

# Connecting offices (site-to-site)

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# PPTP VPN

Using the PPTP protocol, you can connect Branches that use outdated routers supporting only PPTP to the Head Office (if the device supports IPsec, it is recommended to use PPTP).

If possible, use a more reliable and secure protocol for connecting branches - IPsec. For details on setup, see the article [Connecting devices](#).

For SafeUTM communication with SafeUTM, also use IPsec (see article [Branches and Head Office](#)).

**The setup process consists of two stages:**

- Server preparation and configuration of local networks.
- Creating VPN tunnels and configuring routing.

## Server Preparation and Configuration of Local Networks

To combine local office networks, you need to ensure the uniqueness of the IP address space in them. Each office should have its own unique network. Otherwise, when creating a VPN tunnel, you may encounter incorrect routing.

Below is an example of combining networks of two offices. Configure your network and SafeUTM security gateway according to the data in the table below:

Parameter	Office No1 (SafeUTM)	Office No2 (Router)
IP Address Space	<b>IP address:</b> 192.168.0.0 <b>Netmask:</b> 255.255.255.0	<b>IP address:</b> 192.168.1.0 <b>Netmask:</b> 255.255.255.0
Local IP address	<b>IP address:</b> 192.168.0.1 <b>Netmask:</b> 255.255.255.0	<b>IP address:</b> 192.168.1.1 <b>Netmask:</b> 255.255.255.0

## Creating VPN tunnels and configuring routing

### Internet gateway in Office No1

1. Create a user account, for example, "office2", on behalf of which the SafeUTM server in office No2 will connect to the SafeUTM server in office No1.

2. Allow the created account to have **Allow remote access via VPN**. This parameter can be activated in the section **Users -> User & Group -> General** by selecting the desired user.

**General**   Active Directory   Quota

Title  
Accounting

Found in a group  
All ▼

**Operations**

Create user

Create users

Device detection

Delete

**Additional settings**

Deny access

Allow remote access via VPN

**Save**

3. Add routes to the routing table. To do this, go to **Services -> Routing -> Static routes** and click the add button. We need to add the following route:

- **Destination address:** 192.168.1.0/255.255.255.0

- **Gateway:** user "office2"

## Routing

---

Static routes

WAN routes

### Adding a route

Destination address

IP 192.168.222.15 ×

Gateway

Comment

**Save** Cancel

## Configuring the router in office No2

In the example, the settings are given for SafeUTM acting as a router. As a rule, routers from different manufacturers are configured similarly.

You need to create a VPN connection to a remote server and register a route to a remote network via a VPN connection. To do this, follow these steps:

- Create a new interface of the type **Ethernet + PPTP**. As a **VPN server**, specify the external IP address or domain name of office No1 and use the data of the account created on the server in office No1 (in our example, office2) as a username and password.

- Add routes to the routing table. To do this, in the web interface go to the section **Services** -> **Routing** and click the add button. Specify the required values and click **Save**. We need to add the following route:

**Destination address:** 192.168.0.0/24

**Gateway:** Select the Ethernet + PPTP interface that you have created.

## Routing

---

Static routes

WAN routes

### Adding a route

Destination address	▼
Gateway	▼
Comment	

Save

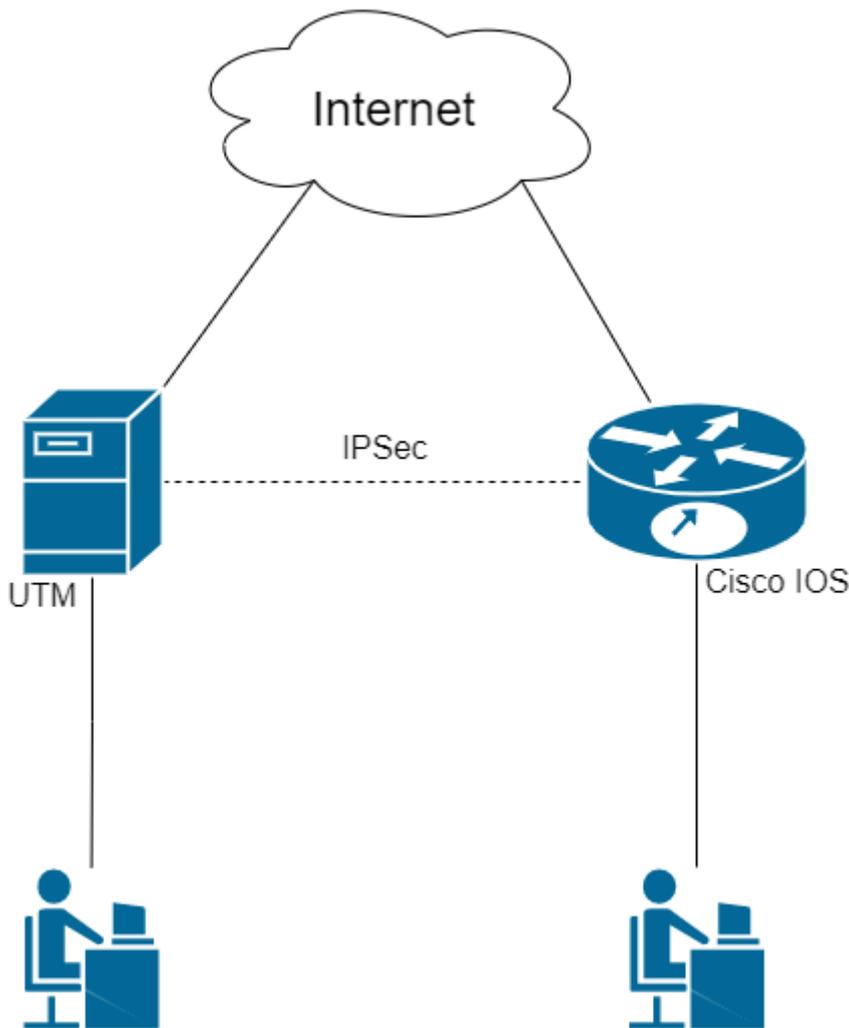
Cancel

# Incoming Connection of Cisco IOS to SafeUTM via IPsec

Following the steps in this article, you can combine Cisco and SafeUTM networks via IPsec using PSK.

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Find below the connection setup according to the scheme shown in the figure:



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Step 1. Initial Setup of SafeUTM

Configure the local and external interfaces on SafeUTM. Detailed information can be found in the article [Initial setup](#).

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## Step 2. Initial setup of Cisco IOS EX

Cisco configuration can be done through the device console (the configuration is described below)

### 1. Setting up the local interface:

```
enable
conf t
interface GigabitEthernet2
ip address {local IP Cisco} {subnet mask}
no shutdown
ip nat inside
exit
```

### 2. Configuring the external interface:

```
interface GigabitEthernet1
ip address {Cisco external IP} {subnet mask}
no shutdown
ip nat outside
exit
```

3. Check if there is a connection between the external interfaces of SafeUTM and Cisco. To do this, use the `ping {external IP UTM}` command in the Cisco console. The result of the command output is the presence of ICMP responses.

### 4. Creating an access list with local network addressing:

```
ip access-list extended NAT
permit ip {Cisco local subnet} {reverse subnet mask} any
exit
```

5. Configuring NAT (for more information on configuring this item, you can read the article on the official Cisco website):

```
ip nat inside source list NAT interface GigabitEthernet1 overload
exit
```

### 6. Saving configuration settings:

```
write memory
```

7. **Having saved the settings, make sure that there is Internet access from the Cisco LAN.** To do this, visit any website (for example: <https://www.cisco.com>) from a device on the Cisco LAN.

---

## Step 3. Configuring IKEv2+IPsec on Cisco

1. Creating a proposal (you can read detailed information on setting up this item in the [article](#) on the official Cisco website):

```
conf t
crypto ikev2 proposal ikev2proposal
encryption aes-cbc-256
integrity sha256
group 19
exit
```

2. Creating a policy (you can read detailed information on setting up this item in the [article](#) on the official Cisco website):

```
crypto ikev2 policy ikev2policy
match fvrfl any
proposal ikev2proposal
exit
```

3. Creating a peer (key\_id is the ID of the remote party, i.e. SafeUTM). Detailed information on setting up this item can be found in the [article](#) on the official Cisco website.

```
crypto ikev2 keyring key
peer strongswan
address {UTM external IP}
identity key-id {key_id}
pre-shared-key local {psk}
pre-shared-key remote {psk}
exit
exit
```

4. Creating an IKEv2 profile (you can read detailed information on configuring this item in the [article](#) on the official Cisco website):

```
crypto ikev2 profile ikev2profile
match identity remote address {UTM external IP} 255.255.255.255
authentication remote pre-share
authentication local pre-share
keyring local key
exit
```

