Application Note

L2TP Configuration without IPSec

Version 1.0

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Contents

Introduction

The purpose of this application note is to assist a customer in setting up a remote VPN tunnel using L2TP from a client PC running Microsoft Windows 2000 to Juniper firewall.

Included Platforms and ScreenOS

This application note demonstrates firewall setup on ScreenOS 5.4r8. However, it also applies to following ScreenOS version:

- ScreenOS 5.0
- ScreenOS 5.1
- ScreenOS 5.2
- ScreenOS 5.3
- ScreenOS 5.4
- ScreenOS 6.0

The product list includes the following:

- NS5000
- ISG1000/2000
- NS500/200/50/25
- SSG550m/550/520m/520/320/350/140
- NS5GT
- SSG5/20

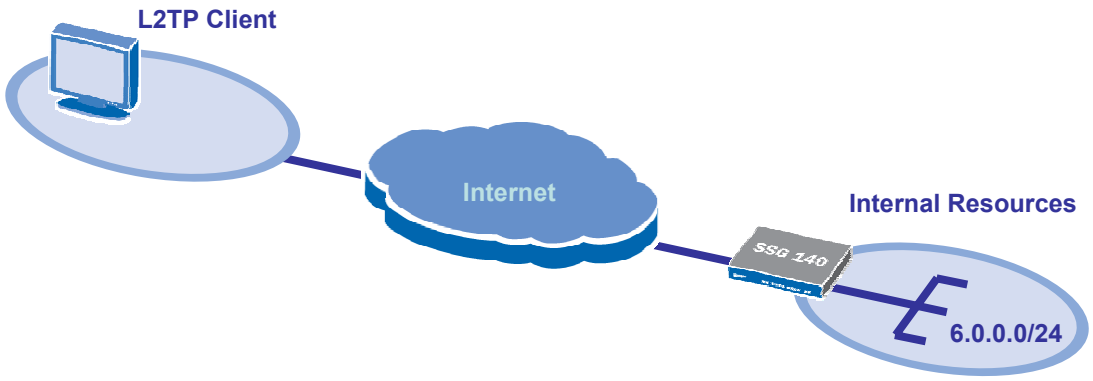
Overview

To configure a VPN connection using L2TP to a Juniper firewall, a native Microsoft L2TP VPN connection can be used. This application note will provide step-by-step procedures to configure a L2TP VPN connection between Microsoft Windows 2000 and a Juniper firewall.

Network Diagram

Refer to Figure 1 below for Network Topology used for this configuration example.

Figure 1.



Configuration Overview

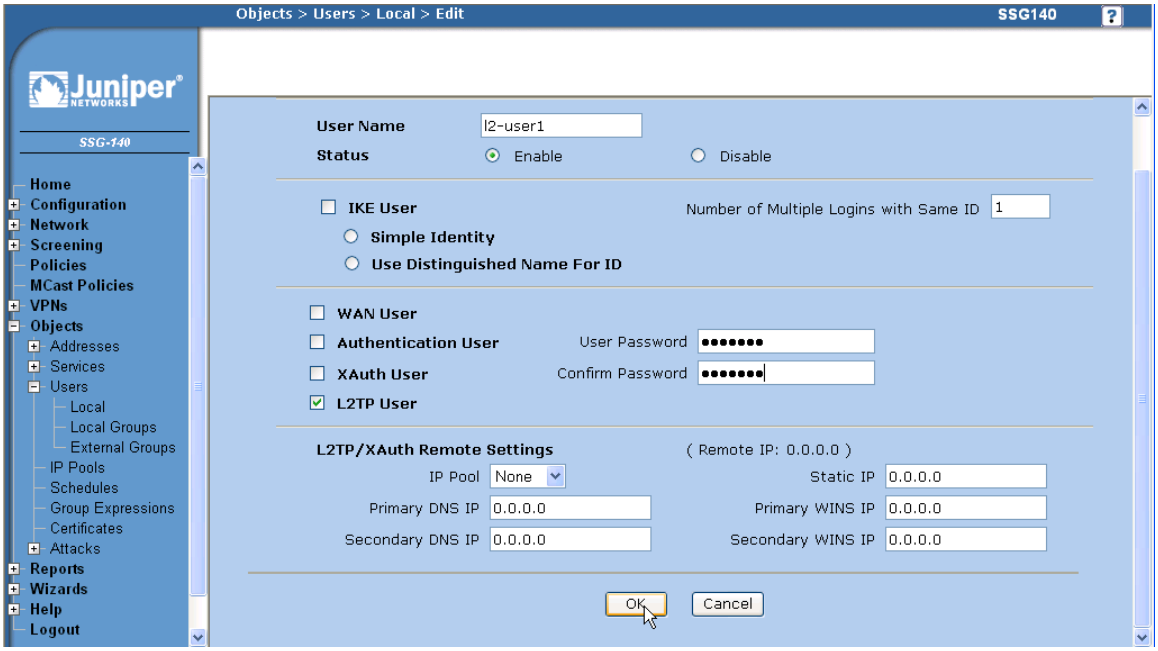
To setup a L2TP tunnel, the customer needs to:

1. Define a L2TP user login and password
2. Define an IP pool for address assignment
3. Configure L2TP default settings
4. Create L2TP tunnel
5. Define an address object for internal resources
6. Create a policy to enable L2TP traffic
7. Configure native L2TP connection on Windows 2000

Configuration Steps

Step 1 : Define L2TP user

To define a L2TP user, you need to configure a L2TP user name and password. In this example, we will define the L2TP user "l2-user1" with password "test123".



WebUI:

Select Objects > Users > Local, then click New.

Enter following, then click OK.

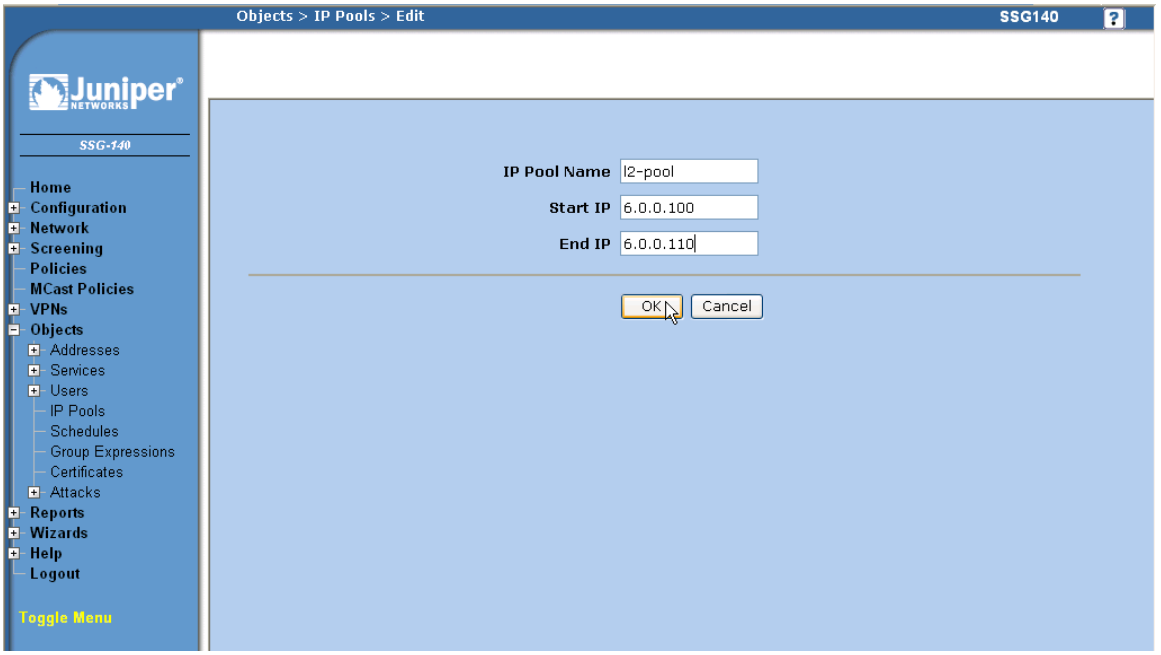
User Name: l2-user1
Status: Enable (selected)
L2TP User: (selected)
User Password: test123 (enter the password)
Confirm Password: test123 (enter the password)

CLI:

```
set user l2-user1 type l2tp
set user l2-user1 password test123
```

Step 2: Define IP pool

An IP pool is used to assign a IP address to the L2TP client. Here, we will define a IP pool that will assign IP addresses in the range of 6.0.0.100 to 6.0.0.110 to the L2TP client.



