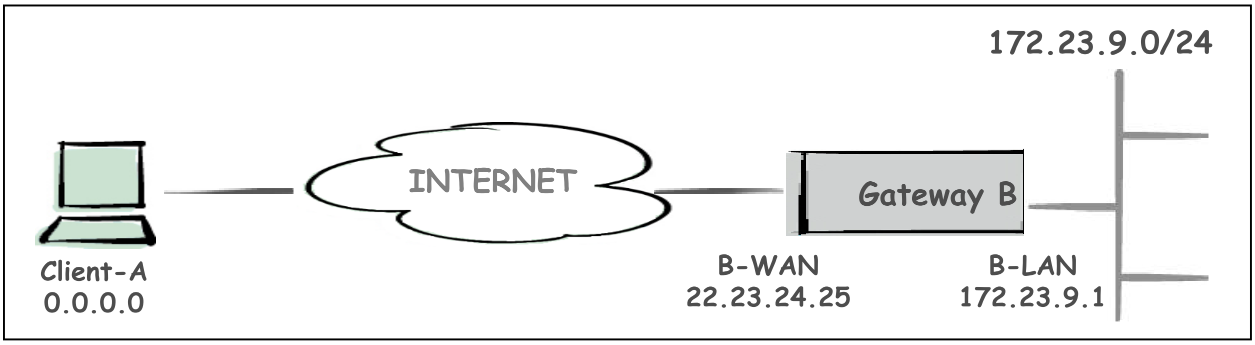
Interoperability Profile for FortiGate-50 with Equinux VPN Tracker

The purpose of this document is to provide you with necessary steps to configure Equinux VPN Tracker with remote Fortigate-50 VPN Gateway. This document is based on VPN Consortium's Profile of Interoperability and should help to understand VPN setup scenario. All these configurations has been installed and verified by myself and is for information only.

VPN Client-to-Gateway with pre-shared secrets

The following is a typical client-to-gateway VPN that uses a pre-shared secret for authentication.



Client connects to the internal LAN 172.23.9.0/24 via the Internet through Gateway B's WAN Interface 22.23.24.25. Gateway B is configured for RAS clients with dynamic IP addressing. In other configurations static IP addressing could be used, such as LAN, PPPoE and NT RAS connections.

The **IKE Phase 1 parameters** used this Scenario are:

- Main mode
- TripleDES
- SHA-1
- MODP group 2 (1024 bits)
- pre-shared secret of "hr5xb84l6aa9r6"
- SA lifetime of 28800 seconds (eight hours) with no kbytes rekeying

Rainer's Technical Tips
DISCLAIMER
This Technical Tip or TechNote is provided as information only. I cannot make any guarantee, either explicit or implied, as to its accuracy to specific system installations / configurations. Readers should consult each Vendor for further information or support.
Although I believe the information provided in this document to be accurate at the time of writing, I reserve the right to modify, update, retract or otherwise change the information contained within for any reason and without notice. This technote has been created after studying the material and / or practical evaluation by myself. All liability for use of the information presented here remains with the user

The **IKE Phase 2 parameters** used in this Scenario are:

- TripleDES
- SHA-1
- ESP tunnel mode
- MODP group 2 (1024 bits)
- Perfect forward secrecy for rekeying
- SA lifetime of 3600 seconds (one hour) with no kbytes rekeying
- Selectors for all IP protocols, all ports, between 0.0.0.0 and 172.23.9.0/24, using IPv4 subnets

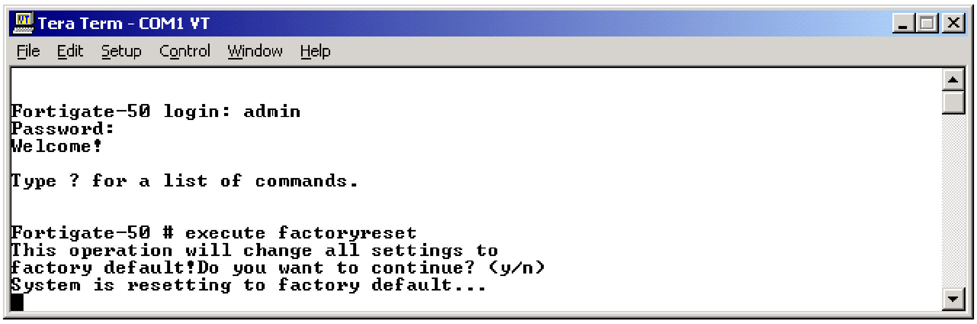
Assuming, you have VPN Gateway already configured. If you run this setup from scratch, go the section “VPN GATEWAY CONFIGURATION” and complete installation & configuration before configuring Client.

Products:

- CLIENT: VPN Tracker 2.2.3 for MAC OS X 10.2 & 10.3
- VPN Gateway: Fortinet FortiGate-50 (Firmware 2.50 Maintenance Release 5)

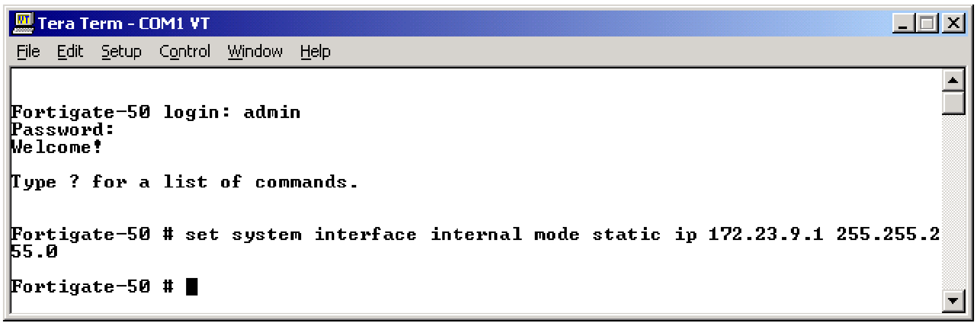
FortiGate-50 Configuration

Connect FortiGate with Console Cable, start and logon as admin



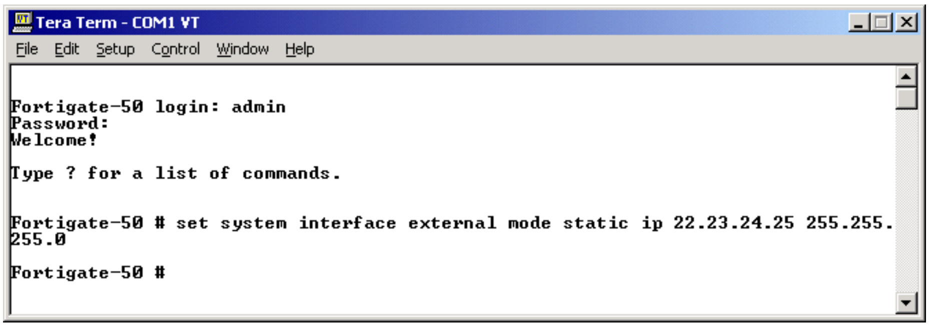
```
Fortigate-50 login: admin
Password:
Welcome!

Type ? for a list of commands.


Fortigate-50 # execute factoryreset
This operation will change all settings to
factory default!Do you want to continue? (y/n)
System is resetting to factory default...
```

