

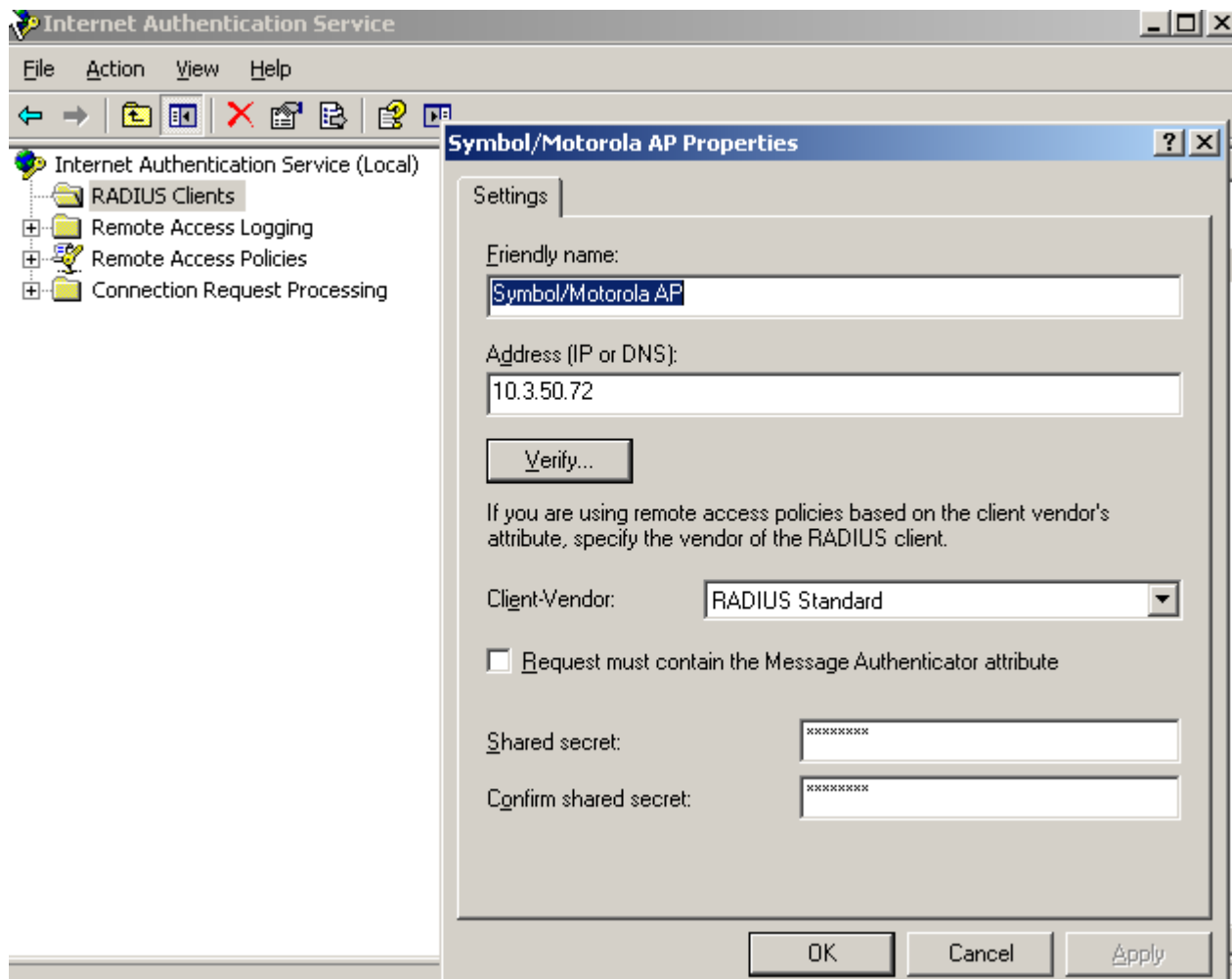
Zebra Setup Utility, Zebra Mobile Printer, IAS, Symbol / Motorola Access point, PEAP and WPA-PEAP

This section of the document illustrates the Microsoft Internet Authentication Service and how PEAP and WPA-PEAP was configured on this server.

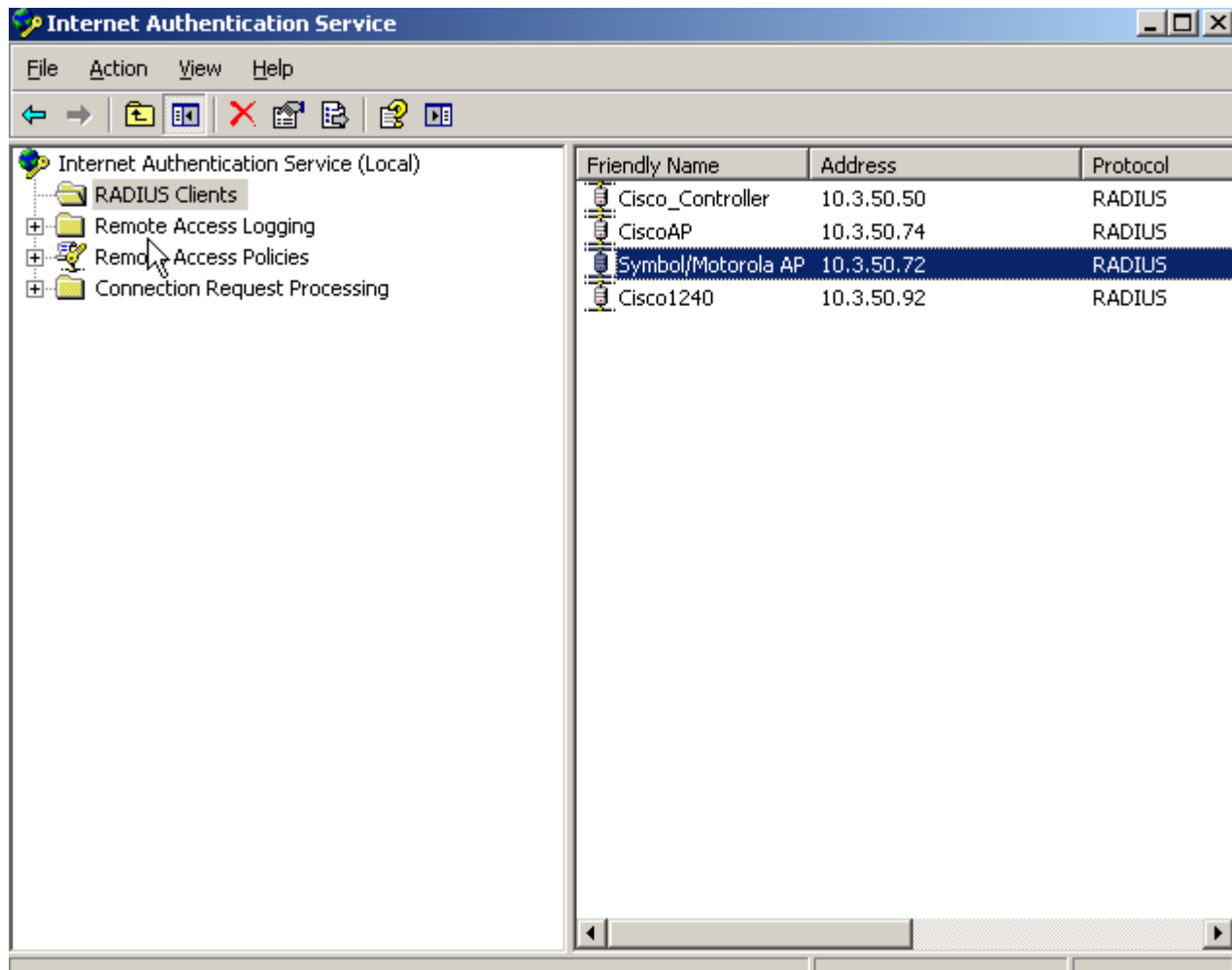
This document is meant as an illustration only. Questions on the setup of IAS should be directed to Microsoft. It should be Microsoft that is used to determine if the illustration below is appropriate for your environment.

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

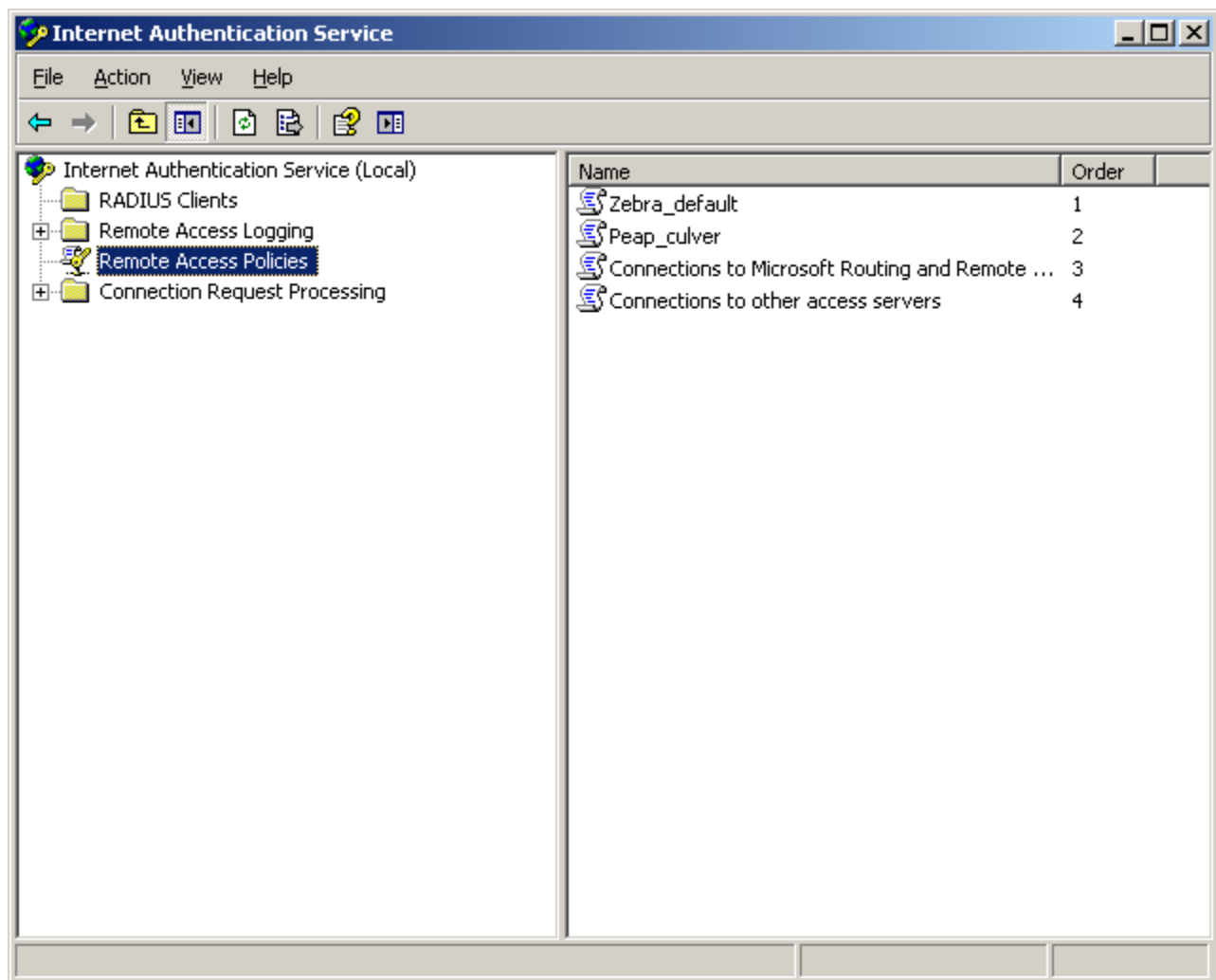
The first series of screenshots shows how a Radius client is added to IAS. In the screenshot below a Symbol / Motorola Access Point with the IP address of 10.3.50.72 is added. The IAS server needs to have a client in the clients table to ensure that authentication requests are only being received from valid clients.

