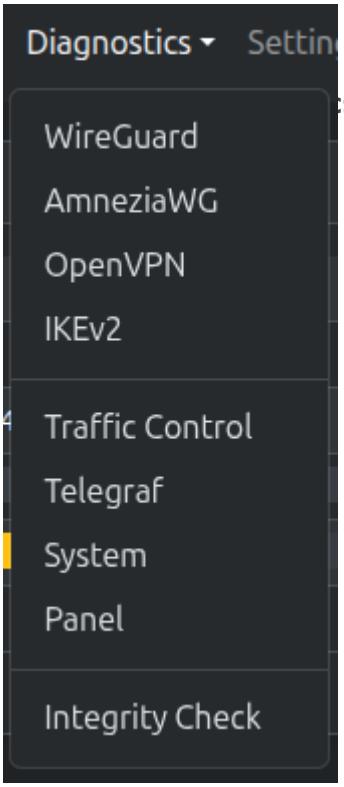
21. Diagnostics

Overview

The **Diagnostics** section provides real-time monitoring, log viewing, and system integrity protocols, traffic control, monitoring services, and the panel itself.



s in the main menu to access the following pages:

Diagnostics dropdown menu

Page	Description
WireGuard	WireGuard service status, `wg show` output, kernel logs
AmneziaWG	AmneziaWG service status, `awg show` output, kernel logs
OpenVPN	OpenVPN service status, certificates, instances, connection events, auth log, server logs
IKEv2	strongSwan service status, certificates, `ipsec statusall` output, IKEv2 logs
Traffic Control	Overview of TC classes, per-interface bandwidth statistics with live throughput

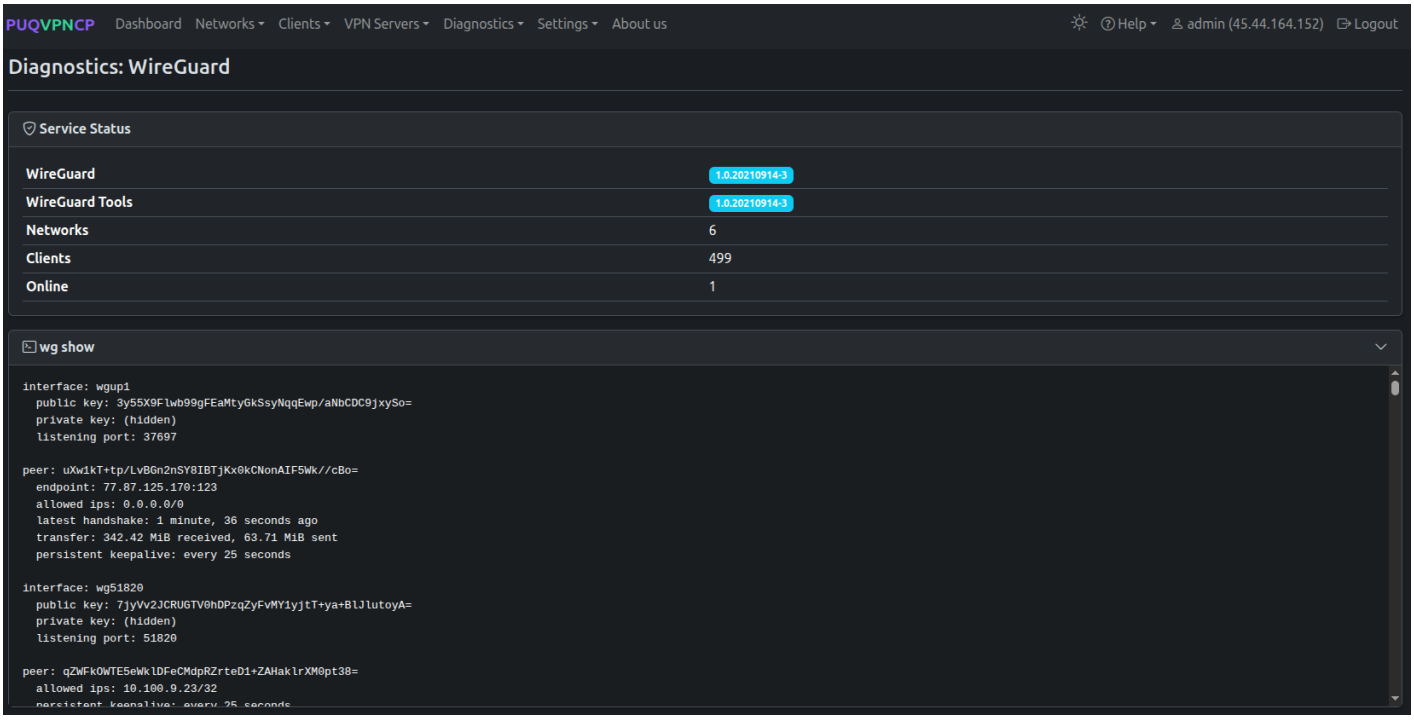
Page	Description
Telegraf	Telegraf service status, InfluxDB output config, inputs, Telegraf logs
System	Server uptime, memory, disk usage, network interfaces, system logs
Panel	PUQVPNCP application log viewer (`puqvpncp.log`)
Integrity Check	Full system integrity audit — verifies firewall rules, ipset, routing, TC classes, interfaces

> **Permission:** All diagnostics pages require the `diagnostics:read` permission. Integrity Check requires `firewall:read` (audit) and `firewall:write` (fix).

All log viewers feature:

- **Auto-refresh** every 3 seconds
- **Pause / Resume** button to stop auto-refresh
- **Line count selector** (50, 100, 200, 500 lines)
- **Color-coded** log entries (errors in red, warnings in yellow, connections in green)

WireGuard



Diagnostics: WireGuard — service status, wg show, kernel logs

Service Status

Field	Description
WireGuard	Installed WireGuard kernel module version
WireGuard Tools	Installed `wireguard-tools` package version
Networks	Number of WireGuard-enabled networks
Clients	Total number of WireGuard clients
Online	Number of currently connected WireGuard peers

If WireGuard or WireGuard Tools are not installed, or no networks are configured, a warning alert is displayed with instructions.

