

# IPSec

- Branches and Head Office
- Connecting Devices
- Connecting users

# Branches and Head Office

This type of connection allows you to combine the LANs of several SafeUTM servers.

Features of IPsec technology implementation in SafeUTM assume two roles of using SafeUTM:

- **Head office** - SafeUTM must have a public address on the Internet and accept connections from other SafeUTM (Branches), network equipment, or workstations (Remote Users).
- **Branch office** - SafeUTM connects to the Head Office and, as a rule, does not have a public address on the Internet. But if the Branch has a public address, then any other device can also be connected to it.

## Setting up Connection Between Branch and Head Office

**Head offices** and **Branches** are added on the tabs with the same names in the section **Services** -> **IPsec**.

- Before creating a connection between the Branch and the Head Office, make sure that the **time zone is correctly configured** on each of the connected parties. It is impossible to establish a connection without this.
- Before configuring IPsec, it should be taken into account that for it to work, no IP subnets involved in connections, including the networks of the Head Office and all Branches, should overlap and, moreover, coincide.
- Networks of local interfaces of the Head offices and Branches to which you want to give access, must be set statically.
- Before setting up the connection, you need to make sure that one of the servers has a public (white) IP address from the Internet provider. If it turns out that the Head Office does not have a public IP address, and the Branch has such an address, then the server roles for this connection should be reversed.
- When replacing/reissuing the root certificate in the **TLS Certificates** section, IPsec connections Head Office <-> Branch will stop working and they will need to be recreated.

### Step 1. Creating a connection in a Branch

In order to create a connection on SafeUTM, which will act as a Branch, it is necessary to perform the following settings in the web interface of this UTM:

1. Open the section **Services -> IPsec -> Branch office** and click **Add** in the upper left corner of the screen.
2. Fill in the following fields:

- **Head office name** - maximum 42 characters.
- **Head office's external address** - the domain name or external IP address of the head office issued by the provider. If necessary, you can enter the **Head office's additional address**.
- **Branch office LANs** - the IP address of the Branch's subnet that will be available to users in the Head Office, in the IP address/mask format.

## IPsec

Head office    **Branch office**    Devices

Head office name

Main office

Head office's external address

172.16.150.3

Head office's additional address

Branch office LANs

192.168.105.0/24

Networks that will be accessible from the head office.

Add LAN

Add head office

Cancel

- 3. After filling in the fields, click **Add head Office.**
- 4. Click on the edit icon next to the added Head Office.

IPsec

2

Head office

Branch office

Devices

+ Add

Title	Statuses	Operations
Main office (Not configured)		<div><div></div><div></div><div></div></div>



5. Copy the contents of the **Branch office settings** field. The contents need to be pasted when setting up the Head Office to which the connection is being made (see [step 2](#)).



Head office

**Branch office**

Devices

Branch office settings

eyJkZXBhcnRtZW50X2NzciI6ICItLS0tLUJFR0I  
OIEUFUIRJRkIDQVRFIJFUVVFU1QtLS0tLVxu  
TUIJQkt6Q0lwd0lCQURCZ01RNHdEQVIEVIFR  
S0RBVkpaR1ZqYnpFTU1Bb0dBMVVFQ3d3RF  
ZWUk5N  
VUF3UGdZRFxuVIFRREREZHdjWx0WVhKNV  
gyOW1abWxqWlY4eFgyTTRNVFZpTW1SalItW  
TJOVFE0  
WTJWaVIXTmxNMIpsTnpKaVxuTWpnNVltRXI  
MbWx3YzJWak1Ga3dFd1lIS29aSXpqMENBU

The content must be sent to Head Office for further setup.

Head office name

Main office

Head office's external address

172.16.150.3

Head office's additional address

#### Branch office LANs

- 192.168.105.0/24

Networks that will be accessible from the head office.

Head office settings

You need to paste the data received from the head office to complete the setup.

