Configuring IPsec VPNs in the EN-1000™

One of the principal features of routers is their support of virtual private networks (VPNs). This document discusses configuration of a VPN connection.

Note: VPN configuration requires collection of some information before the actual configuration can be performed. It is important to plan your virtual private network. Before configuring the EN-1000's IPsec VPN tunnels, study the material discussed in *Virtual Private Networks* and confer with your network administrator.

See the following sections:

- *Configuring an EN-1000 as a VPN Tunnel Initiator*
- *Configuring an EN-1000 as a VPN Tunnel Responder*

Note: In the VPN tunnel configuration screens, "left" indicates "local" (that is, it indicates the EN-1000 router) and "right" indicates "remote" (the device at the other end of the connection).

For information about VPNs, see the document *Virtual Private Networks*. For additional (required) VPN processes, see the following documents:

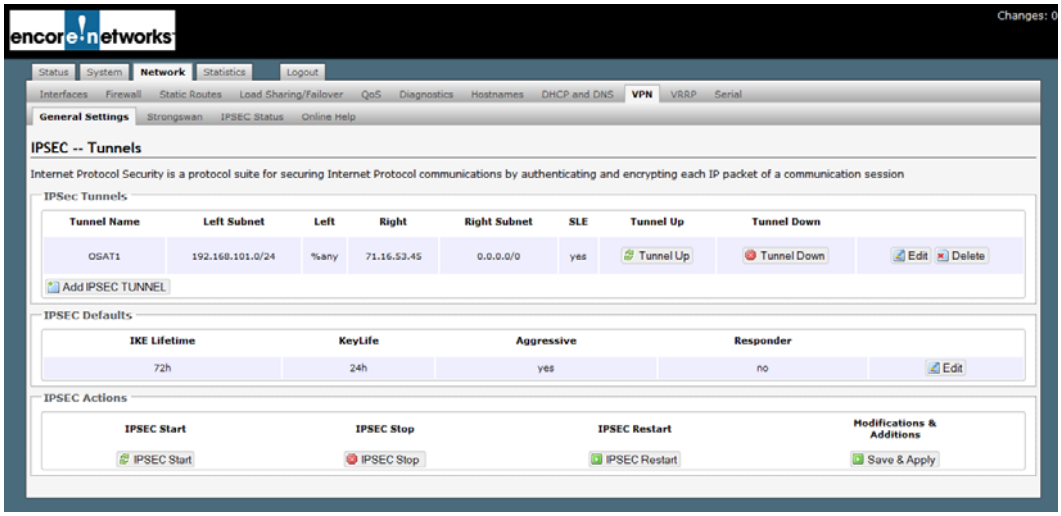
- *Configuring the EN-1000's VPN Firewall*
- *Starting and Tracking VPNs in the EN-1000*

6.1 Configuring an EN-1000 as a VPN Tunnel Initiator

1. Log into the EN-1000. (For details, see *Logging In*, on page 2 of the document *Using the EN-1000's Management System*.)
2. On the EN-1000 management system, select the **Network** tab. Then select the **VPN** tab. If necessary, select the **General Settings** tab.

   ❖ The IPsec VPN Tunnel Table for a VPN Tunnel Initiator is displayed (Figure 6-1).

