

## Example - Client-to-Site IKEv1 IPsec VPN with PSK

<https://campus.barracuda.com/doc/96026125/>

To let users access a client-to-site IPsec VPN without having to install X.509 certificates on their client devices, you can create an IPsec client-to-site VPN group policy using a pre-shared key (PSK). For users with mobile devices that are not managed by a mobile device management platform (MDM), using a PSK is more convenient than having to install client certificates for authentication. To allow multiple concurrent client-to-site connections for a single user, an Advanced Remote Access subscription is required. You can connect from any IPv4 or IPv6 address, as long as an external IPv4 and IPv6 address are configured as a service IP address for the VPN service.



### Supported VPN Clients

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

- [CudaLaunch](#) via VPN templates in SSL VPN. For more information, see [How to Configure VPN Group Policies in the SSL VPN](#).
- [Native iOS IPsec VPN Client](#)

Starting with version 12, Android no longer supports IKEv1. For installation using IKEv2, see [Native Android IPsec VPN Client](#).

### Before You Begin

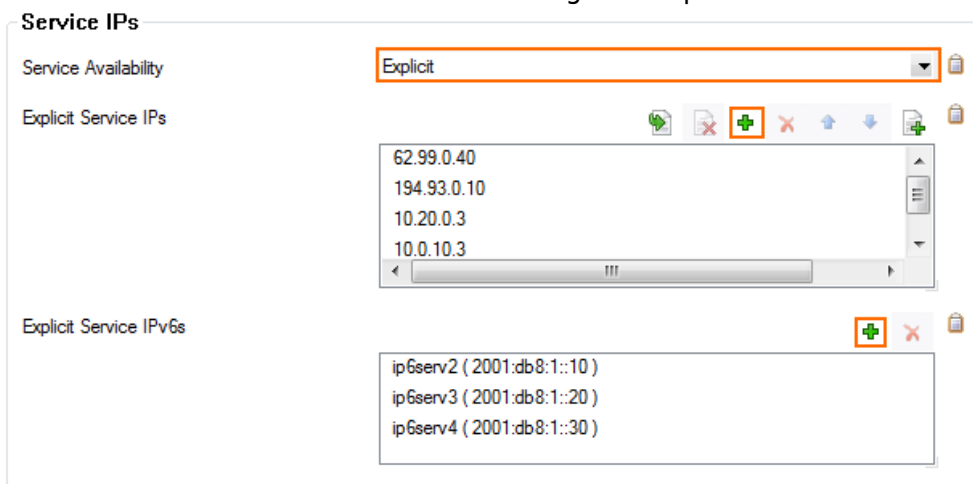
- Set up the VPN certificates for External CA. For more information, see [How to Set Up External CA VPN Certificates](#).
- Configure an external or local authentication service. For more information, see [Authentication](#).
- Identify the subnet (static route) or a range in a local network (proxy ARP) to be used for the VPN clients.
- Identify the IPv4 and IPv6 addresses the VPN service is listening on. If you are using a dynamic

IPv4 WAN, see [How to Configure VPN Access via a Dynamic WAN IP Address](#).

## Step 1. Configure the VPN Service Listeners

Configure the IPv4 and IPv6 listener addresses for the VPN service.

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Service Properties**.
2. Click **Lock**.
3. From the **Service Availability** list, select the source for the IPv4 listeners of the VPN service.
  - When selecting **Explicit**, click **+** for each IP address and enter the IPv4 addresses in the **Explicit Service IPs** list.
4. Click **+** to add an entry to the **Explicit IPv6 Service IPs**.
5. Select an IPv6 listener from the list of configured explicit IPv6 service IP addresses.