Save

Cancel

## Step 2. Creating a connection in the Head Office

In order to create a connection on SafeUTM which will act as the Head Office it is necessary to perform the following settings in the web interface of this UTM:

1. Open the section **Services -> IPsec -> Head Office** and click **Add**.
2. Fill in the following fields:

- **Branch office name** - maximum 42 characters.
- **Branch office settings** - paste the settings that you copied from the Branch after completing [step 1](#).



Head office

Branch office

Devices

Branch office name

Branch office

Branch office settings

FQXdJRFJ3QXdSQUlnY2FyUFxuZVN5MStjZVd  
4Q25p  
ZERQMTRMZnVPenhNaGxLK21xRGh3L3UvN  
ERZQ0IHSUZtUUxGVlhsd3ZwNitSUXloYUNxO  
FxuL0Zs  
WnJoU3F0V01mY2E5Zm40aTdcbi0tLS0tRU5  
EIENFUlRJRklDQVRFIjFUVVVFU1QtLS0tLVxuli  
wg  
ImRlcGFydG1lbnRfbmV0cyI6IFsiMTkyLjE2OC  
4xMDUuMC8yNCJdfQ==

Data generated during branch office setup.

Add branch office

Cancel

3. Click **Add branch office**.
4. Click the edit icon next to the added Branch.

IPsec

2

Head office

Branch office

Devices

+ Add

Title	Statuses	Operations
Branch office (Not configured)		<div><div></div><div></div><div></div></div>

5. Select the LANs of the Head Office and click **Save**.

Head office

Branch office

Devices

Branch office name

Branch office

Head office LANs

192.168.100.0/24

Networks that will be accessible from the branch office.

Add LAN

Branch office LANs


• 192.168.105.0/24

Networks that will be accessible from the head office.

Save

Cancel

6. Go back to editing the added Branch and copy the contents of the **Head office settings** field. The contents need to be added to the Branch settings (see [step 3](#)).

 **IPsec**

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**Head office**   Branch office   Devices

Branch office name

Head office LANs

- 192.168.100.0/24

Networks that will be accessible from the branch office.



Branch office LANs

- 192.168.105.0/24

Networks that will be accessible from the head office.

Head office settings  

eyJkZXBhc...ND  
QVRXZ0F3SUJBZ0IVV2RVU3VicGZEBUkvRVh  
wd2VwZEVrRWNjS0Fjd0NnWUlb1pJemowR  
UF3SXdc  
bkx6RVhNQIVHQTfVRUJSTU9NakF5TWpBNE  
1qa3hNak01TVRNeEZEQVNCZ05WQkFNTUM  
xVIVUUzFU  
UVVaRIJFNVRcbk1CNFhEVEl5TURnek1ERTJN



Content must be sent to the branch office to complete the setup.

**Save**   Cancel

## Step 3. Final setup of the Branch

In order to complete the creation of a connection on SafeUTM which will act as a Branch it is necessary to perform the following settings in the web interface of this UTM:

1. Open section **Services -> IPsec -> Branch office**.
2. Select the desired head office and click **Edit**.
3. Insert into the **Head Office Settings** field the settings text received from the Head Office



during **step 2**.

## IPsec

Head office

**Branch office**

Devices

Branch office settings

```
eyJkZXBhcnRtZW50X2NzciI6ICItLS0tLUJFR0I  
OIEUFURJRklDQVRFIJFUVVU1QtLS0tLVxu  
TUIJQkt6Q0lwd0lCQURCZ01RNHdEQVIEVIFR  
S0RBVkpaR1ZqYnpFTU1Bb0dBMVVVFQ3d3RF  
ZWUk5N  
VUF3UGdZRFxuVIFRREREZHdjWx0WVhKNV  
gyOW1abWxqWlY4eFgyTTRNVFZpTW1SalItW  
TJOVFE0  
WTJWaVlXTmxNMlpsTnpKaVxuTWpnNVltRXI  
MbWx3YzJWak1Ga3dFd1lIS29aSXpqMENBU
```



The content must be sent to Head Office for further setup.

