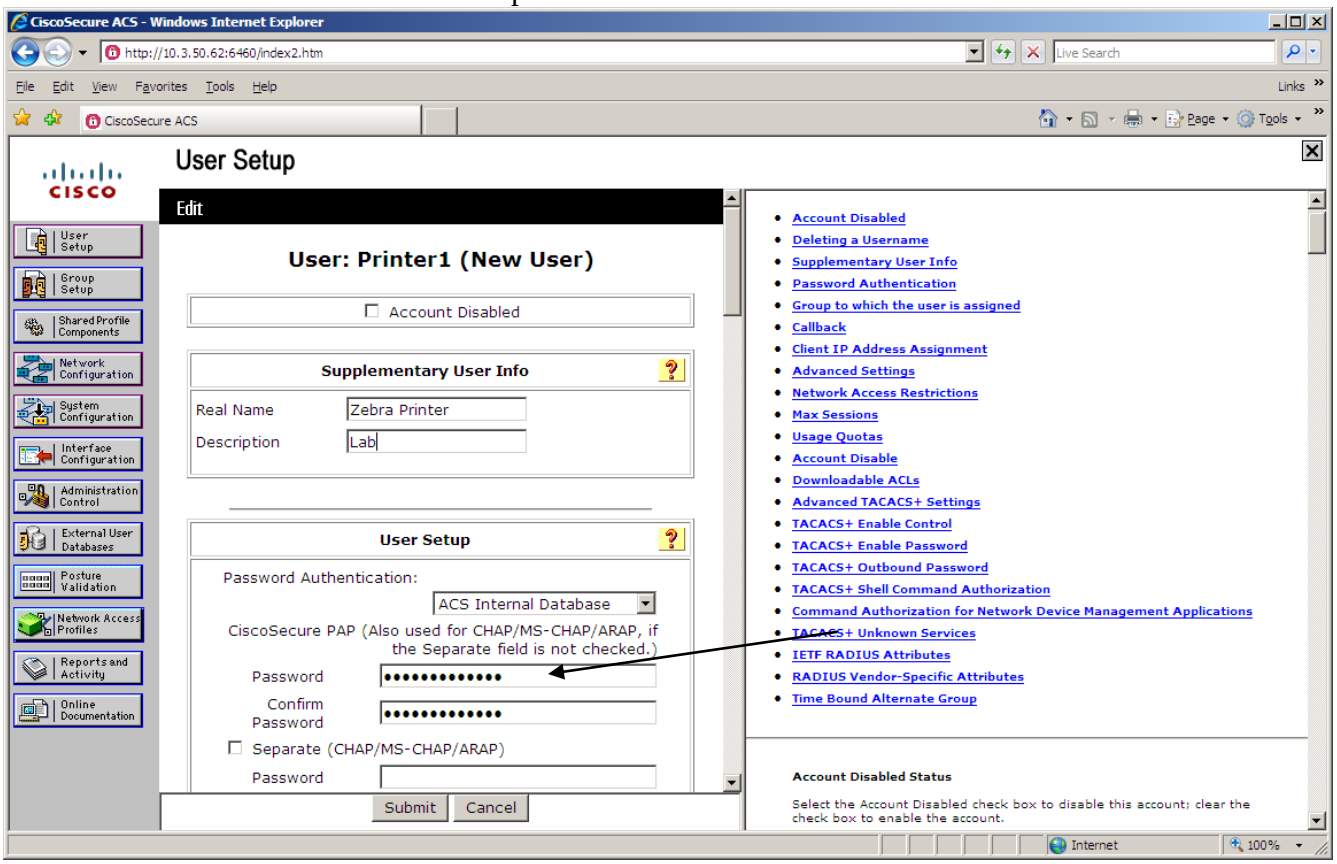


A secret key is entered on the ACS server. This secret key needs to match the secret key on the radius client (in this example the Symbol/Motorola Access Point).

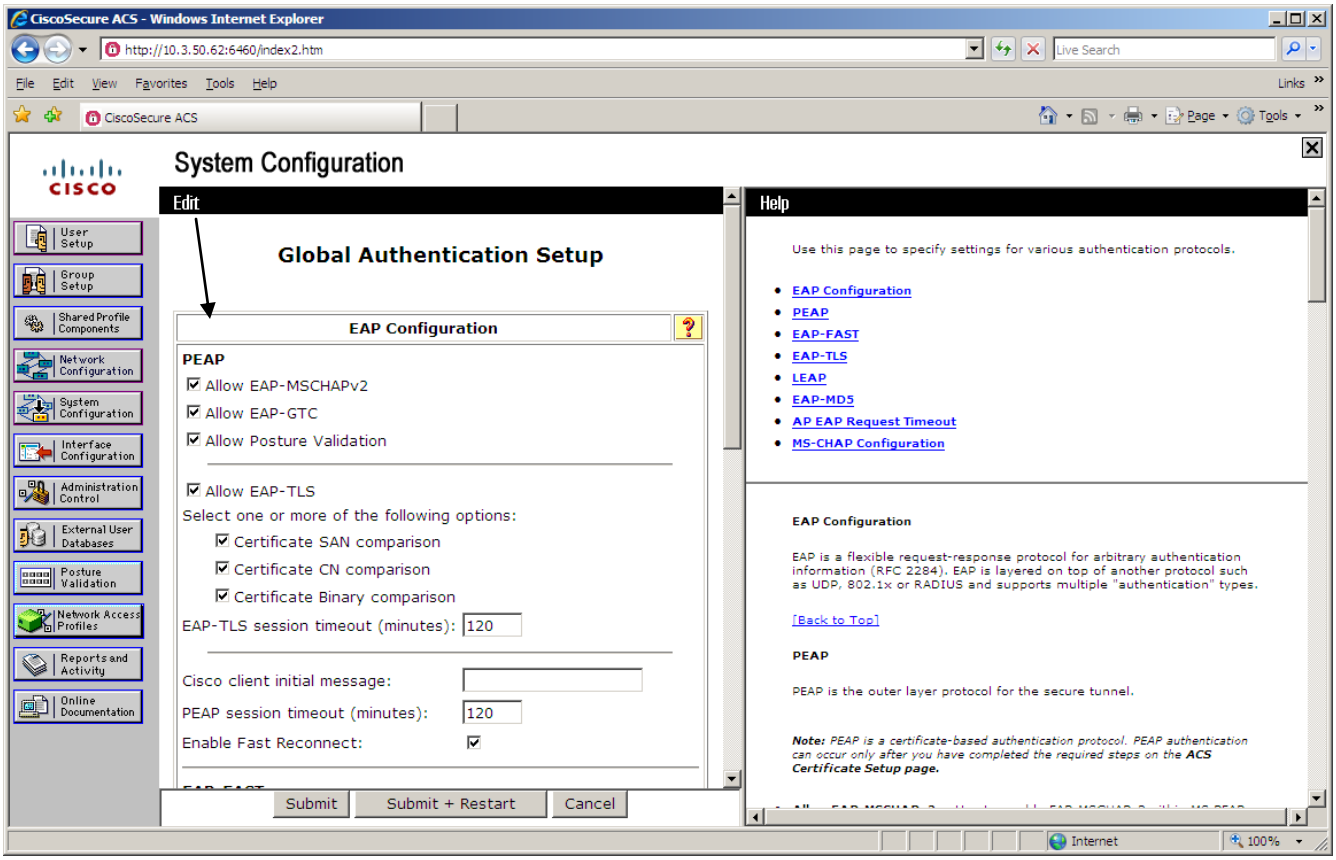
A username is entered for the printer and a password for the printer is also added. In this example the username is Printer1.

