09. OpenVPN

Overview

OpenVPN is a mature, widely-supported VPN protocol based on SSL/TLS. PUQVPNCP manages OpenVPN with full PKI (Easy-RSA) integration.

Key advantages:

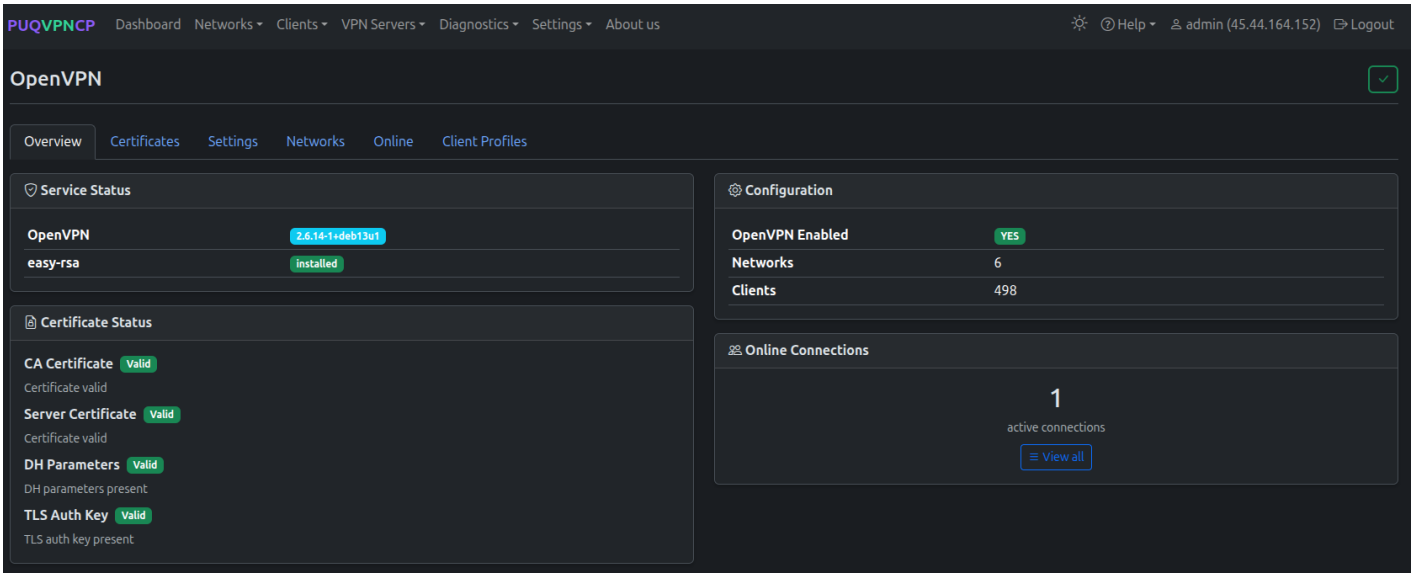
- **Universal compatibility** — works on virtually every platform and device
- **TCP mode** — can bypass restrictive firewalls that block UDP
- **Highly configurable** — extensive cipher, compression, and routing options
- **Certificate-based** — each client gets a unique TLS certificate

OpenVPN is the best choice when you need **maximum compatibility** or when clients are behind restrictive firewalls that block WireGuard and IKEv2 traffic.

> **Requirement:** `openvpn` and `easy-rsa` packages must be installed.

Navigate to **VPN Servers > OpenVPN** to access OpenVPN management. The page has 6 tabs: Overview, Certificates, Settings, Networks, Online, Client Profiles.

Overview Tab



OpenVPN overview — service status, certificates, configuration, online connections

The Overview tab shows:

Card	Description
Service Status	Installed `openvpn` and `easy-rsa` package versions
Certificate Status	Status of CA, Server Certificate, DH Parameters, and TLS Auth Key (Valid/Missing)
Configuration	OpenVPN enabled/disabled, number of networks and clients
Online Connections	Number of currently active OpenVPN connections with a link to view all

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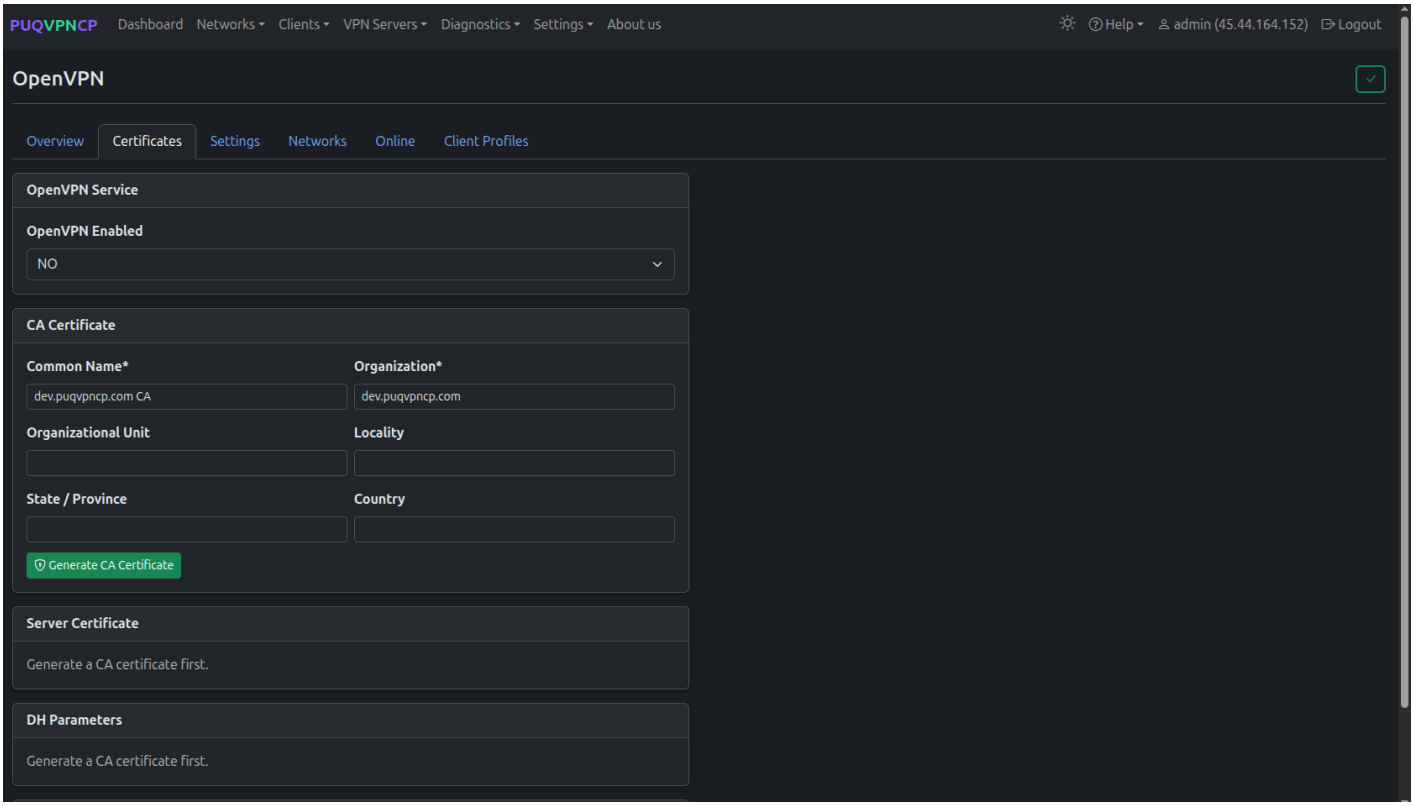
Certificates Tab