WebUI:

Select Object > IP Pools , then click New.

Enter following and click OK.

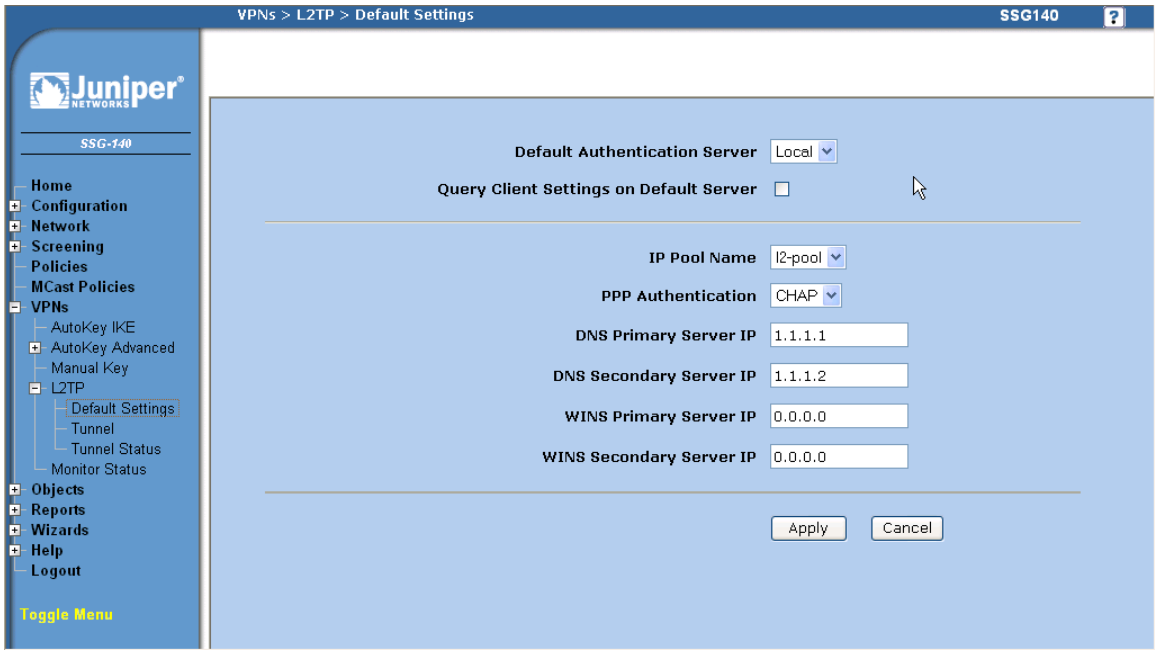
IP Pool Name: L2-pool
Start IP: 6.0.0.100
End IP: 6.0.0.110

CLI:

```
set ippool l2-pool 6.0.0.100 6.0.0.110
```

Step 3: Configure default L2TP settings

The default L2TP setting including IP pool assignment, PPP Authentication protocol, DNS server setting and WINS server setting can be configured on this L2TP default setting page.



WebUI:

Select VPNs > L2TP > Default Settings, then enter following. Click Apply when finished.

IP Pool Name: l2-pool

PPP Authentication: CHAP

DNS Primary Server IP: 1.1.1.1

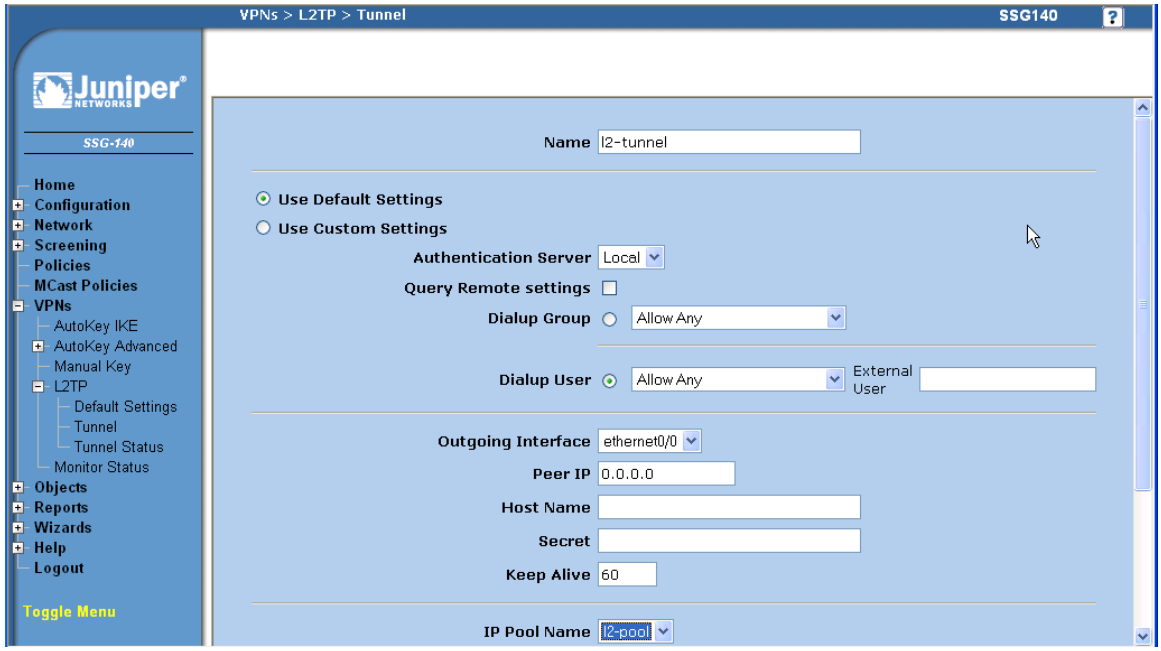
DNS Secondary Server IP: 1.1.1.2

CLI:

```
set l2tp default dns1 1.1.1.1
set l2tp default dns2 1.1.1.2
set l2tp default ippool "l2-pool"
set l2tp default ppp-auth chap
```

Step 4: Create L2TP tunnel

Create the L2TP tunnel by specifying the outgoing interface and IP pool.



WebUI:

Select VPNs > L2TP > Tunnel, then click New.

Enter following and click OK.