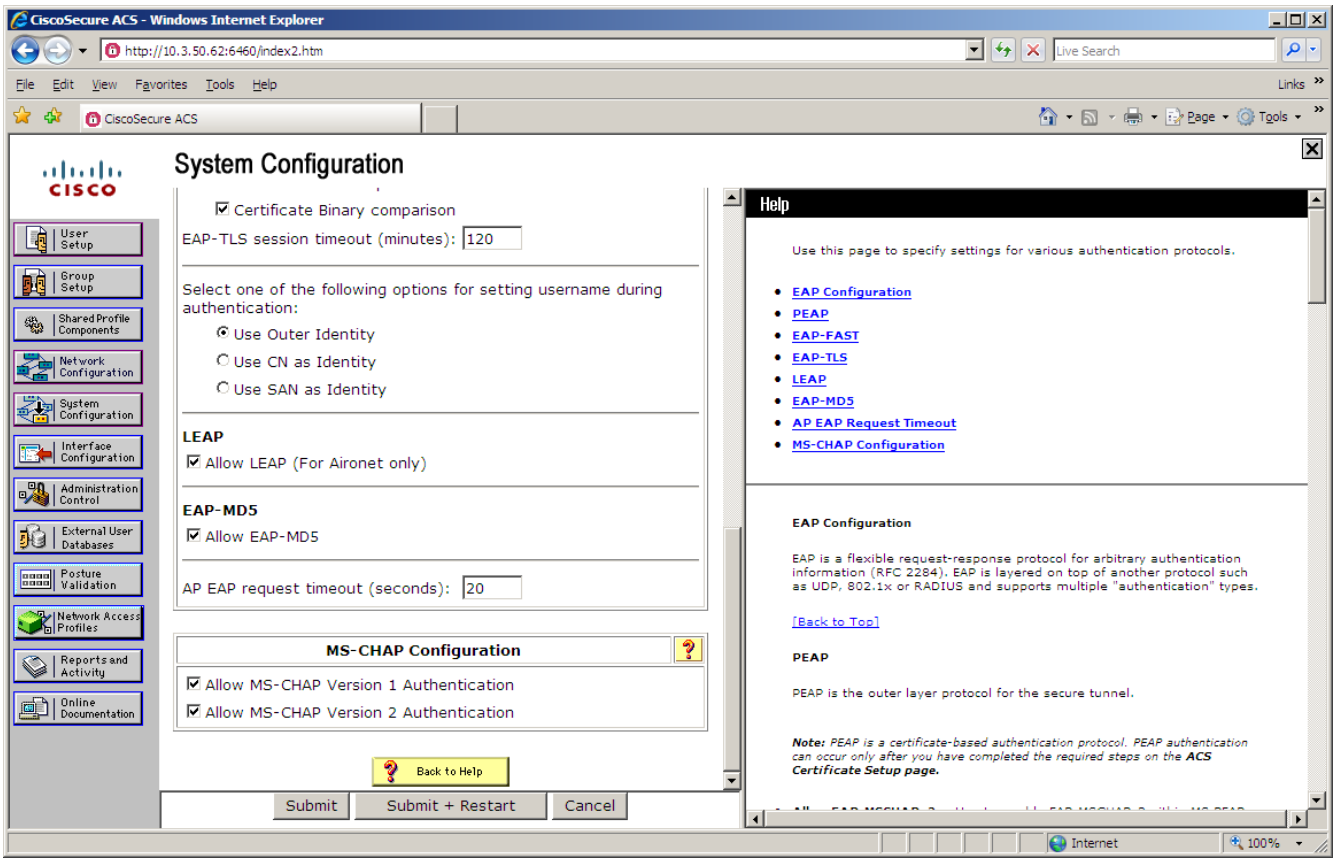


The screenshot below shows where the password is added.



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


CiscoSecure ACS - Windows Internet Explorer
http://10.3.50.62:6460/index2.htm
System Configuration
Edit
Global Authentication Setup
EAP Configuration
PEAP
Allow EAP-MSCHAPv2
Allow EAP-GTC
Allow Posture Validation
Allow EAP-TLS
Select one or more of the following options:
Certificate SAN comparison
Certificate CN comparison
Certificate Binary comparison
EAP-TLS session timeout (minutes): 120
Cisco client initial message:
PEAP session timeout (minutes): 120
Enable Fast Reconnect:
Submit
Submit + Restart
Cancel
Help
Use this page to specify settings for various authentication protocols.
EAP Configuration
PEAP
EAP-FAST
EAP-TLS
LEAP
EAP-MD5
AP EAP Request Timeout
MS-CHAP Configuration
EAP Configuration
EAP is a flexible request-response protocol for arbitrary authentication information (RFC 2284). EAP is layered on top of another protocol such as UDP, 802.1x or RADIUS and supports multiple "authentication" types.
[Back to Top]
PEAP
PEAP is the outer layer protocol for the secure tunnel.
Note: PEAP is a certificate-based authentication protocol. PEAP authentication can occur only after you have completed the required steps on the ACS Certificate Setup page.


