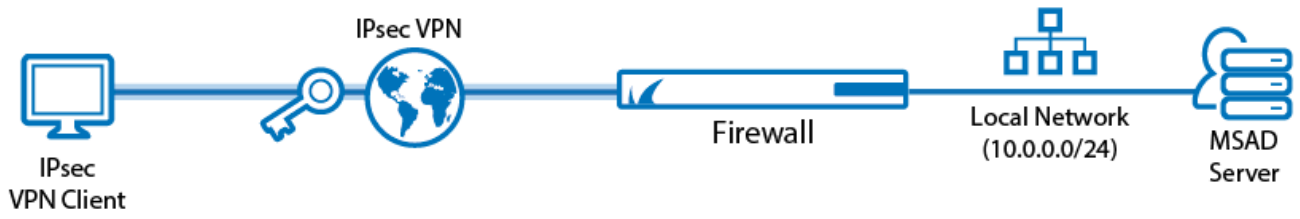
Example - Client-to-Site IKEv2 IPsec VPN with Username/Password Authentication

https://campus.barracuda.com/doc/96026126/

Use an IPsec IKEv2 client-to-site VPN to let mobile workers connect securely to your Barracuda CloudGen Firewall with a standard compliant IKEv2 VPN client.



Supported VPN Clients

Although any standard-compliant IPsec IKEv2 client should be able to connect via IPsec, Barracuda Networks recommends using the following clients:

- Windows 8.1/Windows 10 native IKEv2 IPsec VPN client
- Windows 10 Mobile 10.0.14393 or newer
- Native Android IPsec VPN Client

Before You Begin

- Set up the VPN certificates for external CA. For more information, see How to Set Up External CA VPN Certificates.
- Configure MS-Chapv2 authentication. For more information, see How to Configure MS-CHAP Authentication. For RADIUS-based authentication, this step is not required.
- Identify the subnet and gateway address to use for the VPN service in your network (e.g., `192.168.6.0/24` *and* `192.168.6.254`).
- Identify the IPv4 and IPv6 addresses the VPN service is listening on. If you are using a dynamic WAN IP, see How to Configure VPN Access via a Dynamic WAN IP Address.

Step 1. Prepare VPN Certificates

1. Get the corresponding root certificate (or create a new one) that should be used to issue a VPN server certificate.
   The root certificate must be considered as trusted on the client device (e.g., by importing it into the Trusted Root Certification Authorities Certificate Store on Windows).
2. Create a new VPN server certificate by using the CA from above with the following requirements:
   - Hostname of the VPN server that is entered on the client must be contained in the subjectAltName field of the certificate.
   - Required Key Usage fields:
     - Non-Repudiation, Digital Signature, Key Encipherment
   - Required EKU fields:
     - IP Security IKE Intermediate / IP Security End Identity in xCA (OID 1.3.6.1.5.5.8.2.2)
     - Server Authentication (OID 1.3.6.1.5.5.7.3.1)

You should now have a root certificate in CER or PEM format and a VPN certificate in PKCS12, CRT, or PEM format.

Step 2. Add Certificates to VPN Settings

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > VPN Settings**.
2. Click **Lock**.
3. In the left menu, select **Root Certificates**.
4. Right-click the table and click **Import CER from File** or **Import PEM from File**, depending on the format of your root certificate.
5. Select and upload the root certificate created in Step 1.
6. In the left menu, select **Service Certificates**.
7. Right-click the table and click the **Import Certificate** menu item matching your VPN server certificate.
8. Select and upload the VPN certificate created in Step 1.
9. In the left menu, select **Service Keys**.
10. Right-click the table and select **New Key**.
11. Enter a **Key Name**.
12. Select the **Key Length**.
13. Click **OK**.
14. Click **Send Changes** and **Activate**.

