

## How to Establish a Secure IPSec Tunnel

### Step 1: Create an IPSec Policy

1. Click the **Start** button, select **Run**, and type **secpol.msc** in the **Open** field. The Local Security Setting screen will appear as shown in Figure C-1.
2. Right-click **IP Security Policies on Local Computer**, and click **Create IP Security Policy**.
3. Click the **Next** button, and then enter a name for your policy (for example, **to\_router**). Then, click **Next**.
4. Deselect the **Activate the default response rule** check box, and then click the **Next** button.
5. Click the **Finish** button, making sure the **Edit** check box is checked.

### Step 2: Build Filter Lists

#### Filter List 1: win->router

1. In the new policy's properties screen, verify that the **Rules** tab is selected, as shown in Figure C-2. Deselect the **Use Add Wizard** check box, and click the **Add** button to create a new rule.
2. Make sure the **IP Filter List** tab is selected, and click the **Add** button. (See Figure C-3.)

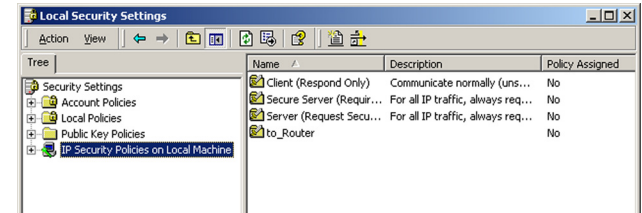


Figure C-1: Password Screen



**NOTE:** The references in this section to “win” are references to Windows 2000 and XP.

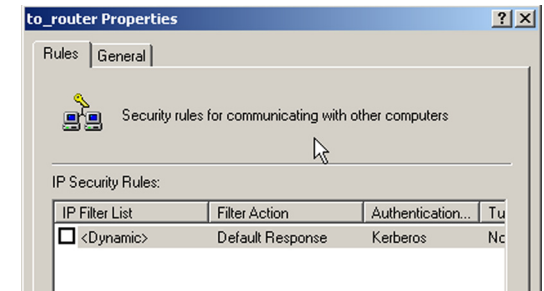


Figure C-2: Setup Tab

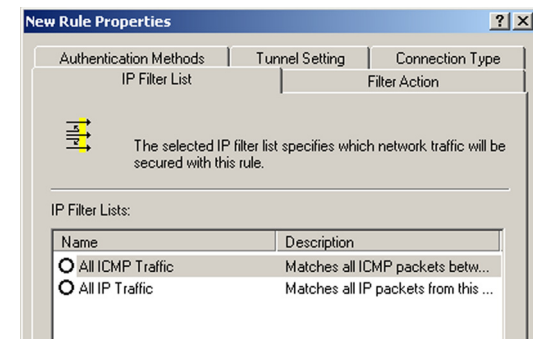


Figure C-3: IP Filter List Tab

3. The IP Filter List screen should appear, as shown in Figure C-4. Enter an appropriate name, such as win->router, for the filter list, and de-select the Use Add Wizard check box. Then, click the Add button.
4. The Filters Properties screen will appear, as shown in Figure C-5. Select the Addressing tab. In the Source address field, select My IP Address. In the Destination address field, select A specific IP Subnet, and fill in the IP Address: 192.168.1.0 and Subnet mask: 255.255.255.0. (These are the Router's default settings. If you have changed these settings, enter your new values.)
5. If you want to enter a description for your filter, click the Description tab and enter the description there.
6. Click the OK button. Then, click the OK (for Windows XP) or Close (for Windows 2000) button on the IP Filter List window.

Filter List 2: router=>win

7. The New Rule Properties screen will appear, as shown in Figure C-6. Select the IP Filter List tab, and make sure that win -> router is highlighted. Then, click the Add button.