#### 5. Setting up encryption in esp:

```
crypto ipsec transform-set TS esp-gcm 256
mode tunnel
exit
```

#### 6. Creating ipsec-isakmp:

```
crypto map cmap 10 ipsec-isakmp
set peer {UTM external IP}
set transform-set TS
set ikev2-profile ikev2profile
match address cryptoacl
exit
```

#### 7. Configuring the crypto map on the external interface:

```
interface GigabitEthernet1
crypto map cmap
exit
```

#### 8. Creating an access list for traffic between Cisco and UTM local networks:

```
ip access-list extended cryptoacl
permit ip {Cisco local subnet} {reverse subnet mask} {UTM local subnet} {reverse subnet mask}
exit
```

#### 9. Adding traffic exceptions between Cisco and UTM local networks to the NAT access list (the deny rule should be higher than permit):

```
ip access-list extended NAT
no permit ip {Cisco local subnet} {reverse subnet mask} any
deny ip {Cisco local subnet} {reverse subnet mask} {local UTM subnet} {reverse subnet mask}
permit ip {Cisco local subnet} {reverse subnet mask} any
```

```
exit
end
```

10. Saving configuration settings:

```
write memory
```

---

## Step 4. Creating an incoming IPsec connection on UTM

1. In the SafeUTM web interface, open tab **Services -> IPsec -> Devices**.

2. Add a new connection:

- **Connection name** - any.
- **Type** - incoming.
- **Authorization type** - PSK.
- **PSK** - specify the PSK key that you entered in Step 3 item 3.
- **Remote side identifier** - insert the Cisco ID (Key ID parameter in Step 3 item 3).
- **Home local network** - specify the SafeUTM local area network.
- **Remote local networks** - specify the Cisco local network.

3. Save the created connection, then click on **Turn on**

4. Check that the connection is established (your connection will appear in the list of connections, in column **Statuses** the word **Installed** will be highlighted in green).

5. Check for traffic between local networks (TCP and web).

---

## The final configuration of Cisco IOS

The final configuration of IKEv2 IPsec on Cisco IOS should look like this:

```
crypto ikev2 proposal ikev2proposal
  encryption aes-cbc-256
  integrity sha256
  group 19

crypto ikev2 policy ikev2policy
  match fvrfl any
  proposal ikev2proposal

crypto ikev2 keyring key
  peer strongswan
  address 5.5.5.5
```

```
pre-shared-key local QWEqwe1234567890
pre-shared-key remote QWEqwe1234567890

crypto ikev2 profile ikev2profile
  match identity remote key-id key-id
  authentication remote pre-share
  authentication local pre-share
  keyring local key

crypto ipsec transform-set TS esp-gcm 256
  mode tunnel

crypto map cmap 10 ipsec-isakmp
  set peer 5.5.5.5
  set transform-set TS
  set ikev2-profile ikev2profile
  match address cryptoacl

interface GigabitEthernet1
! external interface
  ip address 1.1.1.1 255.255.255.0
  ip nat outside
  negotiation auto
  no mop enabled
  no mop sysid
  crypto map cmap

interface GigabitEthernet2
! local interface
  ip address 2.2.2.2 255.255.255.0
  ip nat inside
  negotiation auto
  no mop enabled
  no mop sysid

ip nat inside source list NAT interface GigabitEthernet1 overload

ip access-list extended NAT
  deny ip 2.2.2.0 0.0.0.255 3.3.3.0 0.0.0.255
  permit ip 2.2.2.0 0.0.0.255 any
```

```
ip access-list extended cryptoacl
```