wg show

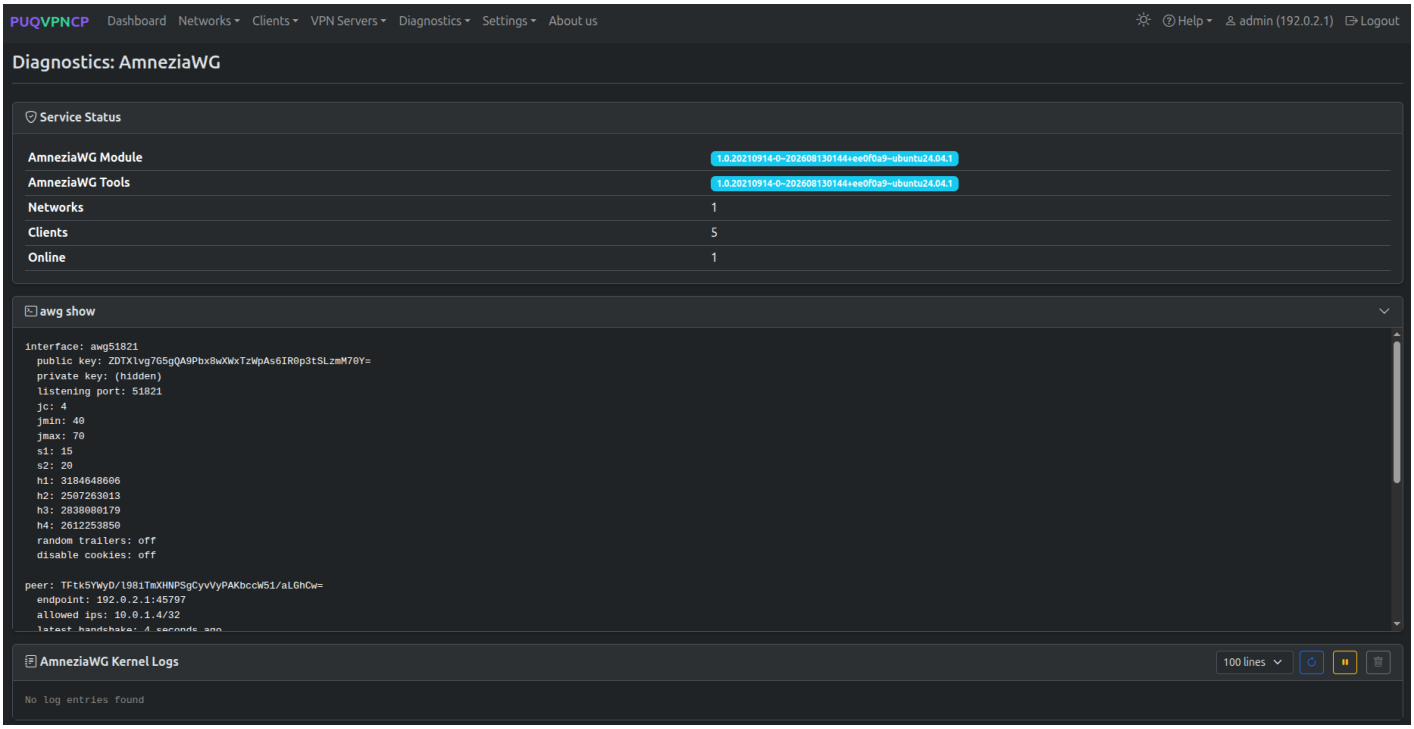
Displays the raw output of the `wg show` command — the standard WireGuard status tool. Shows all active WireGuard interfaces with their public keys, listening ports, and connected peers with handshake times and transfer statistics.

This section is collapsible. Click the header to expand/collapse.

WireGuard Kernel Logs

Displays WireGuard-related kernel messages from `journalctl`. These logs show low-level WireGuard events such as interface creation, peer handshake failures, and kernel module messages.

AmneziaWG



Diagnostics: AmneziaWG — service status, awg show, and kernel logs

Service Status

Field	Description
AmneziaWG	Installed AmneziaWG kernel module (DKMS) version
AmneziaWG Tools	Installed `amneziawg-tools` package CLI version (`awg`)
Networks	Number of AmneziaWG-enabled networks
Clients	Total number of AmneziaWG clients
Online	Number of currently connected AmneziaWG peers

If AmneziaWG or AmneziaWG Tools are not installed, or no networks are configured, an informative warning alert is displayed with repository and package installation instructions for Debian (with `build-essential dkms linux-headers-$(uname -r)`) and Ubuntu (`add-apt-repository -y ppa:amnezia/ppa`).

awg show

Displays the raw output of the `awg show` command — the standard AmneziaWG status tool. Shows all active AmneziaWG interfaces with obfuscation parameters (`Jc`, `Jmin`, `Jmax`, `S1`, `S2`, `H1`, `H2`, `H3`, `H4`), public keys, listening ports, and connected peers with handshake times and transfer statistics.

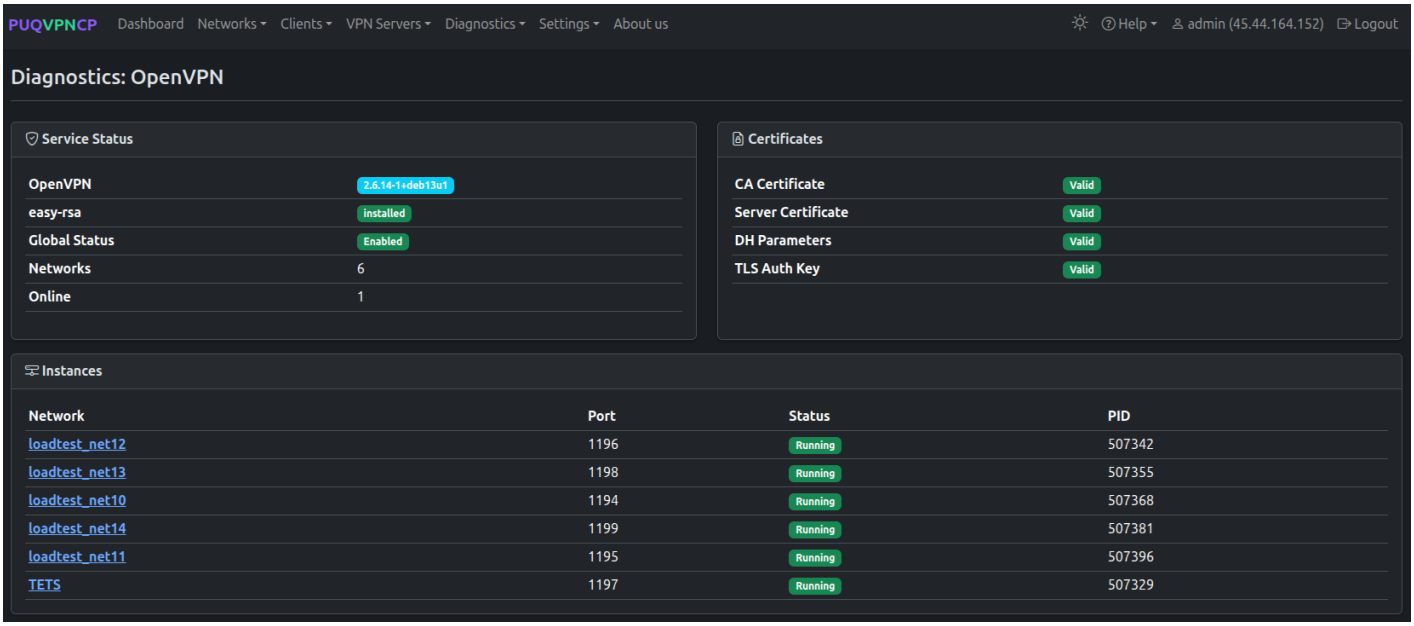
This section is collapsible. Click the header to expand/collapse.