Head office name

Main office

Head office's external address

172.16.150.3

Head office's additional address

Branch office LANs

- 192.168.105.0/24

Networks that will be accessible from the head office.

Head office settings

```
k9pVjdTWnh3ajRPVm9NQW9HQ0NxR1NNND  
ICQU1DQTBn  
QU1FVUNcbklRRGFjTTNXbU1SWUNCd0pLcT  
htN1I3am1HRIhjOTcvWlZ4OVdpdINERUZic1F  
JZ09L  
WWw4YzZoZVE5VHFkMWhcbnNzNUpkRnNy  
ZE1LMFkvYkJoRmR3Y0FTV0paMD1cbi0tLS0  
tRU5EIENF  
UIRJRklDQVRFLS0tLS1cbiJ9  
|
```

You need to paste the data received from the head office to complete the setup.

**Save**

Cancel

4. Click **Save**.

5. Open section **Services -> IPsec -> Branch office** on UTM acting as a Branch and section **Services -> IPsec -> Head Office** on UTM acting as the Head Office and make sure that the connection to the Head Office is established. The confirmation **Established** should appear in a green frame.

IPsec

2

Head office

Branch office

Devices

+ Add

Title	Statuses	Operations
Main office	<div>Established</div> 172.16.150.3	<div></div> <div></div> <div></div>

## Routing of additional networks located behind the router in the local UTM network through an IPsec tunnel.

In order to configure the routing of networks located behind the router in the local UTM network, it is necessary to create a route to an additional network via the router's IP on SafeUTM (UTM, router and target host will be on the same network).

- If SafeUTM is behind NAT, then in order to work with IPsec you need to forward ports 500 and 4500 UDP.
- When installing an IPsec tunnel between SafeUTM servers (Branch and Head Office), 256-bit AES encryption is always used, as it is common and very reliable.

# Connecting Devices

Description of options for connecting various routers (Mikrotik, Zyxel Keenetic, etc.) to SafeUTM for site-to-site VPN using IPsec IKEv2 protocol.

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Devices that are not described in this manual as a rule can be connected using similar settings.

When combining networks using a VPN, LANs in different offices should not overlap.

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## The choice of crypto algorithms on remote devices.

When configuring third-party devices, you must explicitly specify the crypto algorithms used for the connection. SafeUTM supports the most up-to-date and at the same time sufficiently secure algorithms that do not load the server and devices. At the same time, outdated algorithms and those considered unsafe (MD5, SHA1, AES128, DES, 3DES, Blowfish, etc.) are not supported. When configuring third-party devices, as a rule, you can enter several supported algorithms at the same time. In fact, one algorithm of each kind is needed. Unfortunately, not all devices support the best algorithms, so SafeUTM supports several at once. Find below the list of algorithms of each type in descending order of priority for selection.

- **Phase 1 (IKE):**

- encryption:
  - **AES256-GCM**
  - **AES256**
- integrity (hash):
  - for **AES256-GCM** - not required, since integrity check is built into AEAD algorithms.
  - for **AES256**, by priority: **SHA512, SHA256**.
- prf (random value generation function):
  - as a rule, it is configured automatically, depending on the choice of integrity algorithms (therefore, in the example below, the value of prf is PRF-HMAC-SHA512).
  - for AES-GCM, you may need to specify explicitly. In this case, by priority: **AESXCBC, SHA512, SHA384, SHA256**.
- DH (Diffie-Hellman Group):
  - **Curve25519 (group 31)**
  - **ECP256 (group 19)**
  - **modp4096 (group 16)**
  - **modp2048 (group 14)**
  - **modp1024 (group 2)**

