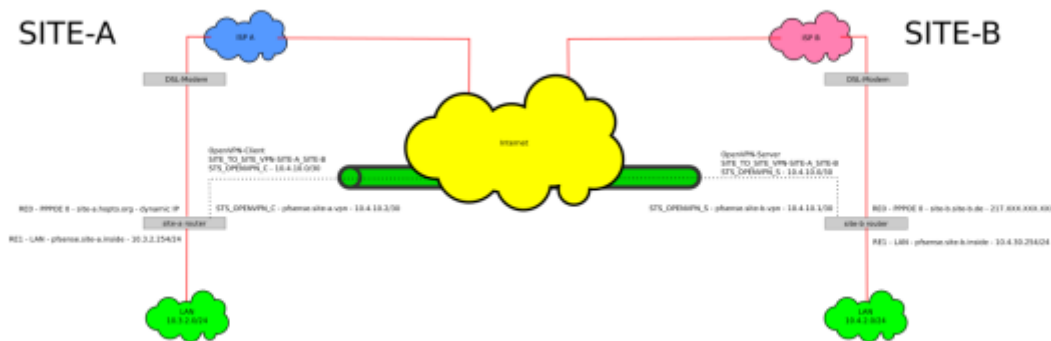


[openvpn](#), [pfsense](#), [sitetosite](#), [vpn](#), [apu1c4](#), [pcengines](#)

# simple site to site VPN with pfSense and OpenVPN

I just had to set up a simple site to site VPN between a site with a fixed IP (SITE-B) and a site with a dynamic IP (SITE-A). Both routers are running the 'Community Edition' of pfSense and are installed on PC Engines APU.1C4. I have followed the documentation at pfsense.org about how to [configure a Site To Site VPN with OpenVPN](#) to get the VPN up and running. Because some things aren't documented there I will put up my own HowTo here. Please do yourself a favour and read the [documentation at pfsense.org](#) first because it explains things in more detail than I will do here.



This HowTo will guide you through the setup of:

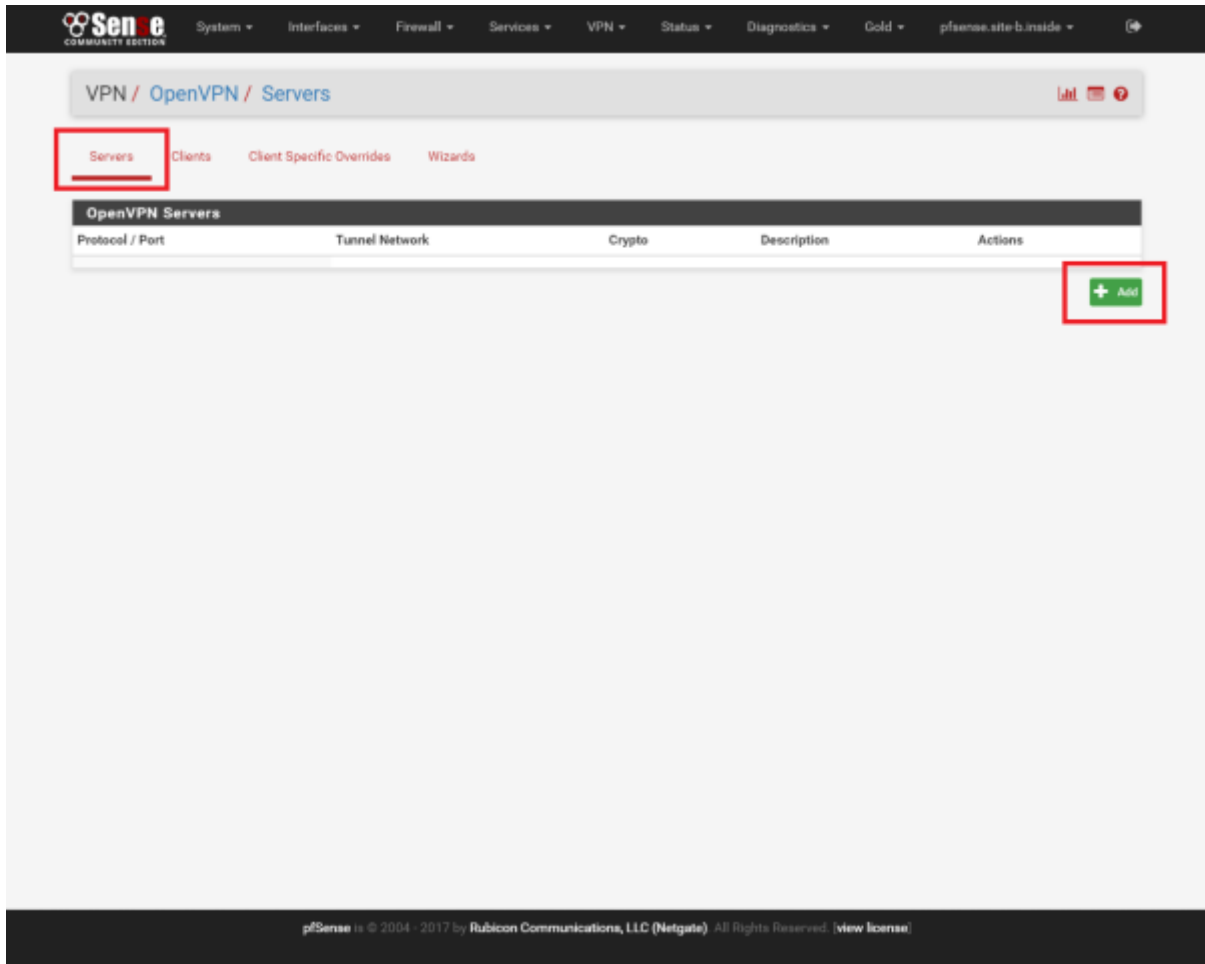
- An IPv4 'Site To Site VPN' with [OpenVPN](#) on the pfSense platform (2.3.4 at time of writing) as seen in the schema above with the specific settings for the PC Engines APU hardware platform.
- The client will autoconnect to the server and (in the event of disconnection) reconnect automatically.
- The authentication between the client and the server will happen automatically via pre-shared key.

## Sources

- [pfsense.org - OpenVPN Site To Site](#)
- [The pfSense Book](#)

## Configure the OpenVPN server on SITE-B router

- Navigate to 'VPN - OpenVPN'



- On the '**Servers**'-Tab click on the '**+ Add**'-button to add a new server

**OpenVPN / Servers / Edit**

Servers Clients Client Specific Overrides Wizards

### General Information

**Disabled**  Disable this server  
Set this option to disable this server without removing it from the list.

**Server mode** Peer to Peer ( Shared Key )

**Protocol** UDP

**Device mode** tun

**Interface** WAN

**Local port** 1194

**Description** Site\_To\_Site-SITE-A\_SITE\_B  
A description may be entered here for administrative reference (not parsed).

### Cryptographic Settings

**Shared key**  Automatically generate a shared key

**Encryption Algorithm** AES-256-CBC (256 bit key, 128 bit block)

**Auth digest algorithm** RSA-SHA512 (512-bit)  
Leave this set to SHA1 unless all clients are set to match. SHA1 is the default for OpenVPN.

**Hardware Crypto** No Hardware Crypto Acceleration

### Tunnel Settings

**IPv4 Tunnel Network** 10.4.10.0/30  
This is the IPv4 virtual network used for private communications between this server and client hosts expressed using CIDR (e.g. 10.0.8.0/24). The first network address will be assigned to the server virtual interface. The remaining network addresses can optionally be assigned to connecting clients (see Address Pool).

**IPv6 Tunnel Network**  
This is the IPv6 virtual network used for private communications between this server and client hosts expressed using CIDR (e.g. fe80::/54). The first network address will be assigned to the server virtual interface. The remaining network addresses can optionally be assigned to connecting clients (see Address Pool).