Figure 6-1. IPsec VPN Tunnel Table for a VPN Tunnel Initiator



3 On that screen, select the box to **Enable IPsec for this unit**.

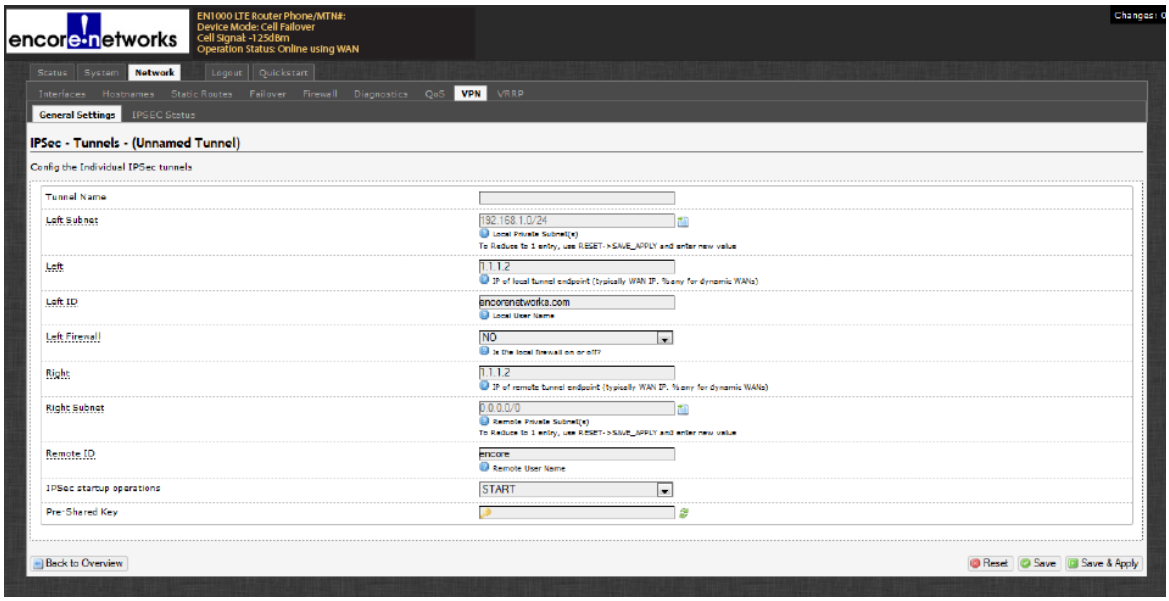
4 Under the heading **IPsec Tunnels**, do one of the following:

a Select the **Edit** button for an existing IPsec VPN tunnel. (The **Edit** button is near the far right of the tunnel's row.)

b Select the **Add IPsec Tunnel** button. (The button is below the list of **Tunnel Names**.)

❖ In either case, the IPsec Tunnel Configuration Screen for a VPN Tunnel Initiator is displayed (Figure 6-2).

Figure 6-2. IPsec Tunnel Configuration Screen for a VPN Tunnel Initiator



5 Configure the fields on the IPsec Tunnel Configuration Screen for a VPN Tunnel Initiator. Get all values from your network administrator.

Note the following required values for the VPN tunnel initiator:

- Set the **Left** IP address to **%any**.
- Set the **Left Firewall** to **No** (off).
- Set **IPsec Startup Operations** to **Start**.
- Type the **Preshared Key**.

  Note: Both sides of the VPN tunnel (initiator and responder) must use the same pre-shared key. Get the key from your network administrator.

The following are sample values.

- **Tunnel Name:** Tunnel_01
- **Left Subnet:** *a.b.c.*0/24 (where *a.b.c* indicates the local private network).

  Note: 24 is the IP prefix; its maximum value is 32.
- **Left ID:** [*a character string*] (representing the local EN-1000)

  Note: The VPN tunnel initiator's Left ID must match the VPN tunnel responder's Right ID. In like manner, the initiator's Right ID must match the responder's Left ID.
- **Right:** *i.j.k.l* (where *i.j.k.l* is the remote router's public IP address)
- **Right Subnet:** *m.n.p.*0/24 (where *m.n.p* indicates the remote private network)
- **Right [Remote] ID:** [*a character string*] (representing the remote EN-1000)