6. Click **Send Changes** and **Activate**.

## Step 2. Configure the Client Network, Gateway, and PSK Key

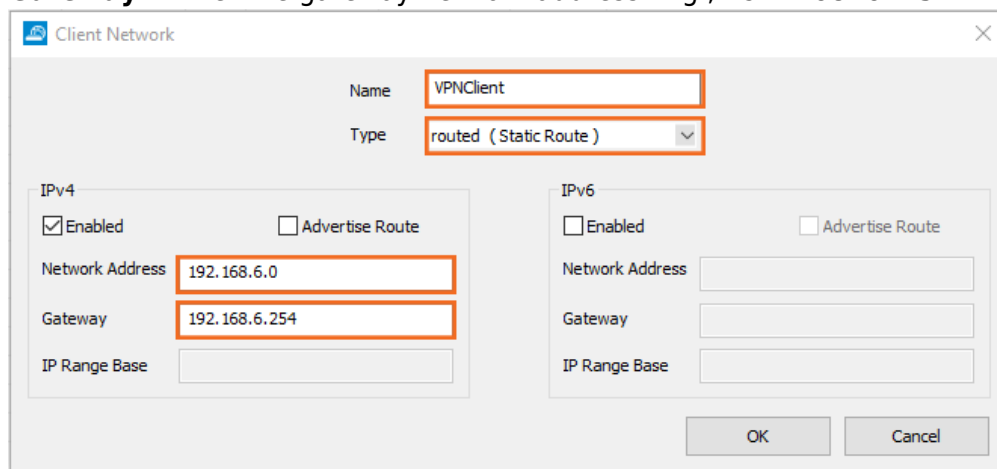
1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN > VPN Settings**.
2. Click **Lock**.
3. Verify that the **Default Server Certificate** and **Private key** are both valid (green). If the **Default Server Certificate** and **Private key** are not valid, see [How to Set Up Barracuda VPN CA VPN Certificates](#).
4. In the left menu, select **IPSec**.
5. In the **IKEv1** section, enter the **Pre-shared key**. E.g., pre\$haredKey

**IKEv1**

Timeout	<input type="text" value="30"/>
Tunnel check interval [s]	<input type="text" value="5"/>
Dead Peer Detection Interval [s]	<input type="text" value="5"/>
Use IPsec dynamic IPs	<input type="checkbox"/>
IPsec Log Level	<input type="text" value="3"/>
Pre-shared key (PSK)	<input type="text" value="*****"/>

## 6. Configure the client network.

1. In the left menu, select **Client Networks**.
2. Right-click the table and select **New Client Network**. The **Client Network** window opens.
3. In the **Client Network** window, configure the following settings:
  - **Name** – Enter a descriptive name for the network.
  - **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.
  - **Network Address** – Enter the base network address for the VPN clients. E.g., 192.168.6.0
  - **Gateway** – Enter the gateway network address. E.g., 192.168.6.254



The screenshot shows the 'Client Network' configuration window. The 'Name' field is set to 'VPNClient'. The 'Type' dropdown is set to 'routed (Static Route)'. Under the 'IPv4' section, 'Enabled' is checked, 'Advertise Route' is unchecked, 'Network Address' is '192.168.6.0', and 'Gateway' is '192.168.6.254'. The 'IPv6' section is disabled. 'OK' and 'Cancel' buttons are at the bottom right.

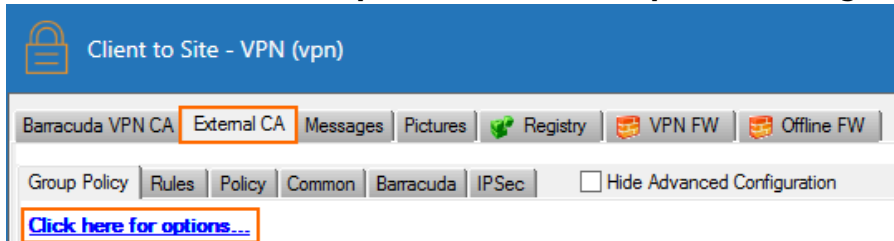
7. Click **OK**.
8. Click **Send Changes** and **Activate**.

**Step 3. Configure VPN Group Match Settings**

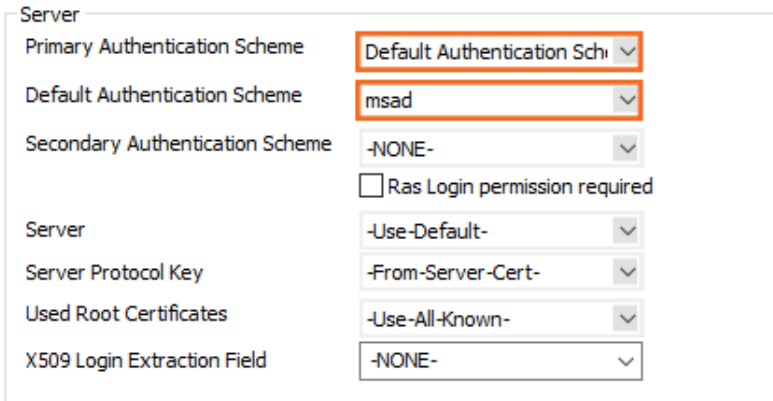
Configure the global authentication settings for VPN tunnels using an external X.509 certificate and group configurations.

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. The **Group VPN Settings** window opens.



