Wireless Data Privacy Guide

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HP ProCurve Secure Access 700wl Series

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HP ProCurve

Secure Access 700wl Series

Wireless Data Privacy Guide

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Applicable Products

HP ProCurve Access Controller 720wl	(J8153A)
HP ProCurve Access Control Server 740wl	(J8154A)
HP ProCurve Integrated Access Manager 760wl	(J8155A)
HP ProCurve 700wl 10/100 Module	(J8156A)
HP ProCurve 700wl Gigabit-SX Module	(J8157A)
HP ProCurve 700wl Gigabit-LX Module	(J8158A)
HP ProCurve 700wl 10/100/1000Base-T	(J8159A)
HP ProCurve 700wl Acceleration Module	(J8160A)

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CONTENTS

PREFACE

This preface describes the audience, use, and organization of the *Wireless Data Privacy Guide.* It also outlines the document conventions, safety advisories, compliance information, related documentation, support information, and revision history.

Audience

The primary audience for this document are network administrators who want to enable their network users to communicate using the HP ProCurve Secure Access 700wl Series. This document is intended for authorized personnel who have previous experience working with network telecommunications systems or similar equipment. It is assumed that the personnel using this document have the appropriate background and knowledge to complete the procedures described in this document.

How To Use This Document

This document contains procedural information describing how to configure an HP ProCurve Integrated Access Manager, or an HP ProCurve Access Control Server to provide support for client connections via IPSec, PPTP (Point-to-Point Tunneling Protocol), and L2TP+IPsec (Layer 2 Tunnel Protocol over IPsec). It also describes how to configure the client system to use an IPsec, PPTP, or L2TP+IPsec client for its VPN connection.

Where applicable, navigation aids also refer you to supplemental information such as figures, tables, and other procedures in this document or another document. Main chapters are followed by supplemental information such as appendices and an index.

Document Conventions

The following text conventions are used in this document:

Table i-1. Text Conventions

Convention	Definition
Boldface Arial	Window menus that you click to select, commands that you select, or field names are in boldface Arial.
Boldface Italic Palatino	New terms that are introduced are in boldface italic Palatino.
Italic Palatino	Emphasized terms are in italic Palatino.

Table i-1. Text Conventions

Convention	Definition
`Courier`	Filenames and text that you type are in `Courier`.

The following notices and icons are used to alert you to important information.

Table i-2. Notices

Icon	Notice Type	Alerts you to...
None	Note	Helpful suggestions or information that is of special importance in certain situations.
None	Caution	Risk of loss of system functionality or loss of data.
⚠	Warning	Risk of personal injury, system damage, or irrecoverable loss of data.

Organization

This document is organized as follows:

Chapter 1 — Overview of Security Protocols

This chapter provides an overview of the security protocols that can be used with the 700wl Series system.

Chapter 2 — 700wl Series System Configuration

This chapter describes the configuration of the HP ProCurve Secure Access 700wl Series VPN and Wireless Data Privacy setup.

Chapter 3 — Client Configuration

This chapter describes client security configuration.

Chapter 4 — Scripts for L2TP/IPSec on Windows 2000 or XP

This chapter describes the use of scripts to setup L2TP/IPSec connections on Windows systems.

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OVERVIEW OF SECURITY PROTOCOLS

This chapter provides an overview of security protocols. It consists of the following sections:

Wireless Data Privacy in the 700wl Series System

The 700wl Series system is used to enhance the security and availability of client connections at the edge of the network. The connections can be made from both wired and wireless networks.

The client must be authenticated by the 700wl Series system before he/she can gain access to the network. The client connection can be secured through a Virtual Private Network (VPN) established between the client system and the 700wl Series system.

This document describes how to configure the HP Integrated Access Manager to provide support for client connections via IPSec, PPTP (Point-to-Point Tunneling Protocol), L2TP+IPSec (Layer 2 Tunnel Protocol over IPSec) and SSH. It also describes how to configure the client system to use an IPSec, PPTP, or L2TP+IPSec client for its VPN connection. The client configuration procedures are described based on Windows XP, Windows 2000, Windows Me, Windows 98, and Apple Mac OS.

The configuration procedures described in this document are also applicable for the system using a combination of an HP Access Control Server and Access Controller instead of an HP Integrated Access Manager.

IPSec

IPSec is a protocol suite that provides security services at the IP layer. IPSec enables a system to select required security protocols, determine the algorithm(s) to use for the service(s), and put in place any cryptographic keys required to provide the requested services.

IPSec can be used to protect communications between a pair of security gateways, or between a security gateway and a host. In a 700wl Series system, the Integrated Access Manager and Access Controller are used as the security gateway.

IPSec uses two protocols to provide traffic security: Authentication Header (AH) and Encapsulating Security Payload (ESP). See more details on these two protocols in RFCs 2402 and 2406, respectively (see "References" on page Ref-1).

The HP Integrated Access Manager and Access Controller only support IPSec ESP protocol. ESP completely encapsulates user data and provides optional authentication. Cryptographic keys or shared secret values are used for both authentication/integrity and encryption services. IPSec relies on a separate set of mechanisms for putting these keys in place; one of which uses the Internet Key Exchange (IKE) protocol. IKE is used between the client and the security gateway for negotiating what kind of IPSec attributes to use. The attributes are, for example, the encryption algorithm, the authentication algorithm, the key length, and so on. For technical details on ESP and IKE refer to RFC 2406, RFC 2407, RFC 2408, and RFC 2409 (see "References" on page Ref-1).

This document describes how to configure both the IPSec client and server. Three applications, namely SafeNet SoftRemote LT, PGPnet, and SSH Sentinel, are used as IPSec clients on Windows platforms. VPN Tracker is available for Mac OS X.

PPTP

Point-to-Point Tunneling Protocol (PPTP) is a network protocol used to secure Point-to-Point (PPP) connections by creating a Virtual Private Network (VPN), which tunnels traffic across a public TCP/IP network. The security of a VPN relies on the strength of authentication and encryption protocols used.

This document describes PPTP-based security only on the Microsoft implementation.

Authentication protocols used in Microsoft PPTP include the Microsoft Challenge/Reply Handshake Protocol (MS-CHAP) and its new version MS-CHAPv2.

The encryption protocol used in Microsoft PPTP is Microsoft Point to Point Encryption (MPPE). The minimum encryption key length for PPTP is 40 bits, and the maximum is 128 bits.

Configuration of both the PPTP client and server to use MS-CHAPv2 with the 128-bit encryption key length is described.

PPTP is available on all Windows platforms and on Apple's Mac OS.

L2TP over IPSec

Layer-2 Tunneling Protocol (L2TP) is an extension of PPP similar to PPTP described in the previous section. L2TP tunnels PPP traffic across a public network.

L2TP inherits the authentication, encryption, and compression control protocols from PPP. It also includes support for tunnel authentication, which can be used to mutually authenticate the tunnel endpoints. However, L2TP does not define tunnel protection mechanisms.

The IPSec protocol suite described in Section 2.1 can be used to protect the L2TP traffic over IP networks. The implementation of L2TP using IPSec is referred to as *L2TP over IPSec* (L2TP+IPSec). See more details in RFC 3193 (see "References" on page Ref-1). The 700wl Series system does not allow L2TP configuration without IPSec.

This document describes how to configure both the L2TP+IPSec client and server. L2TP+IPSec clients are available on all Windows platforms, including Windows Mobile™ 2003 software for Pocket PC.

IPSec vs. L2TP+IPSec

The primary advantage of an IPSEC VPN client over L2TP+IPSec is that it allows you more flexibility in configuring the exact encryption methods you want and the network traffic that is protected by the VPN. Thus, you can allow specified traffic to be unencrypted so that you don't have to pay the computational overhead for encryption for traffic that doesn't require it, such as Internet traffic.

The drawback is that an IPSEC VPN client requires more user expertise and the client software is an added cost, while L2TP+IPSec comes with bundled with Windows.

Alternatively, setting up and using an L2TP+IPSec client is simpler than setting up and using IPSEC and offers the benefits of IPSEC. However, all the traffic goes through a single VPN tunnel.

L2TP vs. PPTP

PPTP and L2TP+IPSec both use PPP to initially encode the data. Each then adds additional information in headers for network transport. PPTP and L2TP+IPSec differ in the following ways:

- With PPTP, data encryption begins after the PPP connection and authentication completes. With L2TP+IPSec, data encryption begins before the PPP connection process by negotiating an IPSec security association; this secures the authentication process.
- PPTP connections use MPPE, a stream cipher, while L2TP+IPSec connections uses DES and other block cipher algorithms. Stream ciphers encrypt data as a bit stream. Block ciphers encrypt data in discrete blocks.
- PPTP connections require only user-level authentication through a PPP-based authentication protocol. L2TP+IPSec connections require user-level authentication and an additional computer-level authentication via digital certificates or a pre-shared key (shared secret).

Advantages of L2TP+IPSec over PPTP

L2TP+IPSec has the following advantages over PPTP:

- IPSec ESP provides per-packet data origin authentication (i.e., proof that the data was sent by the authorized user), data integrity (proof that the data was not modified in transit), replay protection (encrypted packets captured by a third party cannot be resent), and encryption. PPTP only provides per-packet data confidentiality.
- L2TP+IPSec connections provide stronger authentication by requiring both computer-level authentication and user-level authentication.
- PPP packets exchanged during user-level authentication are sent in an encrypted form since the IPSec security negotiation occurs prior to the PPP connection process. With PPTP, the PPP authentication exchange is susceptible to attack, allowing user passwords to be recovered by the attacker.

Advantages of PPTP over L2TP+IPSec

PPTP has the following advantages over L2TP+IPSec:

- PPTP does not require a generating and installing any digital certificates. L2TP+IPSec requires a digital certificate, or pre-shared key (shared secret), for authentication between the VPN server computer and all VPN clients.
- PPTP clients can be placed behind a network address translator (NAT) if the NAT has an editor for PPTP traffic. L2TP+IPSec-based VPN clients or servers cannot be placed behind a NAT unless both the VPN client and server support IPSec NAT traversal (NAT-T). IPSec NAT-T is supported by Windows Server 2003, Microsoft L2TP+IPSec VPN Client.

SSH

Secure Shell (SSH) is a UNIX-based command interface and protocol for users on a local computer (SSH Client) to log into and execute commands on a remote computer (SSH Server).

SSH provides secure encrypted communications between the local and remote computers, which include X11 connections and applications running on arbitrary TCP/IP ports. Both ends of the client/server connection are authenticated using a digital certificate, and passwords are protected by being encrypted. SSH uses RSA public key cryptography for both connection and authentication. Encryption algorithms include AES (SSH2 only), Blowfish, 3DES, and DES.

There are two versions of SSH: version 1 (SSH1) and version 2 (SSH2). SSH2, the latest version, is a proposed set of standards from the Internet Engineering Task Force (IETF). The 700wl Series system supports both versions.

SSH is widely used among network administrators to control Web and other application servers remotely. SSH is also available on Microsoft Windows and Apple Mac OS platforms.

This document describes how to configure the 700wl Series system to function as the SSH server. A freeware application, named “PuTTY” is used as the SSH client on a Windows platform. User traffic is tunneled through the opened SSH session into the network.

700wl Series System Configuration 2

This chapter provides an overview of the 700wl Series system Wireless Data Privacy configuration. It consists of the following sections:

Configuration Overview

There are two parts to the configuration procedure for each security protocol. First, configure the security protocol for each *Access Policy* as appropriate, by editing the Access Policies under the Rights icon in the Administrative Console of your Integrated Access Manager or Access Control Server. The other is to globally enable the Wireless Data Privacy protocols through the VPN icon in the Administrative Console.

To access the Administrative Console, point your browser to the IP address or host name of the Access Control Server or Integrated Access Manager you want to access.

For all examples in this document, the HP ProCurve Secure Access 700wl Series Built-in Authentication Service is assumed as the method used to authenticate users.

Note: *If you allow or require encryption for any of your Access Policies, you must also configure the same security policy for the Unauthenticated Access Policy (or any customized Access Policies you use for unknown clients). Normally when an unknown client first connects to the 700wl Series system, before it authenticates, it receive "logon rights" based on the Unauthenticated Access Policy. If this Access Policy does not allow any encryption protocols, clients will not be able to connect if they use those protocols. The Unauthenticated Access Policy must allow any protocol that might be allowed or required by any other Access Policy.*

IPSec Configuration

This section describes how to configure the 700wl Series system as a VPN Security Gateway for IPSec clients.

Configuring an Access Policy for IPSec

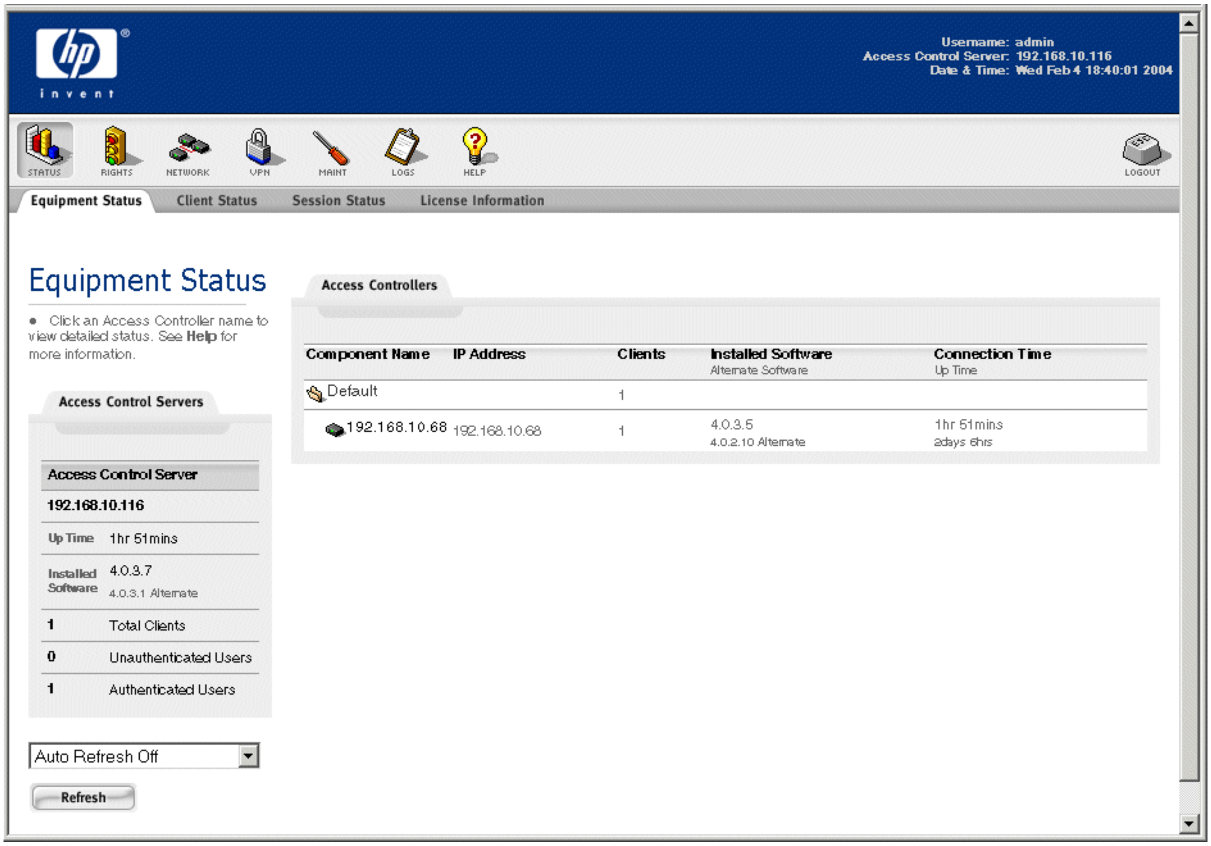
Do the following to configure an Access Policy for IPSec:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

Step 2. Enter the Administrator username and password in the appropriate fields and click **Logon**.

The Equipment Status page is displayed, as shown in Figure 2-1 as the initial page in the Administrative Console.

Figure 2-1. Initial Page after Logon- Equipment Status Page



Username: admin
Access Control Server: 192.168.10.116
Date & Time: Wed Feb 4 18:40:01 2004

Equipment Status

- Click an Access Controller name to view detailed status. See **Help** for more information.

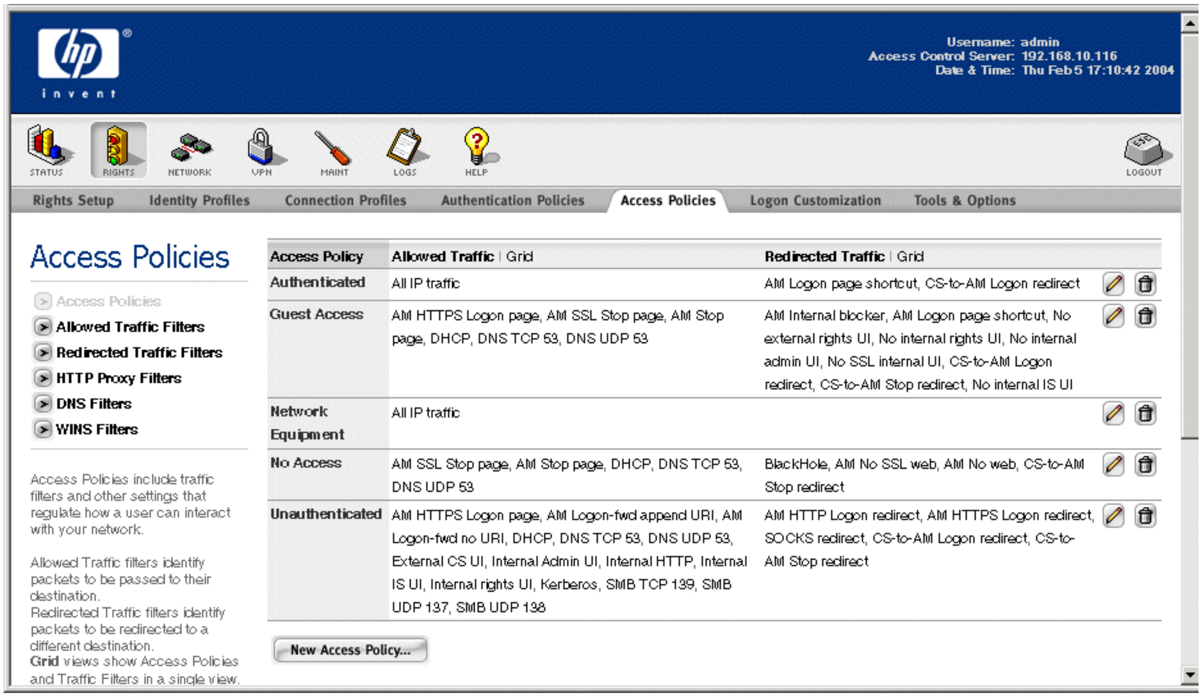
Component Name	IP Address	Clients	Installed Software Alternate Software	Connection Time Up Time
Default		1		
192.168.10.68	192.168.10.68	1	4.0.3.5 4.0.2.10 Alternate	1hr 51mins 2days 6hrs

Access Control Server	
192.168.10.116	
Up Time	1hr 51mins
Installed Software	4.0.3.7 4.0.3.1 Alternate
1	Total Clients
0	Unauthenticated Users
1	Authenticated Users

Step 3. Click the **RIGHTS** icon to access the Rights Manager.

Step 4. Click **Access Policies** tab to access the Rights Manager’s Access Policies page.

Figure 2-2. Access Policies page



Username: admin
Access Control Server: 192.168.10.116
Date & Time: Thu Feb 5 17:10:42 2004

Access Policy	Allowed Traffic | Grid	Redirected Traffic | Grid
Authenticated	All IP traffic	AM Logon page shortcut, CS-to-AM Logon redirect
Guest Access	AM HTTPS Logon page, AM SSL Stop page, AM Stop page, DHCP, DNS TCP 53, DNS UDP 53	AM Internal blocker, AM Logon page shortcut, No external rights UI, No internal rights UI, No internal admin UI, No SSL internal UI, CS-to-AM Logon redirect, CS-to-AM Stop redirect, No internal IS UI
Network Equipment	All IP traffic	
No Access	AM SSL Stop page, AM Stop page, DHCP, DNS TCP 53, DNS UDP 53	BlackHole, AM No SSL web, AM No web, CS-to-AM Stop redirect
Unauthenticated	AM HTTPS Logon page, AM Logon-fwd append URI, AM Logon-fwd no URI, DHCP, DNS TCP 53, DNS UDP 53, External CS UI, Internal Admin UI, Internal HTTP, Internal IS UI, Internal rights UI, Kerberos, SMB TCP 139, SMB UDP 137, SMB UDP 138	AM HTTP Logon redirect, AM HTTPS Logon redirect, SOCKS redirect, CS-to-AM Logon redirect, CS-to-AM Stop redirect

Access Policies include traffic filters and other settings that regulate how a user can interact with your network.

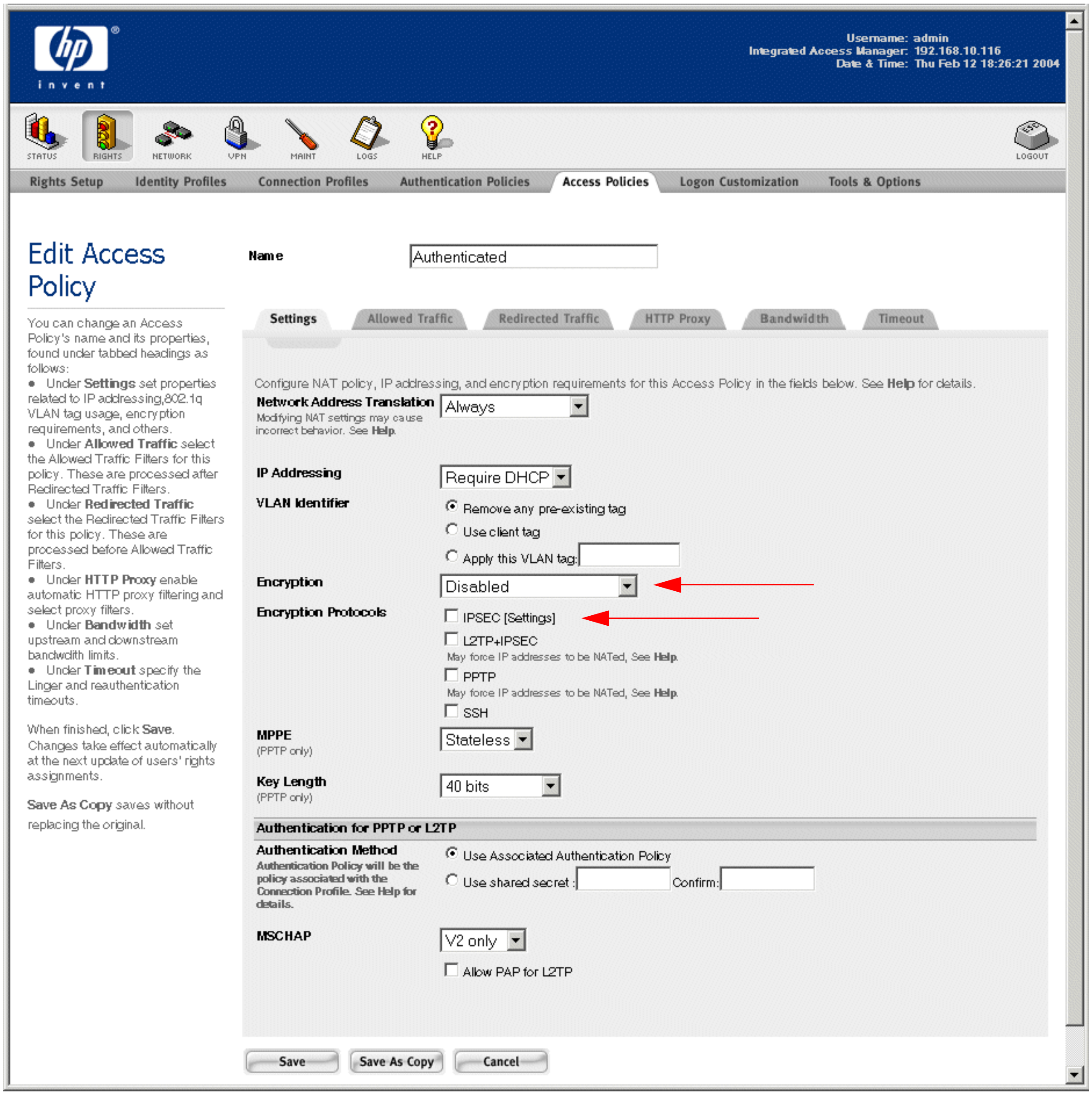
Allowed Traffic filters identify packets to be passed to their destination.
Redirected Traffic filters identify packets to be redirected to a different destination.
Grid views show Access Policies and Traffic Filters in a single view.

Step 5. Click on the Access Policy you wish to configure for Wireless Data Privacy. You can click the Access Policy name or the edit (pencil) button on the same row in the table.

The Edit Access Policy page appears, as shown in Figure 2-3.

Suppose you want to configure the *Authenticated* Access Policy to support IPSec. Note that there is currently no encryption configured for that Access Policy.

Figure 2-3. Encryption settings for Authenticated Access Policy



Edit Access Policy

You can change an Access Policy's name and its properties, found under tabbed headings as follows:

- Under **Settings** set properties related to IP addressing,802.1q VLAN tag usage, encryption requirements, and others.
- Under **Allowed Traffic** select the Allowed Traffic Filters for this policy. These are processed after Redirected Traffic Filters.
- Under **Redirected Traffic** select the Redirected Traffic Filters for this policy. These are processed before Allowed Traffic Filters.
- Under **HTTP Proxy** enable automatic HTTP proxy filtering and select proxy filters.
- Under **Bandwidth** set upstream and downstream bandwidth limits.
- Under **Timeout** specify the Linger and reauthentication timeouts.

When finished, click **Save**. Changes take effect automatically at the next update of users' rights assignments.

Save As Copy saves without replacing the original.

Name Authenticated

Configure NAT policy, IP addressing, and encryption requirements for this Access Policy in the fields below. See **Help** for details.

Network Address Translation Always
Modifying NAT settings may cause incorrect behavior. See **Help**.

IP Addressing Require DHCP

VLAN Identifier
● Remove any pre-existing tag
○ Use client tag
○ Apply this VLAN tag:

Encryption Disabled

Encryption Protocols
□ IPSEC [Settings]
□ L2TP+IPSEC
May force IP addresses to be NATed, See **Help**.
□ PPTP
May force IP addresses to be NATed, See **Help**.
□ SSH

MPPE (PPTP only) Stateless

Key Length (PPTP only) 40 bits

Authentication for PPTP or L2TP

Authentication Method
Authentication Policy will be the policy associated with the Connection Profile. See Help for details.
● Use Associated Authentication Policy
○ Use shared secret : Confirm:

MSCHAP V2 only
□ Allow PAP for L2TP

Step 6. From the **Encryption** drop-down box, choose one of the following options:

- If encryption is required for all clients connecting through this Access Policy, you select the **Required** option.
- The **Allowed, but not required** setting allows access for unencrypted clients through this Access Policy as well as encrypted clients. This setting is recommended for Access Policies used for unknown clients, such as the *Unauthenticated* Access Policy.

Step 7. Select **IPSec** from the **Encryption Protocols** check boxes.

The Settings link following the IPSec check box takes you to the Wireless Data Privacy setup page, where you can configure the settings for IPSec. However, if you do this before you have saved any changes you've made on the current page, those changes will be lost.

Step 8. Click the **Save** button to save the settings.

Step 9. Since *Authenticated* is an existing Access Policy, you should refresh all rights in order to apply the new settings to active users.

Click the **STATUS** icon in the Navigation Toolbar to go to the Status page, then click the **Client Status** tab. Once, the Client Status page appears, click on the **Refresh User Rights Now** to refresh the rights of all users. Note that you may choose to refresh the client's rights on a per-user basis by clicking on each individual user's link in the Clients table, or via the refresh button at the right of each row in the client table.

Note: *If you allow or require IPSec in some of your Access Policies, you must configure the Unauthenticated (or equivalent) Access Policy to allow IPSec, since most VPN clients are enabled before they can logon. See "Configuring Rights" in the 700wl Series system Management and Configuration Guide for a detailed explanation of the logon process and Access Policies.*

Enabling IPSec

Enabling IPSec in the Wireless Data Privacy setup is a global setting that affects the entire 700wl Series system.

Do the following to enable IPSec:

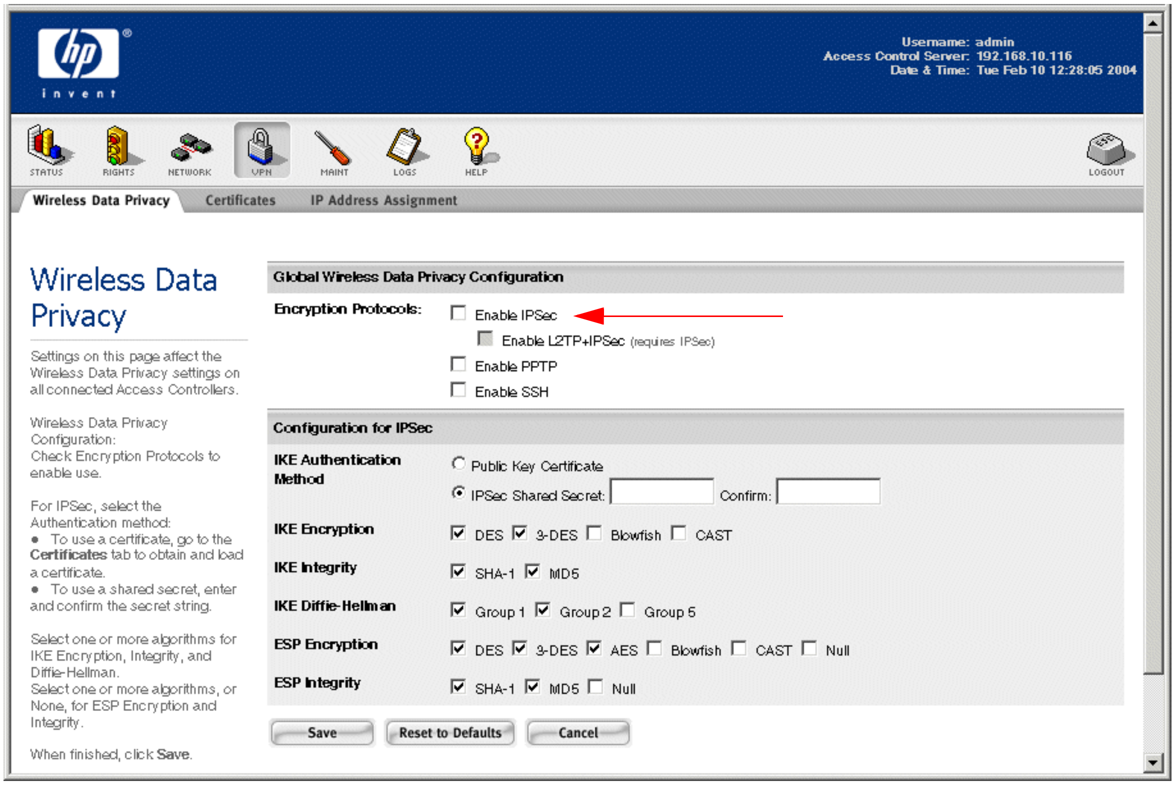
Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

Step 2. Enter the Administrator username and password in the appropriate fields and click **Logon**.

Step 3. Once the Equipment Status page appears (see Figure 2-1) click the **VPN** icon in the Navigation Toolbar.

The Wireless Data Privacy setup page appears, as shown in Figure 2-4.

Figure 2-4. Wireless Data Privacy setup page



Wireless Data Privacy

Settings on this page affect the Wireless Data Privacy settings on all connected Access Controllers.

Wireless Data Privacy Configuration:
Check Encryption Protocols to enable use.

For IPSec, select the Authentication method:
- To use a certificate, go to the **Certificates** tab to obtain and load a certificate.
- To use a shared secret, enter and confirm the secret string.

Select one or more algorithms for IKE Encryption, Integrity, and Diffie-Hellman.
Select one or more algorithms, or None, for ESP Encryption and Integrity.

When finished, click **Save**.

Global Wireless Data Privacy Configuration

Encryption Protocols: □ Enable IPSec
□ Enable L2TP+IPSec (requires IPSec)
□ Enable PPTP
□ Enable SSH

Configuration for IPSec

IKE Authentication Method	○ Public Key Certificate ● IPSec Shared Secret: ____ Confirm: ____
IKE Encryption	☑ DES ☑ 3-DES □ Blowfish □ CAST
IKE Integrity	☑ SHA-1 ☑ MD5
IKE Diffie-Hellman	☑ Group 1 ☑ Group 2 □ Group 5
ESP Encryption	☑ DES ☑ 3-DES ☑ AES □ Blowfish □ CAST □ Null
ESP Integrity	☑ SHA-1 ☑ MD5 □ Null

Step 4. Check **Enable IPSEC** in the list of encryption protocols to enable IPSec for the 700wl Series system.

Step 5. To use an IPSec shared secret, enter the secret in the appropriate field and confirm it in the second field.

You can use a Public Key Certificate as the alternative to using the shared secret. Click **Public Key Certificate** to use a Public Key Certificate. You can view the Certificate configuration or install a new certificate under the Certificates tab at the top of the page. See the *700wl Series system Management and Configuration Guide* or click the **HELP** icon from the Certificates page for detailed instructions on installing a public key certificate.

Make sure that the client uses the same certificate key and certificate authority when making IPSec connection to the 700wl Series system.

Step 6. Make any necessary changes to the various settings for IKE Integrity, Encryption, ESP Integrity, Encryption, and so on.

Note: *Select the appropriate setting for your IPSec VPN clients' configuration so that they match. For example, if your client only supports DES and 3-DES for IKE, you need to have one of these selected for IKE encryption. Typically, if you use PGPnet as the IPSec client software, you need to enable MD5 for IKE encryption, and if you use SSH Sentinel as the IPSec client software, you should enable AES for ESP encryption. Otherwise, the client connection will fail.*

You need to take the settings for all possible clients on your network into account. For example, the Cisco Unity client only supports Diffie-Hellman group 2 in aggressive mode when a pre-shared key is used.

> ***Note:*** *To support VPN clients that use aggressive mode, select a single Diffie-Hellman group to match the client's configured Diffie-Hellman group.*

Step 7. Click **Save** to save the modification.

The 700wl Series system is now ready for the IPSec clients.

PPTP Configuration

This section describes how to configure the HP ProCurve Integrated Access Manager or Access Control Server as a PPTP server.

Configuring the Rights Manager for PPTP

Do the following to configure an Access Policy for PPTP:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

Step 2. Enter the Administrator username and password in the appropriate fields and click **Logon**.

The Equipment Status page is displayed (see Figure 2-1 on page 2-2) as the initial page in the Administrative Console.

Step 3. Click the **RIGHTS** icon to access the Rights Manager.

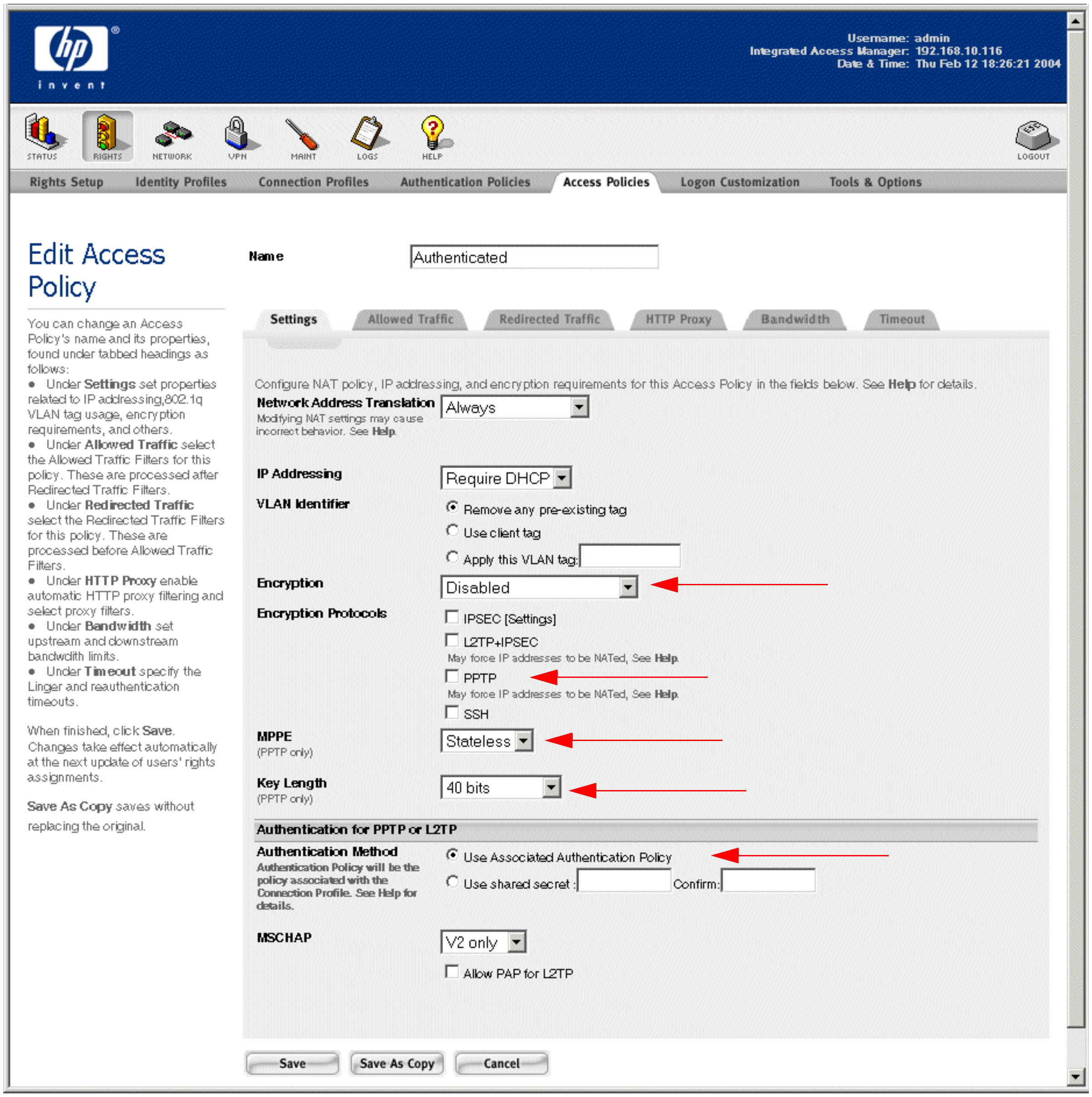
Step 4. Click **Access Policies** to access the Rights Manager's Access Policies page (see Figure 2-2 on page 2-3).

Step 5. Click on an Access Policy to configure PPTP encryption.

The Edit Access Policy page appears, as shown in Figure 2-5.

Suppose you want to configure an existing Access Policy, named *Authenticated*, to support PPTP encryption. Note that there is currently no encryption configured for that Access Policy.

Figure 2-5. Edit Access Policy page



Username: admin
Integrated Access Manager: 192.168.10.116
Date & Time: Thu Feb 12 18:26:21 2004

Edit Access Policy

You can change an Access Policy's name and its properties, found under tabbed headings as follows:

- Under **Settings** set properties related to IP addressing,802.1q VLAN tag usage, encryption requirements, and others.
- Under **Allowed Traffic** select the Allowed Traffic Filters for this policy. These are processed after Redirected Traffic Filters.
- Under **Redirected Traffic** select the Redirected Traffic Filters for this policy. These are processed before Allowed Traffic Filters.
- Under **HTTP Proxy** enable automatic HTTP proxy filtering and select proxy filters.
- Under **Bandwidth** set upstream and downstream bandwidth limits.
- Under **Timeout** specify the Linger and reauthentication timeouts.

When finished, click **Save**. Changes take effect automatically at the next update of users' rights assignments.

Save As Copy saves without replacing the original.

Name Authenticated

Configure NAT policy, IP addressing, and encryption requirements for this Access Policy in the fields below. See **Help** for details.

Network Address Translation Always
Modifying NAT settings may cause incorrect behavior. See **Help**.

IP Addressing Require DHCP

VLAN Identifier
● Remove any pre-existing tag
○ Use client tag
○ Apply this VLAN tag:

Encryption Disabled

Encryption Protocols
□ IPSEC [Settings]
□ L2TP+IPSEC
May force IP addresses to be NATed, See **Help**.
□ PPTP
May force IP addresses to be NATed, See **Help**.
□ SSH

MPPE (PPTP only) Stateless

Key Length (PPTP only) 40 bits

Authentication for PPTP or L2TP

Authentication Method
Authentication Policy will be the policy associated with the Connection Profile. See Help for details.
● Use Associated Authentication Policy
○ Use shared secret : Confirm:

MSCHAP V2 only
□ Allow PAP for L2TP

Step 6. From the **Encryption** drop-down box, choose one of the following options:

- If encryption is required for all clients connecting through this Access Policy, you select the **Required** option.
- The **Allowed, but not required** setting allows access for unencrypted clients through this Access Policy as well as encrypted clients. This setting is recommended for Access Policies used for unknown clients, such as the *Unauthenticated* Access Policy.

Step 7. Click the check box to select **PPTP** from the **Encryption Protocols** check boxes.

Step 8. Change the **MPPE** or **Key Length** as desired. Note that MSCHAP-V2 is selected by default.

Step 9. For the authentication method, you can either use the Authentication Policy defined by the Connection Profile that matches the client's connection location, or you can configure a shared secret.

Step 10. Click **Save** to save the settings.

Step 11. Since *Authenticated* is an existing Access Policy, you should refresh all rights in order to apply the new settings to active users.

a. Click the **STATUS** icon in the Navigation Toolbar at the top of the page, then click **Client Status tab** to go to the clients page.

b. Once the client page appears, click **Refresh User Rights Now** to refresh the rights of all users. You may choose to refresh the client's rights on a per-user basis by clicking on each individual user's link in the Clients table, or clicking the refresh icon to the right of each row.

Note: *If you allow or require PPTP in some of your Access Policies, you must configure the Unauthenticated (or equivalent) Access Policy to allow PPTP as well. See "Configuring Rights" in the 700wl Series system Management and Configuration Guide for a detailed explanation of the logon process and Access Policies.*

Enabling PPTP

Enabling PPTP in the Wireless Data Privacy Setup is a global setting that affects the entire 700wl Series system.

Do the following to enable PPTP:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

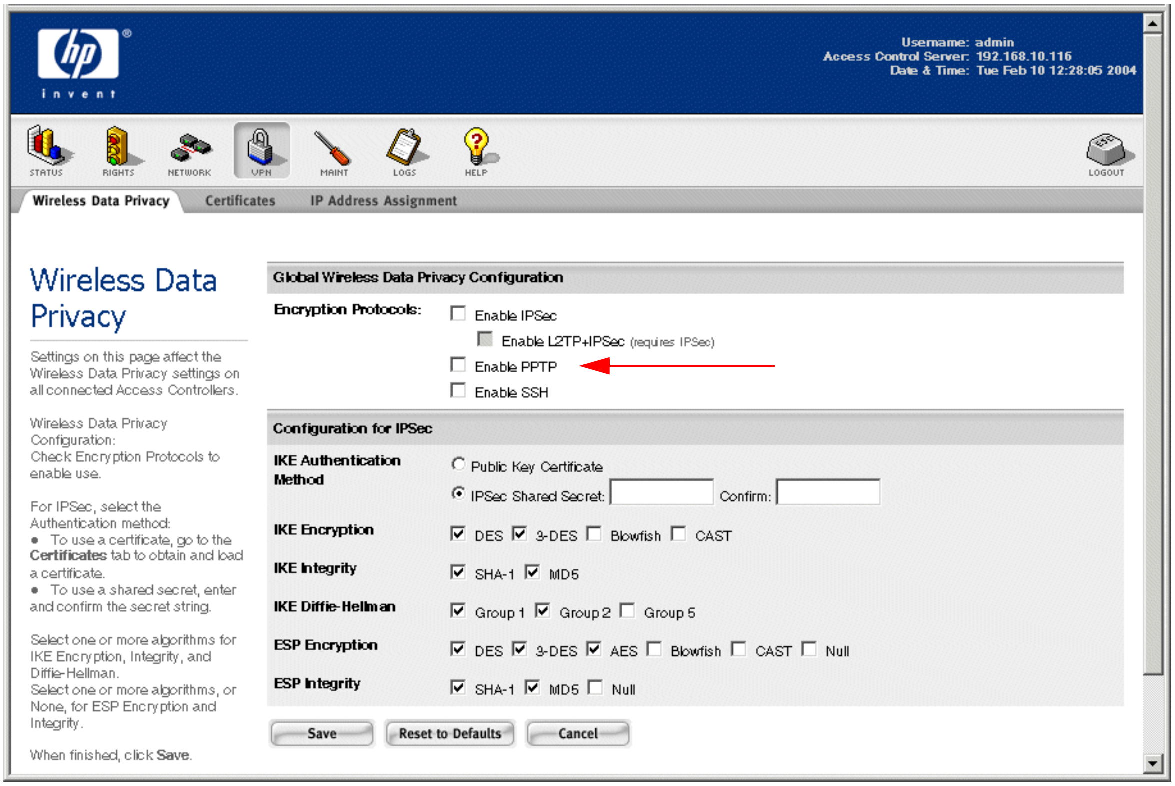
Step 2. You are prompted for the Administrator username and password. Type the username and password in the appropriate text boxes and then click the **Logon** button.