Before OpenVPN can be enabled, you must generate all required certificates. The Certificates tab guides you through the PKI setup step by step.

Step 1: Generate CA Certificate



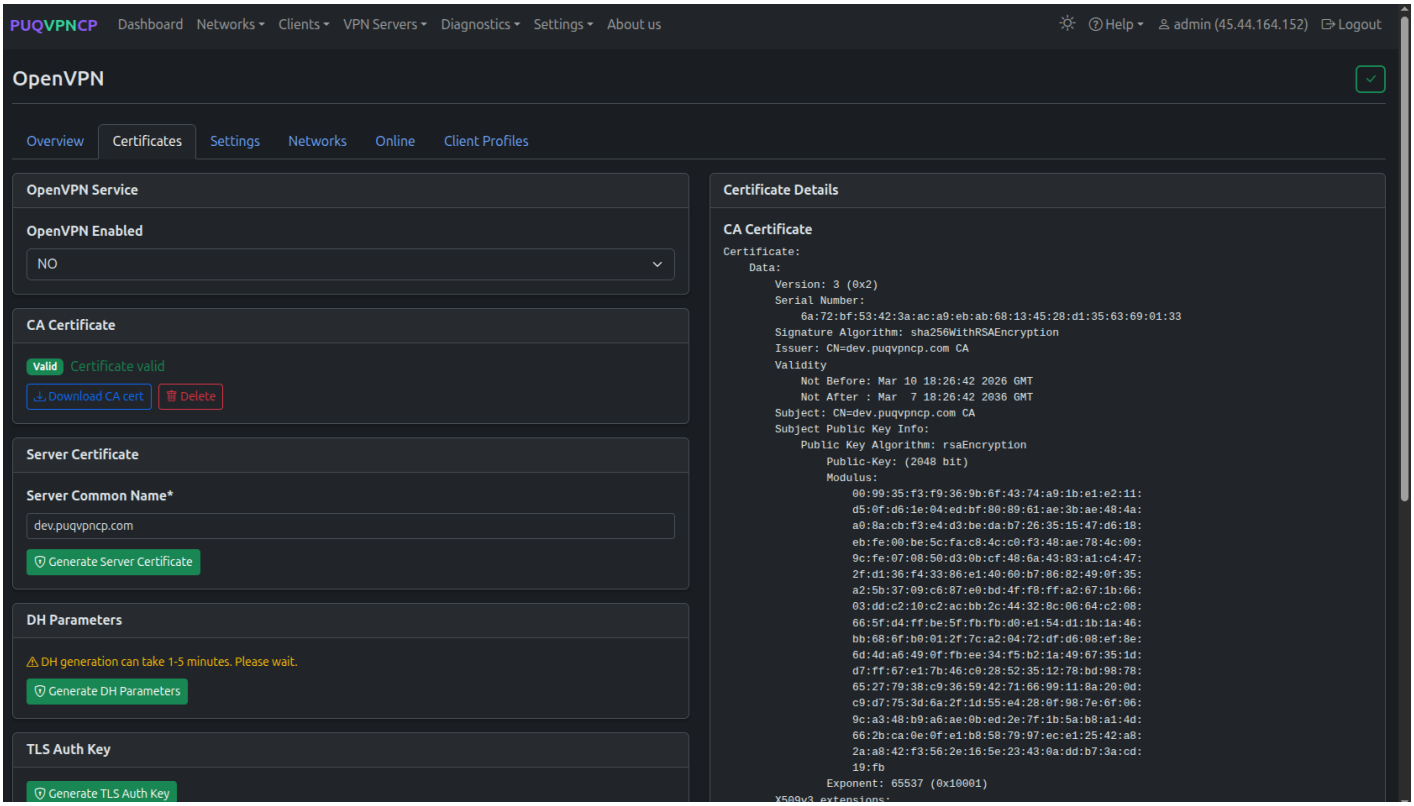
Certificates tab — initial state, CA certificate form

Fill in the CA Certificate fields:

Field	Description	Example
Common Name	CA certificate name	`myserver.com CA`
Organization	Organization name	`myserver.com`
Organizational Unit	(optional) Department	
Locality	(optional) City	
State / Province	(optional) State	
Country	(optional) Country code	

Click **Generate CA Certificate** to create the root CA.