5. Select the **Authentication Scheme**:
  - **Default Authentication Scheme** - The default authentication scheme is used for all VPN group policies.
  - **Extract from username** - The authentication scheme is appended to the username. The authentication scheme with the appended name is used with the default authentication scheme acting as a fallback if the authentication scheme name is not present on the firewall. E.g., user1@msad1 or user2@domain.com@HQLdap.
6. Select the **Default Authentication Scheme** from the drop-down list. This authentication scheme must be configured on box level of the firewall.



Server	
Primary Authentication Scheme	Default Authentication Scheme
Default Authentication Scheme	msad
Secondary Authentication Scheme	-NONE-
	<input type="checkbox"/> Ras Login permission required
Server	-Use-Default-
Server Protocol Key	-From-Server-Cert-
Used Root Certificates	-Use-All-Known-
X509 Login Extraction Field	-NONE-

7. Click **OK**.
8. Click **Send Changes** and **Activate**.

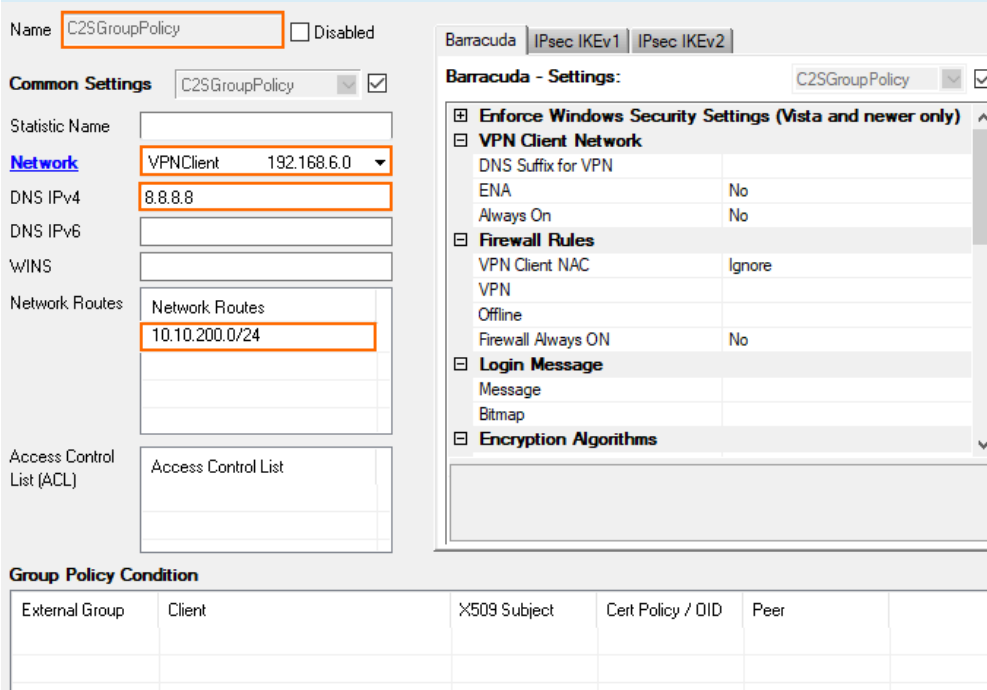
## Step 4. Create a VPN Group Policy

The **VPN Group Policy** specifies the network IPsec settings. You can create group patterns to require users to meet certain criteria, as provided by the group membership of the external authentication server (e.g., CN=vpnusers\*). You can also define conditions to be met by the certificate (e.g., O(Organization) must be the company name).

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > VPN-Service > Client to Site**.
2. Click **Lock**.
3. Click the **External CA** tab, and then click the **Group Policy** tab.

4. Right-click the table and select **New Group Policy**. The **Edit Group Policy** window opens.
5. Enter a name for the **Group Policy**.
6. From the **Network** list, select the VPN client network.
7. In the **Network Routes** table, enter the network that must be reachable through the VPN connection. For example, 10.10.200.0/24

To route all traffic through the client-to-site VPN tunnel, add a 0.0.0.0/0 network route.



Name: C2SGroupPolicy ☐ Disabled

**Common Settings** C2SGroupPolicy ☒

Statistic Name:

**Network** VPNClient 192.168.6.0

DNS IPv4: 8.8.8.8

DNS IPv6:

WINS:

**Network Routes**

Network Routes
10.10.200.0/24

**Access Control List (ACL)**

Access Control List

**Barracuda - Settings:** C2SGroupPolicy ☒

☒ **Enforce Windows Security Settings (Vista and newer only)**

☒ **VPN Client Network**

DNS Suffix for VPN	
ENAs	No
Always On	No

☒ **Firewall Rules**

VPN Client NAC	
VPN	Ignore
Offline	
Firewall Always ON	No

☒ **Login Message**

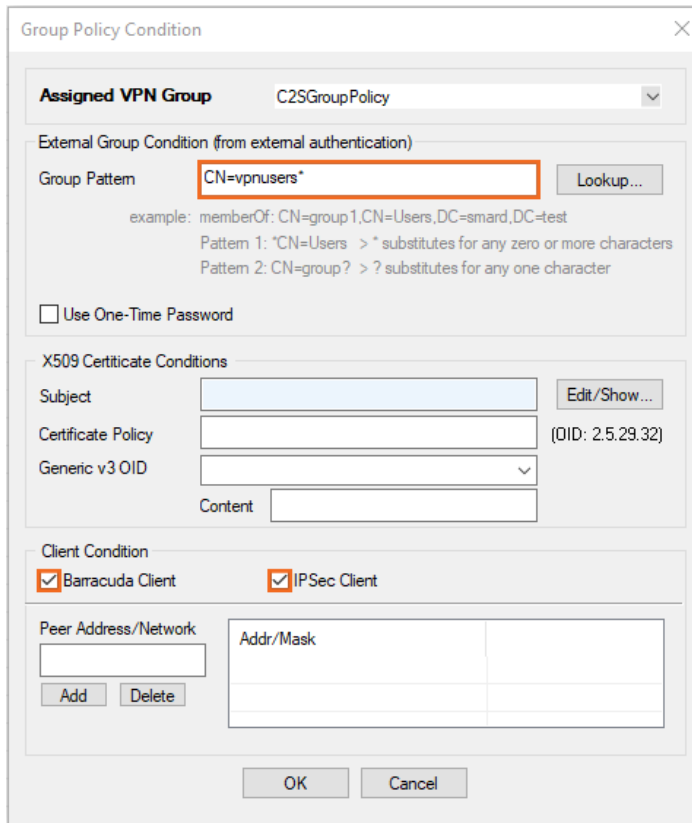
Message	
Bitmap	

☒ **Encryption Algorithms**

**Group Policy Condition**

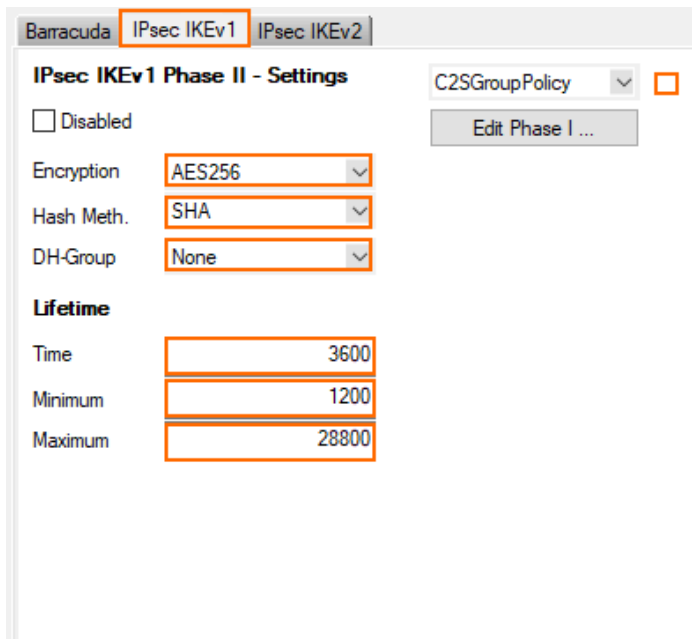
External Group	Client	X509 Subject	Cert Policy / OID	Peer	

8. Configure the group policy.
  1. Right-click the **Group Policy Condition** table and select **New Rule**. The **Group Policy Condition** window opens.
  2. In the **Group Pattern** field, define the groups that will be assigned the policy. E.g., CN=vpnusers\*
  3. In the **Peer Condition** section, verify that **IPsec Client** check box is selected.
  4. To use this group policy for SSL-VPN VPN template resources and CudaLaunch, enable **Barracuda Client**.
  5. Click **OK**.