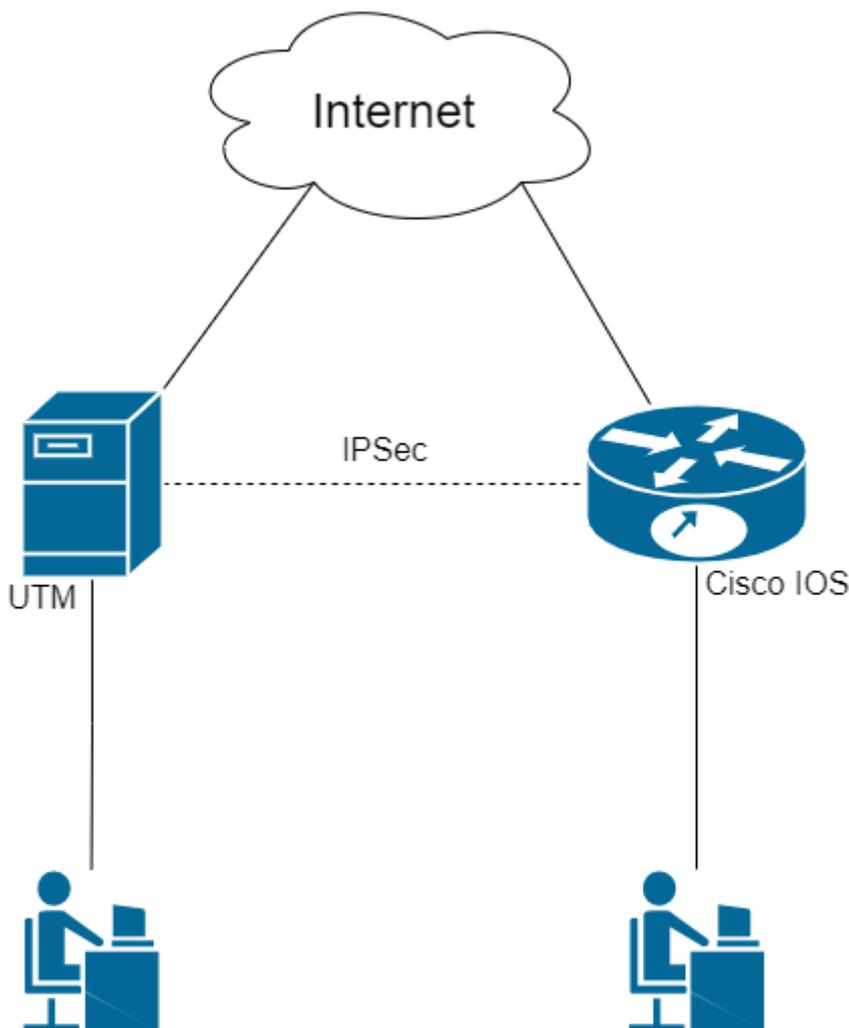
```
permit ip 2.2.2.0 0.0.0.255 3.3.3.0 0.0.0.255
```

# Outgoing SafeUTM Connection to Cisco IOS via IPsec

Following the steps in this article, you can combine Cisco and SafeUTM networks via IPsec using PSK.

---

Find below the connection setup according to the scheme shown in the figure:



---

Step 1. Initial Setup of SafeUTM

Configure the local and external interfaces on SafeUTM. Detailed information can be found in the article [Initial setup](#).

---

## Step 2. Initial Setup of Cisco IOS EX

Cisco configuration can be done through the device console (the configuration is described below).

### 1. Setting up the local interface:

```
enable
conf t
interface GigabitEthernet2
ip address {Cisco local IP} {subnet mask}
no shutdown
ip nat inside
exit
```

### 2. Configuring the external interface:

```
interface GigabitEthernet1
ip address {Cisco external IP} {subnet mask}
no shutdown
ip nat outside
exit
```

3. Check if there is a connection between the external interfaces of SafeUTM and Cisco. To do this, use the `ping {external IP UTM}` command in the Cisco console. The result of the command output is the presence of ICMP responses.

### 4. Creating an access list with local network addressing:

```
ip access-list extended NAT
permit ip {Cisco local subnet} {reverse subnet mask} any
exit
```

5. Configuring NAT (for more information on configuring this item, you can read the article on the official Cisco website):

```
ip nat inside source list NAT interface GigabitEthernet1 overload
exit
```

### 6. Saving configuration settings:

```
write memory
```

7. **Having saved the settings, make sure that there is Internet access from the Cisco LAN.** To do this, visit any website (for example: <https://www.cisco.com>) from a device on the Cisco LAN.

---

## Step 3. Configuring IKEv2+IPsec on Cisco

1. Creating a proposal (you can read detailed information on setting up this item in the [article](#) on the official Cisco website):

```
conf t
crypto ikev2 proposal ikev2proposal
encryption aes-cbc-256
integrity sha256
group 19
exit
```

2. Creating a policy (you can read detailed information on setting up this item in the [article](#) on the official Cisco website):

```
crypto ikev2 policy ikev2policy
match fvrfl any
proposal ikev2proposal
exit
```

3. Creating a peer (key\_id is the ID of the remote party, i.e. SafeUTM). Detailed information on setting up this item can be found in the [article](#) on the official Cisco website.

```
crypto ikev2 keyring key
peer strongswan
address {UTM external IP}
identity key-id {key_id}
pre-shared-key local {psk}
pre-shared-key remote {psk}
exit
exit
```