When FortiGate has been rebooted, logon and assign internal Interface IP Address (LAN-B)



```
Fortigate-50 login: admin
Password:
Welcome!

Type ? for a list of commands.


Fortigate-50 # set system interface internal mode static ip 172.23.9.1 255.255.2
55.0

Fortigate-50 #
```

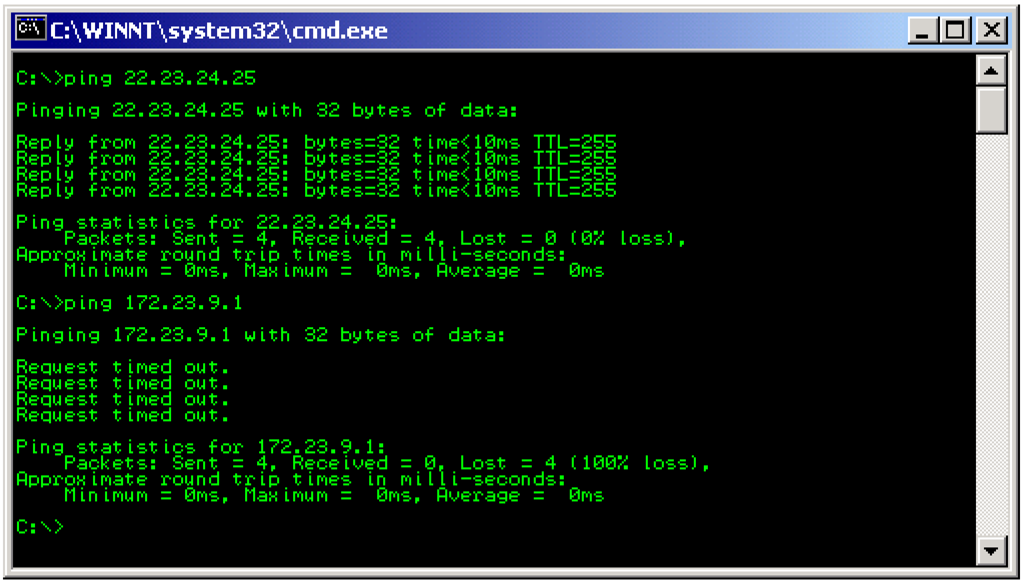
Assign external Interface IP Address (WAN-B)



```
Fortigate-50 login: admin
Password:
Welcome!

Type ? for a list of commands.

Fortigate-50 # set system interface external mode static ip 22.23.24.25 255.255.
255.0

Fortigate-50 #
```

Verify to ping each device to make sure the IP is working.

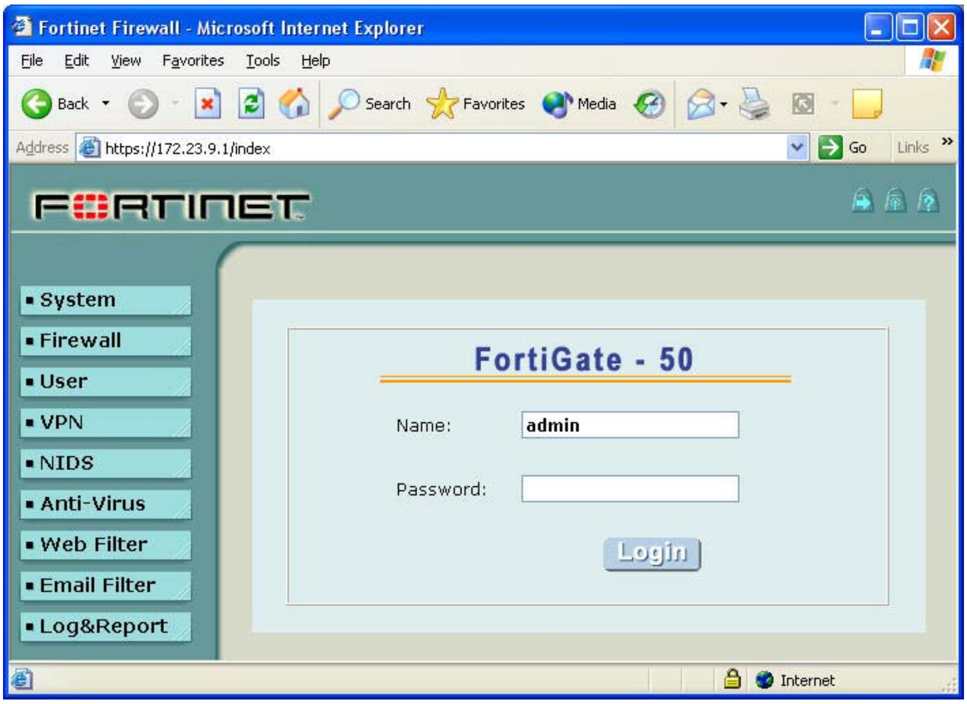
I have a client connected at WAN interface to see if external interface can be reached and internal interface has been secured.



```
C:\>ping 22.23.24.25

Pinging 22.23.24.25 with 32 bytes of data:

Reply from 22.23.24.25: bytes=32 time<10ms TTL=255
Reply from 22.23.24.25: bytes=32 time<10ms TTL=255
Reply from 22.23.24.25: bytes=32 time<10ms TTL=255
Reply from 22.23.24.25: bytes=32 time<10ms TTL=255

Ping statistics for 22.23.24.25:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms

C:\>ping 172.23.9.1

Pinging 172.23.9.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.23.9.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms

C:\>
```

This is all, you have to do on the console. Everything else can be done via Web Interface.

Configure FortiGate Unit as Dial-Up Server


Fortinet Firewall - Microsoft Internet Explorer

Address https://172.23.9.1/index

FortiGate - 50

Name: admin

Password:

Logon to FortiGate-50

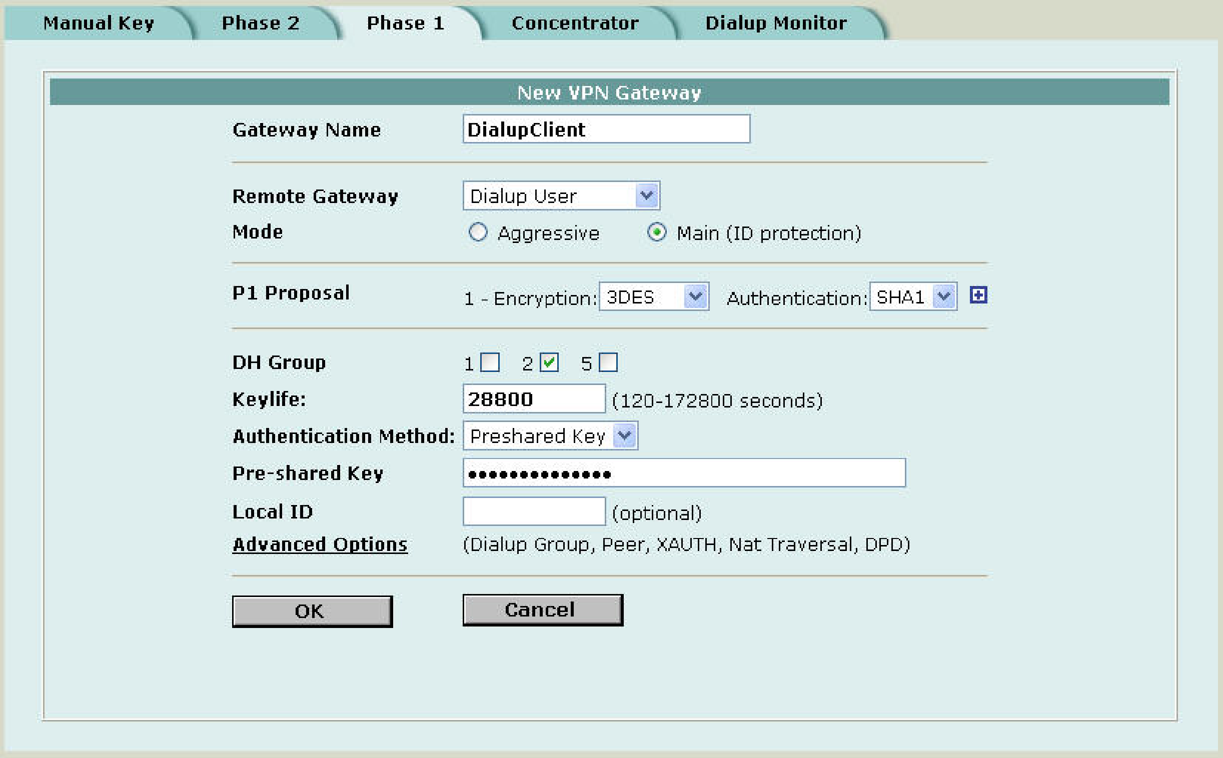
Add a Remote Gateway

1. Go to VPN -> IPSEC -> Phase 1

2. Select New

3. Enter the following information. Everything else can be kept at default

Gateway Name:	**DialupClient**
Remote Gateway:	**Dialup User**
Mode:	**Main (ID Protection)**
P1 Proposal:	**1-Encryption 3DES, Authentication SHA1**
DH Group:	**2**
Keylife:	**28800**
Authentication Mode:	**Preshared Key**
Pre-shared Key:	**hr5xb84l6aa9r6**



New VPN Gateway

Gateway Name	DialupClient
Remote Gateway	Dialup User
Mode	○ Aggressive ● Main (ID protection)
P1 Proposal	1 - Encryption: 3DES Authentication: SHA1
DH Group	1 □ 2 ☑ 5 □
Keylife:	28800 (120-172800 seconds)
Authentication Method:	Preshared Key
Pre-shared Key	••••••••••••••
Local ID	(optional)
Advanced Options	(Dialup Group, Peer, XAUTH, Nat Traversal, DPD)

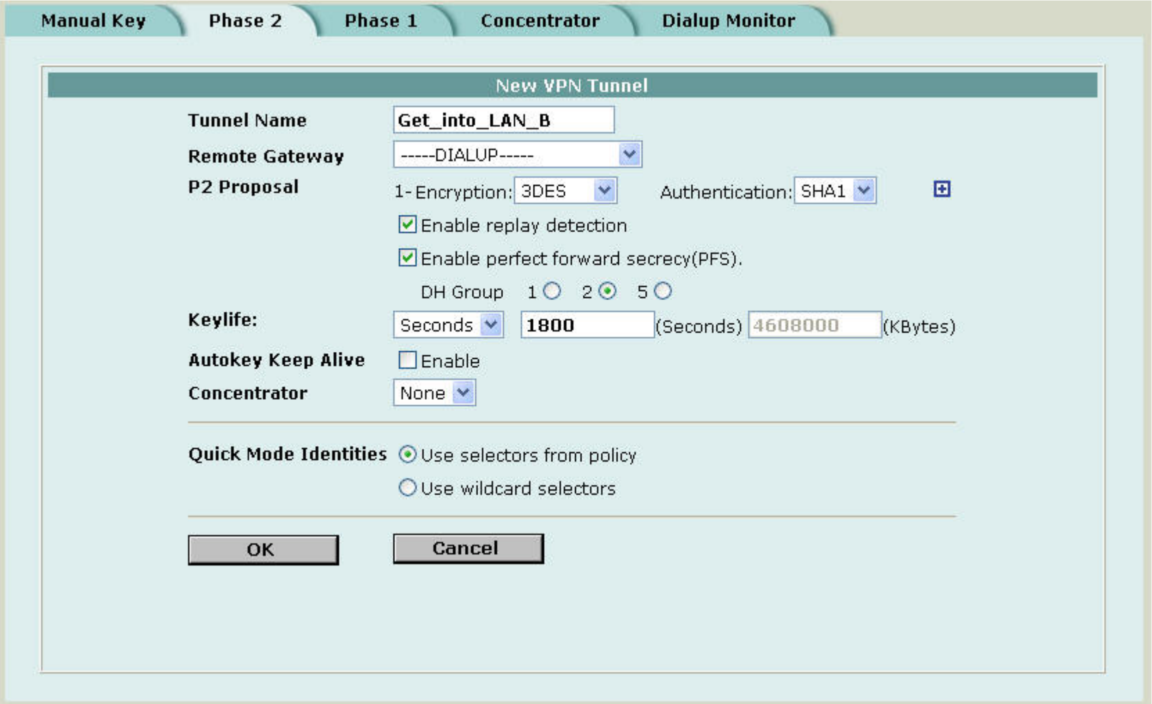
4. Click on **OK**

Add an AutoIKE VPN Tunnel

5. Go to VPN -> IPSEC -> Phase 2

6. Enter the following information. Everything else can be kept at default

Tunnel Name:	**Get_into_LAN_B**
Remote Gateway:	**----DIALUP----**
P2 Proposal:	**1-Encryption 3DES, Authentication SHA1**
Replay Detection:	**Disabled**
PFS:	**Enabled**
DH Group:	**2**
Keylife:	**3600**
Autokey Keep Alive:	**Disabled**
Concentrator:	**None**
Quick Mode Identities:	**Use selectors from policy**



Tunnel Name: Get_into_LAN_B
Remote Gateway: -----DIALUP-----
P2 Proposal: 1-Encryption: 3DES Authentication: SHA1
☑ Enable replay detection
☑ Enable perfect forward secrecy(PFS).
DH Group 1 ○ 2 ● 5 ○
Keylife: Seconds 1800 (Seconds) 4608000 (KBytes)
Autokey Keep Alive: □ Enable
Concentrator: None
Quick Mode Identities: ● Use selectors from policy
○ Use wildcard selectors

