**e·quinux**

# VPN Tracker for Mac OS X

**How-to:**

**Interoperability with**

**NETGEAR VPN Router Appliances**

Rev. 1.4

# 1.    Introduction

This document describes how VPN Tracker can be used to establish a connection between a Macintosh running Mac OS X and a NETGEAR VPN Firewall. The entire NETGEAR product range should be compatible with VPN Tracker. equinux has tested the NETGEAR model FVL328 and FVS 318.

The NETGEAR VPN Firewall is configured as a router, connecting a company LAN to the Internet.

The example demonstrates a connection scenario, with a dial-in Mac connecting to a NETGEAR VPN Firewall.

This paper is only a supplement to, not a replacement for, the instructions that have been included with your NETGEAR VPN Firewall. Please be sure to read and understand those instructions before beginning.

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# 2.  Prerequisites

Firstly, you should use a recent NETGEAR firmware version. The latest firmware release for your NETGEAR VPN Firewall can be obtained from:

http://www.netgear.com

For this document, firmware version 1.4 has been used.

The type of the VPN Tracker license needed (personal or professional edition) depends on the connection scenario you are using:

- If you connect a dial-in Mac without it's own subnet to the NETGEAR VPN Firewall you need a Personal License.

- If you want to establish a LAN-to-LAN connection from your Mac to the NETGEAR VPN Firewall, you need a VPN Tracker Professional License.

VPN Tracker is compatible with Mac OS X 10.2 or higher.

Be sure to use VPN Tracker 2.0.4 or higher.[1] For this document VPN Tracker version 2.0.4 has been used.

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[1] All VPN Tracker versions prior to the 2.0.4 did not include a connection type for NETGEAR products.

# 3.  Connecting a VPN Tracker Host to NETGEAR VPN Firewall using PSK

In this example, the Mac running VPN Tracker is directly connected to the internet via a dialup or PPP connection.[2] The NETGEAR VPN Firewall is configured in NAT mode and has the static WAN IP address 169.1.2.3 and the private LAN IP address 192.168.1.1. The stations in the LAN behind the NETGEAR VPN Firewall use 192.168.1.1 as their default gateway and should have a working Internet connection.



*Figure 1: VPN Tracker - NETGEAR VPN Firewall connection diagram (host to network)*

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[2] Please note that the connection via a router, which uses Network Address Translation (NAT), only works if the NAT router supports „IPsec passthrough". Please contact your router's manufacturer for details.

NETGEAR offers 2 different types of VPN gateways, the NETGEAR FVL 328 and the FVS 318. The configuration for the FVS 318 is described in chapter 3.1. Please see chapter 3.2 for the FVL 328 configuration.

## 3.1    NETGEAR FVS 318 Firewall configuration

The pre-defined VPN Tracker connection type has been created using the default settings on NETGEAR VPN Firewall. If you change any of the settings on the NETGEAR VPN Firewall VPN router, you will subsequently have to adjust the connection type in VPN Tracker.

**Step 1**

NETGEAR VPN settings:

Please go to Setup -› VPN Settings and enter a "Connection Name" e.g. vpntracker. You have to use identifiers in the  passage 'Local' and 'Remote'. These settings refer to the "Local" and "Remote identifier" settings in VPN Tracker. Please type in an arbitrary local and remote identifier (e.g. "netgear" and "vpntracker").

Select "a subnet of local address" where the "Tunnel can be accessed from". Enter in the field "Local LAN start IP Address" the Network IP Address of your local network on the Netgear side. The "Local LAN IP Subnetmask" has to be entered as well.

The tunnel can access "a single remote address". Enter here your "virtual" private IP address e.g. 10.1.2.3. These settings refer to the "local host" setting in VPN Tracker.

You  have to use the "Aggressive Mode" and the Perfect Forward Secrecy must be disabled. The pre-defined connection type for NETGEAR uses 3DES and the Diffie-Hellman Group 1.