- Timeouts:
  - **Lifetime:** 14400 seconds
  - **DPD Timeout** (for L2TP/IPsec): 40 seconds
  - **DPD Delay:** 30 seconds
- **Phase 2 (ESP):**
  - encryption:
    - **AES256-GCM**
    - **AES256**
  - integrity:
    - for **AES256-GCM** - not required, since integrity check is built into AEAD algorithms
    - for AES-256, by priority: **SHA512, SHA384, SHA256**
  - DH (Diffie-Hellman Group, PFS). **ATTENTION! if not specified, it will connect, but rekey will not work after a while:**
    - **Curve25519 (group 31)**
    - **ECP256 (group 19)**
    - **modp4096 (group 16)**
    - **modp2048 (group 14)**
    - **modp1024 (group 2)**
  - Timeouts:
    - **Lifetime:** 3600 seconds

## Example

- **Phase 1 (IKE)** (one of the lines is needed):
  - AES256-GCM\PRF-HMAC-SHA512\Curve25519
  - AES256\SHA512\PRF-HMAC-SHA512\ECP384
  - AES256\SHA256\PRF-HMAC-SHA256\MODP2048
- **Phase 2 (ESP)** (one of the lines is needed):
  - AES256-GCM\ECP384
  - AES256\SHA256\MODP2048

An example of setting up a pfSense connection to SafeUTM via IPsec is shown in the screenshots below:

Phase 1 Proposal (Encryption Algorithm)

Encryption Algorithm

AES256-GCM

Algorithm

128 bits

Key length

SHA512

Hash

31 (Elliptic Curve 25519, 256 bit)

DH Group

Delete

Note: Blowfish, 3DES, CAST128, MD5, SHA1, and DH groups 1, 2, 5, 22, 23, and 24 provide weak security and should be avoided.

Add Algorithm

+ Add Algorithm

Phase 2 Proposal (SA/Key Exchange)

Protocol

ESP

Encapsulating Security Payload (ESP) is encryption, Authentication Header (AH) is authentication only.

Encryption Algorithms

☐ AES

128 bits

☐ AES128-GCM

128 bits

☐ AES192-GCM

Auto

☒ AES256-GCM

128 bits

☐ Blowfish

Auto

☐ 3DES

☐ CAST128

Note: Blowfish, 3DES, and CAST128 provide weak security and should be avoided.

Hash Algorithms

☐ MD5

☐ SHA1

☒ SHA256

☐ SHA384

☐ SHA512

☐ AES-XCBC

Note: Hash is ignored with GCM algorithms. MD5 and SHA1 provide weak security and should be avoided.

PFS key group

31 (Elliptic Curve 25519, 256 bit)

Note: Groups 1, 2, 5, 22, 23, and 24 provide weak security and should be avoided.

# Connecting SafeUTM to MikroTik Using PSK

If there is a public IP address on the MikroTik device, follow the steps below to configure the SafeUTM connection to MikroTik.

## Step 1.

Setting up SafeUTM

1. In SafeUTM, open the tab **Services -> IPsec -> Devices**, click on the icon (+), and fill in the following fields:

• **Connection name** - specify an arbitrary name for the connection. Maximum 42 characters.

• **Connection type** - select **Outcoming**, since the connection is made from UTM to MikroTik.

• **Remote device address** - specify the external IP address of the MikroTik device.

- **Authentication type** - select the **PSK**
- **PSK** - a random PSK key will be generated. You will need it to set up a connection in MikroTik.
- **UTM identifier** - the key you enter will be used to identify the outgoing connection.
- **Home local network** - list all **UTM LANs** that will be available in an IPsec connection, i.e. will be visible to the opposite side.

- **Remote local networks** - list all **MikroTik LANs** that will be available in an IPsec connection, i.e. will be visible to the opposite side.

## IPsec

Head office

Branch office

Devices

Connection name

Test connection

### Connection type

☒ Outcoming

Connect Safe UTM to remote device

☐ Incoming

Connect remote device to Safe UTM

Remote device address

172.16.150.4

For example, 198.168.32.10 or example.com

### Authentication type

☐ Certificate

Provides a high level security, but is not supported by some devices

☒ PSK

Provides a low level security, supported by most devices

PSK

]XMH7ov^eWn\+D,A~-Q{Oixd#R,tu\*



UTM identifier

test\_key\_id

Depends on the settings of the remote device.