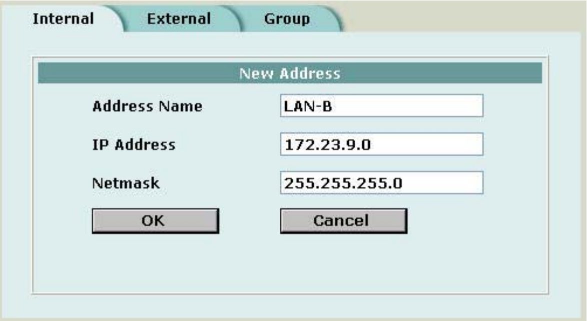
Add a source address to specify the address or address range on the FortiGate internal network that is part of the VPN

7. Go to Firewall -> Address -> Internal

8. Select New

9. Enter the following information

Address Name:	**LAN-B**
IP Address:	**172.23.9.0**
Netmask:	**255.255.255.0**

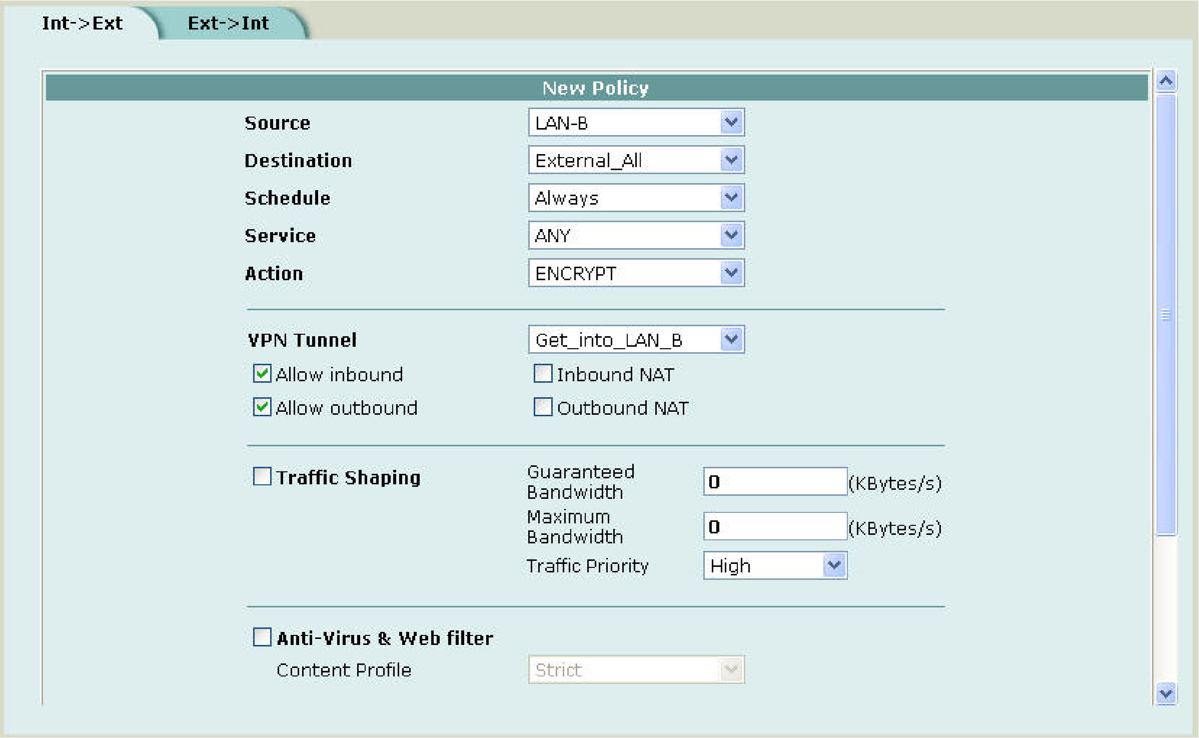


Address Name: LAN-B
IP Address: 172.23.9.0
Netmask: 255.255.255.0

Add an internal to external encrypt policy that includes the source address, the destination address External_All, and the Dial-Up VPN Tunnel

10. Click on **OK**
11. Go to Firewall -> Policy -> Int->Ext.
12. Enter the following information

Source:	**LAN-B**
Destination:	**External_All**
Schedule:	**Always**
Service:	**Any**
Action:	**Encrypt**
VPN Tunnel:	**Get_into_LAN_B**
Allow inbound:	**Check Allow Inbound to enable inbound users to connect to the source address**
Allow outbound:	**Check Allow Outbound to enable outbound users to connect to the destination address**
Inbound NAT:	**Uncheck Inbound NAT**
Outbound NAT:	**Uncheck Outbound NAT**
Traffic Shaping:	**Disabled**
Anti-Virus & Web Filter:	**Disabled**
Log Traffic:	**Enabled**
Comments:	**(none)**



Source: LAN-B
Destination: External_All
Schedule: Always
Service: ANY
Action: ENCRYPT

VPN Tunnel: Get_into_LAN_B
☑ Allow inbound ☐ Inbound NAT
☑ Allow outbound ☐ Outbound NAT

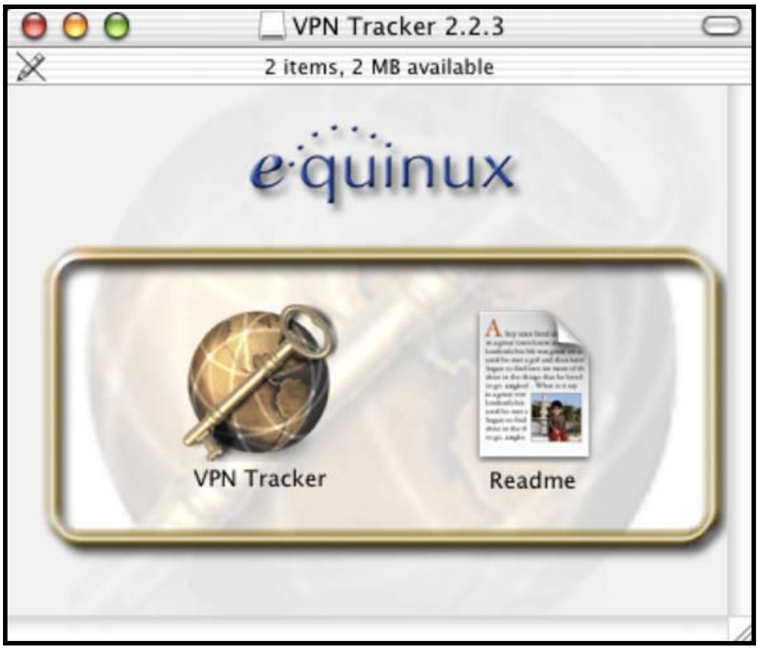
☐ Traffic Shaping
Guaranteed Bandwidth: 0 (KBytes/s)
Maximum Bandwidth: 0 (KBytes/s)
Traffic Priority: High

☐ Anti-Virus & Web filter
Content Profile: Strict

Installing VPN Tracker

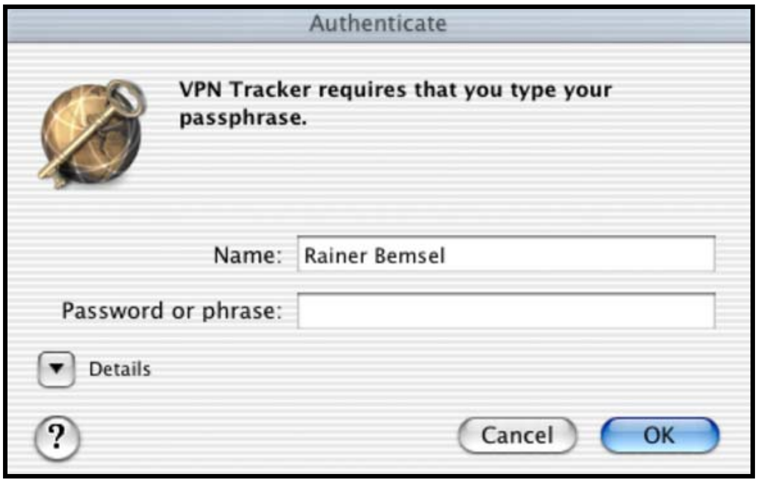
If you haven’t downloaded the evaluation package, go to www.equinux.com.