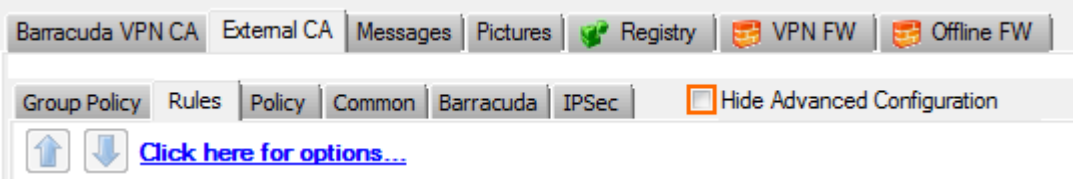
Step 3. Create the VPN Client Network

All VPN clients will receive an IP address from the VPN client network with a static gateway. You can choose the gateway IP address freely from the subnet.

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > VPN Settings**.
2. Click **Lock**
3. In the left menu, select **Client Networks**.
4. Right-click the table and select **New Client Network**. The **Client Network** window opens.
5. In the **Client Network** window, configure the following settings:
   - **Advertise Route** – Select check box to include the VPN network in the OSPF or BGP network.
   - **Name** – Enter a descriptive name for the network.
   - **Network Address** – Enter the base network address for the VPN clients.
   - **Gateway** – Enter the gateway network address.
   - **Type** – Select **routed (Static Route)**. VPN clients are assigned an address via DHCP (fixed or dynamic) in a separate network reserved for the VPN. A static route on the firewall leads to the local network.
6. Click **OK**.
7. Click **Send Changes** and **Activate**.

Step 4. Configure IKEv2 Phase 1 and 2

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Client to Site**.
2. Click **Lock**.
3. Click the **External CA** tab.
4. Clear the **Hide Advanced Configuration** check box.

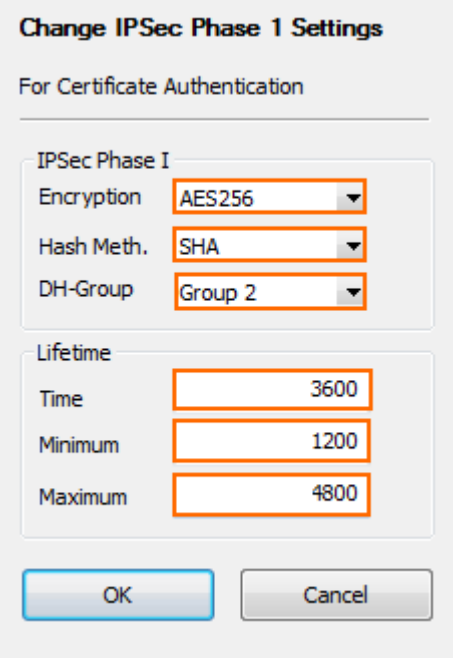


5. Click the **IPsec** sub-tab.

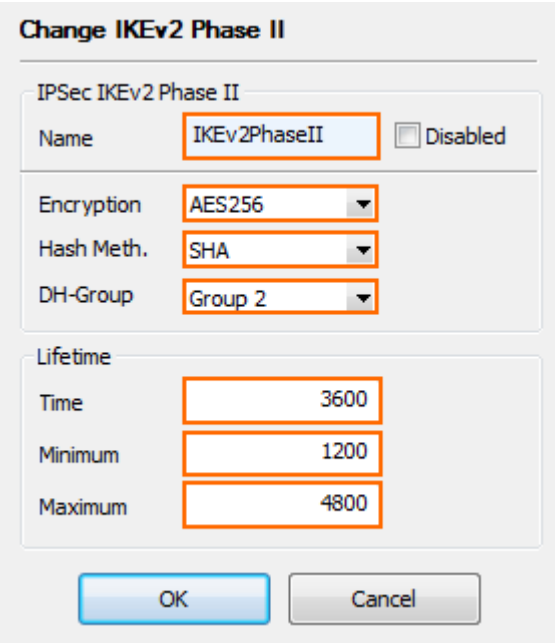
6. In the **IKEv2 Phase 1 (default)** section, double-click on the Phase 1 encryption settings. The **Change IPsec Phase 1** window opens.
7. Configure the **IPsec Phase I** encryption settings:
   - **Encryption** – Select **AES256**.
   - **Hash Meth** – Select **SHA**.
   - **DH-Group** – Select **Group 2**.
8. (optional) Set the IPsec Phase 1 **Lifetime** settings:

- **Time** – Enter 3600
- **Minimum** – Enter 1200
- **Maximum** – Enter 4800

9. Click **OK.**



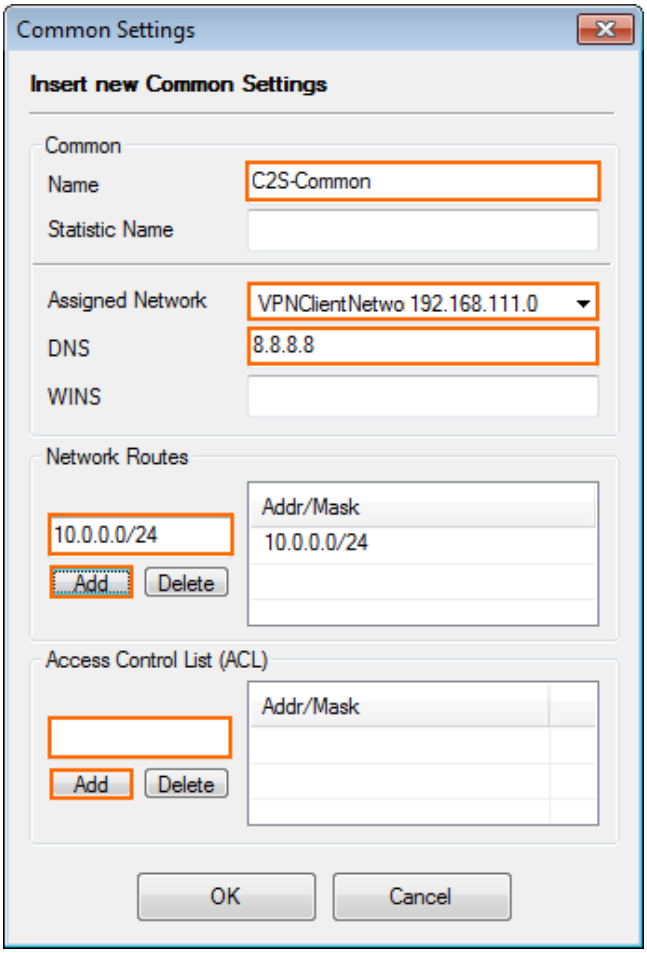
10. Right-click in the **IKEv2 Phase 2** table and select **New IKEv2 Phase II**. The **IPsec IKEv2 Phase II** windows opens.
11. Enter a **Name**.
12. Configure the IPsec phase 2 encryption settings:
    - **Encryption** – Select **AES256**.
    - **Hash Meth** – Select **SHA**.
    - **DH-Group** – Select **Group 2**.
13. (optional) Set the IPsec Phase 2 **Lifetime** settings:
    - **Time** – Enter 3600
    - **Minimum** – Enter 1200
    - **Maximum** – Enter 4800
14. Click **OK**.