CiscoSecure ACS - Windows Internet Explorer
http://10.3.50.62:6460/index2.htm
System Configuration
Certificate Binary comparison
EAP-TLS session timeout (minutes): 120
Select one of the following options for setting username during authentication:
Use Outer Identity
Use CN as Identity
Use SAN as Identity
LEAP
Allow LEAP (For Aironet only)
EAP-MD5
Allow EAP-MD5
AP EAP request timeout (seconds): 20
MS-CHAP Configuration
Allow MS-CHAP Version 1 Authentication
Allow MS-CHAP Version 2 Authentication
Back to Help
Submit
Submit + Restart
Cancel
Help
Use this page to specify settings for various authentication protocols.
EAP Configuration
PEAP
EAP-FAST
EAP-TLS
LEAP
EAP-MD5
AP EAP Request Timeout
MS-CHAP Configuration
EAP Configuration
EAP is a flexible request-response protocol for arbitrary authentication information (RFC 2284). EAP is layered on top of another protocol such as UDP, 802.1x or RADIUS and supports multiple "authentication" types.
[Back to Top]
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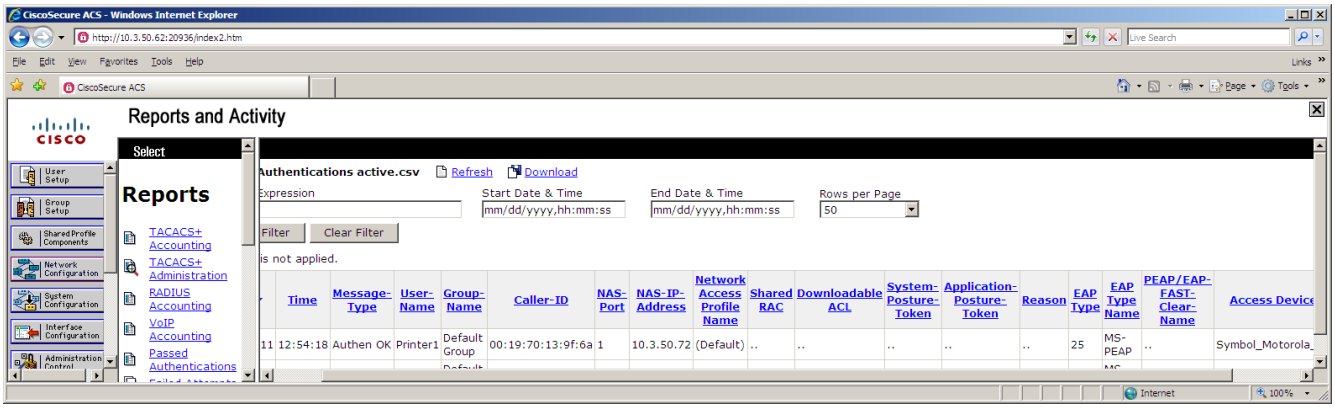
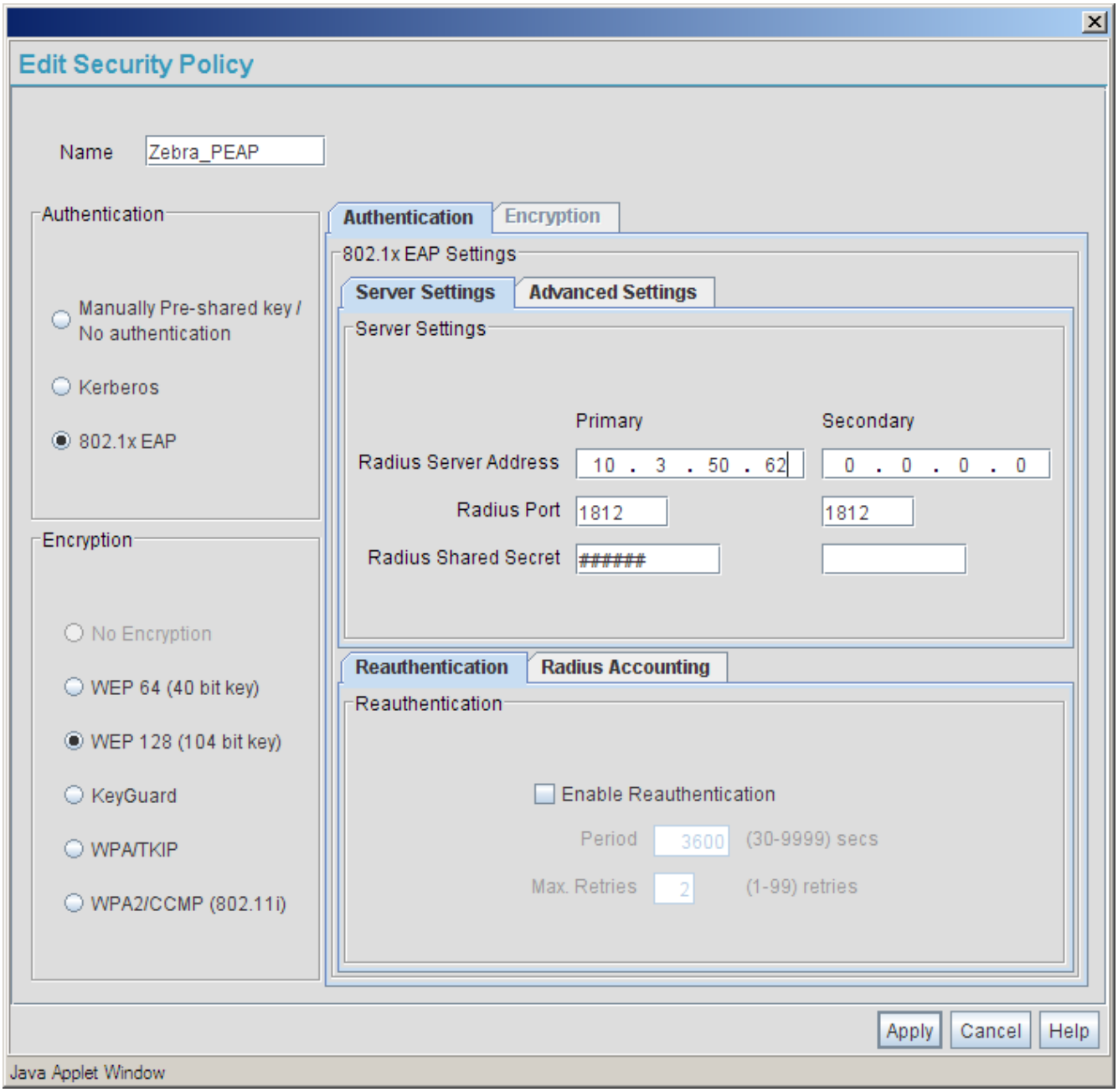
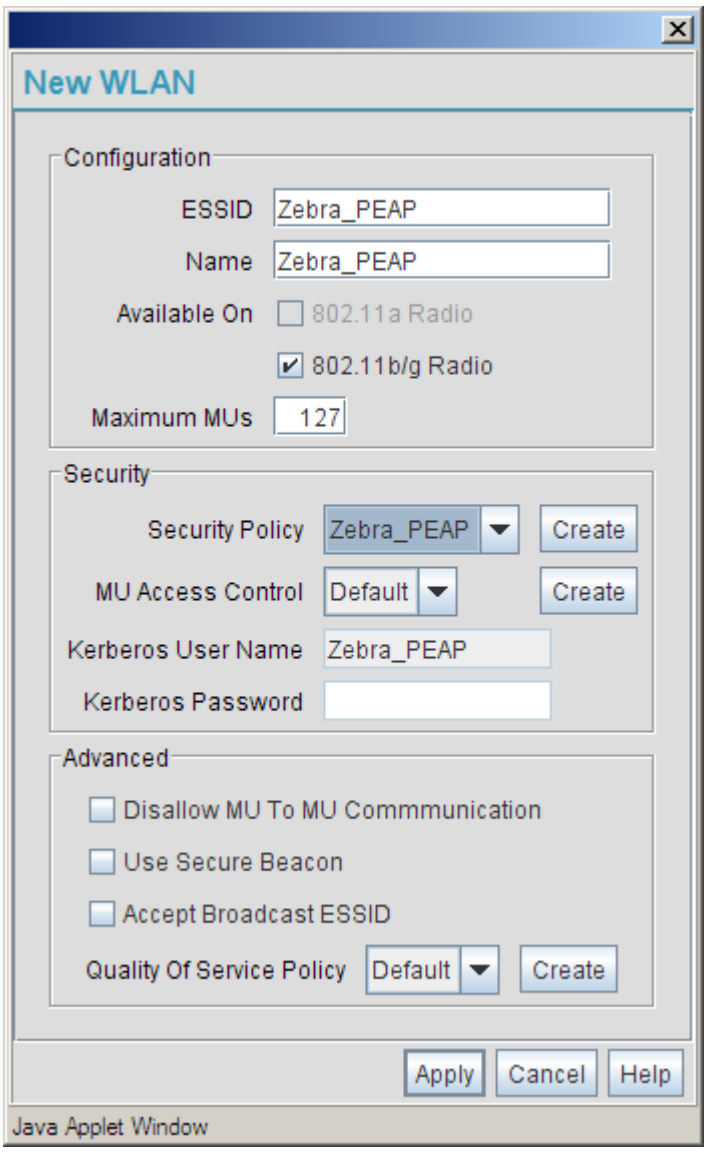
The screenshots below shows how a successful authentication appears on the ACS server.