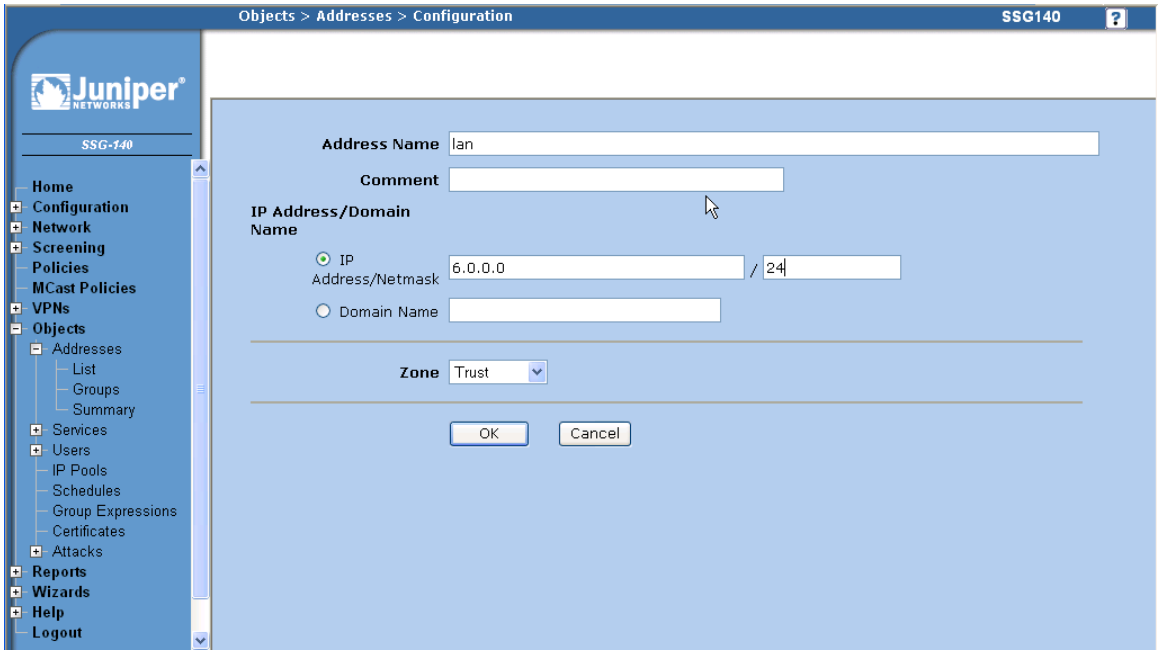
Name: l2-tunnel
Outgoing Interface: ethernet0/0
IP Pool Name: l2-pool

CLI:

```
set l2tp "l2-tunnel" outgoing-interface ethernet0/0
set l2tp "l2-tunnel" remote-setting ippool "l2-pool"
```

Step 5: Define address object for internal resources

An address object for internal resources is used in a policy to enforce traffic that passes through the firewall from the L2TP client.



WebUI:

Select Objects > Addresses > List, select Trust and click New.

Enter following and click OK.

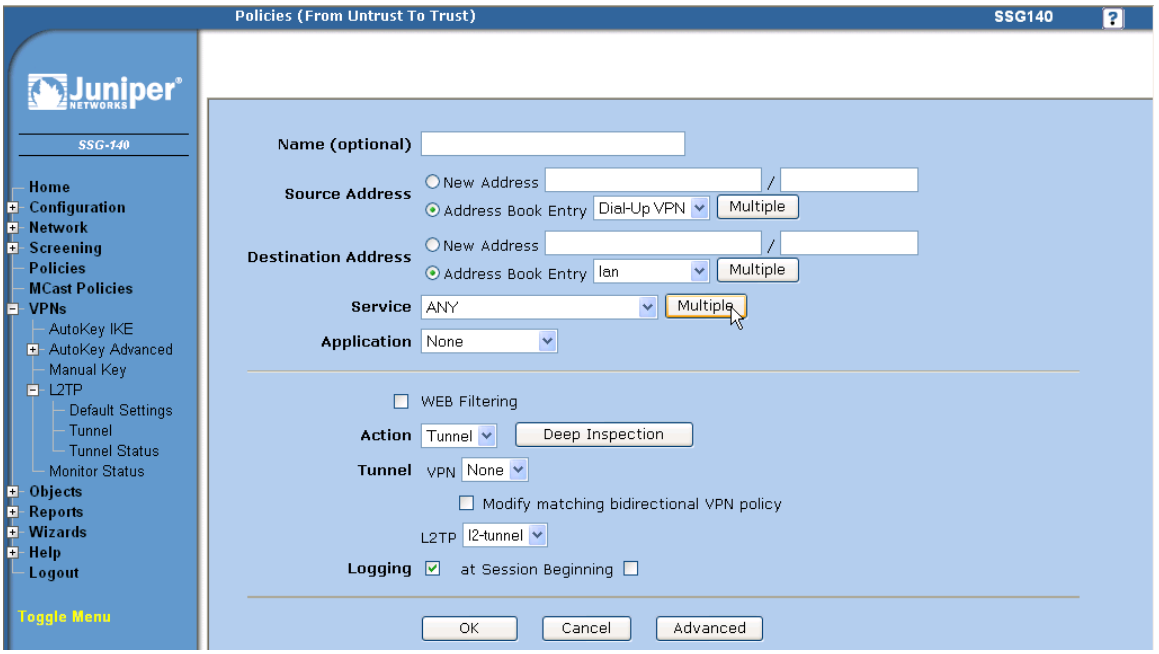
Address Name: lan
IP Address/Netmask: 6.0.0.0/24

CLI:

```
set address trust lan 6.0.0.0/24
```

Step 6: Create policy

To enable the L2TP client to send traffic passing through the tunnel to internal resources, a policy is need. Here, we created a policy to enable any traffic from the L2TP client to access internal resource.



WebUI:

Select Policy with following selection, then click New.

From: Untrust
To: Trust

Enter following and click OK.

Source Address: Address Book Entry (selected), Dial-Up VPN

Destination Address: Address Book Entry, lan

L2TP: l2-tunnel

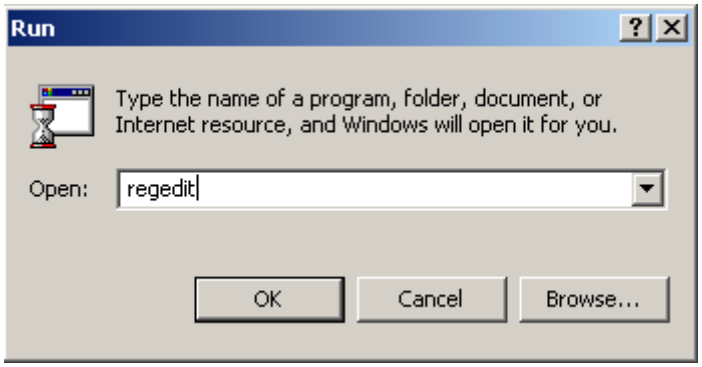
CLI:

```
set policy id 1 from "Untrust" to "Trust"  "Dial-Up VPN" "lan" "ANY" tunnel l2tp
"l2-tunnel"
```

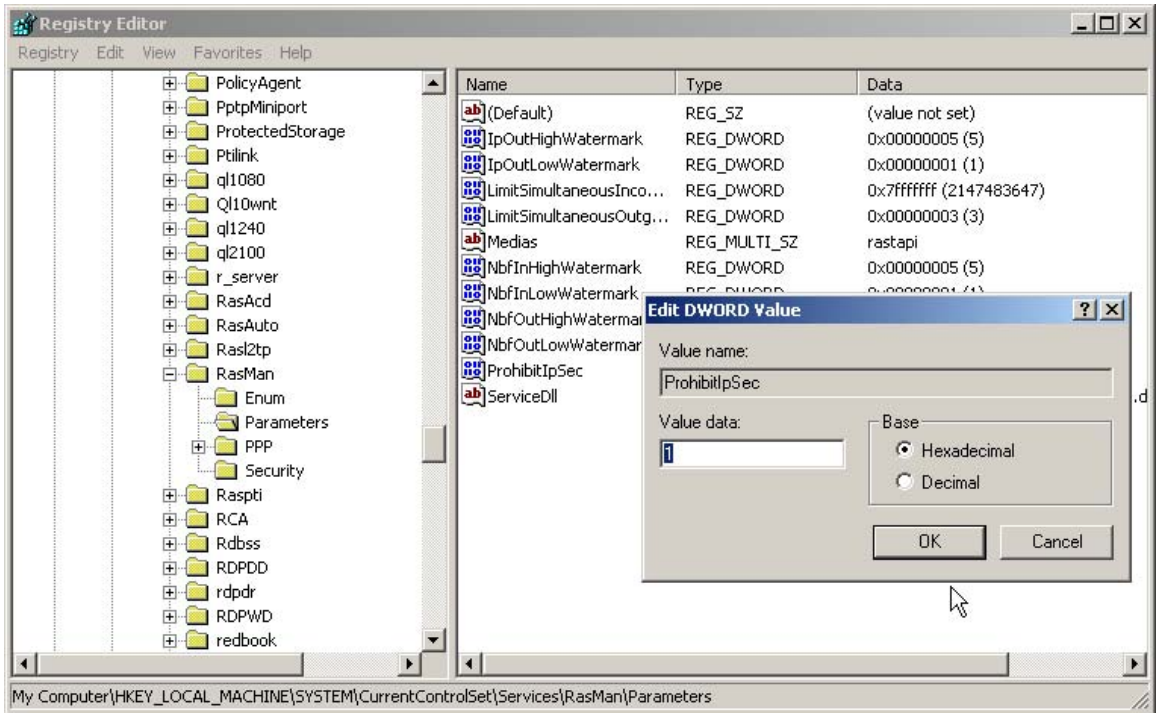
Step 7: Configure native L2TP connection on Windows 2000

