

Kickstart 2: GL.inet Opal SFT1200 router

This material is prepared for use in *PROSA Secure Network* and was prepared by Henrik Kramselund, hkj@zencurity.com.

I have recommended buying a small router from GL.inet, which contains a lot of features.

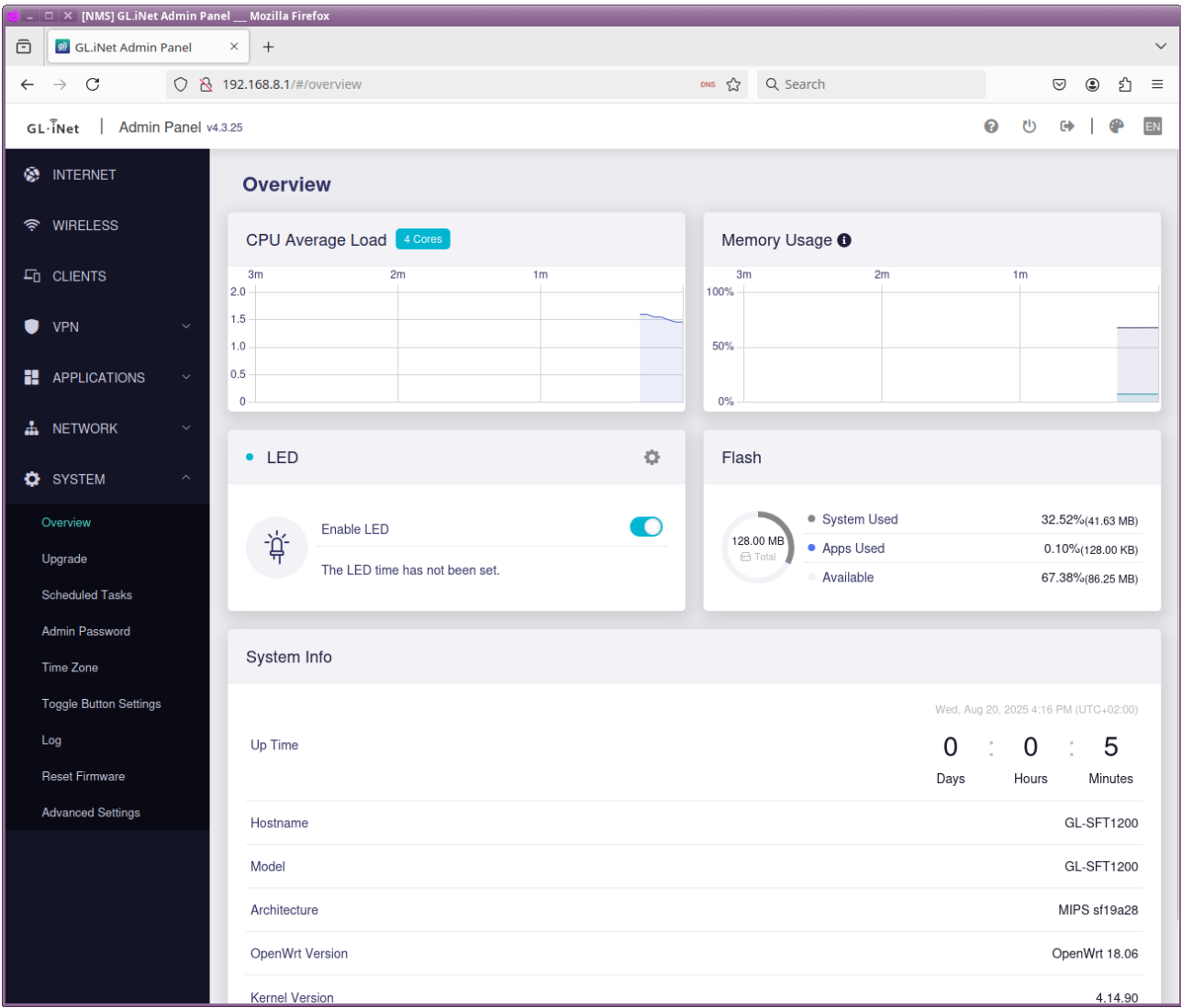


- When learning and investigating it is nice to have a *lab network* – make changes, play with settings, break things
- If you live alone, and are not in a remote meeting – play with you own network!
- I recommended the small GL-Inet Opal (GL-SFT1200) Wireless Travel Router
<https://store.gl-inet.com/products/opal-gigabit-wireless-pocket-sized-openwrt-ipv6-sft1200>
- It has 2 LAN ports for connecting, 1 WAN port for Internet or can act as a Wi-Fi client. All powered by USB-C etc.
- Manual and documentation https://docs.gl-inet.com/router/en/4/user_guide/gl-sft1200/

The following pages show screenshots with comments. The screenshots show some of the features that I find very interesting with the Opal router.

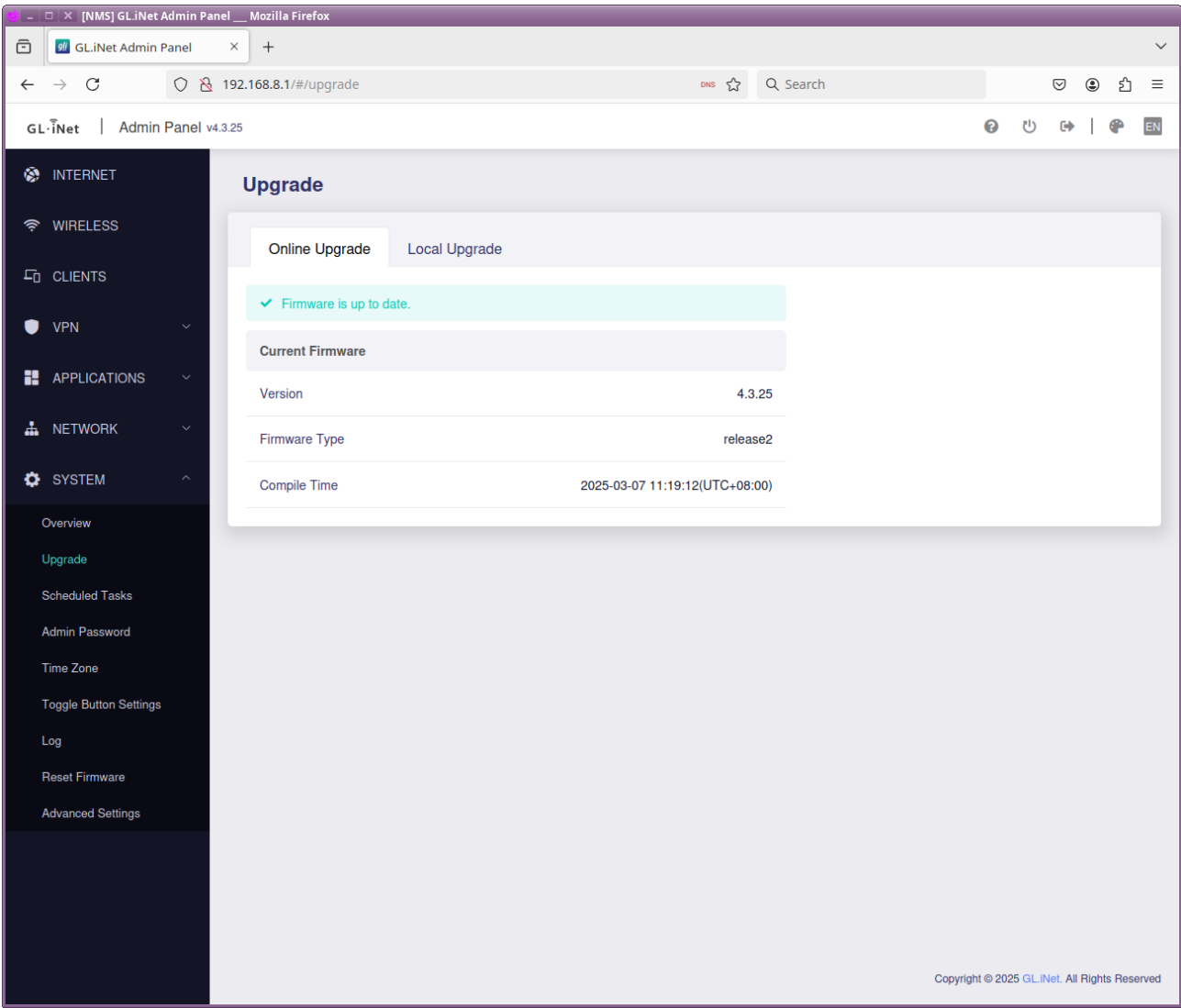
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Opal router contains a modern web interface