4. Creating an IKEv2 profile (you can read detailed information on configuring this item in the [article](#) on the official Cisco website):

```
crypto ikev2 profile ikev2profile
match identity remote address {UTM external IP} 255.255.255.255
authentication remote pre-share
authentication local pre-share
keyring local key
exit
```

#### 5. Setting up encryption in esp:

```
crypto ipsec transform-set TS esp-gcm 256
mode tunnel
exit
```

#### 6. Creating ipsec-isakmp:

```
crypto map cmap 10 ipsec-isakmp
set peer {UTM external IP}
set transform-set TS
set ikev2-profile ikev2profile
match address cryptoacl
exit
```

#### 7. Configuring the crypto map on the external interface:

```
interface GigabitEthernet1
crypto map cmap
exit
```

#### 8. Creating an access list for traffic between Cisco and UTM local networks:

```
ip access-list extended cryptoacl
permit ip {Cisco local subnet} {reverse subnet mask} {UTM local subnet} {reverse subnet mask}
exit
```

#### 9. Adding traffic exceptions between Cisco and UTM local networks to the NAT access list (the deny rule should be higher than permit):

```
ip access-list extended NAT
no permit ip {Cisco local subnet} {reverse subnet mask} any
deny ip {Cisco local subnet} {reverse subnet mask} {local UTM subnet} {reverse subnet mask}
permit ip {Cisco local subnet} {reverse subnet mask} any
```

```
exit
```

```
end
```

10. Saving configuration settings:

```
write memory
```

---

## Step 4. Creating an outgoing IPsec connection on SafeUTM

1. In the SafeUTM web interface, open tab **Services -> IPsec -> Devices**.

2. Add a new connection:

- **Connection name** - any.
- **Type** - Outgoing.
- **Authorization type** - PSK.
- **PSK** - a random PSK key will be generated. You will need it to set up a connection in Cisco (see Step 3 item 3).
- **UTM identifier** - The key you entered will be used to identify the outgoing connection. Also, enter this ID in Cisco (see Step 3 item 3).
- **Home local network** - specify the SafeUTM local area network.
- **Remote local networks** - specify the Cisco local network.

3. Check that the connection has been established (your connection will appear in the list of connections, in the column **Statuses** the word **Installed** will be highlighted in green).

4. Check for traffic between local networks (TCP and web).

---

## Final Configuration of Cisco IOS

The final configuration of IKEv2 IPsec on Cisco IOS should look like this:

```
crypto ikev2 proposal ikev2proposal
  encryption aes-cbc-256
  integrity sha256
  group 19

crypto ikev2 policy ikev2policy
  match fvrfr any
  proposal ikev2proposal

crypto ikev2 keyring key
```

```
peer strongswan
  address 5.5.5.5
  pre-shared-key local QWEqwe1234567890
  pre-shared-key remote QWEqwe1234567890

crypto ikev2 profile ikev2profile
  match identity remote key-id key-id
  authentication remote pre-share
  authentication local pre-share
  keyring local key

crypto ipsec transform-set TS esp-gcm 256
  mode tunnel

crypto map cmap 10 ipsec-isakmp
  set peer 5.5.5.5
  set transform-set TS
  set ikev2-profile ikev2profile
  match address cryptoacl

interface GigabitEthernet1
! external interface
  ip address 1.1.1.1 255.255.255.0
  ip nat outside
  negotiation auto
  no mop enabled
  no mop sysid
  crypto map cmap

interface GigabitEthernet2
! local interface
  ip address 2.2.2.2 255.255.255.0
  ip nat inside
  negotiation auto
  no mop enabled
  no mop sysid

ip nat inside source list NAT interface GigabitEthernet1 overload

ip access-list extended NAT
```

```
deny ip 2.2.2.0 0.0.0.255 3.3.3.0 0.0.0.255
permit ip 2.2.2.0 0.0.0.255 any
ip access-list extended cryptoacl
permit ip 2.2.2.0 0.0.0.255 3.3.3.0 0.0.0.255
```

# Incoming pfSense connection to SafeUTM via IPsec

Following the steps in this article, you can combine pfSense and SafeUTM networks via IPsec using PSK.

The combined LANs should not overlap!