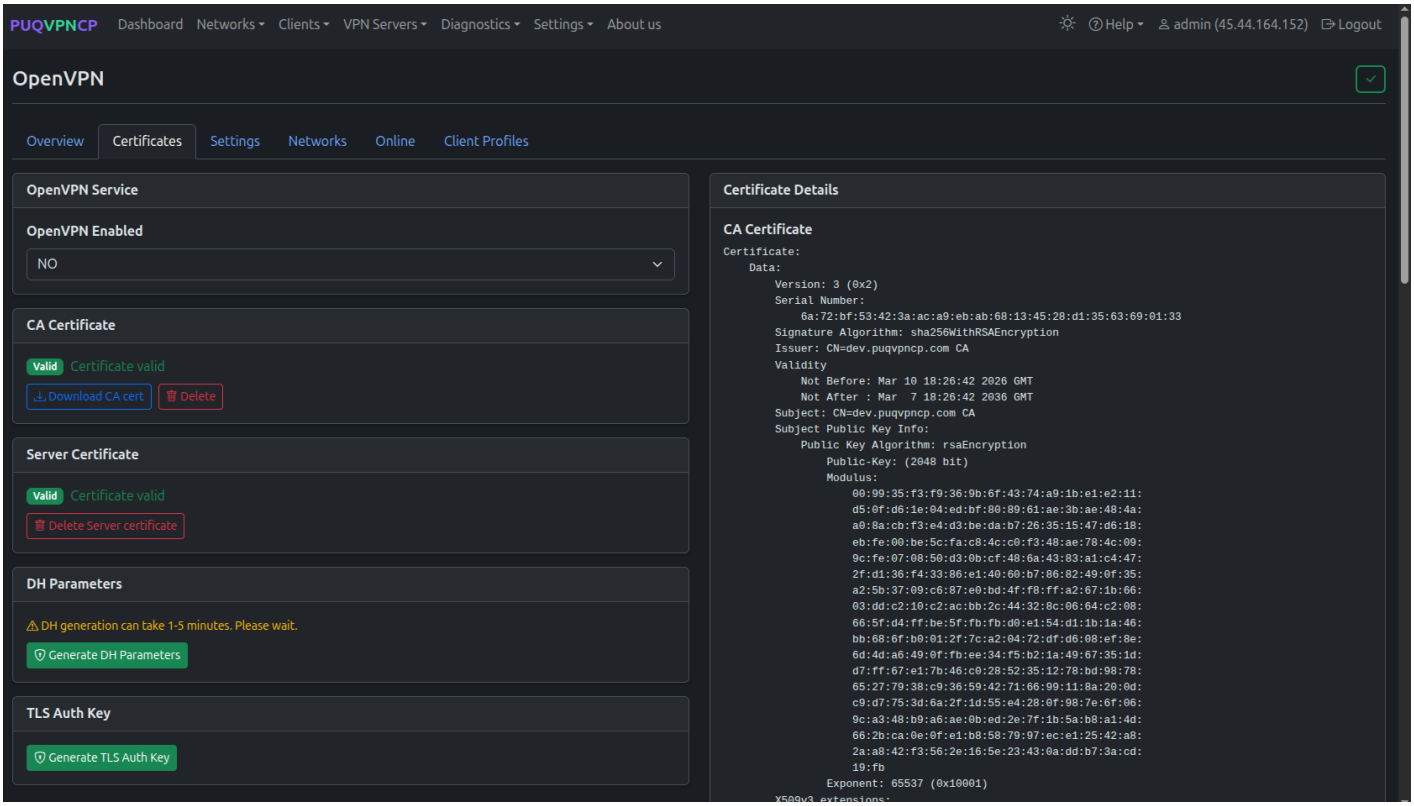
Step 2: Generate Server Certificate and DH Parameters



Certificates tab — CA generated, generating server certificate

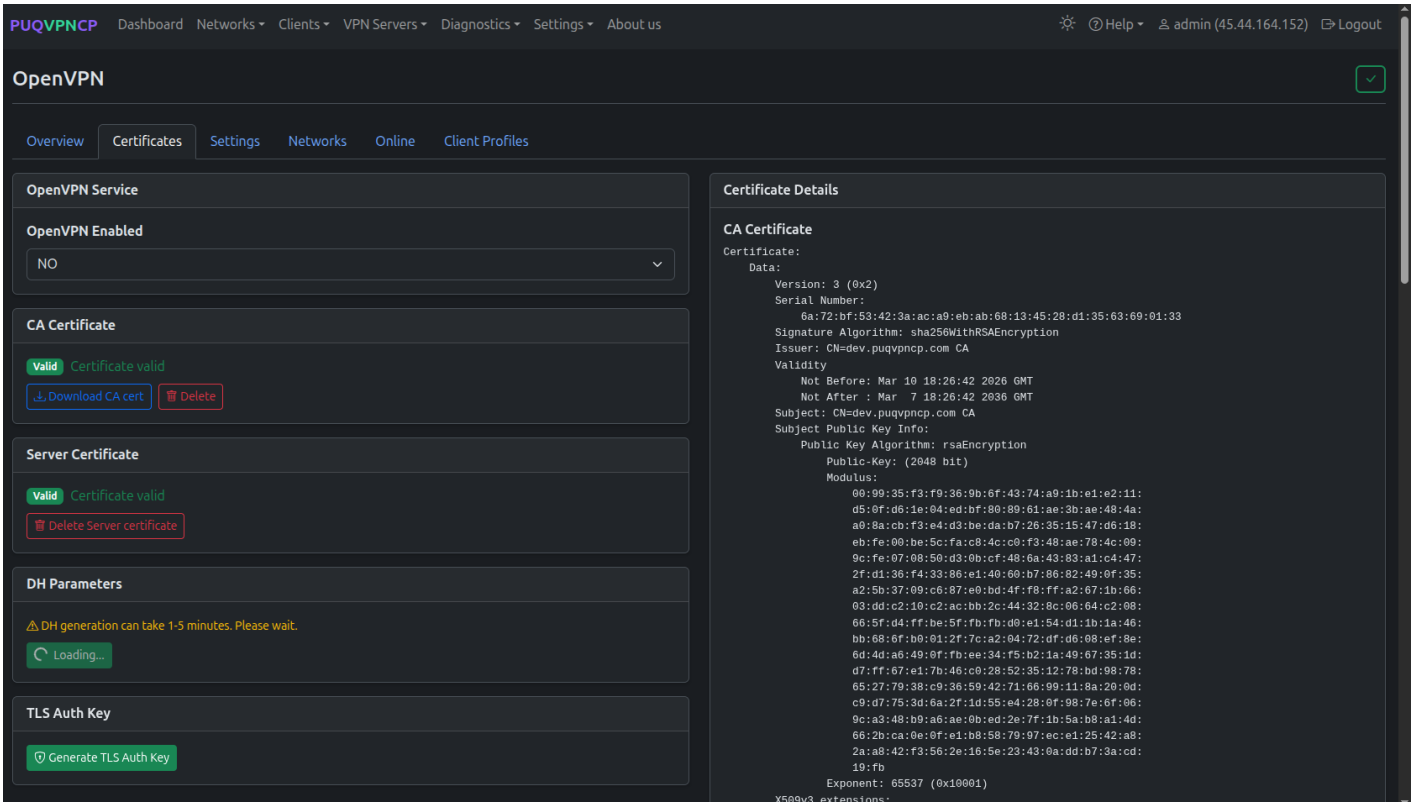
After the CA is generated:

1. Click **Generate Server Certificate** — creates the server's TLS certificate signed by the CA
2. Click **Generate DH Parameters** — creates Diffie-Hellman parameters (takes ~1 minute)



Certificates tab — DH parameters generating

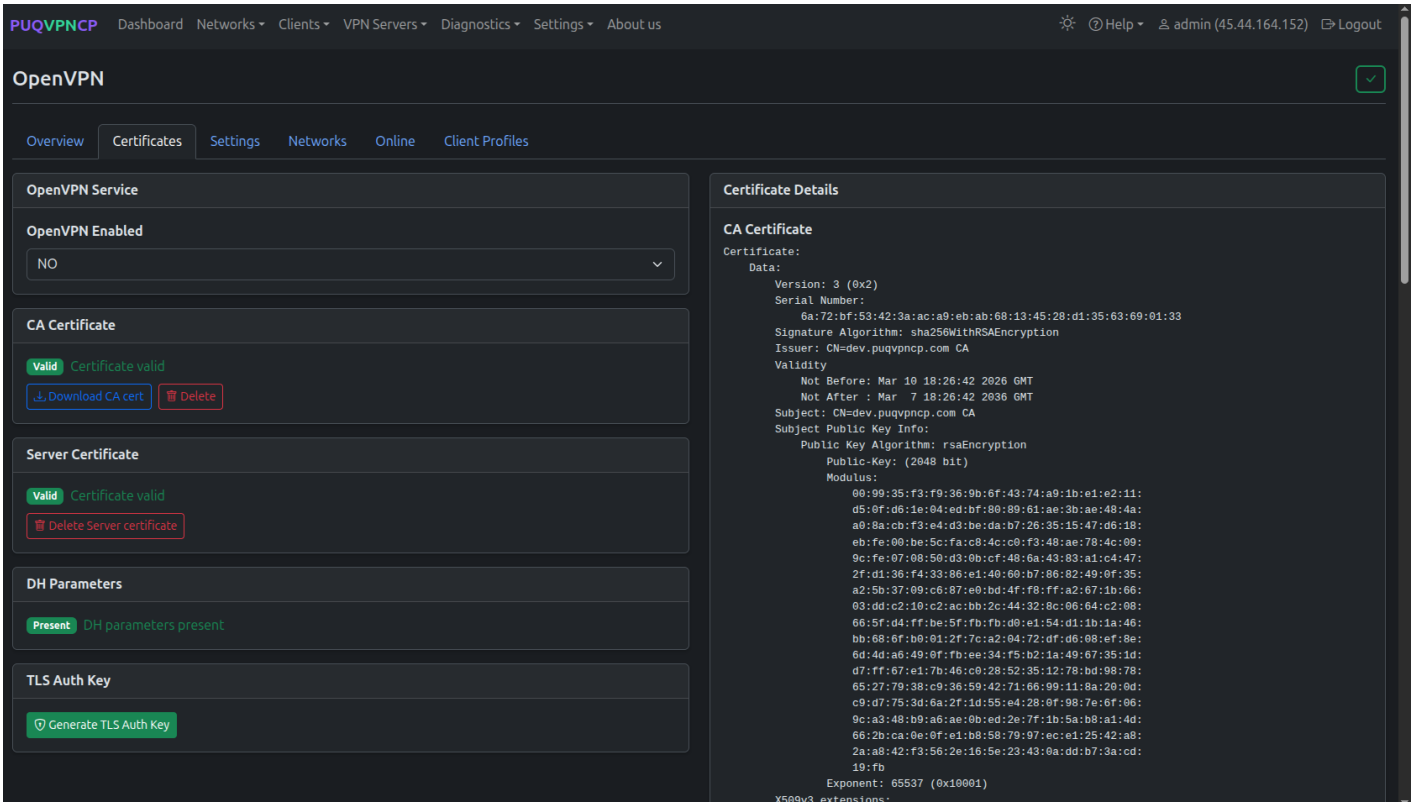
Step 3: Generate TLS Auth Key



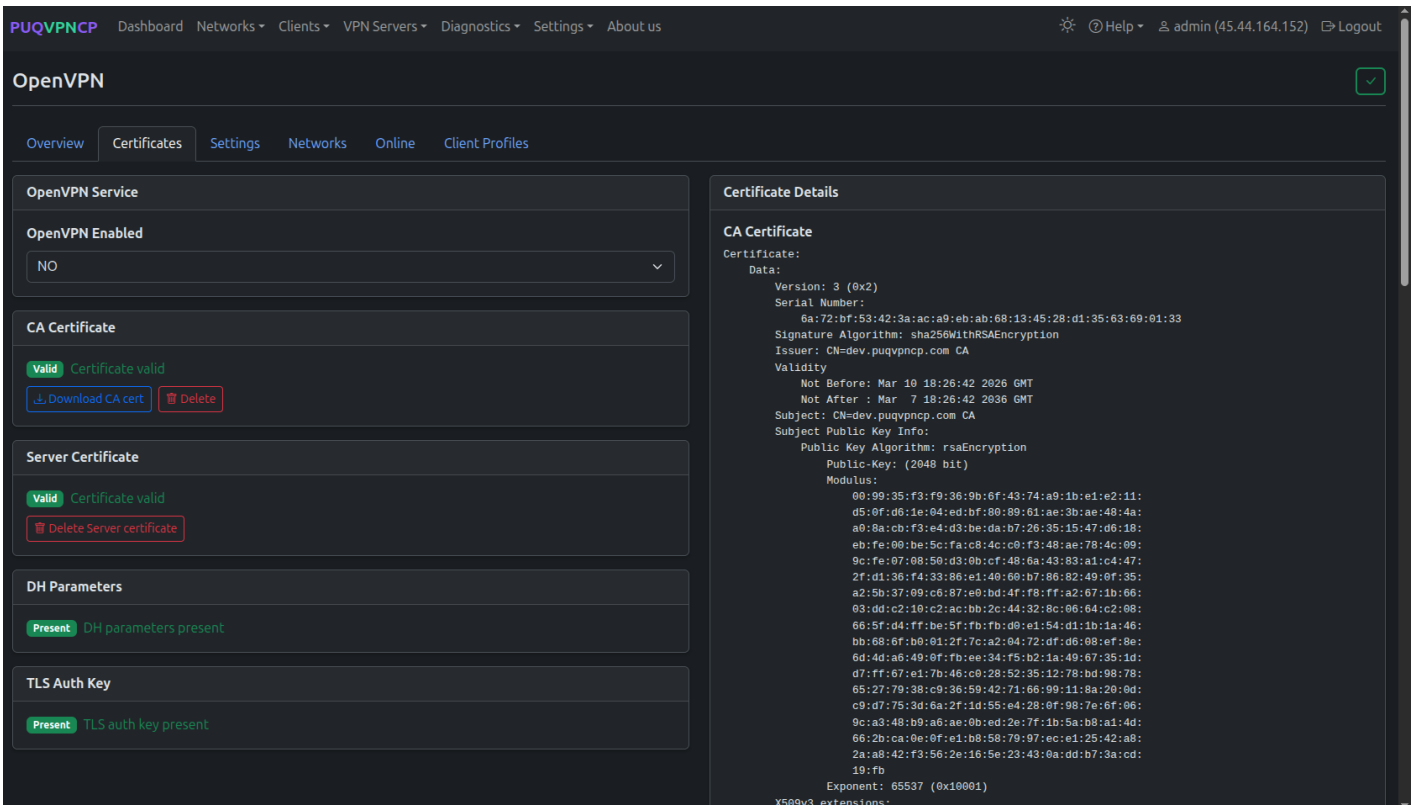
Certificates tab — generating TLS Auth key

Click **Generate TLS Auth Key** to create the HMAC authentication key.