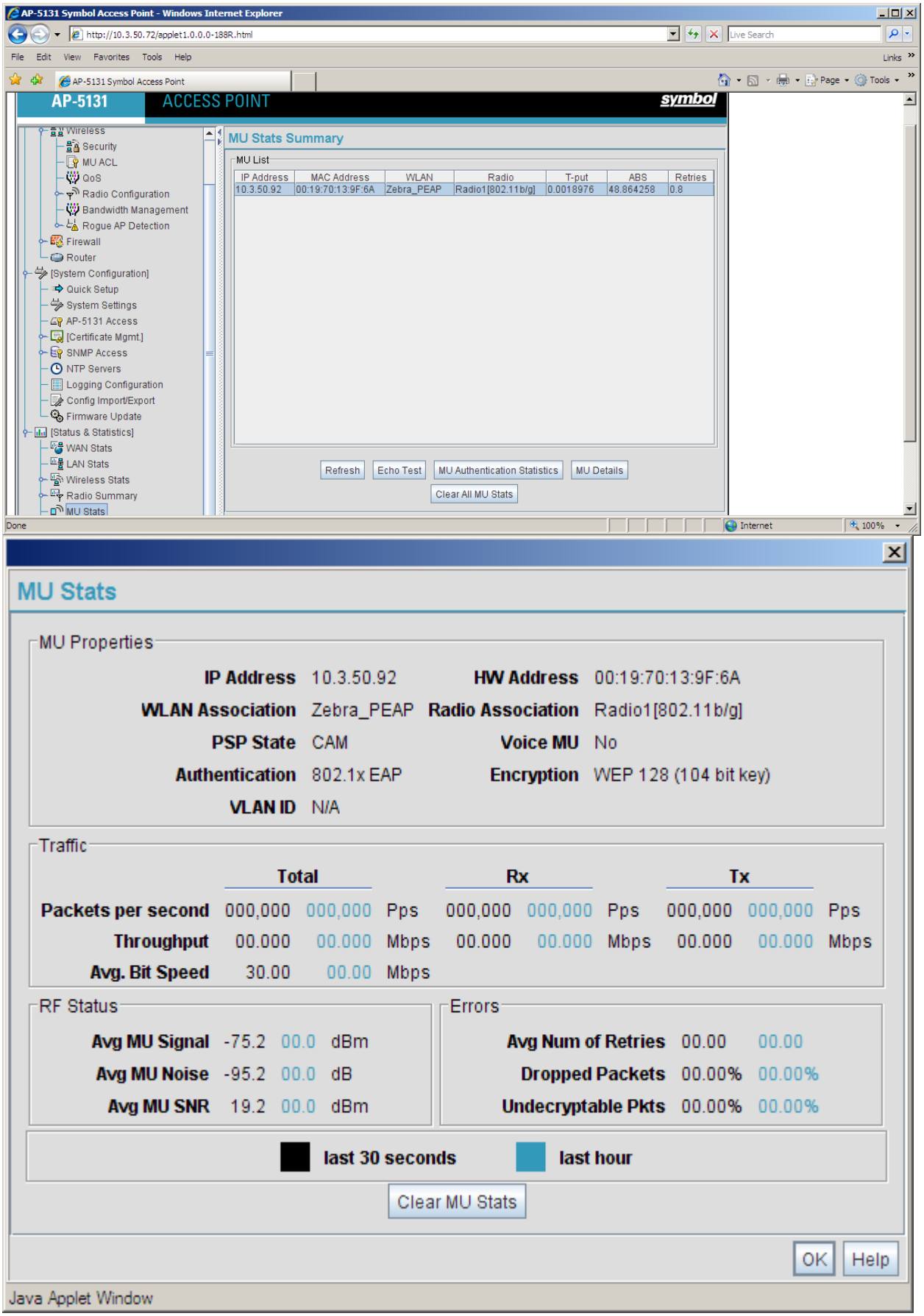
This section of the document illustrates a **Symbol / Motorola Access Point**
This document is meant as an illustration only. Questions on the setup of your Symbol / Motorola Access Point should be directed to Motorola. It should be Motorola that is used to determine if the illustration below is appropriate for your environment
This illustration shows how the Symbol/Motorola Access Point was configured for PEAP initially and then configured for WPA-PEAP.
With PEAP or WPA-PEAP the authentication request is forwarded to a Radius server.
The first step in this illustration is adding a security policy for **PEAP.**
The example below shows an entry of a radius server with an IP address of 10.3.50.62 (Cisco ACS server) and utilizing the port number of 1812. 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.



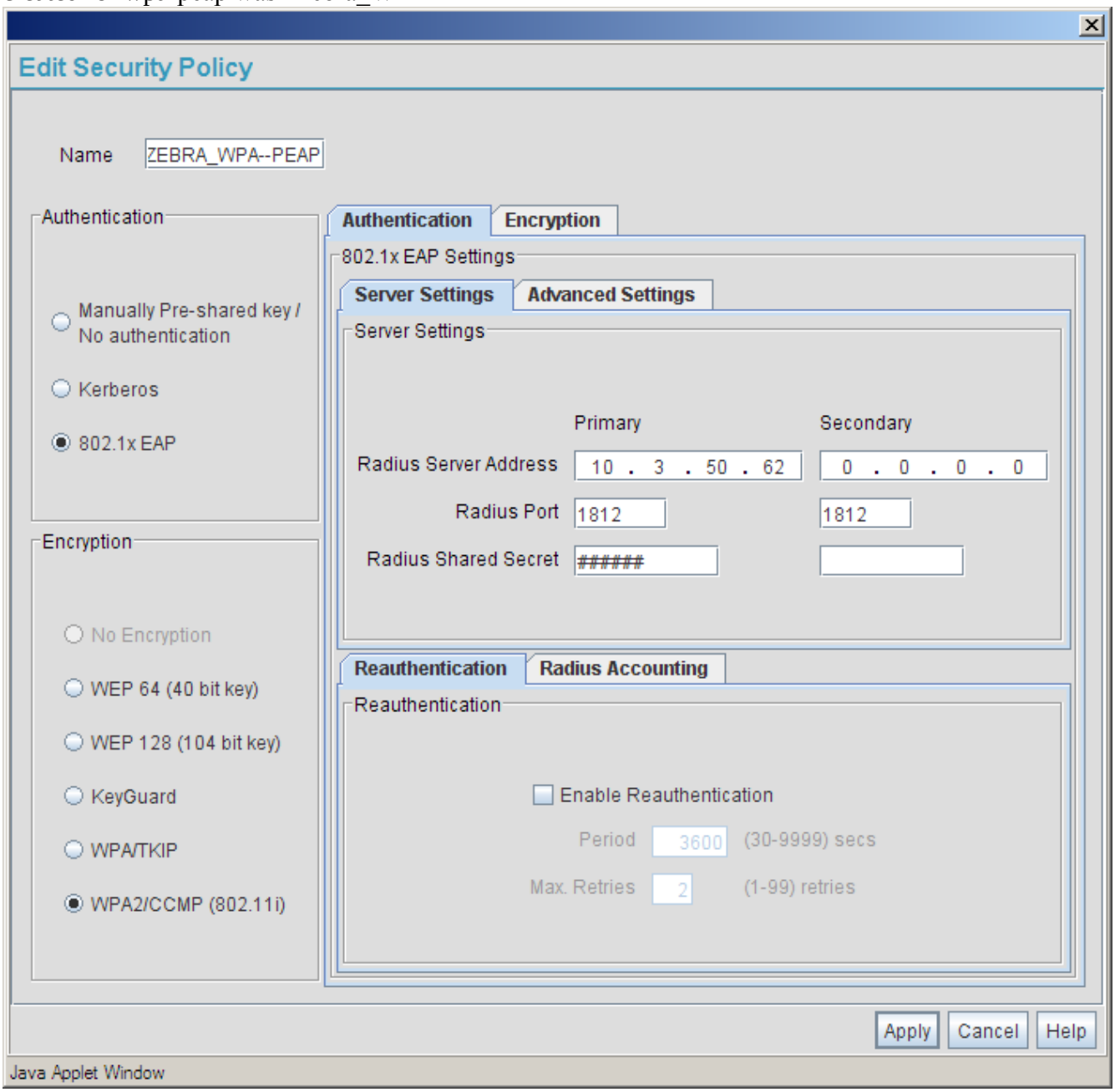
The next step illustrated here is how an ESSID is created. The ESSID in this illustration is "Zebra_PEAP". Please note that ESSID's are case sensitive. In this illustration, I have assigned the security policy that I have entered previously (Zebra_PEAP)