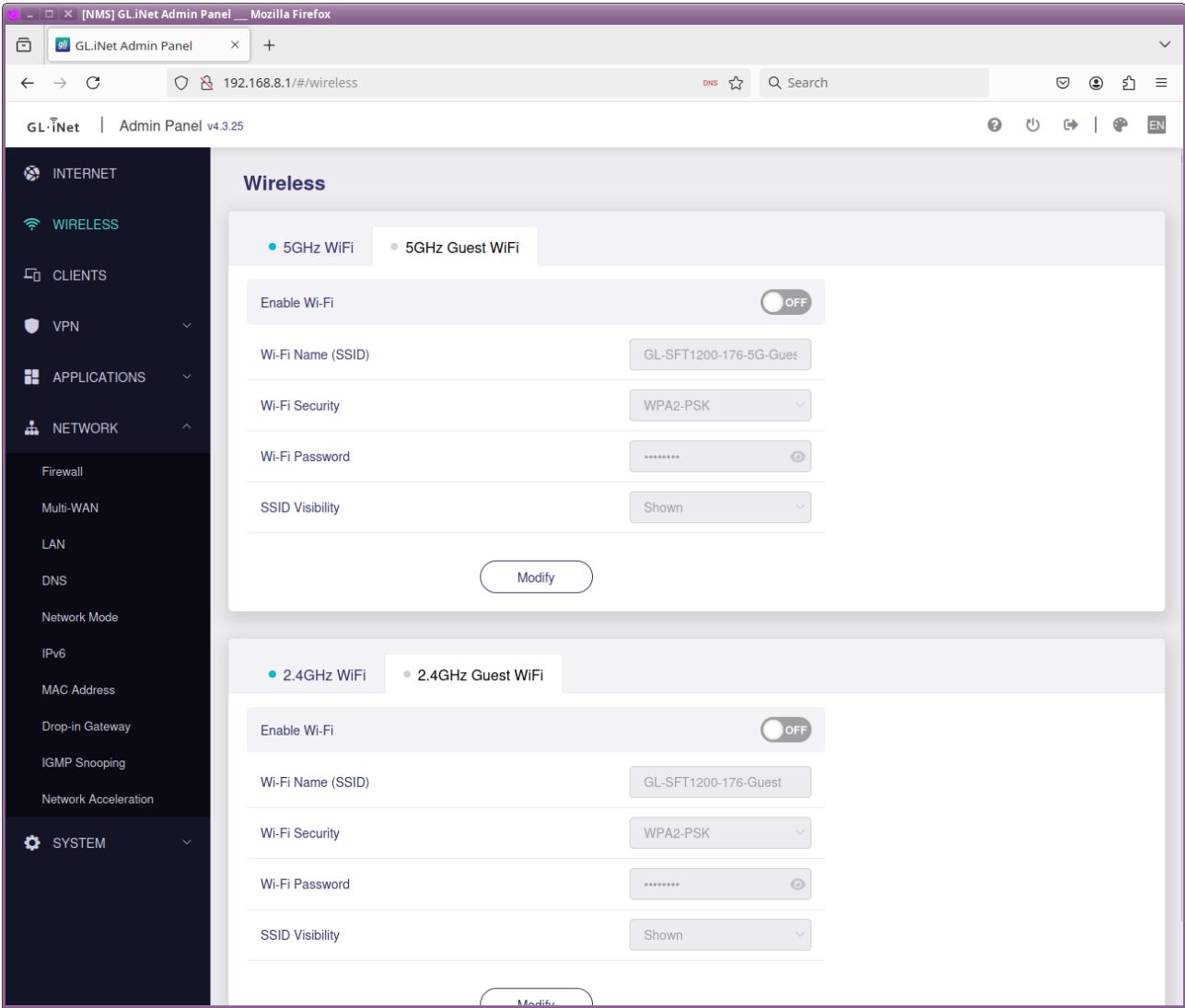
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Firmware upgrade is easy to find and perform:



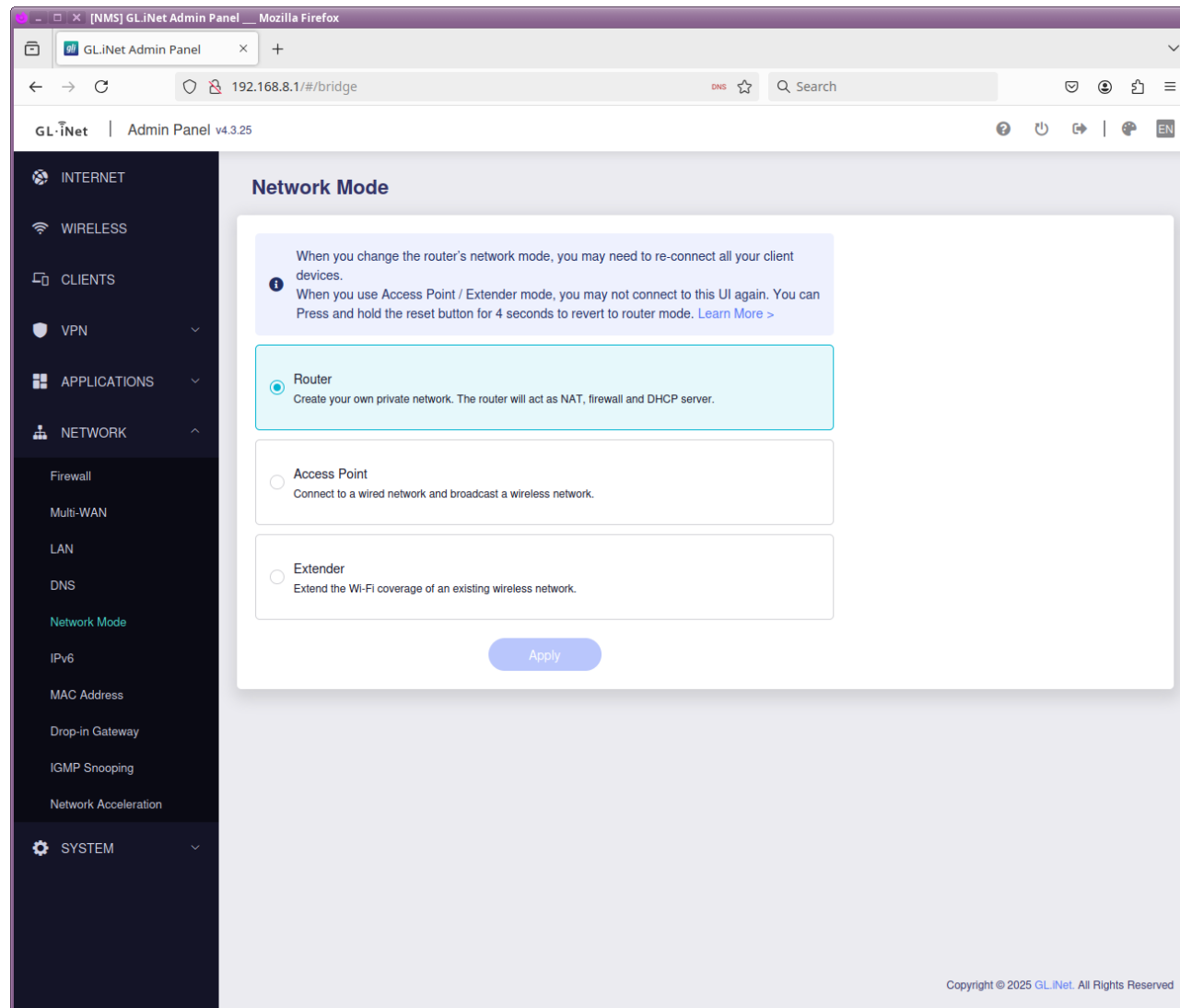
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Guest wi-fi can be added on 2.4GHz or 5GHz or both:



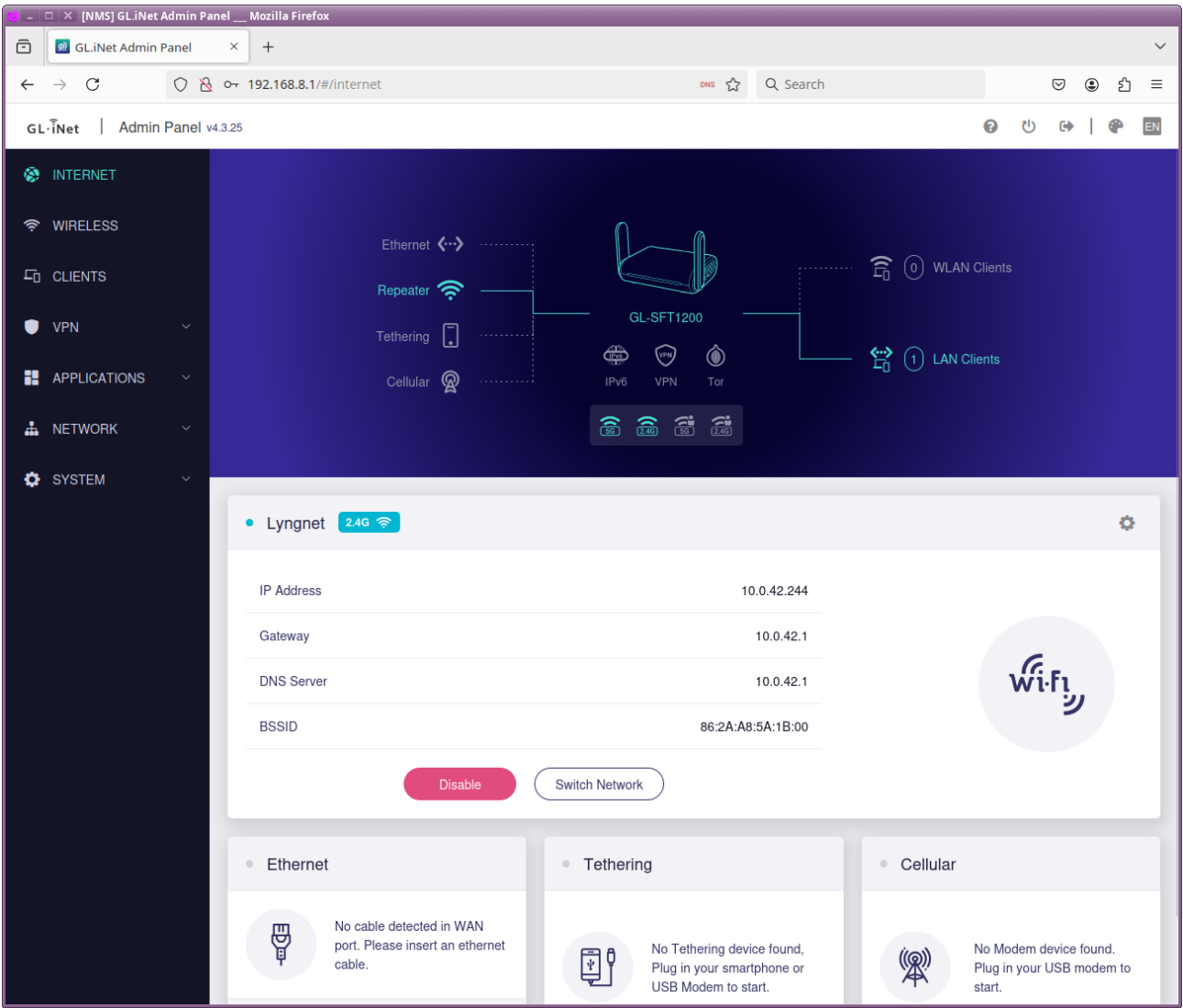
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Router can be configured as a router, or just an Access Point:



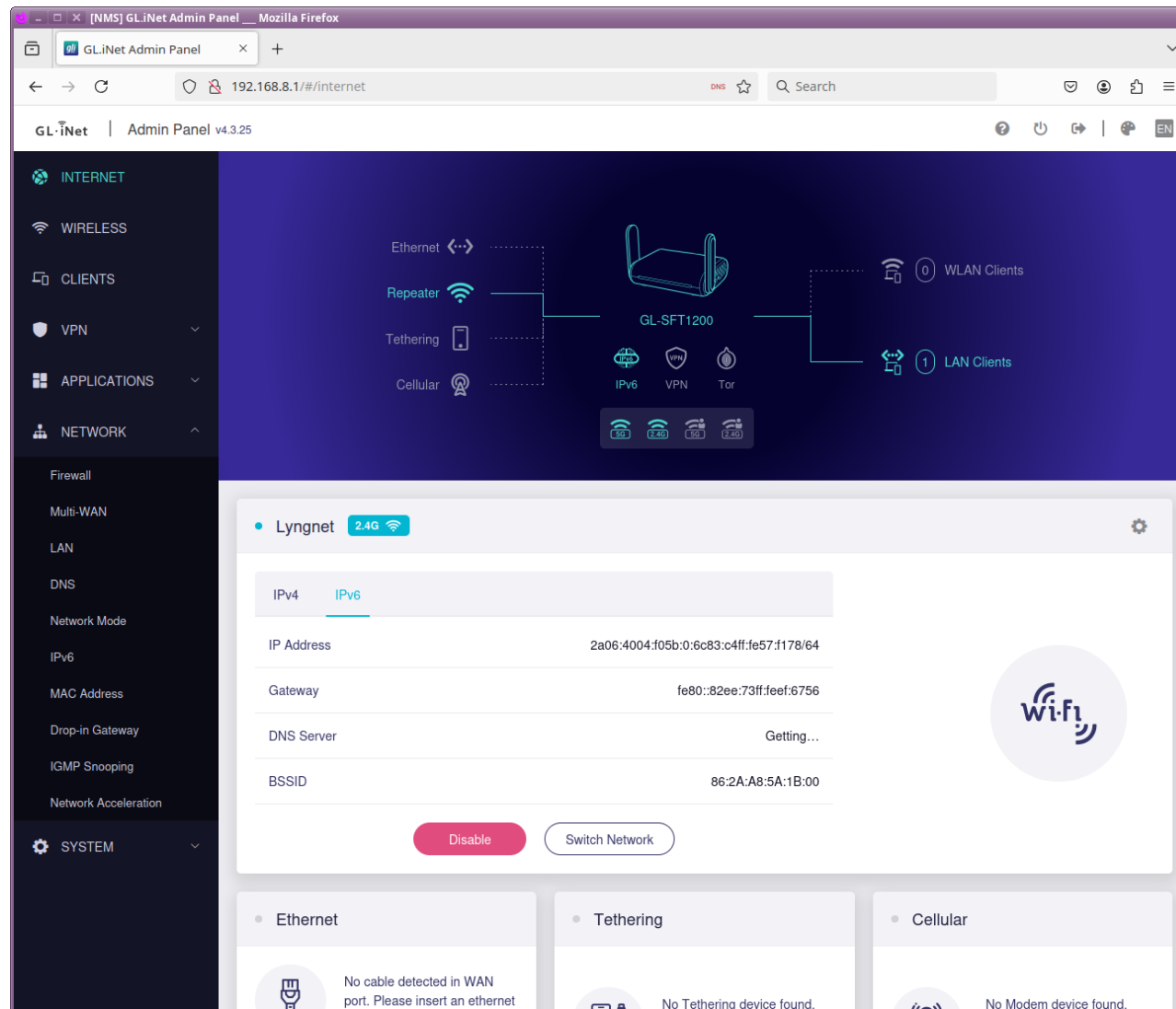
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Currently running as a client on my home Wi-Fi:



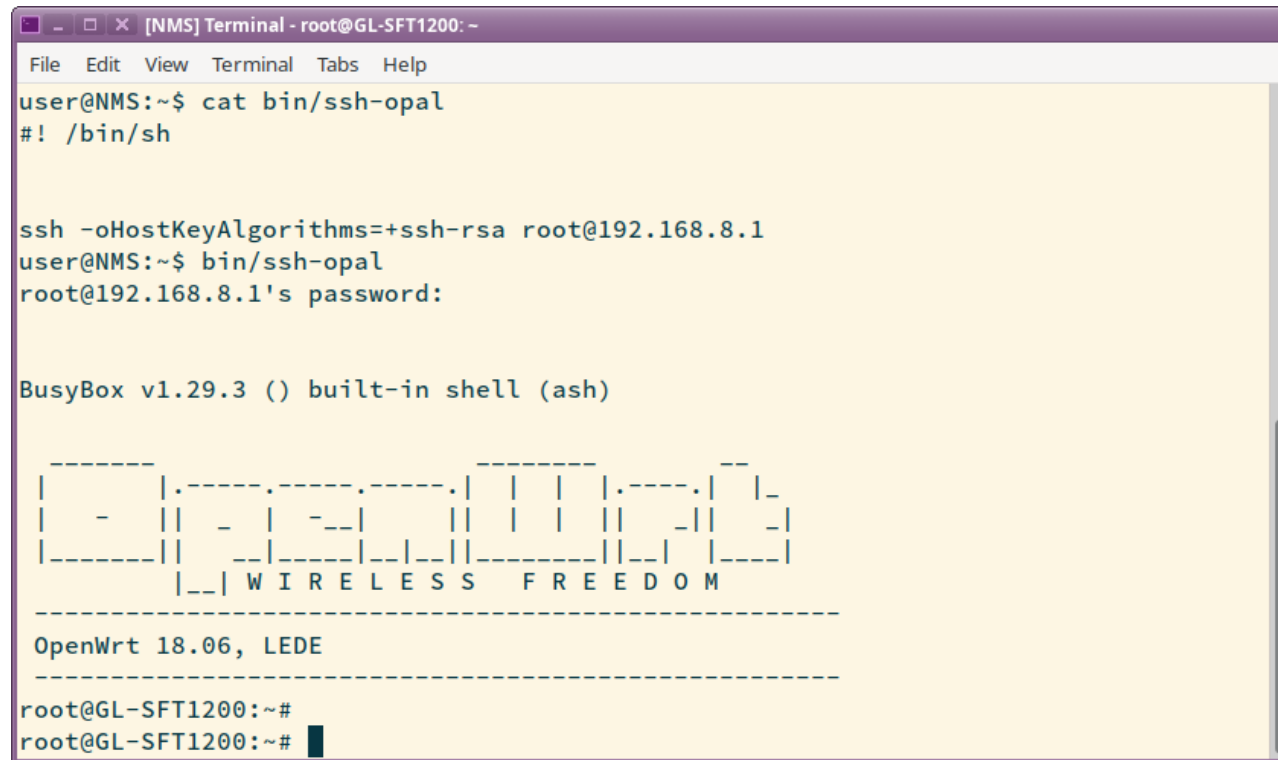
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Router includes IP version 6:



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When Secure Shell (ssh) is enabled you have a command line available:

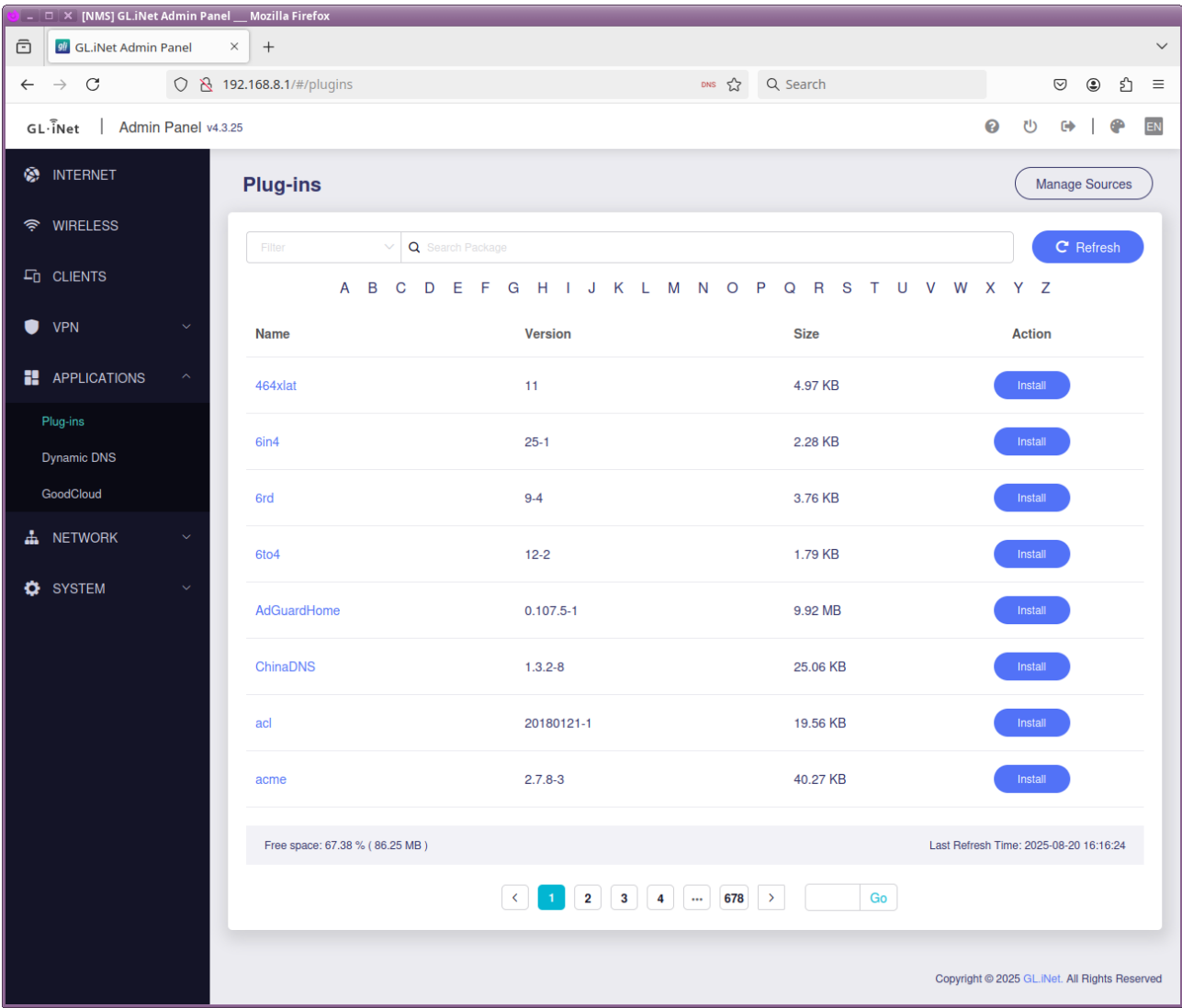


```
[NMS] Terminal - root@GL-SFT1200: ~  
File Edit View Terminal Tabs Help  
user@NMS:~$ cat bin/ssh-opal  
#!/bin/sh  
  
ssh -oHostKeyAlgorithms=+ssh-rsa root@192.168.8.1  
user@NMS:~$ bin/ssh-opal  
root@192.168.8.1's password:  
  
BusyBox v1.29.3 () built-in shell (ash)  
  
  _ _ _ _ _  
| - | | - | - _ | | | | | - | |  
| - | | _ | _ | _ | | | | | _ | |  
  _ | W I R E L E S S F R E E D O M  
  _ _ _ _ _  
  
OpenWrt 18.06, LEDE  
  _ _ _ _ _  
root@GL-SFT1200:~#  
root@GL-SFT1200:~#
```