Step 4: All Certificates Ready

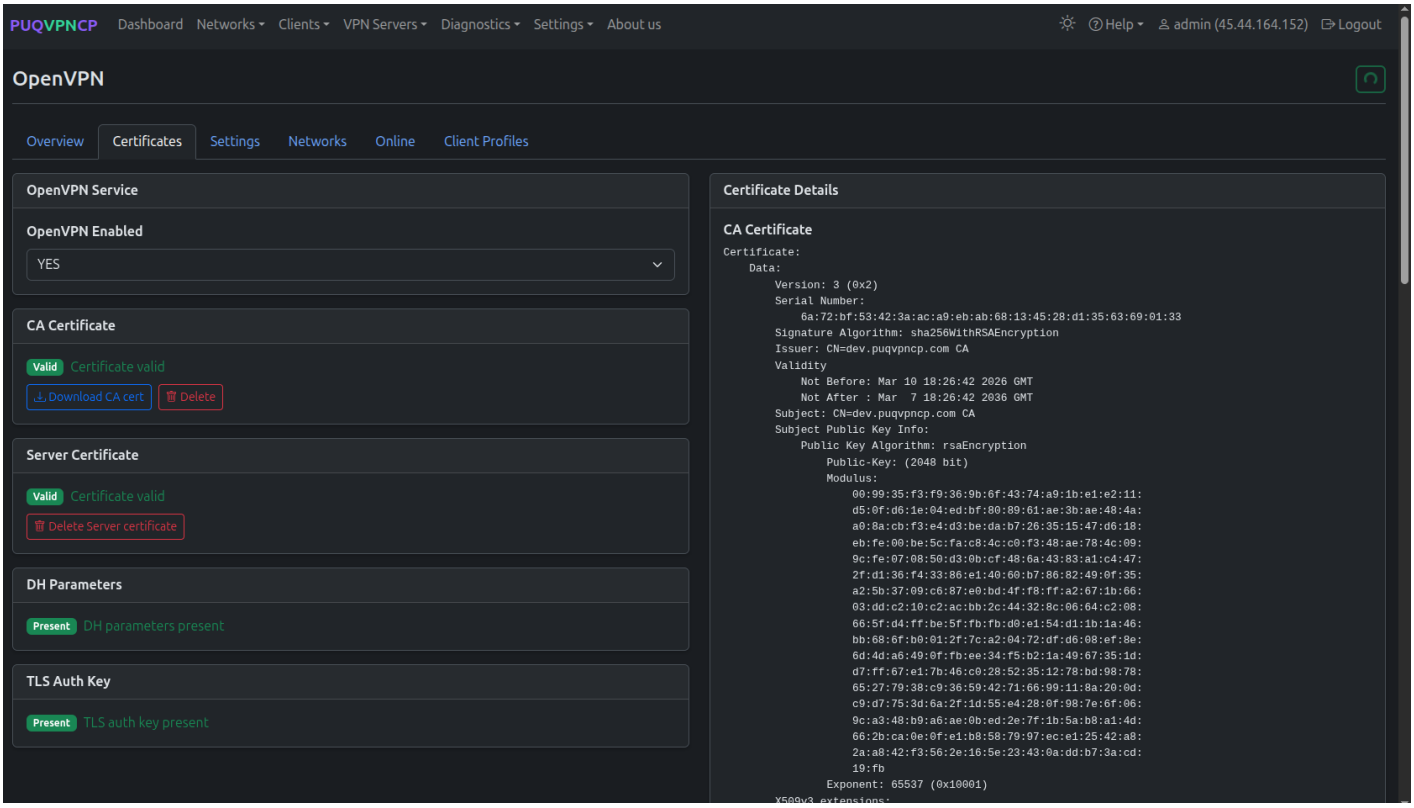


Certificates tab — all certificates and keys generated



Certificates tab — all valid, certificate details panel

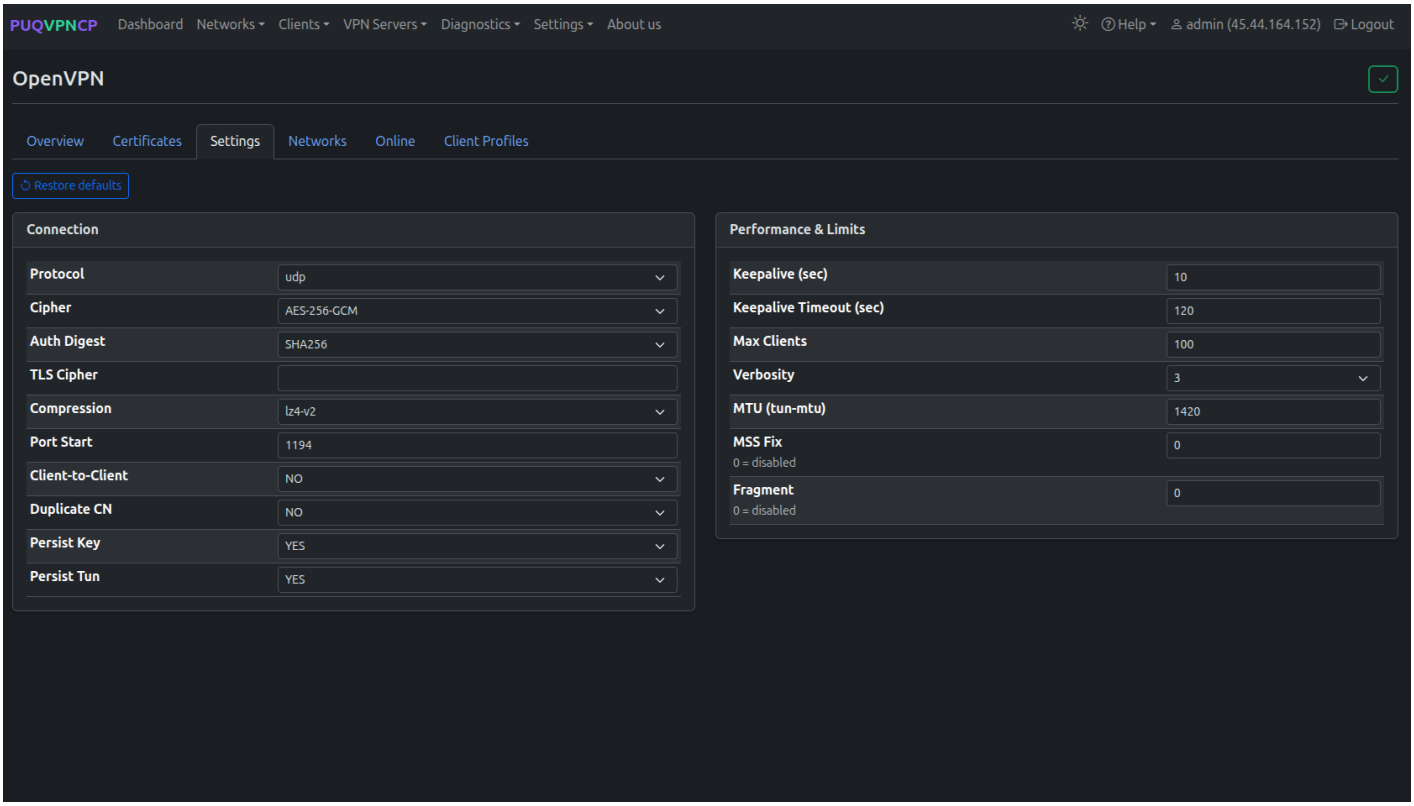
Once all 4 components are generated (CA, Server, DH, TLS Auth), you can enable OpenVPN:



Certificates tab — OpenVPN enabled

Set **OpenVPN Enabled** to **YES** and save. The right panel shows the CA certificate details (issuer, validity dates, fingerprint).

Settings Tab



OpenVPN settings — connection and performance defaults