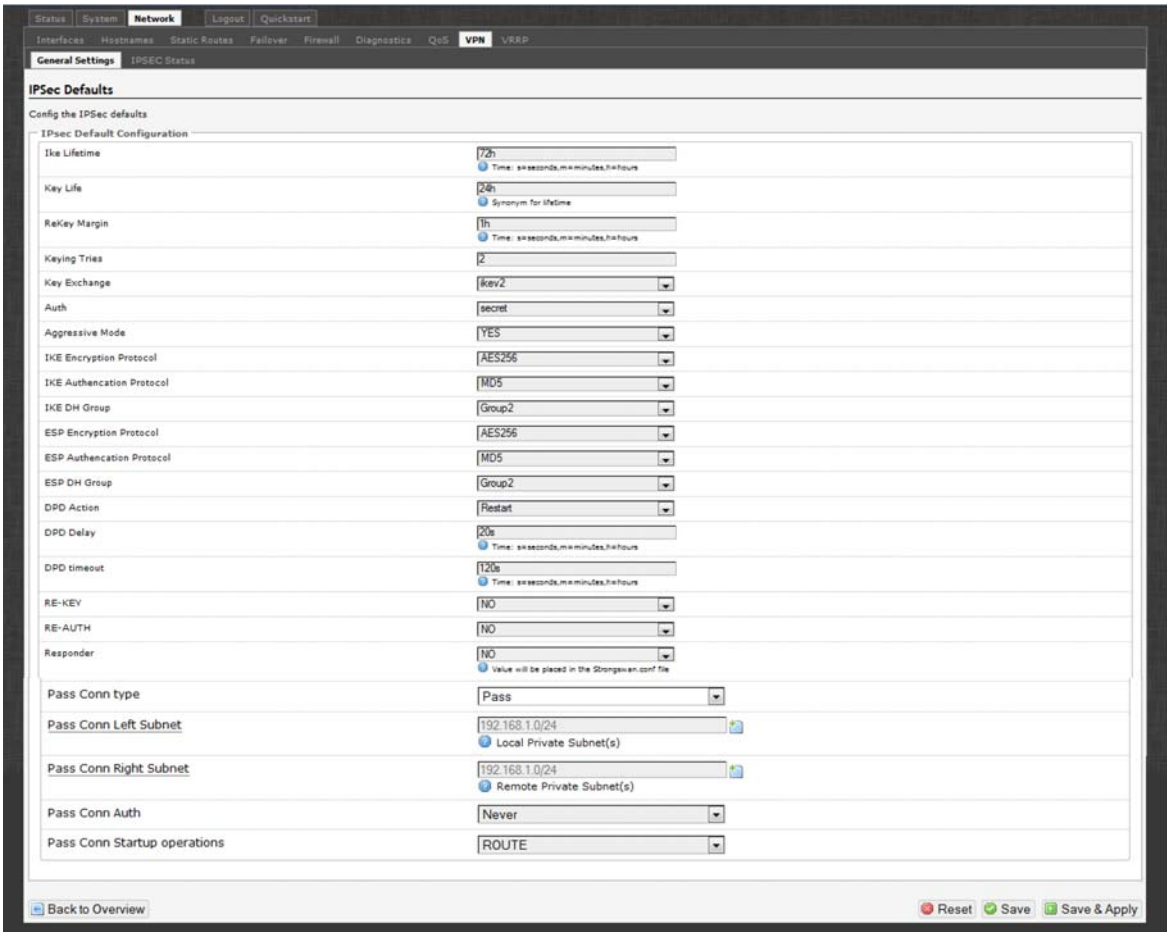
6 When you have finished the configuration, select the **Save & Apply** button (at the lower right of the screen).

❖ The configuration is saved, and the IPsec VPN Tunnel Table for a VPN Tunnel Initiator is redisplayed (recall Figure 6-1).

7 On the IPsec VPN Tunnel Table for a VPN Tunnel Initiator, under the heading **IPsec Defaults**, select the **Edit** button (at the far right of the section).

❖ The IPsec Defaults Configuration Screen for a VPN Tunnel Initiator is displayed (Figure 6-3).

Figure 6-3. IPsec Defaults Configuration Screen for a VPN Tunnel Initiator



8 Configure the fields on the IPsec Defaults Configuration Screen for a VPN Tunnel Initiator. Get all values from your network administrator.