AmneziaWG Kernel Logs

Displays AmneziaWG-related kernel messages from `journalctl`. These logs show low-level AmneziaWG events such as interface creation, handshake negotiations, and kernel module messages.

OpenVPN

Service Status and Certificates



Diagnostics: OpenVPN — service status, certificates, instances

The page displays two cards side by side:

Service Status:

Field	Description
OpenVPN	Installed OpenVPN package version
easy-rsa	Installed easy-rsa package version
Global Status	Whether OpenVPN is globally enabled or disabled
Networks	Number of OpenVPN-enabled networks
Online	Number of currently connected OpenVPN clients

Certificates:

Field	Description
CA Certificate	Root CA certificate status (Valid / Not generated / Invalid)
Server Certificate	Server TLS certificate status
DH Parameters	Diffie-Hellman parameters status
TLS Auth Key	HMAC authentication key status

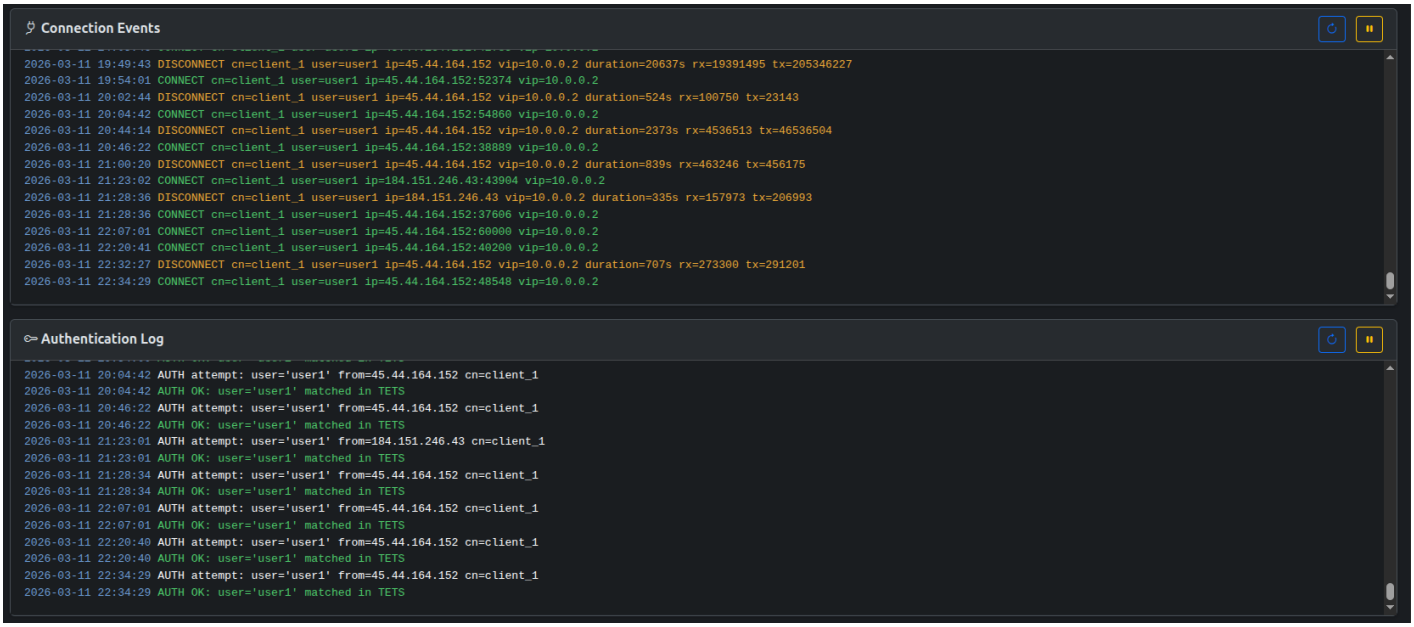
Instances

Shows a table of all OpenVPN network instances:

Column	Description
Network	Network name (link to network edit page)
Port	UDP/TCP port for this instance
Status	Running (green) or Stopped (red)
PID	Process ID (if running)

Each OpenVPN-enabled network runs as a separate `openvpn` process with its own PID file.

Connection Events



Diagnostics: OpenVPN — connection events and authentication log

Displays the OpenVPN connection log (`/etc/openvpn/puqvpncp/logs/connections.log`). Shows client connect and disconnect events with color coding:

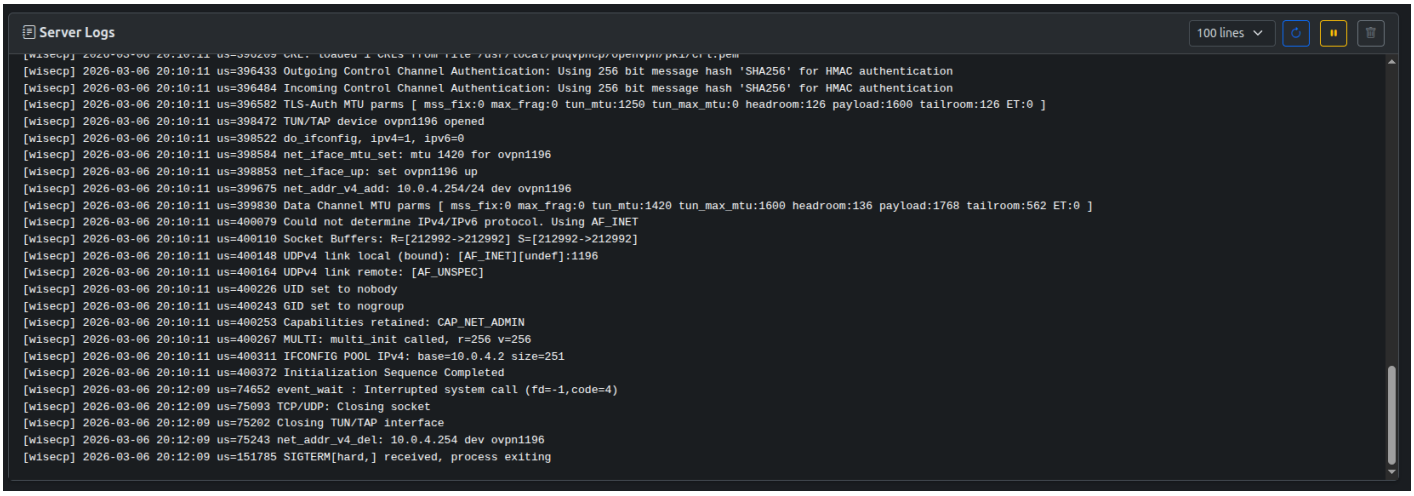
- **Green** — `CONNECT` events
- **Yellow** — `DISCONNECT` events