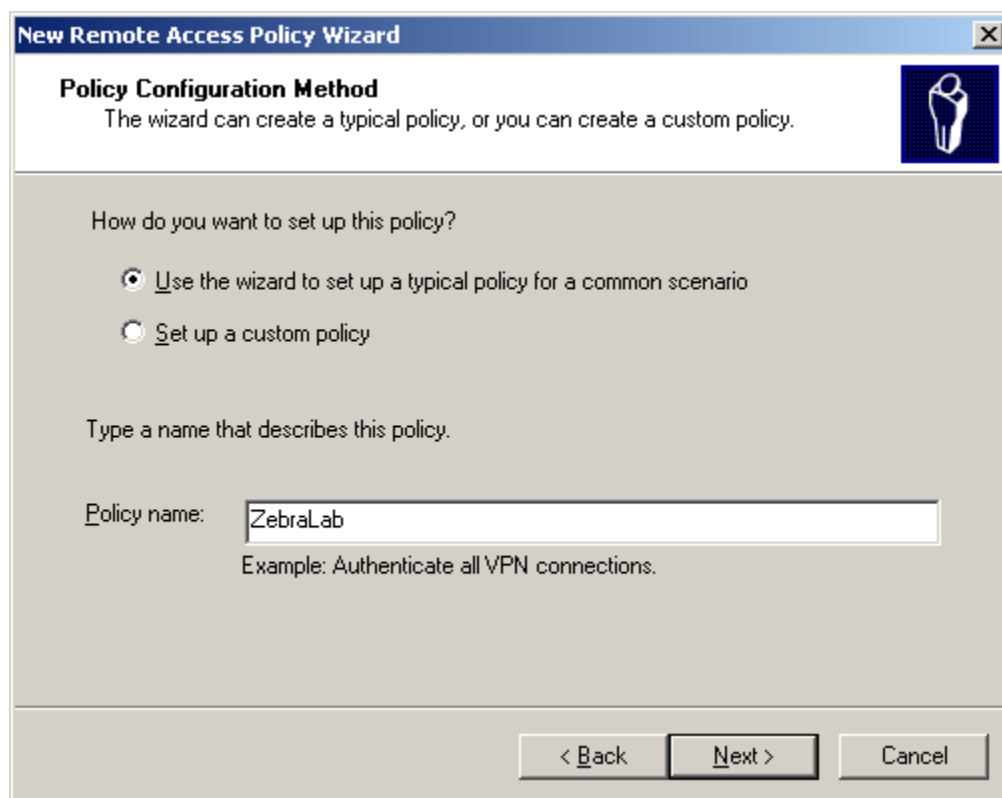
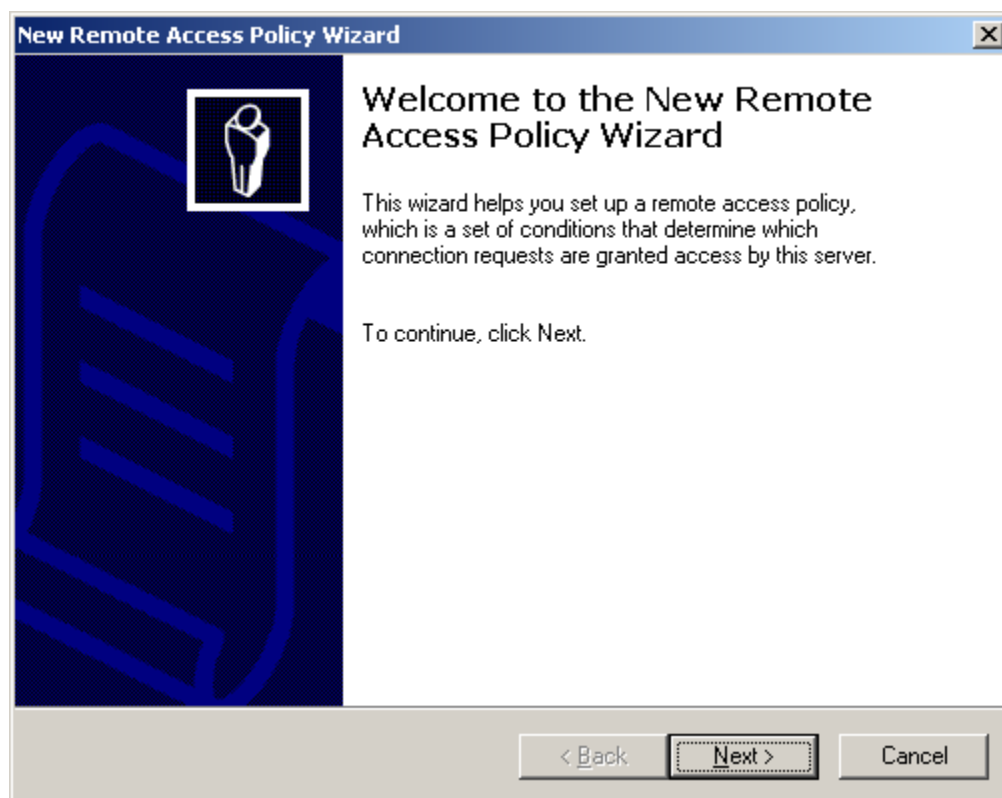


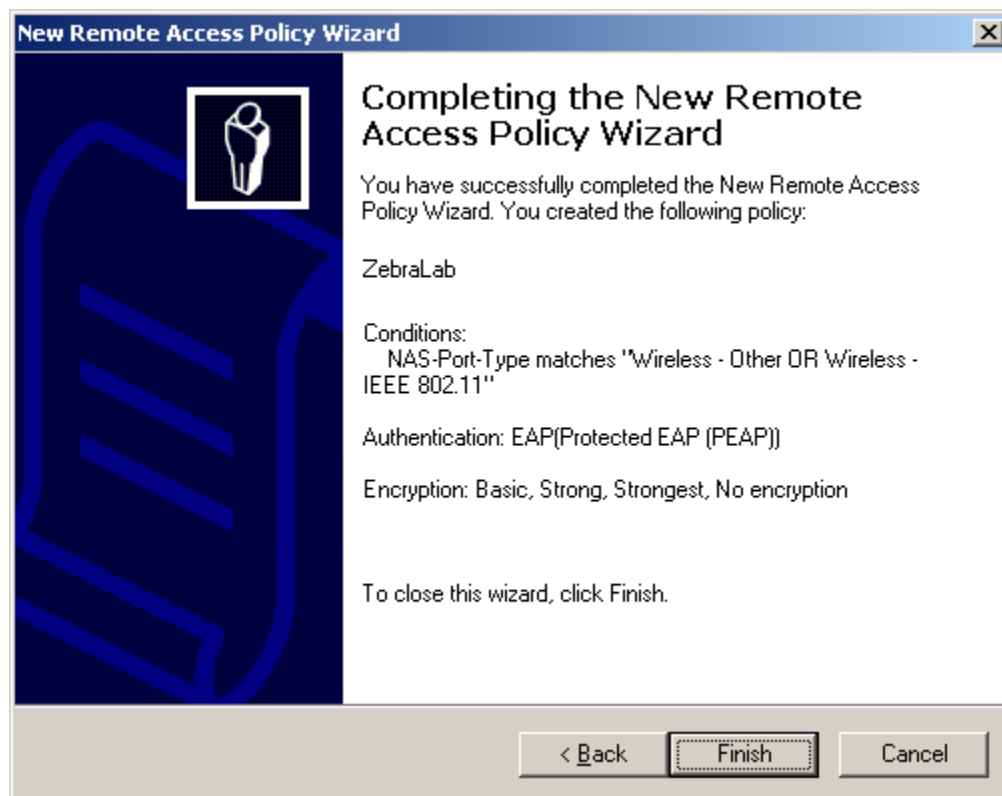
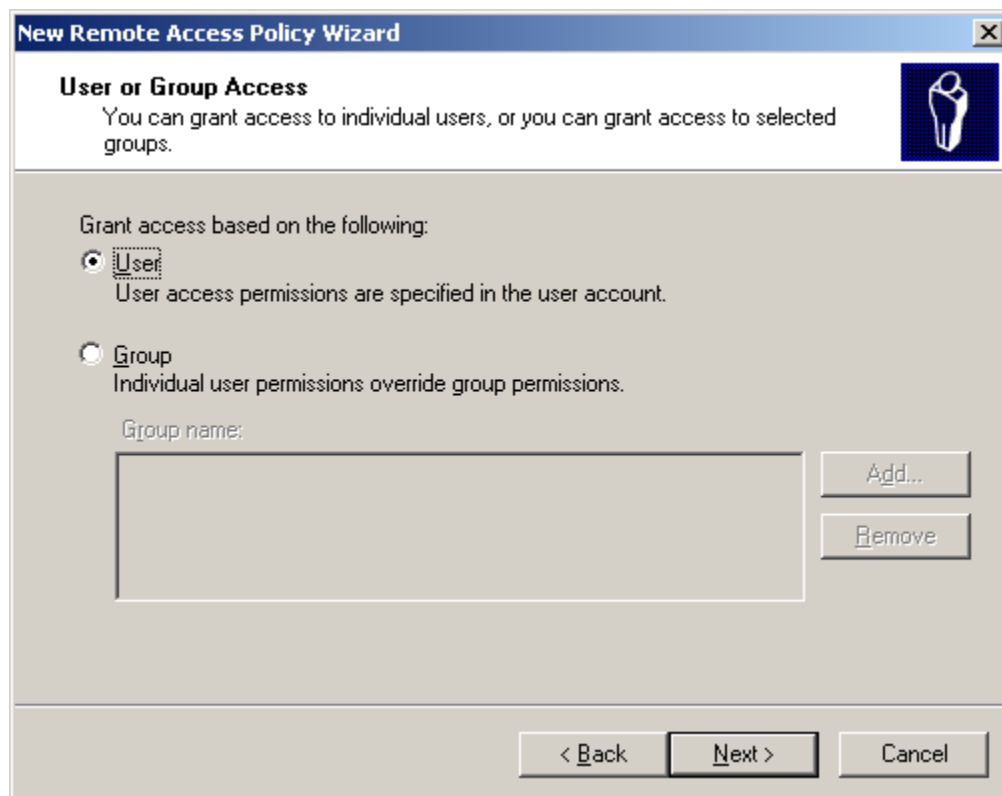
A secret key is entered on the IAS server. This secret key needs to match the secret key on the radius client (in this example the Symbol/Motorola AP).