Note the following required values for the VPN tunnel initiator:

- Set **Responder** to **No**. (This EN-1000 is the tunnel initiator.)
- Set **Pass Conn Type** to **Pass** (passthrough).

  Note: When you select **Pass**, additional fields are displayed.
- Set **Pass Conn Auth** to **Never**.
- Set **Pass Conn Startup Operations** to **Start**.

The following are sample values.

- Phase 1:
  - **IKE Lifetime:** 72h [72 hours]
  - **Key Life:** 8h [8 hours]
  - **ReKey Margin:** 0h [0 hours; thus no kilobytes rekeying]
  - **Keying Tries:** 2 [the default value]
  - **Key Exchange:** IKEv1
  - **Auth** [Authentication]: secret
  - **Aggressive Mode:** No (“No” indicates use of main mode.)
  - **IKE Encryption Protocol:** 3DES

- **IKE Authentication Protocol:** SHA1
- **IKE DH** [Diffie–Hellman] **Group:** Group2

• Phase 2 (uses perfect forward secrecy):

- **ESP Encryption Protocol:** 3DES
- **ESP Authentication Protocol:** SHA1
- **ESP DH** [Diffie–Hellman] **Group:** Group2
- **DPD** [Dead Peer Detection] **Action:** Restart
- **DPD** [Dead Peer Detection] **Delay:** 20s [seconds]
- **DPD** [Dead Peer Detection] **Timeout:** 120s [seconds]
- **Re-Key:** No
- **Re-Auth:** No
- **Pass Conn Left Subnet:** The local LAN subnet
- **Pass Conn Right Subnet:** The local LAN subnet

  Note: The Pass Conn Left Subnet and the Pass Conn Right Subnet must be identical.

9 When you have finished the configuration, select the **Save & Apply** button (at the lower right of the screen).

❖ The configuration is saved, and the IPsec VPN Tunnel Table for a VPN Tunnel Initiator is redisplayed (recall Figure 6-1).

10 On the IPsec VPN Tunnel Table for a VPN Tunnel Initiator, select the **Save & Apply** button (at the lower right of the screen).

❖ The EN-1000 has been configured as an IPsec VPN tunnel initiator.

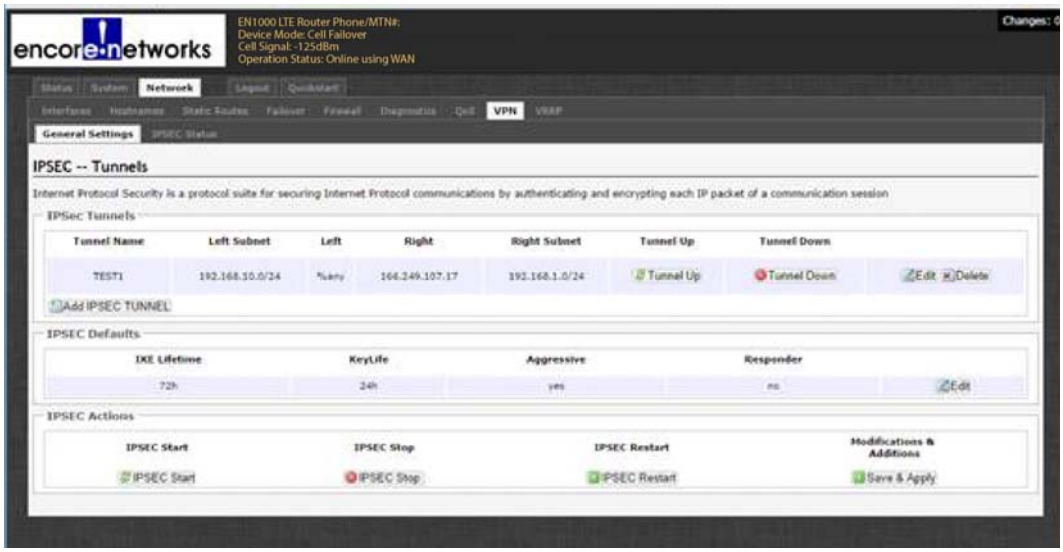
6.2 Configuring an EN-1000 as a VPN Tunnel Responder

1 Log into the EN-1000. (For details, see *Logging In*, on page 2 of the document *Using the EN-1000's Management System*.)