Authentication Log

Displays the OpenVPN authentication log (`/etc/openvpn/puqvpncp/logs/auth.log`). Shows authentication attempts with color coding:

- **Green** — `AUTH OK` events
- **Red** — `AUTH FAILED` or `AUTH ERROR` events

Server Logs

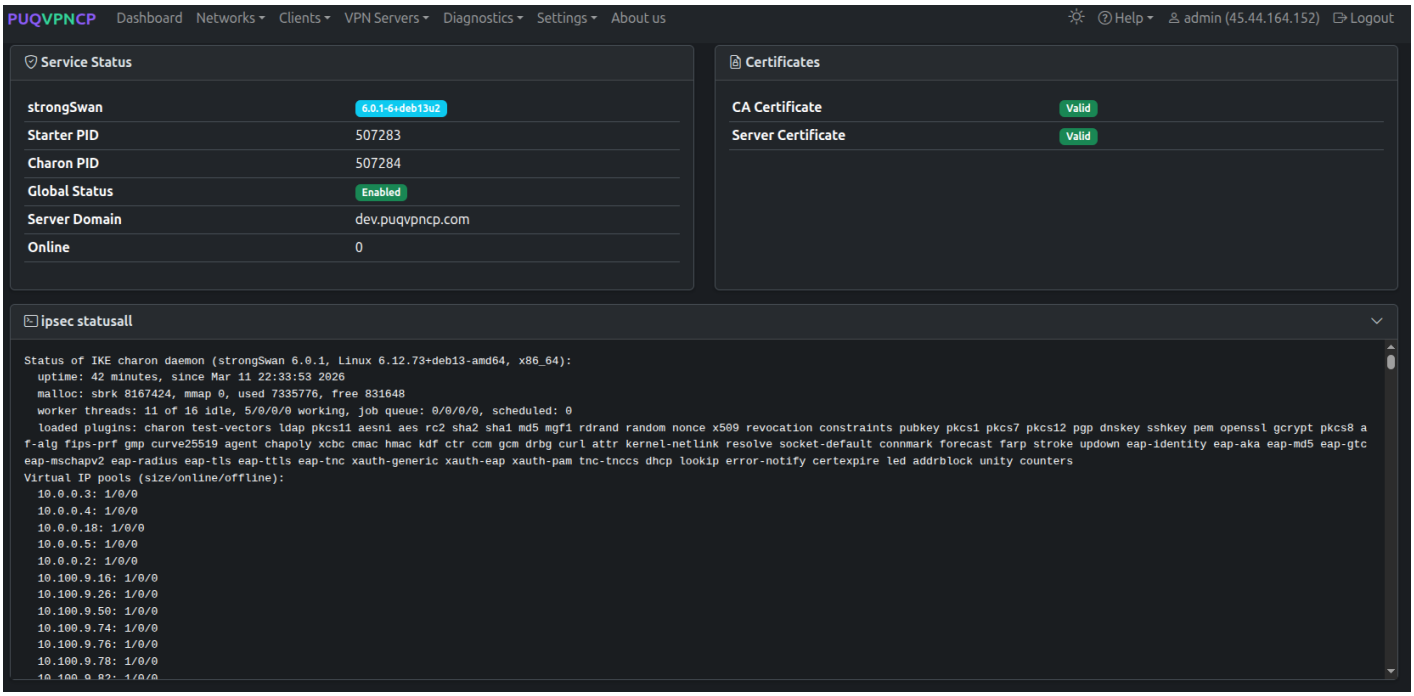


Diagnostics: OpenVPN — server logs from all network instances

Displays combined server logs from all OpenVPN network instances (`/etc/openvpn/puqvpncp/logs/*.log`). Each log line is prefixed with the network name in square brackets (e.g., `[net1] ...`).

IKEv2

Service Status and Certificates



Diagnostics: IKEv2 — service status, certificates, ipsec statusall

The page displays two cards side by side:

Service Status:

Field	Description
strongSwan	Installed strongSwan version
Starter PID	PID of the strongSwan starter process
Charon PID	PID of the IKE daemon (charon)
Global Status	Whether IKEv2 is globally enabled or disabled
Server Domain	Domain configured for IKEv2 server certificates
Online	Number of currently connected IKEv2 clients

Certificates:

Field	Description
CA Certificate	Root CA certificate status (Valid / Not generated / Invalid)
Server Certificate	Server certificate status

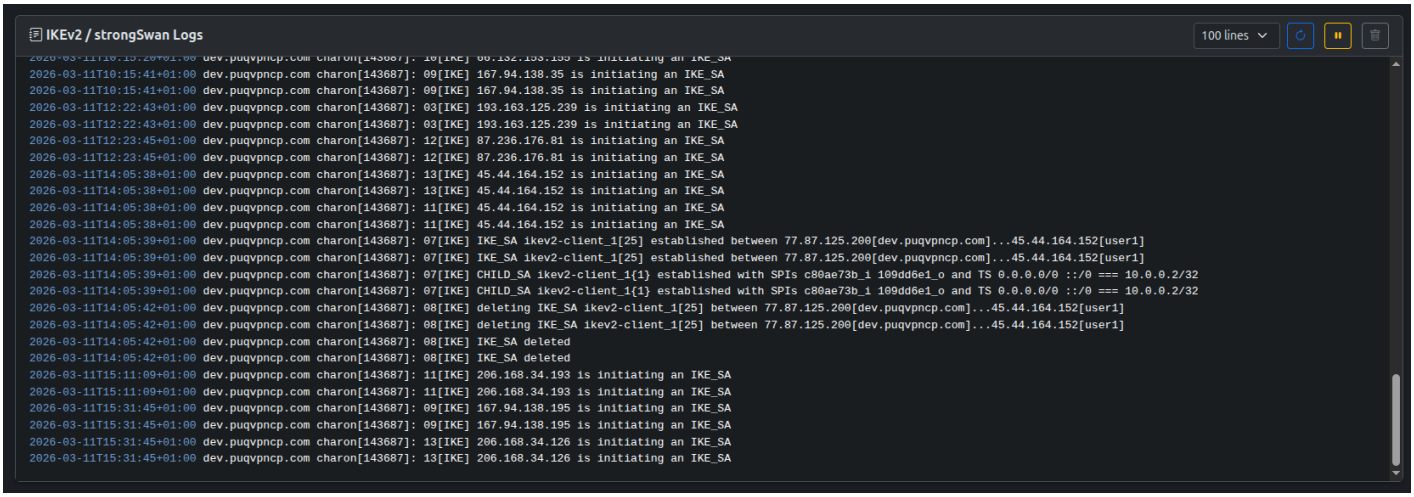
ipsec statusall

Displays the raw output of the `ipsec statusall` command — the standard strongSwan status tool. Shows detailed information about:

- IKE charon daemon status (version, uptime, memory, threads, plugins)
- Virtual IP pools with size/online/offline counters
- Active security associations (SAs)
- Connection definitions

This section is collapsible.