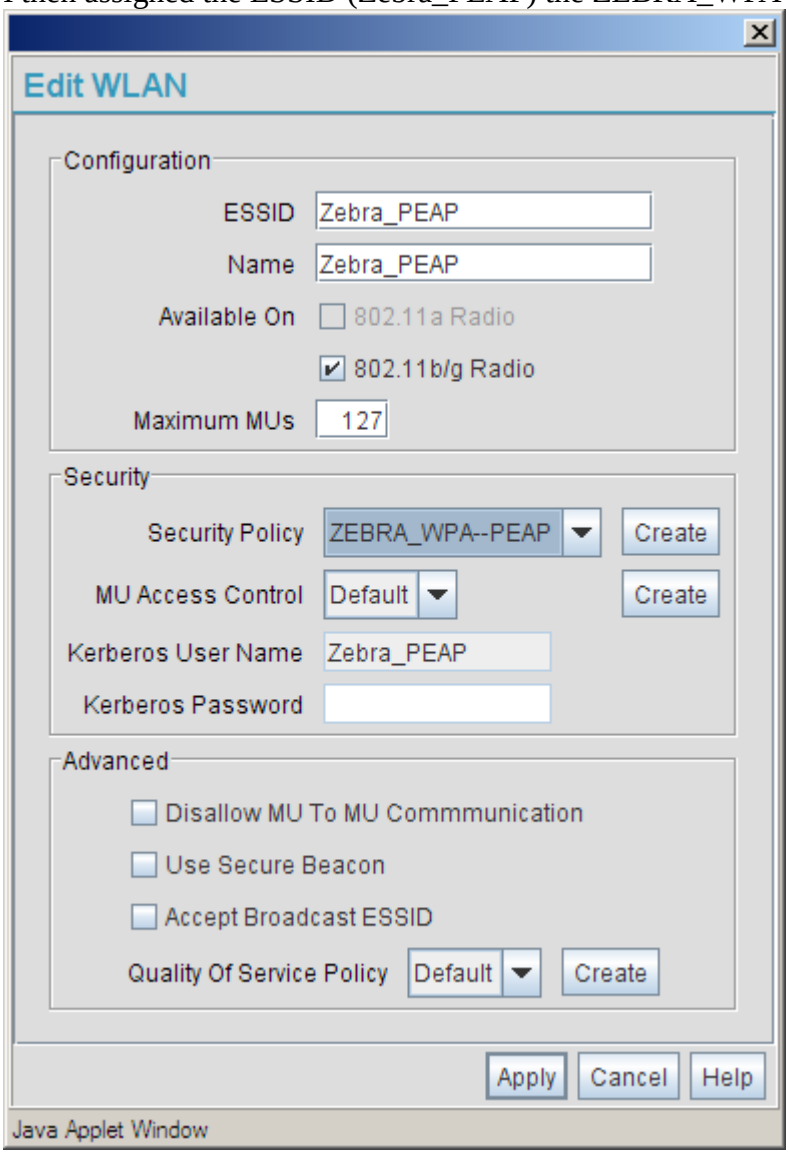
The screenshots below show views on the Access Point of a successful PEAP connection.


AP-5131 Symbol Access Point - Windows Internet Explorer
http://10.3.50.72/applet1.0.0.0-188R.html
File Edit View Favorites Tools Help
AP-5131 Symbol Access Point
AP-5131
ACCESS POINT
symbol
Wireless
Security
MU ACL
QoS
Radio Configuration
Bandwidth Management
Rogue AP Detection
Firewall
Router
[System Configuration]
Quick Setup
System Settings
AP-5131 Access
[Certificate Mgmt.]
SNMP Access
NTP Servers
Logging Configuration
Config Import/Export
Firmware Update
[Status & Statistics]
WAN Stats
LAN Stats
Wireless Stats
Radio Summary
MU Stats
MU Stats Summary
MU List
IP Address MAC Address WLAN Radio T-put ABS Retries
10.3.50.92 00:19:70:13:9F:6A Zebra_PEAP Radio1[802.11b/g] 0.0018976 48.864258 0.8
Refresh
Echo Test
MU Authentication Statistics
MU Details
Clear All MU Stats
Done
Internet
100%
MU Stats
MU Properties
IP Address 10.3.50.92
HW Address 00:19:70:13:9F:6A
WLAN Association Zebra_PEAP
Radio Association Radio1[802.11b/g]
PSP State CAM
Voice MU No
Authentication 802.1x EAP
Encryption WEP 128 (104 bit key)
VLAN ID N/A
Traffic
Total
Rx
Tx
Packets per second 000,000 000,000 Pps 000,000 000,000 Pps 000,000 000,000 Pps
Throughput 00.000 00.000 Mbps 00.000 00.000 Mbps 00.000 00.000 Mbps
Avg. Bit Speed 30.00 00.00 Mbps
RF Status
Avg MU Signal -75.2 00.0 dBm
Avg MU Noise -95.2 00.0 dB
Avg MU SNR 19.2 00.0 dBm
Errors
Avg Num of Retries 00.00 00.00
Dropped Packets 00.00% 00.00%
Undecryptable Pkts 00.00% 00.00%
last 30 seconds
last hour
Clear MU Stats
OK
Help
Java Applet Window

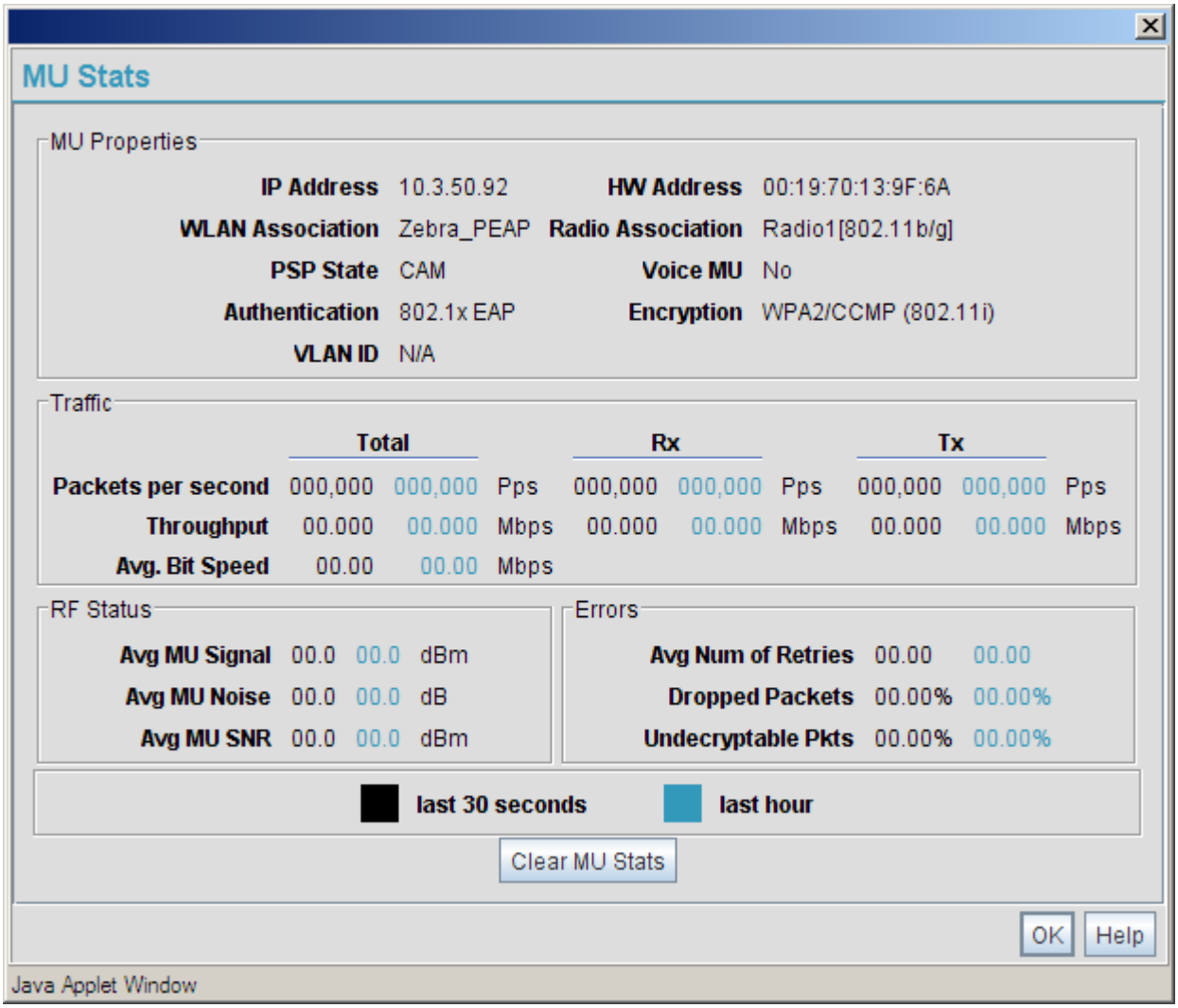
The next screenshots show how the Symbol / Motorola Access Point was set for **WPA-PEAP.** The access point is configured with a new security policy. In this example the security policy that was created for wpa-peap was “Zebra_WPA-PEAP”



I then assigned the ESSID (Zebra_PEAP) the ZEBRA_WPA-PEAP policy.