Finally you have to enter your Pre-shared key.

The pre-defined connection type "Netgear" is based on these settings. Please check all fields. The values should be exactly the same as shown on the screenshot below.



*Figure 2: NETGEAR FVS 318 - VPN settings*

## 3.2    NETGEAR VPN FVL 328 Firewall configuration

**Step 1**

IKE Policy Configuration:

Go to [VPN -› IKE Policies] and add a new policy. Enter a connection name (e.g. vpn-ike) and use "Remote Access" as Direction Mode. You have to use identifiers in the passage 'Local' and 'Remote'. This settings refers to the "Local-" and "Remote identifiers" settings in VPN Tracker. Please type in a arbitrary local and remote identifier (e.g. "netgear" and "vpntracker").

Finally you have to choose "Pre-shared Key" as "Authentication Method" and enter your pre-shared secret in the field below.

The pre-defined connection type "Netgear" is based on default settings. Please check all fields. The values should be exactly the same as shown on the screenshot below.



*Figure 3: IKE Policy Configuration*

After this steps the configuration should look like this:



*Figure 4: IKE Policies*

**Step 2**

VPN IKE / IPSec Setup:

Go to [VPN -› VPN Policies] and add a new "Auto Policy". Enter a policy name (e.g. vpn-pol) and choose as "IKE policy" the previously defined policy "vpn-ike". The "Remote VPN Endpoint" Adress is 0.0.0.0.

In the "Traffic Selector" passage choose "Any" as "Local IP" and "Remote IP".

Enable the "ESP configuration" by checking "Enable Encryption" **and** "Enable

Authentication". Please change the "Encryption Algorithm" from "DES" to "3DES".



*Figure 5: VPN - Auto Policy*

After step 2 the configuration should look like this:



*Figure 6: VPN Policies*

3.3     VPN Tracker configuration

**Step 1**

Add a new connection with the following options: Choose „Netgear" as the Connection Type, „Host to Network" as Topology, then type in the remote endpoint (169.1.2.3) and the remote network (192.168.1.0/24).

If you are using the NETGEAR FVS 318 VPN Firewall, you have to enter an IP address in the field "local host". This address must be the same as that which you entered in chapter 3.1 figure 2 (e.g. 10.1.2.3). If you are using the FVL 328 router, you could leave this field empty.



*Figure 7: VPN Tracker Main Window*

**Step 2**    Select as "Authentication" method „Pre-shared key" and click "Edit…". Type in the same shared secret that you typed-in in the NETGEAR router (Figure 2). Type in your local identifiers (e.g. vpntracker) and the remote one (e.g. netgear). The local identifier in VPN tracker is the remote identifier in the NETGEAR configuration and vice versa.



*Figure 8: VPN Tracker - Authentication dialog*

**Step 3**    Save the connection and Click „Start IPsec" in the VPN Tracker main window.

You're done. After 10-20 seconds the red status indicator for the connection should change to green, which means you're securely connected to the NETGEAR VPN Firewall. After IPsec has been started, you may quit VPN Tracker. The IPsec service will keep running.

Simply test your connection by pinging a host in the NETGEAR VPN Firewall network from the dialed-in Mac in the "Terminal" utility:

```
ping 192.168.1.1
```

⋯⋮ Debugging

If the status indicator does not change to green please have a look at the log file on both sides.  You can define the amount of information available in the log file in the VPN Tracker preferences.

# 4. Connecting a VPN Tracker Host to a NETGEAR VPN Firewall using Certificates

First, make sure to use VPN Tracker 2.0.5 or higher, because of major updates in Certificate management. You need a CA with private key, so one VPN Tracker Professional Edition is required if you don't actually have a signing CA. Only one VPN Tracker Professional Edition is required, other VPN users can use a Personal Edition. For further information please refer to chapter 3 in the VPN Tracker manual.

## 4.1     NETGEAR VPN Firewall configuration

**Step 1**

IKE Policy Configuration:

Go to [VPN -> IKE Policies] and add a new policy. Enter a connection name (e.g. vpn-ike) and use "Remote Access" as Direction Mode (this implicates the "Aggressive Mode"). You have to use identifiers in the  passage 'Local' and 'Remote'. This settings refers to the "Local-" and "Remote identifiers" settings in VPN Tracker and the optional domain name field in the certificates. Please type in a arbitrary "Full Qualified Domain name" identifier (e.g. "netgear" and "vpntracker").

Finally you have to choose "RSA Signature" as "Authentication Method".

*Figure 9: IKE Policy Configuration*

**Step 2**  VPN IKE / IPSec Setup:

The setup of adding a Auto VPN Policy works the same way as described in step 2 in section 3.

**Step 3**  Certificates Setup:

Please go to [VPN -› Certificates] and generate a "Certificate Request". Enter a name and a subject for the Certificate. Choose a "Signature key length" of "1024" Bit.

You have to use a "Optional" "Domain Name". This setting refers to the "Local Identifier" in the IKE Policies and the remote identifier in VPN Tracker.

**Note:** Please make sure, that the time in [Security -› Schedule -› Date/Time] is set to your local time zone, otherwise you can't generate and sign the self certificate, explained in step 4-6.

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*Figure 10: Generate Self Certificate Request*

**Step 4**

Save the certificate request in a text file. Import the Request in the "Request" tab in VPN Tracker. Finally "Sign" the request with a CA. The "Alternative Name" field is pre-defined with the value you entered in the certificate signing request. It should be the same as the "Alternate Subject Name", defined before.

Please note: This feature requires the VPN Tracker Professional Edition.



*Figure 11: VPN Tracker - Sign Certificate*

**Step 5**    Go to [VPN -> CAs] and import the CA which you used for signing into the NETGEAR router. The CA file must be exported in the PEM- format.
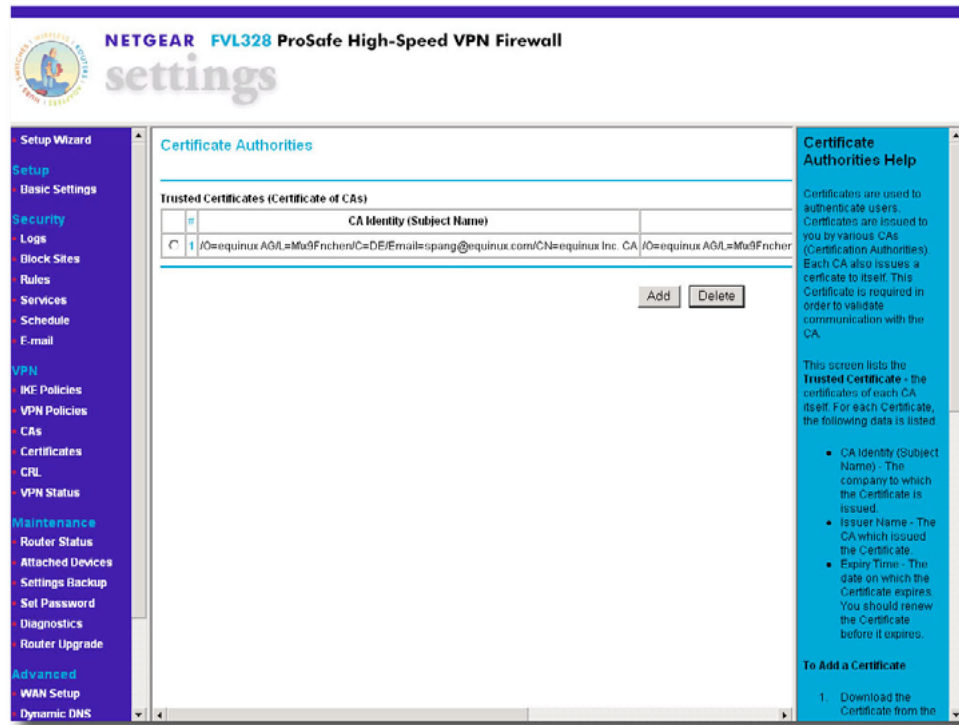