Configure global defaults for OpenVPN. These settings are applied to all networks unless overridden at the network level.

Connection

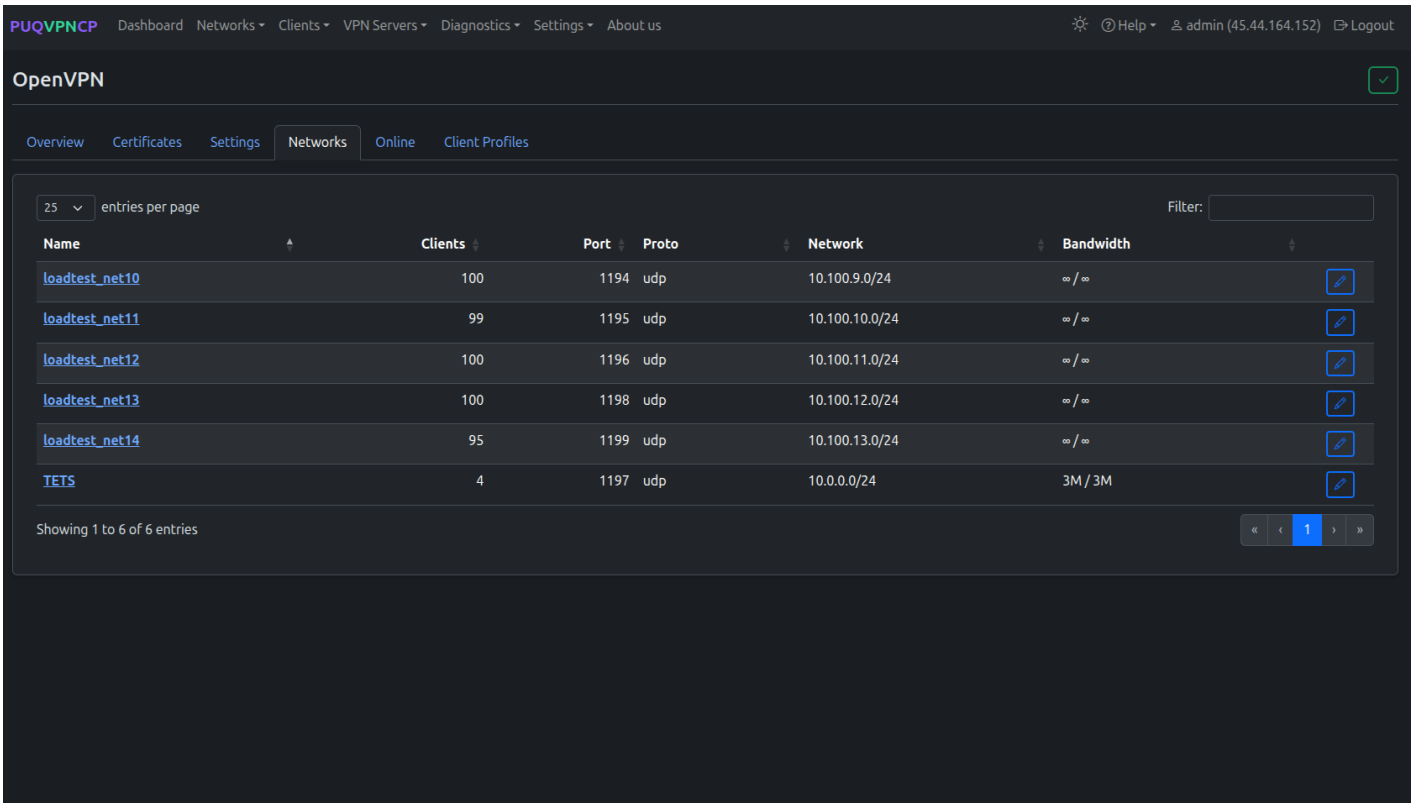
Setting	Description	Default
Protocol	UDP or TCP	udp
Cipher	Encryption cipher	AES-256-GCM
Auth Digest	HMAC authentication digest	SHA256
TLS Cipher	TLS cipher suite (optional)	(empty)
Compression	lz4-v2, lzo, or disabled	lz4-v2
Port Start	Starting port for network instances	1194
Client-to-Client	Allow clients to communicate directly	NO
Duplicate CN	Allow multiple connections with same certificate	NO
Persist Key	Keep keys across restarts	YES
Persist Tun	Keep tunnel device across restarts	YES

