



COSCUP 2025

Open Source Home Network Environment

Presenter: Sheng-Hao Liao (frakw)

Time: 2025-08-10 14:30~15:00

Location: NTUST RB-105

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About Me

- Second time submitting agenda to COSCUP
 - Last year: [Rclone 介紹與應用](#)
- Name : 廖聖郝 (Sheng-Hao Liao)
- Nickname/ID : frakw
- Currently study master in NTUST CS
- Research field:
 - Computer Vision
 - Computer Graphics
 - Server and Network
- Website:
 - <https://resume.frakw.com/>
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社群

標籤

RB105

RB101

開源家用網路環境

14:30 ~ 15:00

frakw 廖聖郝



主議程軌 - Main Session Track



QR Code (1)

Session:



HackMD Note:



QR Code (2)

PPT URL:



YouTube Stream:



Outline

- Motivation
 - Open Source Router
 - Open Source NAS
 - Home Workstation
 - Access From WAN
 - Troubleshooting
 - Other Useful Self-Host Services
 - Q&A
- 
- 25 minute
- 5 minute

Motivation

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Motivation

- Use open source solution in your home network environment
- Why ?
 - Security
 - Privacy Control
 - Customization
 - Self-Reliance
 - Future Proofing
 - Learning Opportunity
- How ?
 - Replace with open source alternative
 - Use your own self-host services
 - Regular updates and patch management
- Cons
 - Zero-day Vulnerability
 - Maintenance Effort
 - High Learning Curve

Open Source Router

...

Router Operating System

- Closed Source
 - ASUSWRT
 - MikroTik RouterOS
 - ...
- Open Source
 - ASUSWRT-Merlin
 - FreshTomato
 - OPNsense
 - DD-WRT
 - OpenWRT



Router Security Issues



【資安日報】5月29日，未及時修補已知漏洞釀禍，大量華碩路由器遭殭屍網路AyySSHush綁架

【攻擊與威脅】... 威脅情報業者GrayNoise揭露鎖定華碩路由器的殭屍網路AyySSHush攻擊行動，他們從3月18日察覺駭客的活動，經過2個月的追蹤，已有近9千臺...

2025年5月29日



1.3萬臺MikroTik路由器被綁架組成殭屍網路，駭客搭配DNS弱點與SPF不當設定散布惡意軟體

資安業者Infoblox揭露將MikroTik路由器用於寄送釣魚郵件的攻擊行動，過程裡駭客運用2萬個DNS網域、挾持1.3萬臺路由器來達到目的。

2025年1月20日



資安趨勢部落格
<https://blog.trendmicro.com.tw> › ... :

Netgear 路由器的遠端存取漏洞遭攻擊，財富500 強企業恐成目標

2017年9月20日 — CVE-2016-10176是出現在特定Netgear路由器和數據機路由器的安全漏洞，一旦攻擊成功就可以攻擊者遠端存取設備。還可以讓駭客回復設備密碼並執行命令。這個 ...

資安趨勢部落格
<https://blog.trendmicro.com.tw> › ... :

重新啟動你的路由器：VPNFilter感染全球超過50萬台的路由器

2018年5月31日 — 資安研究人員發表了一份報告，指出駭客利用惡意軟體VPNFilter 感染至少54個國家，超過50萬台家用和小型企業路由器。這惡意軟體可以操縱受感染路由器進行攻擊 ...

Router Security Issues

- New issues arise every few months



Flash OpenWRT into your router (1)

- Flashing open-source firmware is generally legal, but it **voids warranty** and must comply with **local wireless regulations**.
- Steps
 - 1. Check your router's compatibility with openwrt
 - <https://openwrt.org/toh/start>

Show	50	entries	Search:	asus
Brand	Model	Version	Supported...	Device Page
ASUS	4G-AX56	A1	snapshot	4g-ax56
ASUS	GT-AC5300		24.10.0	Edit
ASUS	Lyra (MAP-AC2200)		24.10.2	lyra_map-ac2200
ASUS	OnHub SRT-AC1900		24.10.2	onhub_tp-link_tgr1900
ASUS	PL-AC56		24.10.2	Edit
ASUS	RP-AC51		24.10.2	Edit
ASUS	RP-AC56		24.10.2	Edit
ASUS	RP-AC66		24.10.2	rp-ac66
ASUS	RP-AC87		24.10.2	Edit
ASUS	RP-N53		24.10.0	rp-n53
ASUS	RT-AC1200	v1	24.10.2	rt-ac1200
ASUS	RT-AC1200	v2	24.10.2	Edit

ASUS RT-N18U

The ASUS RT-N18U was released in 2014. It has 5 gigabit ethernet ports and does 802.11n (2.4GHz-only) @ 450Mbps, when using TurboQAM™ 600Mbps. It is based on the Broadcom [BCM53xx](#) SoC platform. **WiFi does not work.**



Devices with Broadcom WiFi chipsets have **limited OpenWrt supportability** (due to limited FLOSS driver availability for Broadcom chips). Consider this when choosing a device to buy, or when deciding to flash OpenWrt on your device because it is listed as supported. See [Broadcom WiFi](#) for details.

Supported Versions

Brand	ASUS
Model	RT-N18U
Version	A1
Supported Current Rel	24.10.0
OEM Device Homepage URL	asus.com
OWrt Forum Topic URL	Archive thread #53417
Data entry	Edit

Flash OpenWRT into your router (2)

- Steps
 - 2. Download OpenWRT firmware
 - <https://firmware-selector.openwrt.org/>

下載適用於您裝置的OpenWrt韌體

輸入裝置的名稱或型號，然後選擇推薦的穩定版本或夜間"快照"版本。

ASUS RT-N18U 24.10.2 ▾

關於此版本

型號: **ASUS RT-N18U**
平台: bcm53xx/generic
版本: 24.10.2 (r28739-d9340319c6)
連結: [自訂](#) [固件](#) [API](#)
▶ 自訂已安裝套件包及/或首次啟動指令碼

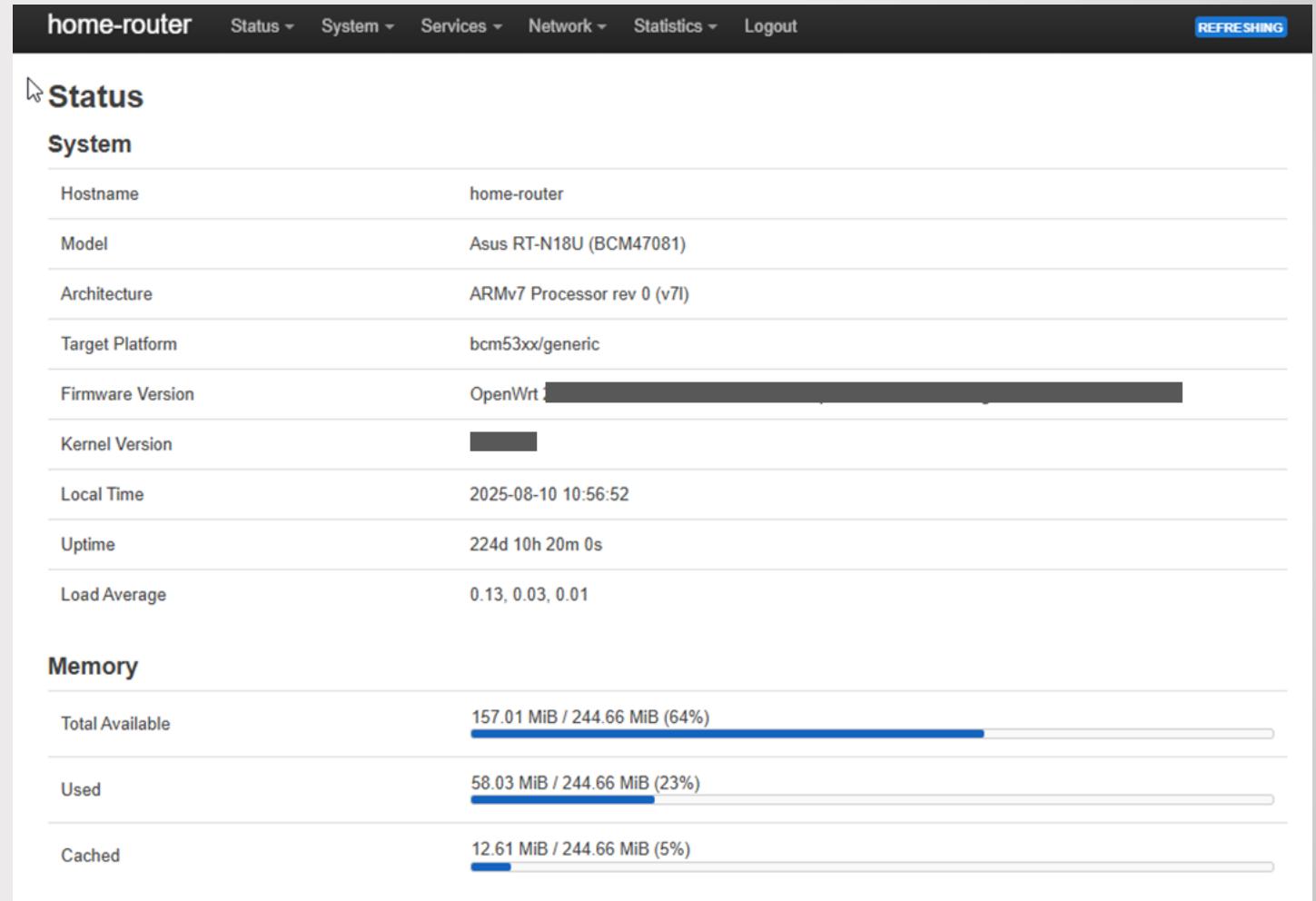
下載映像檔

 TRX 第一次刷OpenWrt時在原廠狀態下刷入。通常您可以透過原廠韌體的web介面執行此操作。
sha256sum: ee233bb911d2e314b726eeb9526cd6cc12765489c234ebeba255db6d74a5cd1f

所有下載 | 意見回饋 | OFS v5.0.3-1-ge6fb8f75

Flash OpenWRT into your router (3)

- Steps
 - 3. Flash OpenWRT firmware
 - Search on google first !



Advanced OpenWRT Functions (1)

- VLAN
- QoS
- VPN (Wireguard/Tailscale...)
- DDNS
- ...

Software

Free space:
98% (100.60 MiB)

Filter: Type to filter... Clear Download and install package: Package name or URL... OK Actions: Update lists... Upload Package... Configure opkg...

Display LuCI translation packages: filtered all none

Available Installed Updates

« Displaying 1-100 of 7207 »

Package name	Version	Size (.ipk)	Description	Action
464xlat	13	4.92 KiB	464xlat provides support to deploy limited IPv4 access services to mobile...	Install...
6in4	28	2.46 KiB	Provides support for 6in4 tunnels in /etc/config/network....	Install...
6rd	12	3.53 KiB	Provides support for 6rd tunnels in /etc/config/network....	Install...
6to4	13	1.81 KiB	Provides support for 6to4 tunnels in /etc/config/network....	Install...
UDPspeeder	20230206.0-1	66.99 KiB	A Tunnel which Improves your Network Quality on a High-latency Lossy Link by using Forward Error Correction,for All Traffics(TCP/UDP/ICMP)	Install...
aardvark-dns	1.11.0-1	642.99 KiB	Aardvark-dns is an authoritative dns server for A/AAAA container records....	Install...
ack	3.7.0+perl5.28-1	23.51 KiB	A grep-like source code search tool	Install...
acl	2.3.1-2	18.89 KiB	Access control list support...	Install...
acme	4.0.0	836 B	Shorthand package for acme-acmesh.	Install...

Advanced OpenWRT Functions (2)

- 802.11K/V/R
- Automatically switch your wifi between different floor
- <https://youtu.be/kMgs2XFClaN?si=NOwKo3Qm6FZ53gi9>
- https://youtu.be/vVoZppb_FR0?si=ykJ2vu0GZD6dh3Ej

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings | **WLAN roaming**

Settings for assisting wireless clients in roaming between multiple APs: 802.11r, 802.11k and 802.11v

802.11r Fast Transition Enables fast roaming among access points that belong to the same Mobility Domain

NAS ID

Mobility Domain 0403 Used for two different purposes: RADIUS NAS ID and 802.11r R0KH-ID. Not needed with normal WPA(2)-PSK.

Reassociation Deadline 1000 time units (TUs / 1.024 ms) [1000-65535]

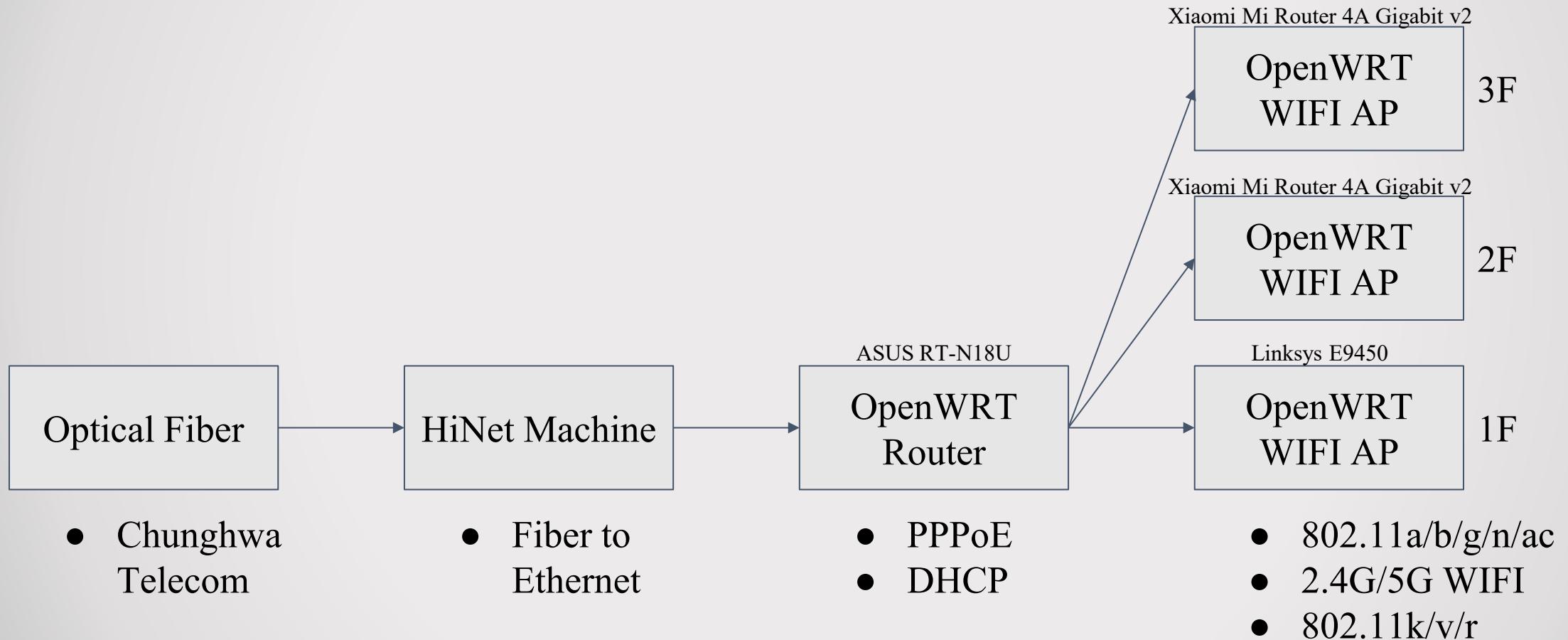
FT protocol FT over the Air

Generate PMK locally When using a PSK, the PMK can be automatically generated. When enabled, the R0/R1 key options below are not applied. Disable this to use the R0 and R1 key options.

R0 Key Lifetime 10000 minutes

R1 Key Holder 00004f577274 6-octet identifier as a hex string - no colons

My Home Network Environment



Open Source NAS

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NAS Operating System

- Closed Source
 - Synology DSM
 - QNAP QTS
 - Asustor ADM
 - Unraid
 - ...
- Open Source
 - TrueNAS CORE
 - TrueNAS SCALE
 - OpenMediaVault (OMV)
 - ...
- NAS Protocol
 - SMB / CIFS
 - NFS
 - FTP/SFTP

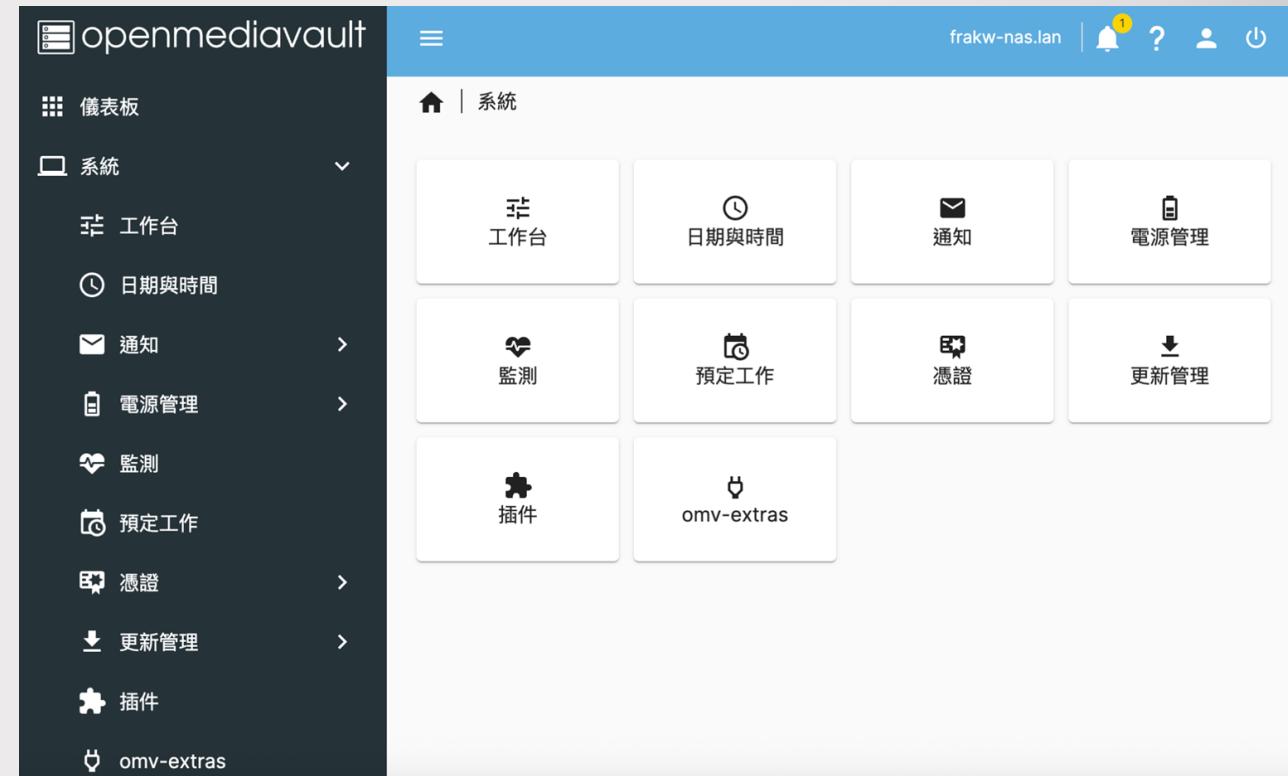
Synology®

QNAP®

 TrueNAS

 OpenMediaVault
The open network attached storage solution

OpenMediaVault Web Dashboard



The image shows the OpenMediaVault web dashboard. At the top, there is a header bar with the "openmediavault" logo, the IP address "frakw-nas.lan", and various status icons. The main navigation menu on the left is titled "openmediavault" and includes a "儀表板" (Dashboard) section and a "系統" (System) section. The "系統" section is expanded and lists several management options: "工作台" (Workstation), "日期與時間" (Date & Time), "通知" (Notifications), "電源管理" (Power Management), "監測" (Monitoring), "預定工作" (Scheduled Tasks), "憑證" (Certificates), "更新管理" (Update Management), "插件" (Plugins), and "omv-extras". The dashboard area displays eight cards: "工作台" (Workstation), "日期與時間" (Date & Time), "通知" (Notifications), "電源管理" (Power Management), "監測" (Monitoring), "預定工作" (Scheduled Tasks), "憑證" (Certificates), and "更新管理" (Update Management). There are also two additional cards at the bottom: "插件" (Plugins) and "omv-extras".