15. Click **Send Changes** and **Activate**.

Step 5. Configure VPN Common Settings

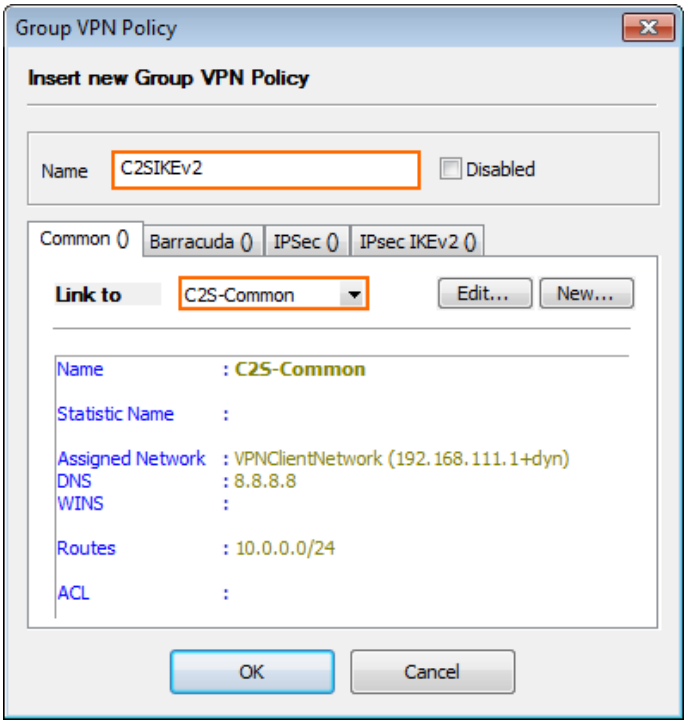
1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Client to Site**.
2. Click **Lock**.
3. Click the **External CA** tab.
4. Click the **Common** sub-tab.
5. Right-click the table and select **New Common**. The **Common Settings** window opens.
6. Enter a **Name**.
7. (optional) Enter a **Statistic Name**. For more information, see Statistics.
8. From the **Assigned Network** drop-down list, select the VPN network created in Step 3.
9. (optional) Enter the **DNS** server IP address.
10. (optional) Enter the **WINS** server IP address.
11. Enter the **Network Routes** that should be sent through the VPN tunnel and click **Add**. To send all traffic through the VPN tunnel, enter `0.0.0.0/0`.
12. (optional) To limit the source from which VPN connections are accepted, add the IP addresses or subnets to the **Access Control List (ACL)**.



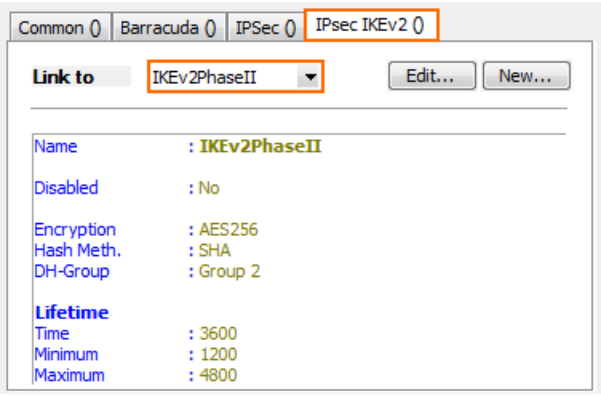
13. Click **OK**.
14. Click **Send Changes** and **Activate**.

Step 6. Configure a VPN Group Policy

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Client to Site**.
2. Click **Lock**.
3. Click the **External CA** tab.
4. Click the **Policy** sub-tab.
5. Right-click in the table and select **New Policy**. The **Group VPN Policy** window opens.
6. Enter a **Name**.
7. In the **Common** tab, select the VPN common settings you created in Step 5 from the **Link to** drop-down list.



8. Click the **IPsecIKEv2** tab.
9. Select the IPsec IKEv2 Phase 2 settings from the **Link to** drop-down list.



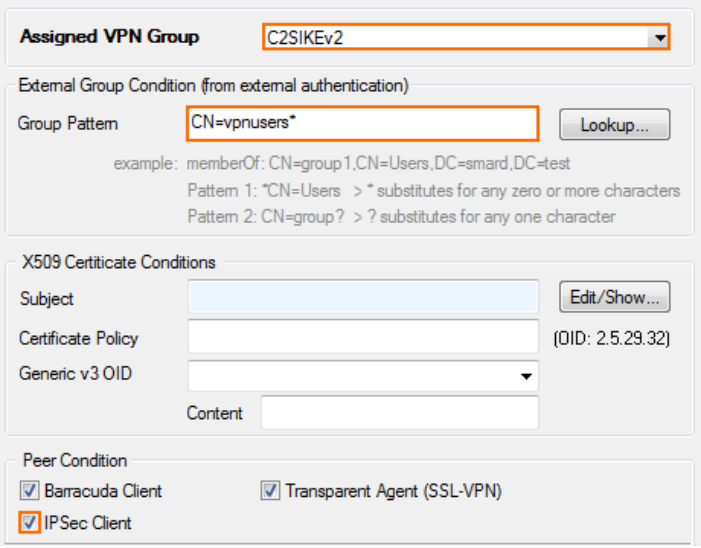
10. Click **OK**.
11. Click **Send Changes** and **Activate**.