Below is an example of what the Symbol / Motorola Access point shows for a successful WPA-PEAP authentication.


MU Stats
MU Properties
IP Address 10.3.50.92
HW Address 00:19:70:13:9F:6A
WLAN Association Zebra_PEAP
Radio Association Radio1[802.11b/g]
PSP State CAM
Voice MU No
Authentication 802.1x EAP
Encryption WPA2/CCMP (802.11i)
VLAN ID N/A
Traffic
Total
Rx
Tx
Packets per second 000,000 000,000 Pps 000,000 000,000 Pps 000,000 000,000 Pps
Throughput 00.000 00.000 Mbps 00.000 00.000 Mbps 00.000 00.000 Mbps
Avg. Bit Speed 00.00 00.00 Mbps
RF Status
Avg MU Signal 00.0 00.0 dBm
Avg MU Noise 00.0 00.0 dB
Avg MU SNR 00.0 00.0 dBm
Errors
Avg Num of Retries 00.00 00.00
Dropped Packets 00.00% 00.00%
Undecryptable Pkts 00.00% 00.00%
last 30 seconds
last hour
Clear MU Stats
OK
Help
Java Applet Window

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

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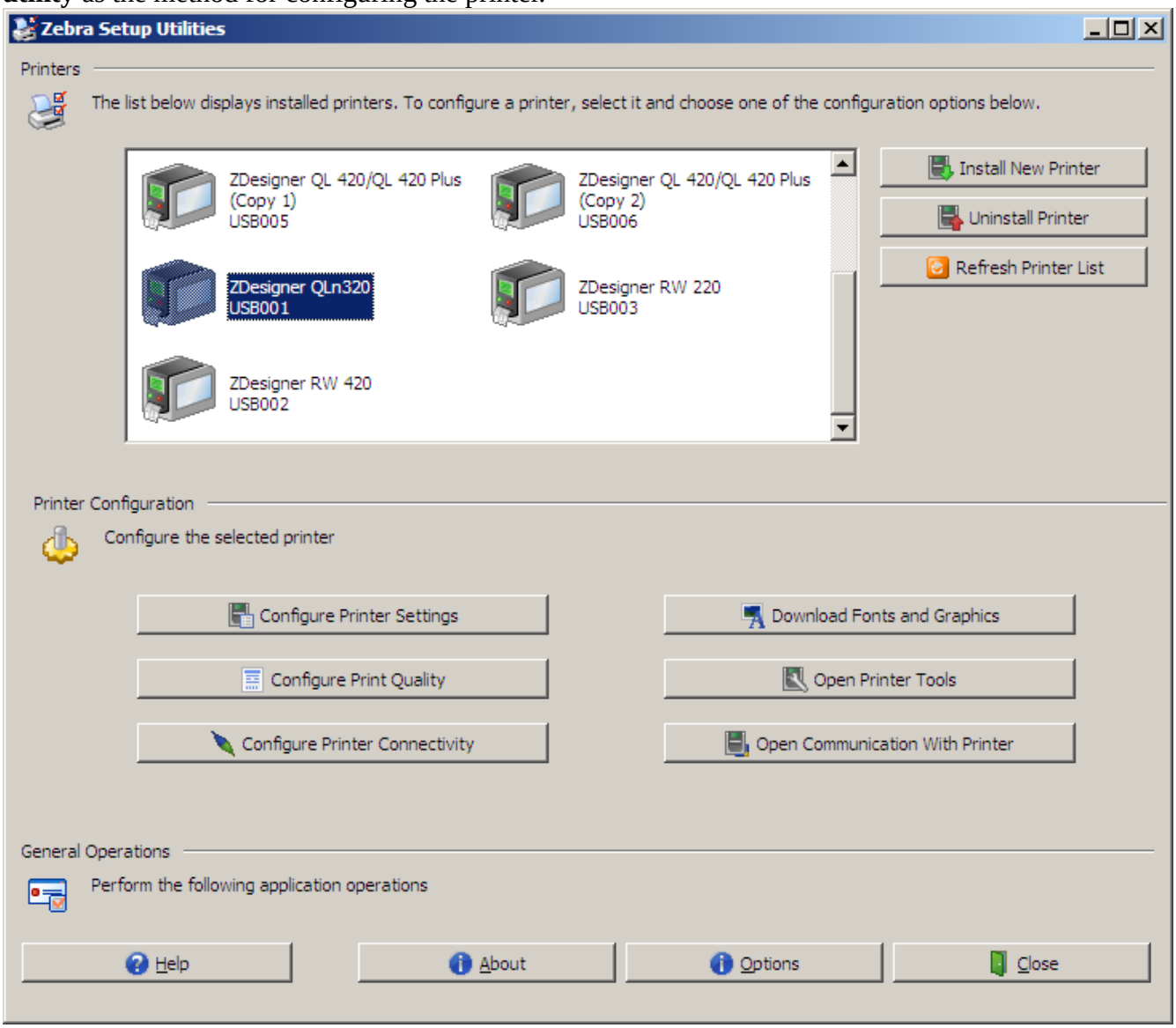
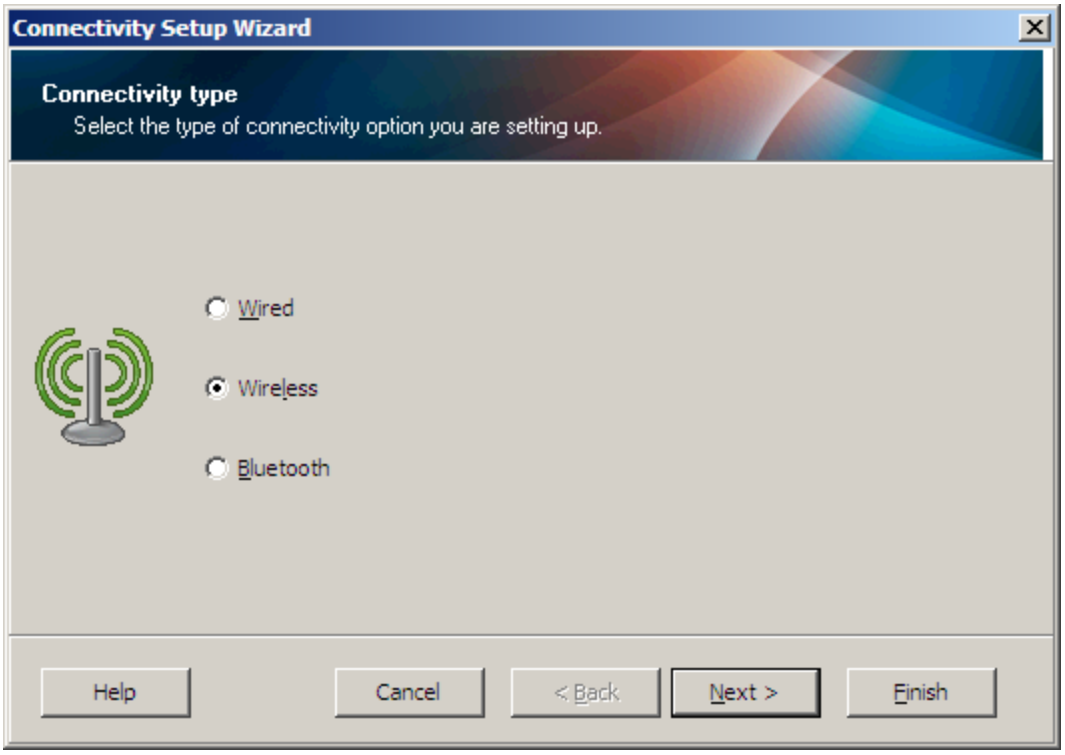
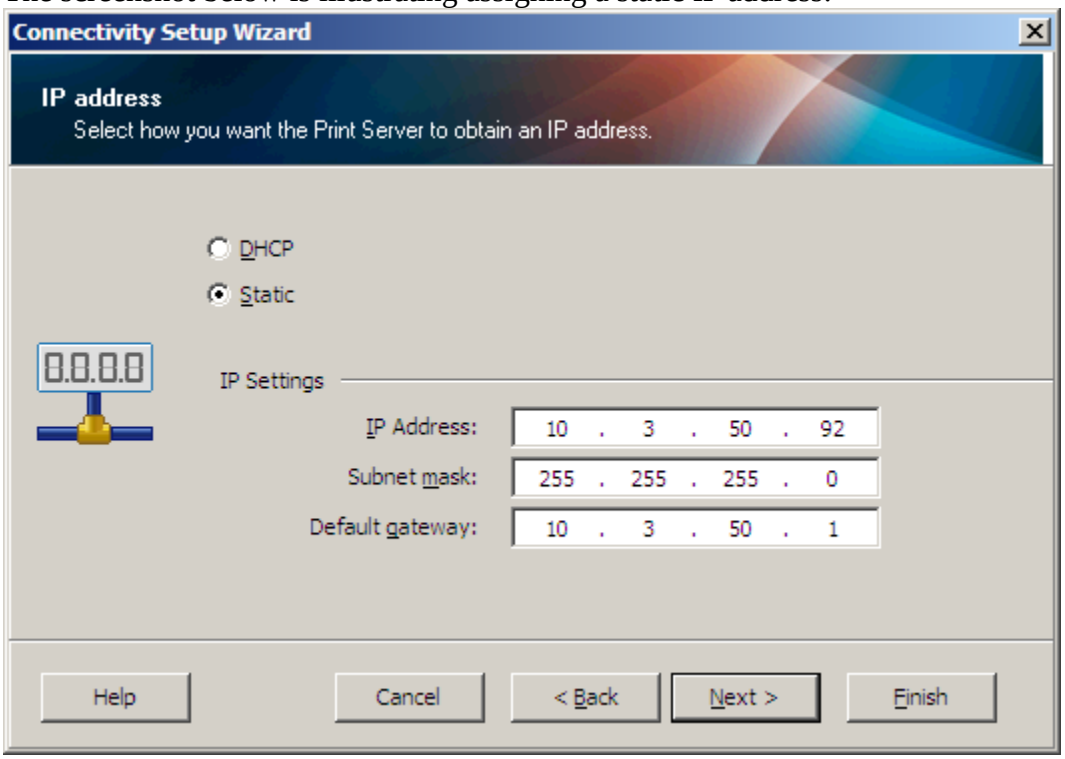