2 On the EN-1000 management system, select the **Network** tab. Then select the **VPN** tab. If necessary, select the **General Settings** tab.

❖ The IPsec VPN Tunnel Table for a VPN Tunnel Responder is displayed (Figure 6-4).

Figure 6-4. IPsec VPN Tunnel Table for a VPN Tunnel Responder



3 On that screen, select the box to **Enable IPsec for this unit**.

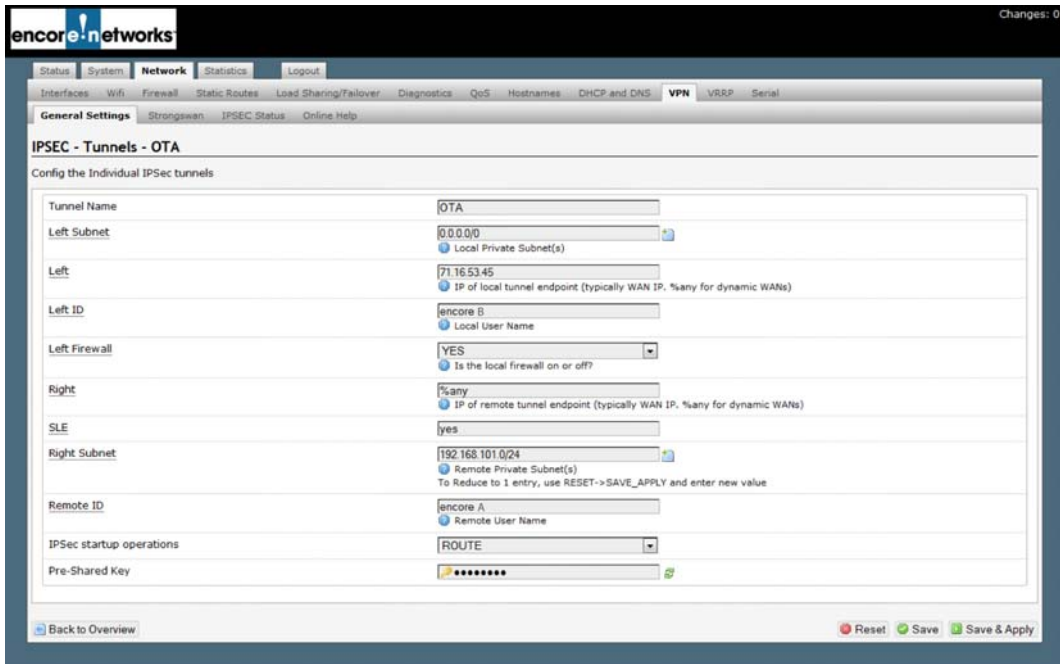
4 Under the heading **IPsec Tunnels**, do one of the following:

a Select the **Edit** button for an existing IPsec VPN tunnel. (The **Edit** button is near the far right of the tunnel's row.)

b Select the **Add IPsec Tunnel** button. (The button is below the list of **Tunnel Names**.)

❖ In either case, the IPsec Tunnel Configuration Screen for a VPN Tunnel Responder is displayed (Figure 6-5).

Figure 6-5. IPsec Tunnel Configuration Screen for a VPN Tunnel Responder



5 Configure the fields on the IPsec Tunnel Configuration Screen for a VPN Tunnel Responder. Get all values from your network administrator.

Note the following required values for the VPN tunnel responder:

- Set the **Left Subnet** to **0.0.0.0**.
- Set the **Left** IP address to this EN-1000's WAN IP address.