## Setting up SafeUTM

1. In the SafeUTM web interface, open tab **Services -> IPsec -> Devices**.
2. Add a new connection:
  - **Connection name** - any.
  - **Type** - incoming.
  - **Authorization type** - PSK.
  - **PSK** - specify the PSK key to be used for the connection.
  - **Remote side identifier** - any.
  - **Home local network** - Specify the SafeUTM local area network that will be visible from the pfSense subnet.
  - **Remote local networks** - Specify the pfSense local network that will be visible from the SafeUTM subnet.
3. Save the created connection, then click on the "Enable" button.
4. Two configuration files will be generated on SafeUTM in the `/etc/strongswan/autogen/` folder. You need to go to the console and open the file of the type `device_<number>.peer` for editing.
5. From this file, you need to copy the value of the `rightid` line (approximate type `-@#746573745f70736b`). In the future, this value will need to be registered on pfSense.
6. The setup is complete, now let's set up pfSense.

## Setting up pfSense

1. In the pfSense web interface, go to tab VPN -> **IPsec -> Tunnels**.

2. Add a new connection:

- **Key Exchange version** - IKEv2.
- **Internet Protocol** - IPv4.
- **Interface** - Select the pfSense external interface that will be used to connect to SafeUTM.
- **Remote Gateway** - IP of the SafeUTM external interface.
- **Description** - any.
- **Authentication Method** - Mutual PSK.
- **My identifier and Peer identifier** - insert the value of the rightid line on SafeUTM here (see step 5 in setting up SafeUTM).
- **Pre-Shared Key** - insert the PSK key that was previously registered on SafeUTM.
- **Encryption Algorithm: For SafeUTM version 13.0 and later**, use the following parameters: Algorithm - AES256-GCM; **Key length** - 128 bit; **Hash** - SHA256; **DH Group** - Elliptic Curve 25519- 256.

All other values can be left by default.

3. Save the connection.

4. Click on the button **Show Phase 2 Entries** and add a new Phase 2. Specify here:

- **Encryption Algorithm: For SafeUTM version 13.0 and later**, use the following parameters: Algorithm - AES256-GCM; **Key length** - 128 bit; **Hash** - SHA256; **DH Group** - Elliptic Curve 25519- 256.
- **Local Network** - pfSense LAN which will be accessible from the SafeUTM subnet.
- **Remote Network** - SafeUTM LAN, which will be accessible from the pfSense subnet.

All other values can be left by default.

5. Save the connection.

6. Then you need to allow traffic to flow between the pfSense and SafeUTM local networks in the pfSense firewall (go to tab **Firewall -> Rules -> IPsec** and create two rules that allow traffic to flow between the SafeUTM and pfSense local networks).

Also, pay attention to the WAN firewall section - by default, incoming traffic from "gray" subnets is prohibited in it, so you need to remove this restriction.

7. Now go to tab **Status -> IPsec** (the created connection should appear there), and click on the Connect VPN button.

The setup is complete, the connection should be successfully established.

If the connection could not be established, and the pfSense firewall settings were made correctly, you should recreate the connection on UTM by specifying in the Key ID field the value that was specified in My identifier and Peer identifier for pfSense and try to connect again. No changes are required on the pfSense side.

# Outgoing pfSense Connection to SafeUTM via IPsec

---

## Setting up SafeUTM

1. In the SafeUTM web interface, open tab **Services -> IPsec -> Devices**.
2. Add a new connection:

- **Connection name** - any.
  - **Type** - outgoing.
  - **Authentication type** - PSK.
  - **PSK** - specify the PSK key to be used for the connection.
  - **UTM identifier** - any.
  - **Home local network** - specify the SafeUTM local area network that will be visible from pfSense subnets.
  - **Remote local networks** - specify the pfSense local network that will be visible from the SafeUTM subnet.
- 

## Setting up pfSense

1. In the pfSense web interface, go to tab **VPN > IPsec > Advanced Options**, and in the **Child SA Start Action** field select option **None (Responder Only)**.
2. Add a new connection:

- **Key Exchange version** - IKEv2.
- **Internet Protocol** - IPv4.
- **Interface** - Select the pfSense external interface that will be used to connect to SafeUTM.
- **Remote Gateway** - IP of external interface SafeUTM.
- **Description** - any.
- **Authentication Method** - Mutual PSK.
- **My identifier** - My IP address.
- **Peer identifier** - KeyID tag. Enter the ID of the remote party, i.e. SafeUTM.
- **Pre-Shared Key** - enter the PSK key.
- **Encryption Algorithm:**

```
Algorithm - AES256- GCM;  
Key length - 128 bit;  
Hash - SHA256;  
DH Group - Elliptic Curve 25519-256.
```

3. Save the connection.

4. Click the button **Show Phase 2 Entries** and add a new Phase 2 and enter the following values:

- **Encryption Algorithm:**

```
Algorithm - AES256- GCM;  
Key length - 128 bit;  
Hash - SHA256;  
DH Group - Elliptic Curve 25519-256.
```

- **Local Network** – pfSense LAN which will be accessible from the SafeUTM subnet.
- **Remote Network** – SafeUTM LAN, which will be accessible from the pfSense subnet.