Double-click on VPN_Tracker__2.2.3.dmg



Click on **VPN Tracker**

Authenticate to have proper right to install the application



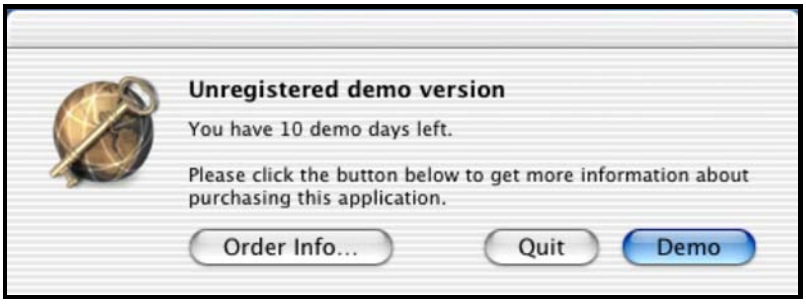
VPN Tracker requires that you type your passphrase.

Name: Rainer Bemsel

Password or phrase:

Enter Password or phrase and click on **OK**

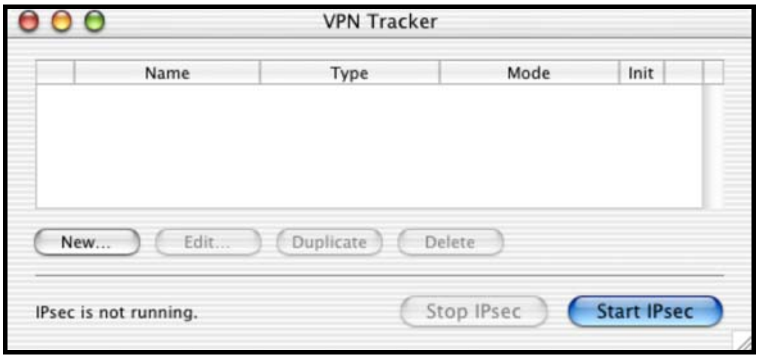
If you are running the demo version, you should get following notification.


Unregistered demo version

You have 10 demo days left.

Please click the button below to get more information about purchasing this application.

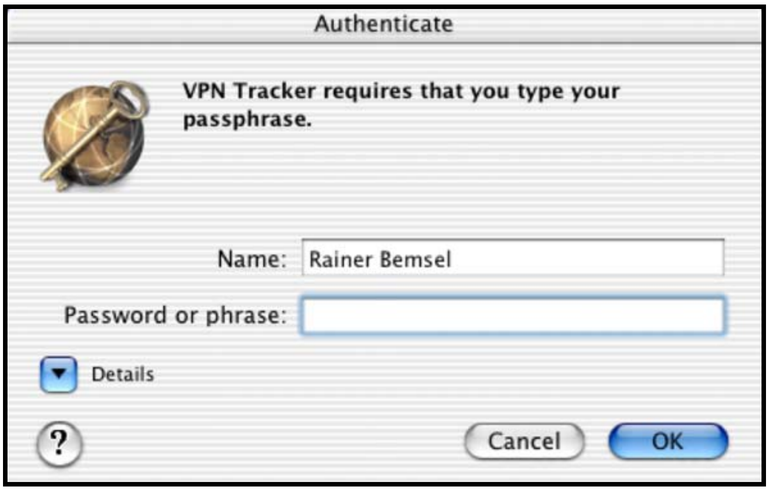
Click on **DEMO**



IPsec is not running.

Next, you will have to add a new connection. Click on **NEW**.

All settings a greyed out. Click on 🔒 to unlock for making changes. You will be asked to Authenticate with your passphrase.



VPN Tracker requires that you type your passphrase.

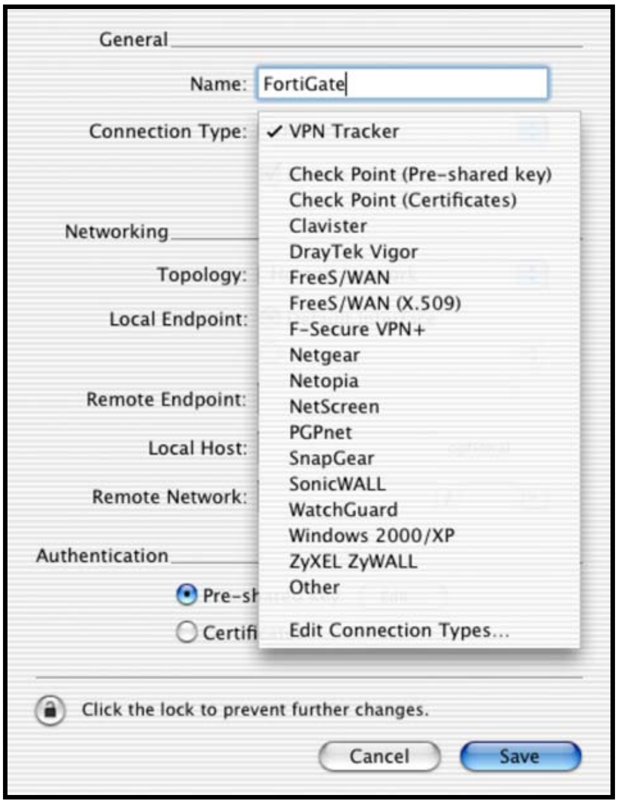
Name: Rainer Bemsel

Password or phrase:

You are now ready to add values for the new connection type.

Add New Connection

Type a Name of your new connection and choose from Connection Type “**Other**” from the Pull-Down Menu.