The Equipment Status page is displayed (see Figure 2-1 on page 2-2).

Step 3. Click the **VPN** icon in the Navigation Toolbar.

The Wireless Data Privacy setup page appears.

Figure 2-6. Wireless Data Privacy setup page



Username: admin
Access Control Server: 192.168.10.116
Date & Time: Tue Feb 10 12:28:05 2004

Wireless Data Privacy

Settings on this page affect the Wireless Data Privacy settings on all connected Access Controllers.

Wireless Data Privacy Configuration: Check Encryption Protocols to enable use.

For IPSec, select the Authentication method:
- To use a certificate, go to the **Certificates** tab to obtain and load a certificate.
- To use a shared secret, enter and confirm the secret string.

Select one or more algorithms for IKE Encryption, Integrity, and Diffie-Hellman.
Select one or more algorithms, or None, for ESP Encryption and Integrity.

When finished, click **Save**.

Global Wireless Data Privacy Configuration

Encryption Protocols: ☐ Enable IPSec
☐ Enable L2TP+IPSec (requires IPSec)
☐ Enable PPTP
☐ Enable SSH

Configuration for IPSec

IKE Authentication Method ○ Public Key Certificate
● IPSec Shared Secret: ______ Confirm: ______

IKE Encryption ☑ DES ☑ 3-DES ☐ Blowfish ☐ CAST

IKE Integrity ☑ SHA-1 ☑ MD5

IKE Diffie-Hellman ☑ Group 1 ☑ Group 2 ☐ Group 5

ESP Encryption ☑ DES ☑ 3-DES ☑ AES ☐ Blowfish ☐ CAST ☐ Null

ESP Integrity ☑ SHA-1 ☑ MD5 ☐ Null

Step 4. Place a check mark in the **Enable PPTP** check box to enable PPTP.

Step 5. Click **Save** to save the settings.

The 700wl Series system is now ready for the PPTP clients.

L2TP+IPSec Configuration

This section describes how to configure the 700wl Series system as an L2TP+IPSec server.

Configuring an Access Policy for L2TP+IPSec

Do the following to configure an Access Policy for L2TP+IPSec:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

Step 2. Type the Administrator username and password in the appropriate fields and click **Logon**.

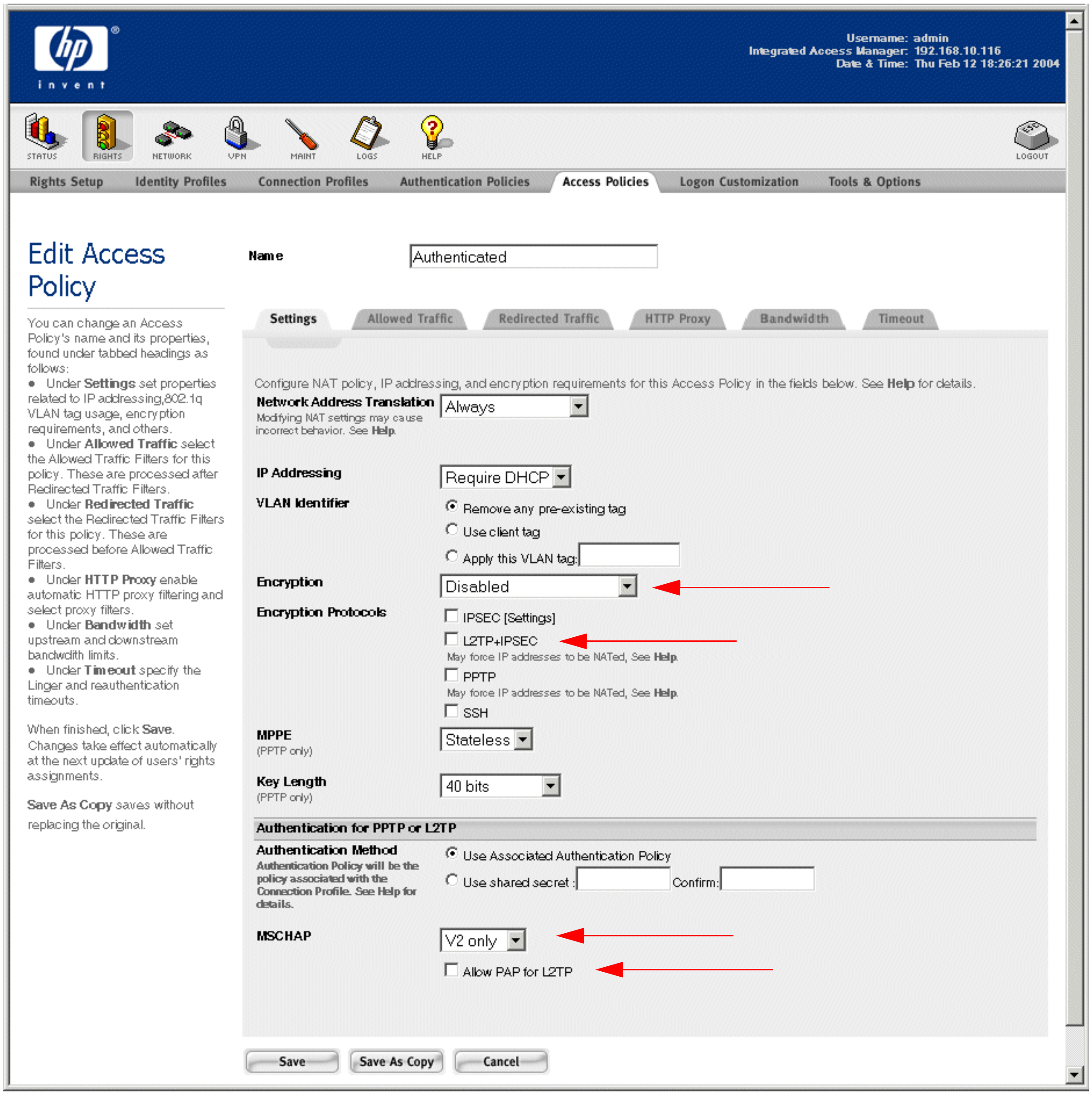
The Equipment Status page is displayed (see Figure 2-1 on page 2-2) as the initial page in the Administrative Console.

Step 3. Click the **RIGHTS** icon to access the Rights Manager.

Step 4. Click **Access Policies** to access the Rights Manager's Access Policies page (see Figure 2-2 on page 2-3).

Step 5. Click on an Access Policy to configure for L2TP+IPSec. The Edit Access Policy page appears, as shown in Figure 2-7.

Figure 2-7. Edit Access Policy page



Username: admin
Integrated Access Manager: 192.168.10.116
Date & Time: Thu Feb 12 18:26:21 2004

Edit Access Policy

You can change an Access Policy's name and its properties, found under tabbed headings as follows:

- Under **Settings** set properties related to IP addressing,802.1q VLAN tag usage, encryption requirements, and others.
- Under **Allowed Traffic** select the Allowed Traffic Filters for this policy. These are processed after Redirected Traffic Filters.
- Under **Redirected Traffic** select the Redirected Traffic Filters for this policy. These are processed before Allowed Traffic Filters.
- Under **HTTP Proxy** enable automatic HTTP proxy filtering and select proxy filters.
- Under **Bandwidth** set upstream and downstream bandwidth limits.
- Under **Timeout** specify the Linger and reauthentication timeouts.

When finished, click **Save**. Changes take effect automatically at the next update of users' rights assignments.

Save As Copy saves without replacing the original.

Name Authenticated

Configure NAT policy, IP addressing, and encryption requirements for this Access Policy in the fields below. See **Help** for details.

Network Address Translation Always
Modifying NAT settings may cause incorrect behavior. See **Help**.

IP Addressing Require DHCP

VLAN Identifier
● Remove any pre-existing tag
○ Use client tag
○ Apply this VLAN tag:

Encryption Disabled

Encryption Protocols
□ IPSEC [Settings]
□ L2TP+IPSEC
May force IP addresses to be NATed, See **Help**.
□ PPTP
May force IP addresses to be NATed, See **Help**.
□ SSH

MPPE (PPTP only) Stateless

Key Length (PPTP only) 40 bits

Authentication for PPTP or L2TP

Authentication Method
Authentication Policy will be the policy associated with the Connection Profile. See Help for details.
● Use Associated Authentication Policy
○ Use shared secret: Confirm:

MSCHAP V2 only
□ Allow PAP for L2TP

Suppose you want to configure an existing location, named *Authenticated*, to support L2TP+IPSec encryption. Note that there is currently no encryption configured for that Access Policy.

Step 6. From the **Encryption** drop-down box, choose one of the following options:

- If encryption is required for all clients connecting through this Access Policy, you select the **Required** option.

- The **Allowed, but not required** setting allows access for unencrypted clients through this Access Policy as well as encrypted clients. This setting is recommended for Access Policies used for unknown clients, such as the *Unauthenticated* Access Policy.

Step 7. Click the check box to select **L2TP+IPSec** from the **Encryption Protocols** check boxes.

Step 8. Change the **MSCHAP** setting as desired. Note that MSCHAP-V2 is selected by default.

Step 9. For the authentication method, you can either use the Authentication Policy defined by the Connection Profile that matches the client's connection location, or you can configure a shared secret.

Note: *For L2TP, there are restrictions on the Authentication Policy that may be used if PAP is* ***not*** *allowed. In this case, the Authentication Policy must include only RADIUS or the built-in authentication services. If PAP is allowed, any authentication service may be included.*

Note: *If a shared secret is specified, this shared secret is not used for client authentication. Once the connection is made, the client is presented with the web-based logon page, and is authenticated based on the appropriate Authentication Policy to determine what access is allowed to the network.*

Step 10. (Optional) If an external LDAP server is used to authenticate the client, checking **Allow PAP for L2TP** enables the 700wl Series system to both authenticate the user and obtain Identity Profile information for the client from the LDAP server. This option allows the 700wl Series system to assign the appropriate Identity Profile to the user once authenticated. Authentication by an external LDAP server and Identity Profile information from the LDAP server *cannot* be obtained through MS-CHAP v2 or MS-CHAP.

Once the **Allow PAP for L2TP** option is selected, the user must also customize their L2TP+IPSec connection properties on the Windows client to use PAP as well. Please see details on the client-side configuration in Step 12 and Step 13 of "Windows XP Clients" and in Step 12 and Step 13 of "Windows 2000 Clients" in Chapter 3, "Client Configuration".

Step 11. Click **Save** to save the settings

Step 12. Since *Authenticated* is an existing Access Policy, you should refresh all rights in order to apply the new settings to active users.

a. Click the **STATUS** icon in the Navigation Toolbar at the top of the page, then click the **Client Status** tab to go to the client status page.

b. Once the Client Status page appears, click **Refresh User Rights Now** to refresh the rights of all users. You may choose to refresh the client's rights on a per-user basis by clicking on each individual user's link in the Clients table, or clicking the refresh icon on the right of each row in the table.

Note: *If you allow or require L2TP+IPSec in some of your Access Policies, you must configure the Unauthenticated (or equivalent) Access Policy to allow L2TP+IPSec as well, since most VPN clients are enabled before they can logon. See "Configuring Rights" in the 700wl Series system Management and Configuration Guide for a detailed explanation of the logon process and Access Policies.*

Enabling L2TP+IPSec

Enabling L2TP+IPSec in the Wireless Data Privacy settings is a global setting; it only needs to be done once for the entire 700wl Series system.

Since this security protocol is L2TP over IPSec, you are required to enable not only L2TP but also IPSec.

Do the following to enable L2TP+IPSec:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

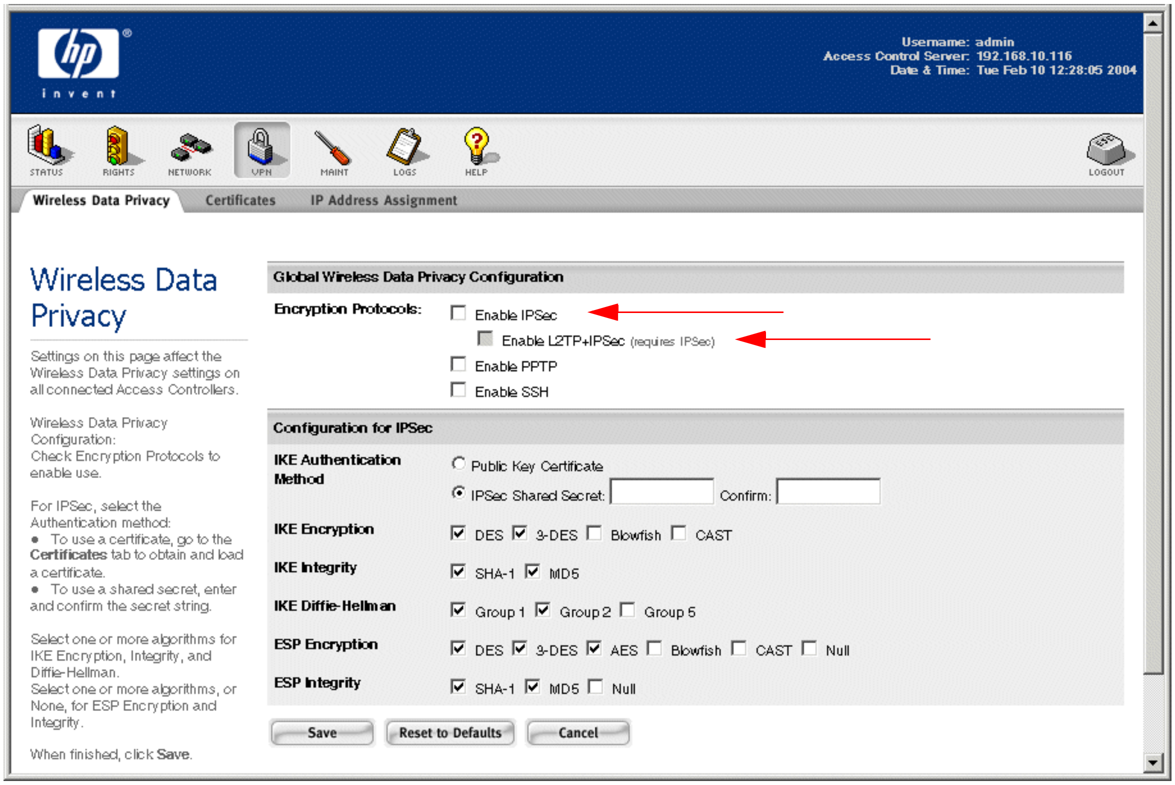
Step 2. You are prompted for the Administrator username and password. Type the username and password in the appropriate text boxes and then click the **Logon** button.

The Equipment Status page is displayed (see Figure 2-1 on page 2-2).

Step 3. Click the **VPN** icon in the Navigation Toolbar.

The Wireless Data Privacy setup page appears, as shown in Figure 2-8.

Figure 2-8. Wireless Data Privacy setup page



Username: admin
Access Control Server: 192.168.10.116
Date & Time: Tue Feb 10 12:28:05 2004

Wireless Data Privacy

Settings on this page affect the Wireless Data Privacy settings on all connected Access Controllers.

Wireless Data Privacy Configuration:
Check Encryption Protocols to enable use.

For IPSec, select the Authentication method:
- To use a certificate, go to the **Certificates** tab to obtain and load a certificate.
- To use a shared secret, enter and confirm the secret string.

Select one or more algorithms for IKE Encryption, Integrity, and Diffie-Hellman.
Select one or more algorithms, or None, for ESP Encryption and Integrity.

When finished, click **Save**.

Global Wireless Data Privacy Configuration

Encryption Protocols: □ Enable IPSec
□ Enable L2TP+IPSec (requires IPSec)
□ Enable PPTP
□ Enable SSH

Configuration for IPSec

IKE Authentication Method: ○ Public Key Certificate
● IPSec Shared Secret: Confirm:

IKE Encryption: ☑ DES ☑ 3-DES □ Blowfish □ CAST

IKE Integrity: ☑ SHA-1 ☑ MD5

IKE Diffie-Hellman: ☑ Group 1 ☑ Group 2 □ Group 5

ESP Encryption: ☑ DES ☑ 3-DES ☑ AES □ Blowfish □ CAST □ Null

ESP Integrity: ☑ SHA-1 ☑ MD5 □ Null

Save | Reset to Defaults | Cancel

Step 4. Check the **Enable IPSec** check box. This makes the **Enable L2TP+IPSec** check box available.

Step 5. Check the **Enable L2TP+IPSec** check box.

Step 6. Make any necessary changes to the various settings for IKE Integrity, Encryption, ESP Integrity, Encryption, and so on.

See “Enabling IPSec” on page 2-5 for more information about the IPSec algorithm choices.

Step 7. Click **Save** to save your changes.

The 700wl Series system is now ready for the L2TP+IPSec clients.

SSH Configuration

This section describes how to configure the 700wl Series system as an SSH server.

Configuring an Access Policy for SSH

To configure the Access Policy to allow SSH, do the following:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

Step 2. Type the administrator username and password in the appropriate fields and then click the **Login** button.

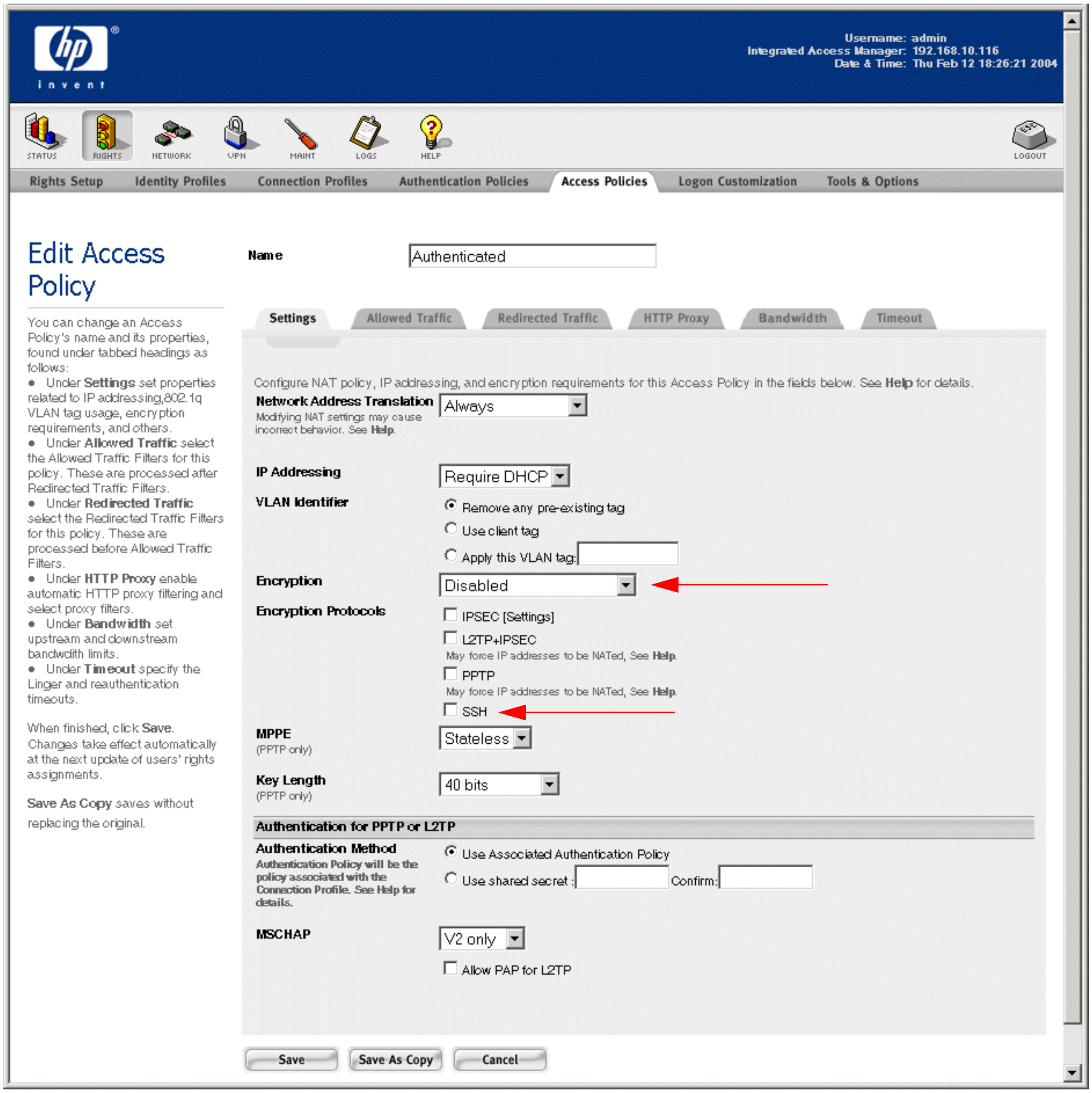
The Equipment Status page is displayed (see Figure 2-1 on page 2-2) as the initial page in the Administrative Console.

Step 3. Click the **RIGHTS** icon to access the Rights Manager.

Step 4. Click **Access Policies** to access the Rights Manager's Access Policies page (see Figure 2-2 on page 2-3).

Step 5. Click on an Access Policy to configure it for SSH. The Edit Access Policy page appears, as shown in Figure 2-9.

Figure 2-9. Edit Access Policy page



Username: admin
Integrated Access Manager: 192.168.10.116
Date & Time: Thu Feb 12 18:26:21 2004

Edit Access Policy

You can change an Access Policy's name and its properties, found under tabbed headings as follows:

- Under **Settings** set properties related to IP addressing,802.1q VLAN tag usage, encryption requirements, and others.
- Under **Allowed Traffic** select the Allowed Traffic Filters for this policy. These are processed after Redirected Traffic Filters.
- Under **Redirected Traffic** select the Redirected Traffic Filters for this policy. These are processed before Allowed Traffic Filters.
- Under **HTTP Proxy** enable automatic HTTP proxy filtering and select proxy filters.
- Under **Bandwidth** set upstream and downstream bandwidth limits.
- Under **Timeout** specify the Linger and reauthentication timeouts.

When finished, click **Save**. Changes take effect automatically at the next update of users' rights assignments.

Save As Copy saves without replacing the original.

Name Authenticated

Configure NAT policy, IP addressing, and encryption requirements for this Access Policy in the fields below. See **Help** for details.

Network Address Translation Always
Modifying NAT settings may cause incorrect behavior. See **Help**.

IP Addressing Require DHCP

VLAN Identifier
● Remove any pre-existing tag
○ Use client tag
○ Apply this VLAN tag:

Encryption Disabled

Encryption Protocols
□ IPSEC [Settings]
□ L2TP+IPSEC
May force IP addresses to be NATed, See **Help**.
□ PPTP
May force IP addresses to be NATed, See **Help**.
□ SSH

MPPE (PPTP only) Stateless

Key Length (PPTP only) 40 bits

Authentication for PPTP or L2TP

Authentication Method
Authentication Policy will be the policy associated with the Connection Profile. See Help for details.
● Use Associated Authentication Policy
○ Use shared secret : Confirm:

MSCHAP V2 only
□ Allow PAP for L2TP

Suppose you want to configure the default Access Policy *Authenticated*, to support SSH. Note that there is no encryption protocol assigned to this Access Policy.

Step 6. From the **Encryption** drop-down box, choose one of the following options:

- If encryption is required for all clients connecting through this Access Policy, you select the **Required** option.
- The **Allowed, but not required** setting allows access for unencrypted clients through this Access Policy as well as encrypted clients. This setting is recommended for Access Policies used for unknown clients, such as the *Unauthenticated* Access Policy.

Step 7. Click the check box to select **SSH** from the **Encryption Protocols** check boxes.

Step 8. Click **Save** to save the settings.

Step 9. Since *Authenticated* is an existing Access Policy, you should refresh all rights in order to apply the new settings to active users.

a. Click the **STATUS** icon in the Navigation Toolbar at the top of the page, then click the **Client Status** tab to go to the client status page.

b. Once the Client Status page appears, click **Refresh User Rights Now** to refresh the rights of all users. You may choose to refresh the client's rights on a per-user basis by clicking on each individual user's link in the Clients table, or clicking the refresh icon on the right of each row in the table.

Note: *If you allow or require SSH in some of your Access Policies, you must configure the Unauthenticated (or equivalent) Access Policy to allow SSH as well, since most VPN clients are enabled before they can logon. See "Configuring Rights" in the 700wl Series system Management and Configuration Guide for a detailed explanation of the logon process and Access Policies.*

Enabling SSH

Enabling SSH in the Wireless Data Privacy settings is a global setting that affects the entire 700wl Series system.

To enable SSH, do the following:

Step 1. To access the Administrative Interface from the network, set your browser to the IP address or hostname of the Integrated Access Manager or Access Control Server.

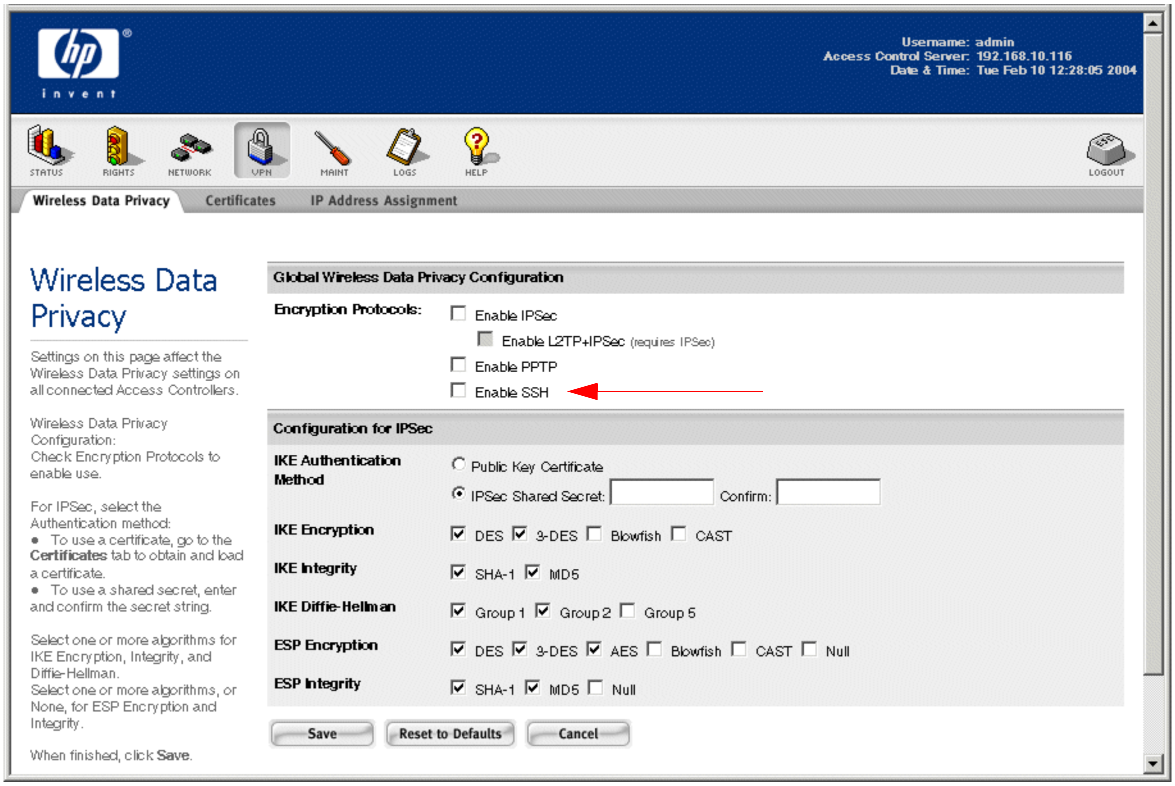
Step 2. Enter the administrator username and password in the appropriate fields and then click the **Login** button.

The Equipment Status page is displayed (see Figure 2-1 on page 2-2).

Step 3. Click the **VPN** icon in the Navigation Toolbar.

The Wireless Data Privacy setup page appears, as shown in Figure 2-10.

Figure 2-10. Wireless Data Privacy setup page



Username: admin
Access Control Server: 192.168.10.116
Date & Time: Tue Feb 10 12:28:05 2004

Wireless Data Privacy

Settings on this page affect the Wireless Data Privacy settings on all connected Access Controllers.

Wireless Data Privacy Configuration:
Check Encryption Protocols to enable use.

For IPSec, select the Authentication method:
- To use a certificate, go to the **Certificates** tab to obtain and load a certificate.
- To use a shared secret, enter and confirm the secret string.

Select one or more algorithms for IKE Encryption, Integrity, and Diffie-Hellman.
Select one or more algorithms, or None, for ESP Encryption and Integrity.

When finished, click **Save**.

Global Wireless Data Privacy Configuration

Encryption Protocols: □ Enable IPSec
□ Enable L2TP+IPSec (requires IPSec)
□ Enable PPTP
□ Enable SSH

Configuration for IPSec

IKE Authentication Method: ○ Public Key Certificate
● IPSec Shared Secret: ____ Confirm: ____

IKE Encryption: ☑ DES ☑ 3-DES □ Blowfish □ CAST

IKE Integrity: ☑ SHA-1 ☑ MD5

IKE Diffie-Hellman: ☑ Group 1 ☑ Group 2 □ Group 5

ESP Encryption: ☑ DES ☑ 3-DES ☑ AES □ Blowfish □ CAST □ Null

ESP Integrity: ☑ SHA-1 ☑ MD5 □ Null

Step 4. Select the check box for **Enable SSH**.

Step 5. Click the **Save** button to save the modification.

The 700wl Series system is now ready for SSH clients.

CLIENT CONFIGURATION 3

This chapter provides an overview of client configurations. It consists of the following sections:

IPSec Client Configuration

This section describes how to configure computers running Microsoft Windows as IPSec clients.

SafeNet SoftRemote for Windows

The following procedures configures SafeNet SoftRemote, for use as an IPSec client.

Note: *This procedure assumes you have already installed the SoftRemote software on your system. SoftRemote should start automatically after the software installation and system reboot.*

The following procedure is based on a Windows XP client. You may follow the same procedure for configuring the software on different Windows platforms.

Step 1. Start the SoftRemote software Security Policy Editor:

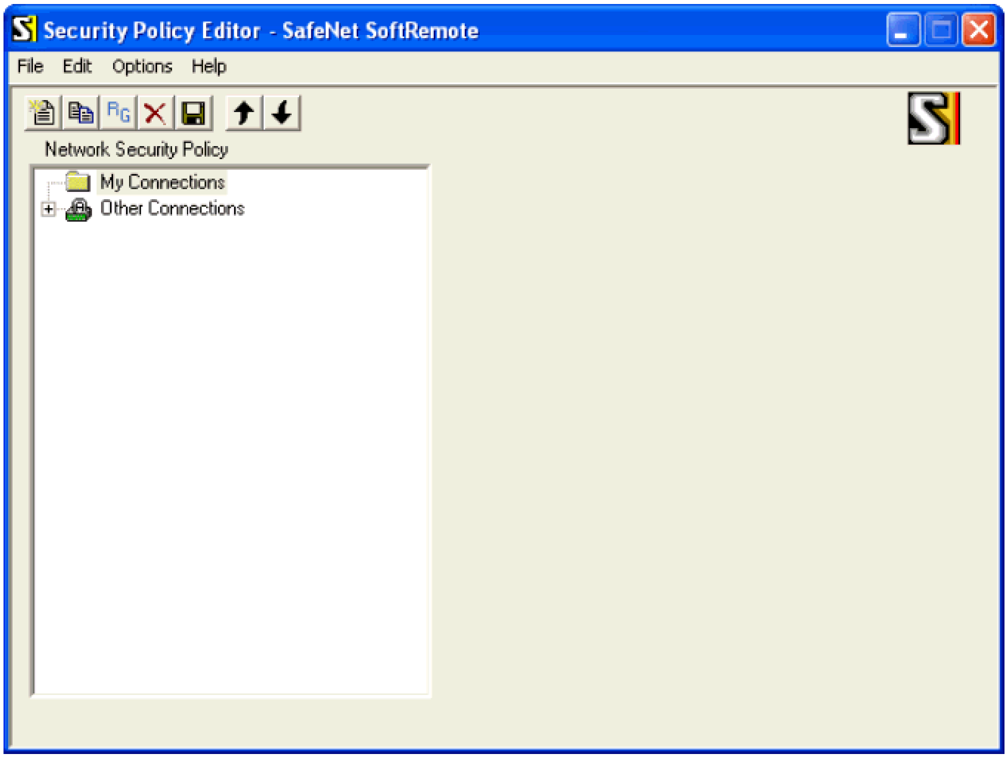
- Double-click the **SoftRemote** icon in the desktop taskbar's Notify area (lower-right corner) to open the Security Policy Editor window

or

- From the **Start** menu select **Programs**, then **SoftRemote**, then click on **Security Policy Editor**.

The Security Policy Editor – SafeNet SoftRemote window appears (Figure 3-1).

Figure 3-1. Security Policy Editor – SafeNet Remote Window

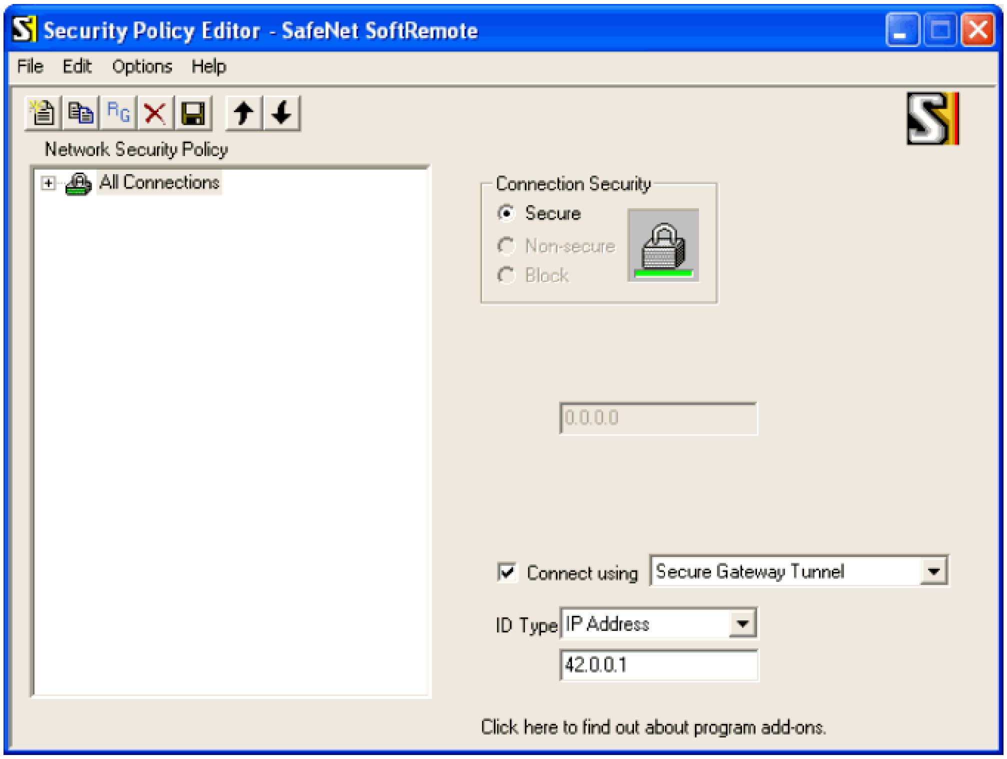


Step 2. Click **Options** to display the **Options** menu.

Select **Secure** and then select **All Connections**. This will force all network connections through the secure tunnel.

The Connection Security Panel appears (Figure 3-2).

Figure 3-2. Security Policy Editor – SafeNet Remote Window, Connection Security Panel



☑ Connect using: Secure Gateway Tunnel

ID Type: IP Address

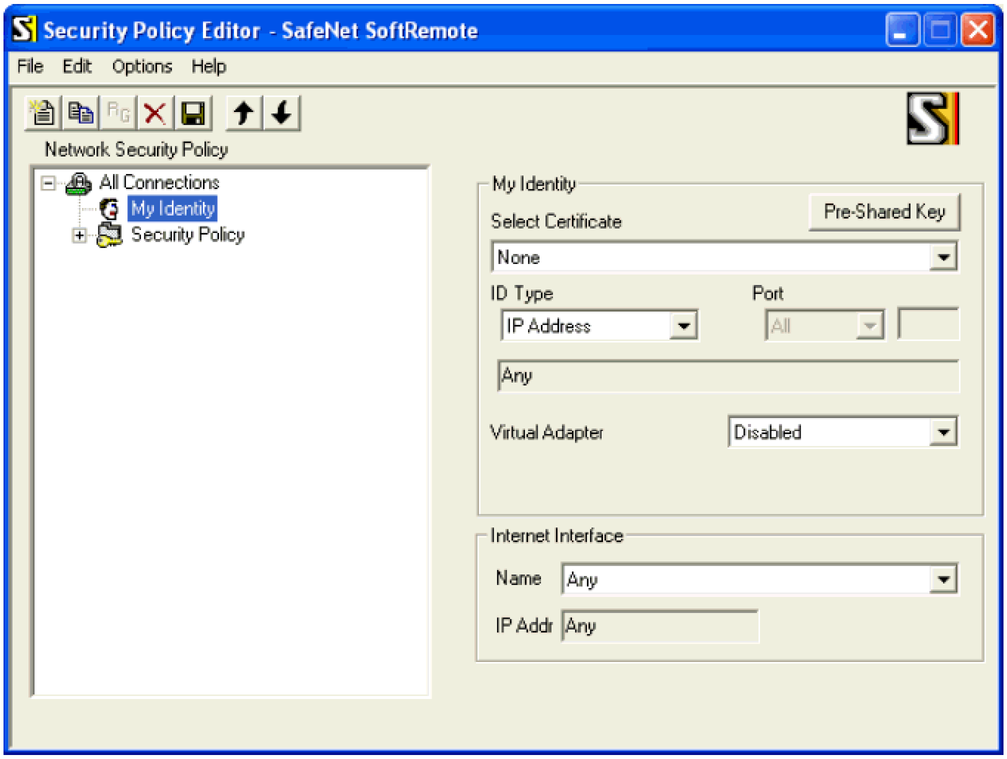
42.0.0.1

Step 3. Click to select the **Connect using** checkbox and make sure that **Secure Gateway Tunnel** is selected. Also make sure that **ID Type** is set to **IP Address**. Next, enter `42.0.0.1` in the text box below the **ID Type** menu.

Step 4. Expand **All Connections** in the Network Security Policy panel and select **My Identity**.

The displays the My Identity panel (Figure 3-3).

Figure 3-3. Security Policy Editor – SafeNet Remote Window, My Identity Panel



Network Security Policy

- All Connections
  - My Identity
  - Security Policy

My Identity

Select Certificate: None

ID Type: IP Address

Port: All

Any

Virtual Adapter: Disabled

Internet Interface

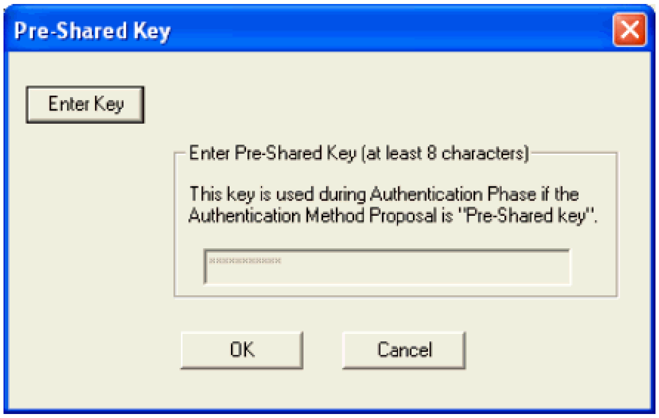
Name: Any

IP Addr: Any

Make sure that **Select Certificate** is set to **None**.

Step 5. Click the **Pre-Shared Key** button. The Pre-Shared Key window appears (Figure 3-4).

Figure 3-4. Pre-Shared Key Dialog



Enter Pre-Shared Key (at least 8 characters)

This key is used during Authentication Phase if the Authentication Method Proposal is "Pre-Shared key".

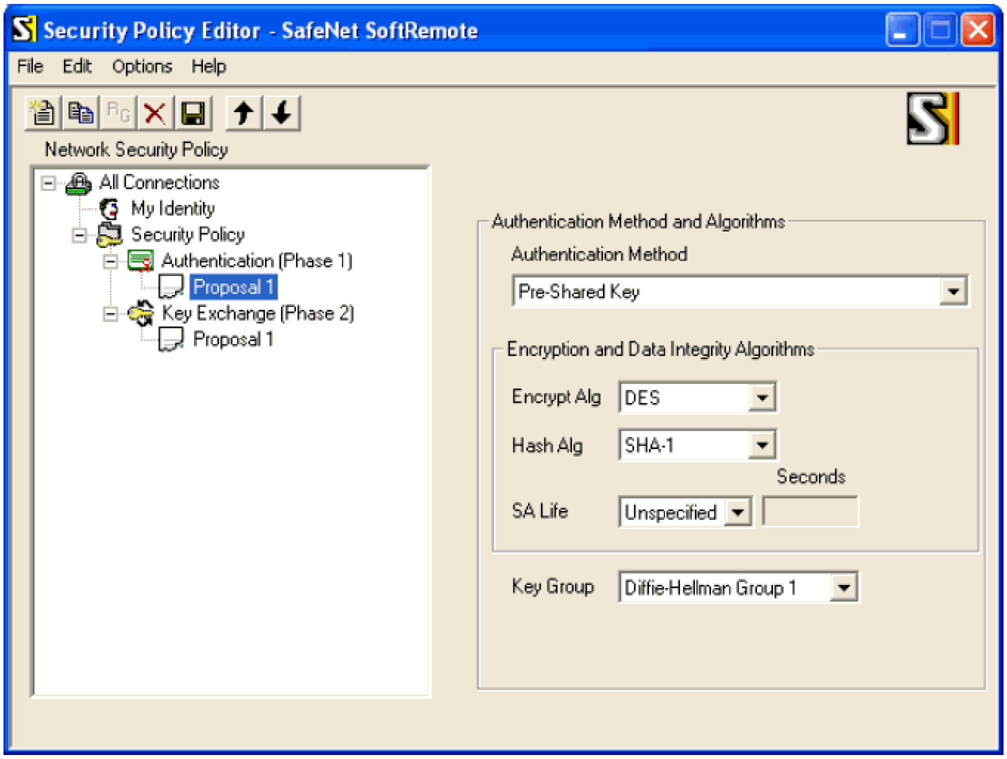
****

Step 6. Click the **Enter Key** button and then enter the shared key in the text box. The key must be at least 8 characters long and it must be the same key as you entered when you configured IPSec in the 700wl Series system.

Click **OK**.

Step 7. Expand **Security Policy** in the Network Security Policy panel. Also expand all items below Security Policy, including: **Authentication (Phase 1)** and **Key Exchange (Phase 2)** (see Figure 3-5). The Authentication Proposals correspond to the IKE configuration parameters set in the 700wl Series system (see "Enabling IPSec" on page 2-5).

Figure 3-5. Security Policy Editor – SafeNet Remote Window, Authentication Method Panel



Authentication Method and Algorithms

Authentication Method: Pre-Shared Key

Encryption and Data Integrity Algorithms

Encrypt Alg: DES

Hash Alg: SHA-1

SA Life: Unspecified — Seconds:

Key Group: Diffie-Hellman Group 1

Step 8. Setup the authentication method.

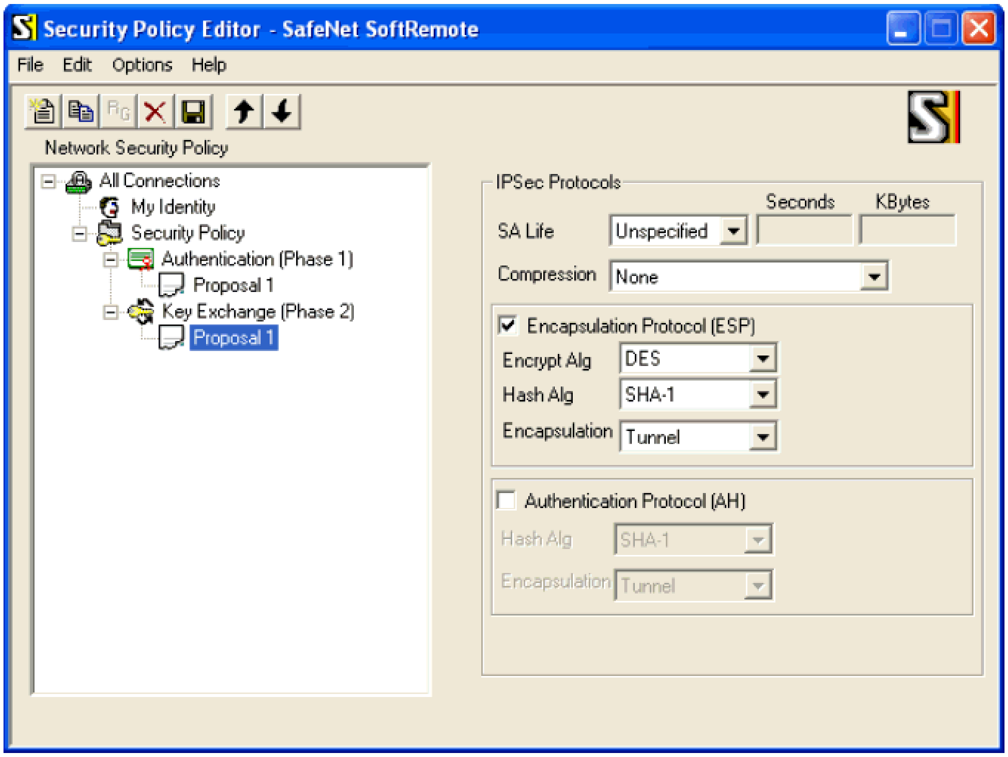
Select **Proposal 1** below Authentication (Phase 1). Make sure that the **Authentication Method** is set to **Pre-Shared Key**.