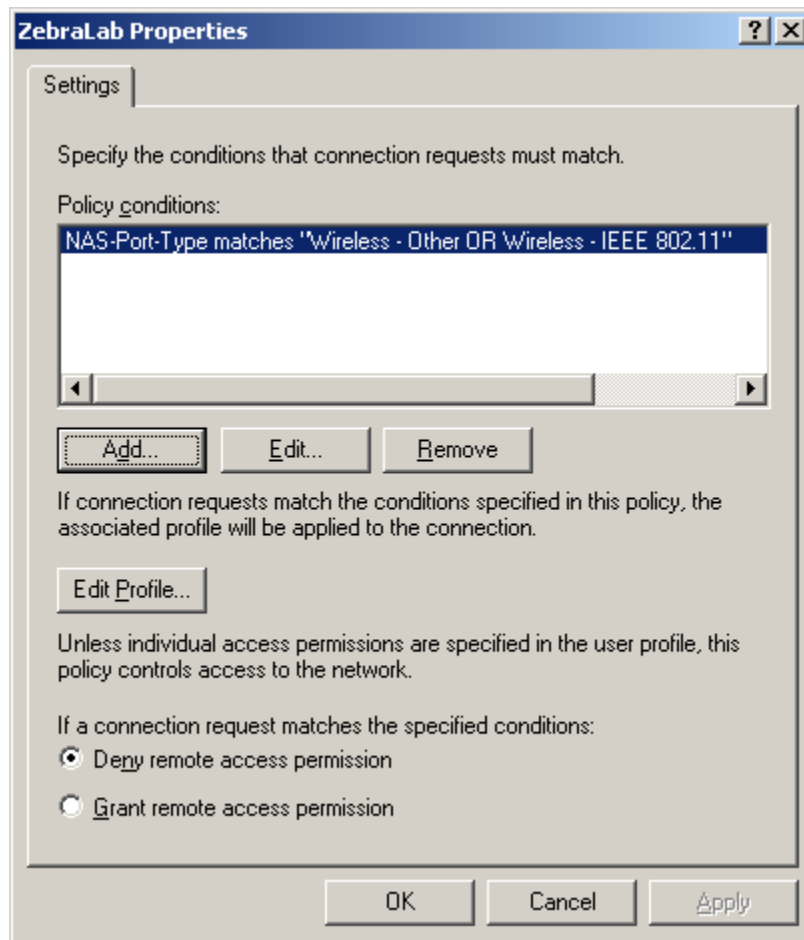


A Remote access policy is included in the IAS server. The following screenshots illustrate how a remote policy is added.

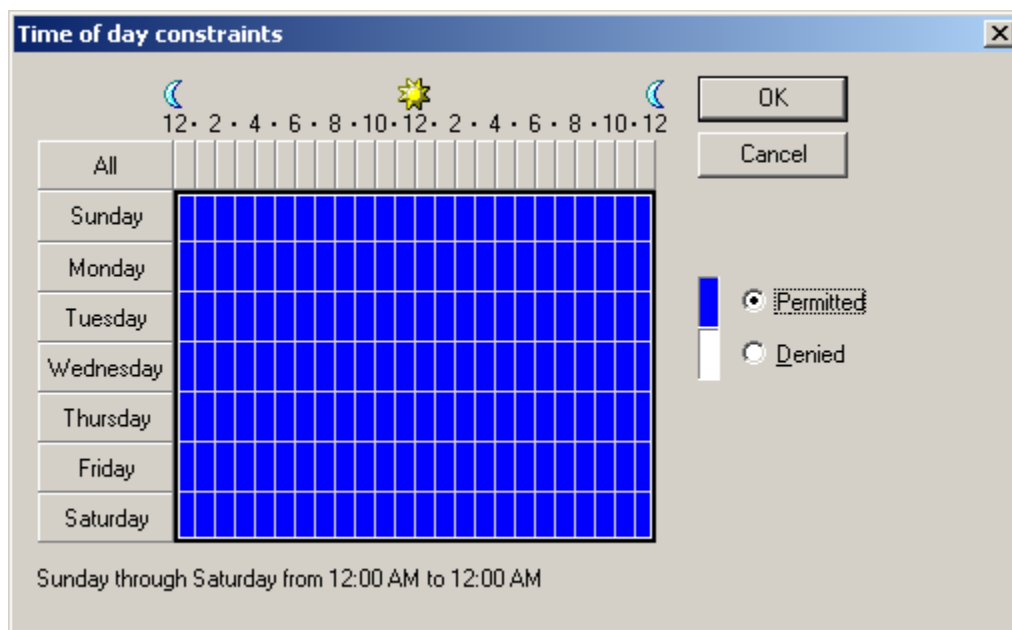
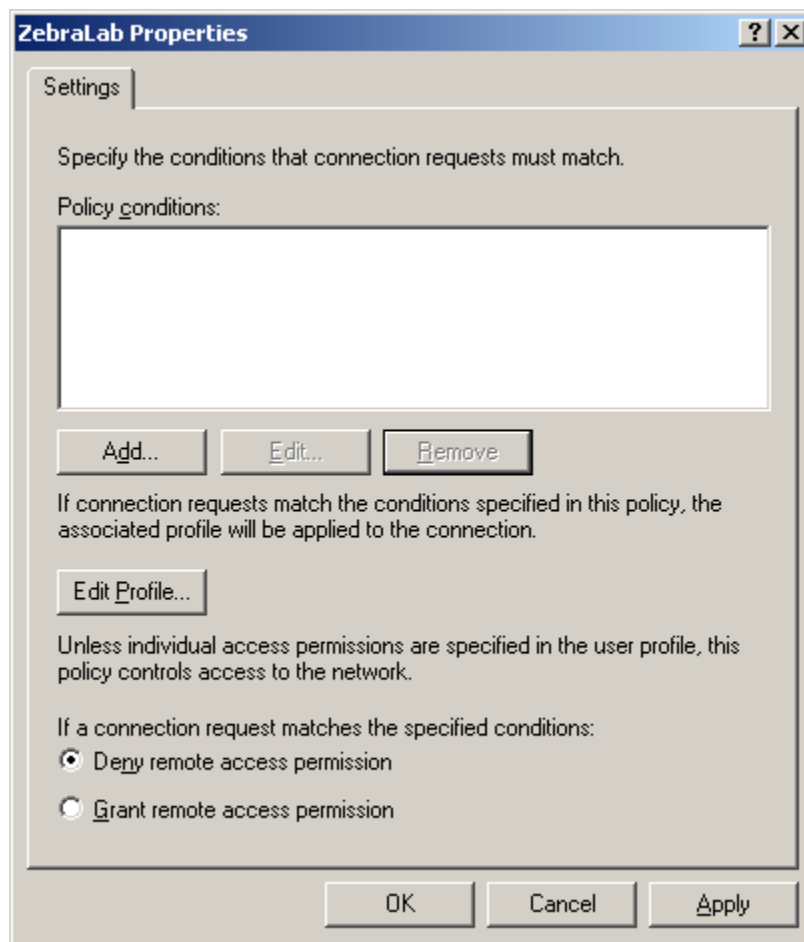