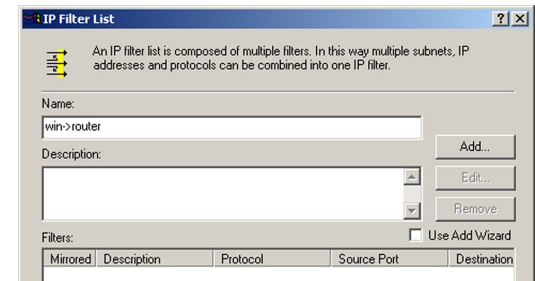


Figure C-4: IP Filter List

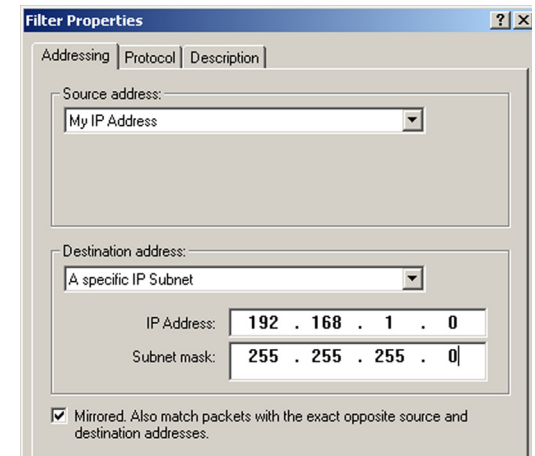


Figure C-5: Filters Properties

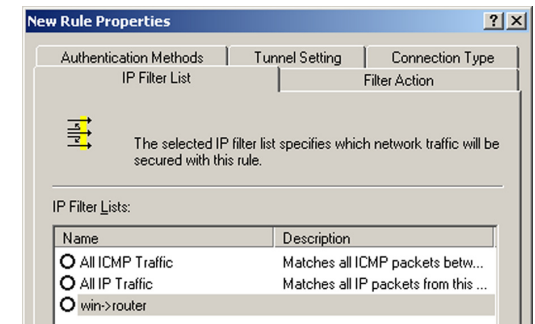


Figure C-6: New Rule Properties

8. The IP Filter List screen should appear, as shown in Figure C-7. Enter an appropriate name, such as router->win for the filter list, and de-select the Use **Add Wizard** check box. Click the **Add** button.
9. The Filters Properties screen will appear, as shown in Figure C-8. Select the Addressing tab. In the Source address field, select **A specific IP Subnet**, and enter the IP Address: 192.168.1.0 and Subnet mask: 255.255.255.0. (Enter your new values if you have changed the default settings.) In the Destination address field, select My IP Address.
10. If you want to enter a description for your filter, click the Description tab and enter the description there.
11. Click the **OK** button and the New Rule Properties screen should appear with the IP Filter List tab selected, as shown in Figure C-9. There should now be a listing for “router -> win” and “win -> router”. Click the **OK** (for WinXP) or **Close** (for Win2000) button on the IP Filter List window.