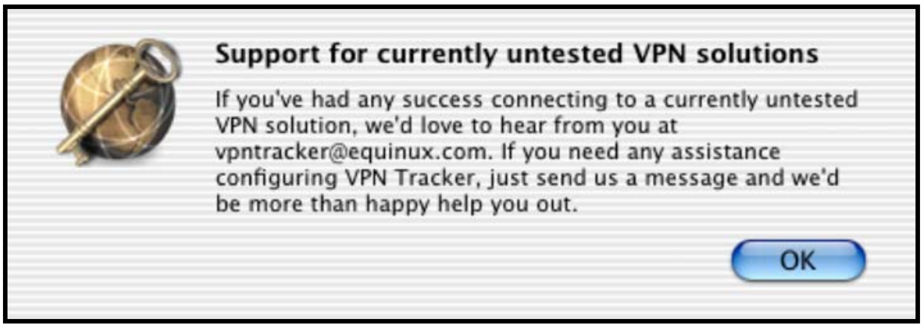
General

Name: FortiGate

Connection Type:

Click the lock to prevent further changes.

This is for all untested VPN solutions. With VPN Tracker 2.2.3, there is no predefined setting for Fortigate.

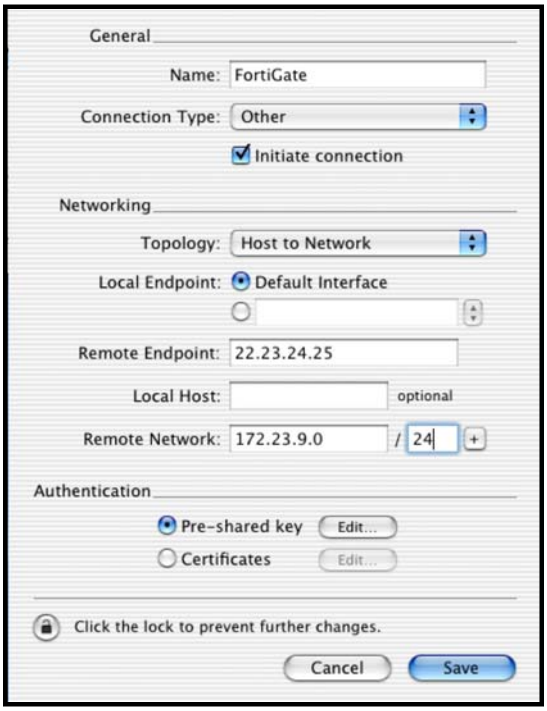


Support for currently untested VPN solutions

If you've had any success connecting to a currently untested VPN solution, we'd love to hear from you at vpntracker@equinux.com. If you need any assistance configuring VPN Tracker, just send us a message and we'd be more than happy help you out.

Click on **OK**

Type IP Address of Remote Endpoint and Remote Network



General

Name: FortiGate

Connection Type: Other

☑ Initiate connection

Networking

Topology: Host to Network

Local Endpoint: ● Default Interface

○

Remote Endpoint: 22.23.24.25

Local Host: optional

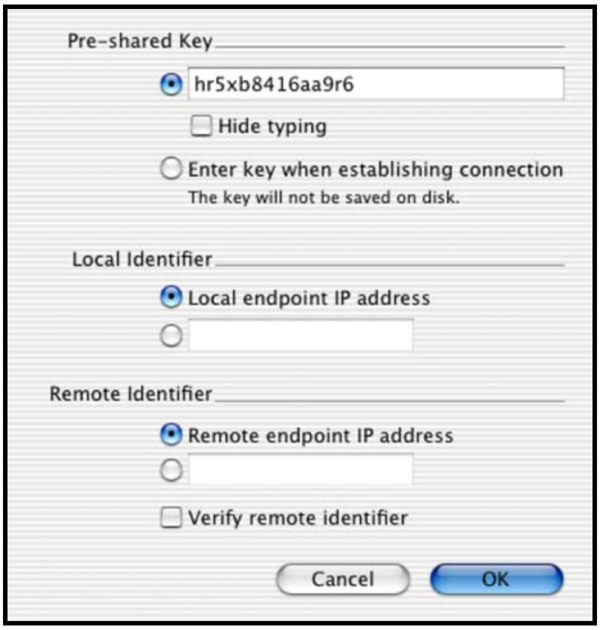
Remote Network: 172.23.9.0 / 24

Authentication

● Pre-shared key Edit...

○ Certificates Edit...

Click on **EDIT** of Pre-shared key. By removing the checkmark of “**HIDE TYPING**”, you can see real values, as VPN Tracker does not offer a COMPARE feature



Pre-shared Key

● hr5xb8416aa9r6

□ Hide typing

○ Enter key when establishing connection
The key will not be saved on disk.

Local Identifier

● Local endpoint IP address

○

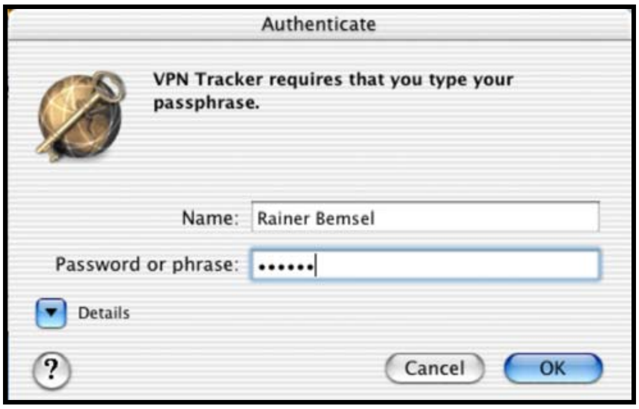
Remote Identifier

● Remote endpoint IP address

○

□ Verify remote identifier

Click on **OK** and **SAVE.** You might be asked again to authenticate for saving this connection

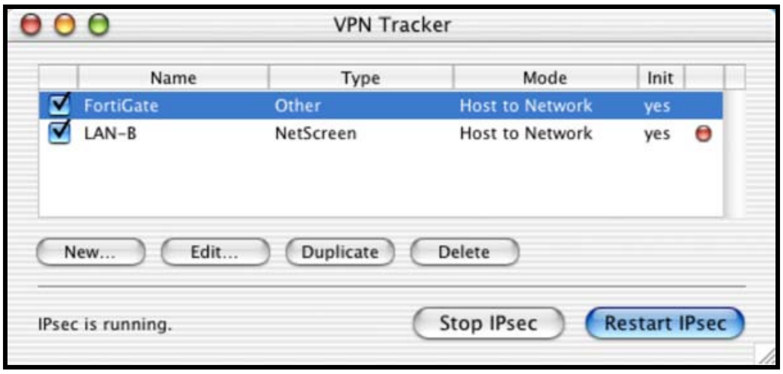


VPN Tracker requires that you type your passphrase.