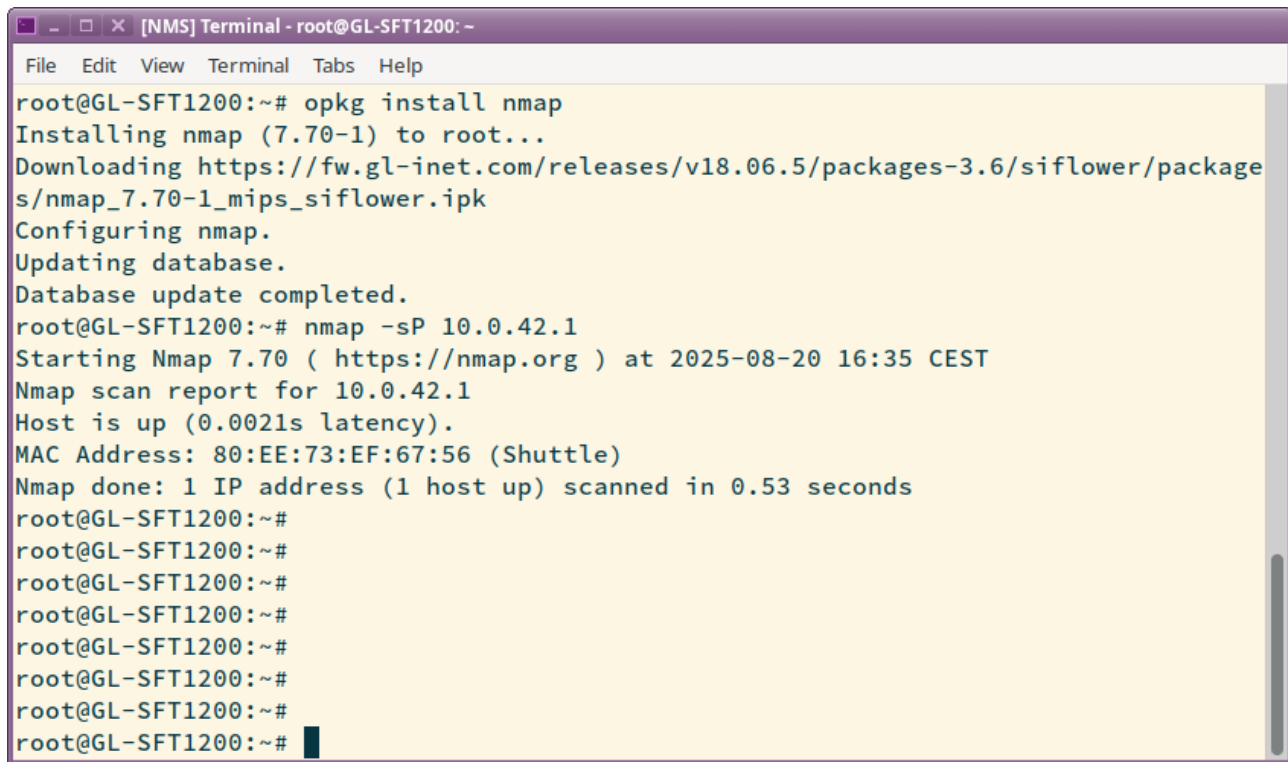
Note: the current config did not agree with my modern OpenSSH client, so needed to add a small script/option:
`ssh -oHostKeyAlgorithms=+ssh-rsa root@192.168.8.1`

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There are a lot of packages that can be installed with web interface or `opkg`:



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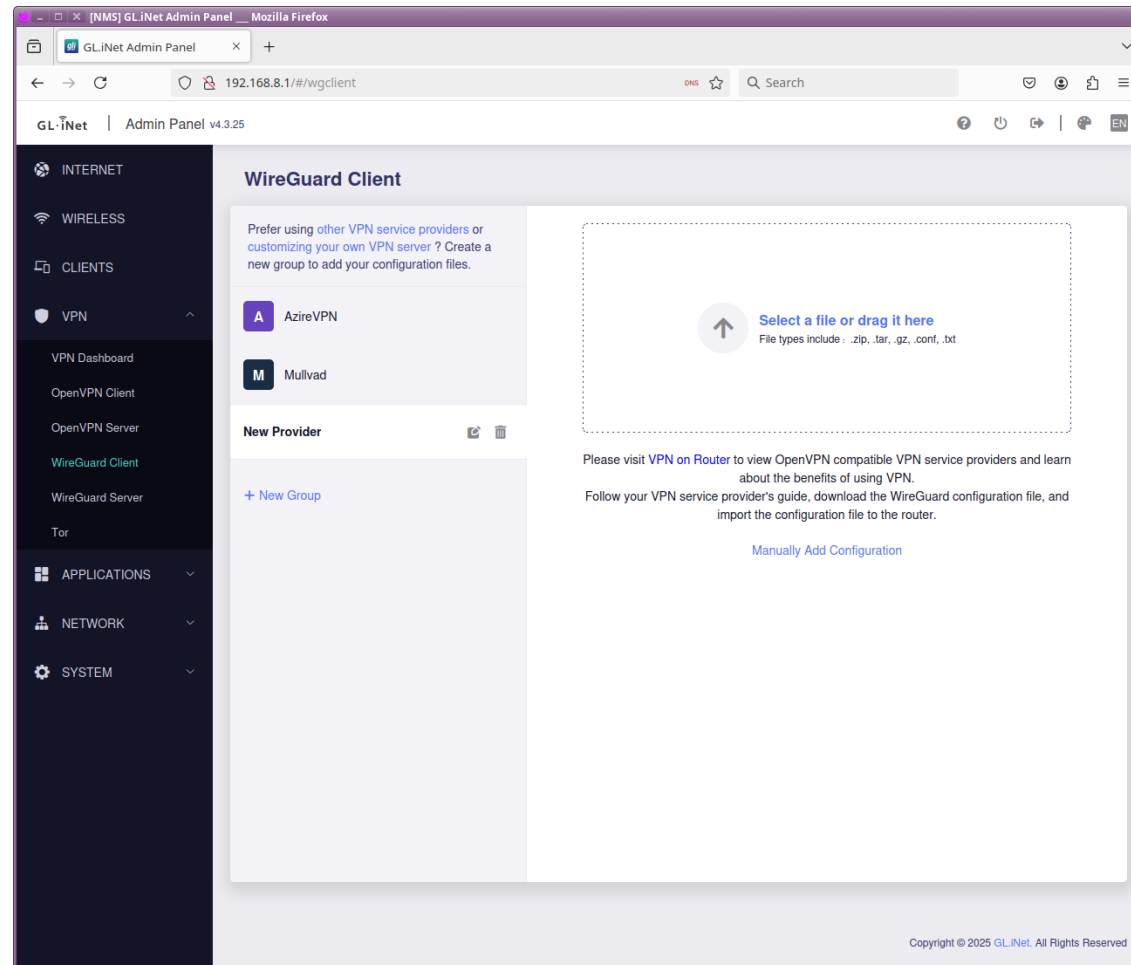
```
[NMS] Terminal - root@GL-SFT1200: ~
File Edit View Terminal Tabs Help
root@GL-SFT1200:~# opkg install nmap
Installing nmap (7.70-1) to root...
Downloading https://fw.gl-inet.com/releases/v18.06.5/packages-3.6/siflower/packages/nmap_7.70-1_mips_siflower.ipk
Configuring nmap.
Updating database.
Database update completed.
root@GL-SFT1200:~# nmap -sP 10.0.42.1
Starting Nmap 7.70 ( https://nmap.org ) at 2025-08-20 16:35 CEST
Nmap scan report for 10.0.42.1
Host is up (0.0021s latency).
MAC Address: 80:EE:73:EF:67:56 (Shuttle)
Nmap done: 1 IP address (1 host up) scanned in 0.53 seconds
root@GL-SFT1200:~#
root@GL-SFT1200:~#
root@GL-SFT1200:~#
root@GL-SFT1200:~#
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```

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Virtual Private Network (VPN)

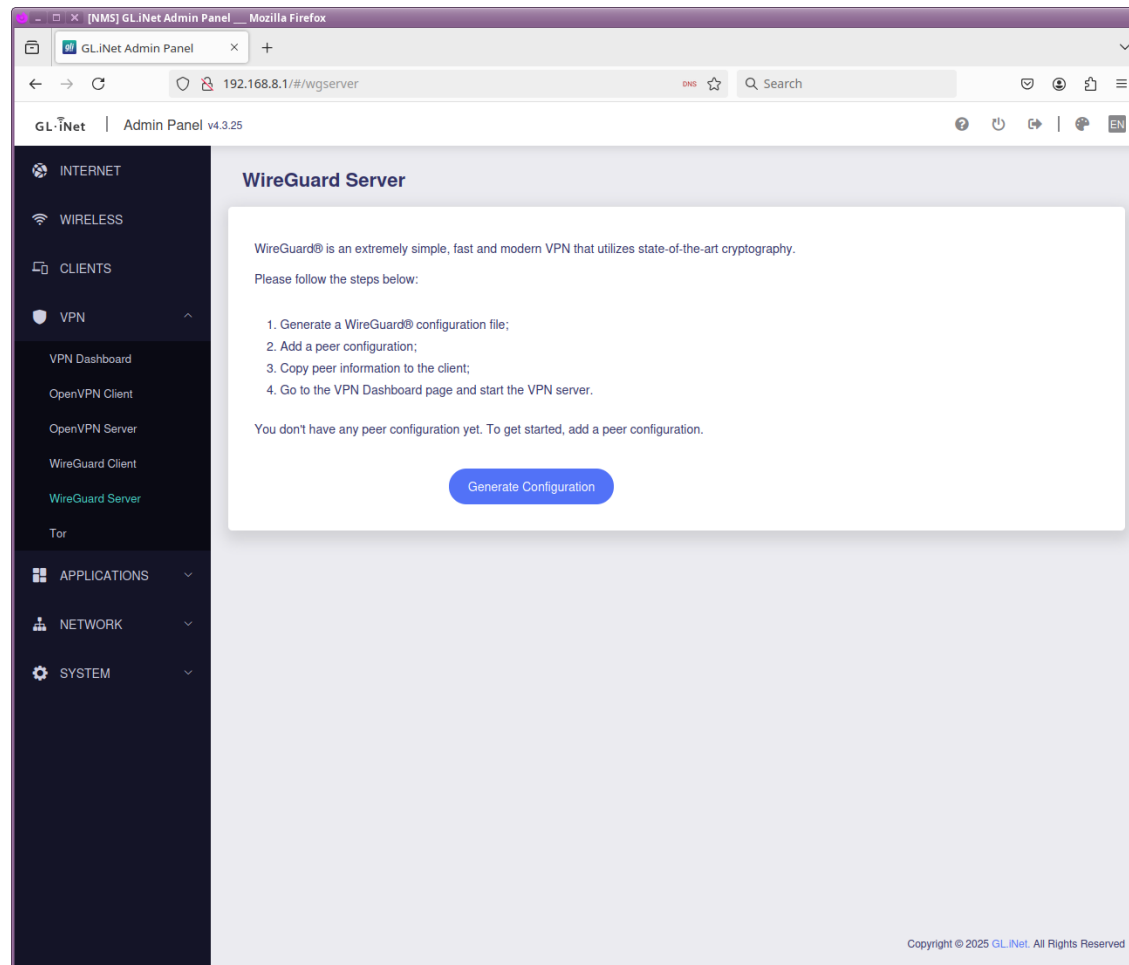
You can enable VPN functionality as a client or server.

Client would be connecting you to your *home network* when travelling:



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Server would be if this was your home router:

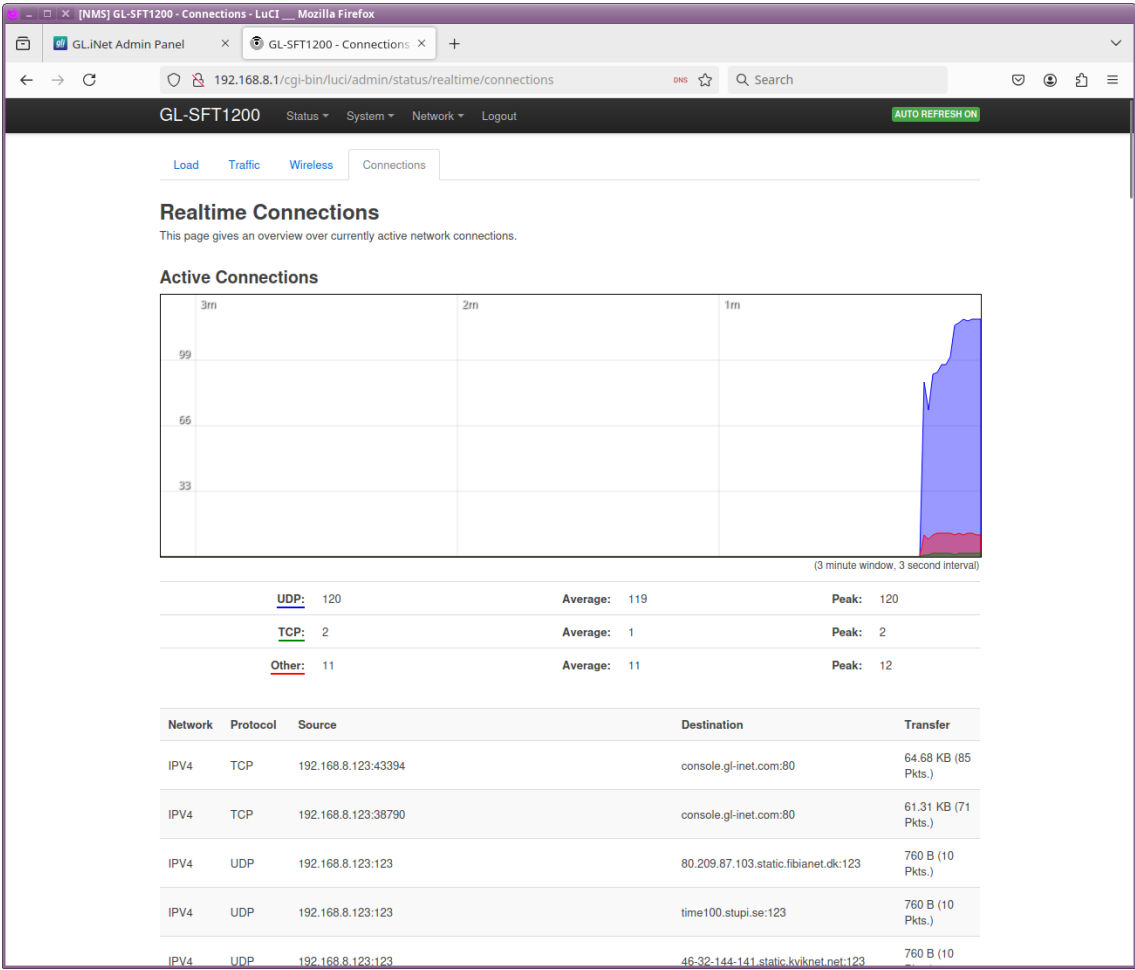


We recommend Wireguard as a modern alternative to OpenVPN

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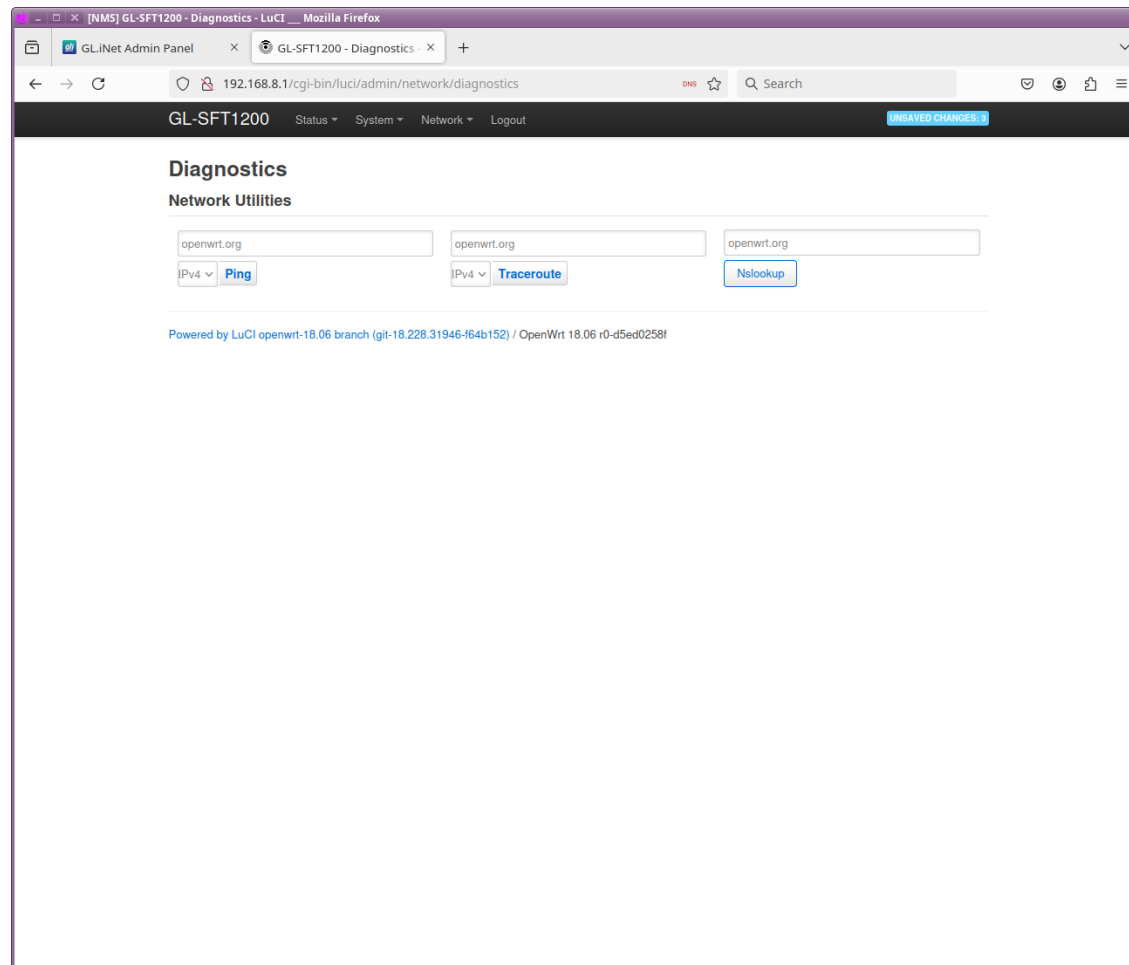
Advanced Features – through the LuCI interface

There is a more advanced web interface named LuCI that can be accessed with the Advanced Settings menu – directing you to `http://192.168.8.1/cgi-bin/luci:`



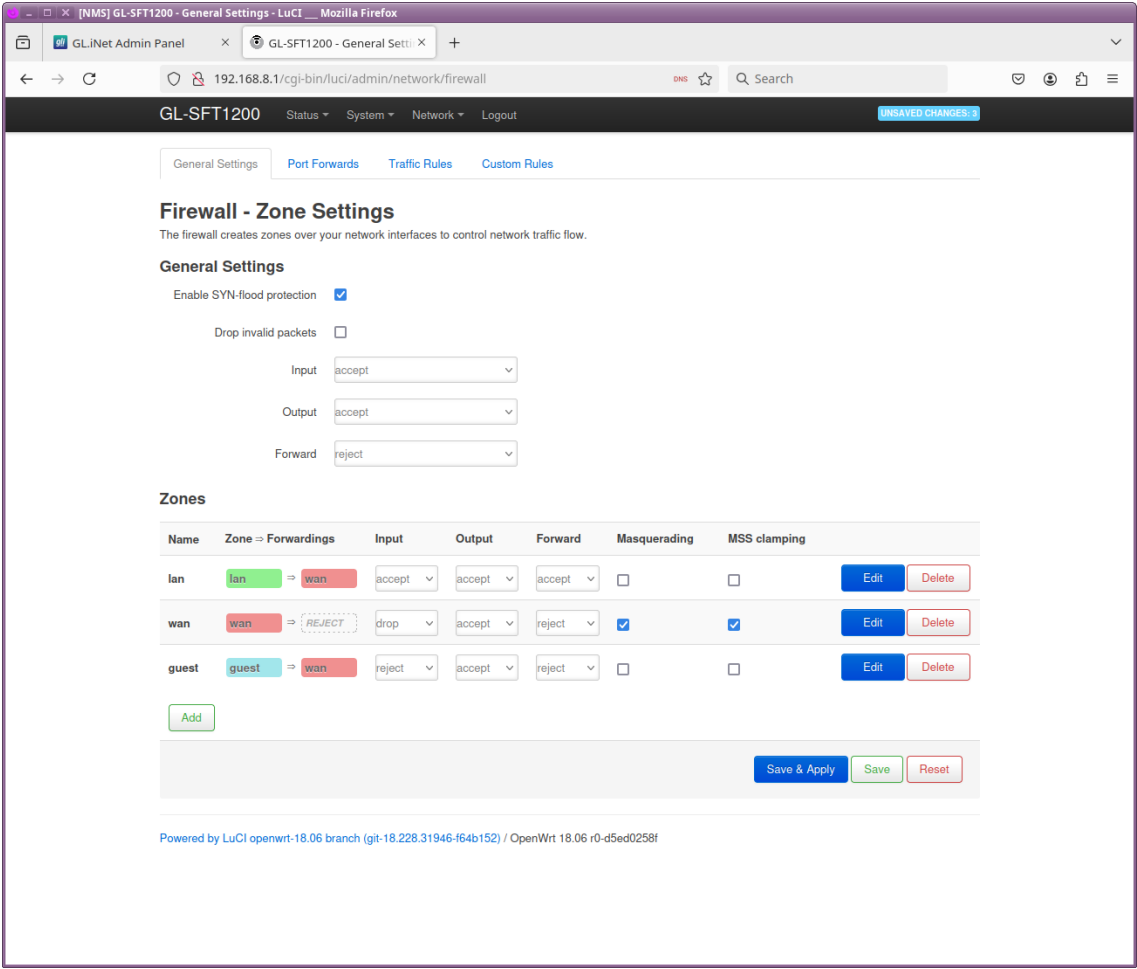