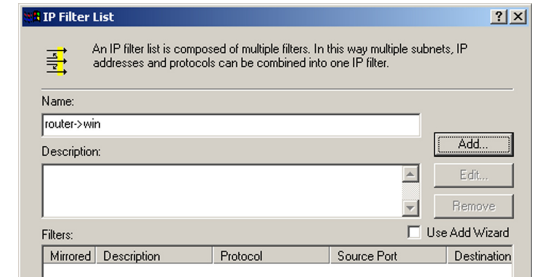


Figure C-7: IP Filter List

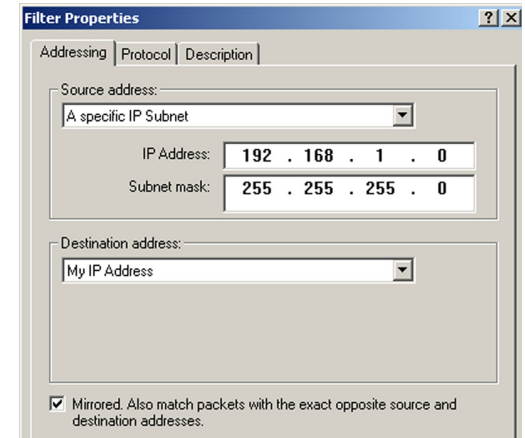


Figure C-8: Filters Properties

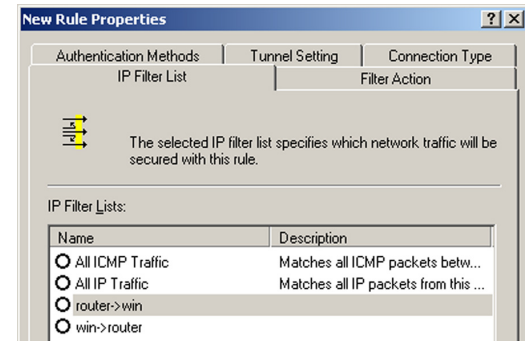


Figure C-9: New Rule Properties

### Step 3: Configure Individual Tunnel Rules

#### Tunnel 1: win->router

1. From the IP Filter List tab, shown in Figure C-10, click the filter list win->router.
2. Click the **Filter Action** tab (as in Figure C-11), and click the filter action Require Security radio button. Then, click the Edit button.
3. From the Security Methods tab, shown in Figure C-12, verify that the Negotiate security option is enabled, and deselect the **Accept unsecured communication**, but always respond using IPSec check box. Select **Session key Perfect Forward Secrecy**, and click the **OK** button.

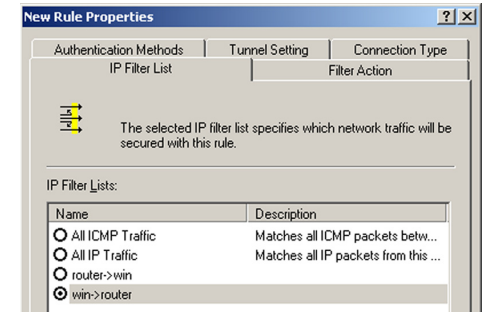


Figure C-10: IP Filter List Tab

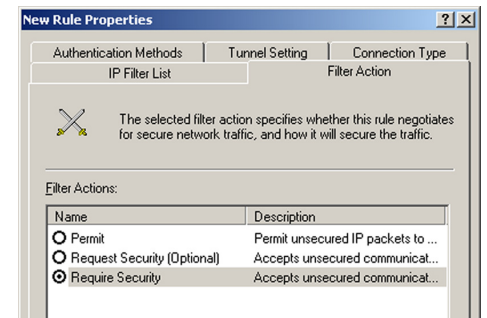


Figure C-11: Filter Action Tab

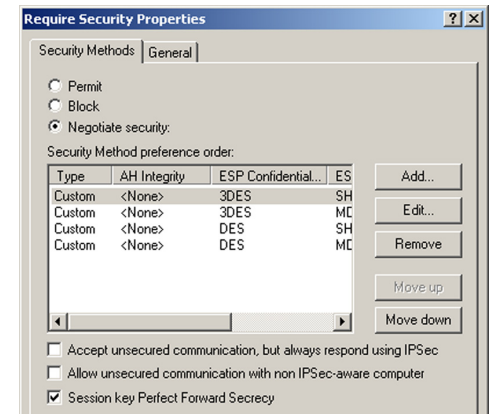


Figure C-12: Security Methods Tab

4. Select the **Authentication Methods** tab, shown in Figure C-13, and click the **Edit** button.
5. Change the authentication method to **Use this string to protect the key exchange (preshared key)**, as shown in Figure C-14, and enter the preshared key string, such as XYZ12345. Click the **OK** button.
6. This new Preshared key will be displayed in Figure C-15. Click the **OK** or **Close** button to continue.