OpenMediaVault Disk and Sharing

The screenshot shows the 'Storage Devices' section of the OpenMediaVault web interface. It lists four QEMU HARDDISK devices:

裝置	型號	序號	供應商	容量
/dev/sda	QEMU HARDDISK	drive-scsi0	QEMU	16.00 GiB
/dev/sdb	QEMU HARDDISK	drive-scsi1	QEMU	4.88 TiB
/dev/sdc	QEMU HARDDISK	drive-scsi2	QEMU	4.88 TiB
/dev/sdd	QEMU HARDDISK	drive-scsi3	QEMU	4.88 TiB

At the bottom, it says "0 已選 / 4 總計".

The screenshot shows the 'Sharing' section of the OpenMediaVault web interface. It lists three shared folders:

已啟用	共享檔案夾	註釋	公開	唯讀	可瀏覽
✓	sdb		No		✓
✓	sdc		No		✓
✓	sdd		No		✓

At the bottom, it says "0 已選 / 3 總計".

OpenMediaVault Docker

The screenshot shows the OpenMediaVault Docker interface. At the top, there's a blue header bar with the server name "frakw-nas.lan" and various icons for notifications, help, user, and power. Below the header is a navigation bar with links for Home, Services, Compose, and Files. The main area is a table listing services:

名稱	敘述	狀況
frakw-nas-emby-server		Up
frakw-nas-nextcloud	frakw-nas-nextcloud	Up
sdd-filebrowser		Stopped
tmn.frankw.work	tmn.frankw.work	Stopped

At the bottom left, it says "0 已選 / 4 總計". The table has a toolbar at the top with icons for creating, editing, deleting, and other actions.

The screenshot shows the configuration details for the "frakw-nas-nextcloud" service. The top part shows the service status: "frakw-nas-nextcloud" | 服務 | Compose | 檔案 | 編輯. The status bar indicates there is 1 notification.

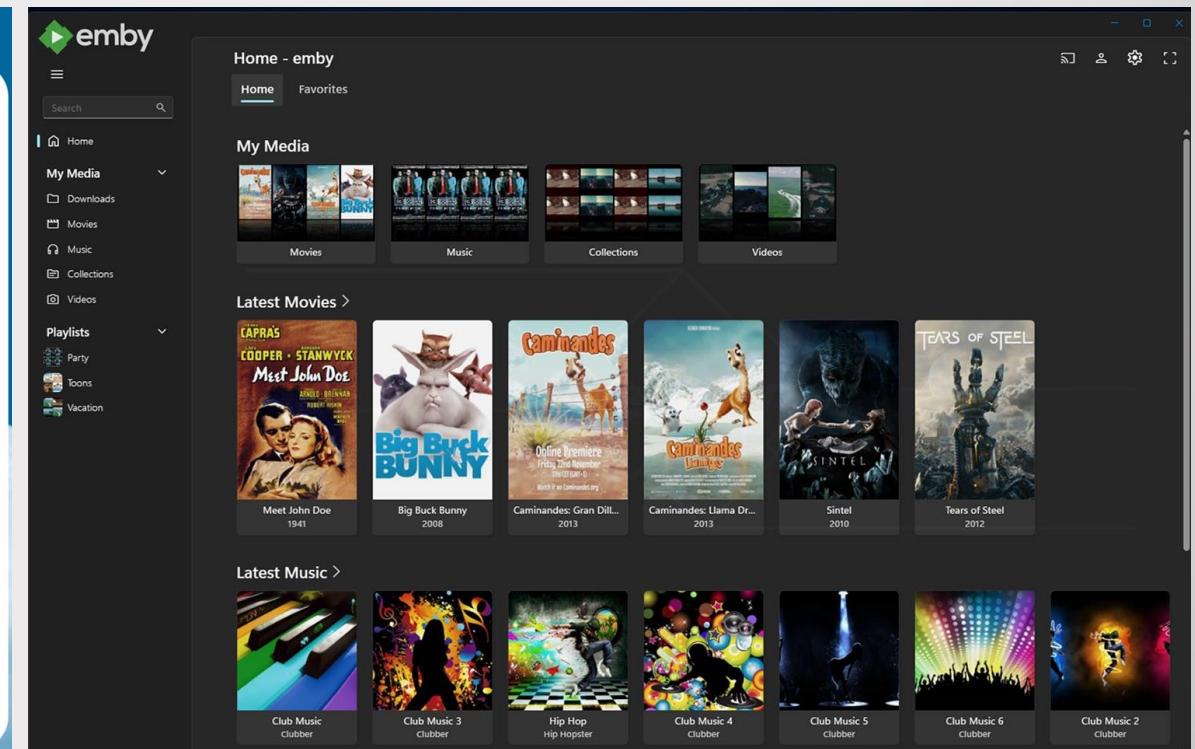
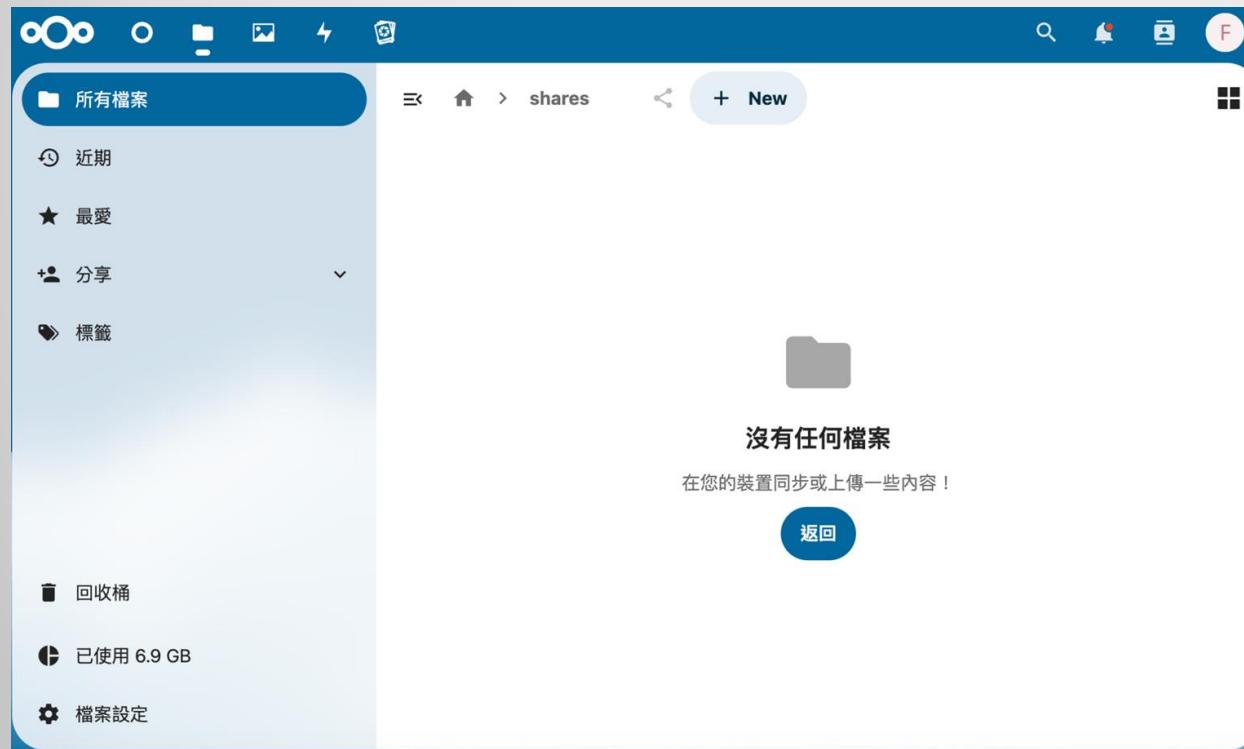
The configuration file content is as follows:

```
4 services:
5   nextcloud:
6     image: nextcloud
7     container_name: nextcloud
8     restart: unless-stopped
9     networks:
10       - cloud
11     depends_on:
12       - nextclouddb
13       - redis
14     ports:
15       - 8081:80
16     volumes:
17       - ./html:/var/www/html
18       - ./custom_apps:/var/www/html/custom_apps
```

At the bottom, there's a "環境" (Environment) section.

Nextcloud & Emby

- <https://github.com/nextcloud/server>
- <https://github.com/MediaBrowser/Emby>



Home Workstation

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Hypervisor Operating System

- Operating systems dedicated to virtual machines
- Closed Source
 - VMware ESXi
 - Microsoft Windows Server
 - ...
- Open Source
 - KVM
 - Xen Project
 - Proxmox VE
 - ...



ProxmoxVE Web Dashboard (1)

X PROXMOX Virtual Environment 7.4-3

Server View Documentation Create VM Create CT root@pam

Node 'pve'

Package versions CPU frequency Repository Status CPU usage Hour (average) No Proxmox VE repository enabled!

Search Summary Notes Shell System Network Certificates DNS Hosts Options Time Syslog Updates Repositories

CPU usage (Cur): 1550.000 MHz | min: 1550.000 MHz | max: 3000.000 MHz

Hour (average)

CPU usage IO delay

Server load Load average

Tasks Cluster log

Start Time ↓	End Time	Node	User name	Description	Status
Aug 10 08:42:41	Aug 10 08:42:41	pve	root@pam	VM/CT 103 - Console	
Aug 10 05:31:02	Aug 10 05:31:09	pve	root@pam	Update package database	OK
Aug 09 16:09:32	Aug 09 16:09:39	pve	root@pam	Update package database	OK
Aug 09 15:31:08	Aug 09 15:31:10	pve	root@pam	CT 103 - Start	OK
Aug 09 15:31:04	Aug 09 15:31:10	pve	root@pam	Start all VMs and Containers	OK

ProxmoxVE Web Dashboard (2)

The screenshot displays two main sections of the ProxmoxVE Web Dashboard.

Left Panel (Storage Management):

- Node 'pve'** header.
- Disks** section:
 - LVM
 - LVM-Thin
 - Directory
 - ZFS** (selected)
- Table:** Shows disk details.

Name ↑	Size	Free	Allocated	Fragmenta...	Health
nas_storage_1	6.00 TB	4.68 TB	1.32 TB	0%	ONLINE
nas_storage_2	6.00 TB	3.30 TB	2.70 TB	0%	ONLINE
nas_storage_3	6.00 TB	657.10 GB	5.34 TB	7%	ONLINE
nvme_ss_512	511.10 GB	295.14 GB	215.96 GB	33%	ONLINE

Right Panel (Virtual Machine Configuration):

- Virtual Machine 100 (ubuntu) on node 'pve' No Tags**
- Actions:** Start, Stop.
- Summary:** Add, Remove, Edit, Disk Action, Revert.
- Hardware:** Memory (16.00 GiB), Processors (8 cores), BIOS (Default), Display (Default), Machine (q35), SCSI Controller (VirtIO SCSI single).
 - Hard Disk (scsi0):** nvme_ss_512:vm-100-disk-0,iothread=1,size=64G
 - Hard Disk (scsi1):** vm-backup:100/vm-100-disk-0.qcow2,iothread=1,size=256G
 - Network Device (net0):** virtio=9E:25:F3:98:05:0B,bridge=vmbr0
- Console, Options, Task History, Monitor, Backup, Replication, Snapshots, Firewall, Permissions** sections.

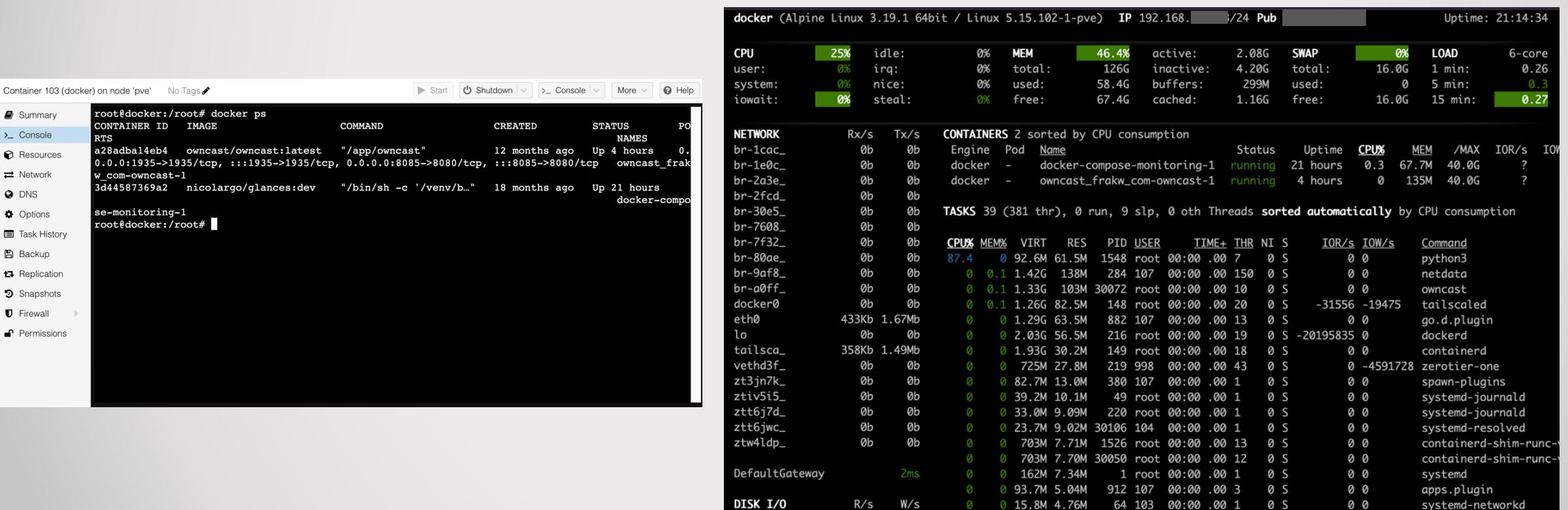
ProxmoxVE Web Dashboard (3)