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This includes small network diagnostics tools:



Various firewall administration options:

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GLinet Admin Panel

GL-SFT1200 - Firewall - LuCI

192.168.8.1/cgi-bin/uci/admin/status/iptables

Search

GL-SFT1200

StatusSystemNetworkLogout

Firewall Status

IPv4 Firewall

IPv6 Firewall

Reset Counters

Restart Firewall

Table: Filter

Chain INPUT (Policy: ACCEPT, Packets: 0, Traffic: 0.00 B)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
192	16.86 KB	ACCEPT	all	lo	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */
543	81.38 KB	input_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	/ * fw3: Custom input rule chain */
462	65.09 KB	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ctstate RELATED,ESTABLISHED / * fw3 */
44	2.23 KB	syn_flood	tcp	*	*	0.0.0.0/0	0.0.0.0/0	tcp flags:0x17/0x02 / * fw3 */
44	2.23 KB	zone_lan_input	all	br-lan	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */
0	0.00 B	zone_wan_input	all	eth0.2	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */
37	14.06 KB	zone_wan_input	all	wlan-sta0	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */

Chain FORWARD (Policy: DROP, Packets: 0, Traffic: 0.00 B)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
0	0.00 B	DROP	all	*	*	0.0.0.0/0	0.0.0.0/0	match-set GL_MAC_BLOCK src
905	56.05 KB	forwarding_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	/ * fw3: Custom forwarding rule chain */
905	56.05 KB	FLOWOFFLOAD	all	*	*	0.0.0.0/0	0.0.0.0/0	/ * fw3: Traffic offloading */ ctstate NEW,RELATED,ESTABLISHED FLOWOFFLOAD fw