By default, the native L2TP client in Windows 2000 is enabled with encryption. That is the default L2TP connection from Windows 2000 native client, that is L2TP over IPSec. To override this default behavior, we need to edit the registry key ProhibitIPSec.

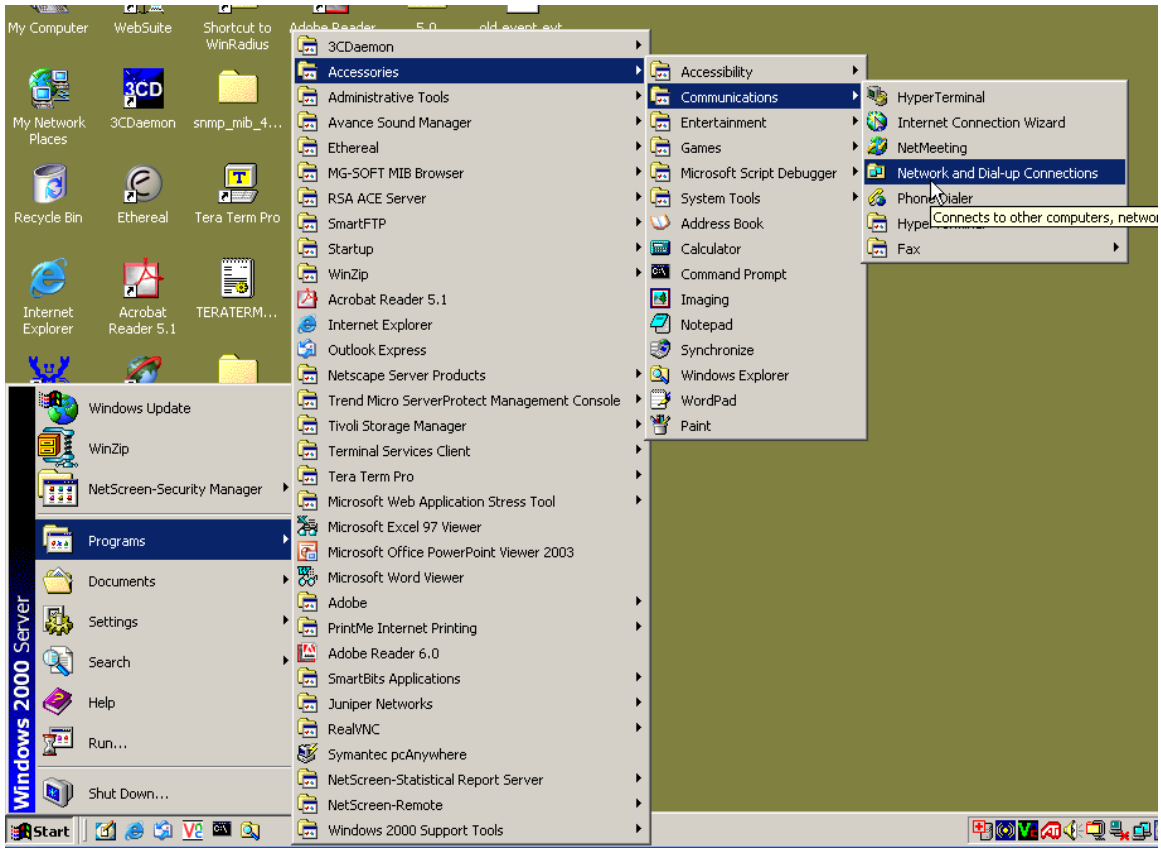
1. Login to Windows 2000 as administrator.
2. Execute regedit to access the Windows 2000 registry.



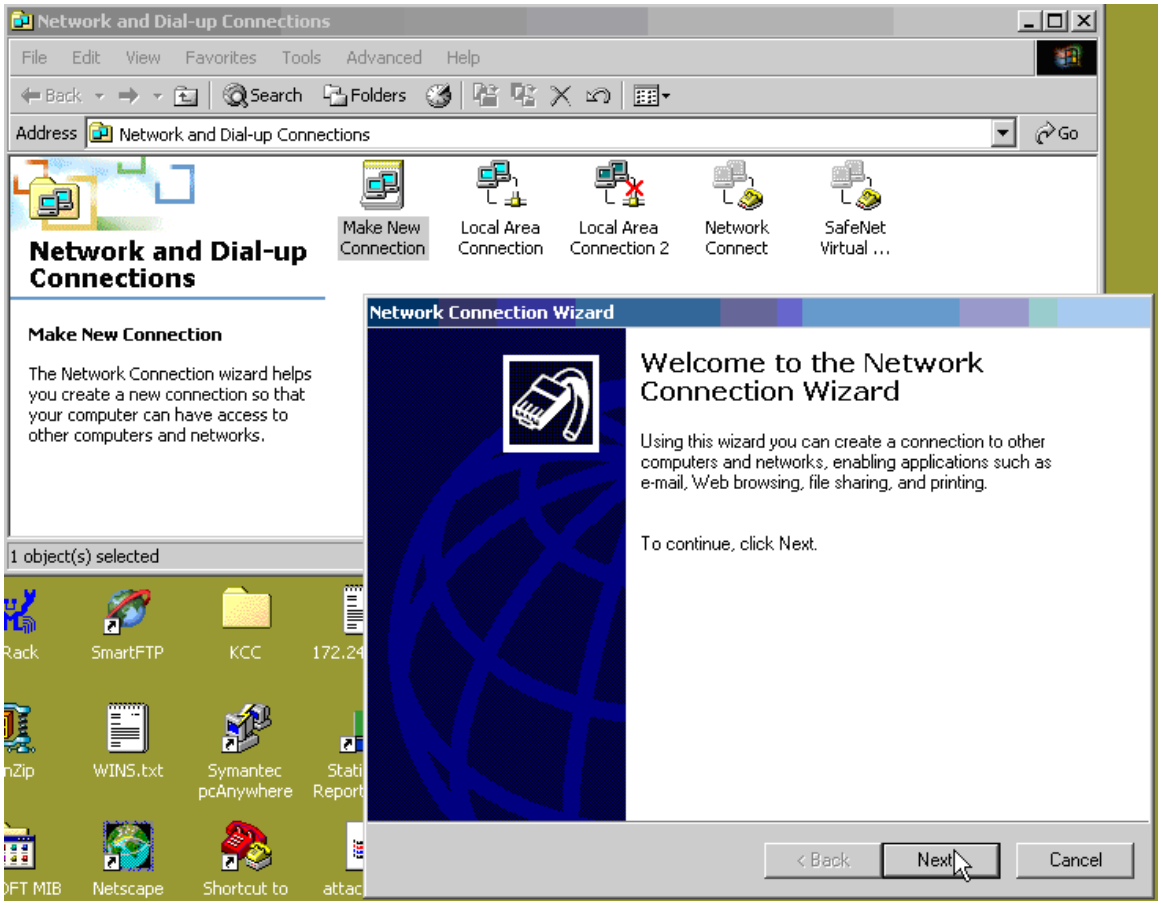
3. Navigate to the following:
   LOCAL_MACHINE/SYSTEM/CurrentControlSet/Services/RasMan/Parameters/
4. If the ProhibitIPSec registry key exists, go to step 7. If the ProhibitIPSec registry key does not exist, create one: Select Edit > New > DWORD, then enter ProhibitIPSec on the new registry key.
5. Change the registry key value to 1.



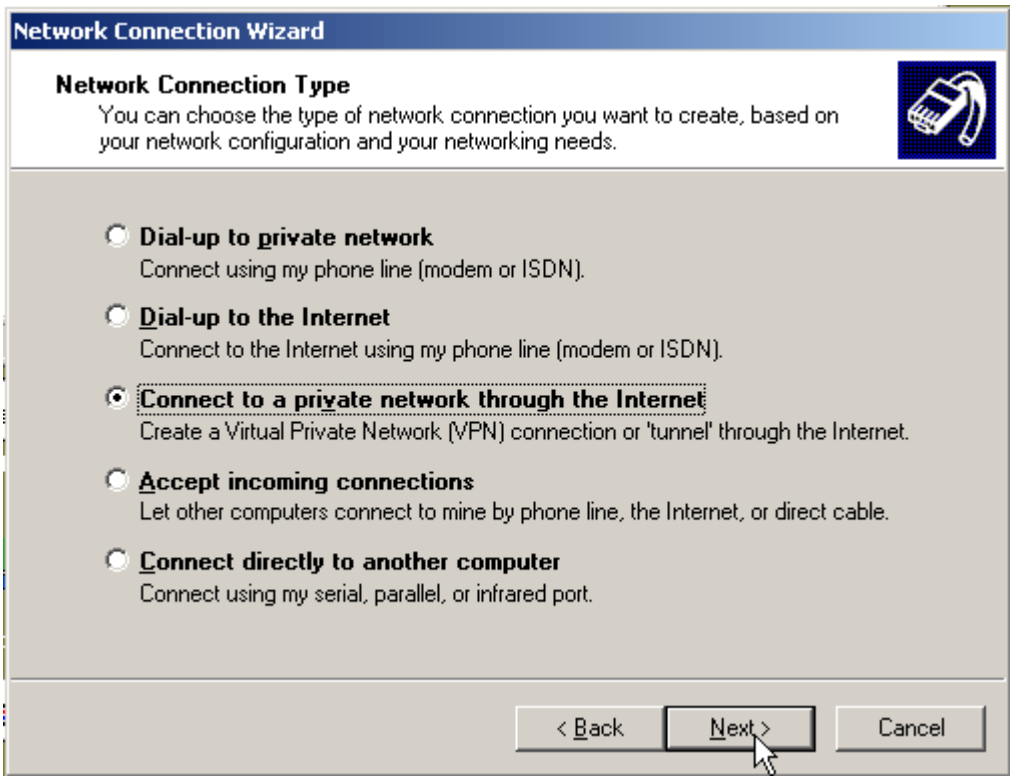
6. Save the change and reboot the PC.
7. Select “Start” > “Programs” > “Accessories” > “Communications” > “Network and Dial-up Connection”.



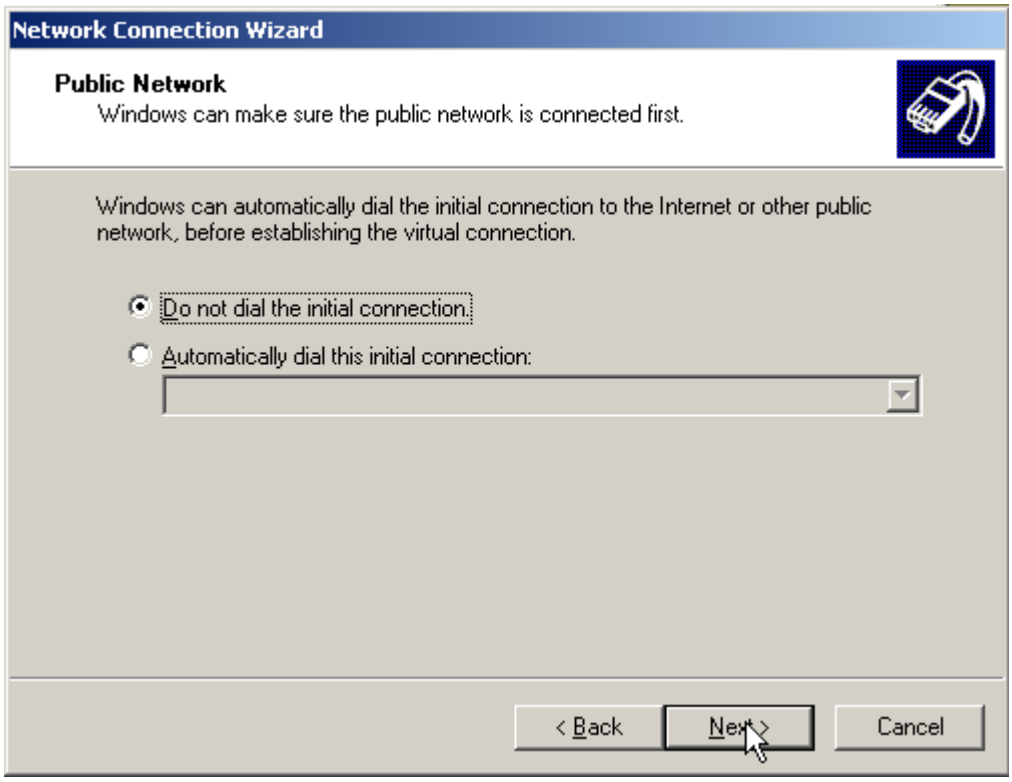
8. Double click “Make New Connection” and click Next.



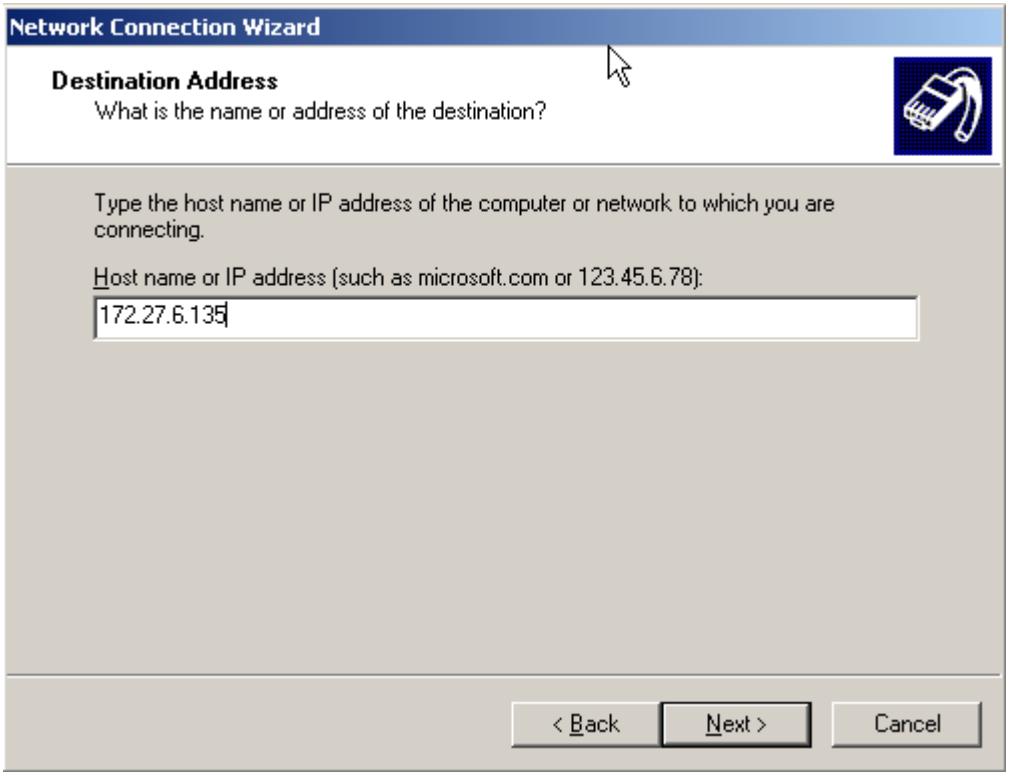
9. Select "Connect to a private network through the Internet" and click Next.