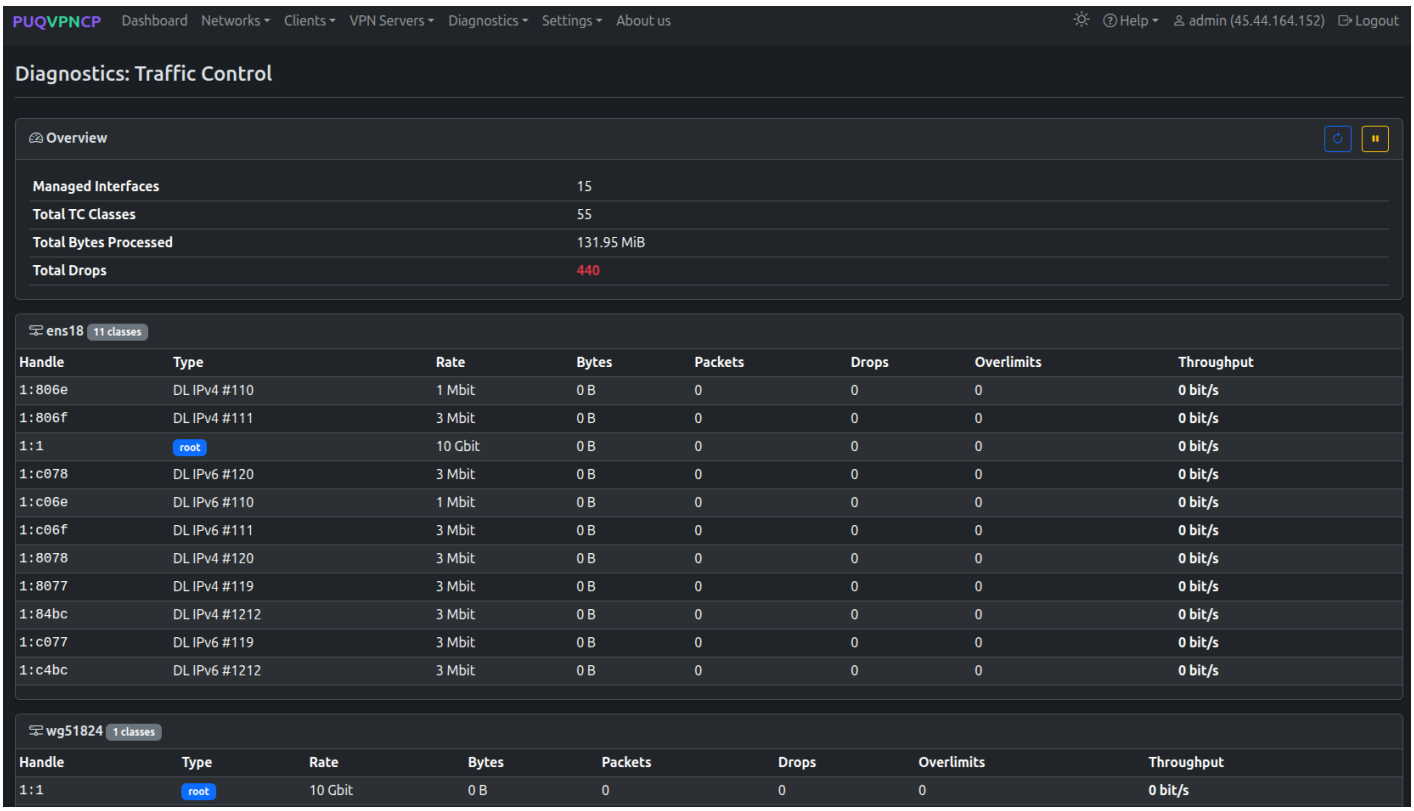
IKEv2 / strongSwan Logs



Diagnostics: IKEv2 — strongSwan logs

Displays strongSwan logs from `journalctl`. Shows IKE negotiation events, connection establishments, certificate validations, and authentication messages. The system tries `strongswan` unit first, then falls back to `charon` syslog tag.

Traffic Control



Diagnostics: Traffic Control — overview and per-interface TC classes

Overview

Field	Description
Managed Interfaces	Total number of network interfaces with TC rules
Total TC Classes	Total number of HTB traffic control classes across all interfaces
Total Bytes Processed	Sum of all bytes processed by TC classes
Total Drops	Sum of all dropped packets (highlighted in red if > 0)

The overview auto-refreshes every 2 seconds.

Per-Interface Tables

Below the overview, each managed interface is displayed as a separate card showing all its TC classes:

Column	Description
Handle	TC class handle (e.g., `1:806e`)
Type	Class type — `root` for the root class, or direction + protocol (e.g., `DL IPv4 #110`, `UL IPv6 #119`)
Rate	Configured bandwidth rate
Bytes	Total bytes processed by this class
Packets	Total packets processed
Drops	Dropped packets (highlighted in red if > 0)
Overlimits	Overlimit events (highlighted in yellow if > 0)
Throughput	Real-time throughput calculated from byte deltas between refreshes

Interfaces include:

- **Gateway interfaces** (e.g., `ens18`) — main server network interfaces
- **WireGuard interfaces** (e.g., `wg51824`) — per-network WireGuard tunnel interfaces
- **OpenVPN interfaces** (e.g., `ovpn1197`) — per-network OpenVPN tunnel interfaces
- **Upstream interfaces** (e.g., `wgup1`) — upstream WireGuard tunnel interfaces

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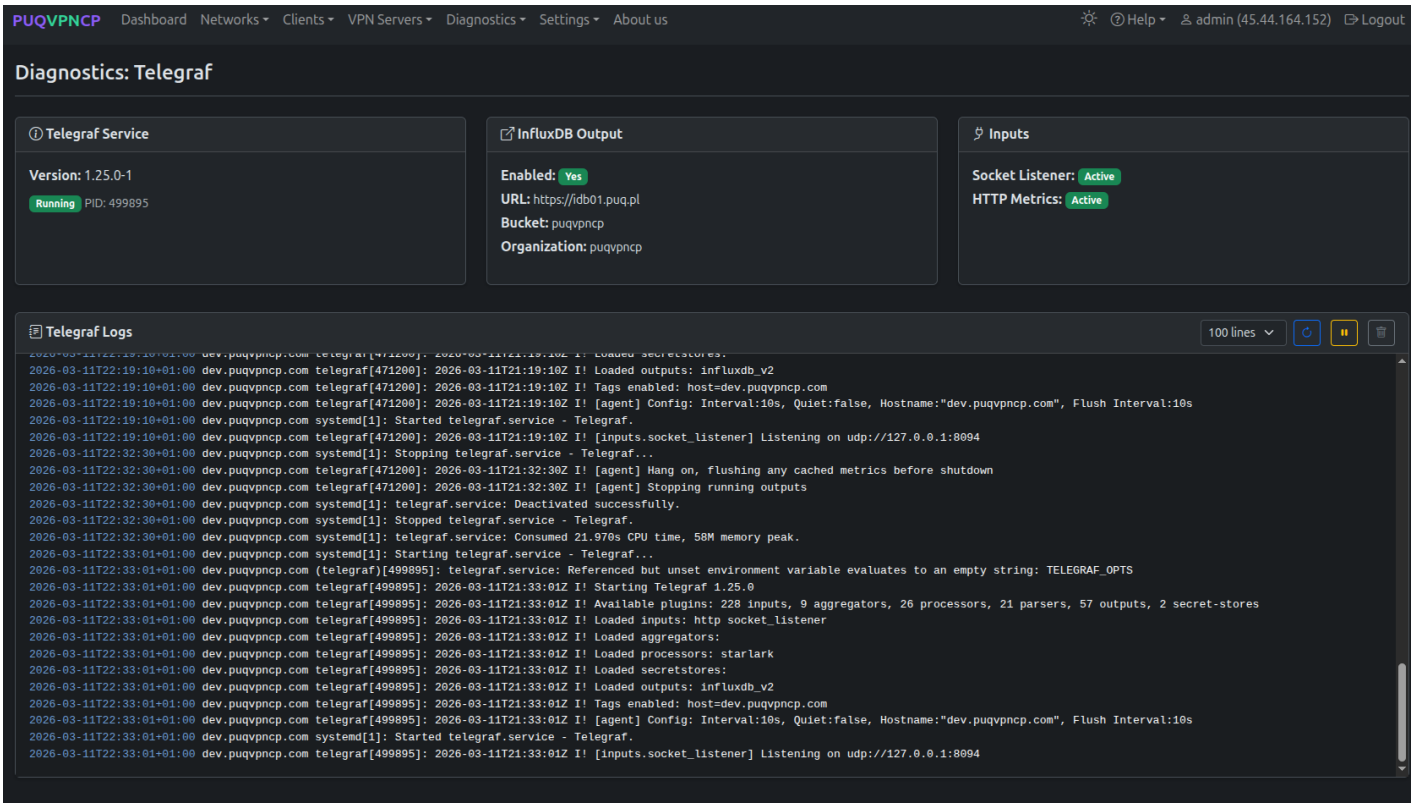
Telegraf



Diagnostics: Telegraf — service status, InfluxDB config, inputs, logs

Service Info

Three cards are displayed:

Telegraf Service:

Field	Description
Version	Installed Telegraf version
Status	Running (with PID) or Stopped

InfluxDB Output:

Field	Description
Enabled	Whether InfluxDB output is enabled
URL	InfluxDB server URL
Bucket	InfluxDB bucket name

Field	Description
Organization	InfluxDB organization

Inputs:

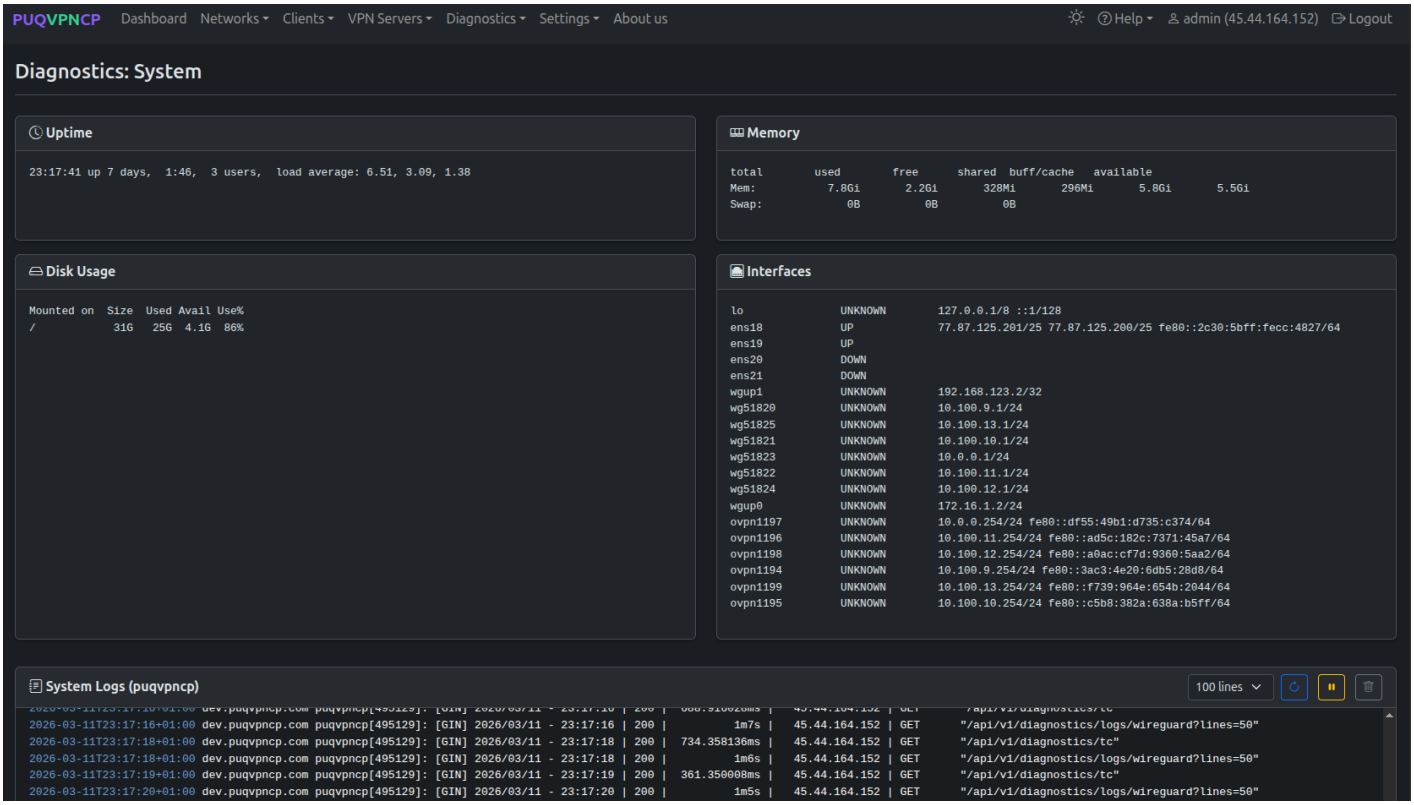
Field	Description
Socket Listener	Whether the Unix socket input is active (receives metrics from PUQVPNCP)
HTTP Metrics	Whether the HTTP metrics endpoint is active

Telegraf Logs

Displays Telegraf service logs from `journalctl` with color coding:

- **Red** — Error messages (`E!`)
- **Yellow** — Warning messages (`W!`)
- **Gray** — Debug messages (`D!`)

System



Diagnostics: System — uptime, memory, disk usage, interfaces

System Info Cards

Four cards are displayed:

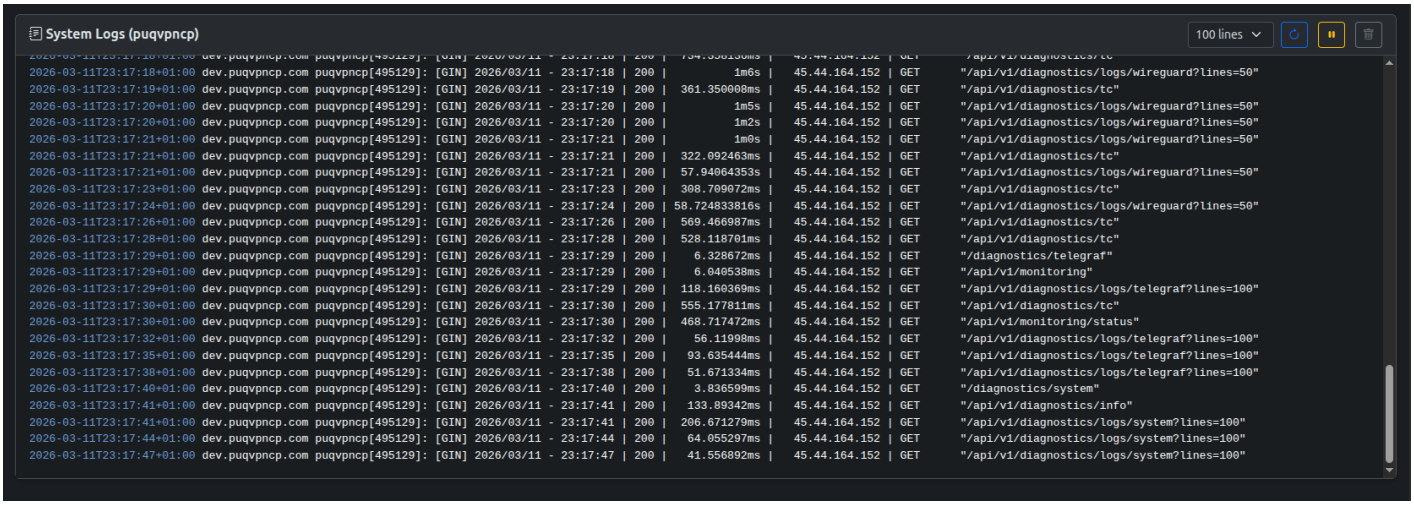
Uptime — output of the `uptime` command showing server uptime, number of users, and load averages.

Memory — output of `free -h` showing total, used, free, shared, buffers/cache, and available memory for both RAM and swap.

Disk Usage — output of `df -h` showing mounted filesystem, size, used space, available space, and usage percentage for the root partition.

Interfaces — output of `ip -br addr` showing all network interfaces with their status (UP/DOWN) and assigned IP addresses. Includes physical interfaces, WireGuard interfaces, OpenVPN tunnel interfaces, and upstream tunnels.

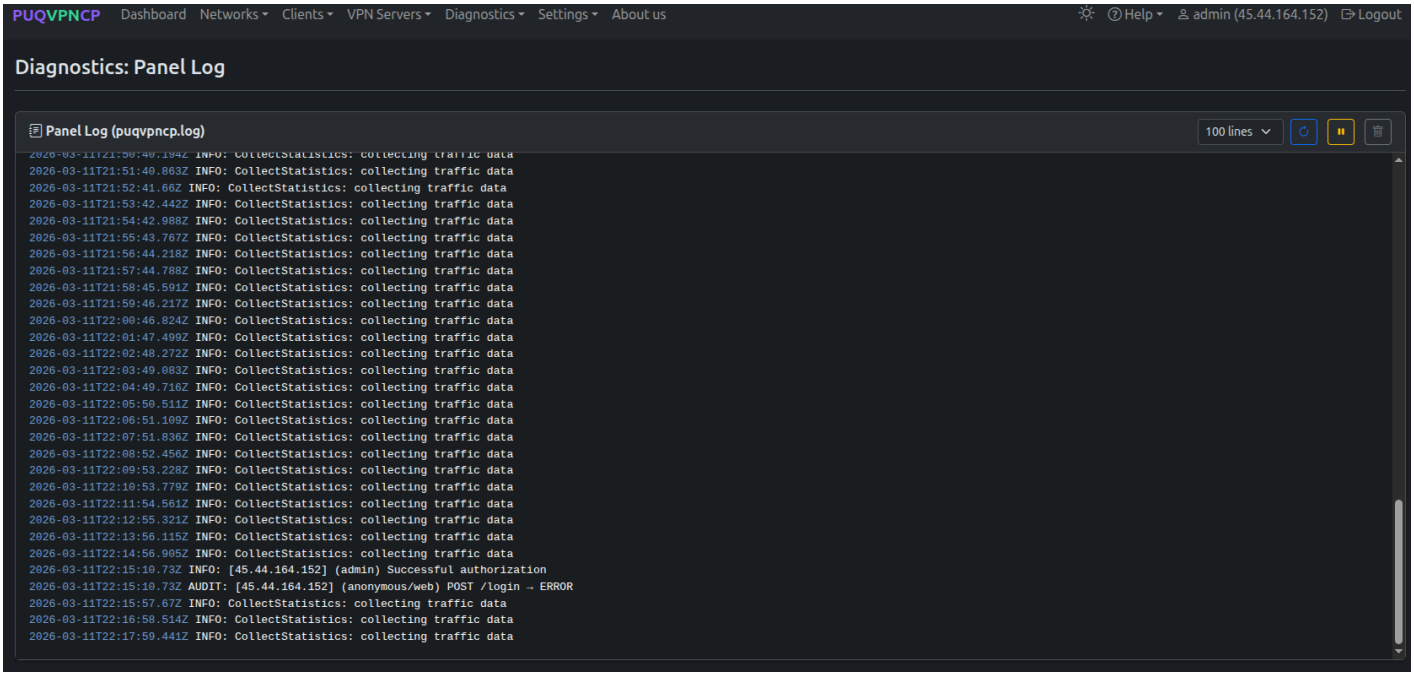
System Logs (puqvpncp)



Diagnostics: System — PUQVPNCP system logs

Displays PUQVPNCP service logs from `journalctl` (syslog tag `puqvpncp`). Shows application events such as API requests, system operations, network changes, and service lifecycle events.

Panel Log



Diagnostics: Panel Log — puqvpncp.log viewer

Displays the PUQVPNCP application log file (`puqvpncp.log` in the configured `LogDir` directory, default `/var/log/puqvpncp/`).

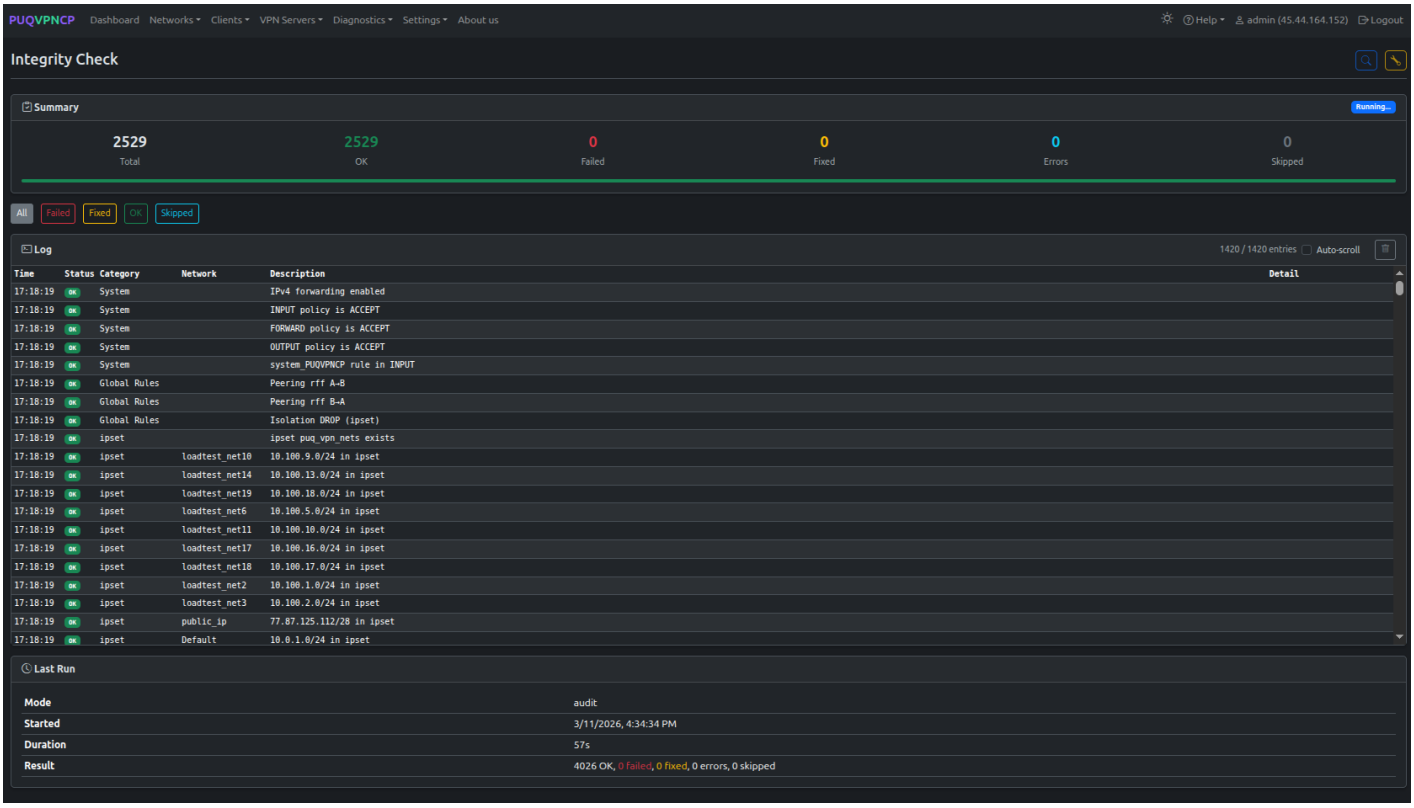
This is the application's own log file (separate from journalctl system logs). Log entries are color-coded by level:

- **Red** — `ERROR:` messages

- **Yellow** — `WARN:` messages
- **Gray** — `DEBUG:` messages
- **Normal** — `INFO:` messages

The log format is: `timestamp LEVEL: message` (e.g., `2026-03-11T17:18:00.000Z INFO: ReloadNetworks: setting iptables`).

Integrity Check



Integrity Check — summary, log table, and last run info

The Integrity Check performs a comprehensive audit of the entire PUQVPNCP system configuration. It verifies that all firewall rules, routing tables, ipset entries, traffic control classes, and network interfaces are correctly configured and match the expected state.

Running a Check

Two buttons are available in the page header:

Button	Description
Audit (magnifying glass)	Run a read-only audit — checks all rules and reports issues without making changes

Button	Description
Audit & Fix (wrench)	Run an audit and automatically fix any issues found

The check runs in the background. Results stream in real-time via Server-Sent Events (SSE), with automatic polling fallback if SSE disconnects.

Summary

The summary card shows counters for each check result:

Counter	Color	Description
Total	—	Total number of checks performed
OK	Green	Checks that passed
Failed	Red	Checks that failed (in audit mode, these need fixing)
Fixed	Yellow	Checks that were failed but successfully repaired (fix mode only)
Errors	Blue	Checks where the fix was applied but still failing
Skipped	Gray	Checks that were skipped (e.g., ipset not installed, mangle overflow)

A progress bar shows the proportion of each result type.

Filter Buttons

Filter the log table by status:

- **All** — show all entries
- **Failed** — show failed, fixed, error, and skipped entries (default)
- **Fixed** — show only fixed entries
- **OK** — show only passed entries
- **Skipped** — show only skipped entries

Log Table

Column	Description
Time	Timestamp of the check
Status	Result badge (OK / FAILED / FIXED / ERROR / SKIPPED)

Column	Description
Category	Check category (see below)
Network	Network and/or client name (if applicable)
Description	What was checked
Detail	Additional information (e.g., "Fixed", error message)

Check Categories

The integrity check performs 9 phases, covering all aspects of the system:

Category	Phase	What is Checked
System	1	IPv4 forwarding enabled, INPUT/FORWARD/OUTPUT chain policies, system_PUQVPNCP rule
Global Rules	2	Pre-filter rules, peering ACCEPT rules (A→B, B→A), intra-network ACCEPT, isolation DROP (ipset), post-filter rules
ipset	3	`puq_vpn_nets` ipset exists, each network subnet is a member
Chains	4	Per-network chains exist in filter (`PQ_`), nat SNAT (`PQN_`), nat DNAT (`PQD_`), mangle (`PQM_`) — plus jump rules from built-in chains
NAT	5	SNAT rules for each network's upstream IP
Mangle	5	Per-client mangle marks for download (dst) and upload (src) traffic
Network Rules	5	Route ACCEPT rules for custom routes
Policy Routing	6	Upstream WG tunnel `ip rule` / `ip route table`, WG/OpenVPN fwmark-based policy routing
CONNMARK	7	WG and OpenVPN CONNMARK rules in PREROUTING (mangle)
Traffic Control	8	Root HTB qdisc on gateway, VPN, and upstream interfaces; per-client TC classes
Interfaces	9	WireGuard interfaces are UP, upstream WG tunnel interfaces are UP

Last Run

The **Last Run** card shows information about the most recent integrity check:

Field	Description
Mode	`audit` or `fix`
Started	When the check started
Duration	How long the check took
Result	Summary of OK, failed, fixed, errors, and skipped counts

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Revision #6
Created 28 September 2026 17:06:12 by Ruslan
Updated 28 September 2026 18:58:44 by Ruslan