466	26.29 KB	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ctstate RELATED,ESTABLISHED / * fw3 */
439	29.77 KB	zone_lan_forward	all	br-lan	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */
0	0.00 B	zone_wan_forward	all	eth0.2	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */
0	0.00 B	zone_wan_forward	all	wlan-sta0	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */
0	0.00 B	reject	all	*	*	0.0.0.0/0	0.0.0.0/0	/ * fw3 */

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You can change network configuration, show and add static routes:

GL-SFT1200

StatusSystemNetworkLogout

Routes

The following rules are currently active on this system.

ARP

IPv4-Address	MAC-Address	Interface
10.0.42.19	B8:27:EB:E7:91:90	wwan6
10.0.42.1	80:EE:73:EF:67:56	wwan6
192.168.8.123	00:24:9B:1E:2E:7A	lan

Active IPv4-Routes

Network	Target	IPv4-Gateway	Metric	Table
wwan6	0.0.0.0/0	10.0.42.1	20	2
wwan6	10.0.42.0/24	-	20	2
lan	192.168.8.0/24	-	0	2
wwan6	0.0.0.0/0	10.0.42.1	20	main
wwan6	10.0.42.0/24	-	20	main
lan	192.168.8.0/24	-	0	main

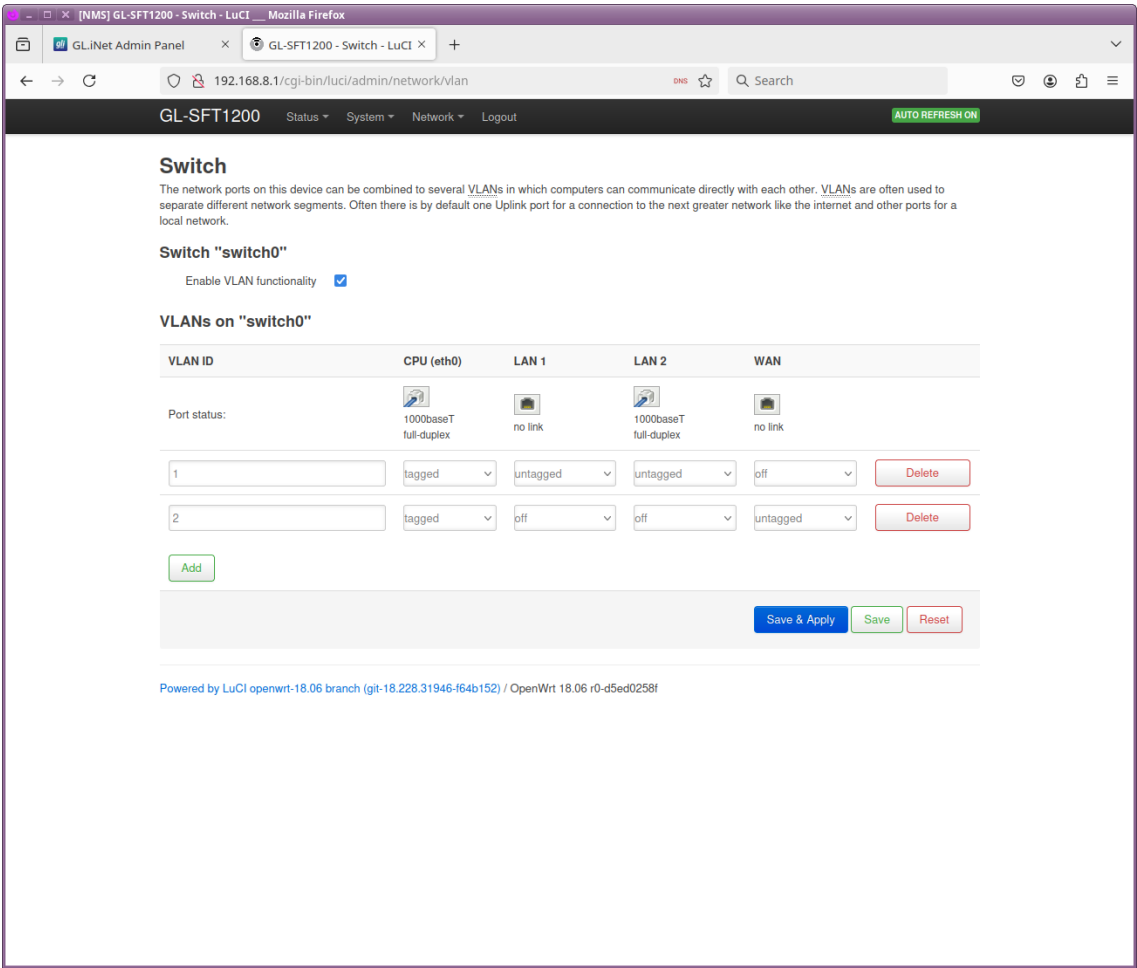
Active IPv6-Routes

Network	Target	Source	Metric	Table
wwan6	2a06:4004:105b::/64		256	5
lan	fd4b:ade9:803e::/64		1024	5
wwan6	::/0		1024	5
wwan6	::/0	2a06:4004:105b::/64	512	main
wwan6	2a06:4004:105b::/64		256	main
lan	fd4b:ade9:803e::/64		1024	main
wwan6	::/0		1024	main

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Reconfigure ports for various VLANs:

Add the WAN to become just another LAN port, or add VLAN tagging – and perhaps some switch connected to the router.



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Even review changes before saving them:

