

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

<https://campus.barracuda.com/doc/73719147/>

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. Traffic passing through the client-to-site VPN is limited to IPv4.



### 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](#)
- [Native Android IPsec VPN Client](#)

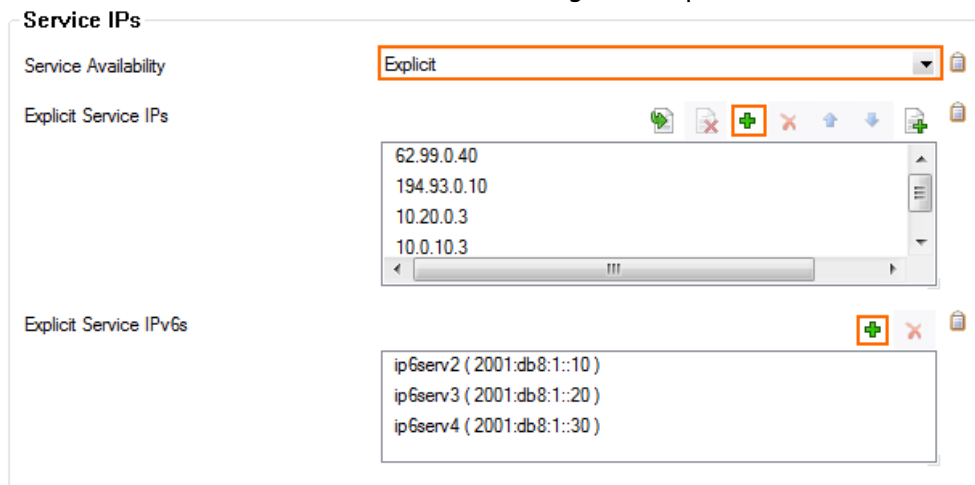
### Before You Begin

- 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 > Virtual Server > your virtual server > Assigned Services > VPN > Service Properties**.
2. Click **Lock**.
3. From the **Service Availability** list, select the source for the IPv4 listeners:
  - **First+Second-IP** – The VPN service listens on the first and second virtual server IPv4 address.
  - **First-IP** – The VPN service listens on the first virtual server IPv4 address.
  - **Second-IP** – The VPN service listens on the second virtual server IPv4 address.
  - **Explicit** – For each IP address, click + 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 virtual server 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 > Virtual Servers > your virtual server > Assigned Services > VPN > VPN Settings**.
2. Click **Lock**.
3. Verify that the default server certificate and key are valid.
  1. Right-click the **Settings** table and select **Edit Server Settings**.
  2. Verify that the **Default Server Certificate** and **Default Key** are both valid (green). If the **Default Server Certificate** and **Default Key** are not valid, see [How to Set Up VPN Certificates](#).

Default Server Certificate

Subject

Issuer

Valid (HKZECO)

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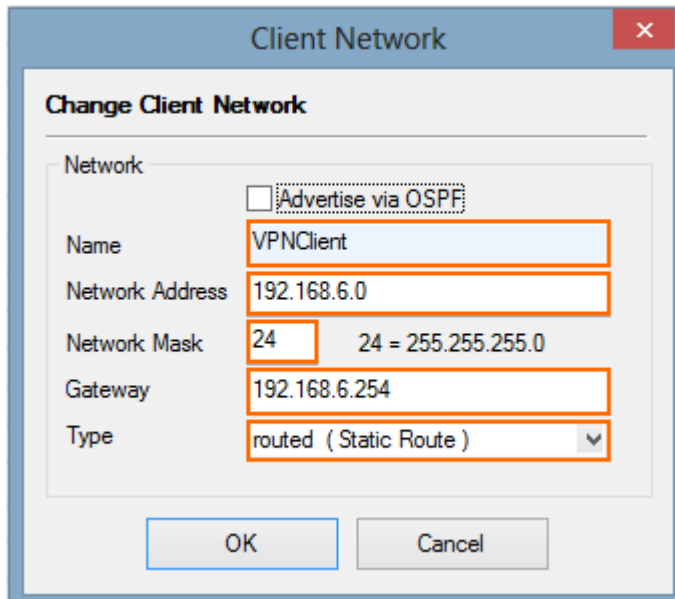
Default Key Valid (HKZECO)

4. In the **Server Settings** window, click the **Advanced** tab.
5. In the **IKE Parameter** section, enter the **IKE PSK** key. E.g., pre\$haredKey

IKE Parameters

Exchange Timeout (s)	30
Tunnel Check Interval (s)	5
Dead Peer Detection Interval (s)	5
Use IPSec dynamic IPs	No
IPSec Log Level	3
IKE PSK	<span style="border: 1px solid orange; padding: 2px;">*****</span>

6. Configure the client network.
  1. Click the **Client Networks** tab.
  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.
    - **Network Address** - Enter the base network address for the VPN clients. E.g., 192.168.6.0
    - **Network Mask** - Enter the subnet mask for the VPN client network. E.g., 24
    - **Gateway** - Enter the gateway network address. E.g., 192.168.6.254
    - **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.

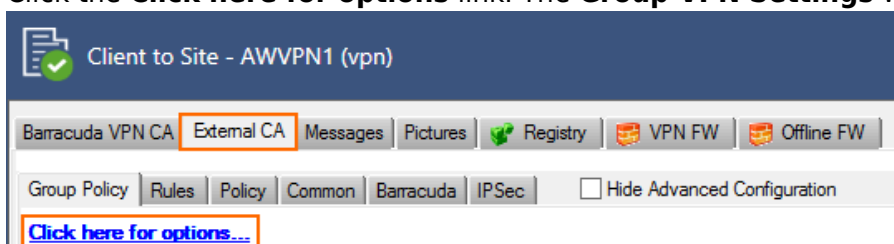


7. Click **OK**.
8. Click **Send Changes** and **Activate**.

### 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 > Virtual Servers > your virtual server > 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@HQ\ldap.
6. Select the **Default Authentication Scheme** from the drop-down list. This authentication scheme must be configured on box level of the firewall.