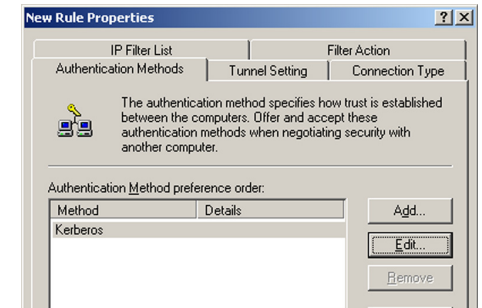


Figure C-13: Authentication Methods

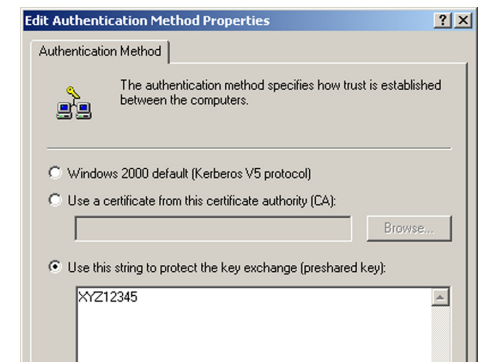


Figure C-14: Preshared Key

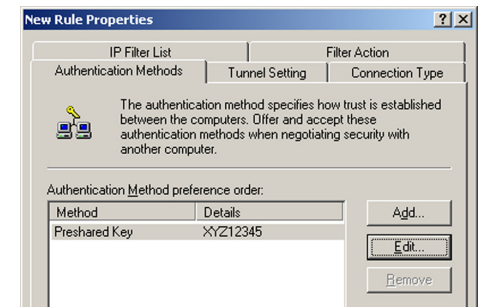


Figure C-15: New Preshared Key

7. Select the **Tunnel Setting** tab, shown in Figure C-16, and click **The tunnel endpoint is specified by this IP Address** radio button. Then, enter the Router's WAN IP Address.
8. Select the **Connection Type** tab, as shown in Figure C-17, and click **All network connections**. Then, click the **OK** or **Close** button to finish this rule.

Tunnel 2: router->win

9. In the new policy's properties screen, shown in Figure C-18, make sure that "win -> router" is selected and deselect the **Use Add Wizard** check box. Then, click the **Add** button to create the second IP filter.

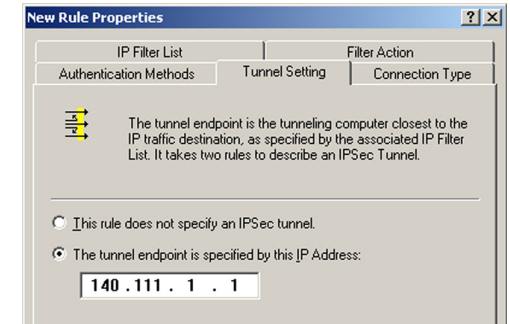


Figure C-16: Tunnel Setting Tab

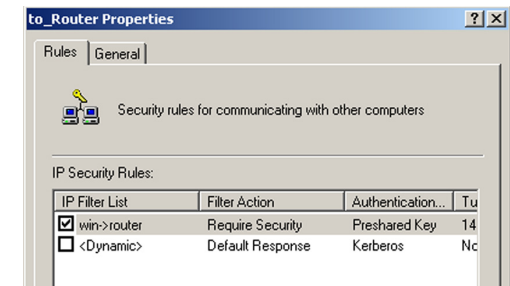


Figure C-17: Connectin Type Tab

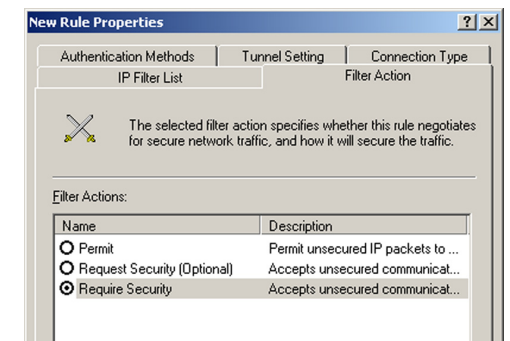
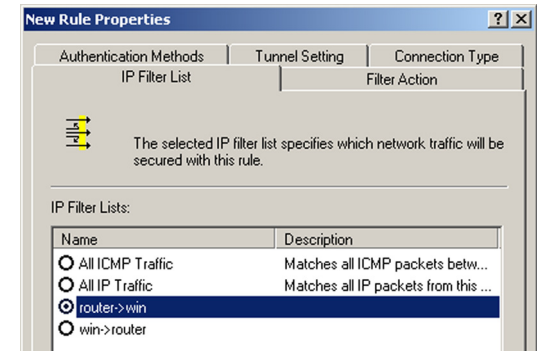
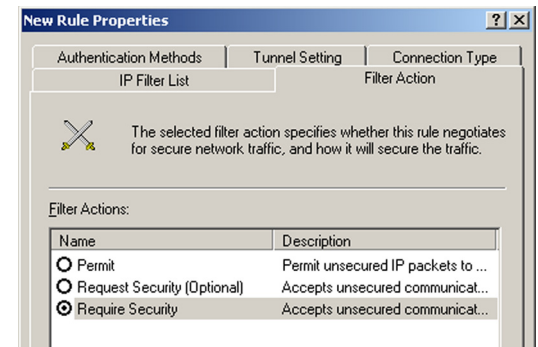