Click on Configure Printer Connectivity

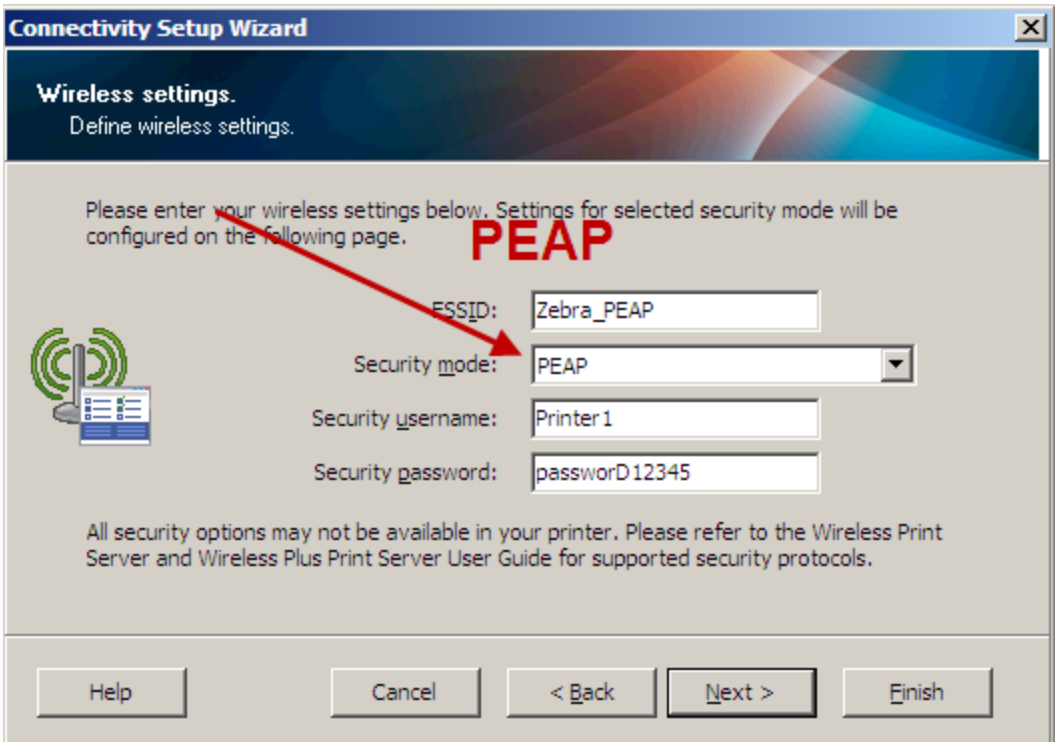


Choose Wireless

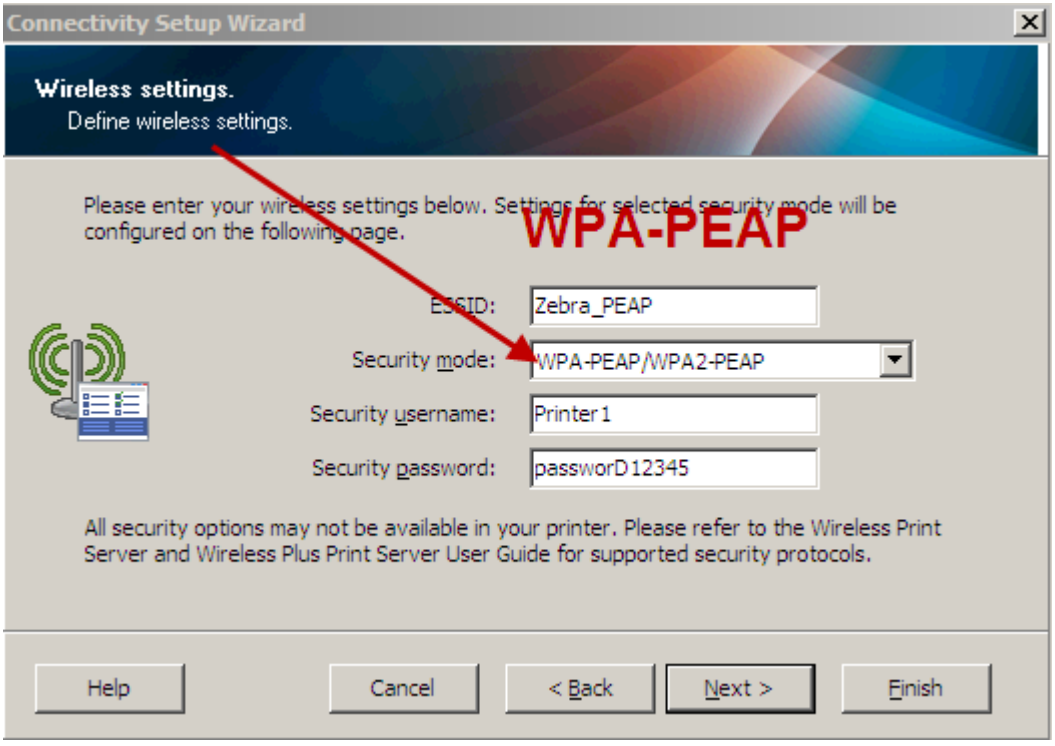
The screenshot below is illustrating assigning a static IP address.