Name: Rainer Bemsel

Password or phrase: ••••••

There are some settings you have to change to make sure all parameters are equal between Client and VPN Gateway

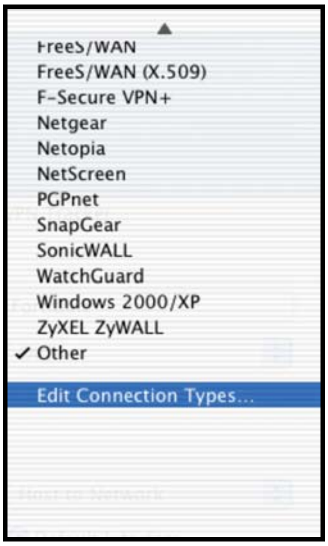


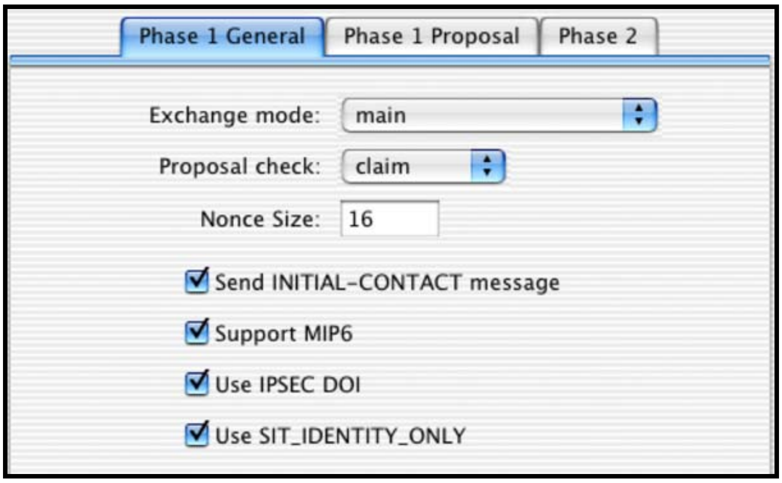
	Name	Type	Mode	Init
☑	FortiGate	Other	Host to Network	yes
☑	LAN-B	NetScreen	Host to Network	yes ●

IPsec is running.

Highlight the new Connection and click on **EDIT**

Go to Connection Type and choose from Pull Down Menu EDIT CONNECTION TYPE





Exchange mode: main

Proposal check: claim

Nonce Size: 16

☑ Send INITIAL-CONTACT message

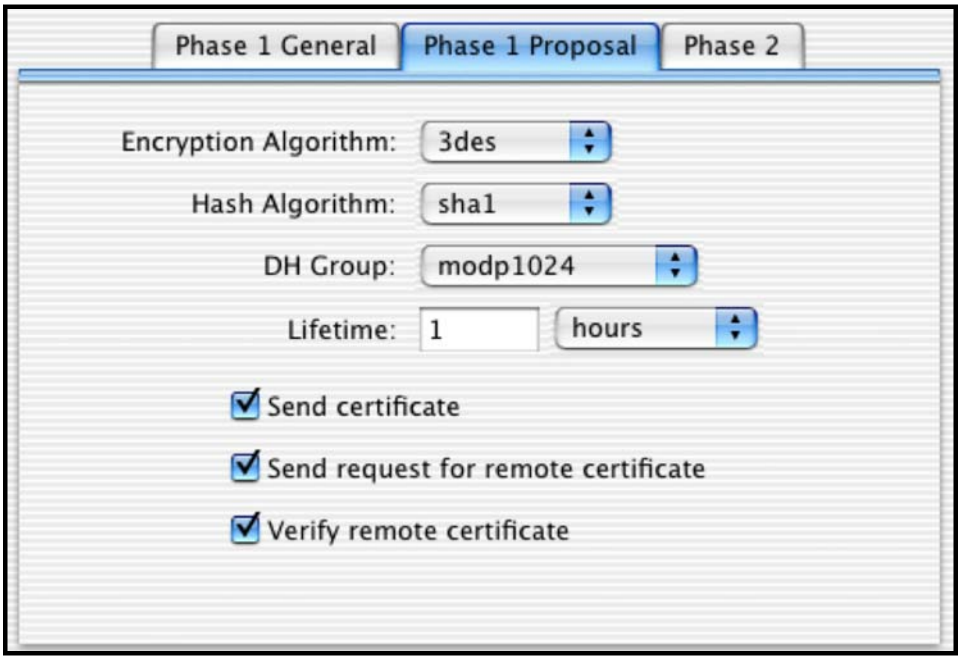
☑ Support MIP6

☑ Use IPSEC DOI

☑ Use SIT_IDENTITY_ONLY

Change Exchange Mode to **MAIN** on Phase 1 General

On Phase 1 Proposal, change Encryption Algorithm to **3des** , Hash Algorithm to **sha1** and DH Group to **modp1024**



Encryption Algorithm: 3des

Hash Algorithm: sha1

DH Group: modp1024

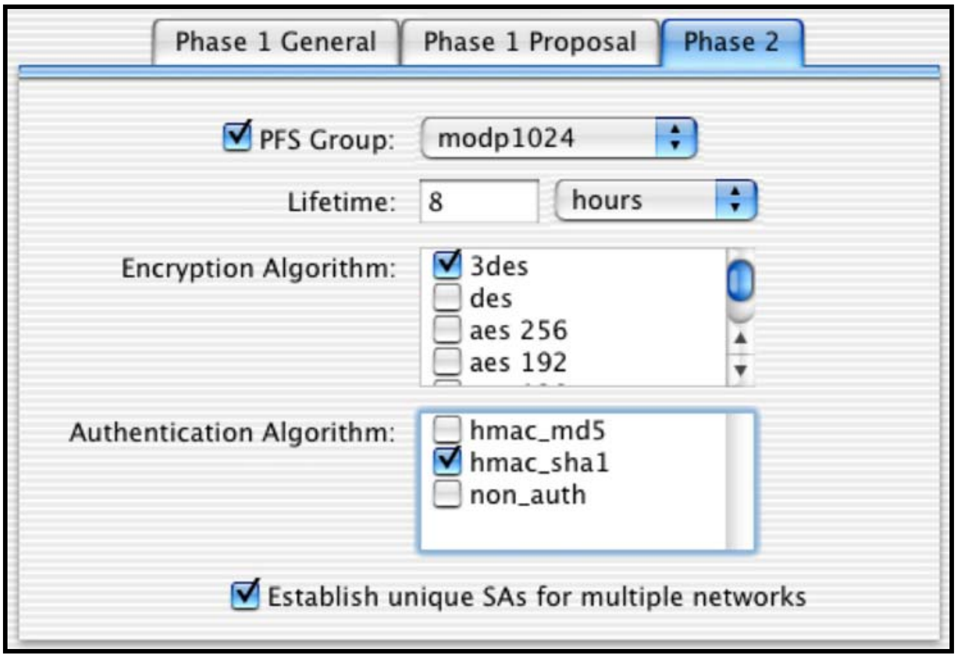
Lifetime: 1 hours

☑ Send certificate

☑ Send request for remote certificate

☑ Verify remote certificate

On Phase 2 make sure, that only **3des** & **hmac_sha1** is check-marked



☑ PFS Group: modp1024

Lifetime: 8 hours

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

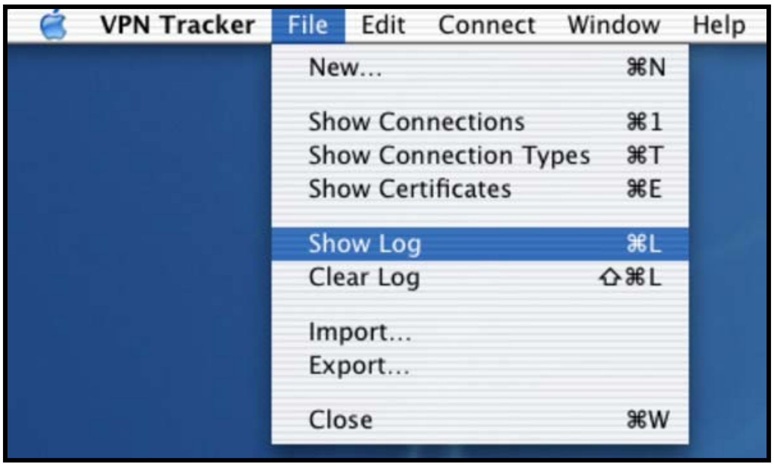
Authentication Algorithm:
□ hmac_md5
☑ hmac_sha1
□ non_auth