Step 7. Configure VPN Rules

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Client to Site**.
2. Click **Lock**.
3. Click the **External CA** tab.
4. Click the **Rules** sub-tab.
5. Right-click in the table and select **New Rule**. The **Group Policy Condition** window opens.
6. From the **Assigned VPN Group** list, select the group VPN policy created in Step 6.
7. (external authentication only) Enter a **Group Pattern** to define the groups that will be assigned

the policy. E.g.: `CN=vpnusers*`

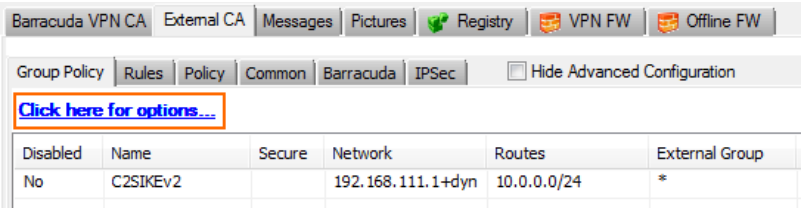
8. In the **Peer Condition** section, verify that the **IPsec Client** check box is selected.
9. (optional) In the **X509 Certificate Conditions** section, enter matching conditions for the X.509 client certificates.



10. Click **OK**.
11. Click **Send Changes** and **Activate**.

Step 8. Configure Group VPN Settings

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Client to Site**.
2. Click **Lock**.
3. Click the **External CA** tab.
4. Click the **Click here for options** link.



5. From the **Authentication Scheme** drop-down list, select **Default Authentication Scheme**.
6. From the **Default Authentication Scheme** drop-down list, select **msad** or **radius**.
7. From the **Server** drop-down list, select the VPN server certificate uploaded in Step 2.
8. From the **Server Protocol Key** drop-down list, select the service certificate created in Step 2.
9. From the **Used Root Certificates** drop-down list, select the root certificate uploaded in Step 2.
10. Click **OK**.
11. Click **Send Changes** and **Activate**.

Step 9. Add Access Rules

Add an access rule to connect your client-to-site VPN to your network.

For more information, see How to Configure an Access Rule for a Client-to-Site VPN.

Monitoring VPN Connections

On the **VPN > Client-to-Site** page, you can monitor VPN connections. The page lists all available client-to-site VPN tunnels. In the **Tunnel** column, the color of the square indicates the status of the VPN:

- **Blue** – The client is currently connected.
- **Green** – The VPN tunnel is available, but currently not in use.
- **Grey** – The VPN tunnel is currently disabled. To enable the tunnel, right-click it and select **Enable Tunnel**.

For more information on the **VPN > Client-to-Site** page, see VPN Tab.

Troubleshooting

To troubleshoot VPN connections, see the `srv_<SERVER_NAME>_<VPN_SERVICE_NAME>_IKEv2.log` log file. For more information, see LOGS Tab.

Next Step

Configure the remote access clients to connect to the client-to-site VPN.

For more information, see Remote Access Clients.

Figures

1. Client2SiteIPsecVPN.png
2. C2S_IKEv2_02b.png
3. C2S_IKEv2_03.png
4. C2S_IKEv2_04.png
5. C2S_IKEv2_05.png
6. C2S_IKEv2_06.png
7. C2S_IKEv2_07.png
8. C2S_IKEv2_08.png
9. C2S_IKEv2_09.png
10. C2S_IKEv2_11.png