Home local network

192.168.105.0/24

Subnet

Add

Remote local networks

192.168.105.0/24

Subnet





Add

Add connection

Cancel

2. After filling in all the fields, click **Add connection**. Your connection will appear in the list of connections:

IPsec



Head office




Branch office

Devices

Here you can configure an IPsec connection between Safe UTM and remote devices

+ Add

Outcoming connections:

Title	Statuses	Operations
Test connection	<div>off</div> 172.16.150.4	  

## Step 2.

You can configure the MikroTik device in several ways - through the GUI, and through the device console.

# Connecting MikroTik to SafeUTM Using PSK

If there is a public IP address on SafeUTM, follow the steps below to configure the connection of the MikroTik device to SafeUTM.

## Step 1.

You can configure the MikroTik device in several ways - through the GUI, and through the device console

## Step 2.

### Setting up SafeUTM

1. In SafeUTM, open the tab **Services -> IPsec -> Devices**, click on the icon (+), and fill in the following fields:

- **Connection name** - specify an arbitrary name for the connection. Maximum 42 characters.
- **Connection type** - select **Incoming**, since the connection to UTM is being made.
- **Authentication type** - select the PSK type.
- **PSK** - insert the PSK key received from MikroTik.



- **Remote side identifier** - insert the MikroTik ID (Key ID parameter in `/ip ipsec peers`).
- **Home local network** - list all **UTM LANs** that will be available in an IPsec connection, i.e. will be visible to the opposite side.

- **Remote local networks** - list all MikroTik LANs that will be available in an IPsec connection, i.e. will be visible to the opposite side.

## IPsec

Head office

Branch office

**Devices**

Connection name

Test

### Connection type

☐ Outcoming

Connect Safe UTM to remote device

☒ Incoming

Connect remote device to Safe UTM

### Authentication type

☐ Certificate

Provides a high level security, but is not supported by some devices

☒ PSK

Provides a low level security, supported by most devices

PSK

sdffeSFjHFJNEH

Remote side identifier

test\_key\_id

For inbound connection identification

Home local network

192.168.105.0/24

Subnet

Add

Remote local networks

192.168.100.0/24

Subnet

Add

Add connection

Cancel

2. After filling in all the fields, click **Add connection**. Your connection will appear in the list of connections.

IPsec

2

Head office

Branch office

Devices

Here you can configure an IPsec connection between Safe UTM and remote devices

+ Add

Incoming connections:

Title	Statuses	Operations
Test	Off	<div></div> <div></div> <div></div>

## Connecting SafeUTM to MikroTik Using Certificates

Connection with certificates is used because it is more secure than a PSK connection, or in cases when the device does not support PSK.

For the correct operation of certificate connections, it is necessary that the time on MikroTik be synchronized via NTP. To do this, it is sufficient for the device to have access to the Internet.

The creation of outgoing IPsec connections using certificates to MikroTik below version 6.45 does not work due to the inability to use modern crypto algorithms in certificates.

### Step 1.

Setting up SafeUTM

1. In SafeUTM, open the tab **Services -> IPsec -> Devices**, click on the icon (+), and fill in the following fields:

- **Connection name** - specify an arbitrary name for the connection. Maximum 42 characters.
- **Connection type** - select **Outcoming**, because the connection is made from UTM.
- **Authentication type** - specify the type of **Certificate**.
- **Address of the remote device** - specify the external IP address of MikroTik.

- **Certificate signing request**

Provides a high level security, but is not supported by some devices

☐ PSK

Provides a low level security, supported by most devices

Certificate signing request

```
-----BEGIN CERTIFICATE REQUEST-----
MIIBIjCBYQIBADBWMQ4wDAYDVQQKDAVJZG
VjbzEMMAoGA1UECwwDVVRNMTYwNAYD
VQQDDC1kZXZpY2VfNWQwNmZhY2E0MDU3
NGFhYWJhNDdmNDgxZTJkMWFhMTEuaXBz
ZWMwWTATBgqhkhjOPQIBBgqhkhjOPQM
BBwNCAATIdAvmxlkkCFJ+u3YDB8ItI+61
mQk7BtqmnZelh8rv36gkyaJRC1y2y3h76XaW
mguzKLv6DV+fYQU/RLON7o3LoBEw
DwYJKoZIhvcNAQkOMQIwADAKBggqhkhjOPQ
```



The UTM.csr file must be sent for signing to the remote device

**MikroTik for signing.**

2. After the request is signed, you will need to continue configuring the connection in SafeUTM.

**Do not close the settings tab!**

## Step 2.

### Setting up MikroTik

At this stage, you should configure MikroTik to continue configuring UTM.

The **UTM.csr** file obtained from SafeUTM must be uploaded to the MikroTik file storage. To do this, open the **File** section, click **Browse**, select the file and upload it.

You can configure MikroTik in several ways - through the GUI, and through the device console.

Two files will appear in the MikroTik file system which you need to download in order to upload to UTM later.

	UTM.crt	.crt file	1000 B	Sep/25/2018 10:46:59	Download
	cert_export_device_712c6384ca0c4b378d727f6ff2a5d4cb.ipsec.crt	.crt file	1208 B	Sep/25/2018 10:46:59	Download
	cert_export_mk_ca.crt	.crt file	1184 B	Sep/25/2018 10:46:59	Download

The file of the type `cert_export_device_<random character set>.ipsec.crt` is a **signed UTM certificate**. The file of the type `cert_export_mk_ca.crt` is **the root certificate of MikroTik**.

At this point, the MikroTik setup can be considered complete.

## Step 3.

### Finishing up the SafeUTM setup

Go back to SafeUTM to the tab with the device connection settings and continue filling in the following fields:

- **Signed UTM certificate** - upload a signed UTM certificate to MikroTik.
- **Remote Device Root Certificate** - download the MikroTik root certificate.
- **Home local networks** - list all **UTM LANs** that will be available in an IPsec connection, i.e. will be visible to the opposite side.

- **Remote local networks** - list all **MikroTik local networks** that will be available in an IPsec connection, i.e. will be visible to the opposite side.

Signed UTM certificate

```
ZWMmWTATBgcqhkJOPQIBBggqhkJOPQMBB
wNCAATIdAvmxlkkCFJ+u3YDB8ItI+61
mQk7BtqmnZelh8rv36gkyaJRC1y2y3h76XaW
mguzKLv6DV+fYQU/RLON7o3LoBEw
DwYJKoZihvcNAQkOMQIwADAKBggqhkJOPQ
QDAgNIADBFAiAuLNhNIZ0OGAUY4IeJ
S0NzNDZaI2OX2nuQR84m/5GJ9QlhAJ+5g+p
uD7Ibl+xgvuA7Yk2LI/1rUjhXUpzx
4UjFpye1
-----END CERTIFICATE REQUEST-----
```

↑ Upload

Remote device root certificate

```
ZWMmWTATBgcqhkJOPQIBBggqhkJOPQMBB
wNCAATIdAvmxlkkCFJ+u3YDB8ItI+61
mQk7BtqmnZelh8rv36gkyaJRC1y2y3h76XaW
mguzKLv6DV+fYQU/RLON7o3LoBEw
DwYJKoZihvcNAQkOMQIwADAKBggqhkJOPQ
QDAgNIADBFAiAuLNhNIZ0OGAUY4IeJ
S0NzNDZaI2OX2nuQR84m/5GJ9QlhAJ+5g+p
uD7Ibl+xgvuA7Yk2LI/1rUjhXUpzx
4UjFpye1
-----END CERTIFICATE REQUEST-----
```

↑ Upload

Home local network

192.168.100.0/24

Subnet

Add

Remote local networks

192.168.105.0/24

Subnet

Add

Add connection

Cancel

After filling in the fields, click **Add connection**. Your connection will appear in the list of connections.