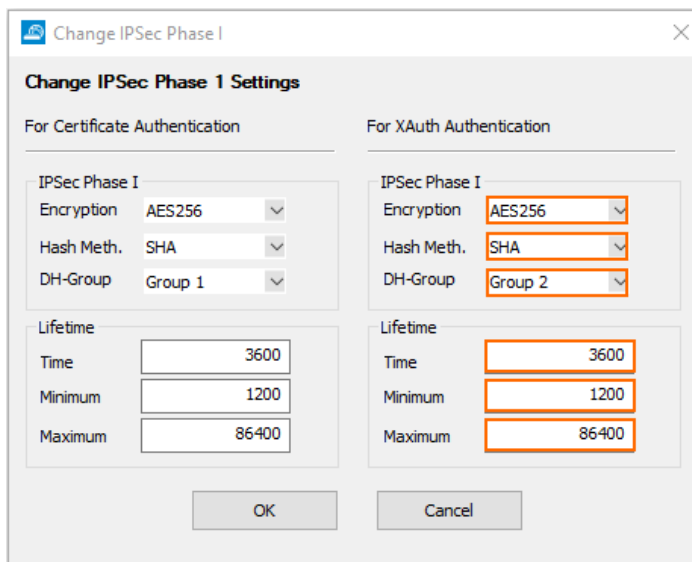
The image shows a 'Group Policy Condition' dialog box. At the top, 'Assigned VPN Group' is set to 'C2SGroupPolicy'. Under 'External Group Condition (from external authentication)', the 'Group Pattern' is 'CN=vpnusers\*' and is highlighted with an orange box. Below this, there are examples and pattern explanations. A checkbox for 'Use One-Time Password' is unchecked. The 'X509 Certificate Conditions' section has fields for 'Subject', 'Certificate Policy', and 'Generic v3 OID', with an 'Edit/Show...' button. The 'Client Condition' section has checkboxes for 'Barracuda Client' and 'IPSec Client', both of which are checked. At the bottom, there is a table for 'Peer Address/Network' with columns for 'Addr/Mask' and an empty row. 'Add' and 'Delete' buttons are to the left of the table. 'OK' and 'Cancel' buttons are at the bottom right.

9. Configure the encryption and hashing settings:
  1. Click the **IPSec** tab.
  2. Clear the check box in the top-right corner.
  3. From the **IPsec Phase II - Settings** list, select the entry that includes **(Create New)** in its name. For example, if you choose *Group Policy* as a name, the entry name is *Group Policy (Create new)*.
  4. Set the following encryption algorithm settings for Phase II:
    - **Encryption** – Select **AES256**.
    - **Hash Meth.** – Select **SHA**.
    - **DH-Group** – Select **None**.
    - **Time** – Enter 3600
    - **Minimum** – Enter 1200
    - **Maximum** – Enter 28800



5. Click **Edit IPsec Phase I** and select the encryption algorithm in the **For XAuth Authentication** section:

- **Encryption** - Select **AES256**.
- **Hash Meth.** - Select **SHA**.
- **DH-Group** - Select **Group2**.
- **Time** - Enter 3600
- **Minimum** - Enter 1200
- **Maximum** - Enter 86400



6. Click **OK**.

10. Click **OK**.

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

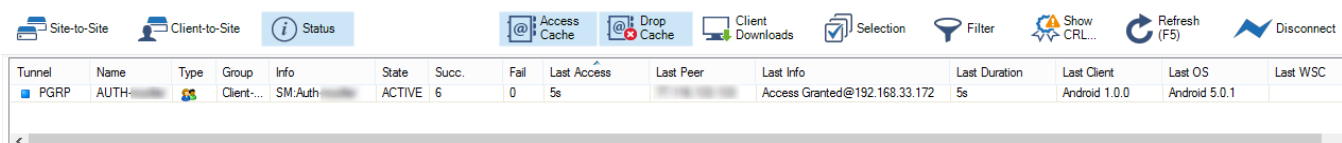
## Step 5. Add Access Rules



Add two access rules 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.



Tunnel	Name	Type	Group	Info	State	Succ.	Fail	Last Access	Last Peer	Last Info	Last Duration	Last Client	Last OS	Last WSC
	PGRP	AUTH		Client-...	SM:Auth	ACTIVE	6	0	5s		Access Granted@192.168.33.172	5s	Android 1.0.0	Android 5.0.1

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 not in use.
- **Grey** - The VPN tunnel is disabled. To enable the tunnel, right-click it and select **Enable Tunnel**.

For more information about the **VPN > Client-to-Site** page, see [VPN Tab](#).

## Troubleshooting

To troubleshoot VPN connections, see the `/VPN/VPN` and `/VPN/ike` log files. For more information, see [LOGS Tab](#).

## Next Steps

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

For more information, see [Remote Access Clients](#).



## Figures

1. Client2SiteIPsecXAUTHPSKVPN-01.png
2. vpn\_service\_listeners.png
3. PSK02.png
4. PSK03a.png
5. PSK04.png
6. PSK05v2.png
7. PSK06.png
8. PSK07.png
9. C2S\_00.png
10. C2S\_01.png
11. C2S\_status\_connected.png

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