☑ Establish unique SAs for multiple networks

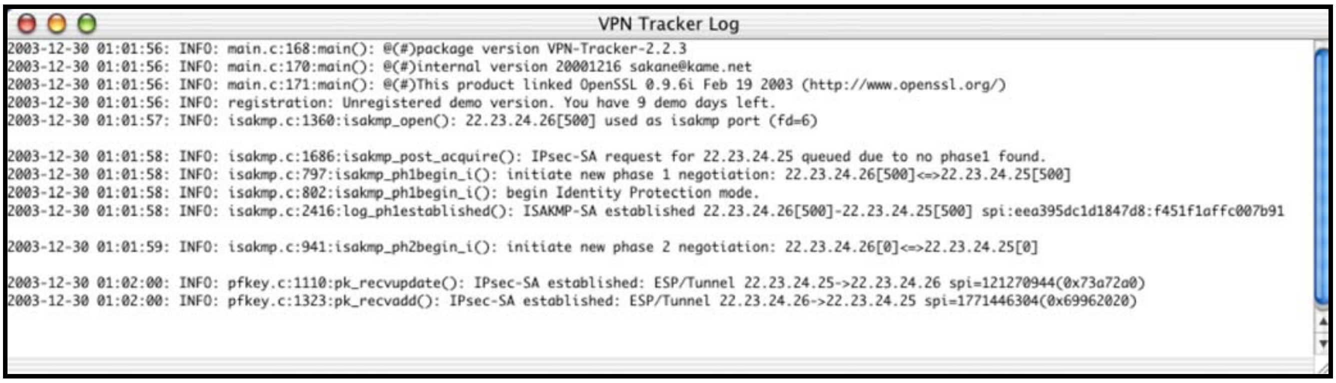
Click on SAVE and ⊗ to close the window

Finally click on **SAVE** again

Open Log Window from FILE



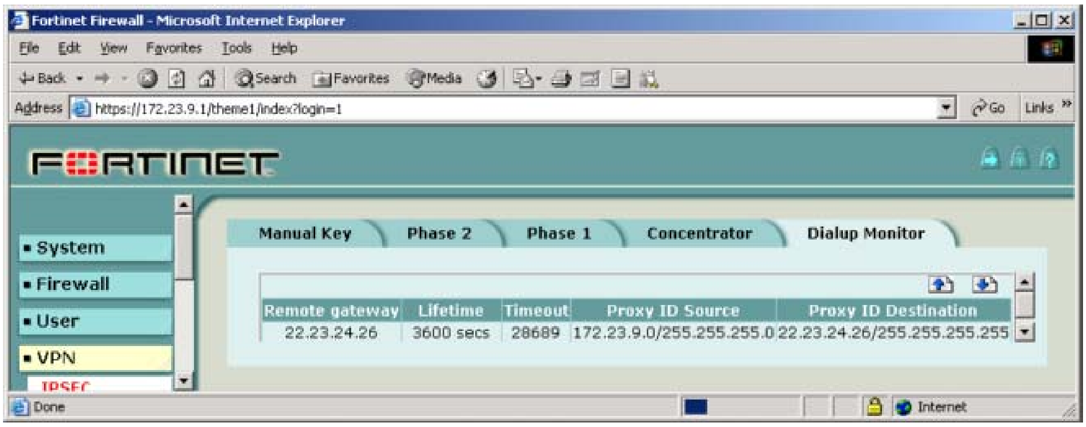
Checkmark FortiGate Connection only and click on **RESTART IPsec**


VPN Tracker Log

```
2003-12-30 01:01:56: INFO: main.c:168:main(): @(#)package version VPN-Tracker-2.2.3
2003-12-30 01:01:56: INFO: main.c:170:main(): @(#)internal version 20001216 sakane@kame.net
2003-12-30 01:01:56: INFO: main.c:171:main(): @(#)This product linked OpenSSL 0.9.6i Feb 19 2003 (http://www.openssl.org/)
2003-12-30 01:01:56: INFO: registration: Unregistered demo version. You have 9 demo days left.
2003-12-30 01:01:57: INFO: isakmp.c:1360:isakmp_open(): 22.23.24.26[500] used as isakmp port (fd=6)

2003-12-30 01:01:58: INFO: isakmp.c:1686:isakmp_post_acquire(): IPsec-SA request for 22.23.24.25 queued due to no phase1 found.
2003-12-30 01:01:58: INFO: isakmp.c:797:isakmp_ph1begin_i(): initiate new phase 1 negotiation: 22.23.24.26[500]<=>22.23.24.25[500]
2003-12-30 01:01:58: INFO: isakmp.c:802:isakmp_ph1begin_i(): begin Identity Protection mode.
2003-12-30 01:01:58: INFO: isakmp.c:2416:log_ph1established(): ISAKMP-SA established 22.23.24.26[500]-22.23.24.25[500] spi:eea395dc1d1847d8:f451f1affc007b91

2003-12-30 01:01:59: INFO: isakmp.c:941:isakmp_ph2begin_i(): initiate new phase 2 negotiation: 22.23.24.26[0]<=>22.23.24.25[0]

2003-12-30 01:02:00: INFO: pfkey.c:1110:pk_recvupdate(): IPsec-SA established: ESP/Tunnel 22.23.24.25->22.23.24.26 spi=121270944(0x73a72a0)
2003-12-30 01:02:00: INFO: pfkey.c:1323:pk_recvadd(): IPsec-SA established: ESP/Tunnel 22.23.24.26->22.23.24.25 spi=1771446304(0x69962020)
```

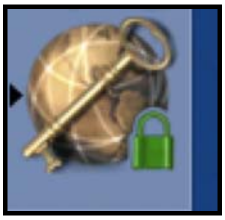
On Foritgate Web Interface, log on and click on VPN – IPSEC – Dialup Monitor.

You should see an entry of the new remote gateway (in this case 22.23.24.26, which is my VPN Client)



Remote gateway	Lifetime	Timeout	Proxy ID Source	Proxy ID Destination
22.23.24.26	3600 secs	28689	172.23.9.0/255.255.255.0	22.23.24.26/255.255.255.255

On MAC OS X Dock, you should see a lock which indicates an established IPsec connection.



That's pretty much all to do for a successful Client-Gateway VPN with shared Secret. Check out my website for more Sample Instructions to come.

www.bemsel.com/techtips