## Connecting MikroTik to SafeUTM by certificates

Connection with certificates is used because it is more secure than a PSK connection, or in cases when the device does not support PSK.

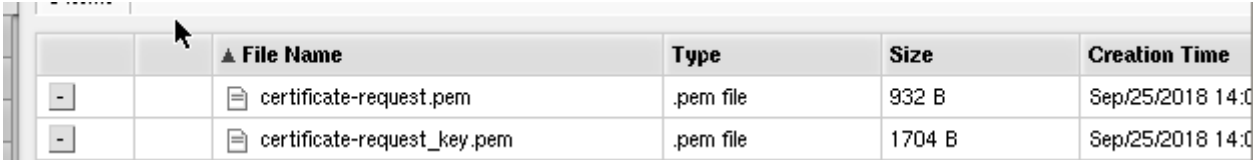
For the correct operation of certificate connections, it is necessary that the time on MikroTik be synchronized via NTP. To do this, it is sufficient for the device to have access to the Internet.

### Step 1.

#### Setting up MikroTik

You can configure MikroTik in several ways - through the GUI, and through the device console.

Two files will appear in the MikroTik file storage which must be downloaded since they are required for further configuration.:



	▲ File Name	Type	Size	Creation Time
-	certificate-request.pem	.pem file	932 B	Sep/25/2018 14:0
-	certificate-request_key.pem	.pem file	1704 B	Sep/25/2018 14:0

- File `certificate-request.pem` is a **certificate signing request**.
- File `certificate-request_key.pem` is a **private key**.

Next, you will need to fill in the **Certificate Signing Request** field in SafeUTM, here is how to configure it.

### Step 2.

#### Setting up SafeUTM

1. In SafeUTM, open the tab **Services -> IPsec -> Devices**, click on the icon (+), and fill in the following fields:

- **Connection name** - specify an arbitrary name for the connection. Maximum 42 characters.
- **Connection type** - select **Incoming**, since the connection to UTM is being made.
- **Authentication type** - select the type **Certificate**.
- **Certificate Signing Request** - Upload the signature request **received from MikroTik**.



- **Home local network** - it is necessary to list all UTM LANs that will be available in an IPsec connection, i.e. they will be visible to the opposite side.

Connection name

Test

### Connection type

☐ Outcoming

Connect Safe UTM to remote device

☒ Incoming

Connect remote device to Safe UTM

### Authentication type

☒ Certificate

Provides a high level security, but is not supported by some devices

☐ PSK

Provides a low level security, supported by most devices

Certificate signing request

```
ZWMwWTATBgqhkjOPQIBBggqhkjOPQMBB
wNCAAQevvXoFOsEAoSKUS6HMyKrHAS1
8KJtemzkip/9iUeX/b/y0bPuzSqWAGgUjmOiua
dxS0aXLnKCRpiafwBKX6SDHoBEw
DwYJKoZlHvcNAQkOMQIwADAKBggqhkjOPQ
QDAgNHADBEAiAISHrx225H3A26JuWs
fwHS0yHA0zWkhLXzZNxDWjTWQAIGBl00hvZ
qwOCKZZnioOXM/Rn+dnU1XcTyHqS2
WRjImcl=
-----END CERTIFICATE REQUEST-----
```

↑ Upload

Home local network

192.168.100.0/24

Subnet

Add

Remote local networks

192.168.105.0/24

Subnet

Add

Add connection

Cancel

2. After the settings, click **Add connection**. Your connection will appear in the list of connections. Click on the edit connection button to continue the setup.

IPsec

2

Head office

Branch office

Devices

Here you can configure an IPsec connection between Safe UTM and remote devices

+ Add

Incoming connections:

Title	Statuses	Operations
Test	<div>Off</div>	<div><div></div><div></div><div></div></div>



3. The connection settings editing area will appear. You need to download the files that are in the fields **UTM root certificate** and **Signed device certificate** for their subsequent use in MikroTik.