The screenshot shows the ProxmoxVE Web Dashboard interface. The left sidebar displays the Datacenter structure, with the 'pve' node expanded, showing several virtual machines (VMs) and storage volumes. The '100 (ubuntu)' VM is selected and highlighted in blue. The main content area shows the 'Console' tab for VM 100 (ubuntu) on node 'pve'. The console window displays a dark terminal session with the 'Ubuntu' logo at the bottom right. On the left side of the console window, a sidebar lists various management options: Summary, Console, Hardware, Cloud-Init, Options, Task History, Monitor, Backup, and Replication. Below the main content area, there is a table titled 'Tasks' showing a log of recent activities. The table has columns for Start Time, End Time, Node, User name, Description, and Status. The log entries are:

Start Time	End Time	Node	User name	Description	Status
Aug 10 12:47:39		pve	root@pam	VM/CT 100 - Console	
Aug 10 12:44:08		pve	root@pam	VM/CT 103 - Console	
Aug 10 12:47:39	Aug 10 12:47:49	pve	root@pam	VM/CT 100 - Console	Error: connection timed out
Aug 10 12:47:37	Aug 10 12:47:39	pve	root@pam	VM 100 - Start	OK
Aug 10 12:41:10	Aug 10 12:42:26	pve	root@pam	VM/CT 103 - Console	OK

Proxmox VE Docker

- 【攻略】從舊電腦到伺服帕魯：架幻獸帕魯伺服器 知識與心得分享
- Web htop: <https://github.com/nicolargo/glances>



Access From WAN

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Access From WAN

- It is recommended to register your **own domain**
- Methods
 - DDNS + Port Forwarding - Dangerous!
 - Reverse Proxy
 - Cloudflare Tunnel
 - VPN
- Avoid leak your public IP

The screenshot shows a domain management interface with the following details:

Domains	Status	Auto-Renew	Expiration
frakw.com	ACTIVE	On	Aug 28, 2026
frakw.work	ACTIVE	On	May 25, 2026

Below the table, there are "Recommended for you" suggestions:

- frakw.dev: \$15.98 /yr, Add to Cart
- frakw.net: \$12.98 /yr (\$14.98 /yr), 13% OFF, Add to Cart

DDNS + Port Forwarding

- **Not Recommend**
- DDNS
 - Install ddns-scripts
 - OpenWRT -> Services -> Dynamic DNS
- Port Forwarding
 - OpenWRT -> Network -> Firewall
- Access your services in
 - sub.domain.com:port

Firewall - Port Forwards

Port forwarding allows remote computers on the Internet to connect to a specific computer or service within

Port Forwards

Name	Match	Action	Enable
openspeedtest	Incoming IPv4 From wan To this device , port [redacted]	Forward to lan IP 192.168. [redacted] port [redacted]	<input type="checkbox"/> Edit Delete

ddns-scripts-cloudflare 2.8.2-43 3.97 KiB Dynamic DNS Client scripts extension for cloudflare.com API v4 (require curl)

DDns Service » [redacted]

[Basic Settings](#) [Advanced Settings](#) [Timer Settings](#) [Log File Viewer](#)

Enabled
If this service section is disabled it could not be started. Neither from LuCI interface nor from console.

Lookup Hostname [redacted]
Hostname/FQDN to validate, if IP update happen or necessary

IP address version [IPv4-Address](#)
Defines which IP address 'IPv4/IPv6' is send to the DDNS provider

DDNS Service provider [cloudflare.com-v4](#)

Domain [redacted]
Replaces [DOMAIN] in Update-URL (URL-encoded)

Cloudflare Tunnel

- Require your own domain
- A 24/7 machine for hosting tunnel
- One service correspond to one subdomain

為您的通道命名

請根據您要連結的網路，使用描述性名稱。我們建議每個網路只建立一個通道。

通道名稱 (必須)
frakw-home-tunnel

選擇您的環境

選擇作業系統:
 Windows Mac Debian Red Hat Docker

選擇架構:
 64-bit 32-bit

安裝並執行連接器

若要將通道連結至 Cloudflare，請將下列其中一個命令複製貼上到終端視窗。遠端管理的通道要求您安裝 cloudflared 2022.03.04 或更新版本。

1. 下載 <https://github.com/cloudflare/cloudflared/releases/latest/download/cloudflared-windows-amd64.msi>.
2. 執行安裝程式。
3. 以系統管理員身分開啟命令提示字元。
4. 執行以下命令:

```
$ cloudflared.exe service install
```

編輯 frakw-home-tunnel 的公用主機名稱

主機名稱

子網域

網域 (必須)
frakw.com

服務

類型 (必須) URL (必須)

HTTP :// 192.168. [REDACTED]:8081

例如 https://localhost:8001

VPN

- Not SurfShark!
- ZeroTier
- TailScale
 - Exit node

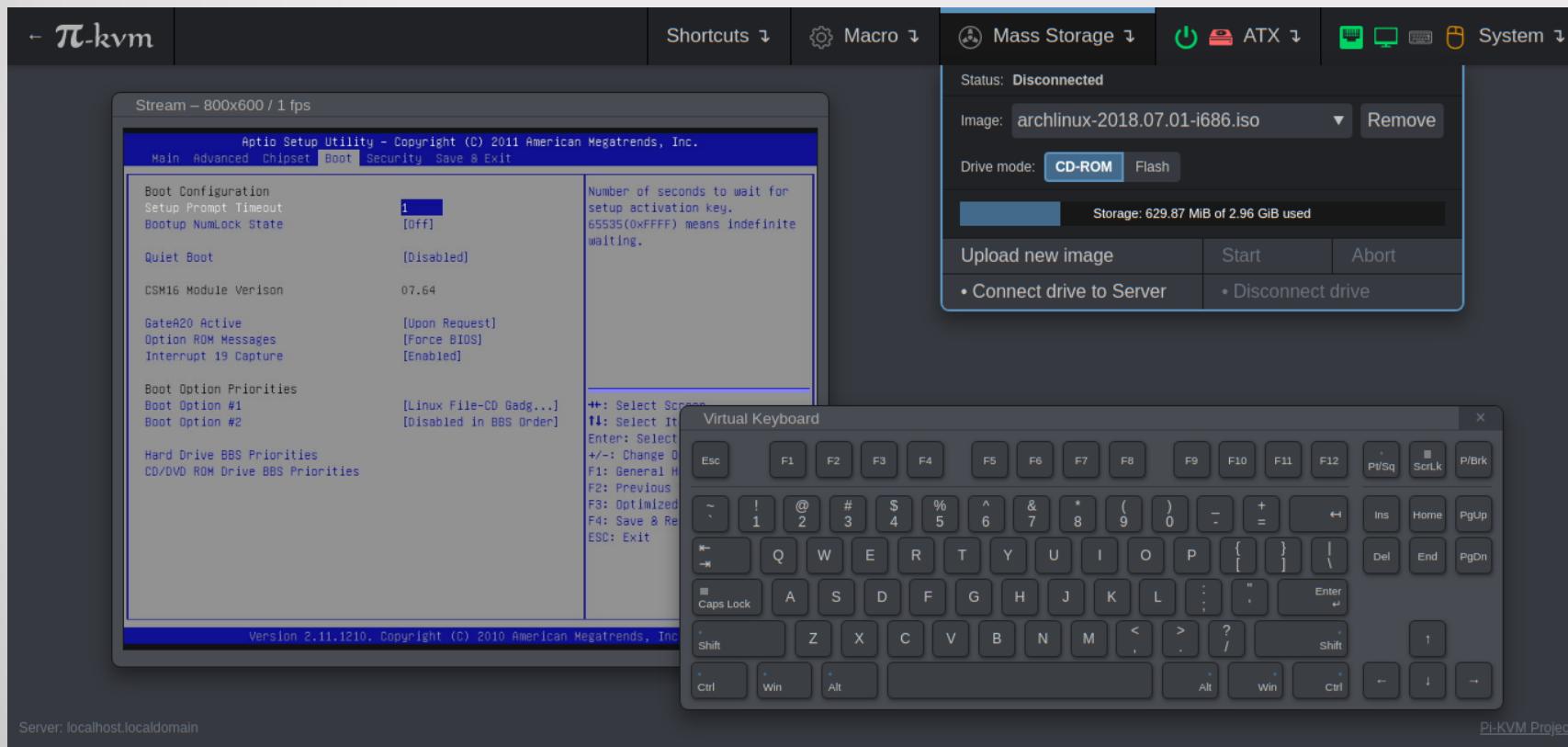
```
frakw@frakw-tillandsia-debian:~$ tailscale status
100.95.31.122 frakw@bian frakwu@      linux  -
100.103.161.31 2024:frakwu@      windows offline
100.93.250.114 benj:frakwu@      linux  offline
100.102.10.121 frakw@frakwu@      windows offline
100.114.187.77 frakw@frakwu@      linux  -
100.91.166.21   frakw@frakwu@      linux  -
100.75.27.85    frakw@frakwu@      windows offline
100.116.60.36   frakw@frakwu@      android offline
100.65.117.77   frakw@frakwu@      windows idle; offers exit node
100.87.228.71   frakw@frakwu@      linux  active;
100.110.104.124 frakw@frakwu@      linux  offline
100.79.18.125   frakw@frakwu@      linux  -
100.83.118.81   frakw@frakwu@      linux  offline
100.101.24.122 frakw@frakwu@      linux  -
100.115.223.106 frakw@frakwu@      linux  offline
100.65.191.105 frakw@frakwu@      linux  -
100.93.58.109   frakw@frakwu@      windows offline
100.98.239.58   frakw@frakwu@      macOS  -
100.118.54.6    frakw@frakwu@      windows offline
100.88.21.15    frakw@frakwu@      linux  -
100.87.191.2    frakw@frakwu@      android offline
100.84.199.128  ipad:frakwu@      iOS    offline
100.66.103.128  link:frakwu@      linux  idle; offers exit node; offline
100.117.164.48  mos:frakwu@      linux  -
```

Troubleshooting

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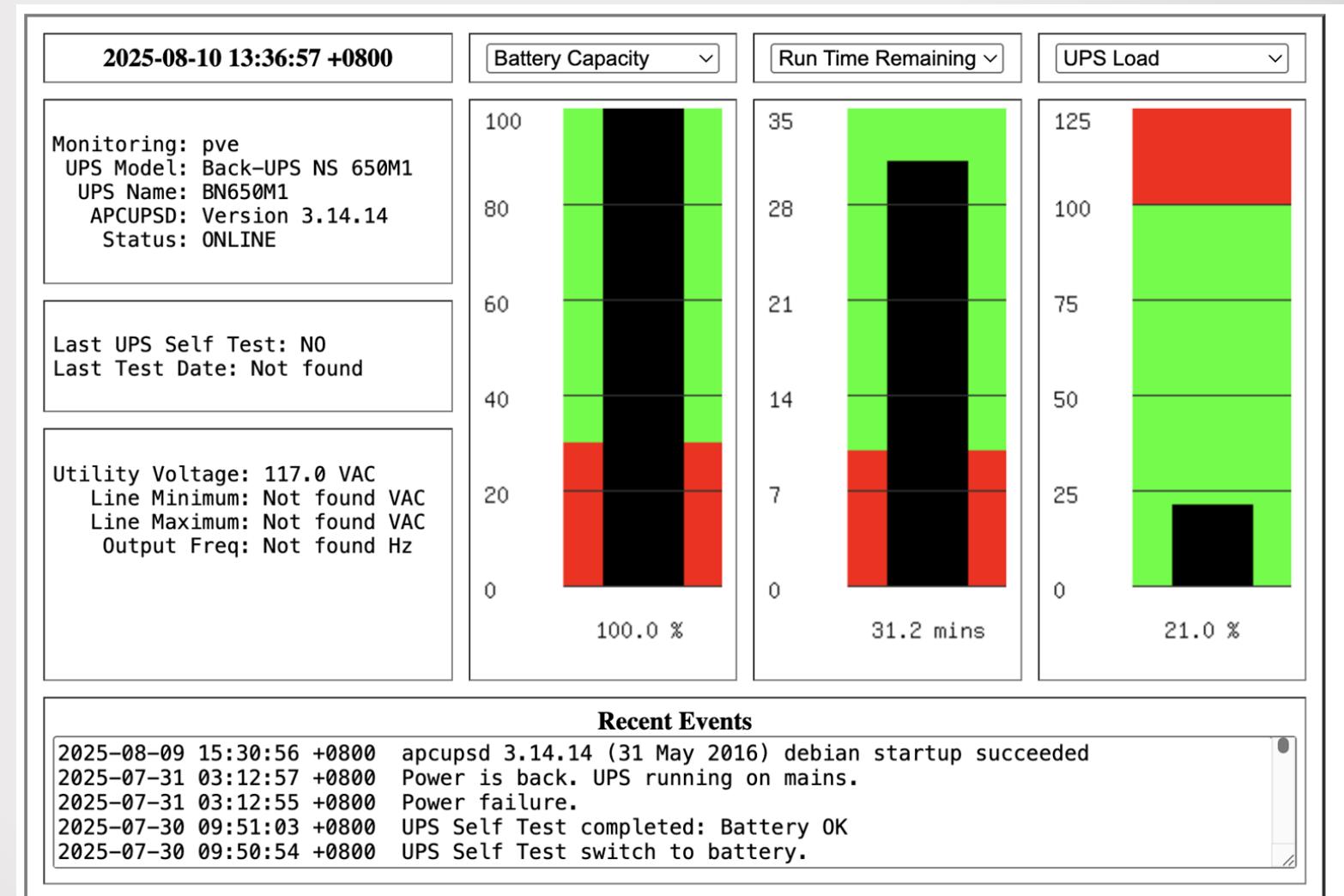
PiKVM