  Note: The VPN tunnel responder's WAN interface must use a static IP address so that it is accessible to the initiator.
- Set the **Left Firewall** to **Yes** (on).
- Set the **Right** IP address to **%any**.
- Set the **Right Subnet** to the subnet of the initiator EN-1000.
- Set **IPsec Startup Operations** to **Route**.
- Type the **Preshared Key**.

  Note: Both sides of the VPN tunnel (initiator and responder) must use the same pre-shared key. Get the key from your network administrator.

The following are sample values.

- **Tunnel Name:** Tunnel_01
- **Left ID:** [*a character string*] (representing the local EN-1000)

  Note: The VPN tunnel initiator's Left ID must match the VPN tunnel responder's Right ID. In like manner, the initiator's Right ID must match the responder's Left ID.
- **Right [Remote] ID:** [*a character string*] (representing the remote EN-1000)

  Do not use this sample pre-shared key; is it merely an example. For purposes of demonstration, the sample pre-shared key includes the lowercase letter "l" (ell); do not mistake it for the number "1" (one).

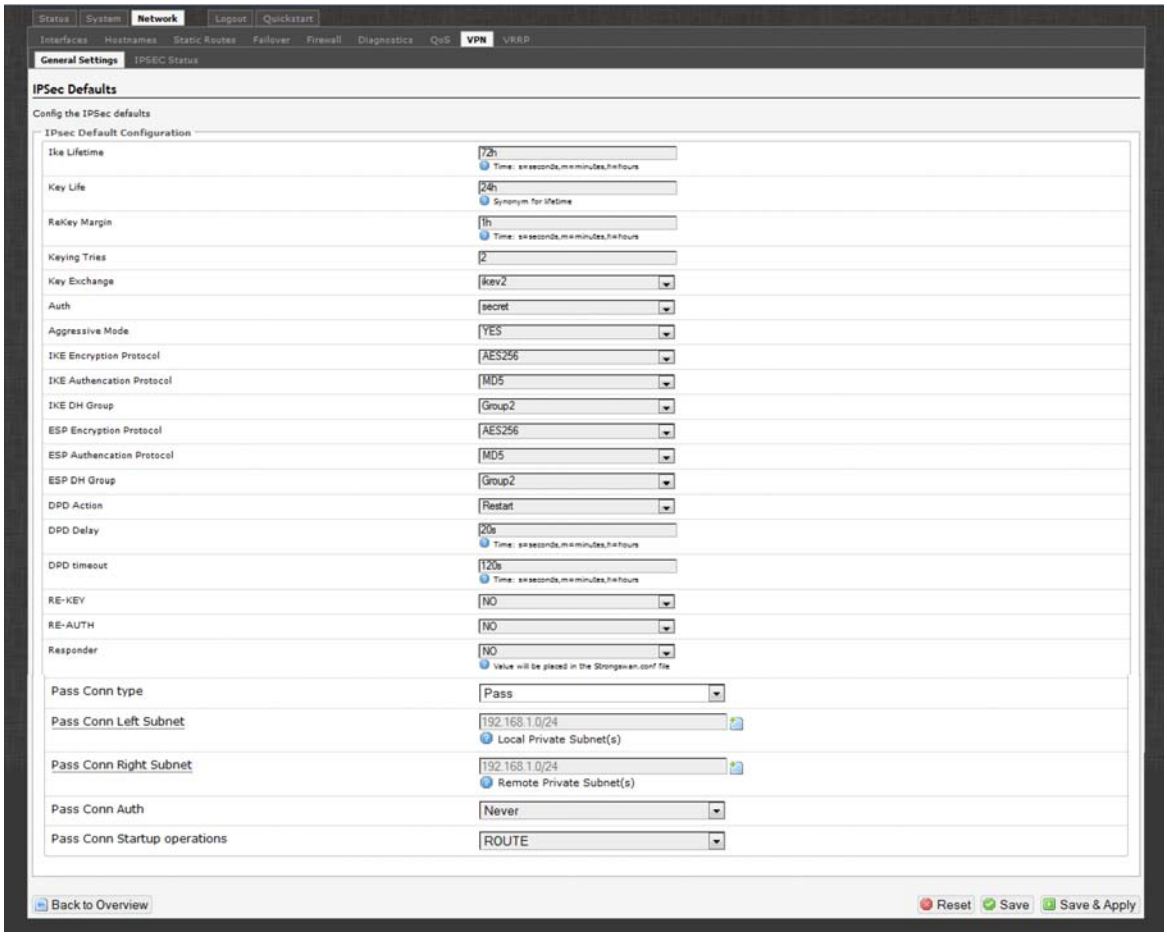
6 When you have finished the configuration, select the **Save & Apply** button (at the lower right of the screen).

❖ The configuration is saved, and the IPsec VPN Tunnel Table for a VPN Tunnel Responder is redisplayed (recall Figure 6-4).

7 On the IPsec VPN Tunnel Table for a VPN Tunnel Responder, under the heading **IPsec Defaults**, select the **Edit** button (at the far right of the section).

❖ The IPsec Defaults Configuration Screen for a VPN Tunnel Responder is displayed (Figure 6-6).

Figure 6-6. IPsec Defaults Configuration Screen for a VPN Tunnel Responder



8 Configure the fields on the IPsec Defaults Configuration Screen for a VPN Tunnel Responder. Get all values from your network administrator.

Note the following required values for the VPN tunnel responder:

- Set **Responder** to **Yes**.
- Set **Pass Conn** to **Pass** (passthrough).

  Note: When you select **Pass**, additional fields are displayed.
- Set **Pass Conn Auth** to **Never**.
- Set **Pass Conn Startup Operations** to **Route**.

The following are sample values.

- Phase 1:
  - **IKE Lifetime:** 72h [72 hours]
  - **Key Life:** 8h [8 hours]
  - **ReKey Margin:** 0h [0 hours; thus no kilobytes rekeying]
  - **Keying Tries:** 2 [the default value]
  - **Key Exchange:** IKEv1
  - **Auth** [Authentication]: secret
  - **Aggressive Mode:** No (“No” indicates use of main mode.)
  - **IKE Encryption Protocol:** 3DES

- **IKE Authentication Protocol:** SHA1
- **IKE DH** [Diffie–Hellman] **Group:** Group2

• Phase 2 (uses perfect forward secrecy):

- **ESP Encryption Protocol:** 3DES
- **ESP Authentication Protocol:** SHA1
- **ESP DH** [Diffie–Hellman] **Group:** Group2
- **DPD** [Dead Peer Detection] **Action:** Restart
- **DPD** [Dead Peer Detection] **Delay:** 20s [seconds]
- **DPD** [Dead Peer Detection] **Timeout:** 120s [seconds]
- **Re-Key:** No
- **Re-Auth:** No
- **Pass Conn Left Subnet:** The local LAN subnet
- **Pass Conn Right Subnet:** The local LAN subnet

  Note: The Pass Conn Left Subnet and the Pass Conn Right Subnet must be identical.

9 When you have finished the configuration, select the **Save & Apply** button (at the lower right of the screen).

❖ The configuration is saved. However, the configuration is not applied until step 11 has been completed.

10 Select the **Back to Overview** button.

❖ The IPsec VPN Tunnel Table for a VPN Tunnel Responder is redisplayed (recall Figure 6-4).

11 On the IPsec VPN Tunnel Table for a VPN Tunnel Responder, select the **Save & Apply** button (at the lower right of the screen).

❖ The EN-1000 has been configured as an IPsec VPN tunnel responder.

6.3 The Next Steps

The following items need to be addressed:

1 Perform the procedures in the document *Configuring the EN-1000's VPN Firewall*.

2 Then perform the procedures in the document *Starting and Tracking VPNs in the EN-1000*.

Note: If you wish to study VPNs, see the document *Virtual Private Networks*.