Note the default settings of SafeNet SoftRemote work with the default settings of the 700wl Series system. If a different authentication algorithm is used, make sure that the settings match those configured on the 700wl Series unit.

Step 9. Setup the key exchange protocol.

Select **Proposal 1** below Key Exchange (Phase 2). You may keep the default settings (see Figure 3-6) because they work with the default IPSec settings on the 700wl Series unit.

Figure 3-6. Security Policy Editor – SafeNet Remote Window, IPSec Protocols Panel



IPSec Protocols

	Seconds	KBytes
SA Life: Unspecified		

Compression: None

☑ Encapsulation Protocol (ESP)

Encrypt Alg: DES

Hash Alg: SHA-1

Encapsulation: Tunnel

□ Authentication Protocol (AH)

Hash Alg: SHA-1

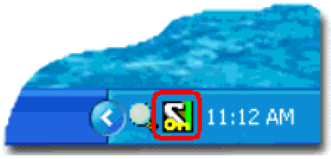
Encapsulation: Tunnel

Note: *The 700wl Series system supports ESP only. Do not select AH.*

Step 10. Pull down the **File** menu and then select **Save Changes**. Next, pull down the **File** menu again, and click **Exit**.

At this point, your system should be able to establish the secured connection with the server. You should see the icon as shown below in the Notify area on the lower left corner of the desktop.

Figure 3-7. Connection Icon



If the connection failed, you will not see the yellow key in the icon. In this case, the easiest approach to resolving the problem is to reboot your system. You must also make sure that the settings on the HP ProCurve Integrated Access Manager or Access Control Server for IPSec match those on your client system.

SSH Sentinel for Windows

This configuration procedure is based on SSH Sentinel version 1.4 (build 137) installed on Windows XP Professional. You may follow the same procedures for configuring the software on different Windows platforms.

Note: *This procedure assumes you have already installed the SSH Sentinel software on your system.*

To configure the SSH Sentinel IPSec client, do the following:

Step 1. Start SSH Sentinel Policy Editor:

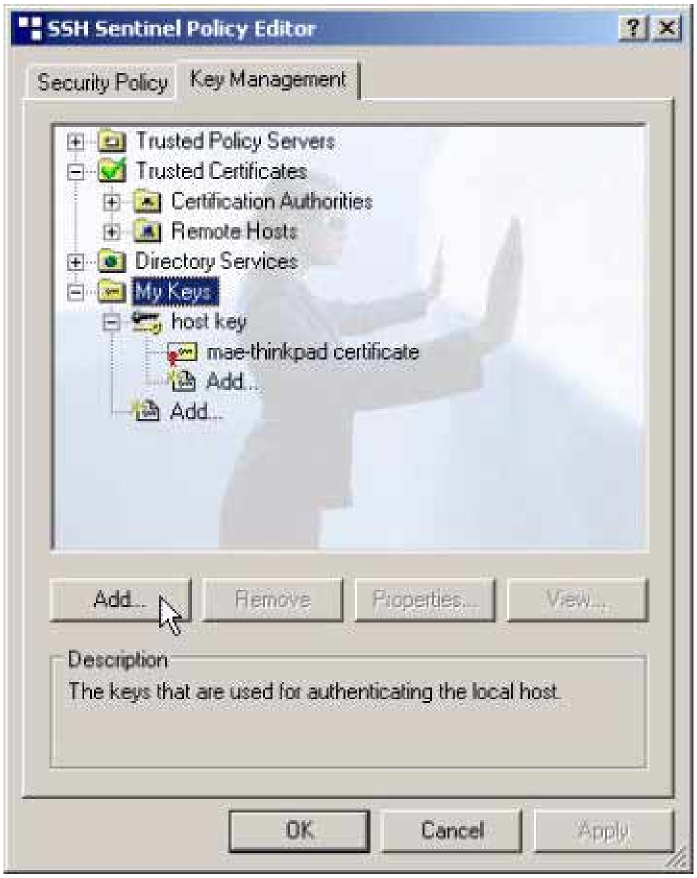
- From the **Start** menu select **All Programs**, then **SSH Sentinel**, then **SSH Sentinel Policy Editor**

or

- Right click the **Sentinel** icon in the notification area (lower-right corner of the desktop) and then select **Run Policy Editor…**.

Step 2. The SSH Sentinel Policy Editor window appears. Click the **Key Management** tab and then select **My Keys** (Figure 3-8).

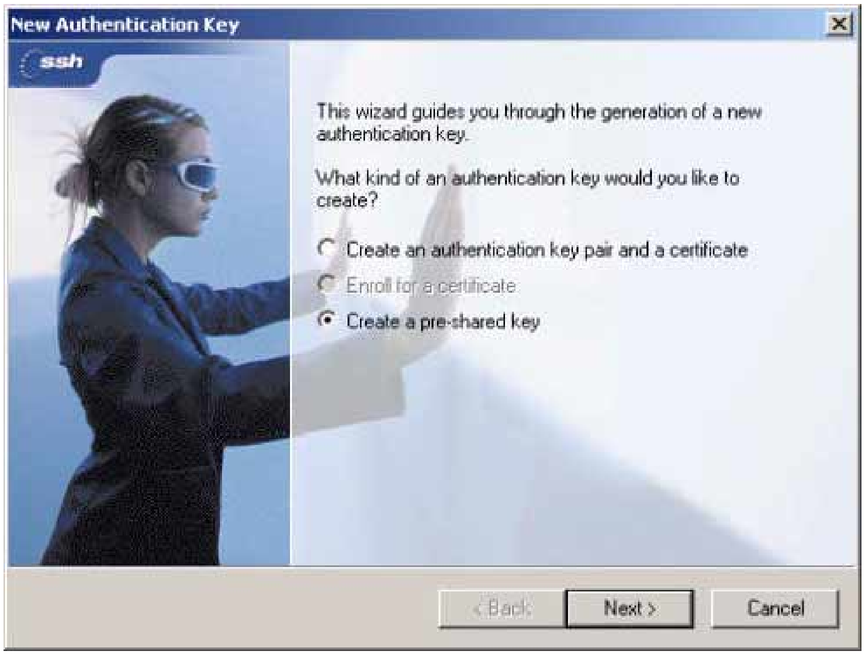
Figure 3-8. SSH Sentinel Policy Editor Window, Key Management Tab



The keys that are used for authenticating the local host.

Step 3. Click the **Add** button to start the New Authentication Key wizard (Figure 3-9).

Figure 3-9. New Authentication Key Wizard



New Authentication Key

This wizard guides you through the generation of a new authentication key.

What kind of an authentication key would you like to create?

○ Create an authentication key pair and a certificate

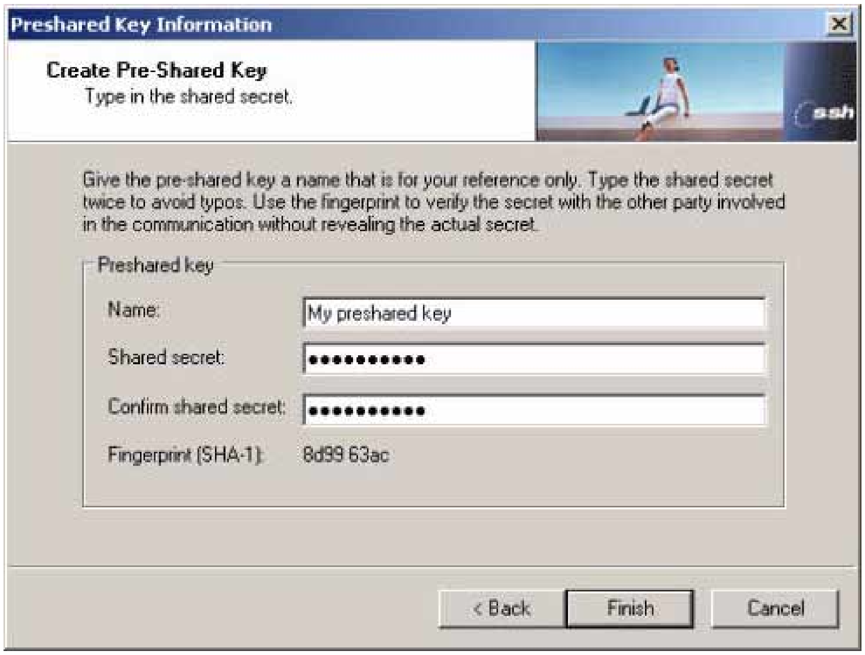
○ Enroll for a certificate

● Create a pre-shared key

Step 4. Select the **Create a pre-shared key** option and then click **Next>**.

Step 5. The Create Pre-Shared Key window appears (Figure 3-10).

Figure 3-10. Create Pre-Shared Key window



Preshared Key Information

Create Pre-Shared Key
Type in the shared secret.

Give the pre-shared key a name that is for your reference only. Type the shared secret twice to avoid typos. Use the fingerprint to verify the secret with the other party involved in the communication without revealing the actual secret.

Preshared key

Name: My preshared key

Shared secret: •••••••••••

Confirm shared secret: •••••••••••

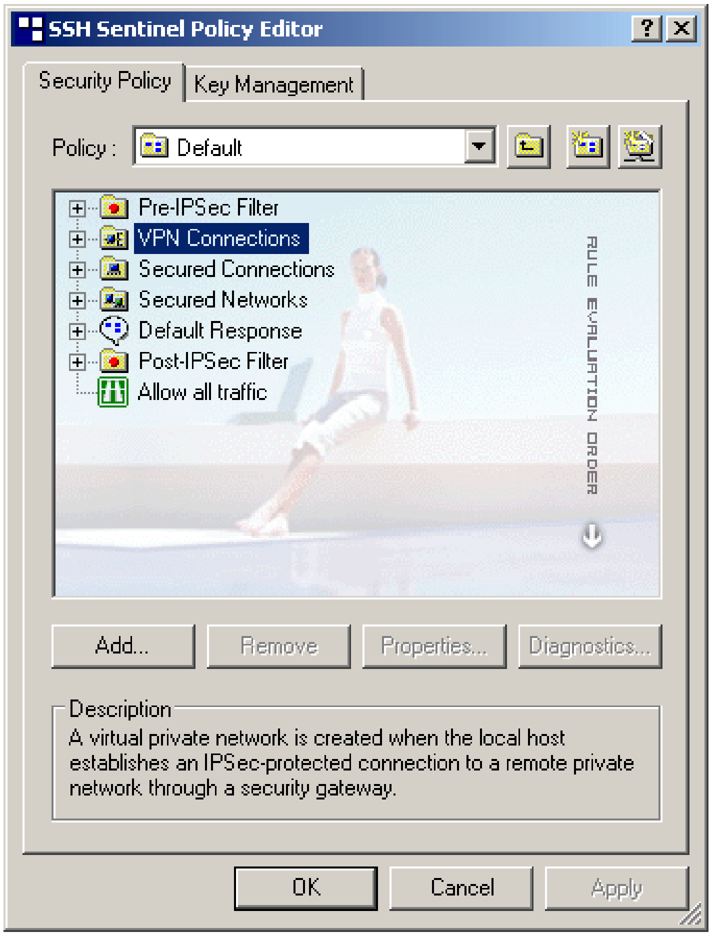
Fingerprint (SHA-1): 8d99 63ac

Step 6. Type the Pre-shared key name, the Shared secret, and Confirm the shared secret in the appropriate fields. Click **Finish**.

The new entry appears in the **My Keys** list.

Step 7. Click the **Security Policy** tab to create a new policy (Figure 3-11).

Figure 3-11. SSH Sentinel Policy Editor Window, Security Policy Tab



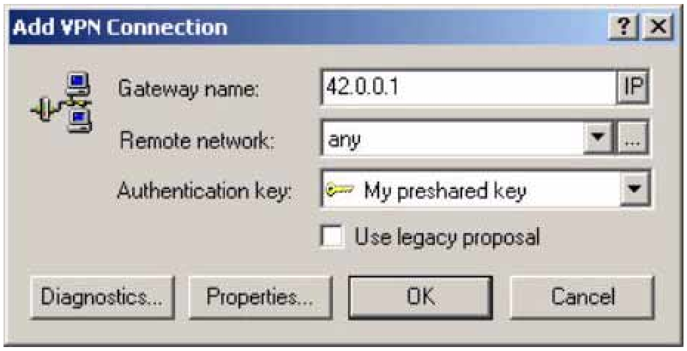
Policy : Default

Description
A virtual private network is created when the local host establishes an IPSec-protected connection to a remote private network through a security gateway.

Step 8. Select **VPN Connections** and then click **Add**.

Step 9. The Add VPN Connection window appears (Figure 3-12).

Figure 3-12. Add VPN Connection Dialog



Gateway name: 42.0.0.1

Remote network: any

Authentication key: My preshared key

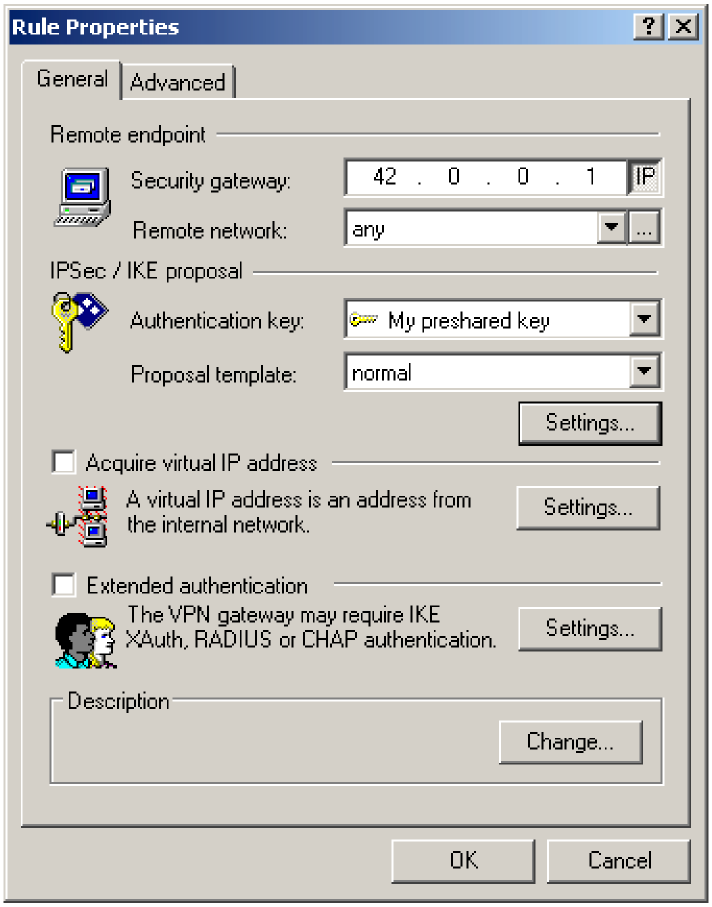
☐ Use legacy proposal

Step 10. Do the following:

- Enter `42.0.0.1` in the **Gateway name** field.
- Specify the **Remote network** (default is *any* – 0.0.0.0/0.0.0.0) that this computer will accessed through the VPN connection.
- Pull down the **Authentication key** menu and then select the pre-shared key entry created in Step 6.

Step 11. Click **Properties**, the Rule Properties tab will appear.

Figure 3-13. SSH Sentinel Policy Editor Window, Rule Properties Tab



Rule Properties

Remote endpoint

Security gateway: 42 . 0 . 0 . 1

Remote network: any

IPSec / IKE proposal

Authentication key: My preshared key

Proposal template: normal

☐ Acquire virtual IP address

A virtual IP address is an address from the internal network.

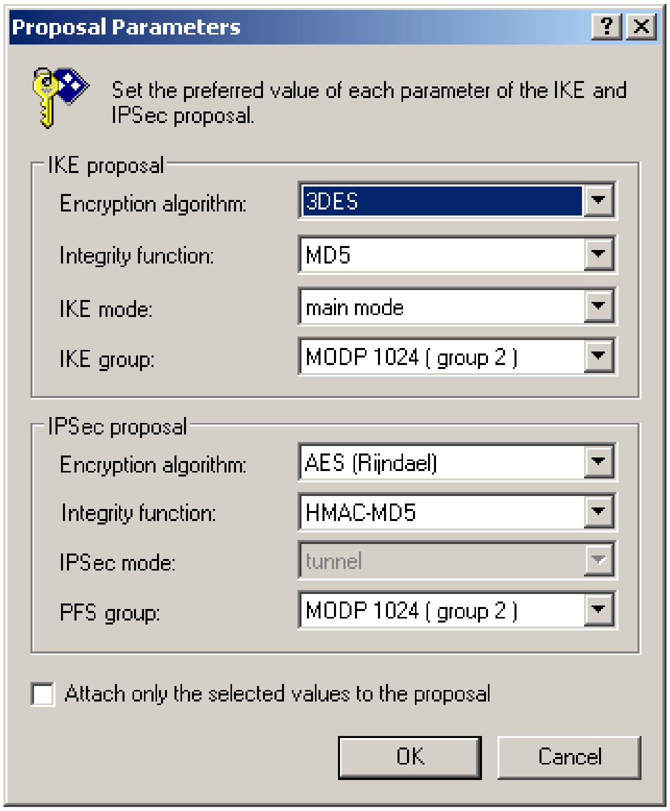
☐ Extended authentication

The VPN gateway may require IKE XAuth, RADIUS or CHAP authentication.

Description

Step 12. Click **Settings** under IPSec / IKE proposal. The Proposal Parameters window appears.

Figure 3-14. SSH Sentinel Policy Editor Window, Proposal Parameters Window



Proposal Parameters

Set the preferred value of each parameter of the IKE and IPSec proposal.

IKE proposal

Encryption algorithm: 3DES

Integrity function: MD5

IKE mode: main mode

IKE group: MODP 1024 (group 2)

IPSec proposal

Encryption algorithm: AES (Rijndael)

Integrity function: HMAC-MD5

IPSec mode: tunnel

PFS group: MODP 1024 (group 2)

☐ Attach only the selected values to the proposal

Step 13. Select the desired IKE proposal encryption algorithm, for example 3-DES, and click **OK**

> ***Note:*** *You cannot use the default IKE proposal encryption algorithm, AES, as the 700wl Series system does not support AES for IKE encryption.*

Step 14. When the Rule Properties window reappears, click **OK** to save your settings.

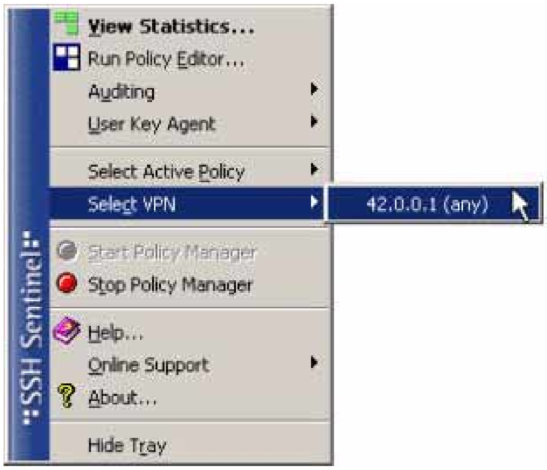
Step 15. (Optional) When the Add VPN Connection window reappears, click the **Diagnostics** button to test the connection.

Step 16. Click **OK** to finish the settings.

Step 17. Do the following to establish the VPN connection:

- Right click on the **Sentinel** icon in the notification area to display the SSH Sentinel menu.
- Move the pointer to the **Select VPN** submenu and then select **42.0.0.1 (any)**, which is the VPN connection created in the previous section.

Figure 3-15. Select VPN Submenu



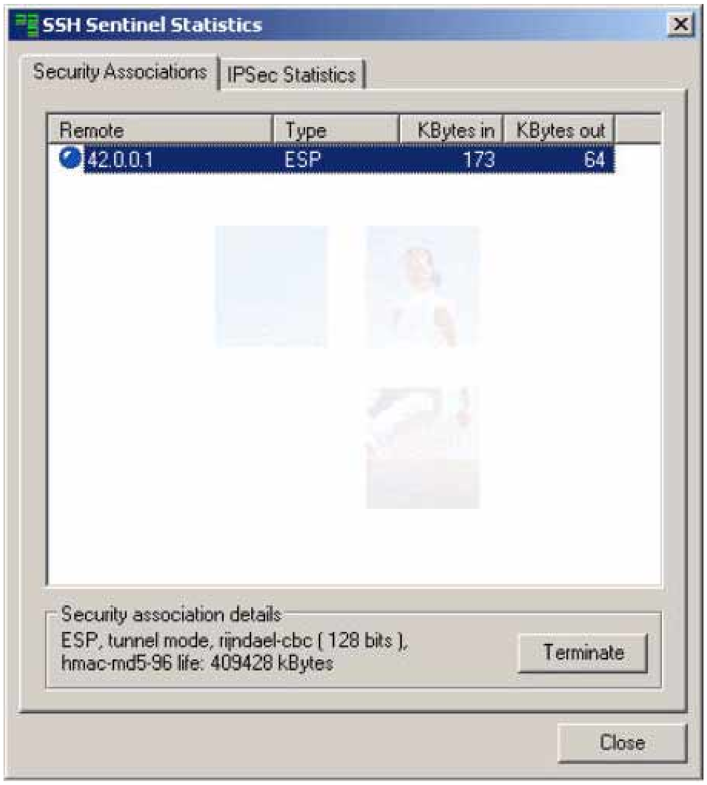
The computer will open the VPN connection to the 700wl Series unit (42.0.0.1).

Step 18. Verify the VPN Connection:

Double click the **Sentinel** icon in the notification area to view the statistics of the VPN connection.

Notice that the 42.0.0.1 entry appears in the Security Associations panel along with the detailed information of the encryption protocol (Figure 3-16).

Figure 3-16. SSH Sentinel Statistics Window



Remote	Type	KBytes in	KBytes out
42.0.0.1	ESP	173	64

Security association details
ESP, tunnel mode, rijndael-cbc (128 bits),
hmac-md5-96 life: 409428 kBytes

PGPnet for Mac OS 9.x

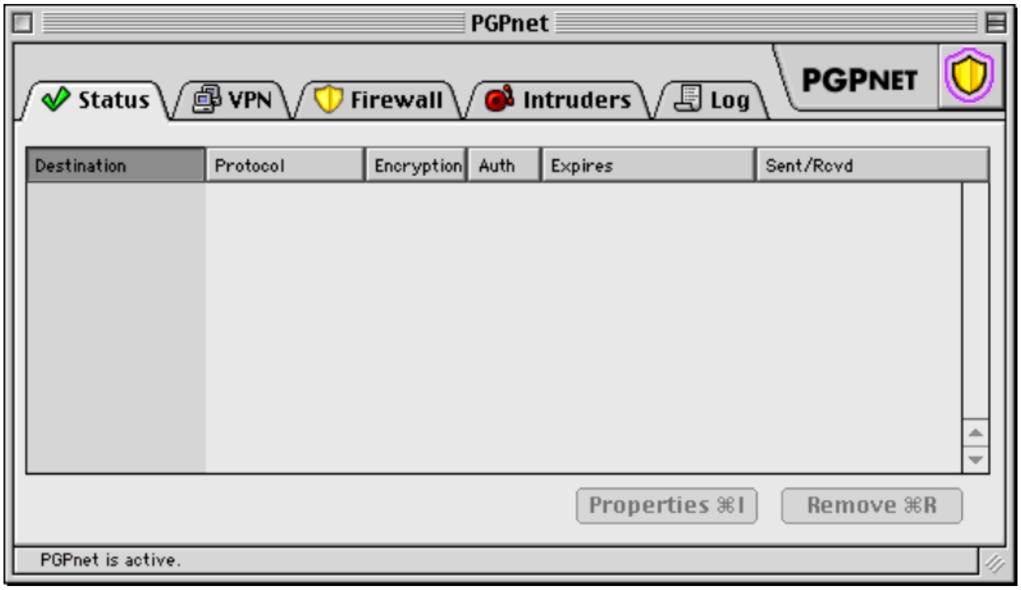
In this section, the procedures for configuring PGPnet 7.1 on Apple Mac OS 9.x are described.

The following procedures are created based on Mac OS 9.2.2. You may follow the same procedures for configuring the software on different Mac OS 9.x versions.

Step 1. After the installation and system restart, PGPnet is started automatically. Click the **PGPnet** icon on the upper-right corner of the desktop (left of Finder) and then select **PGPnet**.

The PGPnet window appears.

Figure 3-17. PGPnet Window, Status Tab



Destination	Protocol	Encryption	Auth	Expires	Sent/Rcvd

PGPnet is active.

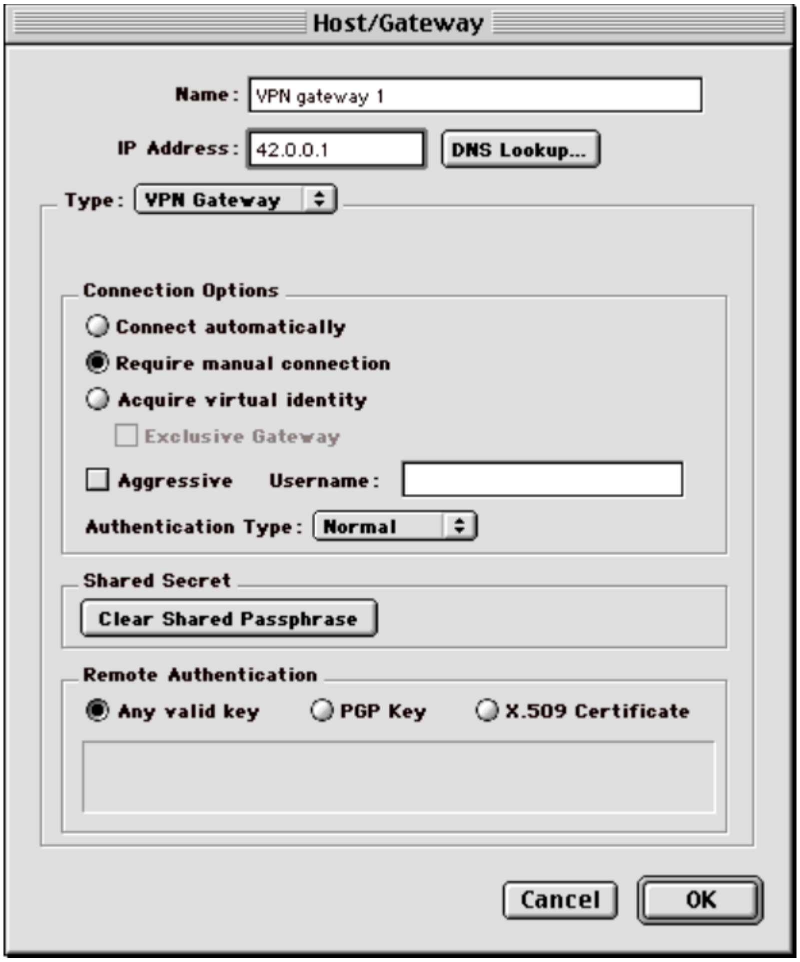
Step 2. Select the VPN tab and then click the **Add** button. The Host/Gateway window appears.

Step 3. Setup the VPN gateway by entering the desired name and IP address in the appropriate text boxes. Pull-down the menu below **IP Address** and then select **VPN Gateway**. Next, select **Require manual connection** from the Connection Options.

If the button in the **Shared Secret** section shows **Set Shared Passphrase**, you must click on the button to setup the Pre-shared key. On the other hand, if the button shows **Clear Shared Passphrase** but you are not sure that the passphrase is setup correctly, you may click the button to clear the previous setting and then set up a new one.

Click **OK** when you are done.

Figure 3-18. Host/Gateway Window



Host/Gateway

Name: VPN gateway 1

IP Address: 42.0.0.1

Type: VPN Gateway

Connection Options

○ Connect automatically

● Require manual connection

○ Acquire virtual identity

□ Exclusive Gateway

□ Aggressive Username:

Authentication Type: Normal

Shared Secret

Remote Authentication

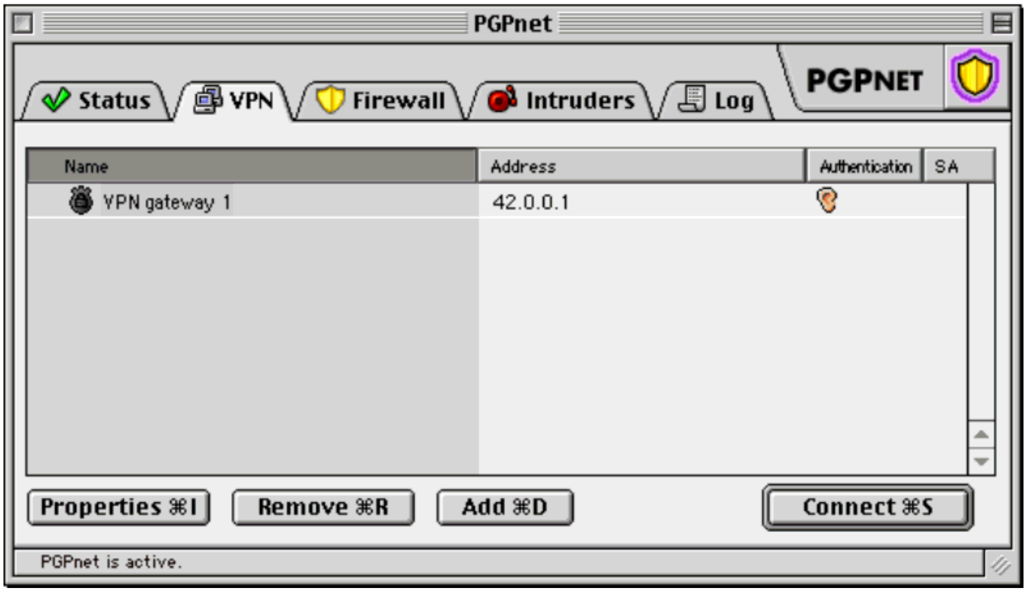
● Any valid key ○ PGP Key ○ X.509 Certificate

Based on the above settings, a new entry, named *VPN gateway 1*, appears in the PGPnet panel.

The following shows how to create a secured connection to the internal network with the address 192.168.0.0 /16 using the VPN gateway created in Step 3.

Step 4. Highlight the entry you created in the previous step and then click **Add**.

Figure 3-19. PGPnet Window, VPN Panel



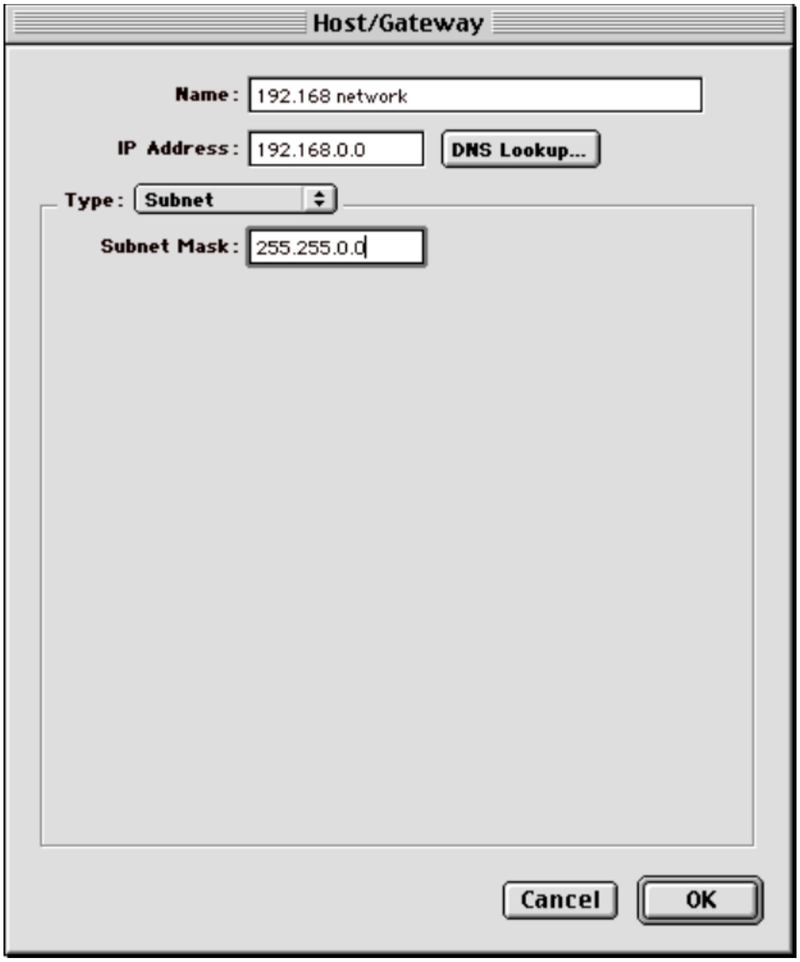
Name	Address	Authentication	SA
VPN gateway 1	42.0.0.1		

PGPnet is active.

The Host/Gateway window appears.

Step 5. Enter the desired name and IP address in the appropriate text boxes. Pull down the menu below **IP Address** and then select **Subnet**. The Host/Gateway window will be reduced to that shown below. Make sure that the Subnet Mask value is 255.255.0.0 (/16). Click **OK**.

Figure 3-20. Host/Gateway Window



Host/Gateway

Name: 192.168 network

IP Address: 192.168.0.0

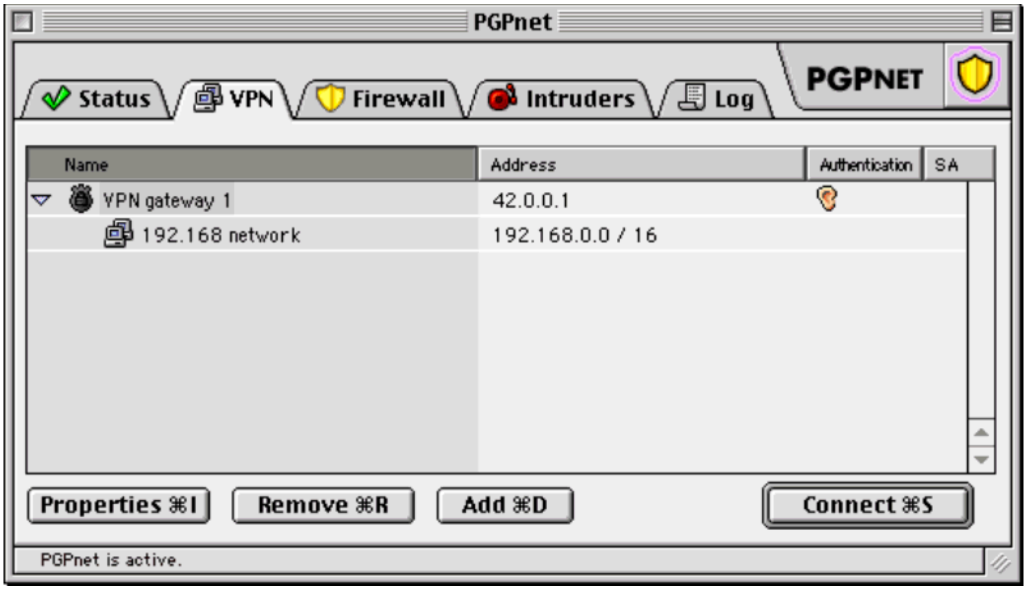
Type: Subnet

Subnet Mask: 255.255.0.0

Note that based on the above settings, all traffic going to this subnet will be encrypted.

A new entry appears below the **VPN gateway 1** entry (you must expand the **VPN gateway 1** entry to see it) as shown below.

Figure 3-21. PGPnet Window, VPN Panel



Name	Address	Authentication	SA
VPN gateway 1	42.0.0.1		
192.168 network	192.168.0.0 / 16		

PGPnet is active.

Step 6. Repeat Steps 4 and 5 to create additional subnet/host entries to which your system will encrypt the traffic and send it through the VPN gateway.

Note: *If you plan to encrypt all IP traffic through the VPN gateway, you must create the following subnet entries:*

0.0.0.1 /1 (covers 0.0.0.1 – 127.255.255.255)

128.0.0.0 /1 (covers 128.0.0.0 – 255.255.255.255)

Step 7. The last configuration step is to change the order of how the PGPnet client attempts to connect to the VPN gateway.

a. Pull down the **Edit** menu and then select **Preferences…**. The PGP Preferences window appears.

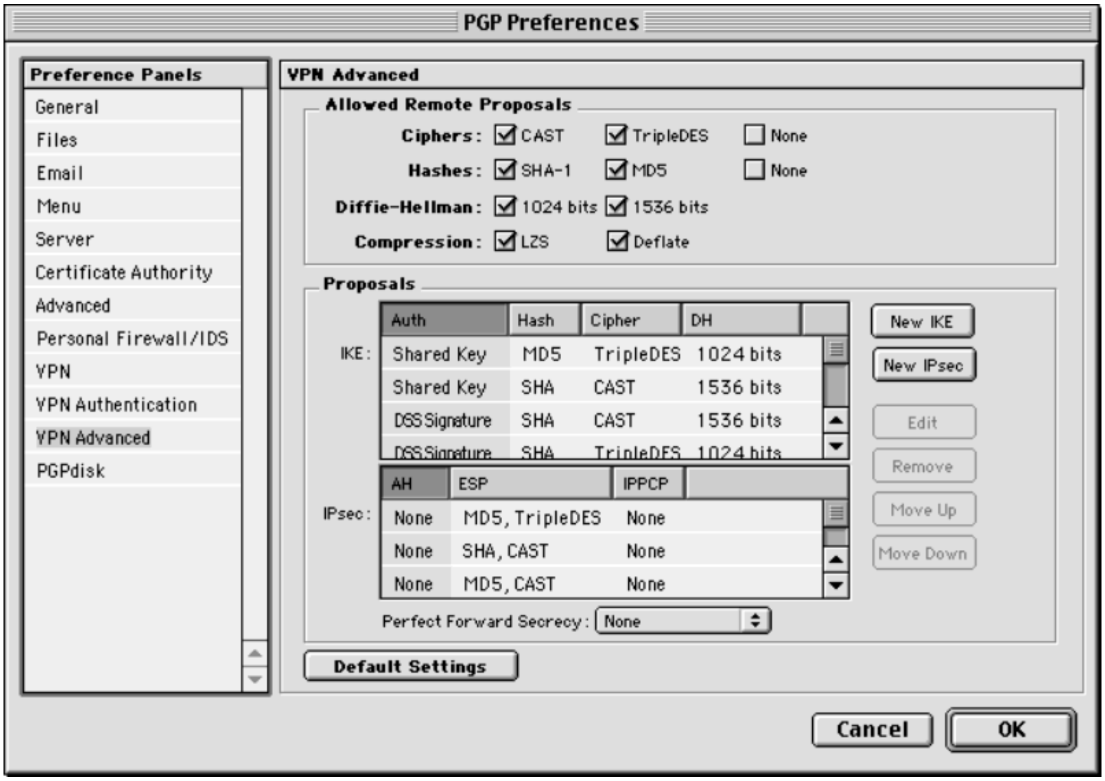
b. Select **VPN Advanced** from the Preference Panels.

c. In the **Proposals** section, highlight the **Shared Key MD5 TripleDES 1024 bits** in the IKE panel and then click **Move Up** repeatedly until the entry is at the top of the panel.

d. Highlight the **None MD5,TripleDES None** entry in the IPSec panel and then move the entry up to the top of the panel.

The final settings are shown in the picture below.

Figure 3-22. PGP Preferences Settings



VPN Advanced

Allowed Remote Proposals

Ciphers: ☑ CAST ☑ TripleDES □ None

Hashes: ☑ SHA-1 ☑ MD5 □ None

Diffie-Hellman: ☑ 1024 bits ☑ 1536 bits

Compression: ☑ LZS ☑ Deflate

Proposals

IKE:

Auth	Hash	Cipher	DH
Shared Key	MD5	TripleDES	1024 bits
Shared Key	SHA	CAST	1536 bits
DSS Signature	SHA	CAST	1536 bits
DSS Signature	SHA	TripleDES	1024 bits

IPsec:

AH	ESP	IPPCP
None	MD5, TripleDES	None
None	SHA, CAST	None
None	MD5, CAST	None

Perfect Forward Secrecy: None

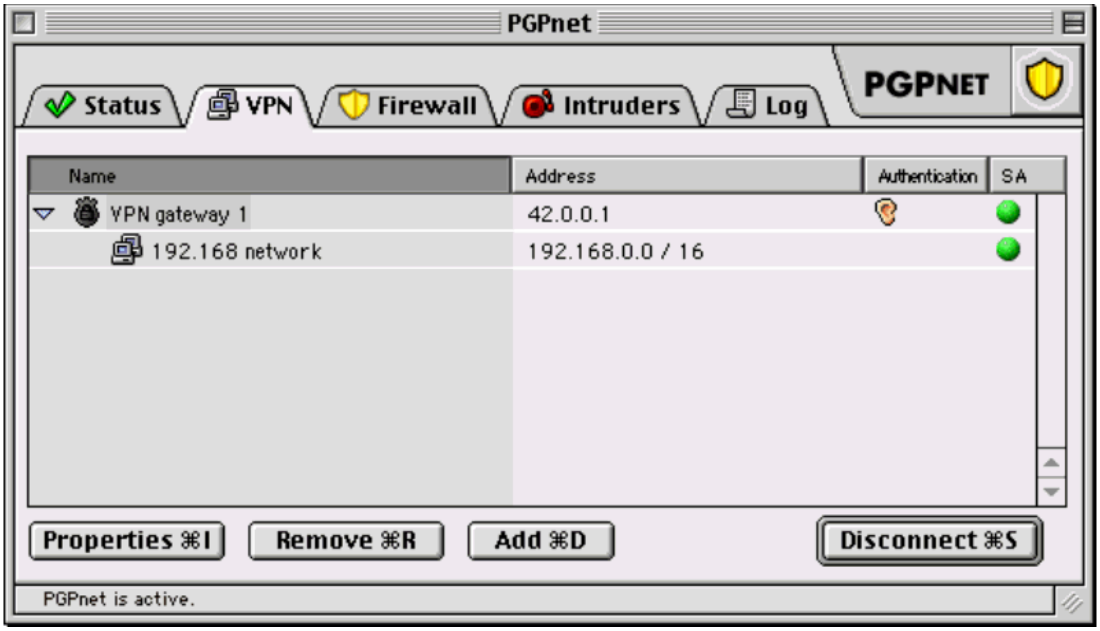
e. Click **OK**.

At this point, PGPnet is ready for connecting to the IPSec gateway.

Step 8. Highlight the VPN gateway (in this example – **VPN gateway 1**) and then click **Connect**.

After the VPN connection has been made, you will see a green icon on the SA column of each entry. Otherwise, you will get a red icon indicating that the VPN connection has failed.

Figure 3-23. PGPnet Window, VPN Panel



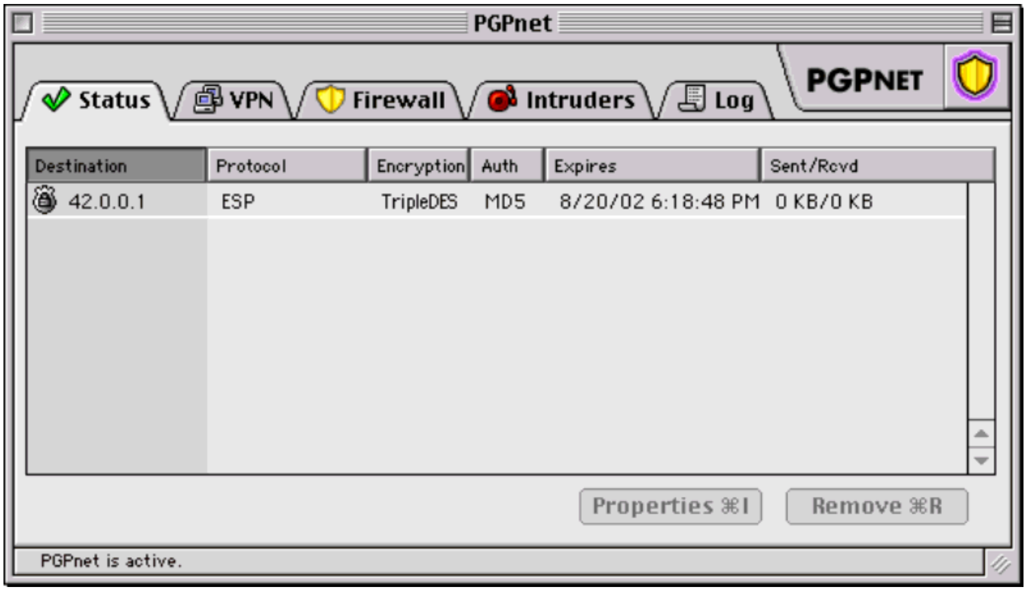
Name	Address	Authentication	SA
VPN gateway 1	42.0.0.1		●
192.168 network	192.168.0.0 / 16		●

PGPnet is active.

If you have problems connecting to the VPN server, you can click on the Log tab for information. You may also view additional information from the Log File on the 700wl Series unit.

When you click on the Status tab, you should see the Sent/Rcvd values increase every time traffic is generated to your defined subnets.

Figure 3-24. PGPnet Window, Status Panel



Destination	Protocol	Encryption	Auth	Expires	Sent/Rcvd
42.0.0.1	ESP	TripleDES	MD5	8/20/02 6:18:48 PM	0 KB/0 KB

PGPnet is active.

VPN Tracker for Mac OS X

In this section, the procedures for configuring VPN Tracker 2.2 on Apple Mac OS X are described.