All other values can be left by default.

5. Save the connection.

6. Then you need to allow traffic to flow between the pfSense and SafeUTM local networks in the pfSense firewall (go to tab **Firewall -> Rules -> IPsec** and create two rules that allow traffic to flow between the SafeUTM and pfSense local networks).

7. Also pay attention to the **WAN** firewall section – by default, incoming traffic from "gray" subnets is prohibited in it, so you need to remove this restriction.

8. Now go to tab **Status -> IPsec** (the connection that was created should appear there), and click on the Connect VPN button.

The setup is complete, the connection should be successfully established.

If the connection could not be established, and the pfSense firewall settings are correct, you should recreate the connection to UTM by specifying in the field **Key ID** the value specified in My identifier and Peer identifier of pfSense, and try to connect again. On the pfSense side, no changes are necessary.

# Connecting Keenetic via SSTP

You can connect routers with SSTP protocol support in site-to-site VPN mode.

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If you do not need access from the central office to the network for Keenetic, then use the article [Connecting Wi-Fi Keenetic Routers via SSTP](#) on client-to-site connection.

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## Setting up SafeUTM

1. Enable and configure the port and domain for SSTP in **Users -> VPN connections**.
2. In **Users -> User & Group** create a special user for the remote router. Check the box **Allow remote access via VPN**. The username/password of the user will be used on the router, save or write them down.

**General**   Active Directory   Quota

---

Title

Found in a group

### Operations

[Create user](#)

[Create users](#)

[Device detection](#)

[Delete](#)

### Additional settings

Deny access

Allow remote access via VPN

[Save](#)

3. Register the routes to the remote network. For example, if the network behind the router is `192.168.10.0/24`, you need to add the following route to the section **Services -> Routing ->**

**Static routes:**

## Routing

---

Static routes

WAN routes

### Adding a route

Destination address

IP 192.168.222.15

Gateway

Comment

---

## Configuring Keenetic Router

Configure the VPN connection of the Keenetic router according to the instructions for client-to-site connections.

Do not forget to follow all three steps:

1. Set up a VPN connection.
2. Set up routes.
3. Configure DNS to resolve the local domain (if using Active Directory).

---

## Verification and Possible Problems

To check the connection, use the ping and traceroute utilities.

If a VPN connection is established, but there is no access to the resources of one local network from another, use the instructions from the article to diagnose possible problems.

Most often, access is blocked in Windows due to network profile settings.

You can allow access to "non-local" networks in all profiles, by running the command in PowerShell (launched with elevated administrator rights): `Enable-NetFirewallRule -Group "@FirewallAPI.dll, -28502"`

# Connecting Kerio Control to SafeUTM via IPsec

Following the steps of the article below, you can combine Kerio Control and SafeUTM networks via IPsec using PSK.

The combined LANs should not overlap!

## Setting up SafeUTM

1. In the SafeUTM web interface, open tab **Services -> IPsec -> Devices**.
2. Add a new connection and fill in the following fields:
  - **Connection name** - specify an arbitrary name for the connection. Maximum 42 characters.
  - **Type** - select **Incoming**.
  - **Authentication type** - select the PSK type.
  - **PSK** - specify the PSK key to be used for the connection.
  - **Remote side identifier** - specify the key that will be used to identify the connection on Kerio.
  - **Home local network** - Select the SafeUTM LAN that will be visible from the Kerio Control subnet.
  - **Remote local networks** - specify the Kerio Control LAN that will be visible from the SafeUTM subnet.
3. Save the created connection, then activate the connection by clicking on the Enable icon in the column **Operations**.
4. The setup is complete, Kerio Control needs to be configured.