**IPv4 Remote network(s)** 10.3.2.0/24  
IPv4 networks that will be routed through the tunnel, so that a site-to-site VPN can be established without manually changing the routing tables. Expressed as a comma-separated list of one or more CIDR ranges. If this is a site-to-site VPN, enter the remote LAN/s here. May be left blank for non site-to-site VPN.

**IPv6 Remote network(s)**  
These are the IPv6 networks that will be routed through the tunnel, so that a site-to-site VPN can be established without manually changing the routing tables. Expressed as a comma-separated list of one or more IP/PREFIX. If this is a site-to-site VPN, enter the remote LAN/s here. May be left blank for non site-to-site VPN.

**Concurrent connections** 1  
Specify the maximum number of clients allowed to concurrently connect to this server.

**Compression** Enabled with Adaptive Compression  
Compress tunnel packets using the LZO algorithm. Adaptive compression will dynamically disable compression for a period of time if OpenVPN detects that the data in the packets is not being compressed efficiently.

**Type-of-Service**  Set the TOS IP header value of tunnel packets to match the encapsulated packet value.

**Duplicate Connection**  Allow multiple concurrent connections from clients using the same Common Name.  
(This is not generally recommended, but may be needed for some scenarios.)

**Disable IPv6**  Don't forward IPv6 traffic.

### Advanced Configuration

**Custom options**  
Enter any additional options to add to the OpenVPN server configuration here, separated by semicolon.  
EXAMPLE: push "route 10.0.0.0 255.255.255.0"

**Verbosity level** default  
Each level shows all info from the previous levels. Level 3 is recommended for a good summary of what's happening without being swamped by output.  
None: Only fatal errors  
Default through 4: Normal usage range  
5: Output R and W characters to the console for each packet read and write. Uppercase is used for TCP/UDP packets and lowercase is used for TUN/TAP packets.  
6-11: Debug info range

**Save**

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- In the 'General Information'-section:

^ Setting ^ Value ^

Disable this server	<input type="checkbox"/>
Server mode	Peer to Peer (Shared Key)
Protocol	UDP
Device Mode	tun
Interface	set it to whatever external interface you want to have your OpenVPN server listening on. In my case this is 'WAN'.
Local port	set it to the port you want the local OpenVPN server to listen on. Default is '1194'.
Description	Set an appropriate description e.g. 'Site_To_Site-SITE-A_SITE_B'

- In the 'Cryptographic Settings'-section:
  - Automatically generate a shared key: ????
  - Encryption Algorithm: AES-256-CBC (256 bit key, 128 bit block)
  - Auth digest algorithm: RSA-SHA512 (512-bit)
  - Hardware Crypto: No Hardware Crypto Acceleration (this is PC Engines APU specific, if your hardware has crypto support - enable it)
- In the 'Tunnel Settings'-Section:
  - IPv4 Tunnel Network: 10.4.10.0/30 (this a very small subnet with 2 useable IP addresses since there is only one server and one client)
  - IPv6 Tunnel Network: leave empty
  - IPv4 Remote network(s): 10.3.2.0/24 (this is a comma separated list for all the networks you want to connect to on the client side (SITE A))
  - IPv6 Remote network(s): leave empty
  - Concurrent connections: 1
  - Compression: Enabled with Adaptive Compression
  - Type-of-Service:  Set the TOS IP header value of tunnel packets to match the encapsulated packet value
  - Duplicate Connection:  Allow multiple concurrent connections from clients using the same Common Name
  - Disable IPv6: ????. Don't forward IPv6 traffic
- In the 'Advanced Configuration'-section:
  - Custom options: leave empty
  - Verbosity Level: default
- Click on 'Save'-button

You should now be forwarded to the list with your configured OpenVPN servers under 'VPN - OpenVPN' on the 'Servers'-tab

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