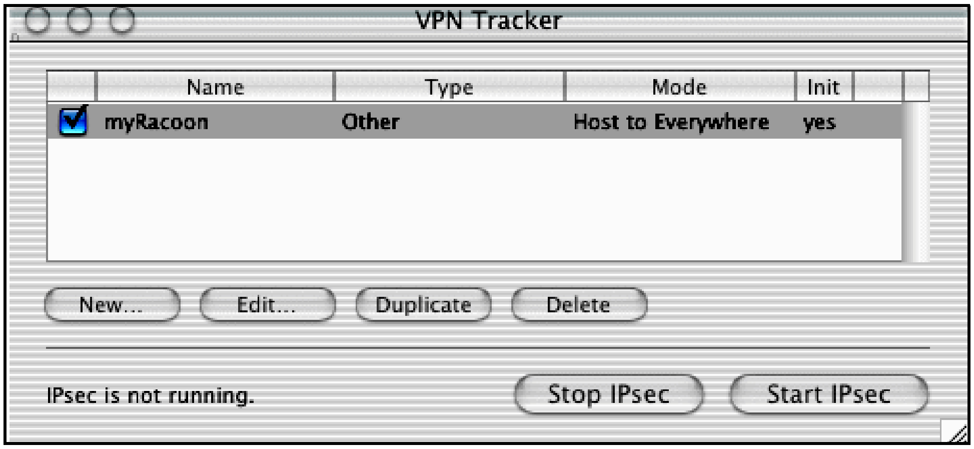
Note: *VPN Tracker requires Mac OS X 10.2 or higher and the BSD subsystem from the Mac OS X installation to be installed.*

The following procedures are created based on Mac OS X 10.2. You may follow the same procedures for configuring the software on higher versions of Mac OS X.

Step 1. After the installation of VPN Tracker and system restart, start up VPN Tracker.

The main VPN Tracker window appears, Figure 3-25.

Figure 3-25. VPN Tracker Window, Main Window



	Name	Type	Mode	Init
☑	myRacoon	Other	Host to Everywhere	yes

IPsec is not running.

Step 2. Click **New** to create a new profile, or select an existing profile and click **Edit** to modify an existing profile (in Figure 3-25 MyRacoon is an existing profile).

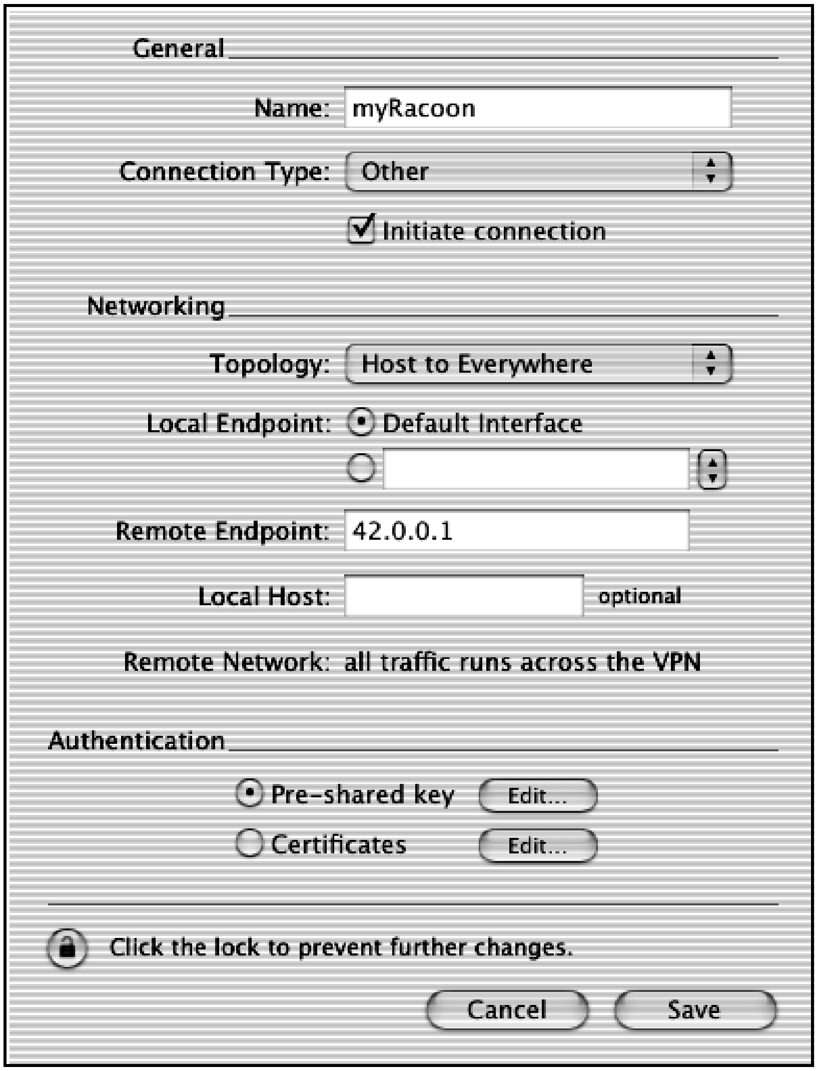
The profile settings window appears.

Step 3. In the profile settings window, as shown in Figure 3-26, enter a name for the connection profile.

Step 4. In the Connection Type field select **Other**, then **Edit connection types**. The Connection Types window appears, displaying the Phase 1 General tab, Figure 3-27.

Step 5. Select or enter data into the fields as described in Table 3-1 below.

Figure 3-26. VPN Tracker Window, Profile Settings Window



General

Name: myRacoon

Connection Type: Other

☑ Initiate connection

Networking

Topology: Host to Everywhere

Local Endpoint: ● Default Interface

○

Remote Endpoint: 42.0.0.1

Local Host: optional

Remote Network: all traffic runs across the VPN

Authentication

● Pre-shared key

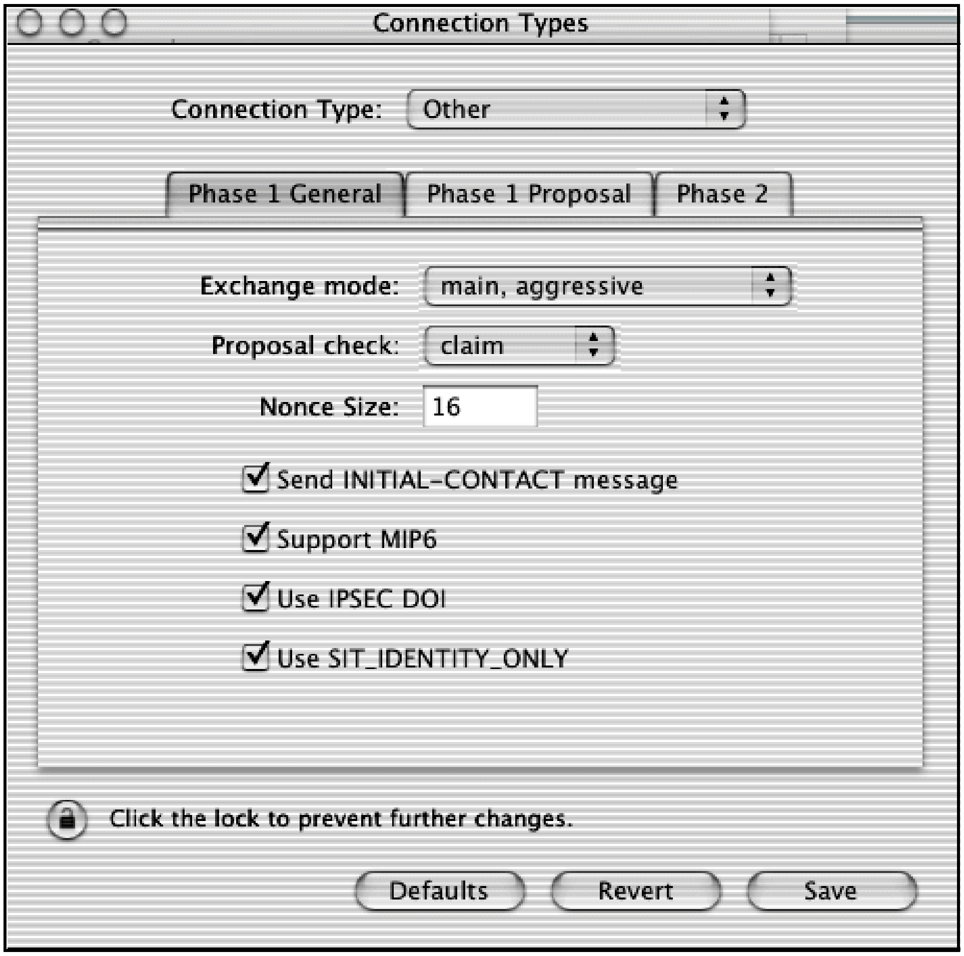
○ Certificates

Click the lock to prevent further changes.

Table 3-1. VPN Tracker Connection Type Settings, Phase 1 General

Field	Setting
Exchange Mode	main, aggressive
Proposal Check	claim
Nonce Size	16
Send INITIAL-CONTACT message	checked
Support MIP6	checked
Use IPSEC DOI	checked
Use SIT_INDENTITY_ONLY	checked

Figure 3-27. VPN Tracker Window, Connection Types Window: Phase 1 General Tab



Connection Type: Other

Exchange mode: main, aggressive

Proposal check: claim

Nonce Size: 16

☑ Send INITIAL-CONTACT message

☑ Support MIP6

☑ Use IPSEC DOI

☑ Use SIT_IDENTITY_ONLY

Click the lock to prevent further changes.

Step 6. Click **Phase 1 Proposal**. The Phase 1 Proposal tab setting appear, Figure 3-28.

Step 7. Select or enter data into the fields as described in Table 3-2 below.

Table 3-2. VPN Tracker Connection Type Settings, Phase 1 Proposal

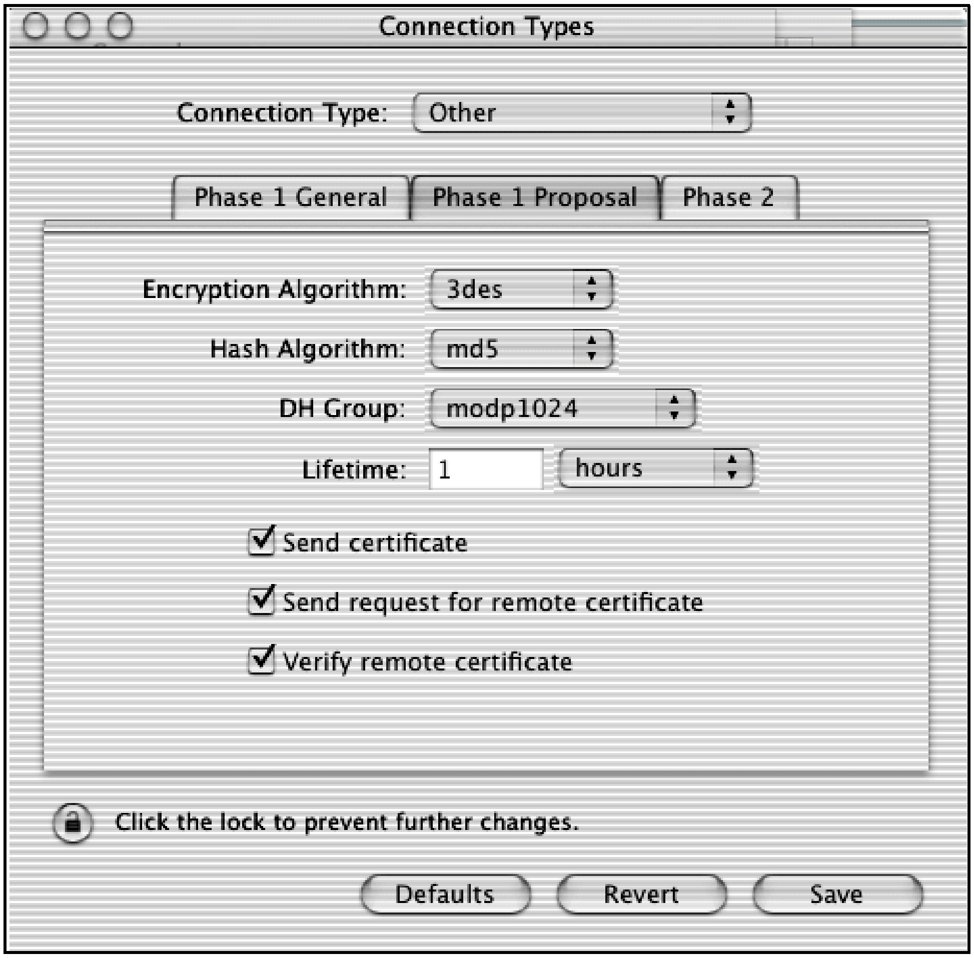
Field	Setting
Encryption Algorithm	Select an algorithm that matches the setting for **IKE Encryption** under Wireless Data Privacy in the VPN section of the 700wl Series system Administrative Console, e.g., **3des**.
Hash Algorithm	Select an algorithm that matches the setting for **IKE Integrity** under Wireless Data Privacy in the VPN section of the 700wl Series system Administrative Console, **sha1** or **md5**.

Table 3-2. VPN Tracker Connection Type Settings, Phase 1 Proposal (Continued)

Field	Setting
DH Group	Select the group used for the Diffie-Hellman exponentiations that matches the setting for **IKE Diffie-Hellman** under Wireless Data Privacy in the VPN section of the 700wl Series system Administrative Console: • Diffie-Hellman Group 1 matches modp768 • Diffie-Hellman Group 2 matches modp1024 • Diffie-Hellman Group 5 matches modp1024
Lifetime	Defines the encryption lifetime, in hours, which will be proposed in the phase 1 negotiations.
Send certificate	checked If checked and certificates are being used for authentication, VPN Tracker will send your own certificate to the 700wl Series system for verification.
Send request for remote certificate	checked If checked and certificates are being used for authentication, VPN Tracker will request the certificate from the 700wl Series system for verification.
Verify remote certificate	checked If checked and certificates are being used for authentication, VPN Tracker will verify the 700wl Series system certificate.

Step 8. Click **Phase 2**. The Phase 2 tab setting appear, Figure 3-29.

Figure 3-28. VPN Tracker Window, Connection Types Window: Phase 1 Proposal Tab



Connection Type: Other

Encryption Algorithm: 3des

Hash Algorithm: md5

DH Group: modp1024

Lifetime: 1 hours

☑ Send certificate

☑ Send request for remote certificate

☑ Verify remote certificate

Step 9. Select or enter data into the fields as described in Table 3-3 below.

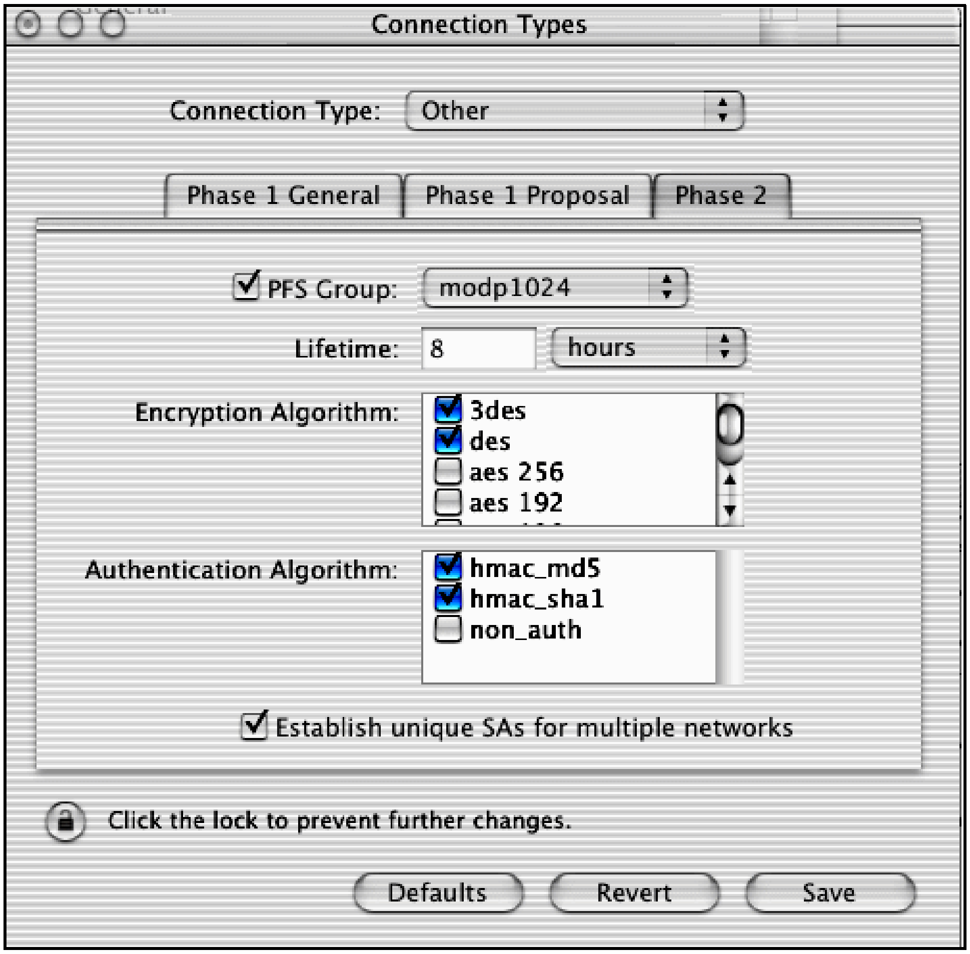
Table 3-3. VPN Tracker Connection Type Settings, Phase 2

Field	Setting
PFS Group	Specifies the group of Diffie-Hellman exponentiations for PFS (Perfect Forward Secrecy) in phase 2. If you do not require PFS, un-check the check box. Otherwise, select the group used for the Diffie-Hellman exponentiations that matches the setting for **IKE Diffie-Hellman** under Wireless Data Privacy in the VPN section of the 700wl Series system Administrative Console: • Diffie-Hellman Group 1 matches modp768 • Diffie-Hellman Group 2 matches modp1024 • Diffie-Hellman Group 5 matches modp1536
Lifetime	Defines the lifetime, in hours, to be used in the IPsec-SA. The connection will expire and be reestablished after this period of time.

Table 3-3. VPN Tracker Connection Type Settings, Phase 2 (Continued)

Field	Setting
Encryption Algorithm	Select one or more algorithms that matches the setting for **ESP Encryption** under Wireless Data Privacy in the VPN section of the 700wl Series system Administrative Console, e.g., **3des** and **des**.
Authentication Algorithm	Select one or more algorithms that matches the setting for **ESP Integrity** under Wireless Data Privacy in the VPN section of the 700wl Series system Administrative Console. The terms used by VPN Tracker match the ESP integrity settings as follows: • hmac_md5 matches MD5 • hmac_sha1 matches SHA-1 • non_auth matches Null
Establish unique SAs for multiple networks	Enabled: VPN Tracker will establish an unique Security Association (SA) for each network when multiple local or remote networks are specified for a connection. Otherwise, the same SA will be used for all networks of a connection.

Figure 3-29. VPN Tracker Window, Connection Types Window: Phase 2 Tab



Connection Types

Connection Type: Other

☑ PFS Group: modp1024

Lifetime: 8 hours

Encryption Algorithm: ☑ 3des ☑ des □ aes 256 □ aes 192

Authentication Algorithm: ☑ hmac_md5 ☑ hmac_sha1 □ non_auth

☑ Establish unique SAs for multiple networks

Click the lock to prevent further changes.

Step 10. Click **Save** to save these connection settings. The Profile Settings window reappears, Figure 3-26.

Step 11. Put a check in the **Initiate connection** check box (this enables you to establish this connection from your end).

Step 12. Select **Host to Everywhere** from the **Topology** pull-down list to secure all your network traffic.

Step 13. For **Local Endpoint**, select **Default Interface**. This means that VPN Tracker will use the default network connection of your Mac for connecting to the remote endpoint.

Step 14. For **Remote Endpoint**, enter the IP address of the VPN server. In this case, the internal address, 42.0.0.1, of the 700wl Series unit (either the Integrated Access Manager or Access Controller) is used.

Step 15. Leave the **Local Host** field blank.

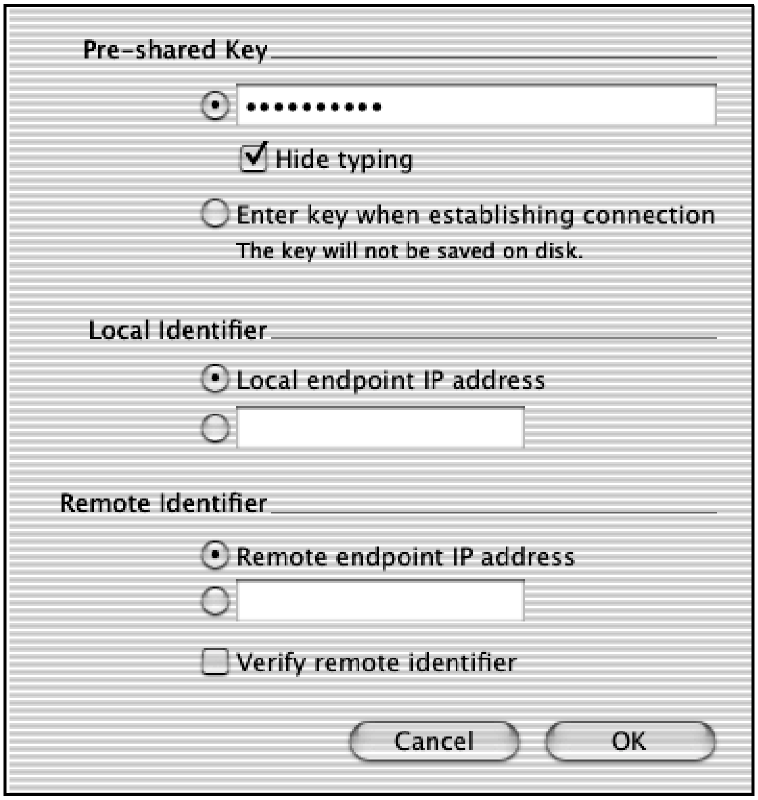
Step 16. For Authentication select **Pre-shared key** if you have set up the corresponding Access Policy to use a shared secret for authentication, or select **Certificates** if you have set up the corresponding Access Policy to use a certificate for authentication.

Step 17. If you selected **Pre-shared key** as the authentication method, click **Edit…** next to the **Pre-shared key** radio button to enter the shared secret.

The Pre-shared Key Window appears, Figure 3-30.

If you selected **Certificates** as the authentication method (Figure 3-26), click **Edit…** next to the **Certificates** radio button to add and manage your certificates as well as certificate authorities (CAs). See the *VPN Tracker User Manual* for further information (see “References” on page Ref-1).

Figure 3-30. VPN Tracker Window, Pre-shared Key Window



Pre-shared Key

● ••••••••••

☑ Hide typing

○ Enter key when establishing connection

The key will not be saved on disk.

Local Identifier

● Local endpoint IP address

○

Remote Identifier

● Remote endpoint IP address

○

□ Verify remote identifier

Step 18. Enter the shared secret specified in the corresponding Access Policy in the top field.

Click **OK** when you are done. You return to the Profile Settings Window, Figure 3-26.

Step 19. Click **Save** to save these profile settings. The main VPN Tracker window reappears, Figure 3-25.

Step 20. In the main VPN Tracker window, put a check mark next to the profile you have created and click **Start IPsec** to start an IPSec connection.

PPTP Client Configuration

This section describes how to configure computers running Windows XP, 2000, and 98SE as PPTP clients.

Windows XP Clients

Do the following to configure the Windows XP client:

Step 1. Open the Network Connections window:

Click the **Start** button and then move the pointer to **My Network Places**. Right-click on My Network Places to display the pop-up menu and then select Properties.

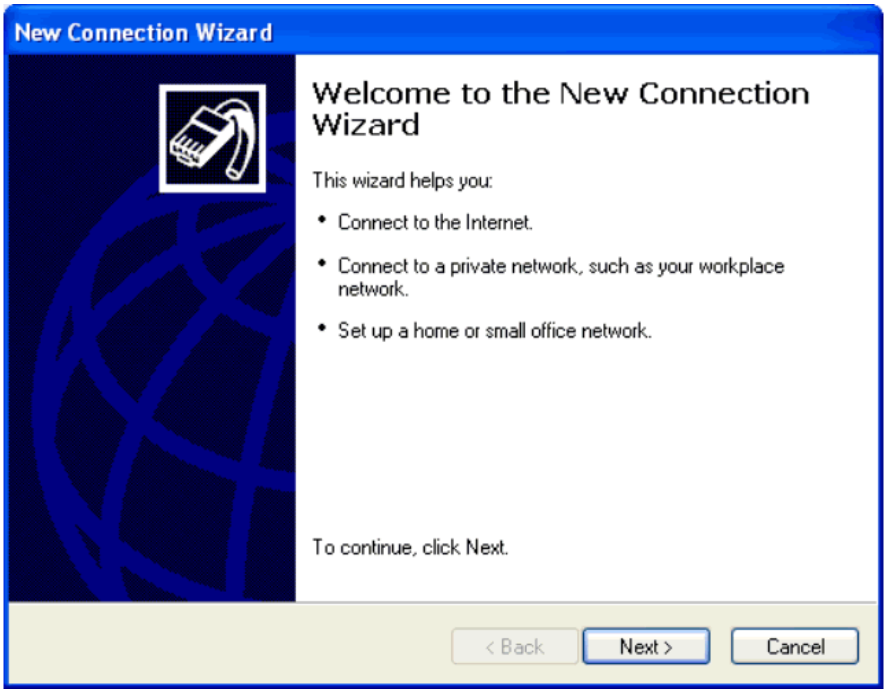
The Network Connections window appears.

Step 2. Click on the **Create a new connection** link on the **Network Tasks** panel.

The New Connection Wizard window appears.

Step 3. Click the **Next>** button to go to the Network Connection Type page.

Figure 3-31. New Connection Wizard



New Connection Wizard

Welcome to the New Connection Wizard

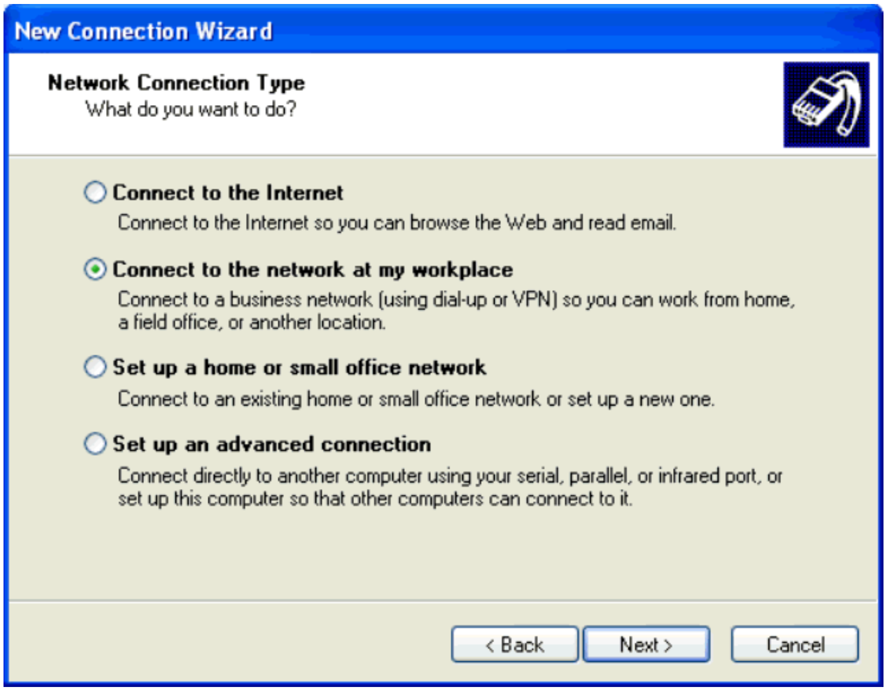
This wizard helps you:

- Connect to the Internet.
- Connect to a private network, such as your workplace network.
- Set up a home or small office network.

To continue, click Next.

Step 4. Select the **Connect to the network at my workplace** option and then click the **Next>** Button.

Figure 3-32. Network Connection Type Window



New Connection Wizard

Network Connection Type
What do you want to do?

○ **Connect to the Internet**
Connect to the Internet so you can browse the Web and read email.

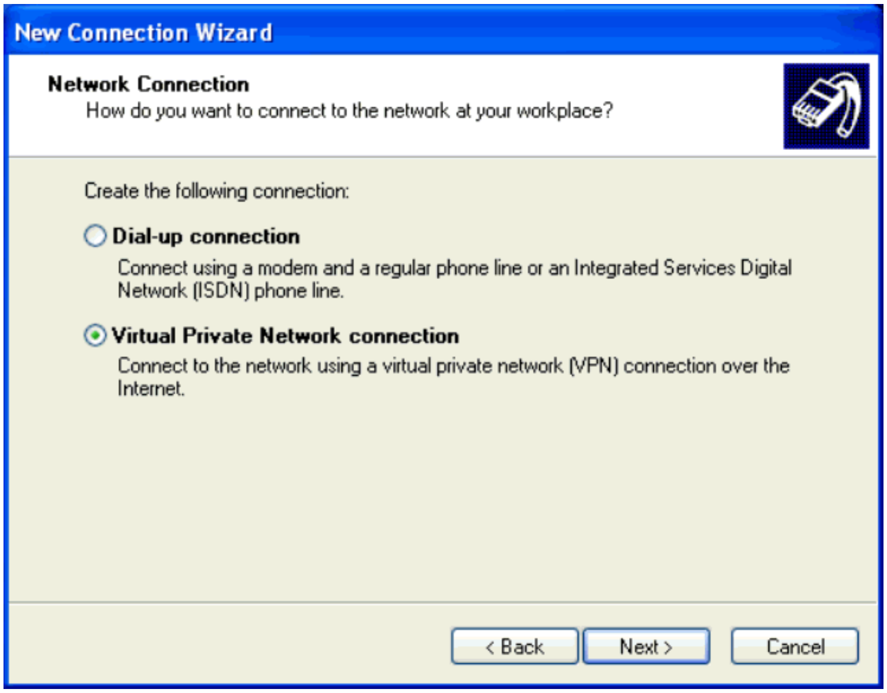
● **Connect to the network at my workplace**
Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.

○ **Set up a home or small office network**
Connect to an existing home or small office network or set up a new one.

○ **Set up an advanced connection**
Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.

Step 5. Select the **Virtual Private Network connection** option. Click **Next>**.

Figure 3-33. Network Connection Window



New Connection Wizard

Network Connection
How do you want to connect to the network at your workplace?

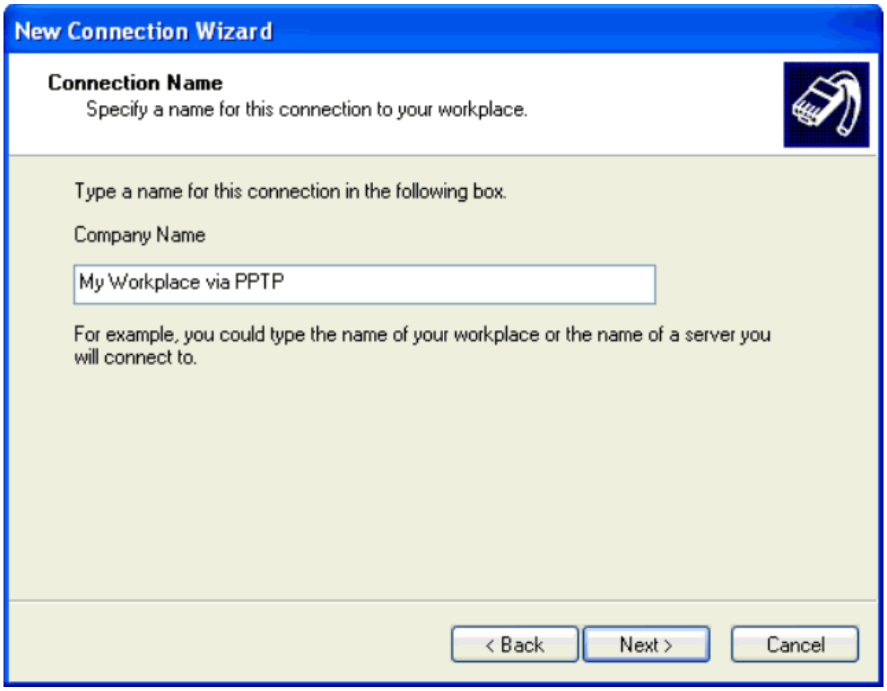
Create the following connection:

○ **Dial-up connection**
Connect using a modem and a regular phone line or an Integrated Services Digital Network (ISDN) phone line.

● **Virtual Private Network connection**
Connect to the network using a virtual private network (VPN) connection over the Internet.

Step 6. Enter the desired connection name in the **Company Name** text box. Click **Next>**.

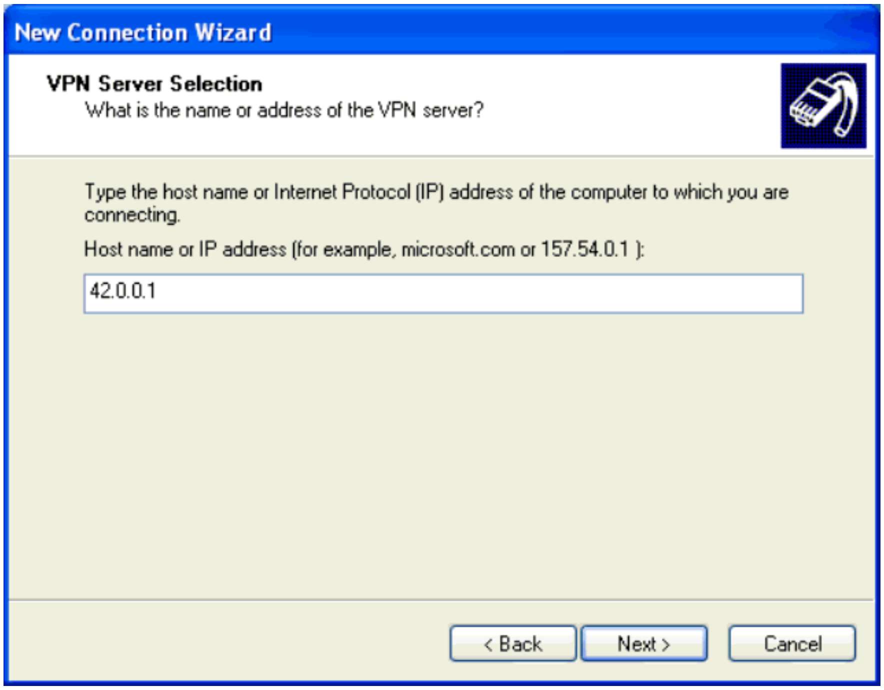
Figure 3-34. Connection Name Window



New Connection Wizard
Connection Name
Specify a name for this connection to your workplace.
Type a name for this connection in the following box.
Company Name
My Workplace via PPTP
For example, you could type the name of your workplace or the name of a server you will connect to.
< Back
Next >
Cancel

Step 7. Enter the IP address of the VPN server in the **Host name or IP address** text box. In this case, the internal address 42.0.0.1 of the 700wl Series unit (either the Integrated Access Manager or Access Controller) is used. Click **Next>**.

Figure 3-35. VPN Server Selection Window



New Connection Wizard

VPN Server Selection

What is the name or address of the VPN server?

Type the host name or Internet Protocol (IP) address of the computer to which you are connecting.

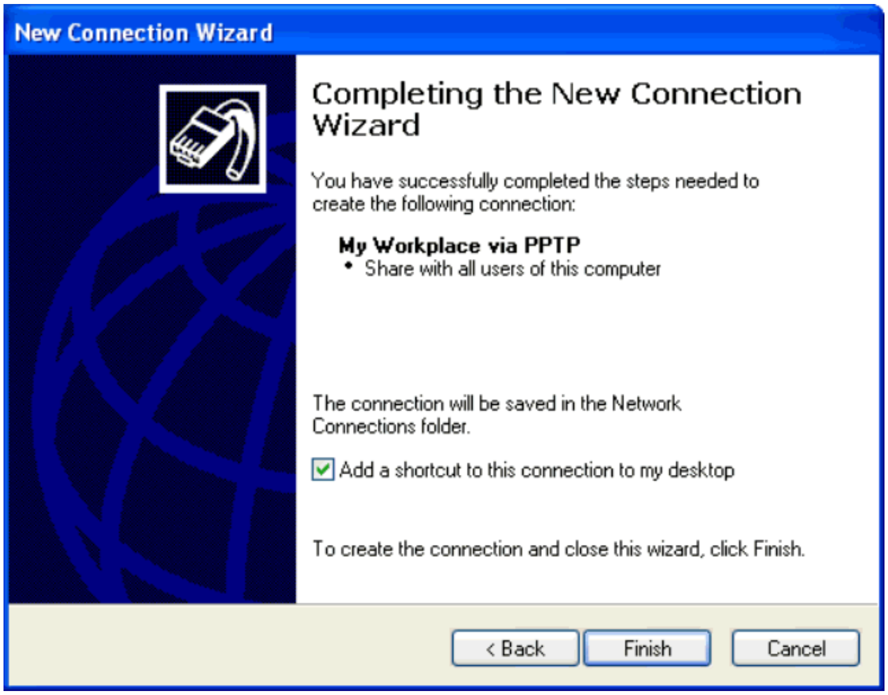
Host name or IP address (for example, microsoft.com or 157.54.0.1):

42.0.0.1

The Completing the New Connection Wizard page appears.

Step 8. Click the **Finish** button. You may choose to add a shortcut to this connection to the desktop before clicking the **Finish** button.

Figure 3-36. New Connection Wizard Completion Window



New Connection Wizard

Completing the New Connection Wizard

You have successfully completed the steps needed to create the following connection:

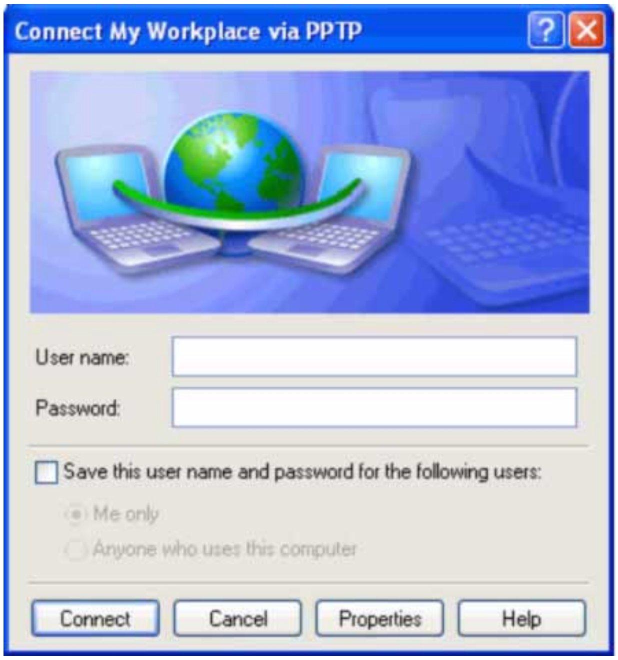
My Workplace via PPTP
- Share with all users of this computer

The connection will be saved in the Network Connections folder.

☑ Add a shortcut to this connection to my desktop

To create the connection and close this wizard, click Finish.

At this point, an icon representing the new connection appears in the Network Connections window under the **Virtual Private Network** section. In the meantime, the Sign-on window should appear on the screen; otherwise, double-click the new connection icon.



Connect My Workplace via PPTP

User name:

Password:

□ Save this user name and password for the following users:

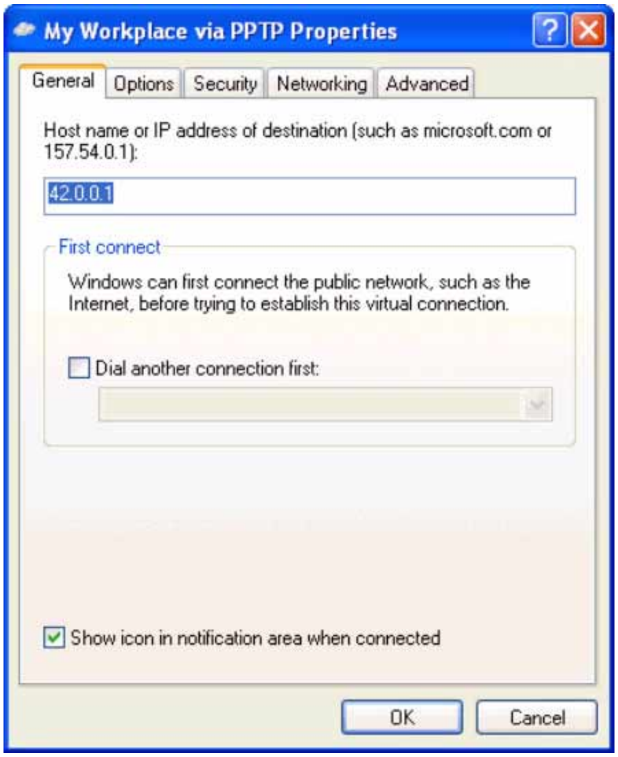
● Me only

○ Anyone who uses this computer

Figure 3-37. Sign-on Window

Step 9. You need to customize the properties of your connection to use PPTP and match the settings of the 700wl Series unit. Click the **Properties** button to open the connection's properties window.

Figure 3-38. PPTP Properties Window, General Tab



Host name or IP address of destination (such as microsoft.com or 157.54.0.1):

42.0.0.1

First connect

Windows can first connect the public network, such as the Internet, before trying to establish this virtual connection.

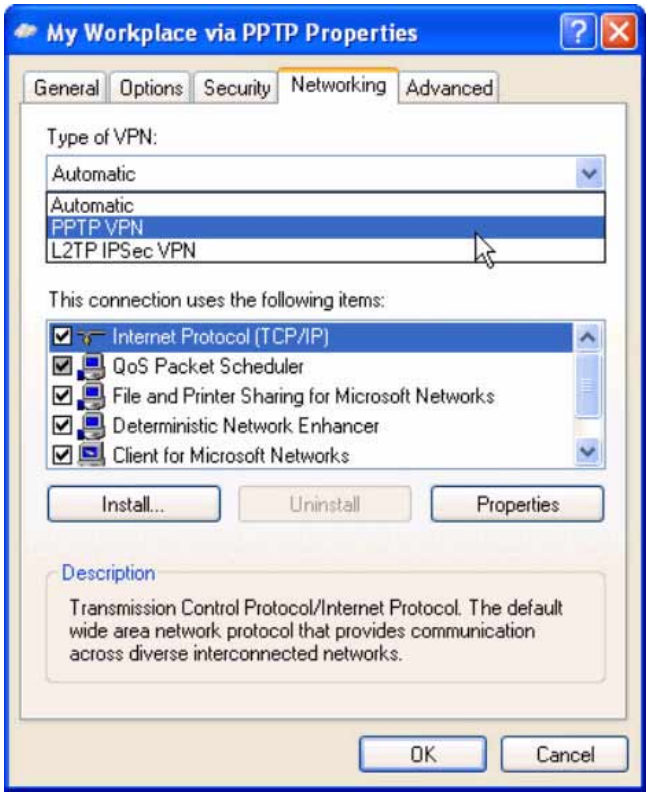
☐ Dial another connection first:

☑ Show icon in notification area when connected

Step 10. Click the Networking tab to specify the type of VPN.

Pull down the **Type of VPN** menu and select **PPTP VPN**. Make sure that **Internet Protocol (TCP/IP)** is selected.

Figure 3-39. PPTP Properties Window, Networking Tab



Type of VPN: Automatic

This connection uses the following items:

- ☑ Internet Protocol (TCP/IP)
- ☑ QoS Packet Scheduler
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ Deterministic Network Enhancer
- ☑ Client for Microsoft Networks

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

Step 11. Click the Security tab to customize the security protocols.

Select **Advanced (custom settings)** and then click the **Settings** button.

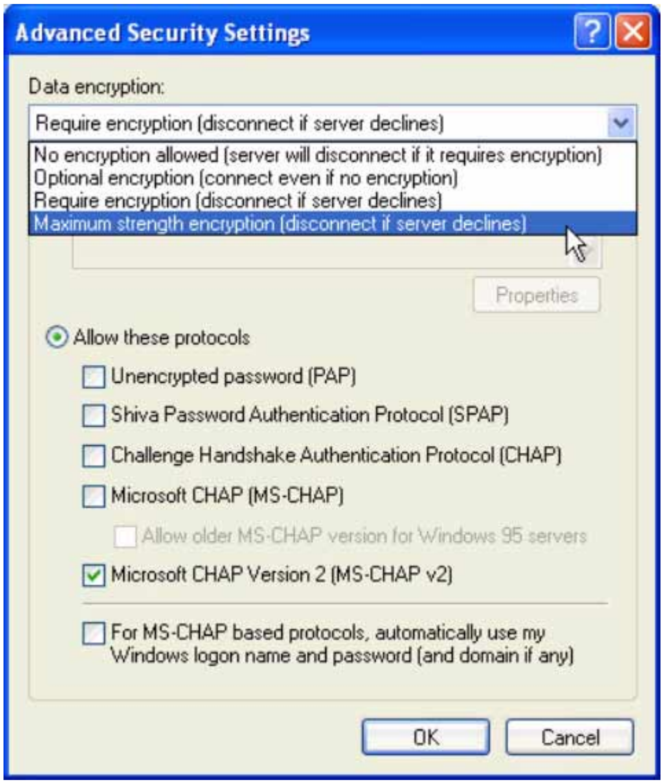
The Advanced Security Settings window appears.