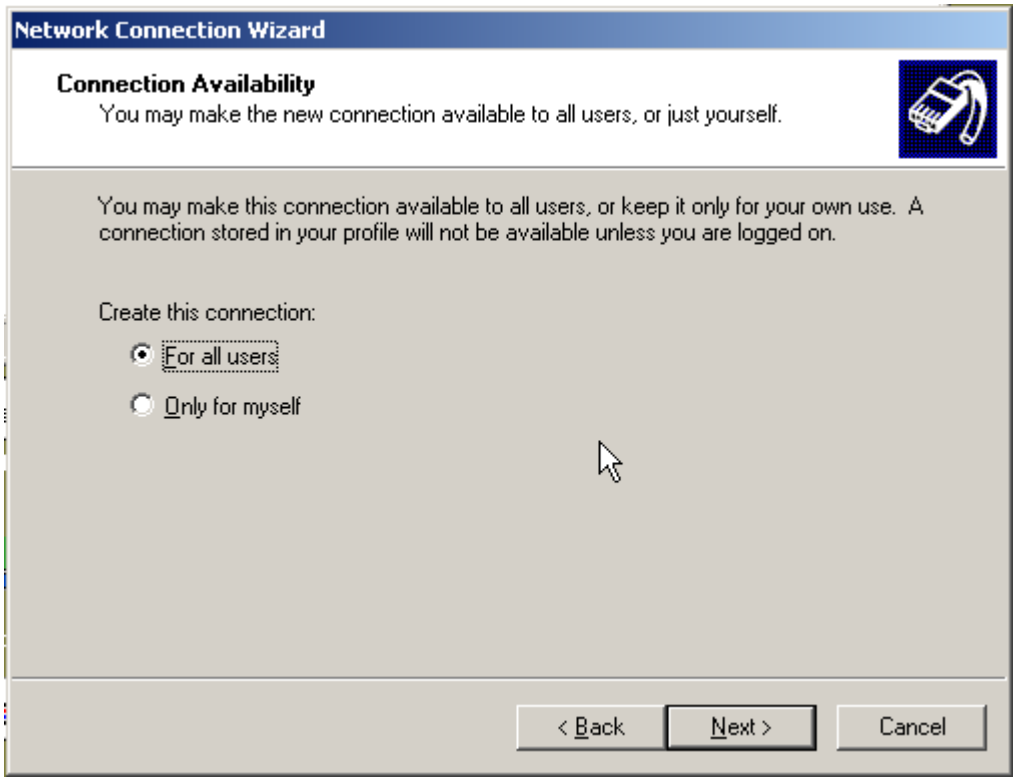
10. Select “Do not dial the initial connection” and click Next.