Figure C-18: Properties Screen

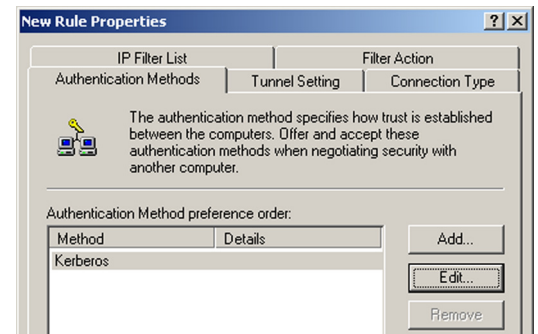
10. Go to the **IP Filter List** tab, and click the filter list **router->win**, as shown in Figure C-19.
11. Click the **Filter Action** tab, and select the filter action **Require Security**, as shown in Figure C-20. Then, click the **Edit** button.
12. Click the **Authentication Methods** tab, and verify that the authentication method Kerberos is selected, as shown in Figure C-21. Then, click the **Edit** button.



**Figure C-19: IP Filter List Tab**

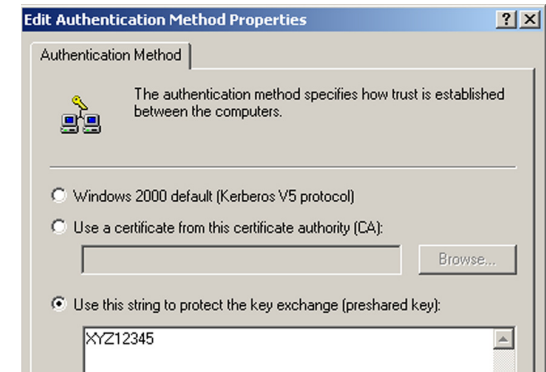


**Figure C-20: Filter Action Tab**

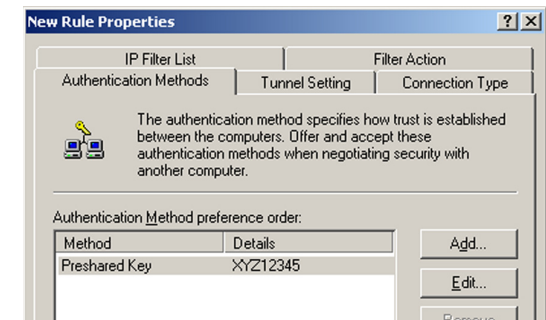


**Figure C-21: Authentication Methods Tab**

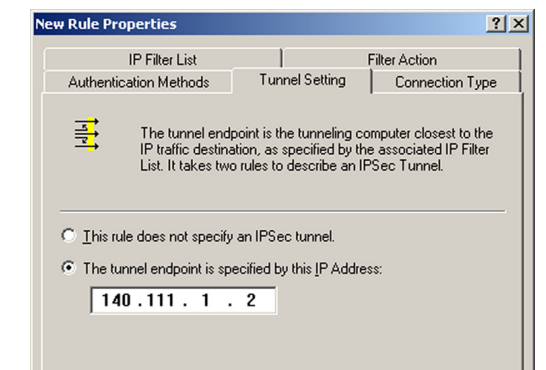
13. Change the authentication method to **Use this string to protect the key exchange (preshared key)**, and enter the preshared key string, such as XYZ12345, as shown in Figure C-22. (This is a sample key string. Yours should be a key that is unique but easy to remember.) Then click the **OK** button.
14. This new Preshared key will be displayed in Figure C-23. Click the **OK** button to continue.
15. From the Tunnel Setting tab, shown in Figure C-24, click the radio button for **The tunnel endpoint is specified by this IP Address**, and enter the Windows 2000/XP computer's IP Address.