## Configuring Kerio Control

1. By default, Kerio Control uses IKEv1 to create connections to third-party devices. You can enable IKEv2 via the console. To do this, follow these steps:
  - 1.1. Connect to Kerio Control via SSH.
  - 1.2. Go to the folder `/var/winroute`

1.3. Open `winroute.cfg` file for editing.

1.4. In it, find the section starting with the text `<table name="Firewall">`

1.5. In this section, find the line `<variable name="IKEVersion">ikev1</variable>` and change `ikev1` in it to `ikev2`

1.6. After that, it is advisable to restart the server and make sure that the changes in the settings are saved.

2. In the section **Traffic rules**, allow VPN services traffic.

3. Then go to the section **Interfaces** and click **Add**. In the drop-down list, select **VPN tunnel...**

4. The connection creation window will open. In it, select:

- **Type** - IPsec.
- **The name** is arbitrary.
- Activate **Enable this tunnel**.
- Select type **Active** and in the field below it, enter the IP address of the SafeUTM external interface that will be used for the connection.
- Select the **Predefined key** and enter the PSK key that will be used to connect.
- **Local ID** - specify the key that was set in the **Remote side identifier** field (p. 2);
- **Remote ID** - specify the IP address of the SafeUTM external interface;
- Under setting the ciphers, click on Edit. Set ciphers as in the screenshot:

**VPN Tunnel Ciphers Configuration**

Default ciphers

	Primary:	Fallback:
Phase 1 (IKE) cipher:	<input type="text" value="aes128-sha1-modp2048"/>	<input type="text" value="3des-sha1-modp1536"/>
Phase 2 (ESP) cipher:	<input type="text" value="aes128-sha1"/>	<input type="text" value="3des-sha1"/>

Custom ciphers

	Encryption:	Integrity:	DH Groups:
Phase 1 (IKE) cipher:	<input type="text" value="aes256"/>	<input type="text" value="sha2_256"/>	<input type="text" value="modp4096"/>
Phase 2 (ESP) cipher:	<input type="text" value="aes256"/>	<input type="text" value="sha2_256"/>	<input type="text" value="modp4096"/>

OK Cancel

An example of the final settings is shown in the screenshot below.

**VPN Tunnel Properties**

**General**

Name:

Enable this tunnel

Active - it connects to the remote endpoint [i](#)

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

Passive - it only accepts incoming connections [i](#)

Type:

**Authentication** **Remote Networks** **Local Networks**

Preshared key:

Remote certificate:

Local ID: [i](#)

Remote ID:

Phase 1 (IKE) cipher:

Phase 2 (ESP) cipher:

[Learn more about IPsec parameters](#)

5. Go to the section **Remote networks**, click **Add** and enter the information about SafeUTM local network, which will be visible from the Kerio Control subnet.

6. Then in the section **Local networks** either click on the button **Use automatically defined local networks**, or configure networks that will be visible from the SafeUTM subnet manually, as in the previous step.

7. Setup is complete. After adding a new interface, you need to click **Apply**. After that, the connection should be successfully established, and the information about this is displayed in the table in the **Interfaces** section.

In case of problems, first of all, pay attention to Kerio Control firewall settings.



# Connecting Keenetic via IPsec

On the SafeUTM side, configure the connection settings in the **Services -> IPSec -> Devices** section.

On the Keenetic device side, use the following encryption protocol settings:

## IPsec connection setup



Wait for a connection from a remote peer



Domain name

Nailed-up



Dead peer detection (DPD)



Checking interval

*seconds*

### Phase 1

Local gateway ID

IP address



Remote gateway ID

IP address



PSK key



Save

Cancel

# IPsec connection setup



IKE protocol

IKE v2

IKE lifetime

3600 *seconds*

IKE AEAD mode

 ?

IKE encryption

 DES  3DES  AES-128  AES-192  AES-256  AES-128-CTR  AES-192-CTR  AES-256-CTR

IKE integrity

 MD5  SHA1  SHA256  SHA384  SHA512

Diffie-Hellman (DH) group

 1  2  5  14  15  16  17  18  25  26  19  20  21  31  32

## Phase 2

Mode

Tunnel

Save

Cancel

# IPsec connection setup



SA lifetime

3600 *seconds*

SA AEAD mode

 ?

SA encryption

 DES  3DES  AES-128  AES-192  AES-256  AES-128-CTR  AES-192-CTR  AES-256-CTR  NULL

SA integrity

 MD5  SHA1  SHA256

Diffie-Hellman (DH) group

 1  2  5  14  15  16  17  18  25  26  19  20  21  31  32

Local subnet IP

192.168.1.0 | 255.255.255.0

Remote subnet IP

192.168.2.0 | 255.255.255.0

Save

Cancel