11. Enter the IP address of the firewall (172.27.6.135) and click Next.

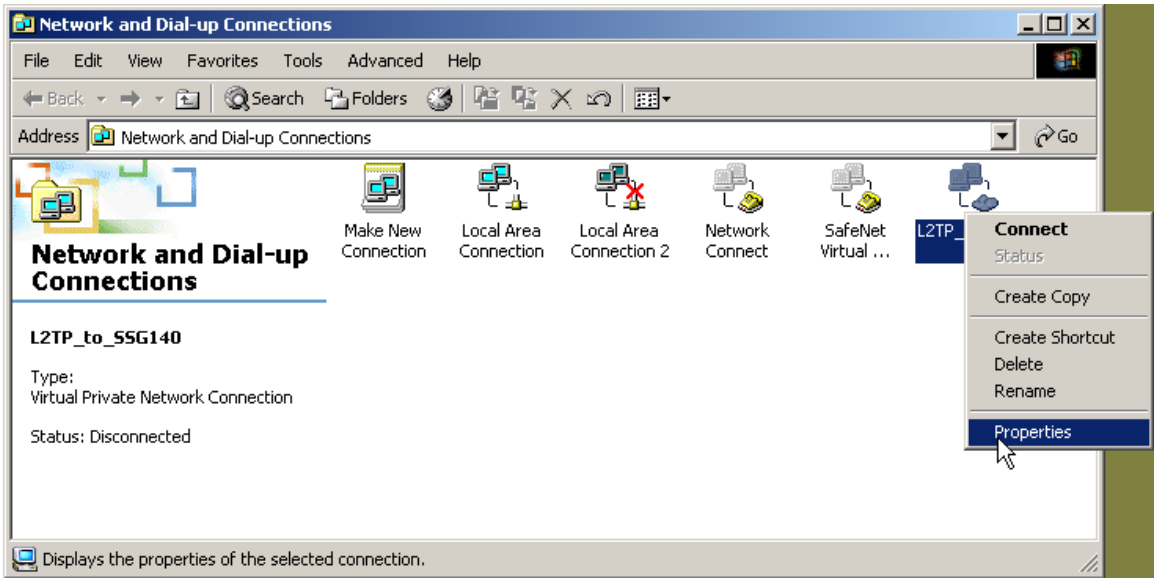


12. Select “For all users” and click Next.

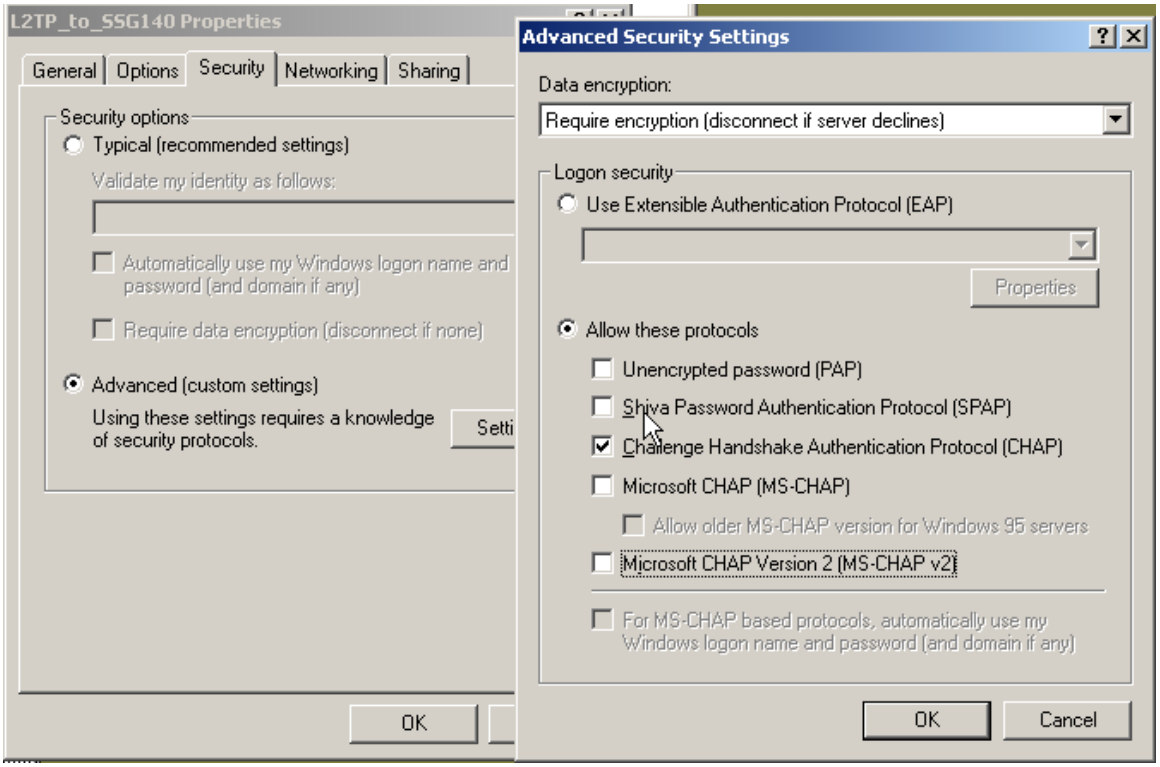


13. Click Next again and enter the connection name (L2TP_to_SSG140), then click Finish.

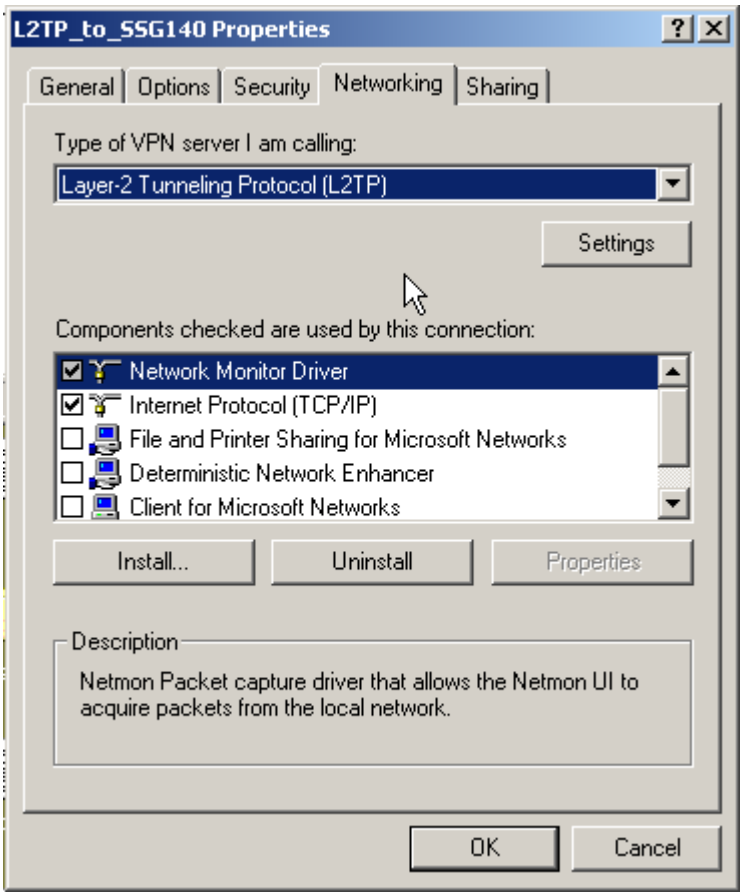
14. Select the L2TP connection icon (L2TP_to_SSG140), right click and select Properties.



15. From the Security tag, select "Allow these protocols". Uncheck all other protocols but just check "Challenge Handshake Authentication Protocol (CHAP)", then click OK.



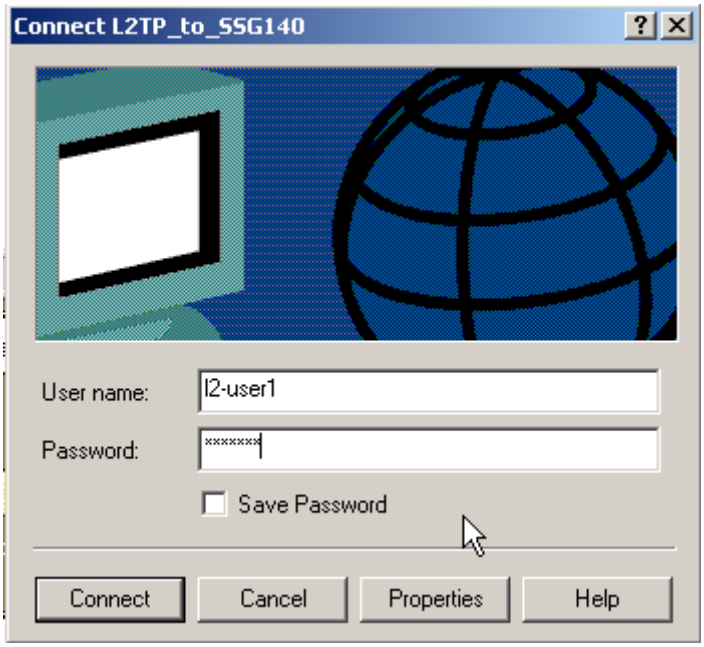
16. From the Networking tag, select “Layer-2 Tunneling Protocol (L2TP) from “Type of VPN” and click OK.



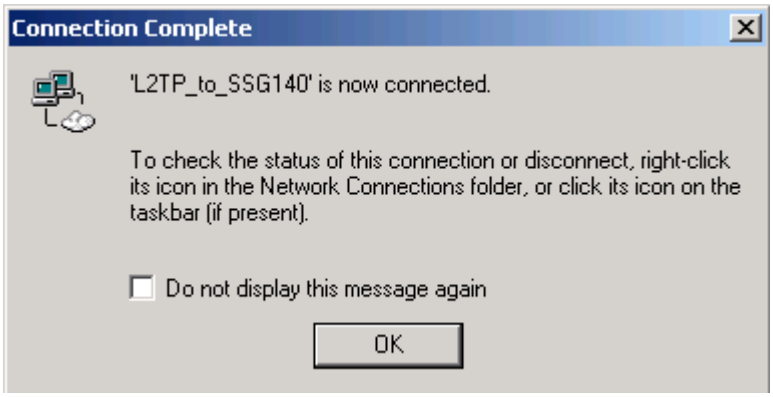
Verifying Configuration

The configuration can be verified by connecting the PC L2TP client to firewall.