*Figure 12: Netgear Certficate Authorities window*

**Step 6**    Export the signed certificate in the PEM- format and "upload the Certificate" in the NETGEAR router.

Please note: The subject name of the certificate must look like this: "FQDN: netgear"

After step 6 the configuration should look like this:

*Figure 13: Netgear Certificate window*

## 4.2    VPN Tracker configuration
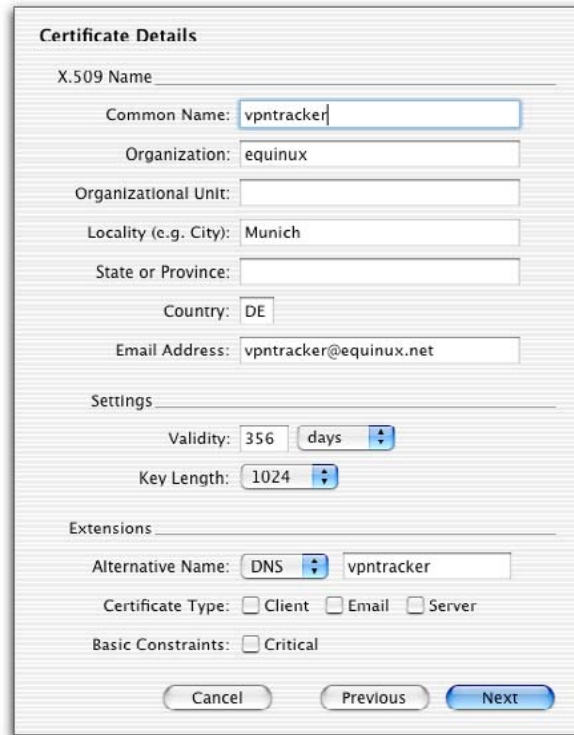
**Step 1**

Create a new "Own certificate" for VPN Tracker.

Go to the VPN Tracker certificate manager (⌘ + "E") and create and sign a new certificate. Type in the certificate data.

You have to use an "Alternative Name". Choose DNS from the drop-down box and enter the alternative name. Please note: This name must be the same as the remote identifier in the NETGEAR IKE settings.

*Figure 14: Own certificate*

**Step 2**        Add a new connection with the following options: Choose „Netgear " as Connection
Type, „Host to Network" as Topology, then type in the remote endpoint (169.1.2.3)
and the remote network (192.168.1.0/24).

*Figure 15: VPN Tracker Main Window*

**Step 3**      Select „Certificates" as "Authentication" method and click "Edit…".

Choose as "own certificate" a self-signed certificate, you created with VPN Tracker and verify the remote certificate "with CAs".

Type in your local identifier (e.g. vpntracker) and the remote one (e.g. netgear). The local identifier in VPN tracker is the remote identifier in the NETGEAR configuration and vice versa.

Do <u>not</u> "Verify the remote certificate".

*Figure 16: VPN Tracker Authentication dialog*

**Step 4**

Save the connection and Click „Start IPsec" in the VPN Tracker main window.

You're done. After 10-20 seconds the red status indicator for the connection should change to green, which means you're securely connected to the NETGEAR VPN Firewall. After IPsec has been started, you may quit VPN Tracker. The IPsec service will keep running.

Now to test your connection simply ping a host in the NETGEAR VPN Firewall network from the dialed-in Mac in the "Terminal" utility:

```
ping 192.168.1.1
```

⋯⋮ Debugging

If the status indicator does not change to green please have a look at the log file on both sides. You can define the amount of information available in the log file in the VPN Tracker preferences.