Server	
Authentication Scheme	Default Authentication Sch ▾
Default Authentication Scheme	msad ▾
	<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 > Virtual Servers > your virtual server > 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   Disabled

**Common Settings** C2SGroupPolicy

Statistic Name

**Network**

DNS

WINS

Network Routes

Access Control List (ACL)

**Group Policy Condition**

External Group	Client	X509 Subject	Cert Policy / OID	Peer

Barracuda  IPsec IKEv1  IPsec IKEv2

**Barracuda - Settings:** C2SGroupPolicy

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

**VPN Client Network**

DNS Suffix for VPN	
ENA	No
Always On	No

**Firewall Rules**

Enable VPN Client NAC	No
VPN	
Offline	
Firewall Always ON	No

**Login Message**

Message	
Bitmap	

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

**Assigned VPN Group** C2S-GroupPolicy

External Group Condition (from external authentication)

Group Pattern

example:memberOf: CN=group1,CN=Users,DC=smard,DC=test  
 Pattern 1: \*CN=Users > \* substitutes for any zero or more characters  
 Pattern 2: CN=group? > ? substitutes for any one character

X509 Certificate Conditions

Subject

Certificate Policy  (OID: 2.5.29.32)

Generic v3 OID

Content

Peer Condition

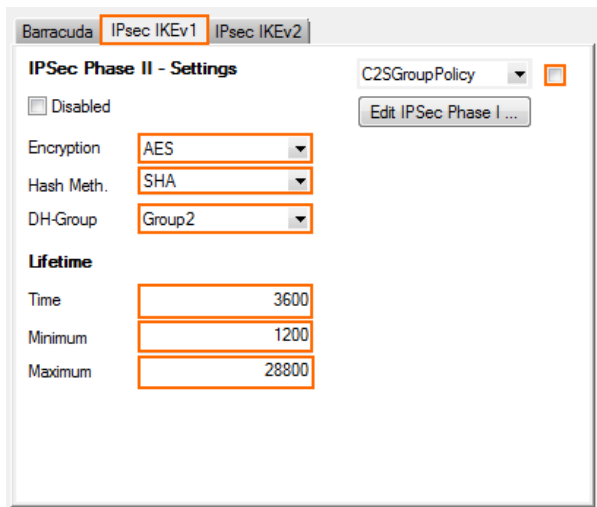
Barracuda Client  Transparent Agent (SSL-VPN)

IPsec Client

Peer Address/Network

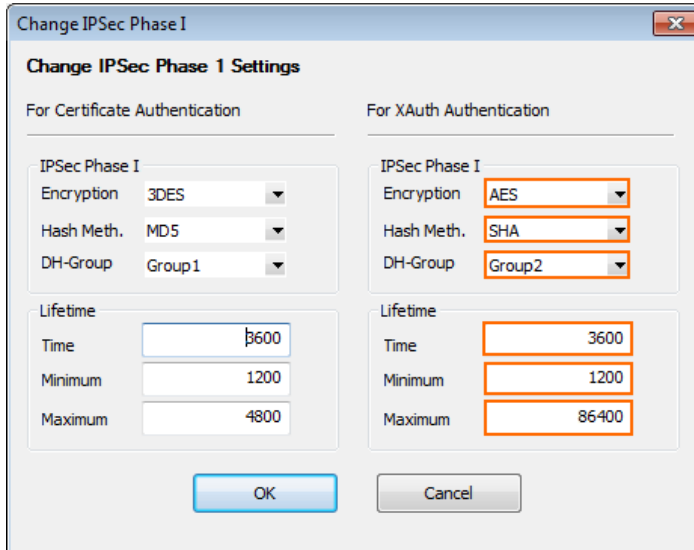
Addr/Mask	
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

13. 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 **AES**.
    - **Hash Meth.** – Select SHA for iOS and Android 5.2 or lower. Select **SHA256** for Android 6.0 to 7.1.2, and **SHA512** for Android 7.1.2 or higher.
    - **DH-Group** – Select **Group2**.
    - **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 **AES**.
- **Hash Meth.** - Select **SHA**.
- **DH-Group** - Select **Group2**.
- **Time** - Enter 3600
- **Minimum** - Enter 1200
- **Maximum** - Enter 86400



6. Click **OK**.

14. Click **OK**.

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

## Step 5. Add Access Rules

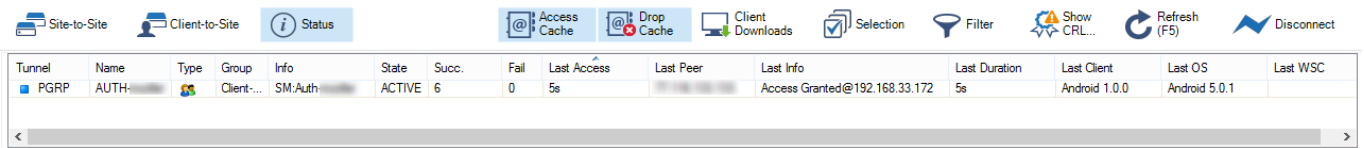
Add two access rules to connect your client-to-site VPN to your network.



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-to-Site	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 `/yourVirtualServer/VPN/VPN` and `/yourVirtualServer/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. PSK01.png
4. PSK02.png
5. PSK03.png
6. PSK04.png
7. PSK05v2.png
8. PSK06.png
9. PSK07.png
10. C2S\_00.png
11. C2S\_01.png
12. C2S\_status\_connected.png

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