Step 12. Make sure that **Microsoft CHAP (MS-CHAP)** is *not* selected. Note that this protocol is selected by default. You must deselect this option so that only MS-CHAP v2 is used.

Step 13. Pull down the **Data Encryption** menu and select **Maximum strength encryption (disconnect if server declines)**. This will set the length of the encryption key to 128 bits.

Step 14. Click **OK** to go back to the connection's properties window.

Figure 3-40. Advanced Security Settings Window



Advanced Security Settings

Data encryption:

Require encryption (disconnect if server declines)

- No encryption allowed (server will disconnect if it requires encryption)
- Optional encryption (connect even if no encryption)
- Require encryption (disconnect if server declines)
- Maximum strength encryption (disconnect if server declines)

● Allow these protocols

□ Unencrypted password (PAP)

□ Shiva Password Authentication Protocol (SPAP)

□ Challenge Handshake Authentication Protocol (CHAP)

□ Microsoft CHAP (MS-CHAP)

□ Allow older MS-CHAP version for Windows 95 servers

☑ Microsoft CHAP Version 2 (MS-CHAP v2)

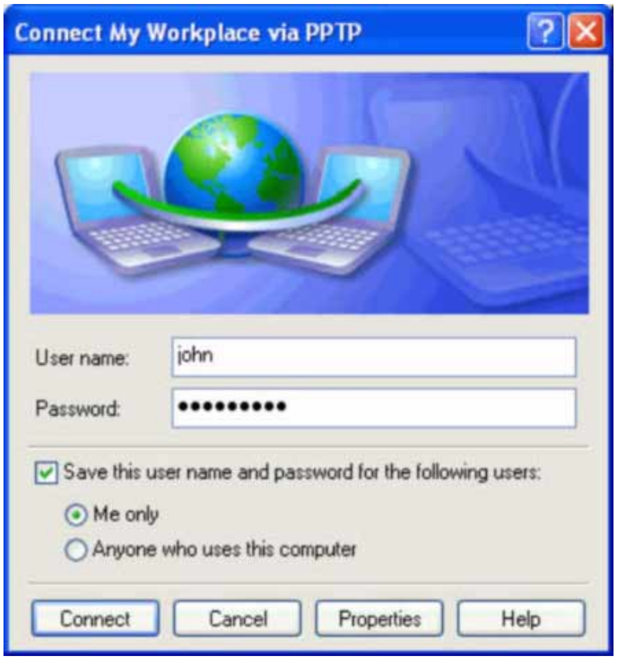
□ For MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)

Step 15. Click **OK** to go back to the Sign-on window.

Before starting the VPN connection, you must make sure your system has established the network connection with the server, and the server has assigned an IP address to your system.

Step 16. Enter your username and password in the appropriate boxes and then click the **Connect** button to connect to the server. You may choose to save this username and password for future uses before clicking the **Connect** button.

Figure 3-41. Sign-on Window



Connect My Workplace via PPTP

User name: john

Password: ●●●●●●●●●●

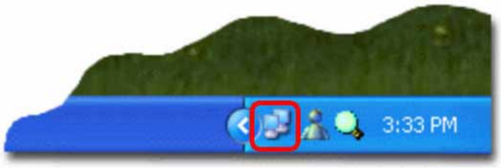
☑ Save this user name and password for the following users:

● Me only

○ Anyone who uses this computer

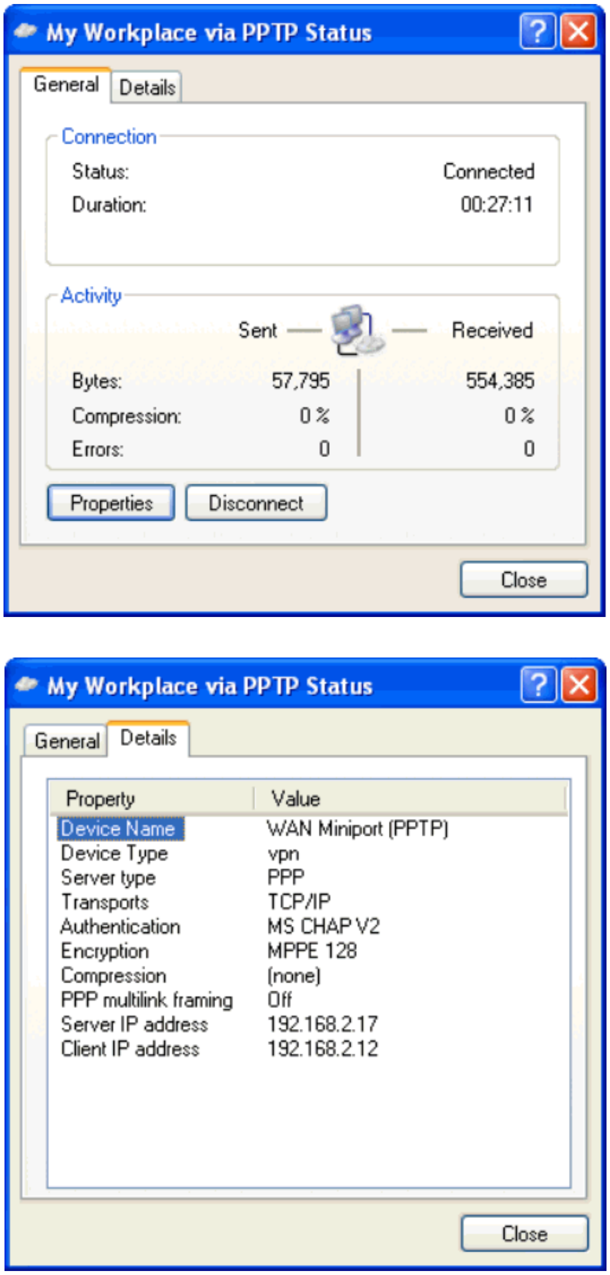
After the connection is made, the connection icon appears in the notification area on the lower-right corner of the screen as shown below.

Figure 3-42. Connection Icon



You may double-click on the icon to display the status of the connection.

Figure 3-43. Connection Status Windows



Connection

Status: Connected

Duration: 00:27:11

Activity

	Sent	Received
Bytes:	57,795	554,385
Compression:	0 %	0 %
Errors:	0	0

Property	Value
Device Name	WAN Miniport (PPTP)
Device Type	vpn
Server type	PPP
Transports	TCP/IP
Authentication	MS CHAP V2
Encryption	MPPE 128
Compression	(none)
PPP multilink framing	Off
Server IP address	192.168.2.17
Client IP address	192.168.2.12

Notice that your system is now connected to the server via the VPN device using PPTP protocol with 128-bit session key and MS CHAP v2 authentication.

Windows 2000/NT Clients

In this section, the procedures for configuring a PPTP connection on Windows 2000/NT are described.

The following procedures are created based on a Windows 2000 client. You may follow similar procedures for configuring PPTP on Windows NT (RAS).

Step 1. Open the Network and Dial-up Connections window:

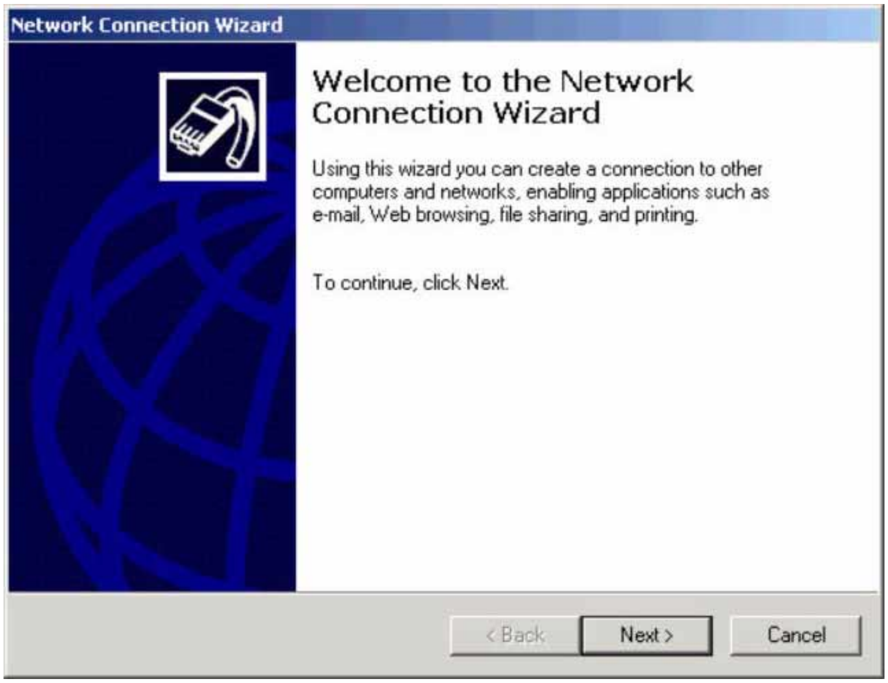
Click the **Start** button. Move the pointer to and select **Programs**, **Accessories**, and **Communications**, respectively. Click on **Network and Dial-up Connections** on the **Communications** menu.

The Network and Dial-up Connections window appears.

Step 2. Double-click the **Make new connection** icon.

The Network Connection Wizard window appears.

Figure 3-44. Network Connection Wizard



Network Connection Wizard

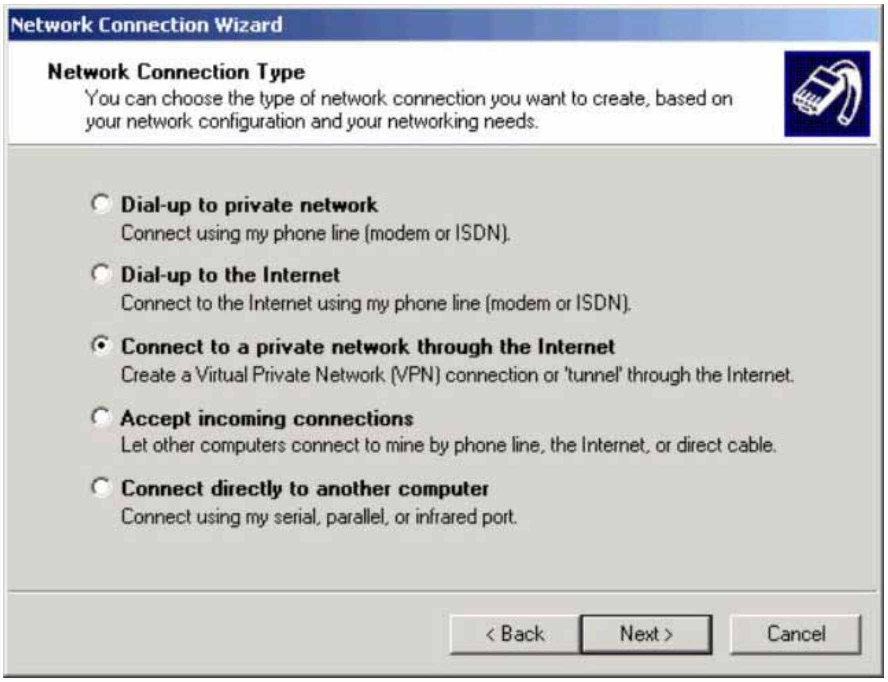
Welcome to the Network Connection Wizard

Using this wizard you can create a connection to other computers and networks, enabling applications such as e-mail, Web browsing, file sharing, and printing.

To continue, click Next.

Step 3. Click the **Next>** button to go to the Network Connection Type page. Select the **Connect to a private network through the Internet** option and then click the **Next>** button.

Figure 3-45. Network Connection Type Window



Network Connection Wizard

Network Connection Type

You can choose the type of network connection you want to create, based on your network configuration and your networking needs.

○ **Dial-up to private network**
Connect using my phone line (modem or ISDN).

○ **Dial-up to the Internet**
Connect to the Internet using my phone line (modem or ISDN).

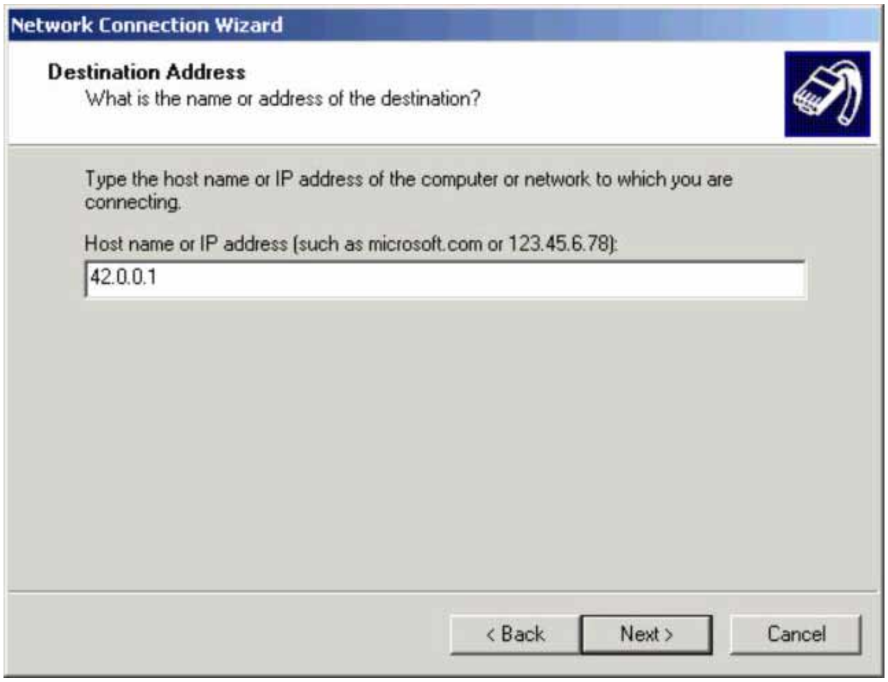
● **Connect to a private network through the Internet**
Create a Virtual Private Network (VPN) connection or 'tunnel' through the Internet.

○ **Accept incoming connections**
Let other computers connect to mine by phone line, the Internet, or direct cable.

○ **Connect directly to another computer**
Connect using my serial, parallel, or infrared port.

Step 4. Enter the destination address in the **Host name or IP address** text box. In this case, the internal address 42.0.0.1 of the 700wl Series unit (either Integrated Access Manager or Access Controller) is used. Click **Next>**.

Figure 3-46. Destination Address Window



Network Connection Wizard

Destination Address

What is the name or address of the destination?

Type the host name or IP address of the computer or network to which you are connecting.

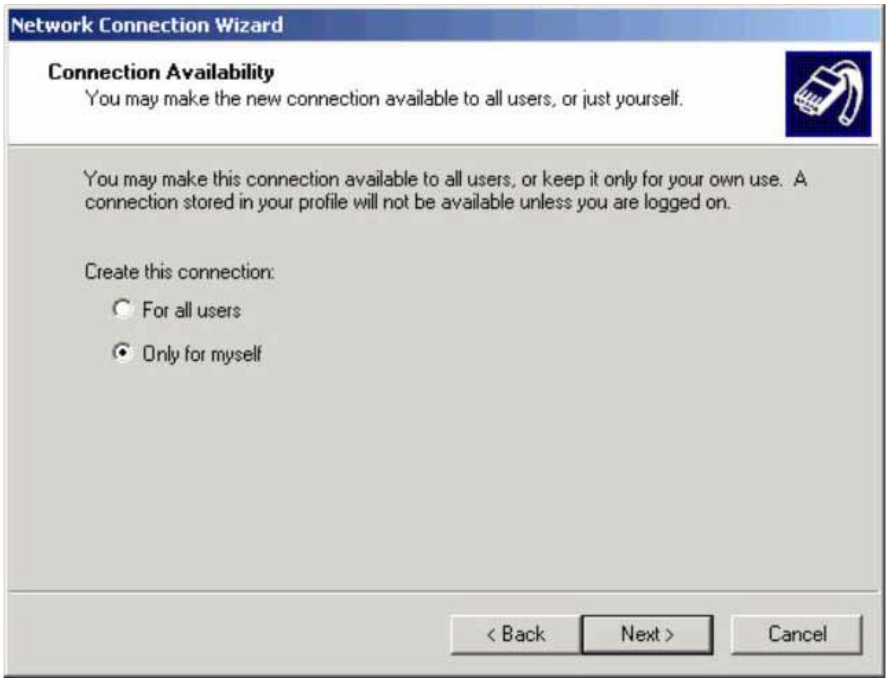
Host name or IP address (such as microsoft.com or 123.45.6.78):
42.0.0.1

Step 5. The network connection wizard will display the Public Network window if other dial-up connections exist. Select the **Do not dial the initial connection** option and then click **Next>**.

If no other dial-up connection is previously created, the Connection Availability window shown in Step 6 is displayed.

Step 6. Select the desired Connection Availability option, e.g., **Only for myself**. Click **Next>**.

Figure 3-47. Connection Availability Window



Network Connection Wizard

Connection Availability

You may make the new connection available to all users, or just yourself.

You may make this connection available to all users, or keep it only for your own use. A connection stored in your profile will not be available unless you are logged on.

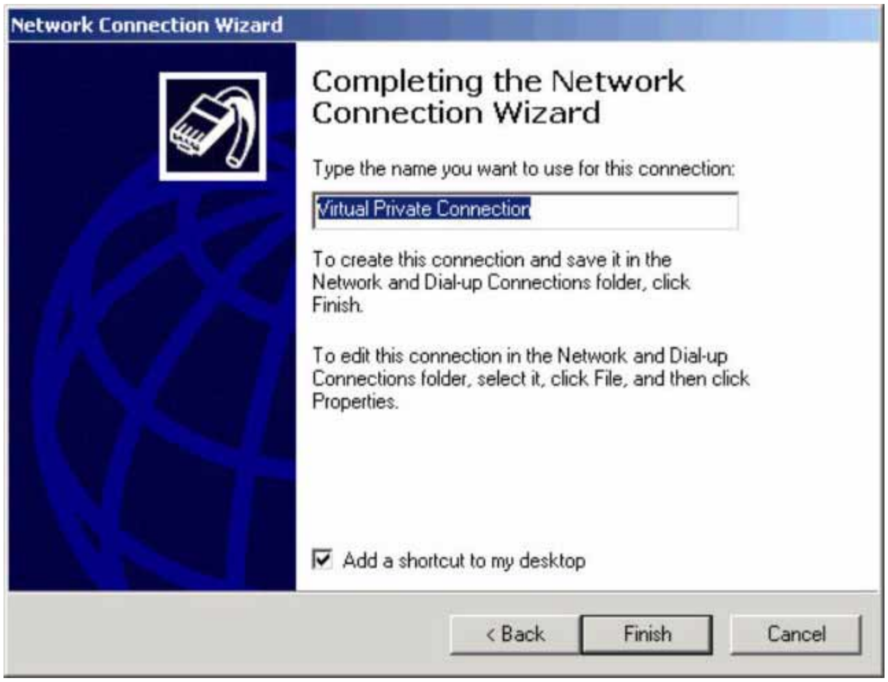
Create this connection:

○ For all users

● Only for myself

Step 7. Click the **Finish** button. You may choose to add a shortcut to this connection to the desktop before clicking the **Finish** button.

Figure 3-48. Network Connection Wizard Completion Window



Network Connection Wizard

Completing the Network Connection Wizard

Type the name you want to use for this connection:

Virtual Private Connection

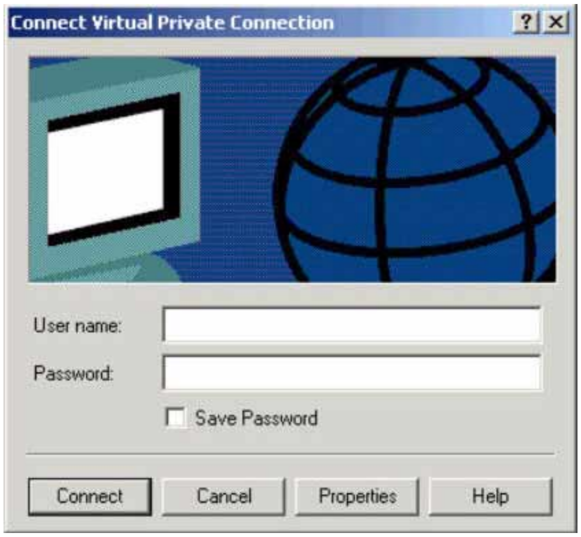
To create this connection and save it in the Network and Dial-up Connections folder, click Finish.

To edit this connection in the Network and Dial-up Connections folder, select it, click File, and then click Properties.

☑ Add a shortcut to my desktop

At this point, an icon, named **Virtual Private Network**, representing the new connection appears in the Network and Dial-up Connections window. In the meantime, the Sign-on window should appear on the screen; otherwise, double-click the new connection icon.

Figure 3-49. Sign-on Window



Connect Virtual Private Connection

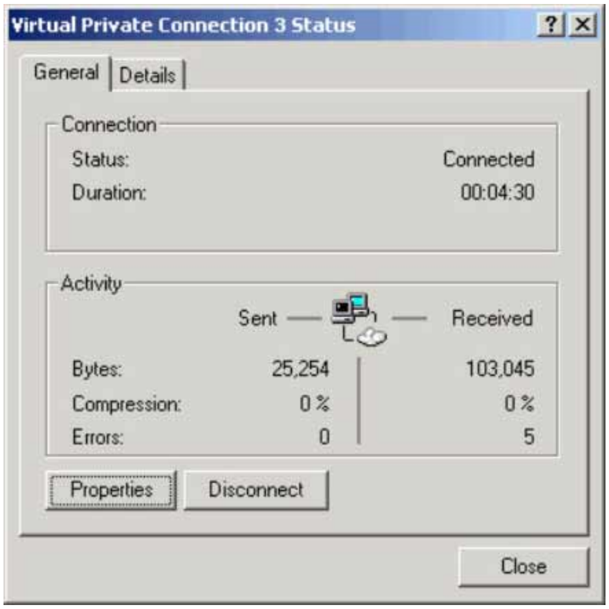
User name:

Password:

☐ Save Password

Step 8. You need to customize the properties of your connection to use PPTP and match the settings of the 700wl Series unit. Click the **Properties** button to open the connection's properties window.

Figure 3-50. Virtual Private Connection Window, General Tab



Connection

Status: Connected

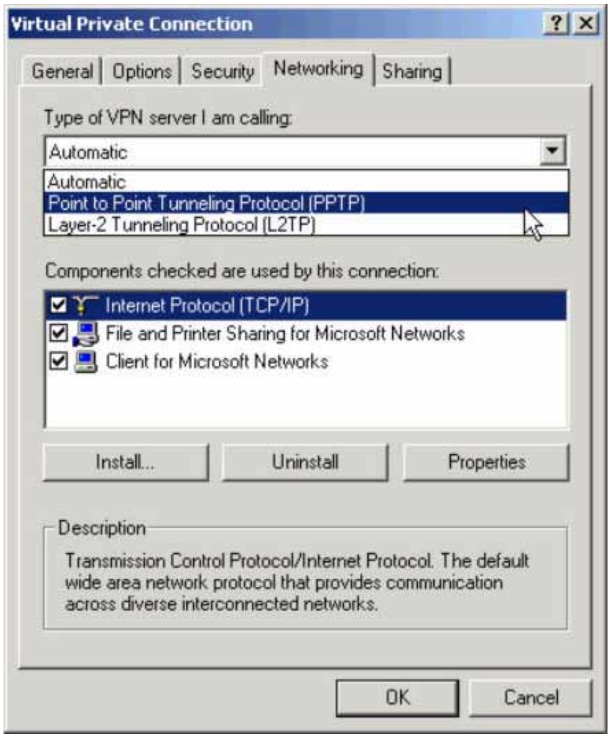
Duration: 00:04:30

Activity

	Sent	Received
Bytes:	25,254	103,045
Compression:	0 %	0 %
Errors:	0	5

Step 9. Click the Networking tab to specify the type of VPN. Next, pull down the **Type of VPN** menu and select *PPTP*. Make sure that **Internet Protocol (TCP/IP)** is selected.

Figure 3-51. Virtual Private Connection Window, Networking Tab


Virtual Private Connection
General
Options
Security
Networking
Sharing
Automatic
Point to Point Tunneling Protocol (PPTP)
Layer-2 Tunneling Protocol (L2TP)
Install...
Uninstall
Properties
OK
Cancel

Type of VPN server I am calling: Automatic

Components checked are used by this connection:

☑ Internet Protocol (TCP/IP)

☑ File and Printer Sharing for Microsoft Networks

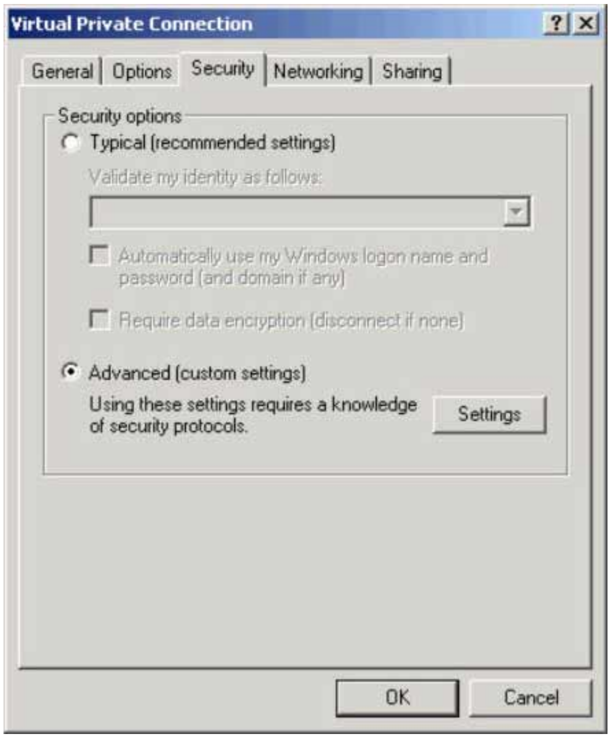
☑ Client for Microsoft Networks

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

Step 10. Click the Security tab to customize the security protocols. Next, select **Advanced (custom settings)** and then click the **Settings** button.

Figure 3-52. Virtual Private Connection Window, Security Tab



Virtual Private Connection

General | Options | Security | Networking | Sharing

Security options

○ Typical (recommended settings)

Validate my identity as follows:

□ Automatically use my Windows logon name and password (and domain if any)

□ Require data encryption (disconnect if none)

● Advanced (custom settings)

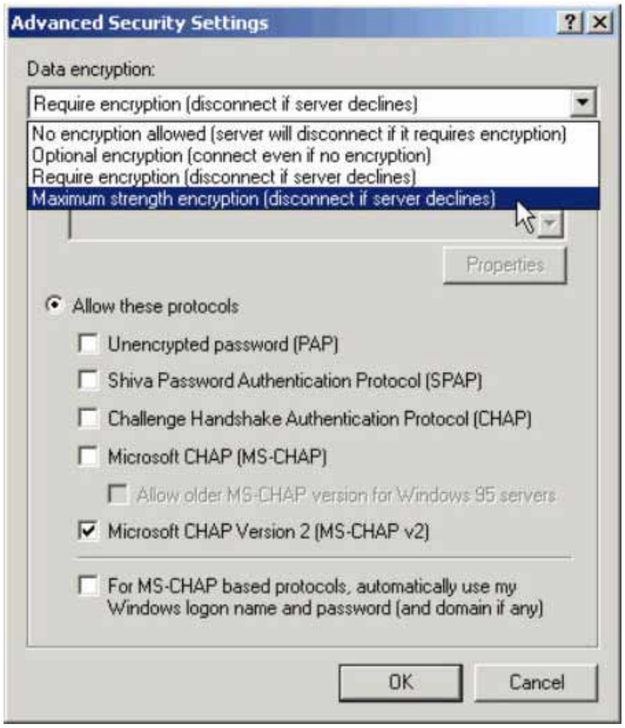
Using these settings requires a knowledge of security protocols.

The Advanced Security Settings window appears.

Step 11. Make sure that **Microsoft CHAP (MS-CHAP)** is *not* selected. Note that this protocol is selected by default. You must deselect this option so that only MS-CHAP v2 is used.

Step 12. Pull down the **Data Encryption** menu and select **Maximum strength encryption (disconnect if server declines)**. This will set the length of the encryption key to 128 bits.

Figure 3-53. Advanced Security Settings Window



Advanced Security Settings

Data encryption:

Require encryption (disconnect if server declines)

No encryption allowed (server will disconnect if it requires encryption)
Optional encryption (connect even if no encryption)
Require encryption (disconnect if server declines)
Maximum strength encryption (disconnect if server declines)

● Allow these protocols

□ Unencrypted password (PAP)

□ Shiva Password Authentication Protocol (SPAP)

□ Challenge Handshake Authentication Protocol (CHAP)

□ Microsoft CHAP (MS-CHAP)

□ Allow older MS-CHAP version for Windows 95 servers

☑ Microsoft CHAP Version 2 (MS-CHAP v2)

□ For MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)

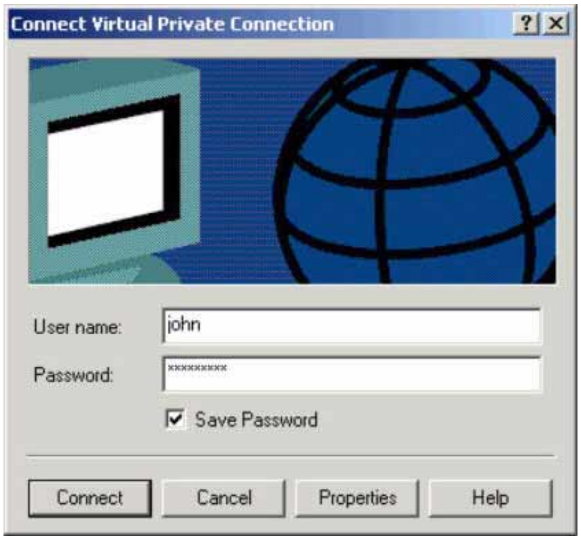
Step 13. Click **OK** to go back to the connection's properties window.

Step 14. Click **OK** to go back to the Sign-on window.

Before starting the VPN connection, you must make sure your system has established the network connection with the server, and the server has assigned an IP address to your system.

Step 15. Enter your username and password in the appropriate boxes and then click the **Connect** button to connect to the server. You may choose to save this username and password for future uses before clicking the **Connect** button.

Figure 3-54. Sign-on Window



Connect Virtual Private Connection

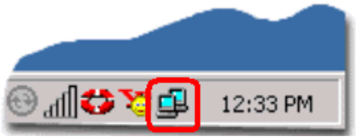
User name: john

Password: *********

☑ Save Password

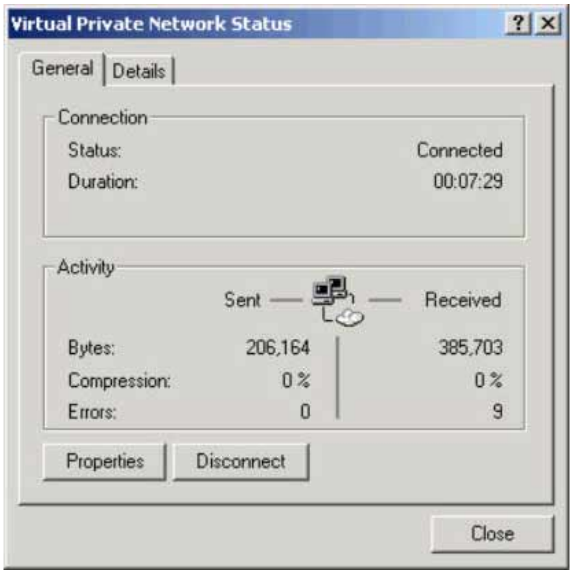
After the connection is made, the connection icon appears in the notification area on the lower-right corner of the screen as shown below.

Figure 3-55. Connection Icon



You may double-click on the icon to display the status of the connection.

Figure 3-56. Virtual Private Network Status Window, General Tab



Virtual Private Network Status

Connection

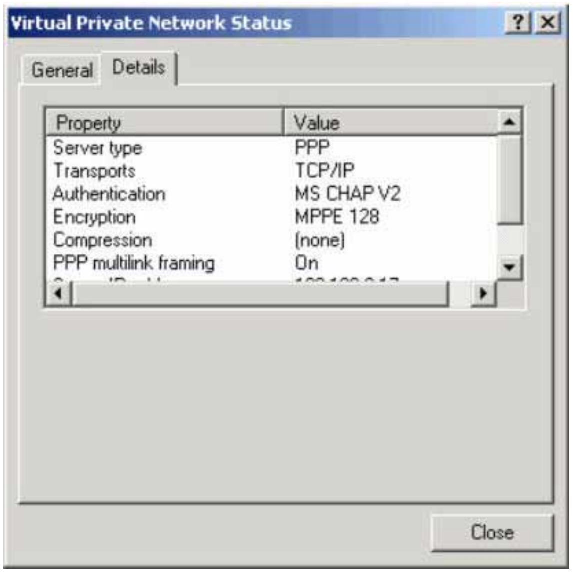
Status: Connected

Duration: 00:07:29

Activity

	Sent	Received
Bytes:	206,164	385,703
Compression:	0 %	0 %
Errors:	0	9

Figure 3-57. Virtual Private Network Status Window, Details Tab



Property	Value
Server type	PPP
Transports	TCP/IP
Authentication	MS CHAP V2
Encryption	MPPE 128
Compression	(none)
PPP multilink framing	On

Notice that your system is now connected to the server via PPP using 128-bit encryption and MS CHAP v2 authentication.

Windows 98/95/ME Clients

This section describes the procedures for configuring a PPTP connection on Windows 98/95/ME.

For Windows 95, make sure that Dial-up Networking has been updated to version 1.3 and Virtual Private Networking for Windows 95 has been installed.

For Windows 98, make sure that the Virtual Private Networking has been updated. You should read Article Q237691 at http://www.microsoft.com prior to updating the software.

The software updates for both Windows 95 and 98 can be found at the Microsoft web site. The easiest approach to find all the information at once is by searching for the keyword “DUN” at the web site.

The following procedures are created based on a Windows 98 client. You may follow similar procedures for configuring PPTP on Windows 95 and ME.

Step 1. Open the Dial-Up Networking window:

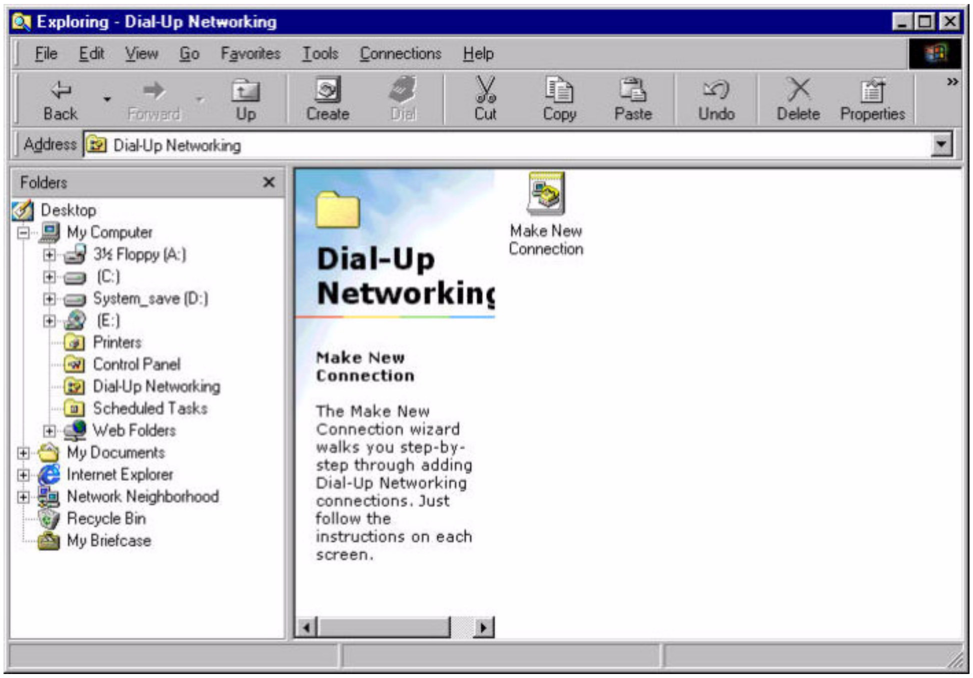
Move the pointer to the **My Computer** icon on the desktop. Right-click on the icon to display the pop-up menu and then select **Explore**.

The Exploring - My Computer window appears.

Double-click the **Dial-Up Networking** link on the **Network Tasks** panel.

The New Connection Wizard window appears.

Figure 3-58. New Connection Wizard Window



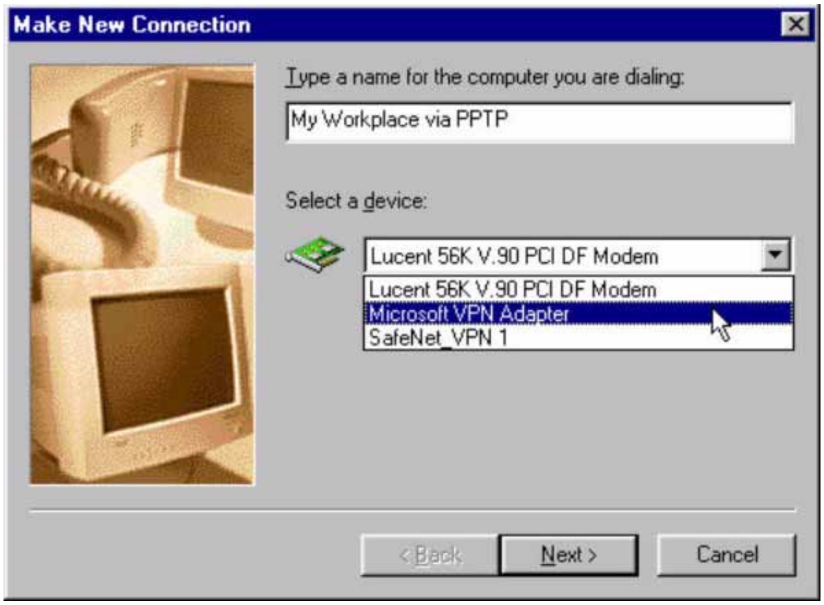
Dial-Up Networking

Make New Connection

The Make New Connection wizard walks you step-by-step through adding Dial-Up Networking connections. Just follow the instructions on each screen.

Step 2. Double-click the **Make New Connection** icon to start the Make New Connection wizard (see Figure 3-59). Enter the desired connection name in the text box. Pull-down the **Select a device** menu and then select **Microsoft VPN Adapter**. Click **Next>**.

Figure 3-59. Make New Connection Window, selecting a device



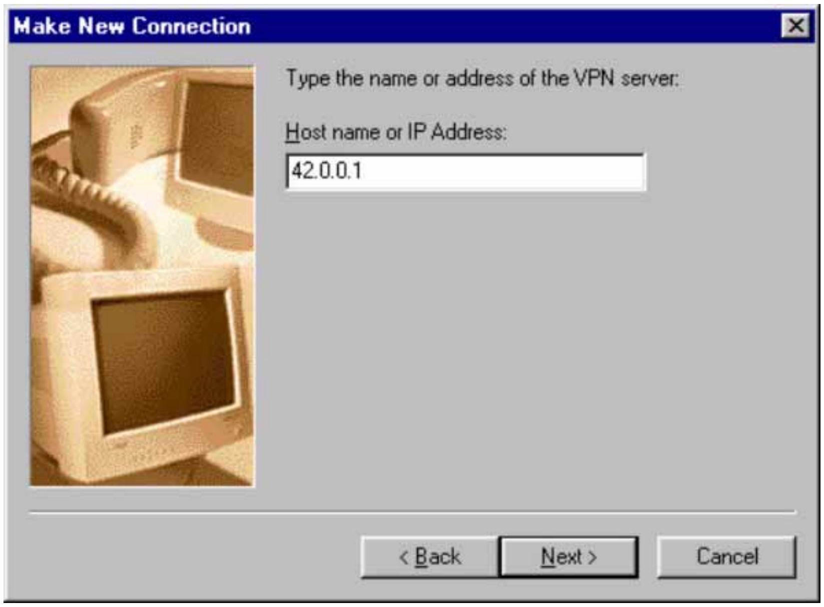
Type a name for the computer you are dialing: My Workplace via PPTP

Select a device: Lucent 56K V.90 PCI DF Modem

Note that if **Microsoft VPN Adapter** does not appear on the menu, you must cancel the Make New Connection activities and add the VPN adapter to the Network's Properties.

Step 3. Enter the IP address of the VPN server in the **Host name or IP address** text box. In this case, the internal address 42.0.0.1 of the 700wl Series unit (either Access Controller or Integrated Access Manager) is used. Click **Next>**.

Figure 3-60. Make New Connection Window, VPN server address



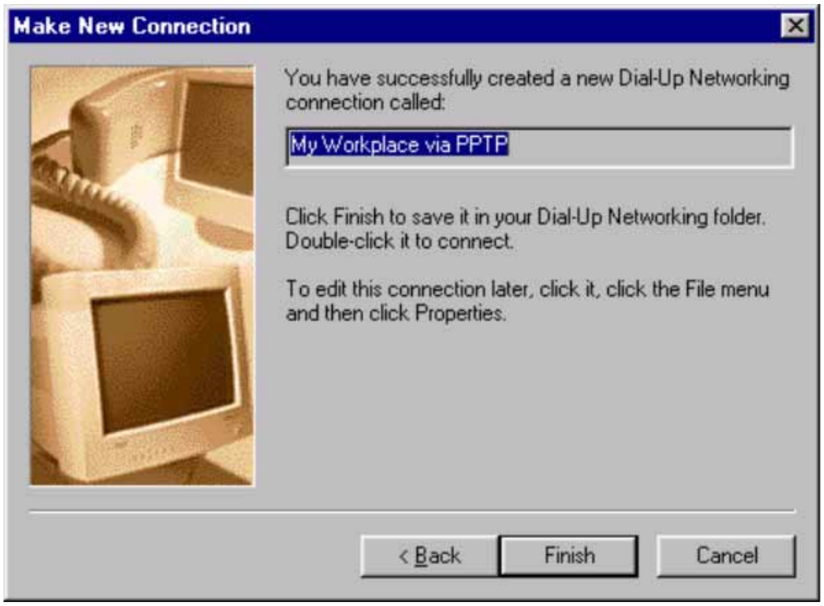
Make New Connection

Type the name or address of the VPN server:

Host name or IP Address: 42.0.0.1

Step 4. Click the **Finish** button to complete the process.

Figure 3-61. Make New Connection Window, Final Dialog Box



Make New Connection

You have successfully created a new Dial-Up Networking connection called:

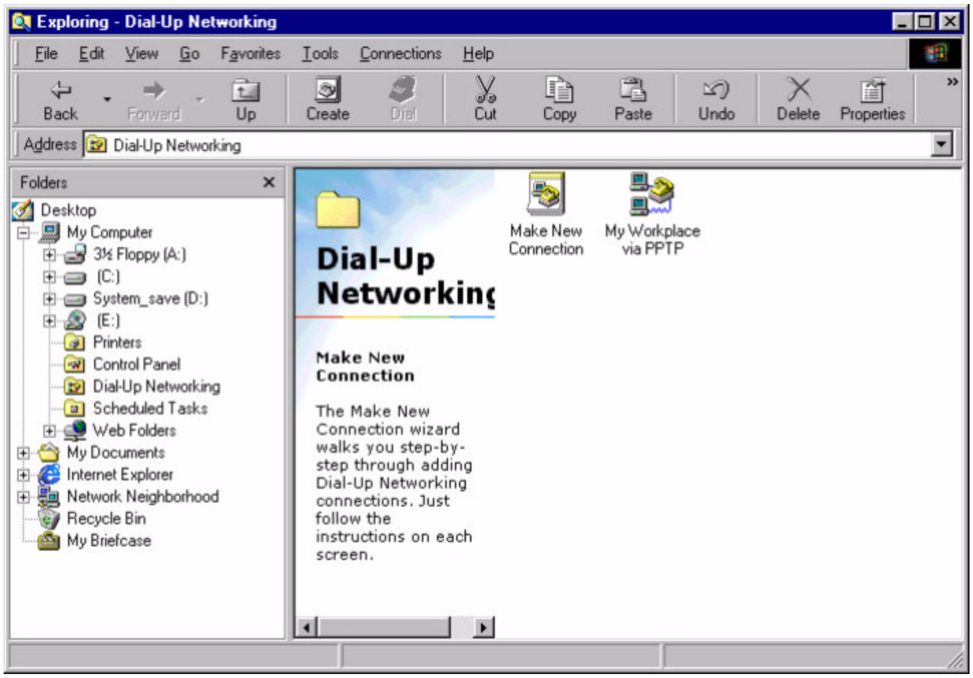
My Workplace via PPTP

Click Finish to save it in your Dial-Up Networking folder. Double-click it to connect.

To edit this connection later, click it, click the File menu and then click Properties.

At this point, an icon representing the new connection appears in the Dial-Up Networking window as shown below.

Figure 3-62. Dial-up Networking Window with new connection icon



The Make New Connection wizard walks you step-by-step through adding Dial-Up Networking connections. Just follow the instructions on each screen.