Performance & Limits

Setting	Description	Default
Keepalive (sec)	Ping interval	10
Keepalive Timeout (sec)	Connection timeout	120
Max Clients	Maximum simultaneous clients per instance	100
Verbosity	Log verbosity level (0-11)	3
MTU (tun-mtu)	Tunnel MTU	1420
MSS Fix	Clamp MSS to avoid fragmentation (0 = disabled)	0
Fragment	Fragmentation size (0 = disabled)	0

Use the **Restore defaults** button to reset all settings to their original values.

Networks Tab

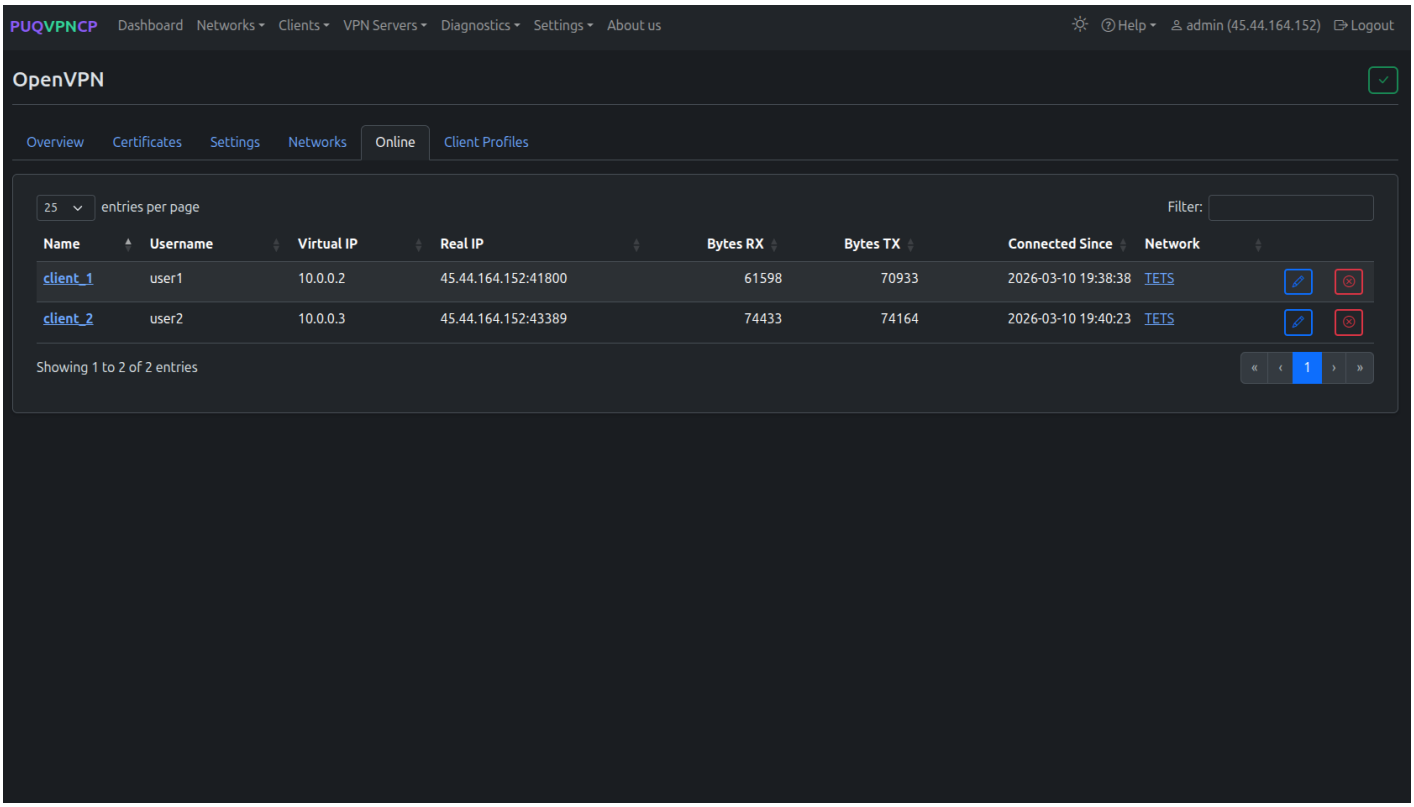


OpenVPN networks — list of all OpenVPN instances

Shows all networks that have OpenVPN enabled:

Column	Description
Name	Network name (link to network edit page)
Clients	Number of OpenVPN clients in this network
Port	UDP/TCP port for this network's OpenVPN instance
Proto	Protocol (udp/tcp)
Network	Subnet assigned to this network
Bandwidth	Upload / download bandwidth limits

Online Tab



OpenVPN online users — currently connected clients

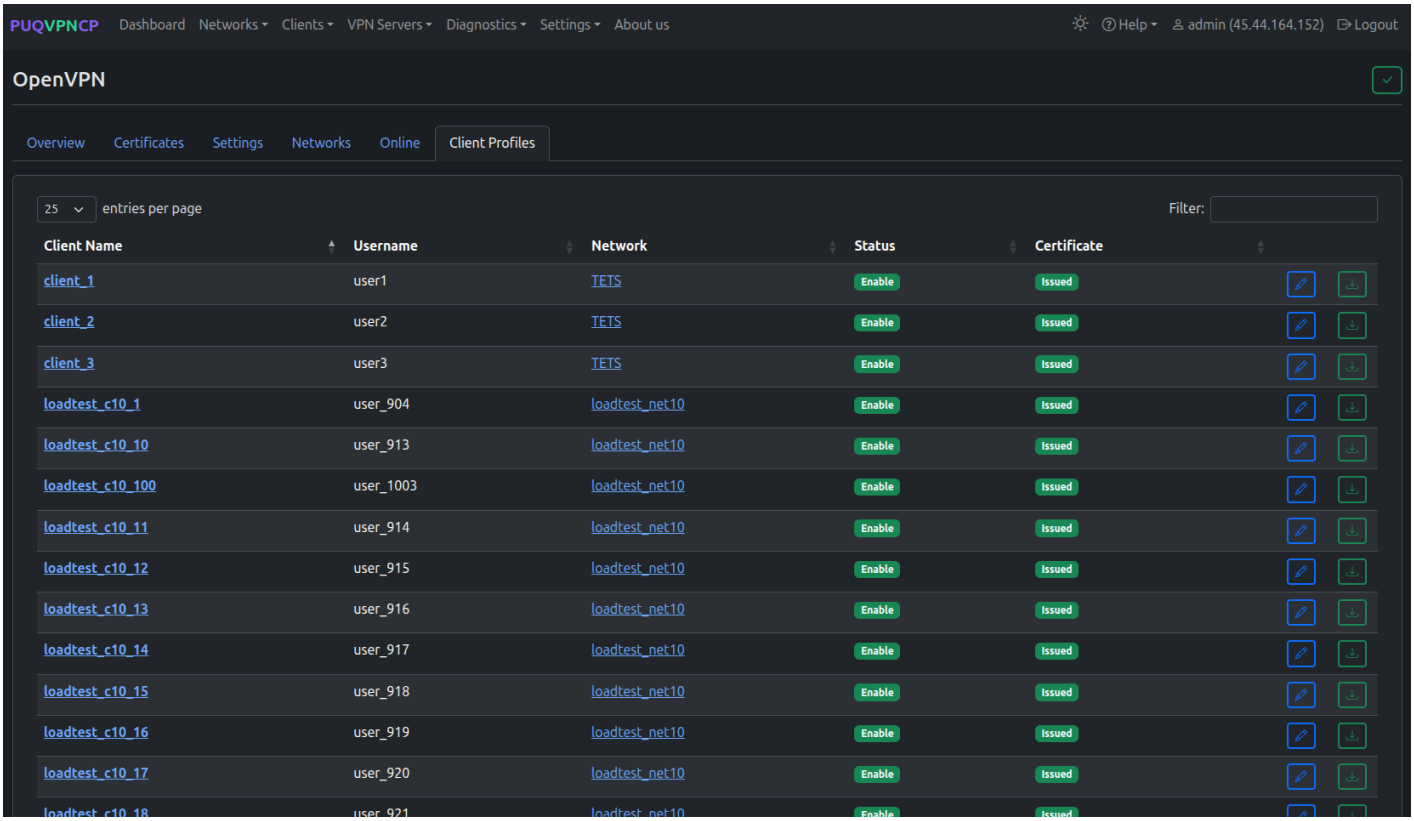
Shows all active OpenVPN sessions:

Column	Description
Name	Client name (link to client page)
Username	System user who owns this client
Virtual IP	IP assigned inside the VPN tunnel

Column	Description
Real IP	Client's real IP address and port
Bytes RX	Bytes received from client
Bytes TX	Bytes sent to client
Connected Since	Connection start timestamp
Network	Network name

Each row has buttons to edit the client or disconnect the session.

Client Profiles Tab



OpenVPN client profiles — all clients across all networks

Lists all OpenVPN clients across all networks:

Column	Description
Client Name	Client name (link to client page)
Username	System user who owns this client
Network	Network this client belongs to
Status	Enable/Disable

Column	Description
Certificate	Certificate status (Issued/Missing)

Each client row has buttons to edit the client and download the `.ovpn` configuration file.

Client Configuration

Each OpenVPN client automatically gets:

- A unique **X.509 client certificate** (issued by the PKI)
- A ready-to-use **`.ovpn` profile** with embedded certificates
- **Username/password** credentials for double authentication

The `.ovpn` profile contains everything needed to connect:

- Server address and port
- Encryption settings
- Embedded CA, client certificate, client key, and TLS-Auth key
- Authentication settings

Supported Client Apps

Platform	App
Windows	OpenVPN GUI, OpenVPN Connect
macOS	Tunnelblick, OpenVPN Connect
Linux	`openvpn` CLI, NetworkManager
Android	OpenVPN Connect (Play Store)
iOS	OpenVPN Connect (App Store)
Mikrotik	RouterOS 7+ OVPN client

Per-Network Configuration

Each network has its own OpenVPN instance with:

- Unique port and protocol
- Separate interface (e.g., `ovpn1197`)

- Per-network overrides for cipher, auth, compression, MTU, MSS
- Policy routing with mark/table
- Client push settings (full/split tunnel, DNS)

See the OpenVPN tab in Networks for details.

Revision #5
Created 28 September 2026 17:05:30 by Ruslan
Updated 28 September 2026 18:58:36 by Ruslan