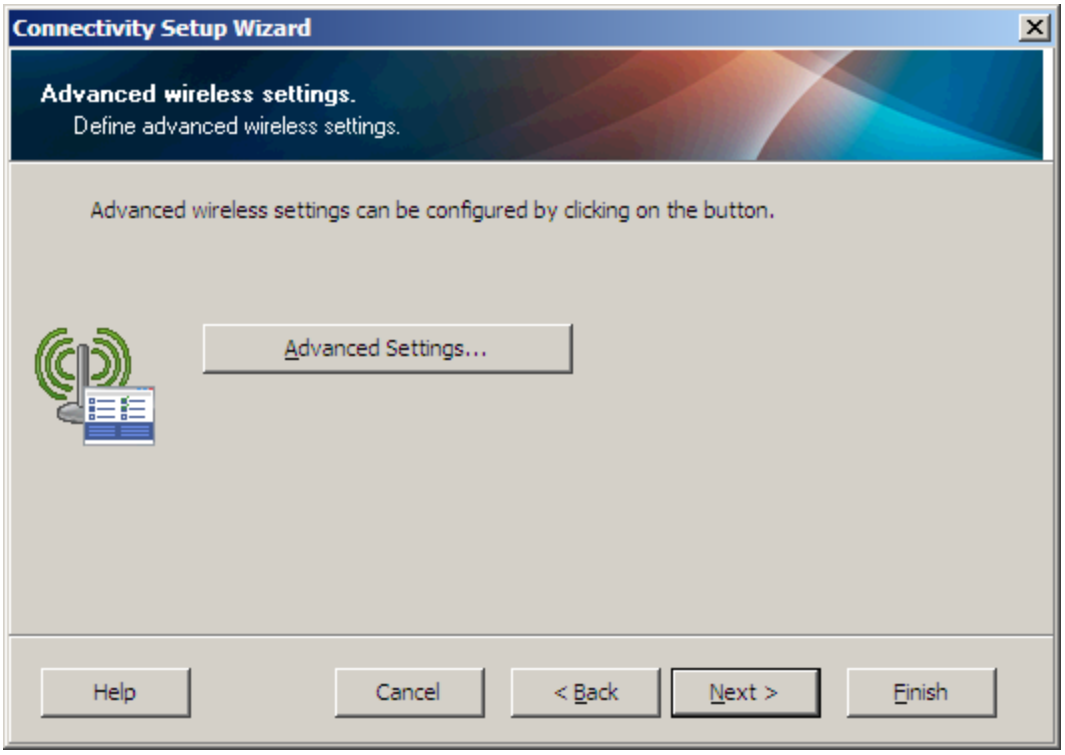


The screenshot below shows a 802.1x PEAP connection

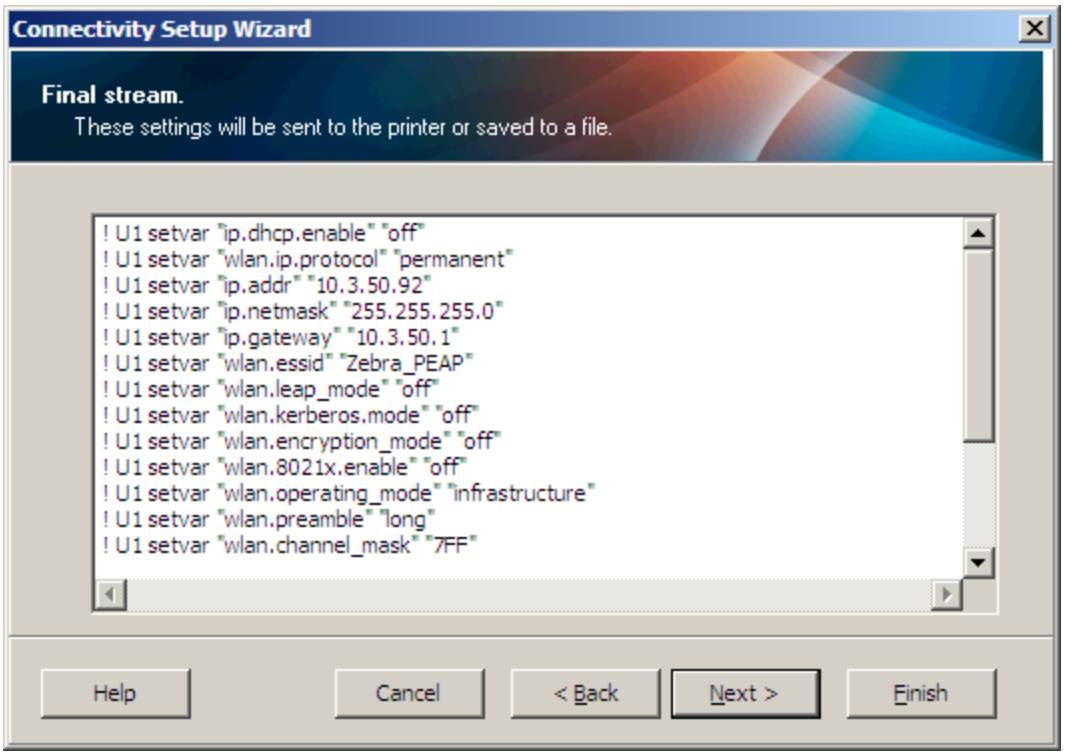


The screenshot below shows a WPA-PEAP connection

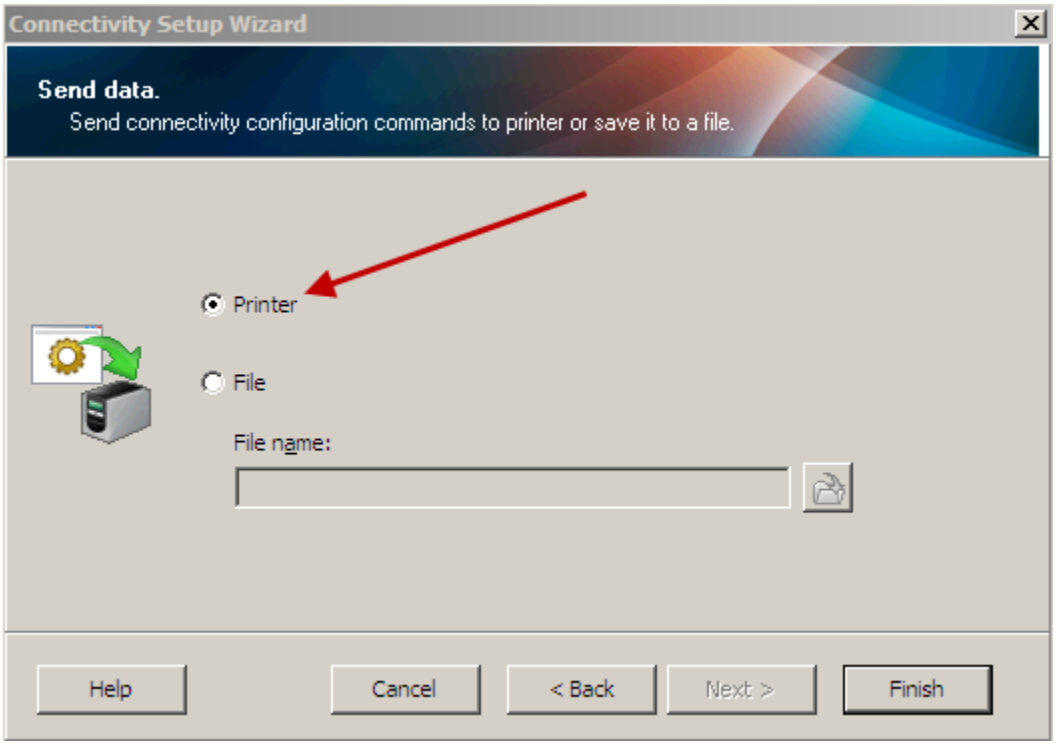




Choose NEXT



Choose NEXT



Choose Printer then FINISH

The wireless setup commands will be sent directly to the printer and the printer will reboot.