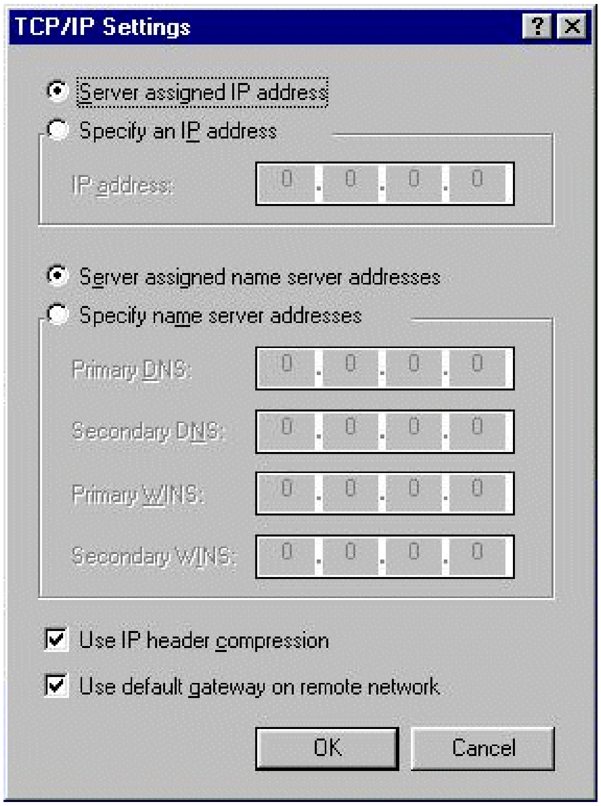
Step 5. To set the default gateway for the remote network, right-click on the new connection icon, and select Properties from the pop-up menu.

Go to the Server Types tab and click the **TCP/IP Settings...** button. The TCP/IP Settings window appears (see Figure 3-63).

Check the box for **Use default gateway on remote network** at the bottom of the window.

Click **OK** to close the window, and **OK** in the Properties window.

Figure 3-63. TCP/IP Settings



TCP/IP Settings

● Server assigned IP address

○ Specify an IP address

IP address: 0 . 0 . 0 . 0

● Server assigned name server addresses

○ Specify name server addresses

Primary DNS: 0 . 0 . 0 . 0

Secondary DNS: 0 . 0 . 0 . 0

Primary WINS: 0 . 0 . 0 . 0

Secondary WINS: 0 . 0 . 0 . 0

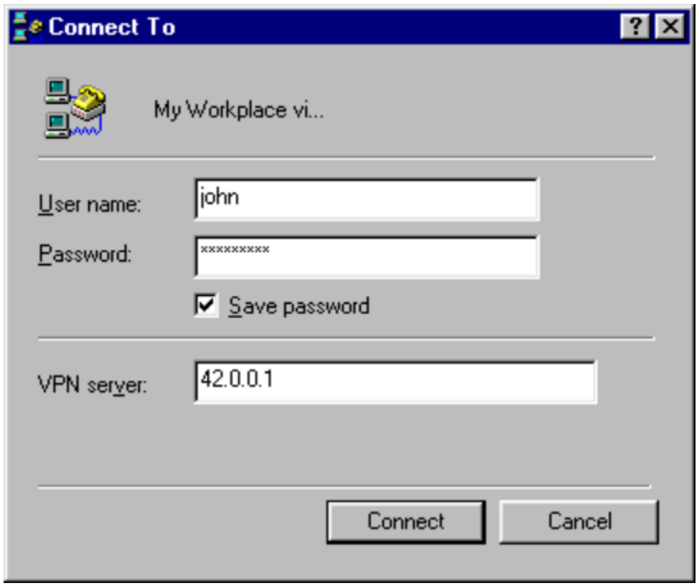
☑ Use IP header compression

☑ Use default gateway on remote network

Before starting the VPN connection, you must make sure your system has established the network connection with the server, and the server has assigned an IP address to your system.

Step 6. Double-click the new connection icon to start connecting. The Connect To window appears. Enter your username and password in the appropriate boxes and then click the **Connect** button to connect to the server. You may choose to save this username and password for future uses before clicking the **Connect** button.

Figure 3-64. Connect To Window



User name: john

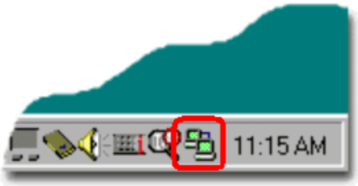
Password: **********

☑ Save password

VPN server: 42.0.0.1

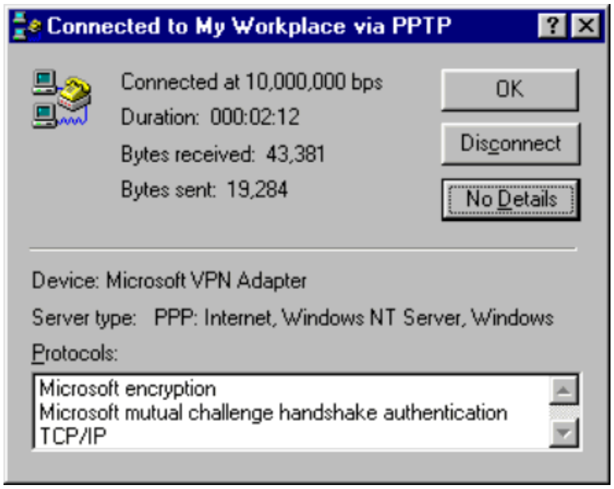
After the connection is made, the connection icon appears in the notification area on the lower-right corner of the screen as shown below.

Figure 3-65. Connection Icon



You may double-click on the icon to display the status of the connection.

Figure 3-66. Connection Status Window



Connected to My Workplace via PPTP

Connected at 10,000,000 bps
Duration: 000:02:12
Bytes received: 43,381
Bytes sent: 19,284

Device: Microsoft VPN Adapter
Server type: PPP: Internet, Windows NT Server, Windows
Protocols:
Microsoft encryption
Microsoft mutual challenge handshake authentication
TCP/IP

Notice that your system is now connected to the server via PPP using Microsoft encryption and Microsoft mutual challenge handshake (MS CHAP) authentication. This PPP connection is certainly using a 128-bit encryption key and MS CHAP v2 authentication because the server is configured to accept only this type of the connection.

Warning: *If the server rejects the connection, it is highly likely that the 128-bit encryption key does not work.*

You need to access the Rights Manager to modify the Location's properties to lower the minimum encryption key length to 40 bits (see "Configuring the Rights Manager for PPTP").

L2TP+IPSec Client Configuration

This section describes how to configure computers running Windows XP, Windows 2000, Windows NT, and Windows 98 or Windows ME as L2TP+IPSec clients.

Windows XP Clients

Before configuring the L2TP+IPSec client, please read Chapter 4 "Scripts for L2TP/IPSec on Windows 2000 or XP". The instructions in Chapter 4 will guide you through the uses of Microsoft Connection Manager Administration Kit to create a script for setting up an L2TP+IPSec connection on Windows XP. If you use the script, you do not need to use the procedure described here.

Do the following to configure the Windows XP client:

Step 1. Open the Network Connections window:

Click the **Start** button and then move the pointer to **My Network Places**. Right-click on **My Network Places** to display the pop-up menu and then select **Properties**.

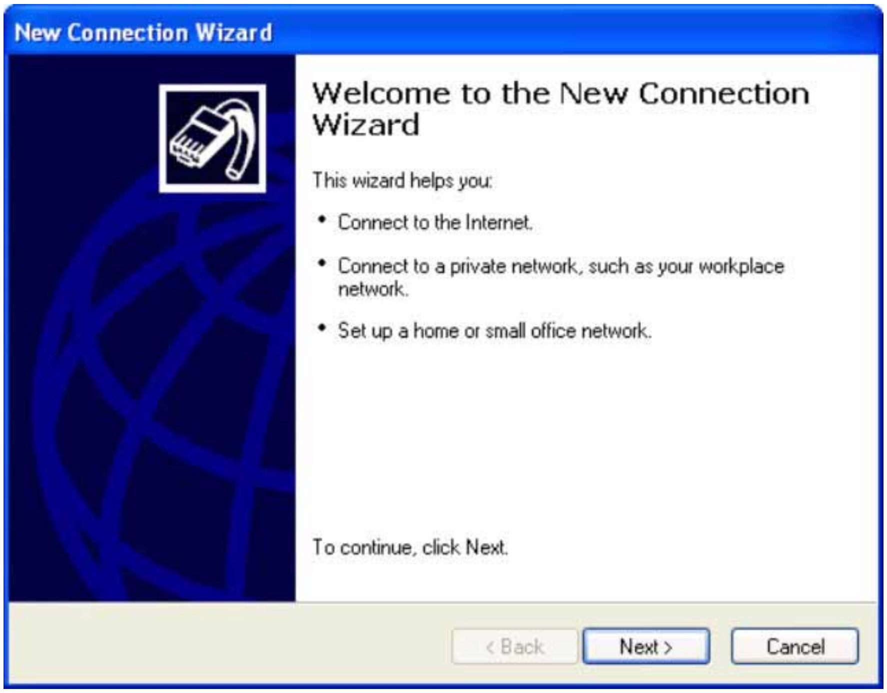
The Network Connections window appears.

Step 2. Click on the **Create a new connection** link on the **Network Tasks** panel.

The New Connection Wizard window appears.

Step 3. Click the **Next>** button to go to the Network Connection Type page.

Figure 3-67. New Connection Wizard



New Connection Wizard

Welcome to the New Connection Wizard

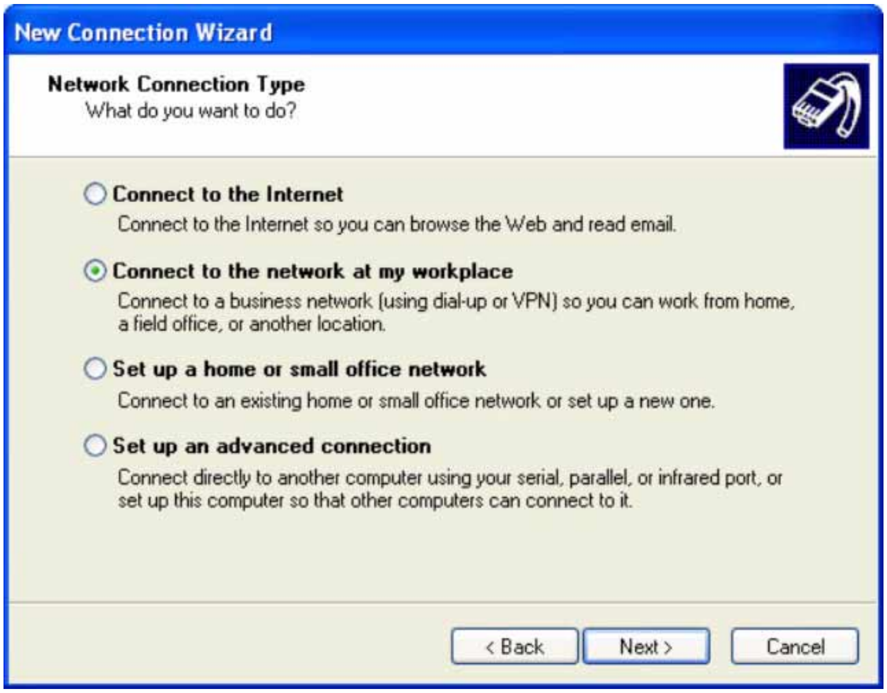
This wizard helps you:

- Connect to the Internet.
- Connect to a private network, such as your workplace network.
- Set up a home or small office network.

To continue, click Next.

Step 4. Select the **Connect to the network at my workplace** option and then click the **Next>** button.

Figure 3-68. Network Connection Type Window



New Connection Wizard

Network Connection Type
What do you want to do?

○ Connect to the Internet
Connect to the Internet so you can browse the Web and read email.

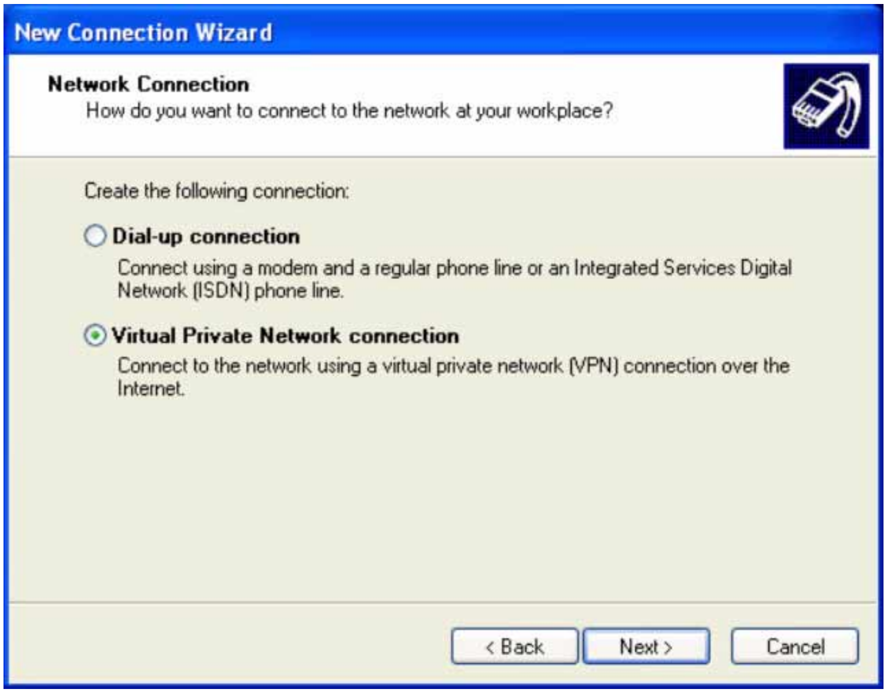
● Connect to the network at my workplace
Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.

○ Set up a home or small office network
Connect to an existing home or small office network or set up a new one.

○ Set up an advanced connection
Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.

Step 5. Select the **Virtual Private Network connection** option. Click **Next>**.

Figure 3-69. Network Connection Window



New Connection Wizard

Network Connection
How do you want to connect to the network at your workplace?

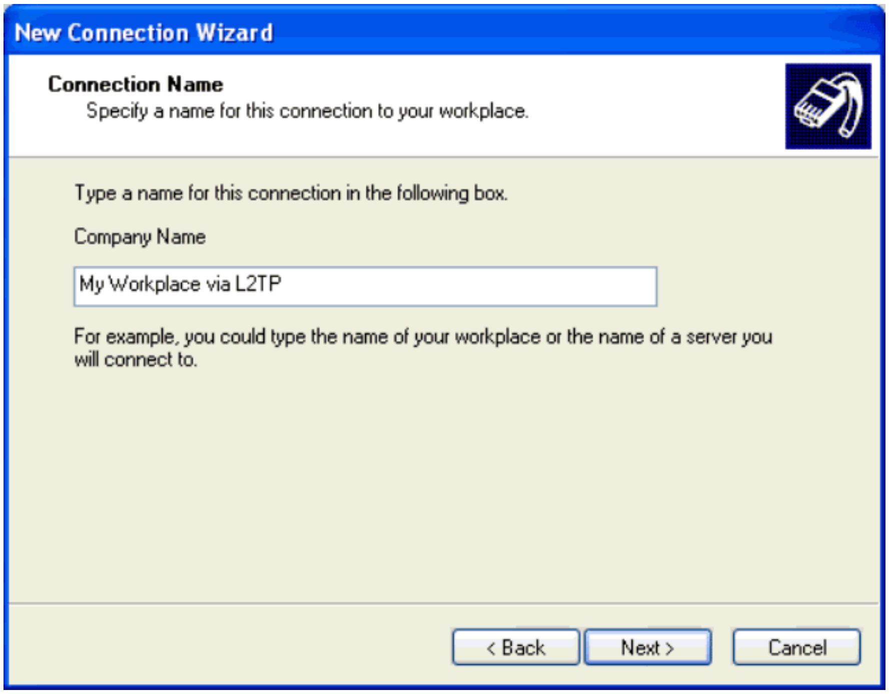
Create the following connection:

○ Dial-up connection
Connect using a modem and a regular phone line or an Integrated Services Digital Network (ISDN) phone line.

● Virtual Private Network connection
Connect to the network using a virtual private network (VPN) connection over the Internet.

Step 6. Enter the desired connection name in the **Company Name** text box. Click **Next>**.

Figure 3-70. Connection Name Window



Connection Name

Specify a name for this connection to your workplace.

Type a name for this connection in the following box.

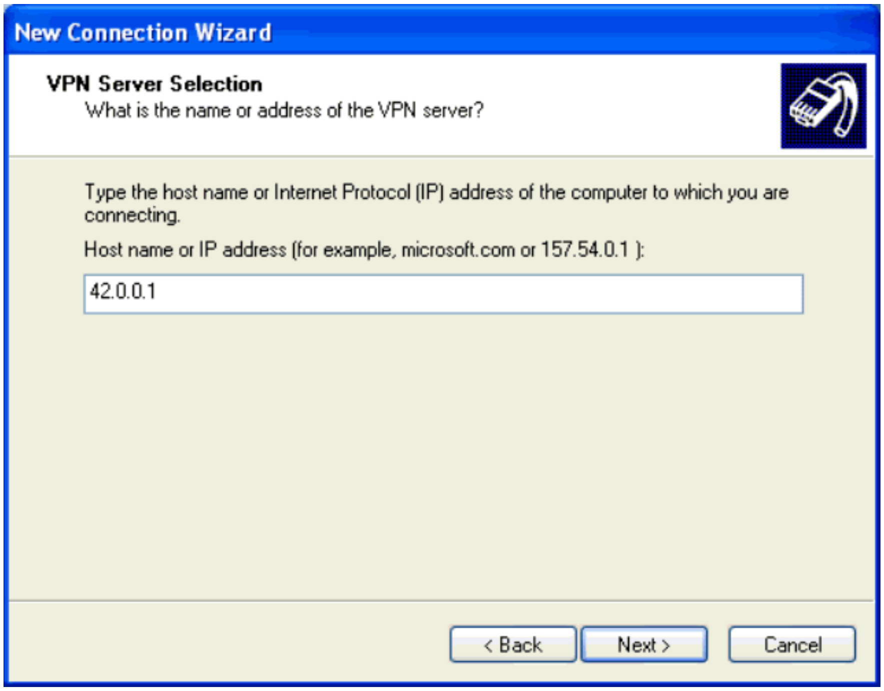
Company Name

My Workplace via L2TP

For example, you could type the name of your workplace or the name of a server you will connect to.

Step 7. Enter the IP address of the VPN server in the **Host name or IP address** text box. In this case, the internal address 42.0.0.1 of the 700wl Series unit (either Access Controller or Integrated Access Manager) is used. Click **Next>**.

Figure 3-71. VPN Server Selection Window



VPN Server Selection

What is the name or address of the VPN server?

Type the host name or Internet Protocol (IP) address of the computer to which you are connecting.

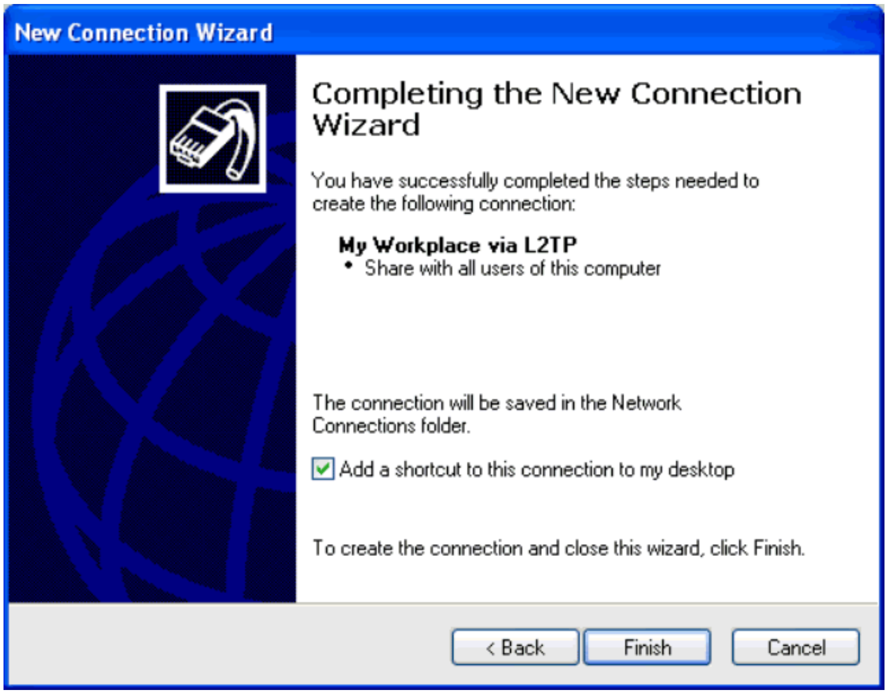
Host name or IP address (for example, microsoft.com or 157.54.0.1):

42.0.0.1

The Completing the New Connection Wizard page appears.

Step 8. Click the **Finish** button. You may choose to add a shortcut to this connection to the desktop before clicking the **Finish** button.

Figure 3-72. New Connection Wizard, Completion Window



New Connection Wizard

Completing the New Connection Wizard

You have successfully completed the steps needed to create the following connection:

My Workplace via L2TP

- Share with all users of this computer

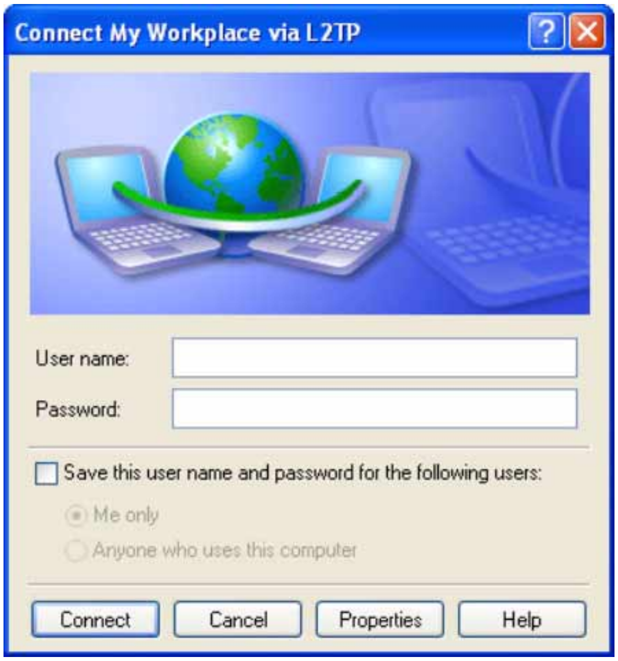
The connection will be saved in the Network Connections folder.

☑ Add a shortcut to this connection to my desktop

To create the connection and close this wizard, click Finish.

At this point, an icon representing the new connection appears in the Network Connections window under the **Virtual Private Network** section. In the meantime, the Sign-on window should appear on the screen; otherwise, double-click the new connection icon.

Figure 3-73. Sign-on Window



Connect My Workplace via L2TP

User name:

Password:

□ Save this user name and password for the following users:

● Me only

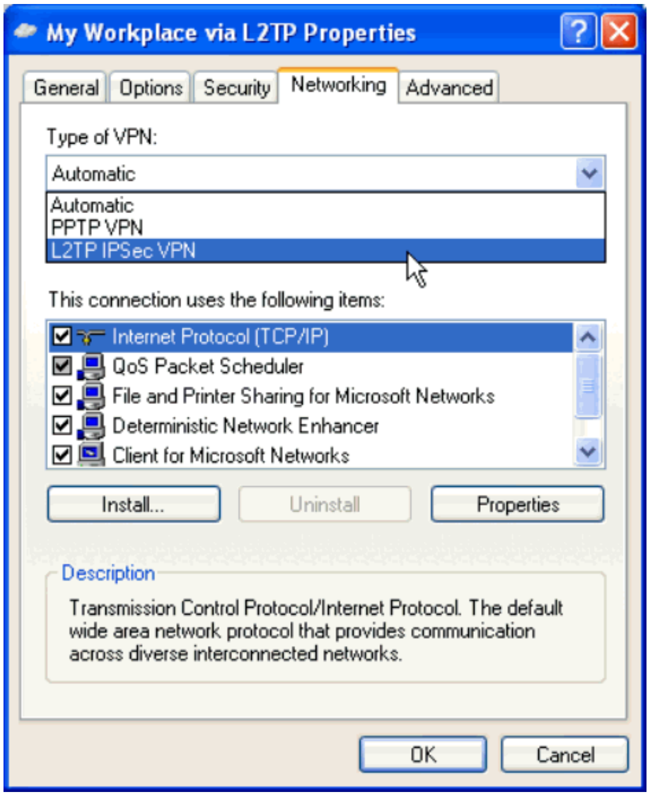
○ Anyone who uses this computer

Step 9. You need to customize the properties of your connection to use L2TP+IPSec and match the settings of the 700wl Series unit. Click the **Properties** button to open the connection's properties window.

Step 10. Click the Networking tab to specify the type of VPN.

Pull down the **Type of VPN** menu and select **L2TP IPSec VPN**. Make sure that **Internet Protocol (TCP/IP)** is selected.

Figure 3-74. L2TP Properties Window, Networking Tab



Type of VPN: Automatic

This connection uses the following items:

☑ Internet Protocol (TCP/IP)
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Deterministic Network Enhancer
☑ Client for Microsoft Networks

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

Step 11. Click the Security tab to customize the security protocols.

Select **Advanced (custom settings)** and then click the **Settings** button.

The Advanced Security Settings window appears.

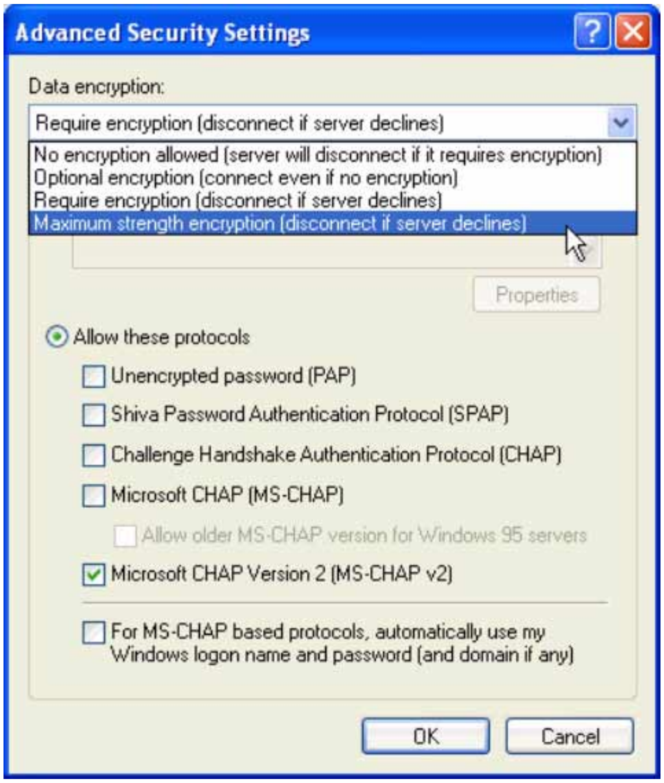
Step 12. Make sure that **Microsoft CHAP (MS-CHAP)** is *not* selected. Note that this protocol is selected by default. You must clear the selection so that only MS-CHAP v2 is used.

If an external LDAP server is used for user authentication with PAP (an Option in the Location properties), then make sure that only **Unencrypted password (PAP)** is selected.

Step 13. Pull down the **Data Encryption** menu and select **Maximum strength encryption (disconnect if server declines)**. This will set the length of the encryption key to 128 bits.

If an external LDAP server is used for user authentication with PAP, then select **Optional encryption (connect even if no encryption)** from the **Data encryption** menu.

Figure 3-75. Advanced Security Settings Window



Advanced Security Settings

Data encryption:

Require encryption (disconnect if server declines)

No encryption allowed (server will disconnect if it requires encryption)
Optional encryption (connect even if no encryption)
Require encryption (disconnect if server declines)
Maximum strength encryption (disconnect if server declines)

● Allow these protocols

□ Unencrypted password (PAP)

□ Shiva Password Authentication Protocol (SPAP)

□ Challenge Handshake Authentication Protocol (CHAP)

□ Microsoft CHAP (MS-CHAP)

□ Allow older MS-CHAP version for Windows 95 servers

☑ Microsoft CHAP Version 2 (MS-CHAP v2)

□ For MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)

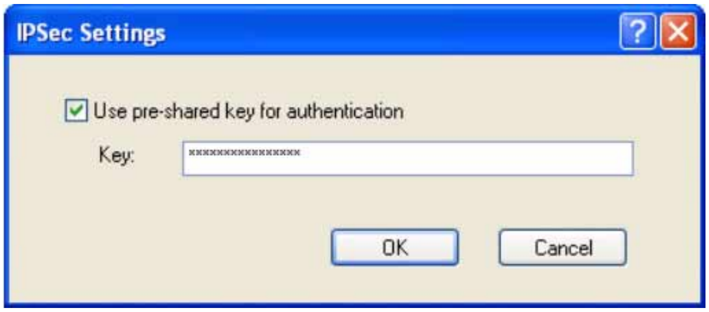
Step 14. Click **OK** to return to the Security tab.

Step 15. Click the **IPSec Settings** button.

The IPSec Settings window appears.

Step 16. Enter the appropriate pre-shared key in the **Key** text box. Click **OK**.

Figure 3-76. IPSec Settings Authentication Window



IPSec Settings

☑ Use pre-shared key for authentication

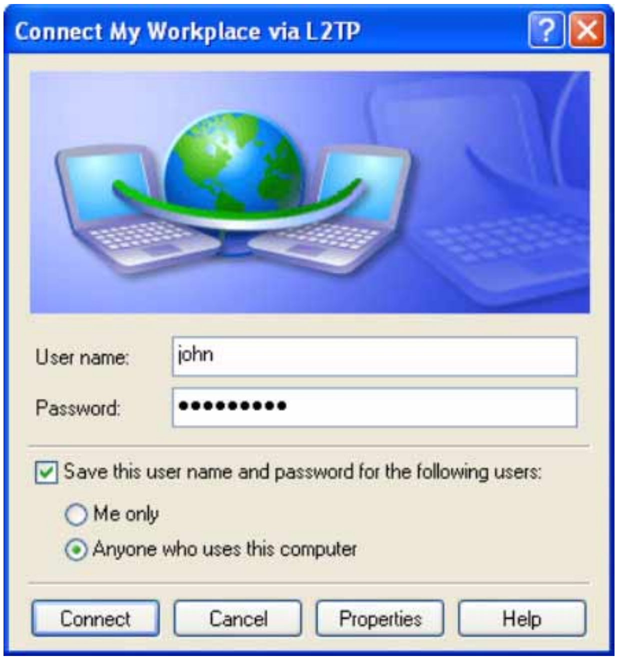
Key: ****************

Step 17. Click **OK** to go back to the Sign-on window.

Before starting the VPN connection, you must make sure your system has established the network connection with the server, and the server has assigned an IP address to your system.

Step 18. Enter your username and password in the appropriate boxes and then click the **Connect** button to connect to the server. You may choose to save this username and password for future uses before clicking the **Connect** button.

Figure 3-77. Sign-on Window



User name: john

Password: ●●●●●●●●●●

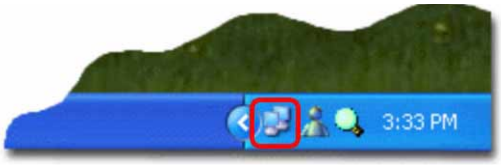
☑ Save this user name and password for the following users:

○ Me only

● Anyone who uses this computer

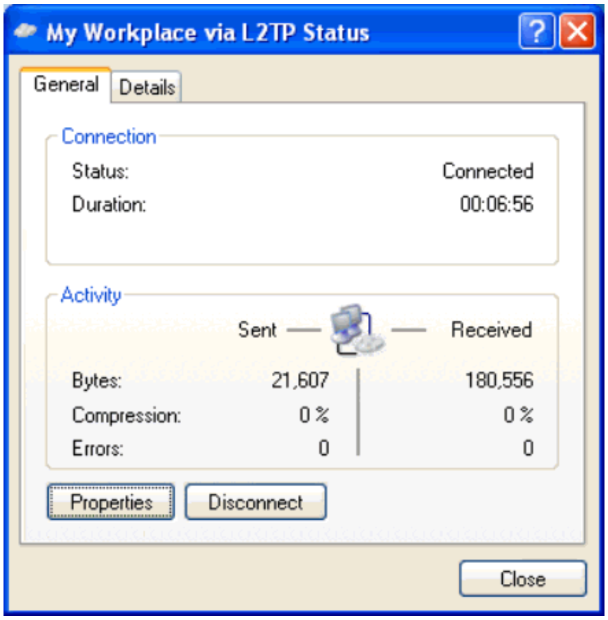
After the connection is made, the connection icon appears in the notification area on the lower-right corner of the screen as shown below.

Figure 3-78. Connection Icon



You may double-click on the icon to display the status of the connection.

Figure 3-79. Connection Status Window, General Tab

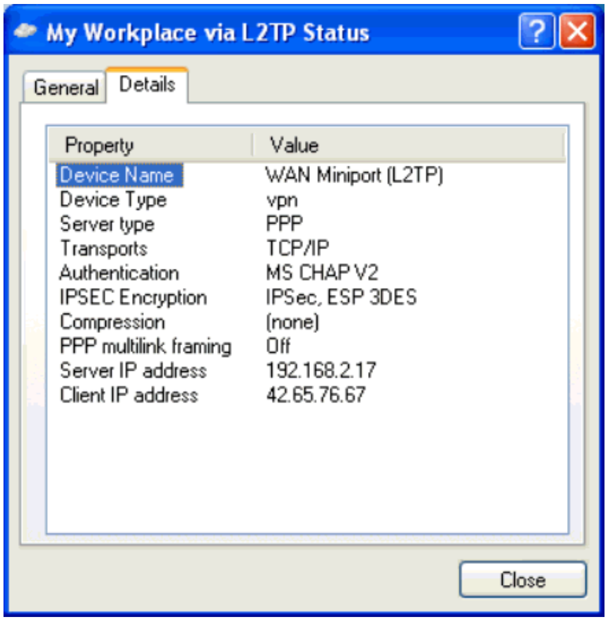


Status: Connected

Duration: 00:06:56

	Sent	Received
Bytes:	21,607	180,556
Compression:	0 %	0 %
Errors:	0	0

Figure 3-80. Connection Status Window, Details Tab



Property	Value
Device Name	WAN Miniport (L2TP)
Device Type	vpn
Server type	PPP
Transports	TCP/IP
Authentication	MS CHAP V2
IPSEC Encryption	IPSec, ESP 3DES
Compression	(none)
PPP multilink framing	Off
Server IP address	192.168.2.17
Client IP address	42.65.76.67

Notice that your system is now connected to the server via IPSec using 3DES (168-bit) encryption and MS CHAP v2 authentication.

Windows 2000 Clients

Before configuring the L2TP+IPSec client, please read Chapter 3 “Scripts for L2TP/IPSec on Windows 2000 or XP”. The instructions in Chapter 3 will guide you through the uses of Microsoft Connection Manager Administration Kit to create a script for setting up an L2TP+IPSec connection on Windows 2000. If the script is used, it is not required to follow the instructions described below.

Do the following to configure the L2TP+IPSec connection on Windows 2000:

Step 1. Open the Network and Dial-up Connections window:

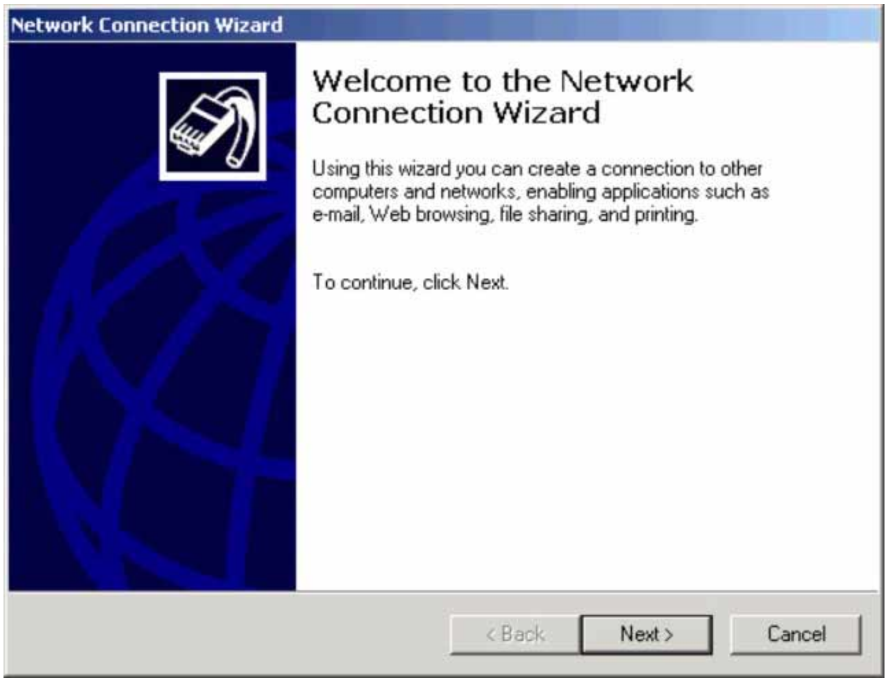
Click the **Start** button. Move the pointer to and select **Programs**, **Accessories**, and **Communications**, respectively. Click on **Network and Dial-up Connections** on the **Communications** menu.

The Network and Dial-up Connections window appears.

Step 2. Double-click the **Make new connection** icon.

The Network Connection Wizard window appears.

Figure 3-81. Network Connection Wizard



Welcome to the Network Connection Wizard

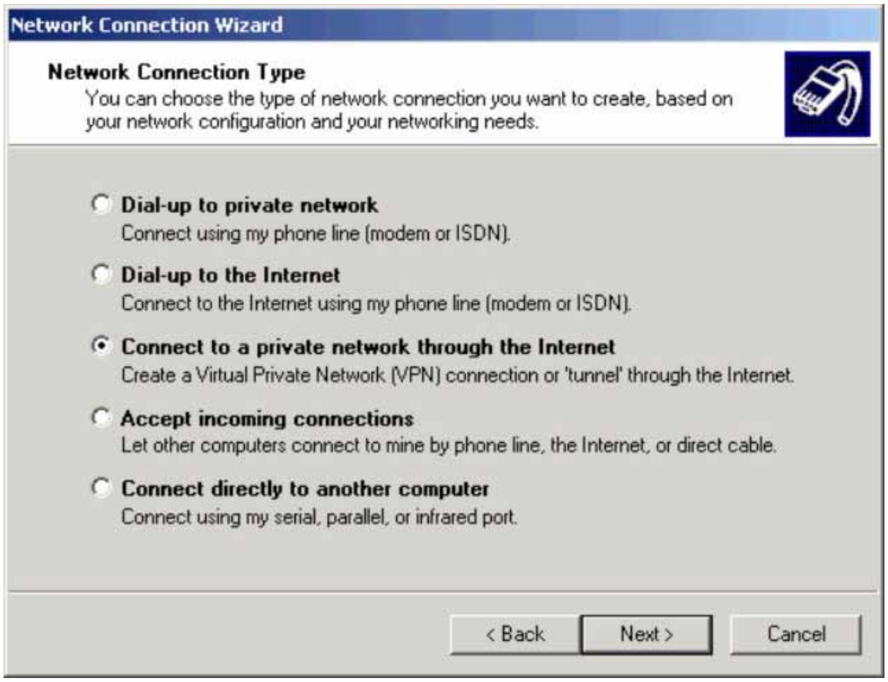
Using this wizard you can create a connection to other computers and networks, enabling applications such as e-mail, Web browsing, file sharing, and printing.

To continue, click Next.

Step 3. Click the **Next>** button to go to the Network Connection Type page.

Step 4. Select the **Connect to a private network through the Internet** option and then click the **Next>** button.

Figure 3-82. Network Connection Type Window



Network Connection Wizard

Network Connection Type

You can choose the type of network connection you want to create, based on your network configuration and your networking needs.

○ **Dial-up to private network**
Connect using my phone line (modem or ISDN).

○ **Dial-up to the Internet**
Connect to the Internet using my phone line (modem or ISDN).

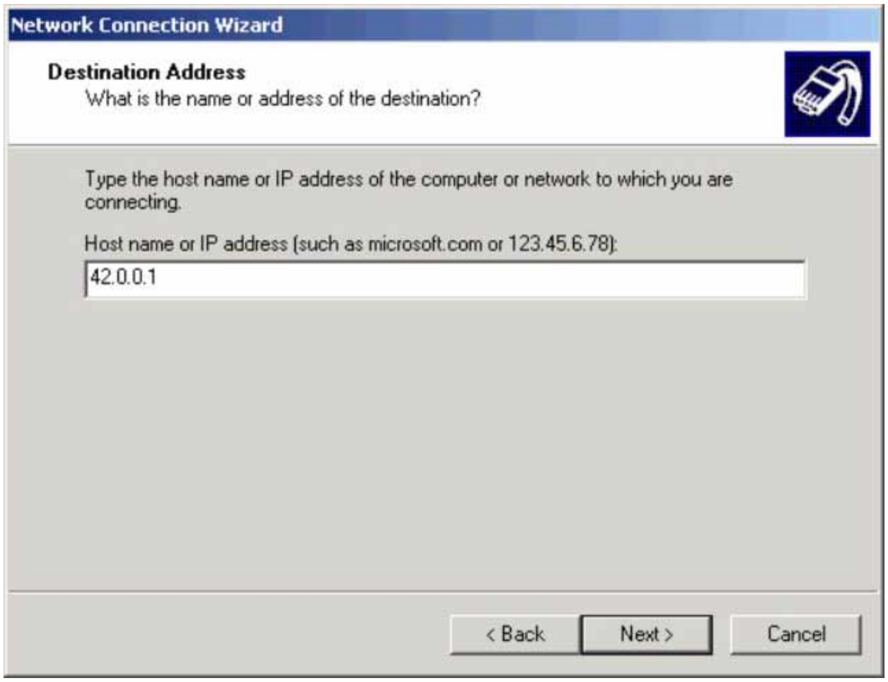
● **Connect to a private network through the Internet**
Create a Virtual Private Network (VPN) connection or 'tunnel' through the Internet.

○ **Accept incoming connections**
Let other computers connect to mine by phone line, the Internet, or direct cable.

○ **Connect directly to another computer**
Connect using my serial, parallel, or infrared port.

Step 5. Enter the destination address in the **Host name or IP address** text box. In this case, the internal address 42.0.0.1 of the 700wl Series unit (either Access Controller or Integrated Access Manager) is used. Click **Next>**.

Figure 3-83. Destination Address Window



Network Connection Wizard

Destination Address

What is the name or address of the destination?

Type the host name or IP address of the computer or network to which you are connecting.

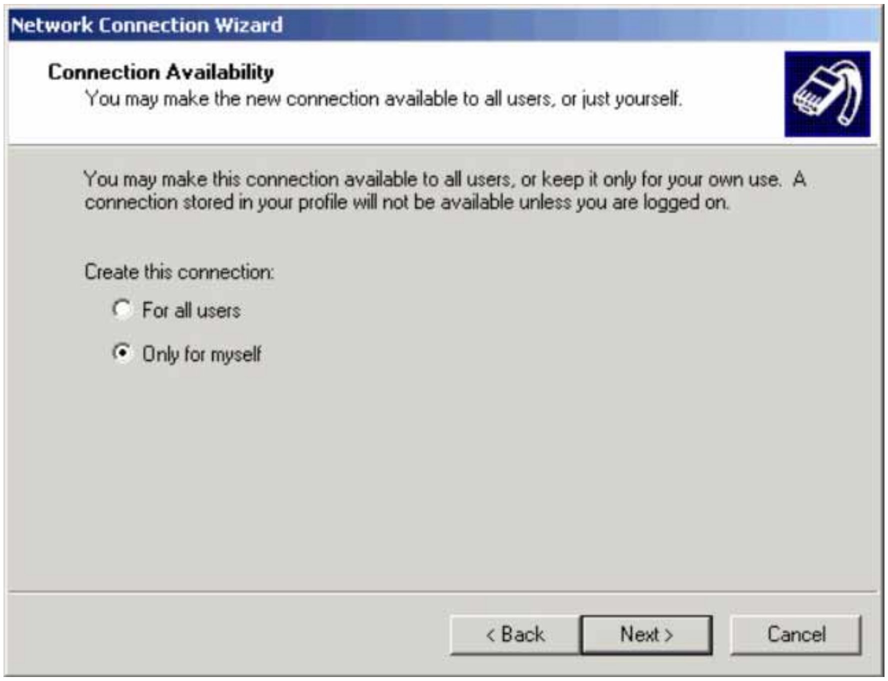
Host name or IP address (such as microsoft.com or 123.45.6.78):
42.0.0.1

Step 6. The network connection wizard will display the Public Network window if other dial-up connections exist. Select the **Do not dial the initial connection** option and then click **Next>**.

If no other dial-up connection is previously created, the Connection Availability window shown in Step 6 is displayed.

Step 7. Select the desired Connection Availability option, e.g., **Only for myself**. Click **Next>**.

Figure 3-84. Connection Availability Window



Network Connection Wizard

Connection Availability

You may make the new connection available to all users, or just yourself.

You may make this connection available to all users, or keep it only for your own use. A connection stored in your profile will not be available unless you are logged on.