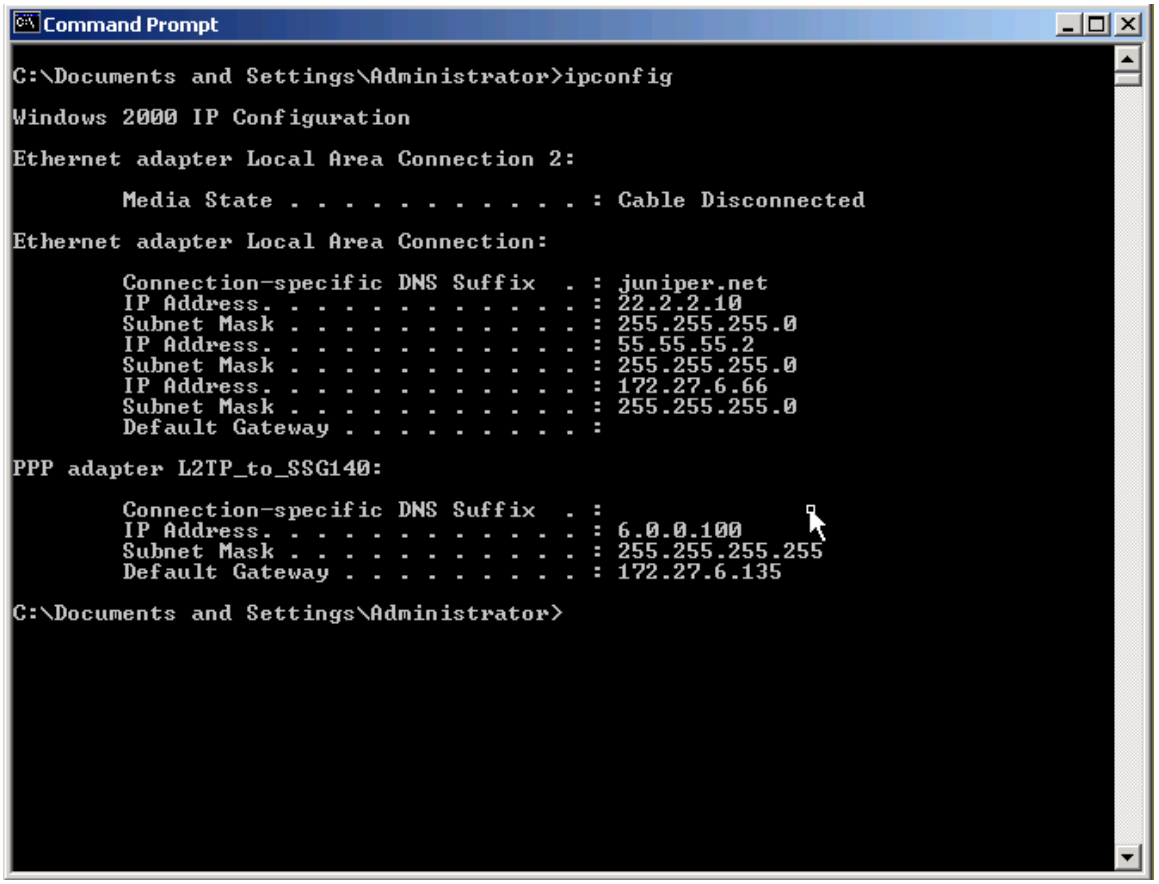
1. From "Network and Dial-up Connections", double click the L2TP connection icon.
2. From the connect window, enter username and password, then click Connect.



3. When the connection is done, a connection complete window will be prompted.



4. After connected, open a command prompt. From the command prompt, execute the command "ipconfig" to check the IP address assigned.



5. From the command prompt, ping to internal resources to check connectivity.

6. From the firewall CLI, check the L2TP tunnel status:

```
SSG140-> get l2tp l2-tunnel active
L2TP Name       Tunnel Id Peer Address    Port Peer Host    Calls State   t_info
--------------- --------- --------------- ---- ------------ ----- ------- --HEX---
l2-tunnel       (  4/  4) 172.27.6.66     1701 tac1.tac1.ap     1 estblsh 80008004
call id(local/peer)=(1/1)
     assigned ip=6.0.0.100, user="l2-user1", type=incoming, state=establish
     Logged in at: 01/28/2008 16:28:31
l2-tunnel       (  0/  0) 0.0.0.0            0                  0    idle 80000001
```

From the above output, it shows the source IP of the L2TP client and connection status In addition, it shows the username and IP addresss assigned to the L2TP connection.

Sample Configuration

```
SSG140-> get config
Total Config size 3692:
set clock timezone 0
set vrouter trust-vr sharable
set vrouter "untrust-vr"
exit
set vrouter "trust-vr"
unset auto-route-export
exit
set auth-server "Local" id 0
set auth-server "Local" server-name "Local"
set auth default auth server "Local"
set auth radius accounting port 1646
set admin name "netscreen"
set admin password "nKVUM2rwMUzPcrkG5sWIHdCtqkAibn"
set admin auth timeout 10
set admin auth server "Local"
set admin format dos
set zone "Trust" vrouter "trust-vr"
set zone "Untrust" vrouter "trust-vr"
set zone "DMZ" vrouter "trust-vr"
set zone "VLAN" vrouter "trust-vr"
set zone "Untrust-Tun" vrouter "trust-vr"
set zone "Trust" tcp-rst
set zone "Untrust" block
unset zone "Untrust" tcp-rst
set zone "MGT" block
set zone "DMZ" tcp-rst
set zone "VLAN" block
unset zone "VLAN" tcp-rst
set zone "Untrust" screen tear-drop
set zone "Untrust" screen syn-flood
set zone "Untrust" screen ping-death
set zone "Untrust" screen ip-filter-src
set zone "Untrust" screen land
set zone "V1-Untrust" screen tear-drop
set zone "V1-Untrust" screen syn-flood
set zone "V1-Untrust" screen ping-death
set zone "V1-Untrust" screen ip-filter-src
set zone "V1-Untrust" screen land
set interface "ethernet0/0" zone "Untrust"
set interface "ethernet0/1" zone "DMZ"
set interface "ethernet0/2" zone "Trust"
set interface "bri1/0" zone "Untrust"
set interface ethernet0/0 ip 172.27.6.135/24
set interface ethernet0/0 route
unset interface vlan1 ip
set interface ethernet0/2 ip 6.0.0.1/24
set interface ethernet0/2 route
unset interface vlan1 bypass-others-ipsec
unset interface vlan1 bypass-non-ip
set interface ethernet0/0 ip manageable
set interface ethernet0/2 ip manageable
set interface ethernet0/0 manage ping
set interface ethernet0/0 manage ssh
set interface ethernet0/0 manage telnet
set interface ethernet0/0 manage snmp
set interface ethernet0/0 manage ssl
set interface ethernet0/0 manage web
set interface ethernet0/0 manage mtrace
set interface ethernet0/2 manage mtrace
unset flow no-tcp-seq-check
set flow tcp-syn-check
set console timeout 0
set pki authority default scep mode "auto"
set pki x509 default cert-path partial
set address "Trust" "lan" 6.0.0.0 255.255.255.0
set ippool "l2-pool" 6.0.0.100 6.0.0.110
```

```
set user "l2-user1" uid 1
set user "l2-user1" type  l2tp
set user "l2-user1" password "mLFwMNHHNOzn2fsyjDCRJf4NCIncKcSfsQ=="
unset user "l2-user1" type auth
set user "l2-user1" "enable"
set ike respond-bad-spi 1
unset ike ikeid-enumeration
unset ike dos-protection
unset ipsec access-session enable
set ipsec access-session maximum 5000
set ipsec access-session upper-threshold 0
set ipsec access-session lower-threshold 0
set ipsec access-session dead-p2-sa-timeout 0
unset ipsec access-session log-error
unset ipsec access-session info-exch-connected
unset ipsec access-session use-error-log
set l2tp default dns1 1.1.1.1
set l2tp default dns2 1.1.1.2
set l2tp default ippool "l2-pool"
set l2tp default ppp-auth chap
set l2tp "l2-tunnel" id 1 outgoing-interface ethernet0/0
set l2tp "l2-tunnel" remote-setting ippool "l2-pool"
set url protocol websense
exit
set policy id 1 from "Untrust" to "Trust"  "Dial-Up VPN" "lan" "ANY" tunnel l2tp
"l2-tunnel" log
set policy id 1
exit
set nsmgmt bulkcli reboot-timeout 60
set nsmgmt bulkcli reboot-wait 0
set ssh version v2
set config lock timeout 5
set snmp port listen 161
set snmp port trap 162
set vrouter "untrust-vr"
exit
set vrouter "trust-vr"
unset add-default-route
set route 0.0.0.0/0 gateway 172.27.6.1
set route 172.27.0.0/16 gateway 172.27.6.1
exit
set vrouter "untrust-vr"
exit
set vrouter "trust-vr"
exit
SSG140->
```