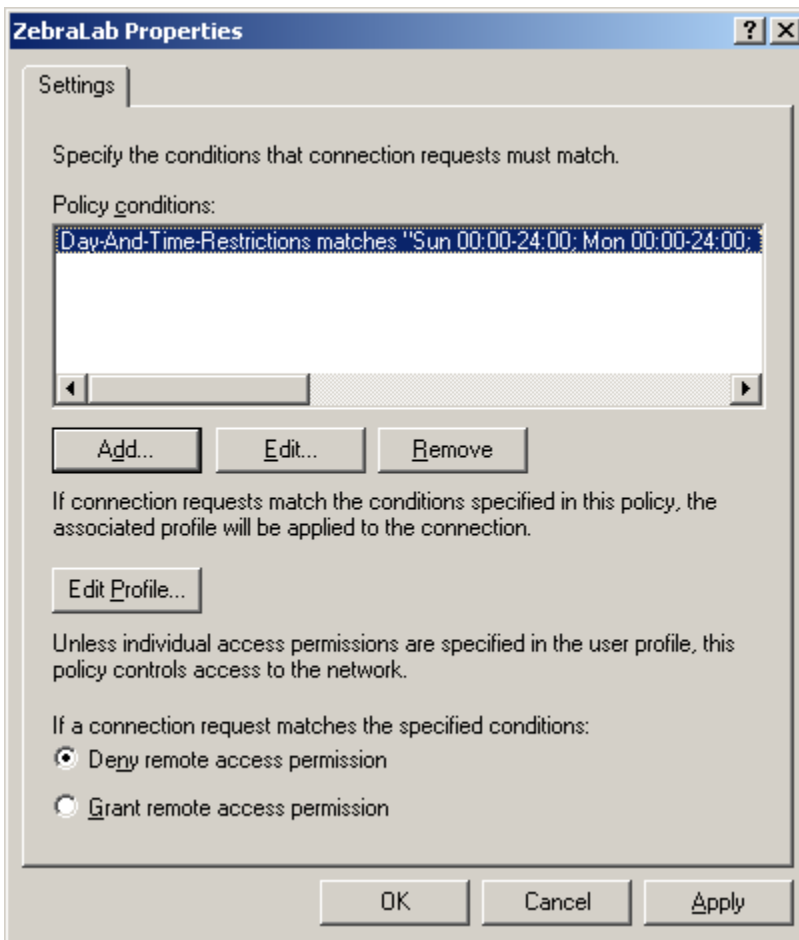


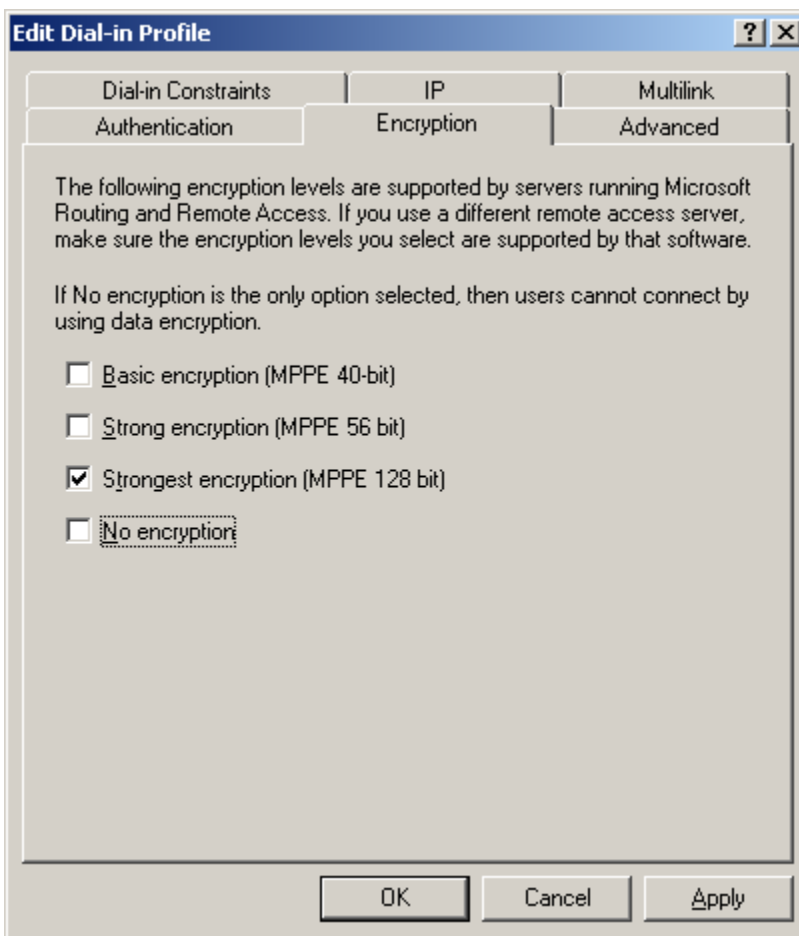


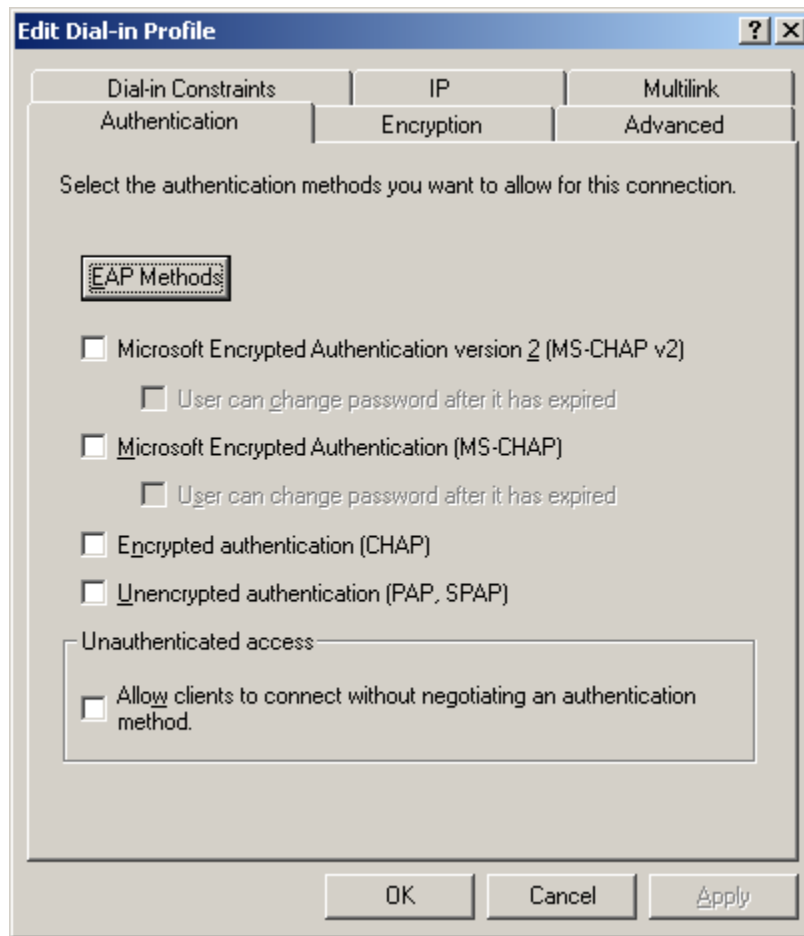


In the next few screenshots I have illustrated how a policy can be added.

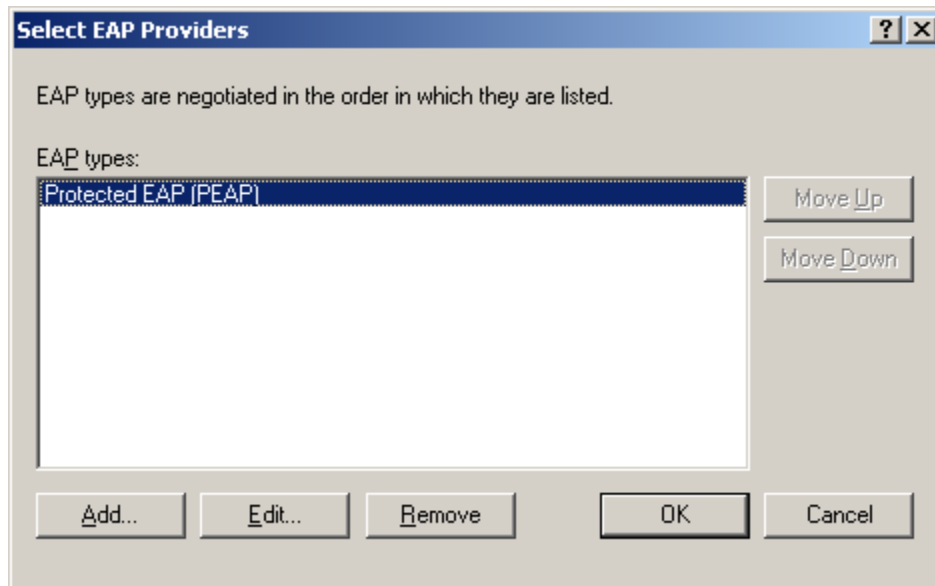


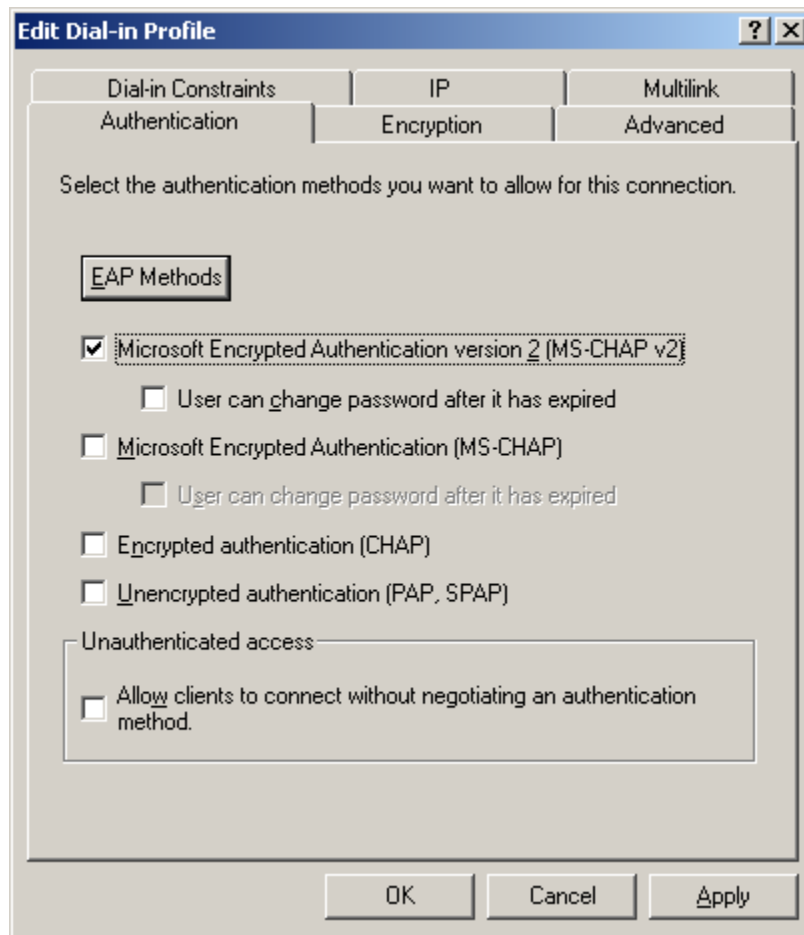
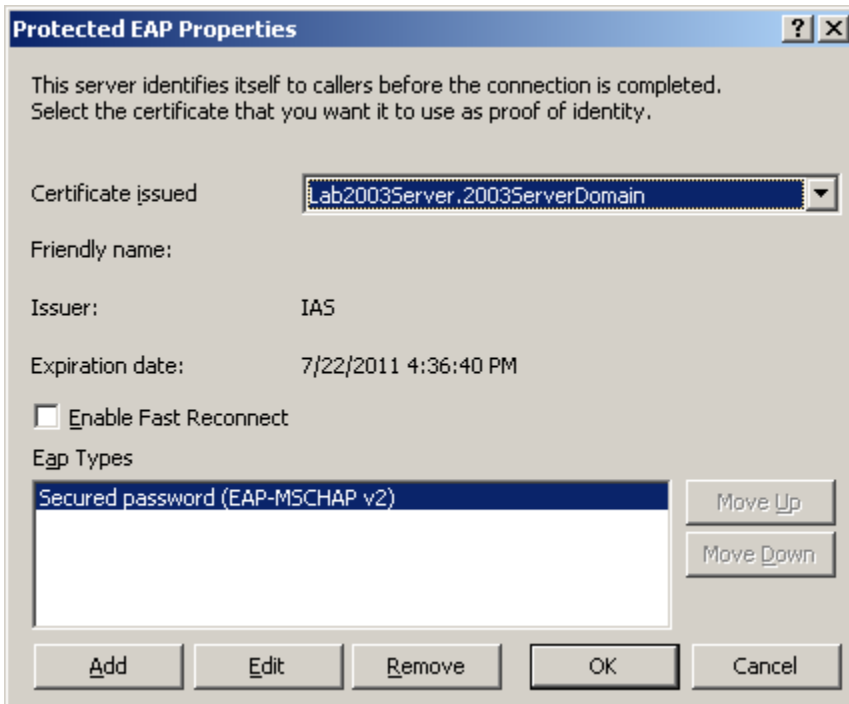




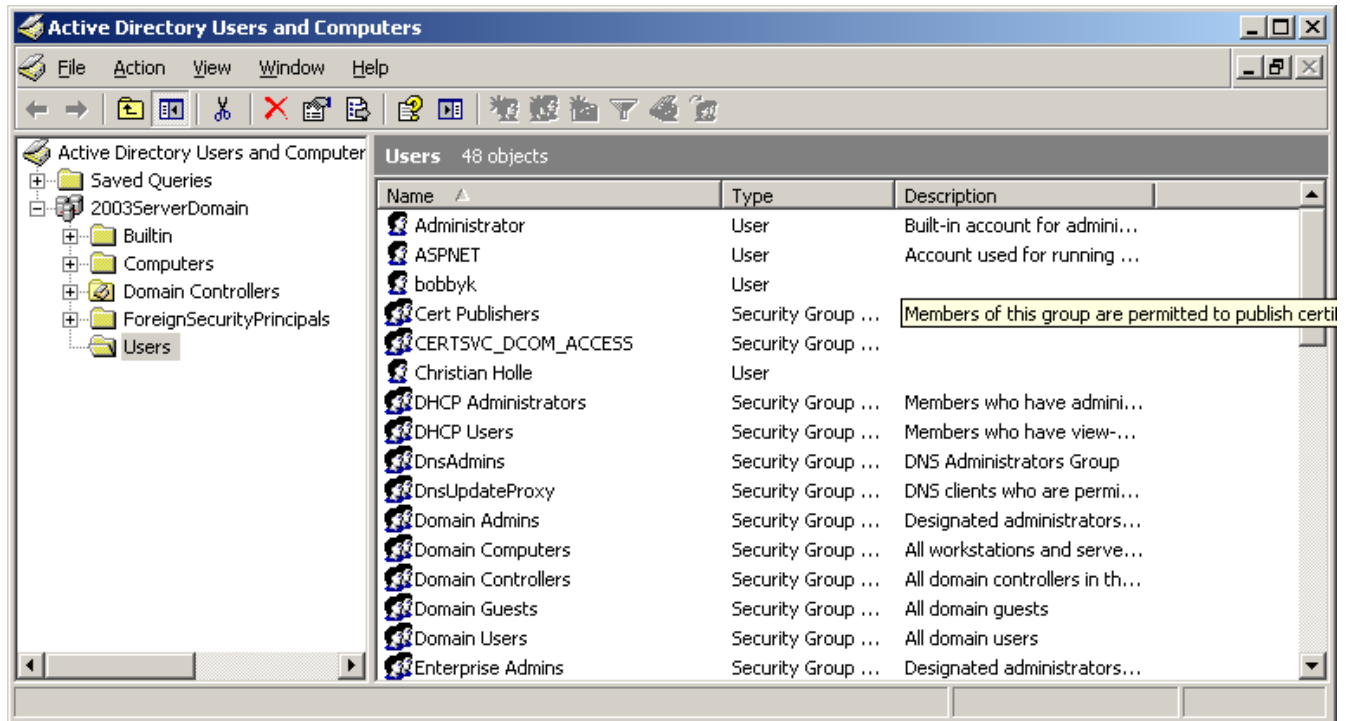


The example that is provided illustrates PEAP and MSCHAP v2






The next series of screenshots shows how one is able to add a user in the active directory. The username and password that is added in the active directory is the same username and password that is added on the printer.



New Object - User [X]

 Create in: 2003ServerDomain/Users

First name: Initials:

Last name:

Full name:


User logon name:

@2003ServerDomain [v]

User logon name (pre-Windows 2000):

< Back Next > Cancel

New Object - User [X]

 Create in: 2003ServerDomain/Users

Password:

Confirm password:

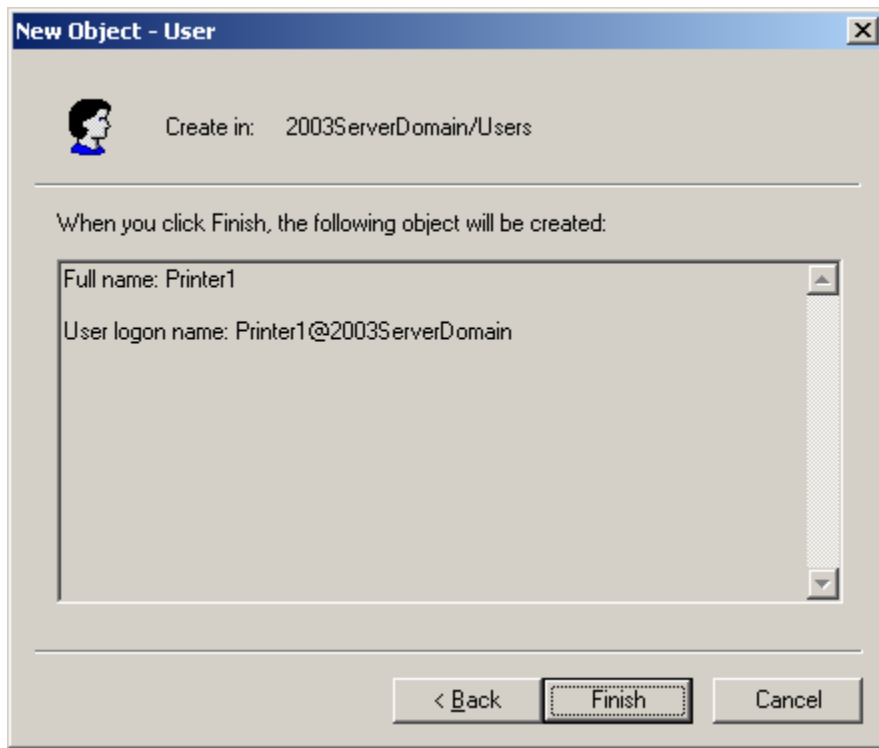
User must change password at next logon

User cannot change password

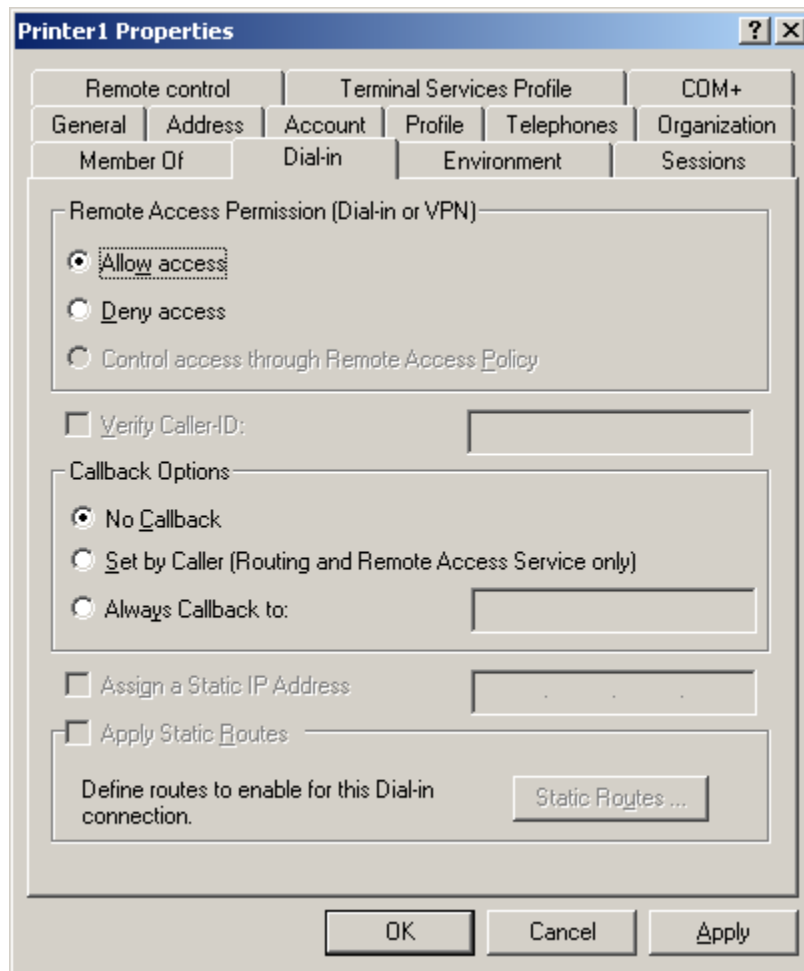
Password never expires

Account is disabled

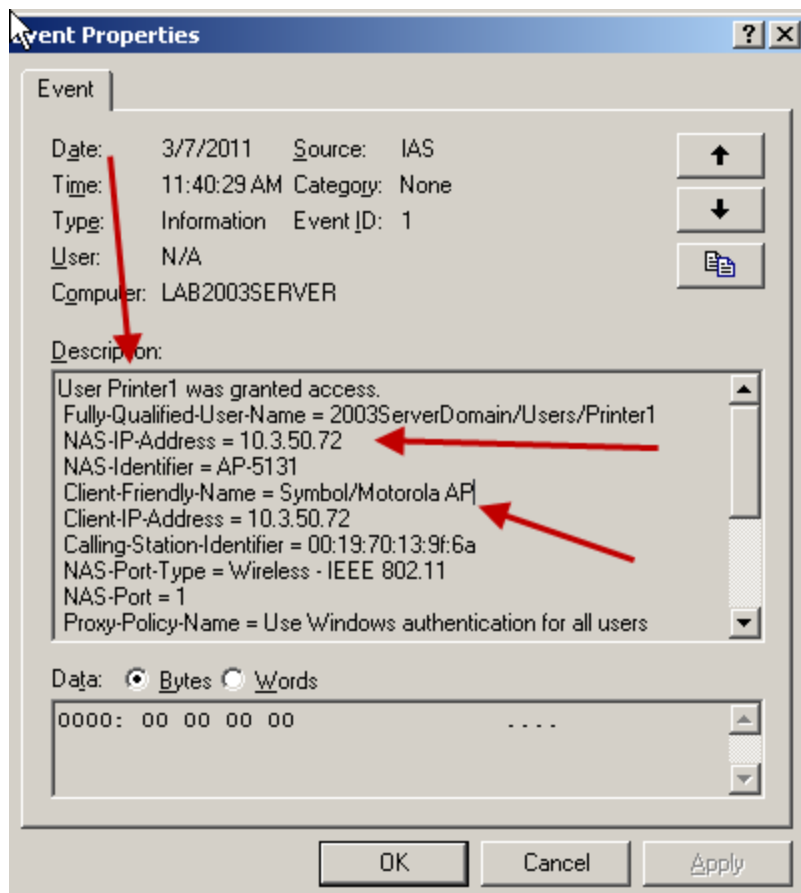
< Back Next > Cancel

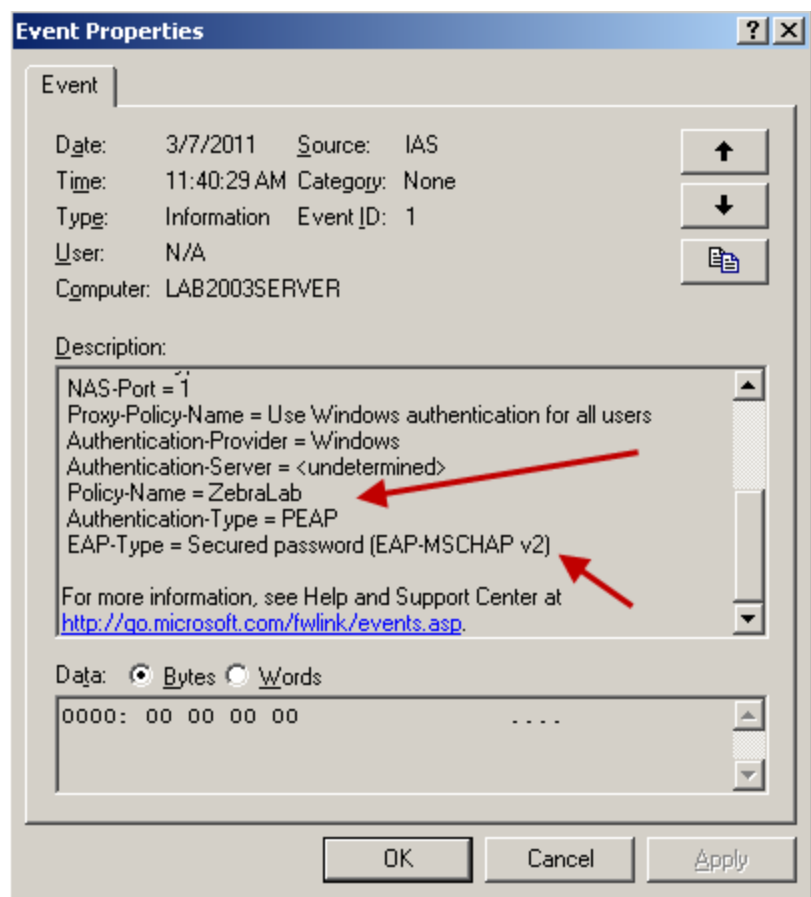


The following screenshot shows how the properties of the user are modified to grant dial-in permission.



The Event Viewer on the IAS server can be used for troubleshooting purposes. In the screenshots below the event viewer is showing a successful authentication.





This section of the document illustrates a **Symbol / Motorola Access Point**

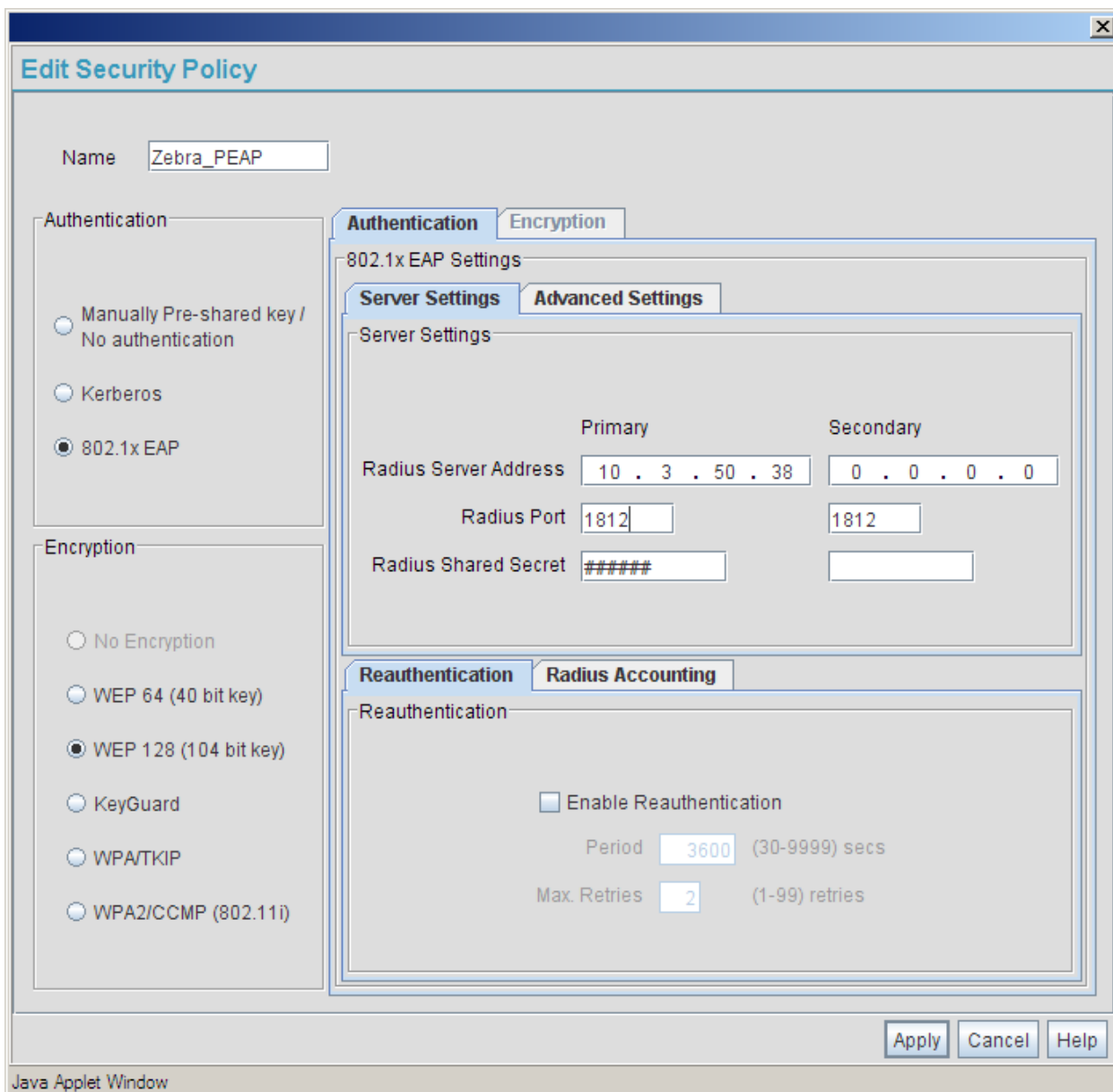
This document is meant as an illustration only. Questions on the setup of your Symbol / Motorola Access Point should be directed to Motorola. It should be Motorola that is used to determine if the illustration below is appropriate for your environment

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 10.3.50.38 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 ESSIDs are case sensitive. In this illustration, I have assigned the security policy that I have entered previously (Zebra_PEAP)

New WLAN

Configuration

ESSID

Name

Available On 802.11 a Radio

802.11 b/g Radio

Maximum MUs

Security

Security Policy

MU Access Control

Kerberos User Name

Kerberos Password

Advanced

Disallow MU To MU Communication

Use Secure Beacon

Accept Broadcast ESSID

Quality Of Service Policy

Java Applet Window

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
Throughput	00.000	00.000	Mbps	00.000	00.000	Mbps	00.000	00.000
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%

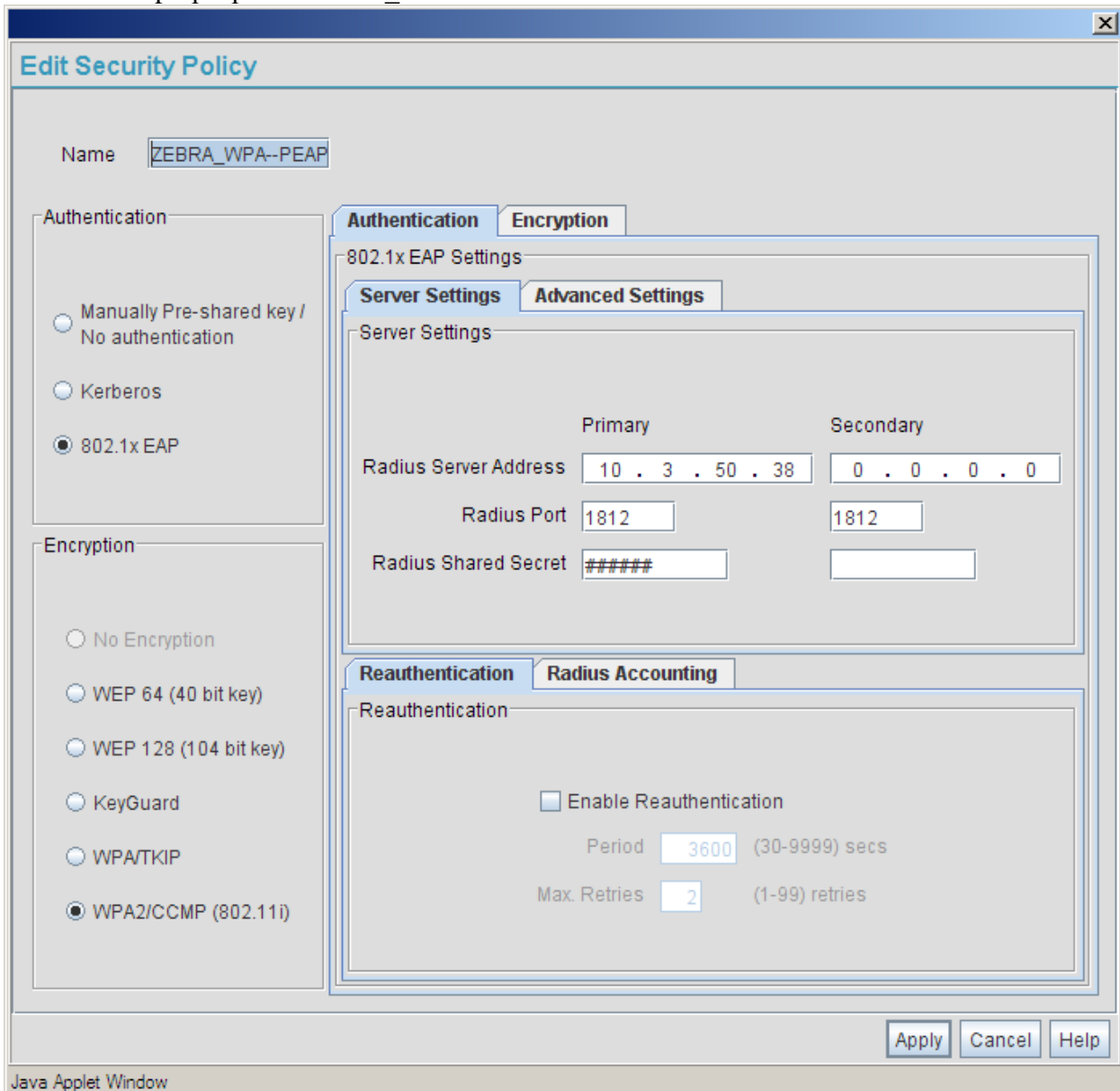
last 30 seconds
 last hour

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.

The image shows a Java Applet window titled "Edit WLAN" with a close button in the top right corner. The window is divided into three main sections: Configuration, Security, and Advanced.

Configuration:

- ESSID: Zebra_PEAP
- Name: Zebra_PEAP
- Available On: 802.11a Radio, 802.11b/g Radio
- Maximum MUs: 127

Security:

- Security Policy: ZEBRA_WPA--PEAP (dropdown menu) with a "Create" button
- MU Access Control: Default (dropdown menu) with a "Create" button
- Kerberos User Name: Zebra_PEAP
- Kerberos Password: (empty text field)

Advanced:

- Disallow MU To MU Communication
- Use Secure Beacon
- Accept Broadcast ESSID
- Quality Of Service Policy: Default (dropdown menu) with a "Create" button

At the bottom of the window are three buttons: "Apply", "Cancel", and "Help". The text "Java Applet Window" is visible at the very bottom left of the window frame.

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

	<u>Total</u>			<u>Rx</u>			<u>Tx</u>		
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

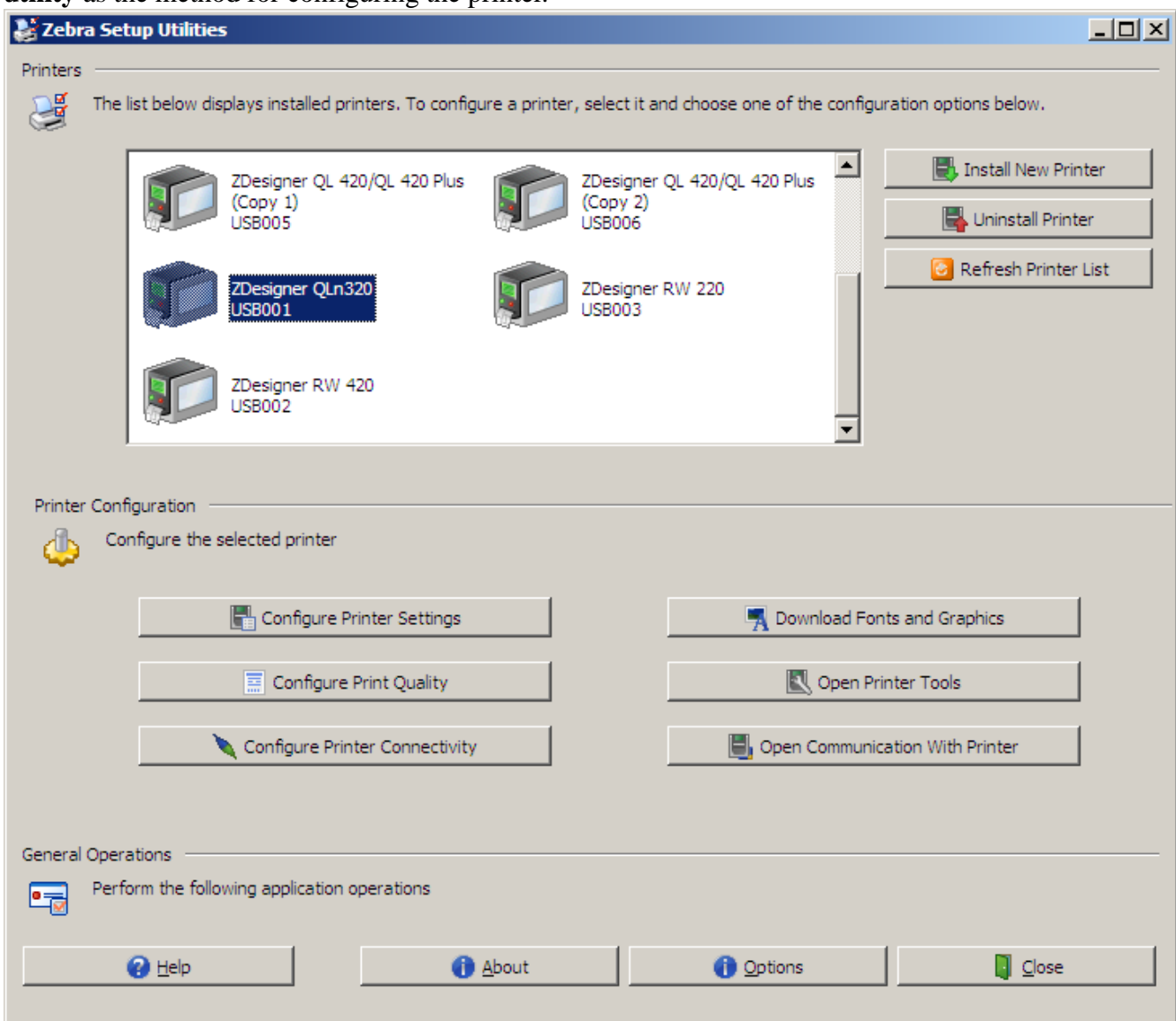
Clear MU Stats

OK

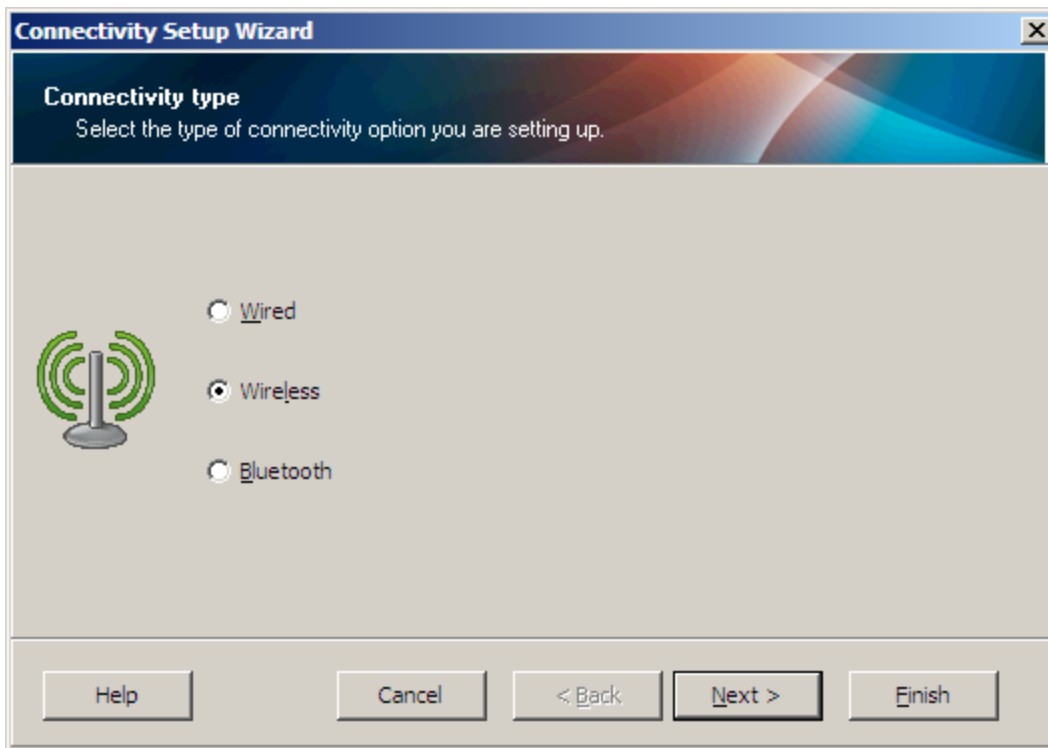
Help

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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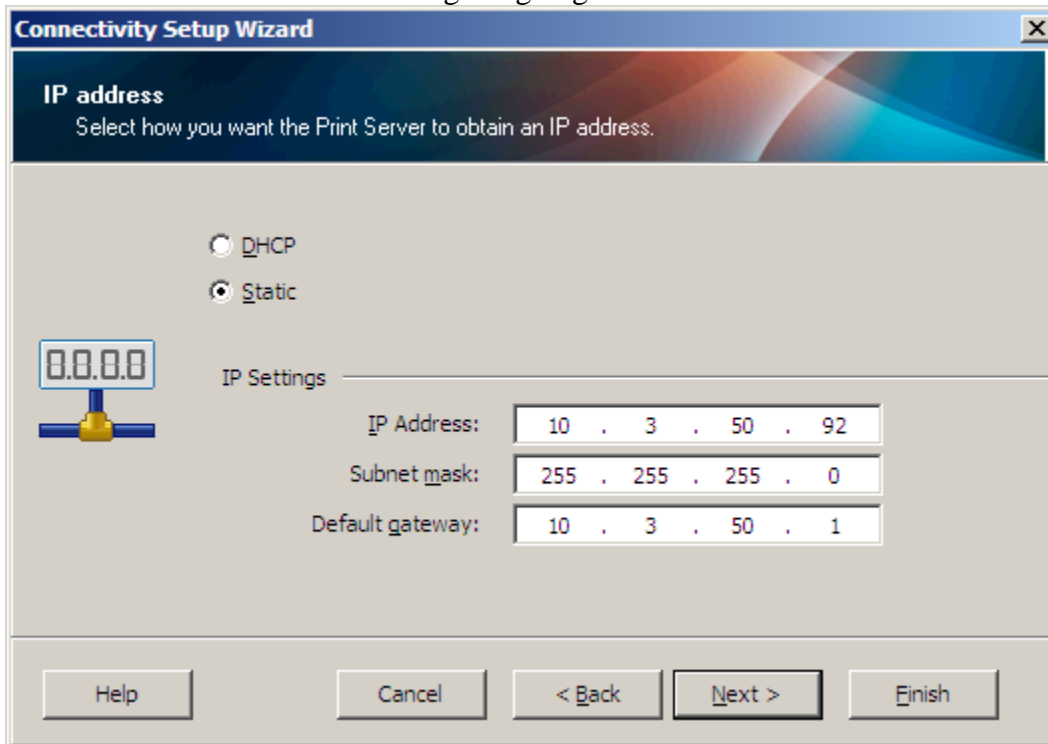


Click on Configure Printer Connectivity



Choose Wireless

The screenshot below is illustrating assigning a static IP address.



The screenshot below shows a 802.1x PEAP connection

Connectivity Setup Wizard [X]

Wireless settings.
Define wireless settings.

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

PEAP

ESSID:

Security mode:

Security username:

Security password:

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 a WPA-PEAP connection

Connectivity Setup Wizard [X]

Wireless settings.
Define wireless settings.

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

WPA-PEAP

ESSID:

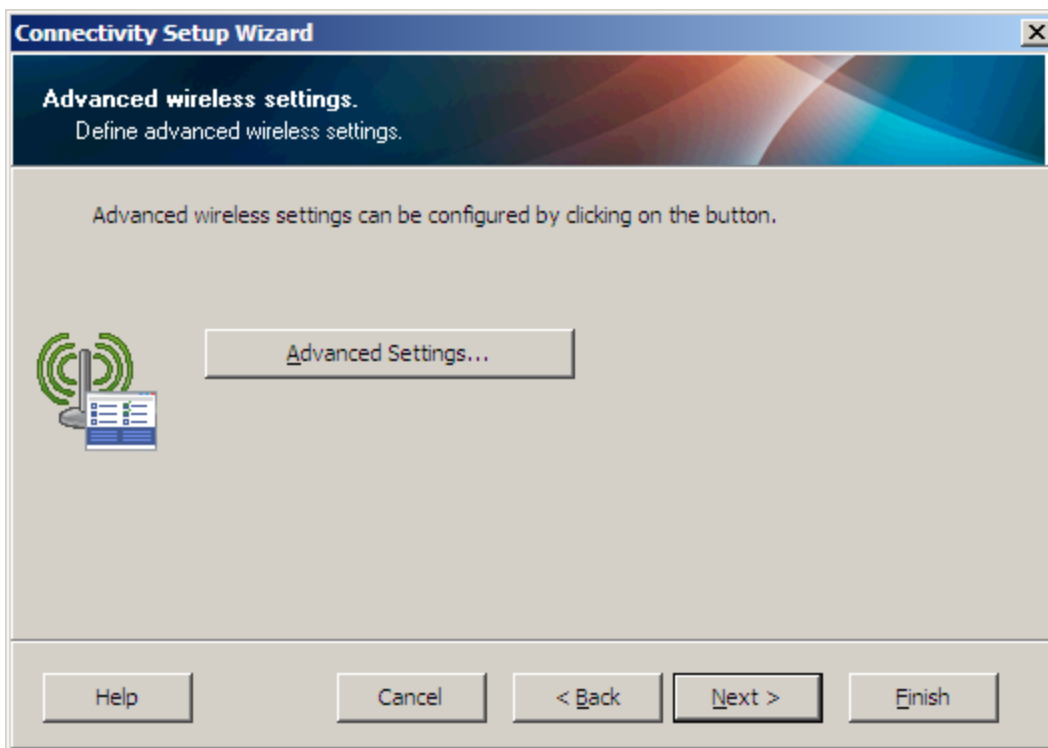
Security mode:

Security username:

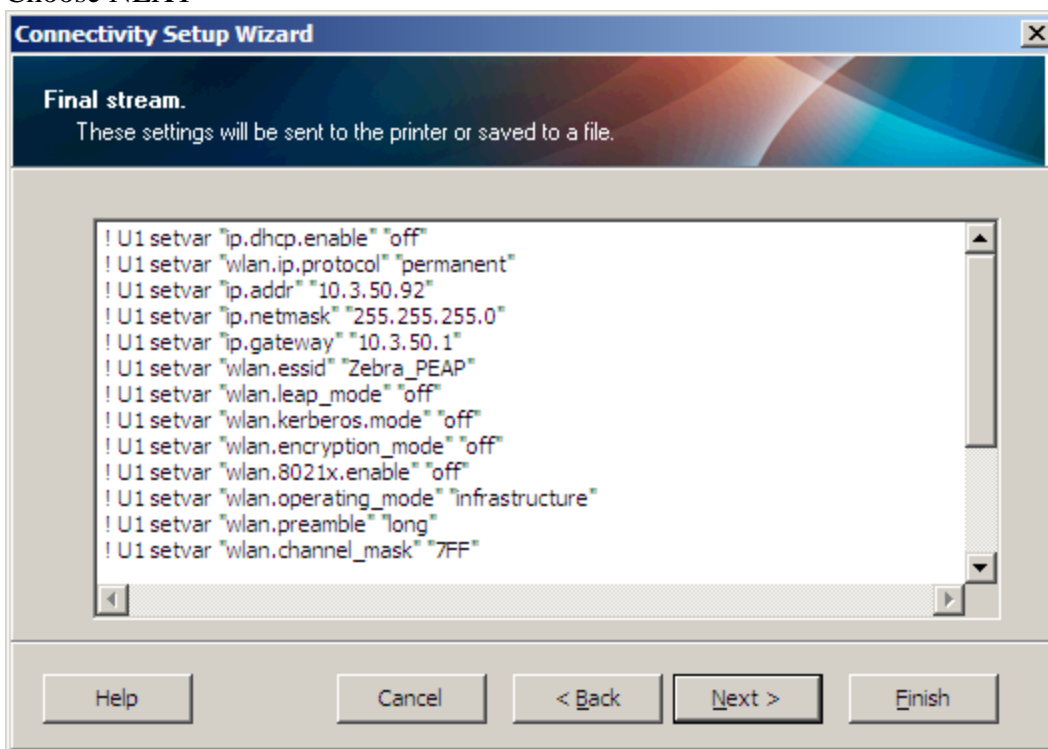
Security password:

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.

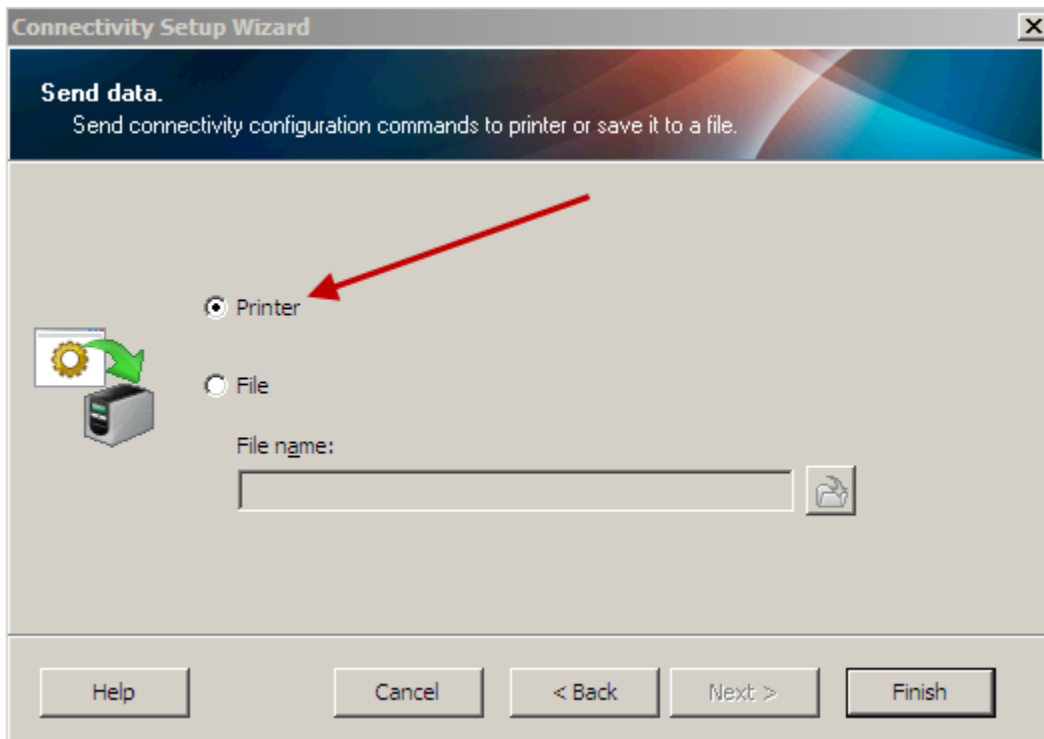
Help Cancel < Back Next > Finish



Choose NEXT



Choose NEXT



Choose Printer then FINISH

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