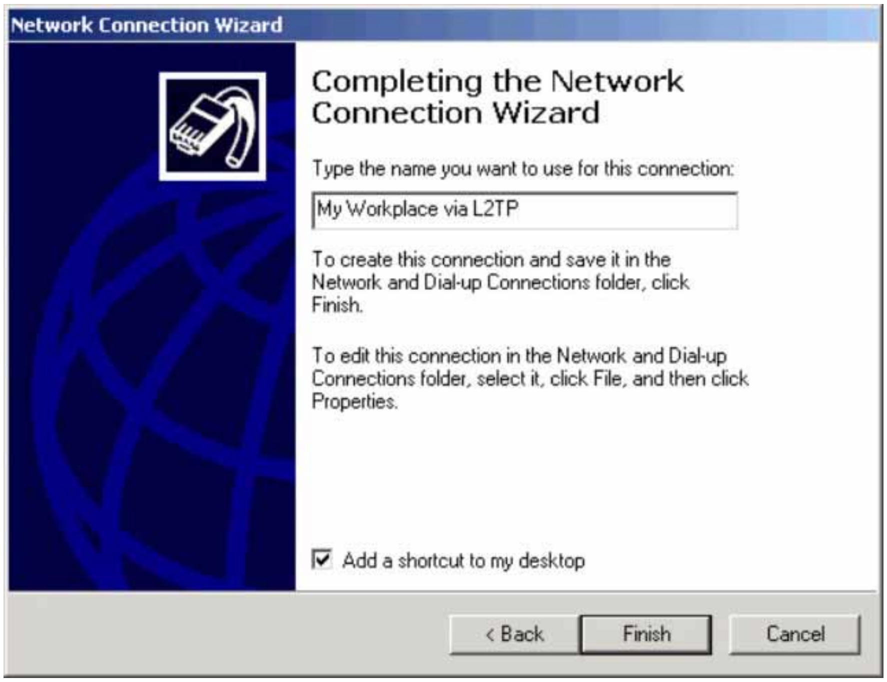
Create this connection:

○ For all users

● Only for myself

Step 8. Enter the desired name for this connection in the text box and then click the **Finish** button. You may choose to add a shortcut to this connection to the desktop before clicking the **Finish** button.

Figure 3-85. Network Connection Wizard, Completion Window



Network Connection Wizard

Completing the Network Connection Wizard

Type the name you want to use for this connection:

My Workplace via L2TP

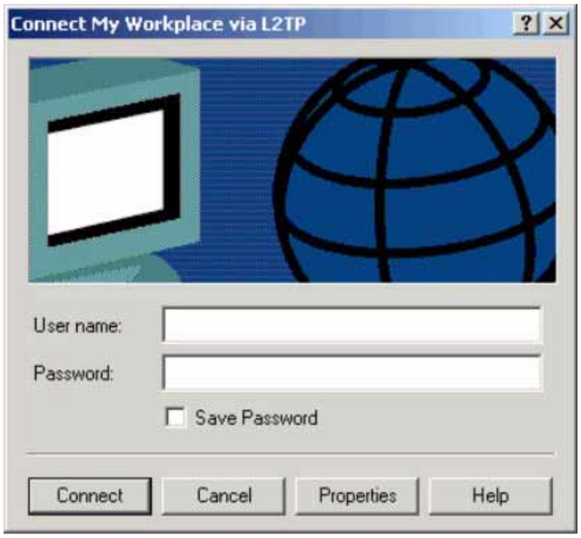
To create this connection and save it in the Network and Dial-up Connections folder, click Finish.

To edit this connection in the Network and Dial-up Connections folder, select it, click File, and then click Properties.

☑ Add a shortcut to my desktop

At this point, an icon, named **Virtual Private Network**, representing the new connection appears in the Network and Dial-up Connections window. In the meantime, the Sign-on window should appear on the screen; otherwise, double-click the new connection icon.

Figure 3-86. Sign-on Window



Connect My Workplace via L2TP

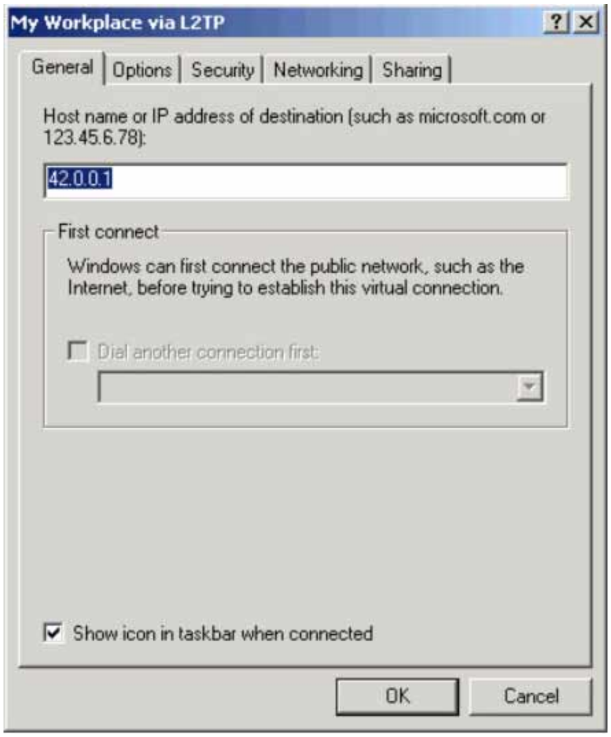
User name:

Password:

□ Save Password

Step 9. You need to customize the properties of your connection to use L2TP over IPSec and match the settings of the 700wl Series unit. Click the **Properties** button to open the connection's properties window.

Figure 3-87. L2TP Connection Properties Window, General Tab



My Workplace via L2TP

Host name or IP address of destination (such as microsoft.com or 123.45.6.78):

42.0.0.1

First connect

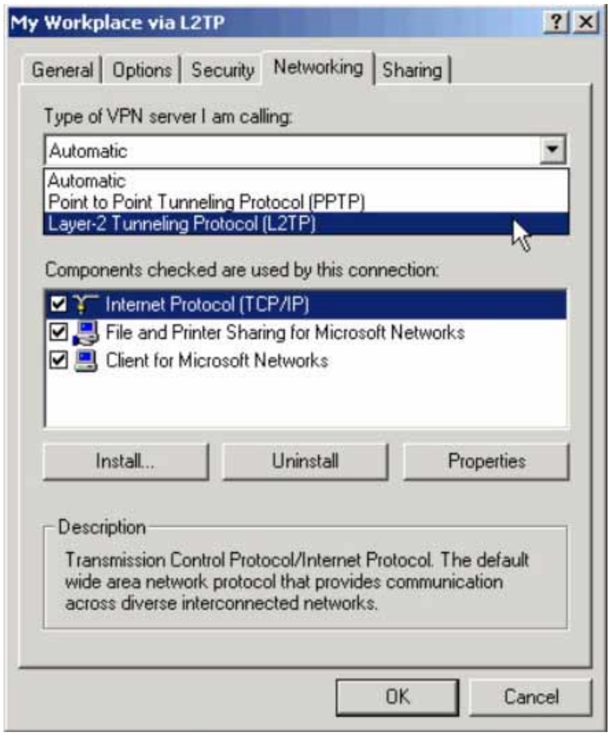
Windows can first connect the public network, such as the Internet, before trying to establish this virtual connection.

□ Dial another connection first:

☑ Show icon in taskbar when connected

Step 10. Click the Networking tab to specify the type of VPN. Next, pull down the **Type of VPN** menu and select *L2TP*. Make sure that **Internet Protocol (TCP/IP)** is selected.

Figure 3-88. L2TP Connection Properties Window, Networking Tab



My Workplace via L2TP

General | Options | Security | Networking | Sharing

Type of VPN server I am calling:

Automatic

- Automatic
- Point to Point Tunneling Protocol (PPTP)
- Layer-2 Tunneling Protocol (L2TP)

Components checked are used by this connection:

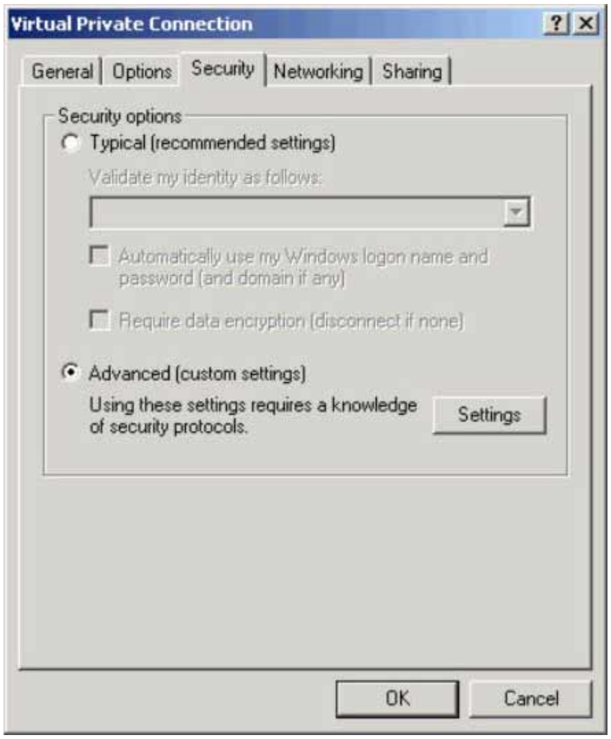
☑ Internet Protocol (TCP/IP)
☑ File and Printer Sharing for Microsoft Networks
☑ Client for Microsoft Networks

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

Step 11. Click the Security tab to customize the security protocols. Next, select **Advanced (custom settings)** and then click the **Settings** button.

Figure 3-89. Virtual Private Connection Window, Security Tab



Security options

○ Typical (recommended settings)

Validate my identity as follows:

□ Automatically use my Windows logon name and password (and domain if any)

□ Require data encryption (disconnect if none)

● Advanced (custom settings)

Using these settings requires a knowledge of security protocols.

The Advanced Security Settings window appears.

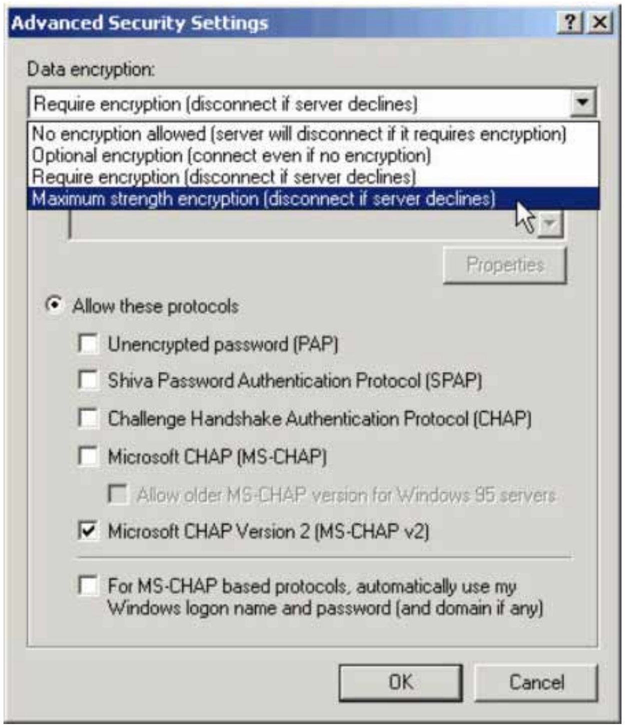
Step 12. Make sure that **Microsoft CHAP (MS-CHAP)** is *not* selected. Note that this protocol is selected by default. You must deselect this option so that only MS-CHAP v2 is used.

If an external LDAP server is used for user authentication with PAP (an Option in the Location properties), then make sure that only **Unencrypted password (PAP)** is selected.

Step 13. Pull down the **Data Encryption** menu and select **Maximum strength encryption (disconnect if server declines)**. This will set the length of the encryption key to 128 bits.

If an external LDAP server is used for user authentication with PAP, then select **Optional encryption (connect even if no encryption)** from the **Data encryption** menu.

Figure 3-90. Advanced Security Settings Window



Advanced Security Settings

Data encryption:

Require encryption (disconnect if server declines)

- No encryption allowed (server will disconnect if it requires encryption)
- Optional encryption (connect even if no encryption)
- Require encryption (disconnect if server declines)
- Maximum strength encryption (disconnect if server declines)

● Allow these protocols

- □ Unencrypted password (PAP)
- □ Shiva Password Authentication Protocol (SPAP)
- □ Challenge Handshake Authentication Protocol (CHAP)
- □ Microsoft CHAP (MS-CHAP)
  - □ Allow older MS-CHAP version for Windows 95 servers
- ☑ Microsoft CHAP Version 2 (MS-CHAP v2)

□ For MS-CHAP based protocols, automatically use my Windows logon name and password (and domain if any)

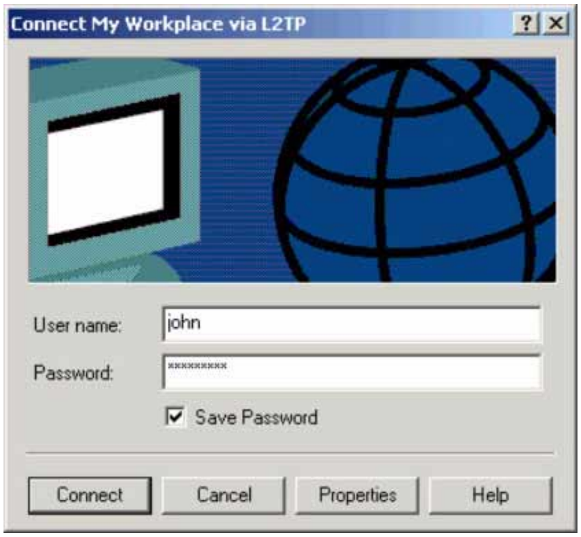
Step 14. Click **OK** to go back to the connection's properties window.

Step 15. Click **OK** to go back to the Sign-on window

Before starting the VPN connection, you must make sure your system has established the network connection with the server, and the server has assigned an IP address to your system.

Step 16. Enter your username and password in the appropriate boxes and then click the **Connect** button to connect to the server. You may choose to save this username and password for future uses before clicking the **Connect** button.

Figure 3-91. Sign-on Window



Connect My Workplace via L2TP

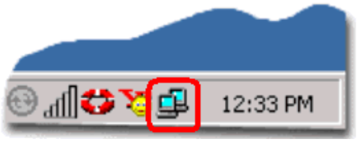
User name: john

Password: *********

☑ Save Password

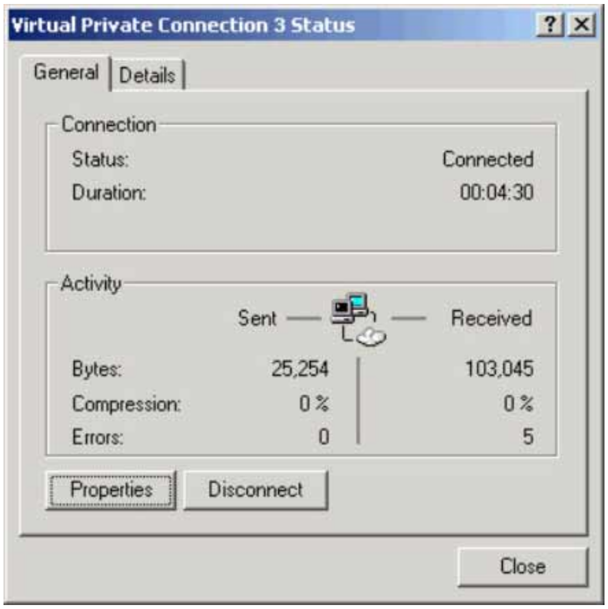
After the connection is made, the connection icon appears in the notification area on the lower-right corner of the screen as shown below.

Figure 3-92. Connection Icon



You may double-click on the icon to display the status of the connection.

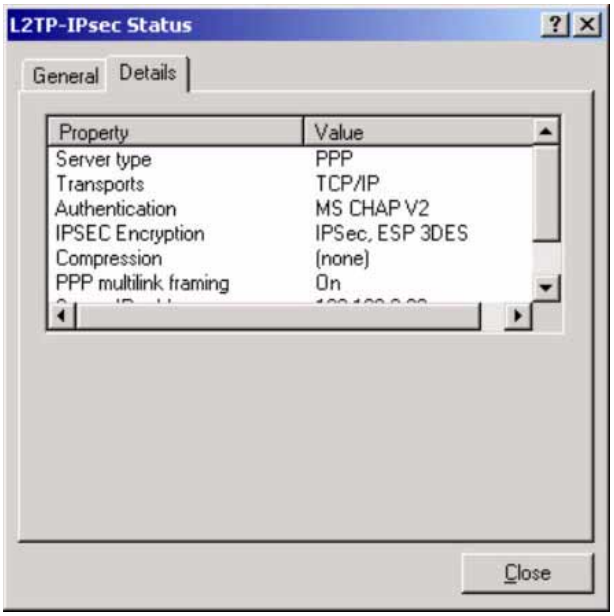
Figure 3-93. Virtual Private Connection Status Window, General Tab



Status: Connected
Duration: 00:04:30

	Sent	Received
Bytes:	25,254	103,045
Compression:	0 %	0 %
Errors:	0	5

Figure 3-94. L2TP-IPSec Status Window, Details Tab



Property	Value
Server type	PPP
Transports	TCP/IP
Authentication	MS CHAP V2
IPSEC Encryption	IPSec, ESP 3DES
Compression	(none)
PPP multilink framing	On

Notice that your system is now connected to the server via IPSec using 3DES (168-bit) encryption and MS CHAP v2 authentication.

Windows NT Clients

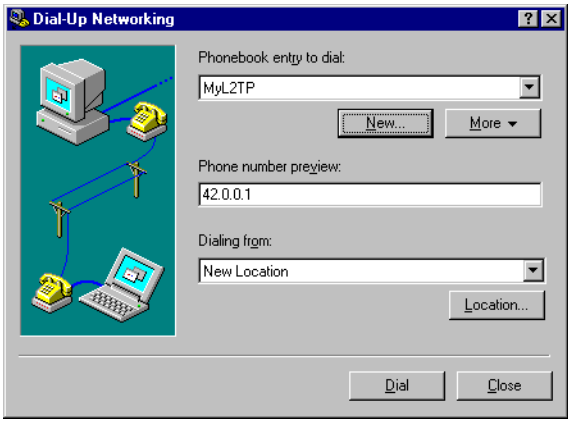
This section describes how to configure computers running Windows NT as L2TP+IPSec clients. To configure an L2TP client on a Windows NT computer do the following:

Step 1. Download the Microsoft IPSec VPN Client and install it on your computer.

The Microsoft IPSec VPN Client, along with instructions on how to install it, is found at: http://www.microsoft.com/windows2000/server/evaluation/news/bulletins/l2tpclient.asp

Step 2. On your Windows computer, click **My Computer**, then **Dial-Up Networking**. The Dial-Up Networking window appears, Figure 3-95.

Figure 3-95. Dial-Up Networking: Initial Window



Dial-Up Networking

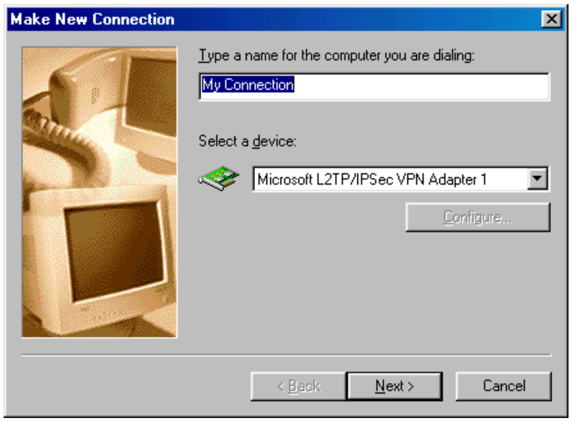
Phonebook entry to dial: MyL2TP

Phone number preview: 42.0.0.1

Dialing from: New Location

Step 3. Click New to create a new connection profile. The New Phonebook Entry window appears, displaying the Basic tab, Figure 3-96.

Figure 3-96. New Phonebook Entry: Basic Tab



Make New Connection

Type a name for the computer you are dialing: My Connection

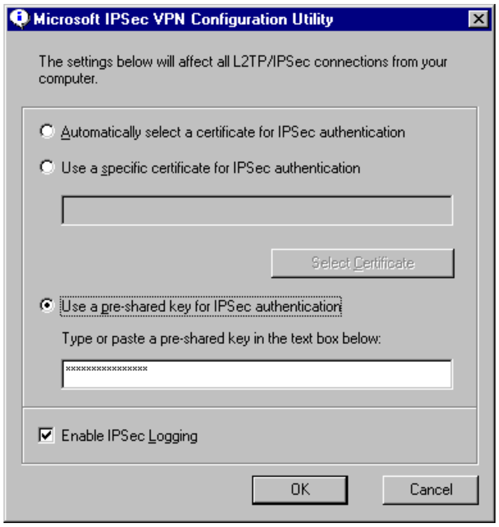
Select a device: Microsoft L2TP/IPSec VPN Adapter 1

Step 4. Under **Entry Name** enter the name you wish to give this connection.

Step 5. In the **Phone number** field enter the destination IP address. In this example, the internal address 42.0.0.1 of the 700wl Series unit (either Access Controller or Integrated Access Manager) is used.

Step 6. Select **MRASL2TPM (VPN2)** from the drop-down list of devices in the **Dial using** field, and click **Configure**. The Microsoft IPSec VPN Configuration Utility window appears, Figure 3-97.

Figure 3-97. Microsoft IPSec VPN Configuration Utility Window



Microsoft IPSec VPN Configuration Utility

The settings below will affect all L2TP/IPSec connections from your computer.

○ Automatically select a certificate for IPSec authentication

○ Use a specific certificate for IPSec authentication

● Use a pre-shared key for IPSec authentication

Type or paste a pre-shared key in the text box below:

****

☑ Enable IPSec Logging

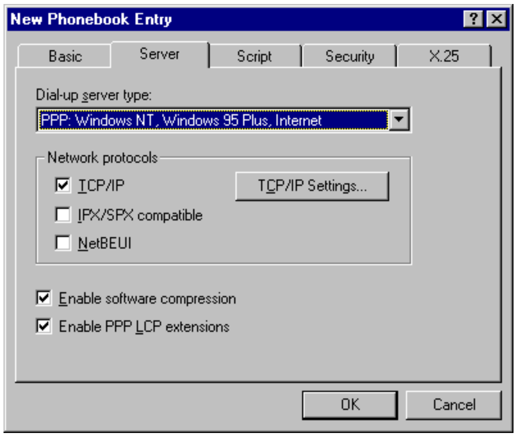
Step 7. Select the radio button for either **Use a specific certificate for IPSec authentication** or **Use a pre-shared key for IPSec authentication**.

- If you select **Use a specific certificate for IPSec authentication**, the **Select Certificate** button will become active. Click **Select Certificate** and enter the certificate information. This must match the certificate settings specified in the VPN settings in the 700wl Series system Administrative Console.
- If you select **Use a pre-shared key for IPSec authentication**, enter the shared secret in the **Type of paste a pre-shared key in the text box below** field.

Step 8. (Optional) Enter a check mark in the **Enable IPSec Logging** check box. This is useful if you need to debug the connection.

Step 9. Click **OK** to save your IPSec configuration settings. The New Phone Book Entry window appears (Figure 3-96). Click the **Server** tab to go to the server settings, Figure 3-98.

Figure 3-98. New Phonebook Entry: Server Tab



New Phonebook Entry

Dial-up server type: PPP: Windows NT, Windows 95 Plus, Internet

Network protocols

☑ TCP/IP

☐ IPX/SPX compatible

☐ NetBEUI

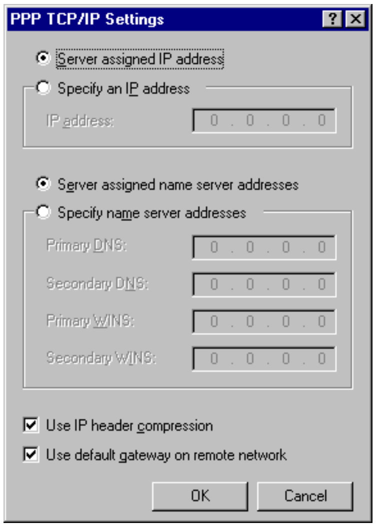
☑ Enable software compression

☑ Enable PPP LCP extensions

Step 10. Select **PPP, Windows NT, Windows 95 Plus, Internet** from the Dial-Up server type pull-down list.

Step 11. Enter a check mark in the **TCP/IP** check box and click **TCP/IP Settings…**. A PPP TCP/IP Settings window appears, Figure 3-99.

Figure 3-99. PPP TCP/IP Settings Window



PPP TCP/IP Settings

● Server assigned IP address

○ Specify an IP address

IP address: 0 . 0 . 0 . 0

● Server assigned name server addresses

○ Specify name server addresses

Primary DNS: 0 . 0 . 0 . 0

Secondary DNS: 0 . 0 . 0 . 0

Primary WINS: 0 . 0 . 0 . 0

Secondary WINS: 0 . 0 . 0 . 0

☑ Use IP header compression

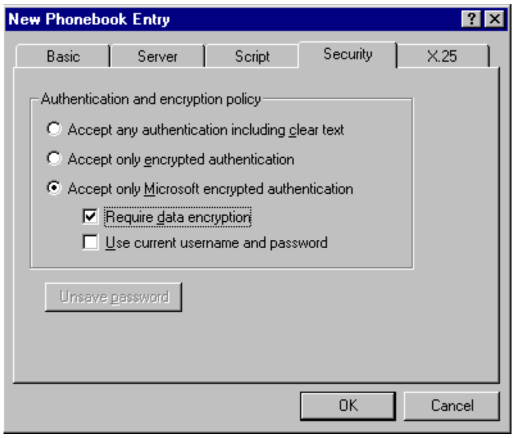
☑ Use default gateway on remote network

Step 12. Select the **Server assigned IP address** and **Server assigned name server addresses** radio buttons.

Step 13. Enter a check mark in the **Use default gateway on remote network** check box, and click **OK** to save your PPP TCP/IP settings. The New Phonebook Entry window returns, Figure 3-98.

Step 14. Click **Security** to go to the security setting tab, Figure 3-100.

Figure 3-100. New Phonebook Entry: Security Tab



New Phonebook Entry

Authentication and encryption policy

○ Accept any authentication including clear text

○ Accept only encrypted authentication

● Accept only Microsoft encrypted authentication

☑ Require data encryption

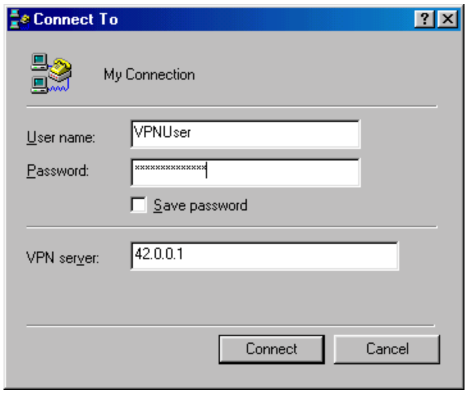
□ Use current username and password

Step 15. Select the **Accept only Microsoft encrypted authentication** radio button, and put a check mark in the Require data encryption check box.

Step 16. Click **OK** to save your connection profile settings.

Step 17. To connect to the 700wl Series system using your new L2TP client, go back to Dial-Up Networking and click the icon for the connection you have just created. A connection window appears, Figure 3-101.

Figure 3-101. Connection Windows



My Connection

User name: VPNUser

Password: **************

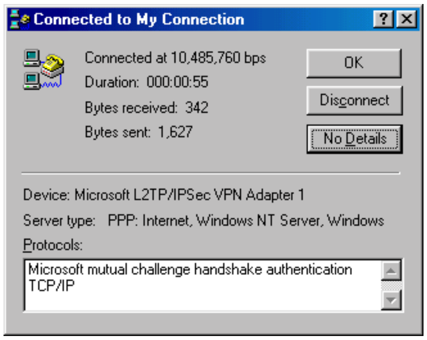
☐ Save password

VPN server: 42.0.0.1

Step 18. Enter your **Username** and **Password** (and optionally check the **Save password** check box) and click **Connect**.

Step 19. Once you have successfully connected to the network the connection window will show the status and details of the connection, Figure 3-102.

Figure 3-102. Connection Windows: Connection Status and Details



Connected at 10,485,760 bps

Duration: 000:00:55

Bytes received: 342

Bytes sent: 1,627

Device: Microsoft L2TP/IPSec VPN Adapter 1

Server type: PPP: Internet, Windows NT Server, Windows

Protocols:

Microsoft mutual challenge handshake authentication
TCP/IP

Windows 98 Clients

This section describes how to configure computers running Windows 98 as L2TP+IPSec clients. The same process will work for Windows ME, as well. This example will use Windows 98 Second Edition (SE); the steps are the same for Windows ME.

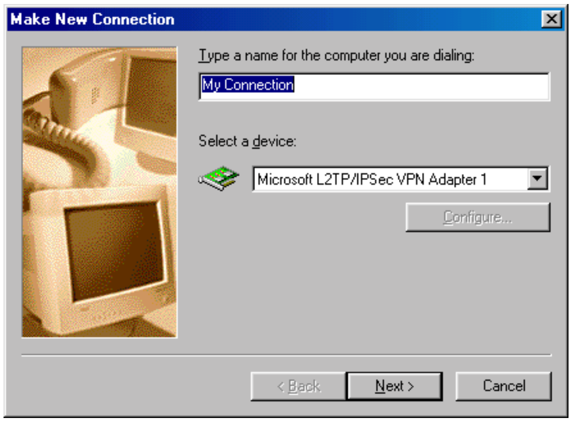
To configure an L2TP client on a Windows 98 computer do the following:

Step 1. Download the Microsoft IPSec VPN Client and install it on your computer.

The Microsoft IPSec VPN Client, along with instructions on how to install it, is found at: http://www.microsoft.com/windows2000/server/evaluation/news/bulletins/l2tpclient.asp

Step 2. On your Windows computer, go to Dial-Up Networking and click **Make New Connection**. The Make New Connection window appears, Figure 3-103.

Figure 3-103. Make New Connection Wizard: Initial Window



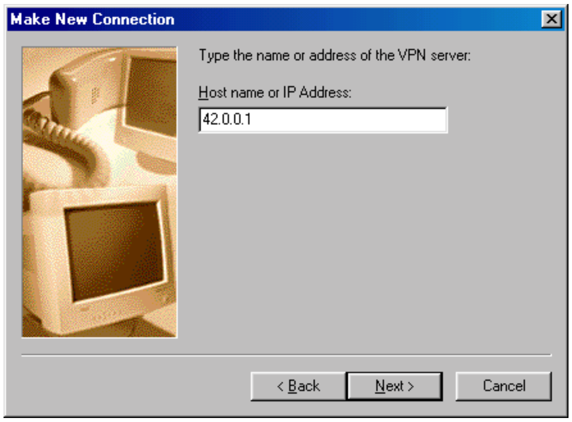
Type a name for the computer you are dialing: My Connection

Select a device: Microsoft L2TP/IPSec VPN Adapter 1

Step 3. Enter the name you wish to give this connection.

Step 4. Select **Microsoft L2TP/IPSec VPN Adapter 1** for **Select a device**, and click **Next >**. The next window appears, where you specify the host name or IP address, Figure 3-104.

Figure 3-104. Make New Connection Wizard: Specify Host IP Address

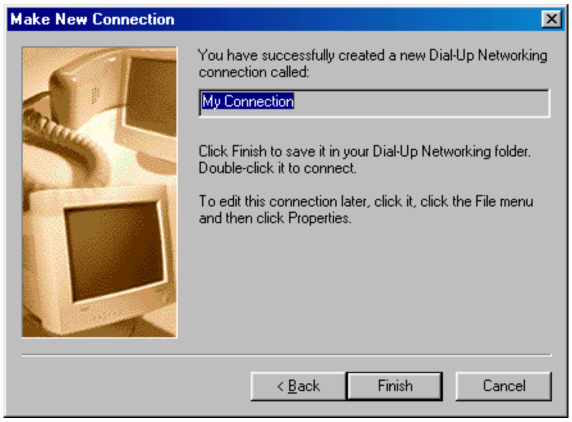


Type the name or address of the VPN server:

Host name or IP Address: 42.0.0.1

Step 5. Enter the destination address in the **Host name or IP address** text box. In this case, the internal address 42.0.0.1 of the 700wl Series unit (either Access Controller or Integrated Access Manager) is used. Click **Next>**. A confirmation window appears, Figure 3-105. Click **Finish** to close the window.

Figure 3-105. Make New Connection Wizard: Confirmation Window



Make New Connection

You have successfully created a new Dial-Up Networking connection called:

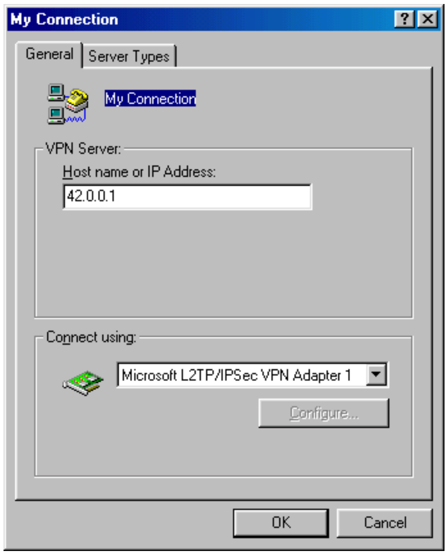
My Connection

Click Finish to save it in your Dial-Up Networking folder. Double-click it to connect.

To edit this connection later, click it, click the File menu and then click Properties.

Step 6. Return to Dial-Up Networking and right-click the icon for the connection you have just created. Select **Properties** from the menu that appears. The properties window for your connection appears, Figure 3-106.

Figure 3-106. Connection Properties Window



My Connection

My Connection

VPN Server:

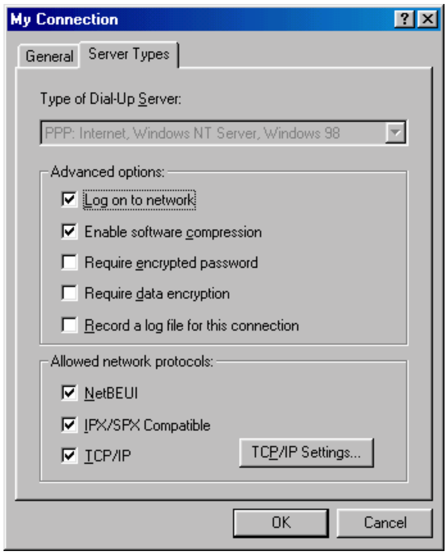
Host name or IP Address: 42.0.0.1

Connect using: Microsoft L2TP/IPSec VPN Adapter 1

Step 7. Click the **Server Types** tab. The Server types settings appear, Figure 3-107.

Step 8. Make sure **Log on to Network** is enabled and there is a check mark next to the **TCP/IP** network protocol.

Figure 3-107. Connection Properties Window: Server Types Tab



My Connection

General | Server Types

Type of Dial-Up Server:

PPP: Internet, Windows NT Server, Windows 98

Advanced options:

☑ Log on to network

☑ Enable software compression

☐ Require encrypted password

☐ Require data encryption

☐ Record a log file for this connection

Allowed network protocols:

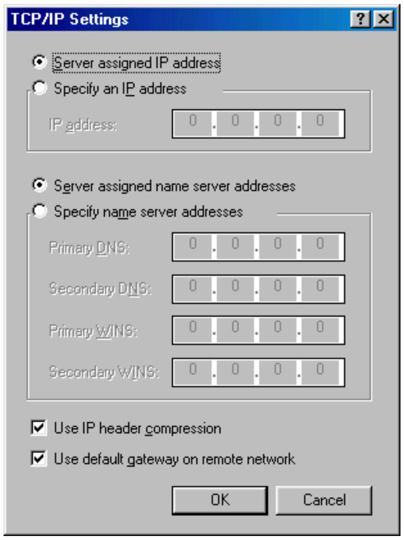
☑ NetBEUI

☑ IPX/SPX Compatible

☑ TCP/IP

Step 9. Click **TCP/IP Settings...**. A TCP/IP Settings window appears, Figure 3-108.

Figure 3-108. Connection Properties: TCP/IP Settings



TCP/IP Settings

● Server assigned IP address

○ Specify an IP address

IP address: 0 . 0 . 0 . 0

● Server assigned name server addresses

○ Specify name server addresses

Primary DNS: 0 . 0 . 0 . 0

Secondary DNS: 0 . 0 . 0 . 0

Primary WINS: 0 . 0 . 0 . 0

Secondary WINS: 0 . 0 . 0 . 0

☑ Use IP header compression

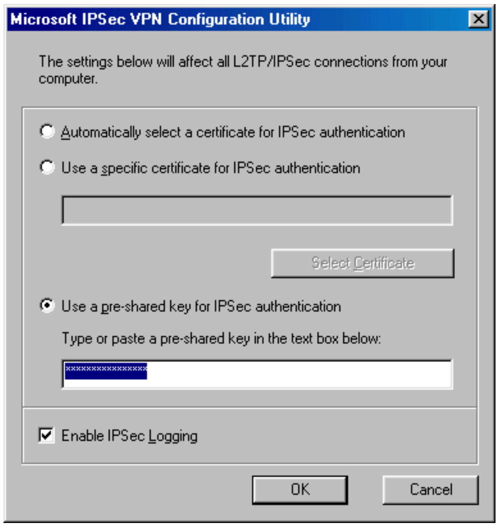
☑ Use default gateway on remote network

Step 10. Make sure that **Use default gateway on remote network** is checked. Click **OK**. The Connection Properties window is reactivated.

Step 11. In the Connection Properties window click **OK** to save your settings.

Step 12. From the Windows Start Menu, select **Programs** ⇨ **Microsoft IPSEC VPN** ⇨ **Microsoft IPSEC VPN Configuration**. The Microsoft IPSec Configuration Utility windows appears, Figure 3-109.

Figure 3-109. Microsoft IPSec Configuration Utility Windows



Microsoft IPSec VPN Configuration Utility

The settings below will affect all L2TP/IPSec connections from your computer.

○ Automatically select a certificate for IPSec authentication

○ Use a specific certificate for IPSec authentication

● Use a pre-shared key for IPSec authentication

Type or paste a pre-shared key in the text box below:

****

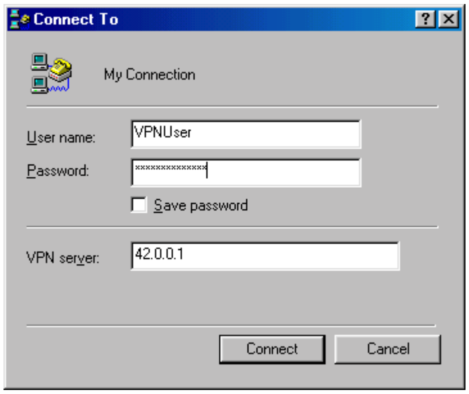
☑ Enable IPSec Logging

Step 13. Either select **Use a pre-shared key for IPSec authentication** and enter the shared secret, or select **Use a specific certificate for IPSec authentication,** then click **Select Certificate** and enter the certificate information.

Step 14. Click **OK** to save your settings.

Step 15. To connect to the 700wl Series system using your new L2TP client, go back to Dial-Up Networking and click the icon for the connection you have just created. A connection window appears, Figure 3-110.

Figure 3-110. Connection Windows



Connect To

My Connection

User name: VPNUser

Password: **************

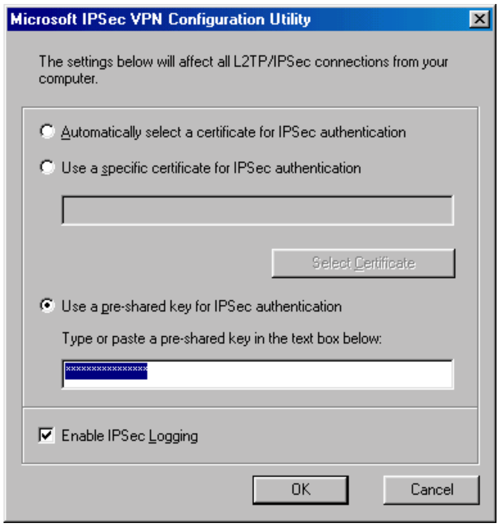
□ Save password

VPN server: 42.0.0.1

Step 16. Enter your **Username** and **Password** (and optionally check the **Save password** check box) and click **Connect**.

Step 17. Once you have successfully connected to the network the connection window will show the status and details of the connection, Figure 3-111.

Figure 3-111. Connection Windows: Connection Status and Details



Microsoft IPSec VPN Configuration Utility

The settings below will affect all L2TP/IPSec connections from your computer.

○ Automatically select a certificate for IPSec authentication

○ Use a specific certificate for IPSec authentication

● Use a pre-shared key for IPSec authentication

Type or paste a pre-shared key in the text box below:

xxxxxxxxxxxxxxxx

☑ Enable IPSec Logging

SSH Client Configuration

There are many Windows-based SSH client programs available for download on the Internet. One of popular freeware is "PuTTY" which can be obtained from:

`http://www.chiark.greenend.org.uk/~sgtatham/ putty/download.html`.

This section describes how to configure a computer running Microsoft Windows as an SSH client using PuTTY.

PuTTY for Windows

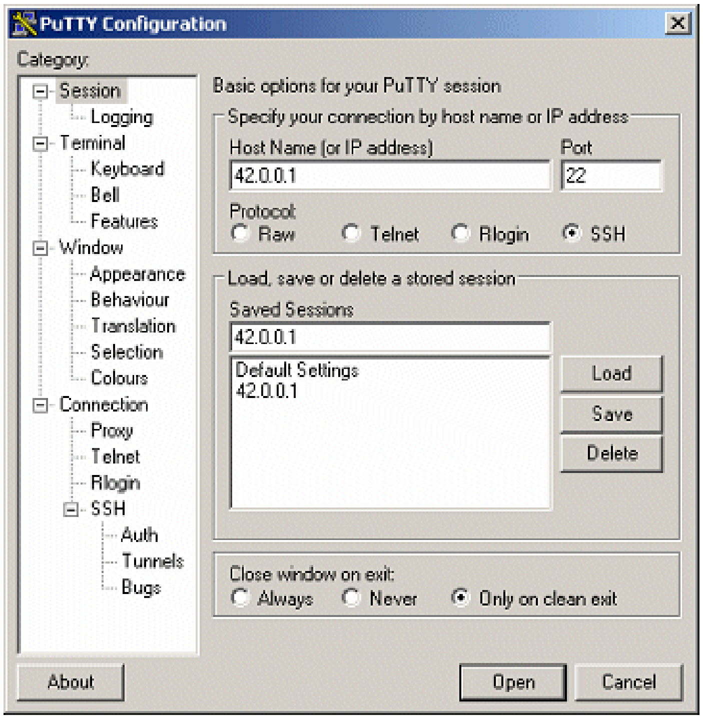
The following procedure is based on a Windows XP client. You may follow the same procedures for configuring the software on different Windows platforms.

Step 1. Start "putty.exe" from the location where you stored the downloaded file

Figure 3-112. The PuTTY desktop icon

Step 2. The PuTTY Configuration window appears.

Figure 3-113. The PuTTY Configuration window



Basic options for your PuTTY session

Specify your connection by host name or IP address

Host Name (or IP address): 42.0.0.1

Port: 22

Protocol: ○ Raw ○ Telnet ○ Rlogin ● SSH

Load, save or delete a stored session

Saved Sessions: 42.0.0.1

Default Settings
42.0.0.1

Close window on exit: ○ Always ○ Never ● Only on clean exit

Step 3. Enter 42.0.0.1 in the **Host Name (or IP address)** field and then select **SSH** for Protocol. Note that once SSH has been selected the Port field is automatically updated to “22”.

Step 4. (Optional) Enter 42.0.0.1 in the **Saved Sessions** field and then click **Save** to store the setting so that it can be reused in the next logon attempt.

Step 5. (Optional) Configure port forwarding tunnels to encrypt application data such as SMTP, POP3, and IMAP via the SSH session to the appropriate servers inside the network

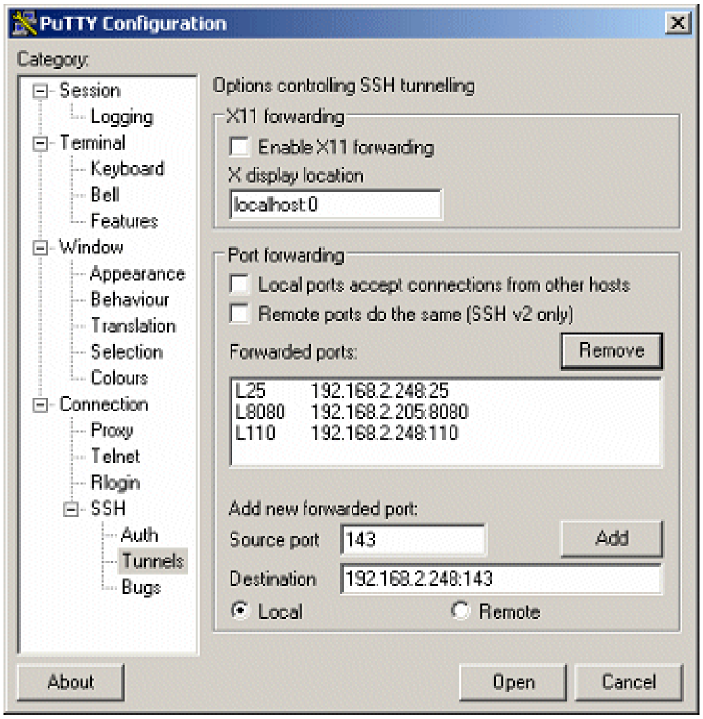
a. Click **Tunnels** in the Category panel. The window displays tunneling configuration options ((Figure 3-114).

b. Type the **Source port** and **Destination** address in the appropriate fields.

c. Click **Add.**

d. Repeat the above steps to include all desired applications. In the example shown in Figure 3-114, the Forwarded ports include SMTP, Proxy, POP3, and IMAP).

Figure 3-114. SSH Tunneling options



Options controlling SSH tunnelling

X11 forwarding

□ Enable X11 forwarding

X display location: localhost:0

Port forwarding

□ Local ports accept connections from other hosts

□ Remote ports do the same (SSH v2 only)

Forwarded ports:

```
L25     192.168.2.248:25
L8080   192.168.2.205:8080
L110    192.168.2.248:110
```

Add new forwarded port:

Source port: 143

Destination: 192.168.2.248:143

● Local ○ Remote

Note that, in changing the configuration, you are required to save the settings again so that the parameters can be reused.

When applicable, clients that use port forwarding must be reconfigured to use localhost or 127.0.0.1 (Loopback) as the server address.

Step 6. Click **Open**

Step 7. If the client connects to the Integrated Access Manager/Access Controller for the first time, you will be prompted to save the server's digital certificate. Select **Yes** or **Save**.

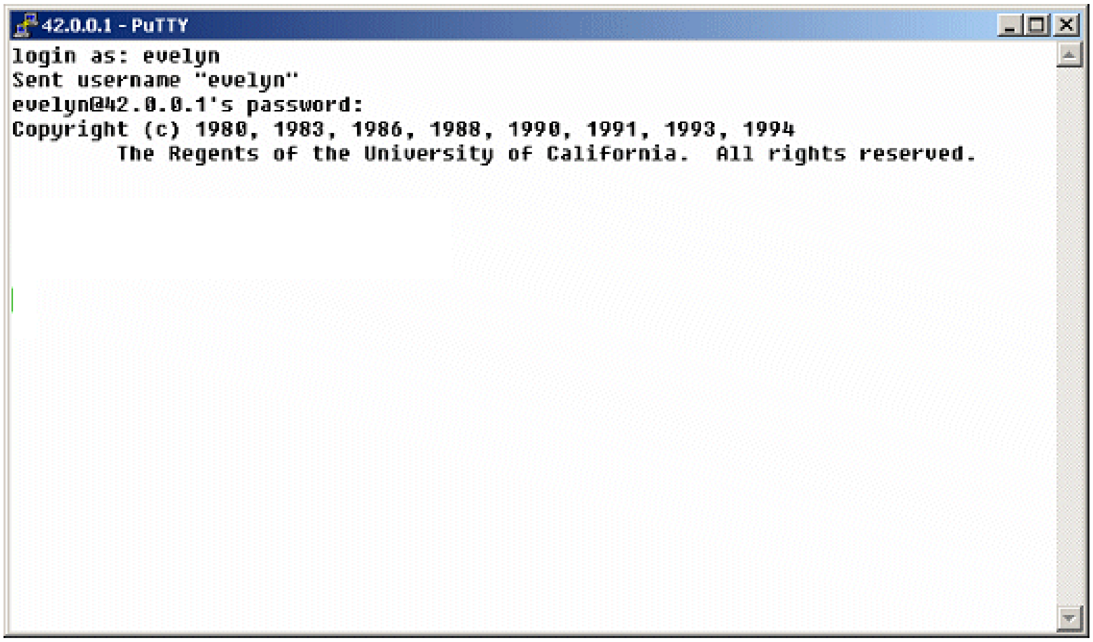
Step 8. The PuTTY window displaying the login prompt appears (Figure 3-115).

Step 9. Type the username and press ENTER.

Step 10. Type the password and then press ENTER. You will not see anything you've typed for password.

At this point, you should be able to access the network normally. Please make sure to leave the PuTTY window opened to stay connected.

Figure 3-115. PuTTY login window



```
login as: evelyn
Sent username "evelyn"
evelyn@42.0.0.1's password:
Copyright (c) 1980, 1983, 1986, 1988, 1990, 1991, 1993, 1994
        The Regents of the University of California.  All rights reserved.
```

You may logoff the network by selecting the PuTTY window and then typing CTRL-D (CTRL and D keys together).

SCRIPTS FOR L2TP/IPSEC ON WINDOWS 2000 OR XP 4

This chapter describes the setup of L2TP/IPSec connections on Windows systems. It includes the following sections:

The information described in this section is intended for use by an administrator.

Scripts Overview

This section describes how to setup an L2TP/IPSec connection to the 700wl Series system on Windows 2000 and Windows XP.

Two scripts, one for Windows 2000 and the other for Windows XP, are used to streamline the setup process. Both scripts use Microsoft CMAK (Connection Manager Administration Kit), which allows you to build a client connection installation package that reflects the customer's settings. In addition to CMAK, the script for Windows 2000 made use Microsoft's **ipsecpol.exe** command line program, which is a tool for configuring Internet Protocol Security (IPSec) policies on the computer.

Note: *The CMAK package is part of the adminpak that is found on the Windows 2000 Server distribution CD. For Windows XP, you can download the adminpak for Windows 2003 Server from the Microsoft download site (search for adminpak).*

The ipsecpol tool for Windows 2000 can also be downloaded from the Microsoft download site (search for ipsecpol).

It should be noted that without the two scripts, you still can create a new L2TP/IPSec connection using New Connection Wizard available by default on both Windows 2000 and Windows XP.

What's in the Package?

The package contains two important subdirectories—**win2k** and **winxp**. The list of files in each subdirectory is shown in Table 4-1.

Table 4-1. Files Contained In Package Subdirectories

Platform	Subdirectory	Files
Windows 2000	win2k	IPSECPOL.EXE IPSECUTIL.DLL prohibitIPSec.reg **setupL2TP.cmd** TEXT2POL.DLL uninstallL2Tp.cmd u_prohibitIPSec.reg vn.txt vnil2tp.exe vnil2tp.inf [vnil2tp_PAP] [vnil2tp_MSCHAP]
Windows XP	winxp	**setupl2tp_XP.cmd** uninstalll2tp_XP.cmd vnil2tp.exe vnil2tp.inf [vnil2tp_PAP] [vnil2tp_MSCHAP]

Note: *[vnil2tp_PAP] is the subdirectory containing files for setting up an L2TP connection that uses PAP (clear text) for authentication. If PAP is required (for instance, if you are using L2TP/IPSec via LDAP authentication), these files should be used. This is the default set of files, in other words the files in this directory match the default files found in the win2k or winxp directory. This subdirectory is used for restoration purposes, in case the files in the main directory have been modified.*

[vnil2tp_MSCHAP] is the subdirectory containing files for setting up the L2TP connection that uses MS-CHAP v2 for authentication. If you want to use MS-CHAP v2 for authentication, copy all files in this subdirectory and place them in the win2k directory. This will override the existing files.

Setting up Windows 2000

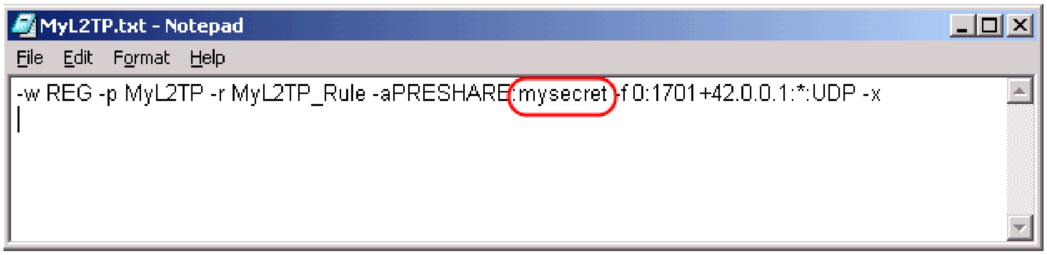
Do the following to install and configure a new L2TP/IPSec connection on Windows 2000.

Step 1. Download the ZIP package, **l2tp_setup.zip**, from the 700wl Series system technical support web site.

Step 2. Extract the ZIP package on to a directory.

Step 3. To setup your IPSec shared secret, use a text editor, such as Notepad, to edit the file, **MyL2TP.txt**, and then replace the default shared secret, “mysecret” (see the figure below), with the one that is set on the 700wl Series unit.

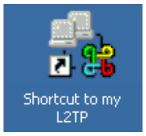
Figure 4-1. Editing MyL2TP.txt File



```
-w REG -p MyL2TP -r MyL2TP_Rule -aPRESHARE:mysecret -f 0:1701+42.0.0.1:*:UDP -x
```

Step 4. Run **setupL2TP.cmd**. The script will modify the system's registry to allow the uses of shared secret and create the MMC IPSec policy, named *my_L2TP*. In addition, a new Network Connection shortcut, **Shortcut to My L2TP**, is created on the desktop.

Figure 4-2. Desktop Shortcut



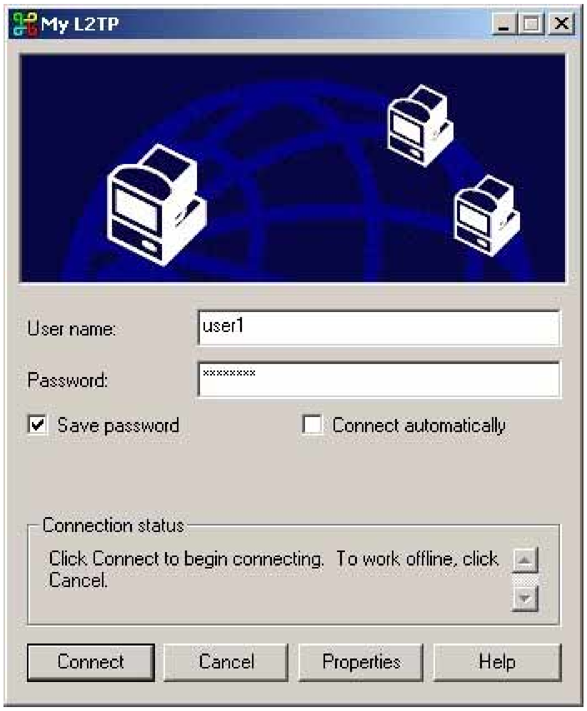
Step 5. Reboot the system.

Warning: *Without rebooting, any attempt to make the L2TP connection will fail.*

Step 6. Double-click the **Shortcut to My L2TP** icon. The L2TP connection window appears.

Step 7. Enter the User name and Password information in the appropriate text box. If required, enter the **Logon domain** information in the third text box. You may select the **Save password** and/or **Connect automatically** options by clicking the appropriate checkboxes.

Figure 4-3. My L2TP Connection Window



User name: user1

Password: ********

☑ Save password

□ Connect automatically

Connection status

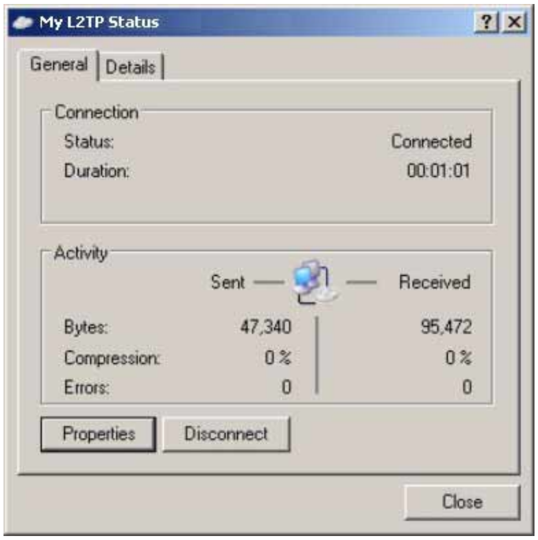
Click Connect to begin connecting. To work offline, click Cancel.

Step 8. (Optional) Click the **Properties** button to modify the number of *Redial attempts* and the minutes of **Idle time before disconnecting**. After finishing the modification, click **OK**.

Step 9. Click the **Connect** button to make the VPN connection to the 700wl Series unit.

Once the connection is made, you will see a new connection icon appeared in the notification tray (low-right corner of your desktop). You may click on the icon to view the connection status.

Figure 4-4. L2TP Status Window, General Tab



Connection

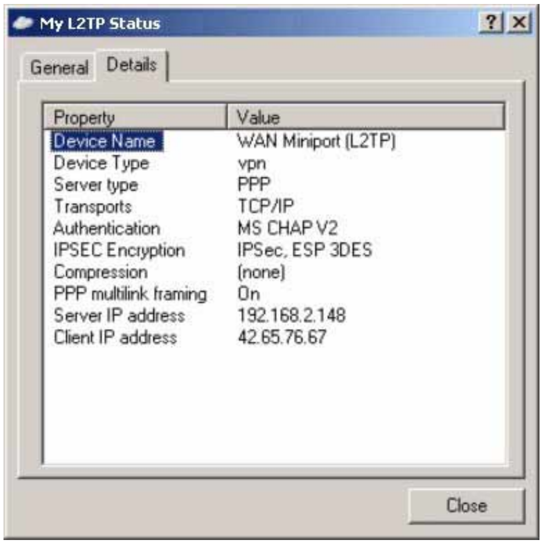
Status: Connected

Duration: 00:01:01

Activity

	Sent	Received
Bytes:	47,340	95,472
Compression:	0 %	0 %
Errors:	0	0

Figure 4-5. L2TP Status Window, Details Tab



Property	Value
Device Name	WAN Miniport (L2TP)
Device Type	vpn
Server type	PPP
Transports	TCP/IP
Authentication	MS CHAP V2
IPSEC Encryption	IPSec, ESP 3DES
Compression	(none)
PPP multilink framing	On
Server IP address	192.168.2.148
Client IP address	42.65.76.67

Setting up Windows XP

Do the following to install and configure a new L2TP/IPSec connection on Windows XP.

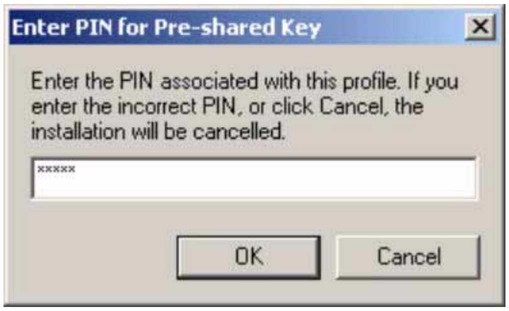
Step 1. Download the ZIP package, **l2tp_setup.zip**, from the internal web site

Step 2. Extract the ZIP package on to a directory

Step 3. Run **setupL2TP.cmd**.

Step 4. You will be prompted to enter the PIN for pre-shared key. Enter the PIN and then click **OK**. See details in “How to Rebuild a CMAK Package” on how to rebuild the CMAK package which includes the information on how to setup the PIN and the pre-shared key.

Figure 4-6. PIN Entry Dialog



Enter the PIN associated with this profile. If you enter the incorrect PIN, or click Cancel, the installation will be cancelled.

xxxxx

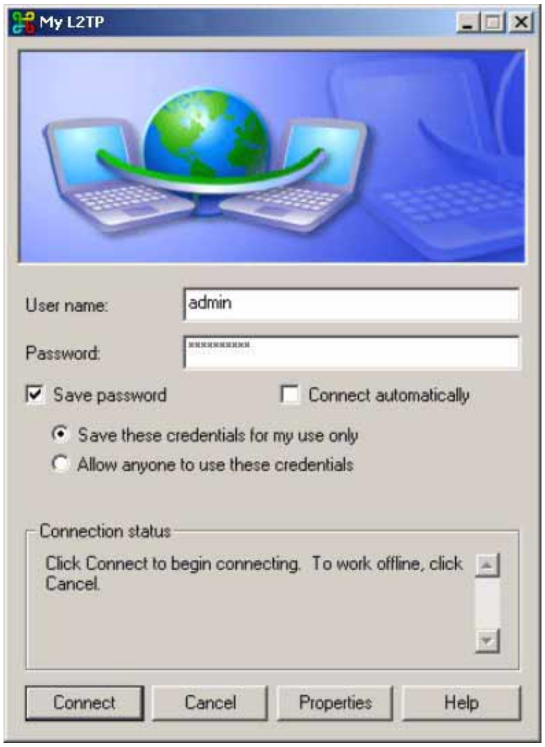
Step 5. A new Network Connection shortcut, **Shortcut to my L2TP**, is created on the desktop.

Figure 4-7. Desktop Shortcut

Step 6. Double-click the **Shortcut to My L2TP** icon. The L2TP connection window appears.

Step 7. Enter the User name and Password information in the appropriate text box. You may select the **Save password** and/or **Connect automatically** options by clicking the appropriate check boxes.

Figure 4-8. Sign-on Window


My L2TP

User name: admin

Password: **********

☑ Save password ☐ Connect automatically

● Save these credentials for my use only

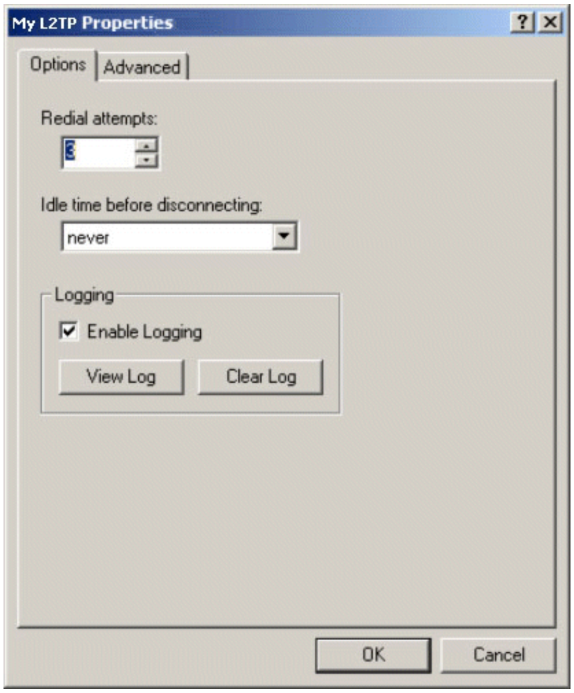
○ Allow anyone to use these credentials

Connection status

Click Connect to begin connecting. To work offline, click Cancel.

Step 8. (Optional) Click the **Properties** button to modify the number of **Redial attempts** and the minutes of **Idle time before disconnecting**. You may click the **View Log** button to display the connection's log. The Advanced tab is used to enable packet filtering for this connection. Click **OK** to save the settings.

Figure 4-9. L2TP Properties Window, Options Tab



Redial attempts: 3

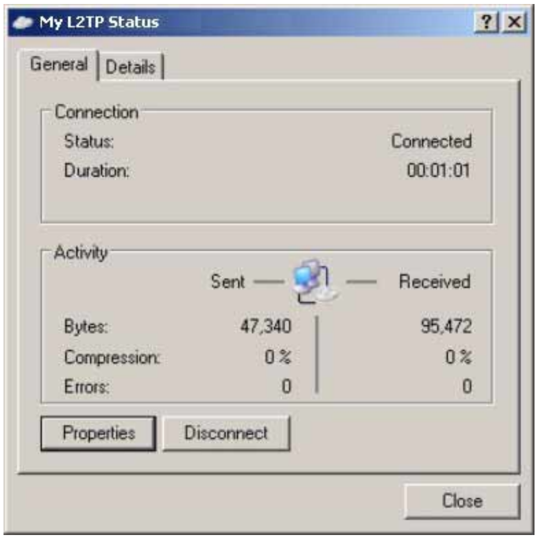
Idle time before disconnecting: never

☑ Enable Logging

Step 9. Click the **Connect** button to make the VPN connection to the 700wl Series system.

Step 10. Once the connection is made, you will see a new connection icon appeared in the notification tray (lower-right corner of your desktop). You may click on the icon to view the connection status.

Figure 4-10. L2TP Status Window, General Tab

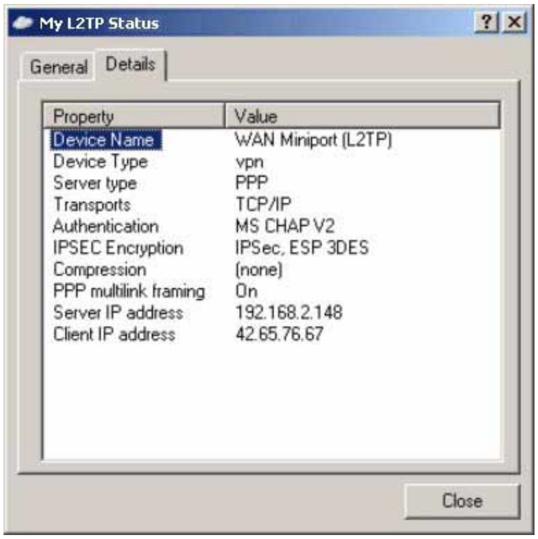


Status: Connected

Duration: 00:01:01

	Sent	Received
Bytes:	47,340	95,472
Compression:	0 %	0 %
Errors:	0	0

Figure 4-11. L2TP Status Window, Details Tab



Property	Value
Device Name	WAN Miniport (L2TP)
Device Type	vpn
Server type	PPP
Transports	TCP/IP
Authentication	MS CHAP V2
IPSEC Encryption	IPSec, ESP 3DES
Compression	(none)
PPP multilink framing	On
Server IP address	192.168.2.148
Client IP address	42.65.76.67

Note: *Both PIN and IPSec shared secret are embedded into the CMAK package. The only method to change either PIN or IPSec shared secret is to rebuild the CMAK package.*

See "How to Rebuild a CMAK Package" for instructions on how to rebuild a CMAK package.

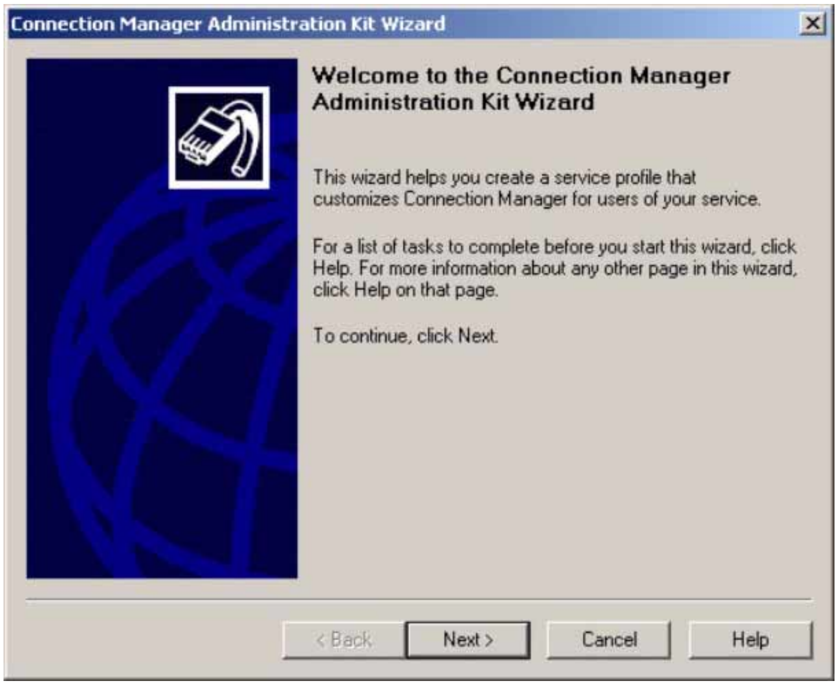
How to Rebuild a CMAK Package

Step 1. Start the CMAK Wizard

Start ⟶ **Run...** ⟶ Enter "`cmak`" in the **Open** text box ⟶ **OK**

The Welcome window of the CMAK Wizard appears. Click **Next>**.

Figure 4-12. Connection Manager Administration Kit Wizard



Connection Manager Administration Kit Wizard

Welcome to the Connection Manager Administration Kit Wizard

This wizard helps you create a service profile that customizes Connection Manager for users of your service.

For a list of tasks to complete before you start this wizard, click Help. For more information about any other page in this wizard, click Help on that page.

To continue, click Next.

Step 2. The Service Profile Selection window appears. Make sure that **New profile** is selected and then click **Next>**.

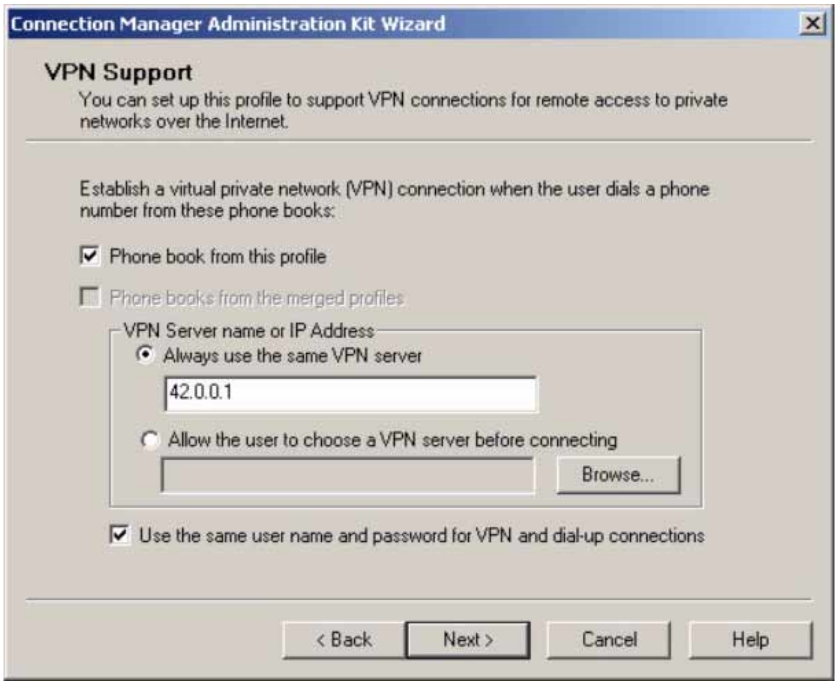
Step 3. The Service and File Names window appears. Enter the Service name and File name in the appropriate text box. Click **Next>**.

Step 4. The Realm Name window appears. Make sure that **Do not add a realm name to the user name** is selected. Click **Next>**.

Step 5. The Merging Profile Information window appears. Click **Next>**.

Step 6. Select **Phone book from this profile**. Enter `42.0.0.1` in the **Always use the same VPN server** text box and then select `Use the same user name and password for VPN and dial-up connections`. Click **Next>**.

Figure 4-13. VPN Support Window



Connection Manager Administration Kit Wizard

VPN Support

You can set up this profile to support VPN connections for remote access to private networks over the Internet.

Establish a virtual private network (VPN) connection when the user dials a phone number from these phone books:

☑ Phone book from this profile

□ Phone books from the merged profiles

VPN Server name or IP Address

● Always use the same VPN server

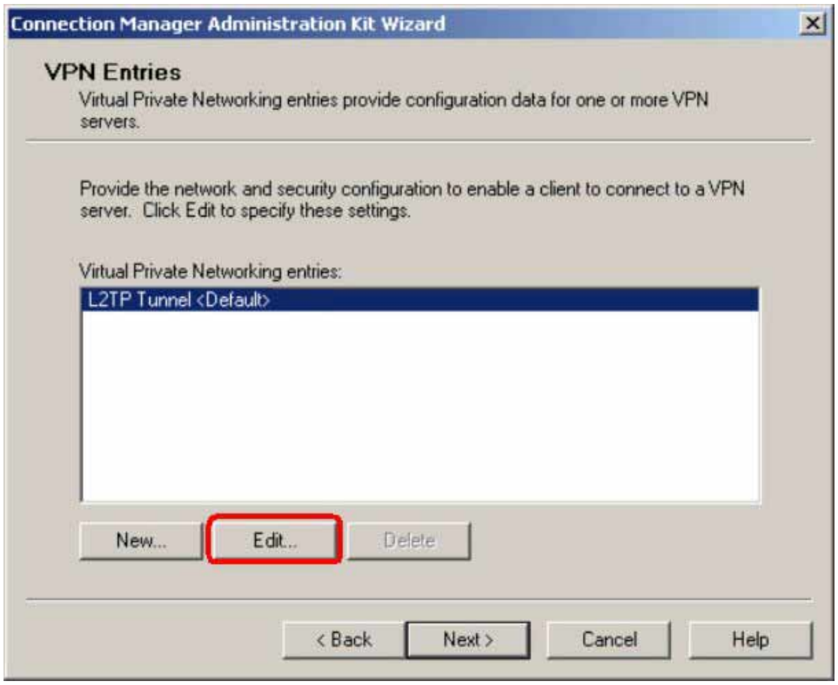
42.0.0.1

○ Allow the user to choose a VPN server before connecting

☑ Use the same user name and password for VPN and dial-up connections

Step 7. The VPN Entries window appears. Select the entry you just created (named after the Service name specified in Step 3) and then click **Edit**.

Figure 4-14. VPN Entries Window



Connection Manager Administration Kit Wizard

VPN Entries

Virtual Private Networking entries provide configuration data for one or more VPN servers.

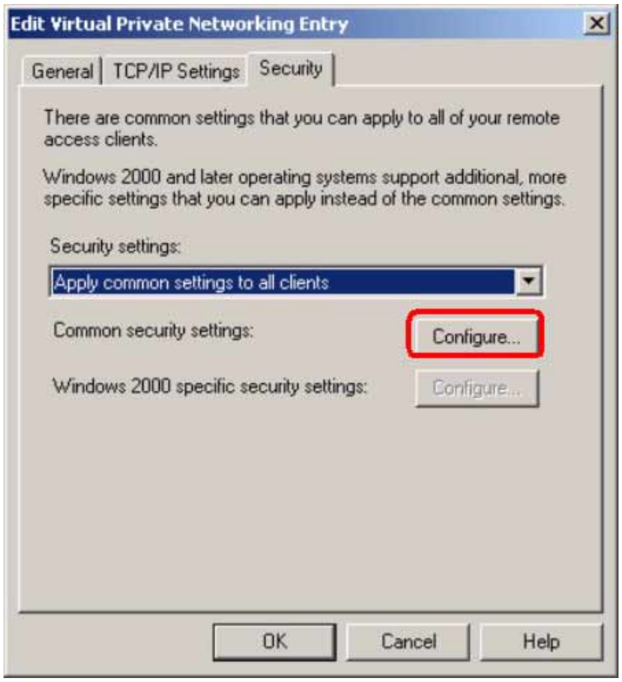
Provide the network and security configuration to enable a client to connect to a VPN server. Click Edit to specify these settings.

Virtual Private Networking entries:

L2TP Tunnel <Default>

Step 8. The Edit Virtual Private Networking Entry window appears. Click the Security tab and then click the **Configure…** button.

Figure 4-15. Edit Virtual Private Networking Entry Window



Edit Virtual Private Networking Entry

There are common settings that you can apply to all of your remote access clients.

Windows 2000 and later operating systems support additional, more specific settings that you can apply instead of the common settings.

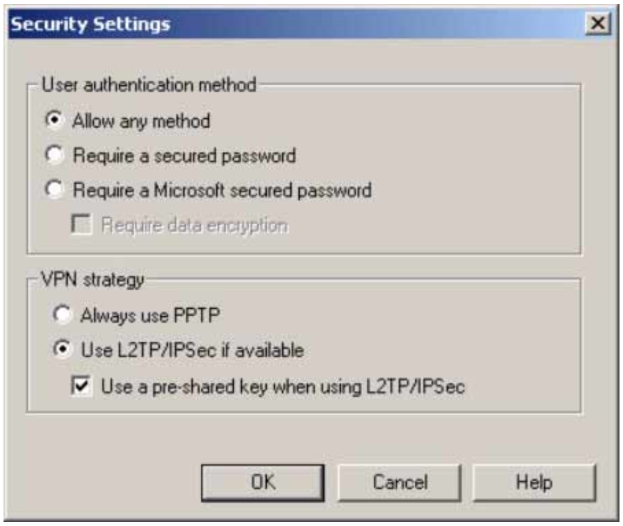
Security settings: Apply common settings to all clients

Common security settings: Configure...

Windows 2000 specific security settings: Configure...

Step 9. The Security Settings window appears. Select **Use L2TP/IPSec if available** and then select the **Use a pre-shared key when using L2TP/IPSec** option. Click **OK**.

Figure 4-16. Security Settings Window



Security Settings

User authentication method

● Allow any method

○ Require a secured password

○ Require a Microsoft secured password

☐ Require data encryption

VPN strategy

○ Always use PPTP

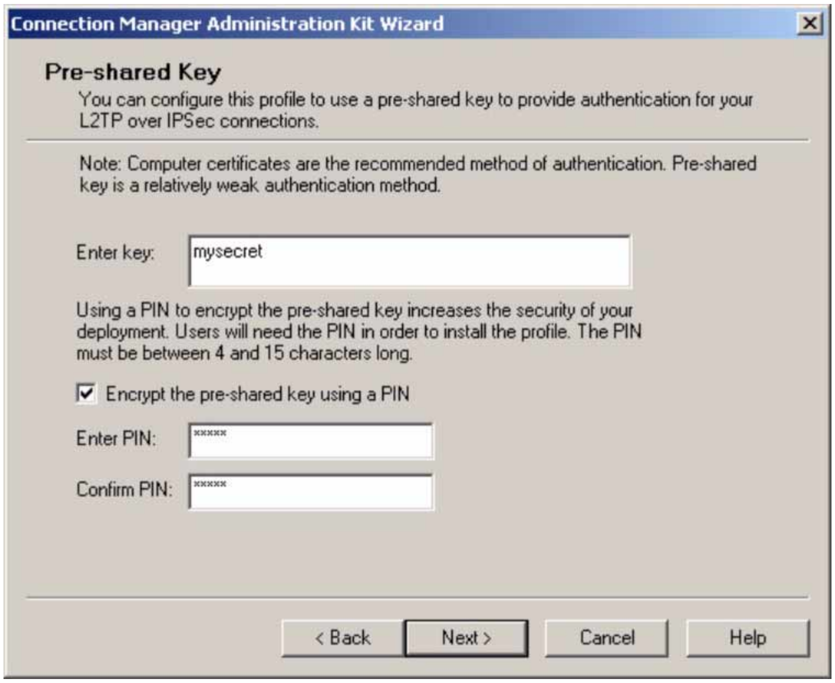
● Use L2TP/IPSec if available

☑ Use a pre-shared key when using L2TP/IPSec

Step 10. Click **OK** to return to the VPN Entries window. Click **Next>**.

Step 11. The Pre-shared Key window appears. Enter your shared secret in the **Enter key** field and then enter the PIN and the confirmation in the appropriate text box. Note that you must enter a PIN; otherwise the system does not use a shared secret. Click **Next>**.

Figure 4-17. Pre-Shared Key Window



Connection Manager Administration Kit Wizard

Pre-shared Key

You can configure this profile to use a pre-shared key to provide authentication for your L2TP over IPSec connections.

Note: Computer certificates are the recommended method of authentication. Pre-shared key is a relatively weak authentication method.

Enter key: mysecret

Using a PIN to encrypt the pre-shared key increases the security of your deployment. Users will need the PIN in order to install the profile. The PIN must be between 4 and 15 characters long.

☑ Encrypt the pre-shared key using a PIN

Enter PIN: *****

Confirm PIN: *****

Step 12. The Phone Book window appears. Make sure that the **Automatically download phone book updates** option is *cleared*. Click **Next>**.

Step 13. The Dial-up Networking Entries window appears. Select the entry, which is named after the Service name defined in Step 3 and then click **Next>**.

Step 14. The Routing Table Update window appears. Click **Next>**.

Step 15. The Automatic Proxy Configuration window appears. Click **Next>**.

Note: *Note that if the Proxy support is required, you must create a PAC file, which contains the proxy information. However, this is beyond the scope of this document. The detailed information is not provided.*

Step 16. The Custom Actions window appears. Click **Next>**.

Step 17. The Logon Bitmap window appears. Click **Next>**.

Step 18. The Phone Book Bitmap window appears. Click **Next>**.

Step 19. The Icons window appears. Click **Next>**.

Step 20. The Notification Area Shortcut Menu window appears. Click **Next>**.

Step 21. The Help File window appears. Click **Next>**.

Step 22. The Support Information window appears. Click **Next>**.

Step 23. The Connection Manager Software window appears. Click **Next>**.

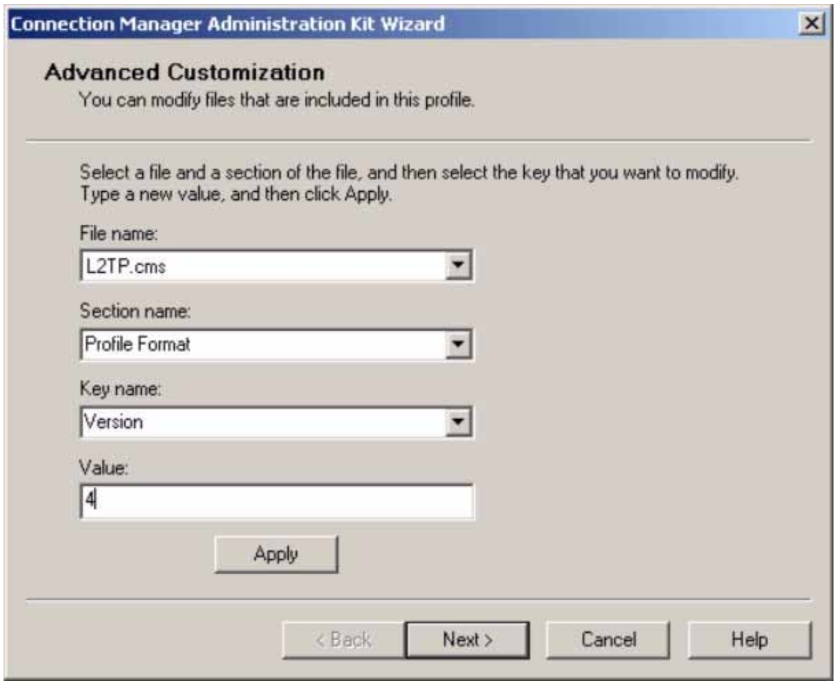
Step 24. The License Agreement window appears. Click **Next>**.

Step 25. The Additional Files window appears. Click **Next>**.

Step 26. The Ready to Build the Service Profile window appears. Select **Advanced customization**. Click **Next>**.

Step 27. The Advanced Customization window appears.

Figure 4-18. Advanced Customization Window



Connection Manager Administration Kit Wizard

Advanced Customization

You can modify files that are included in this profile.

Select a file and a section of the file, and then select the key that you want to modify. Type a new value, and then click Apply.

File name: L2TP.cms

Section name: Profile Format

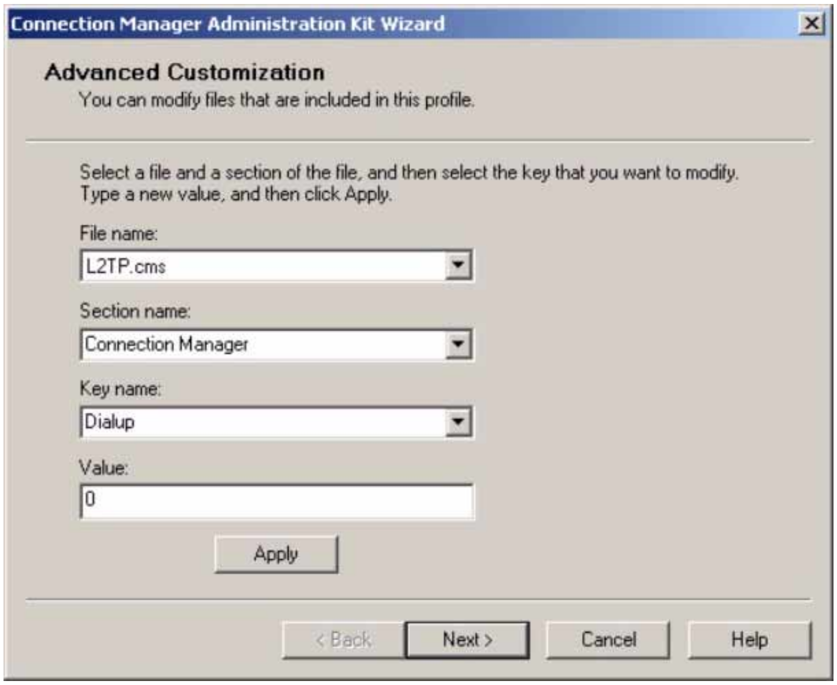
Key name: Version

Value: 4

Make the following modifications (click **Apply** after each change):

a. Select **Connection Manager** from the **Section name** menu. Select **Dialup** from the **Key name** menu. Enter `0` in the **Value** field. Click **Apply**.

Figure 4-19. Advanced Customization Window



Connection Manager Administration Kit Wizard

Advanced Customization

You can modify files that are included in this profile.

Select a file and a section of the file, and then select the key that you want to modify. Type a new value, and then click Apply.

File name: L2TP.cms

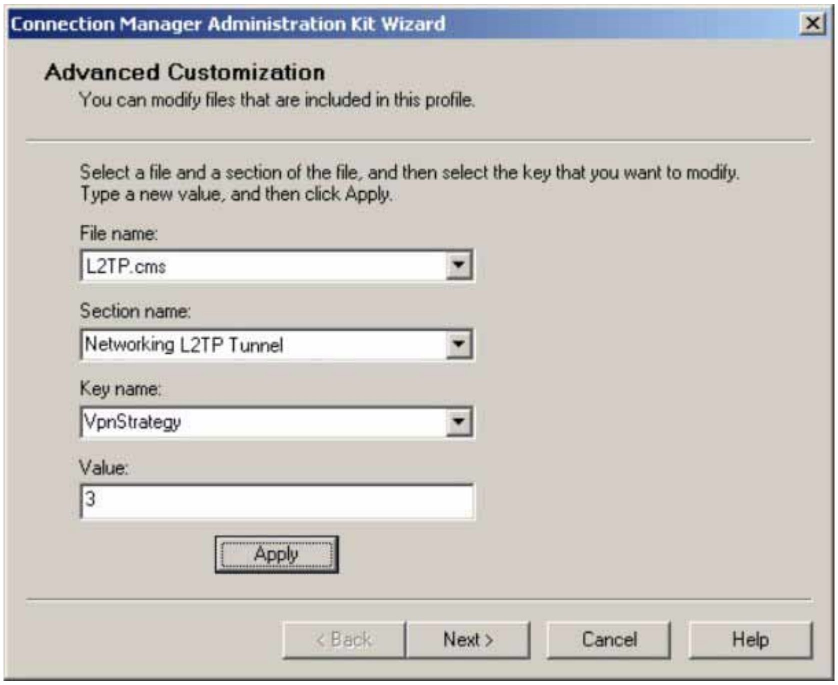
Section name: Connection Manager

Key name: Dialup

Value: 0

b. Select **Networking&Default L2TP Tunnel** from the **Section name** menu. Select **VpnStrategy** from the **Key name** menu. Enter 3 in the **Value** field. Click **Apply** and then click **Next>**.

Figure 4-20. Advanced Customization Window



Connection Manager Administration Kit Wizard

Advanced Customization

You can modify files that are included in this profile.

Select a file and a section of the file, and then select the key that you want to modify. Type a new value, and then click Apply.

File name: L2TP.cms

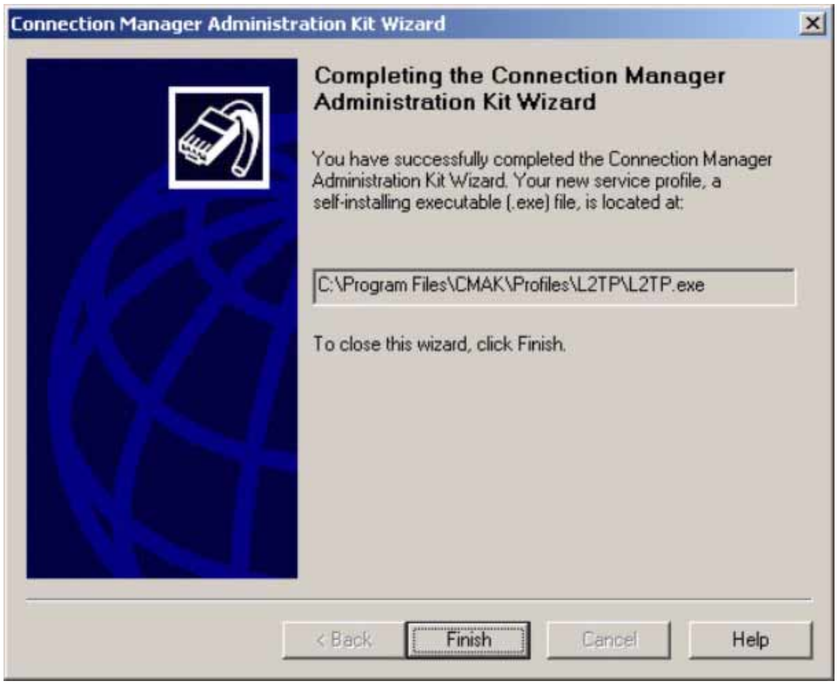
Section name: Networking L2TP Tunnel

Key name: VpnStrategy

Value: 3

This will build your files.

Figure 4-21. Connection Manager Administration Kit Wizard, Completion Window



Completing the Connection Manager Administration Kit Wizard

You have successfully completed the Connection Manager Administration Kit Wizard. Your new service profile, a self-installing executable (.exe) file, is located at:

C:\Program Files\CMAK\Profiles\L2TP\L2TP.exe

To close this wizard, click Finish.

Step 28. Click Finish.

You are now ready to install this connection on a client device. Copy the output files **L2TP.exe** and **L2TP.inf** from **C:\Program Files\CMAK\Profile\L2TP** to any target directory.

To install, use the following command:

```
l2tp /q:a /c:“cmstp.exe l2tp.inf /u /s”
l2tp /q:a /c:“cmstp.exe l2tp.inf /s”
```

The first line will uninstall this connection if it exists and the second line will install the connection.

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   http://www.microsoft.com/windows2000/server/evaluation/news/bulletins/l2tpclient.asp

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14. *Michael Moy* created the scripts and compiled them in ZIP packages.

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