**Figure C-22: Preshared Key**



**Figure C-23: New Preshared Key**



**Figure C-24: Tunnel Setting Tab**

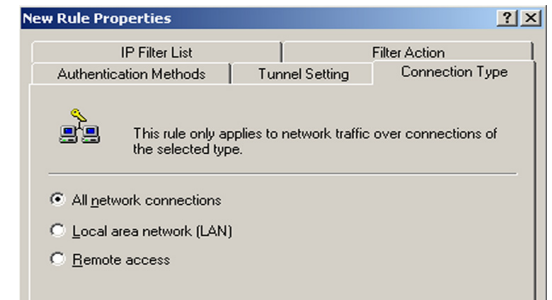


16. Click the **Connection Type** tab, shown in Figure C-25, and select **All network connections**. Then click the **OK** (for Windows XP) or **Close** (for Windows 2000) button to finish.

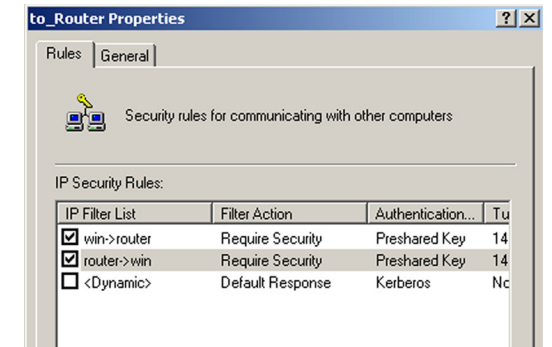
17. From the Rules tab, shown in Figure C-26, click the **OK** button to return to the secpol screen.

#### Step 4: Assign New IPSec Policy

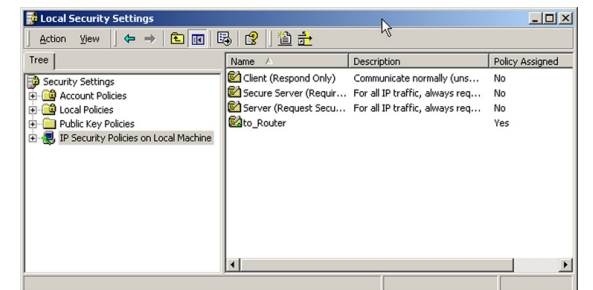
In the IP Security Policies on Local Computer window, shown in Figure C-27, right-click the policy named `to_router`, and click **Assign**. A green arrow appears in the folder icon.



**Figure C-25: Connection Type**



**Figure C-26: Rules**



**Figure C-27: Local Computer**

## Step 5: Create a Tunnel Through the Web-Based Utility

1. Open your web browser, and enter **192.168.1.1** in the Address field. Press the **Enter** key.
2. When the User name and Password field appears, enter the default the user name and password **admin**. Press the **Enter** key.
3. From the Setup tab, click the **VPN** tab.
4. From the VPN tab, shown in Figure C-28, select the tunnel you wish to create in the Select Tunnel Entry drop-down box. Then click **Enabled**. Enter the name of the tunnel in the Tunnel Name field. This is to allow you to identify multiple tunnels and does not have to match the name used at the other end of the tunnel.
5. Enter the IP Address and Subnet Mask of the local VPN Router in the Local Secure Group fields. To allow access to the entire IP subnet, enter 0 for the last set of IP Addresses. (e.g. 192.168.1.0).
6. Enter the IP Address and Subnet Mask of the VPN device at the other end of the tunnel (the remote VPN Router or device with which you wish to communicate) in the Remote Security Gateway fields.
7. Select from two different types of encryption: DES or 3DES (3DES is recommended because it is more secure). You may choose either of these, but it must be the same type of encryption that is being used by the VPN device at the other end of the tunnel. Or, you may choose not to encrypt by selecting Disable.
8. Select from two types of authentication: MD5 and SHA (SHA is recommended because it is more secure). As with encryption, either of these may be selected, provided that the VPN device at the other end of the tunnel is using the same type of authentication. Or, both ends of the tunnel may choose to Disable authentication.
9. Select the Key Management. Select Auto (IKE) and enter a series of numbers or letters in the Pre-shared Key field. Check the box next to PFS (Perfect Forward Secrecy) to ensure that the initial key exchange and IKE proposals are secure. You may use any combination of up to 24 numbers or letters in this field. No special characters or spaces are allowed. In the Key Lifetime field, you may optionally select to have the key expire at the end of a time period of your choosing. Enter the number of seconds you'd like the key to be useful, or leave it blank for the key to last indefinitely.
10. Click the **Save Settings** button to save these changes.

Your tunnel should now be established.



Figure C-28: VPN Tab