Head office

Branch office

**Devices**

Connection name

Test

UTM root certificate

```
-----BEGIN CERTIFICATE-----
MIIBuTCCAWCgAwIBAgIUUNHPvEj0gBmWCV
w0eEzzboAs6DPQwCgYIKoZIzj0EAwIw
LDEXMBUGA1UEBRMOMjAyMjA4MzEyMzI1N
TQxETAPBgNVBAMMCElkZWVVRNMB4X
DTlyMDgzMDIzMDU1NFoXDUMyMDgyODIz
MjU1NFowLDEXMBUGA1UEBRMOMjAyMjA4
MzEyMzI1NTQxETAPBgNVBAMMCElkZWV
VRNMFkwEwYHKoZIzj0CAQYIKoZIzj0D
AQcDQgAAEMjCQXdcEOYn3eCqmzY0LPbw1Q
```



The UTM.crt file must be sent to the remote device

Signed device certificate

```
-----BEGIN CERTIFICATE-----
MIIBgTCCASigAwIBAgIUUDTDc+4CxZGKdU5o
GQr/9sR5l4RQwCgYIKoZIzj0EAwIw
LDEXMBUGA1UEBRMOMjAyMjA4MzEyMzI1N
TQxETAPBgNVBAMMCElkZWVVRNMB4X
DTlyMDgzMDE2MjU1NFoXDUMyMDgyODE2M
jU1NFowVjEOMAwGA1UECgwFSWRIY28x
DDAKBgNVBAsMA1VUTTE2MDQGA1UEAwwt
ZGV2aWNlX2Q4YTJlNmU4ZDZlMTRkOTU5
ZjEyZTFjZTBiMGU3YzlmLmlwc2VjMFkwEwY
```



The device.crt file must be sent to the remote device

Home LANs:

- 192.168.100.0/24

Remote local networks:

- 192.168.105.0/24

Remote side identifier:

- 

**Save**

Cancel

---

## Problems when reactivating an incoming connection to SafeUTM

If after using this connection you turned it off, for example, as unnecessary, and when trying to re-enable the connection failed to be established, then most likely the remote device got into fail2ban (a tool that tracks attempts to access services in log files, and if it finds repeated unsuccessful authorization attempts from the same IP-address or host, it blocks further attempts).

---

## Connecting Mikrotik to SafeUTM via L2TP/IPsec

Configure the connection by running the following commands:

1. Edit the IPsec profile:

```
ip ipsec profile set default hash-algorithm=sha1 enc-algorithm=aes-256 dh-group=modp2048
```

2. Edit IPsec proposals:

```
ip ipsec proposal set default auth-algorithms=sha1 enc-algorithms=aes-256-cbc, aes-192-cbc, aes-128-cbc pfs-group=modp2048
```

3. Create a connection to SafeUTM:

```
interface l2tp-client add connect-to={server} profile=default disabled=no  
name={interface_name} password="{password}" user="{login}" use-ipsec="yes" ipsec-  
secret="{psk}"
```

# Connecting users

Connecting remote users via L2TP/IPsec protocol.

---

The settings for connecting users (client-to-site VPN) are described in the article [\*\*VPN connection L2TP IPsec\*\*](#).

---

## Allow remote users to connect via L2TP/IPsec protocol

1. Go to **Users -> VPN connections**.
2. Check the item **L2TP/IPsec connection**. Unchecking the box disables all users connected via L2TP/IPsec and makes their connection impossible.

## VPN connections

Stopped

General

Fixed VPN IP addresses

### General settings

Network for VPN connections

192.168.0.0/16

☐ PPTP connection

☐ PPPoE connection

☐ IKEv2/IPSec Connection

Domain

safeutm.com

☐ SSTP Connection

Domain

Port

1443

☒ L2TP/IPSec Connection

PSK

.....



[PowerShell - script for configuring connections](#)

Save

3. Change the default PSK. The pre-shared key is a line that will need to be entered in the L2TP/IPsec connection settings on end devices.

When changing the Pre-shared key, all remotely connected users will be disconnected. To restore connectivity, specify a new PSK on remote user devices.