- Open and inexpensive DIY IP-KVM based on Raspberry Pi
- <https://pikvm.org/>
- <https://github.com/pikvm/pikvm>



UPS (Uninterruptible Power Supply)

- Types
 - Offline
 - Line-Interactive
 - Online



Other Useful Self-Host Services

...

Bitwarden

- Password manager
- Self-Host version:
 - <https://github.com/dani-garcia/vaultwarden>

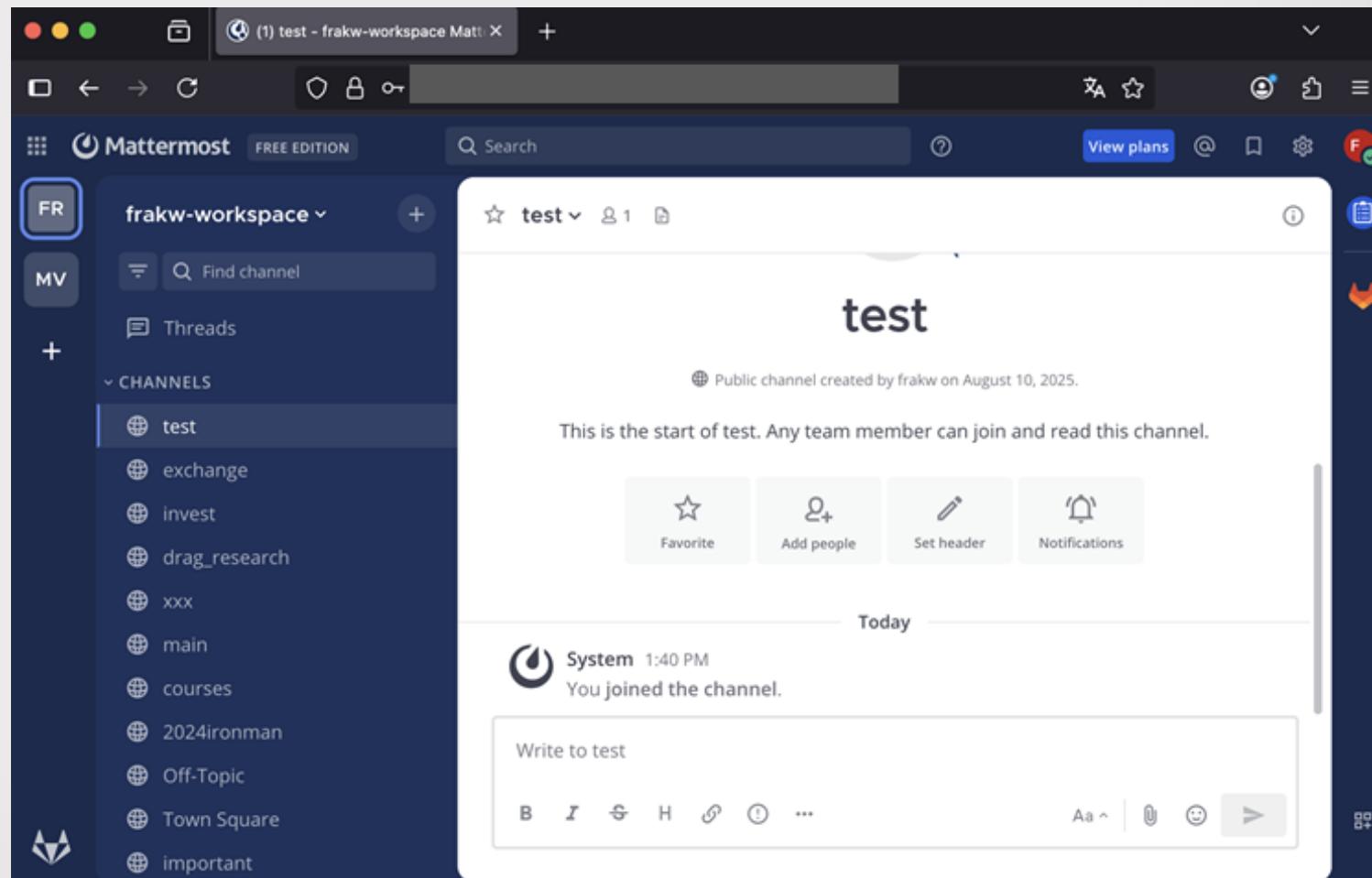
The screenshot shows the Bitwarden web application interface. On the left is a dark sidebar with navigation links: 密碼庫 (Vaults), Send, Tools, Reports, and Settings. The main area has a title '所有密碼庫' (All Vaults). It includes a search bar and a sidebar with vault categories like '所有密碼庫', '我的密碼庫', and '所有項目'. The main content area lists various vault entries with icons, names, and owner information ('我').

名稱	擁有者	操作
Koofr Cloud Storage Plans: Lifetime Subscript...	我	⋮
4tests.com	我	⋮
115.com	我	⋮
172.24.0.102	admin	⋮
192.168.10.1	root	⋮
192.168.10.2	root	⋮
192.168.10.3	root	⋮
711 openpoint	我	⋮

This screenshot shows a 'Item details' modal. At the top is a header 'Item details'. Below it, under 'Item name', is 'dash.cloudflare.com'. The 'Login credentials' section contains fields for 'Username' (redacted@gmail.com) and 'Password' (redacted). A 'Verification code (TOTP)' field shows '170 9' with a red circle containing the number '4' next to it.

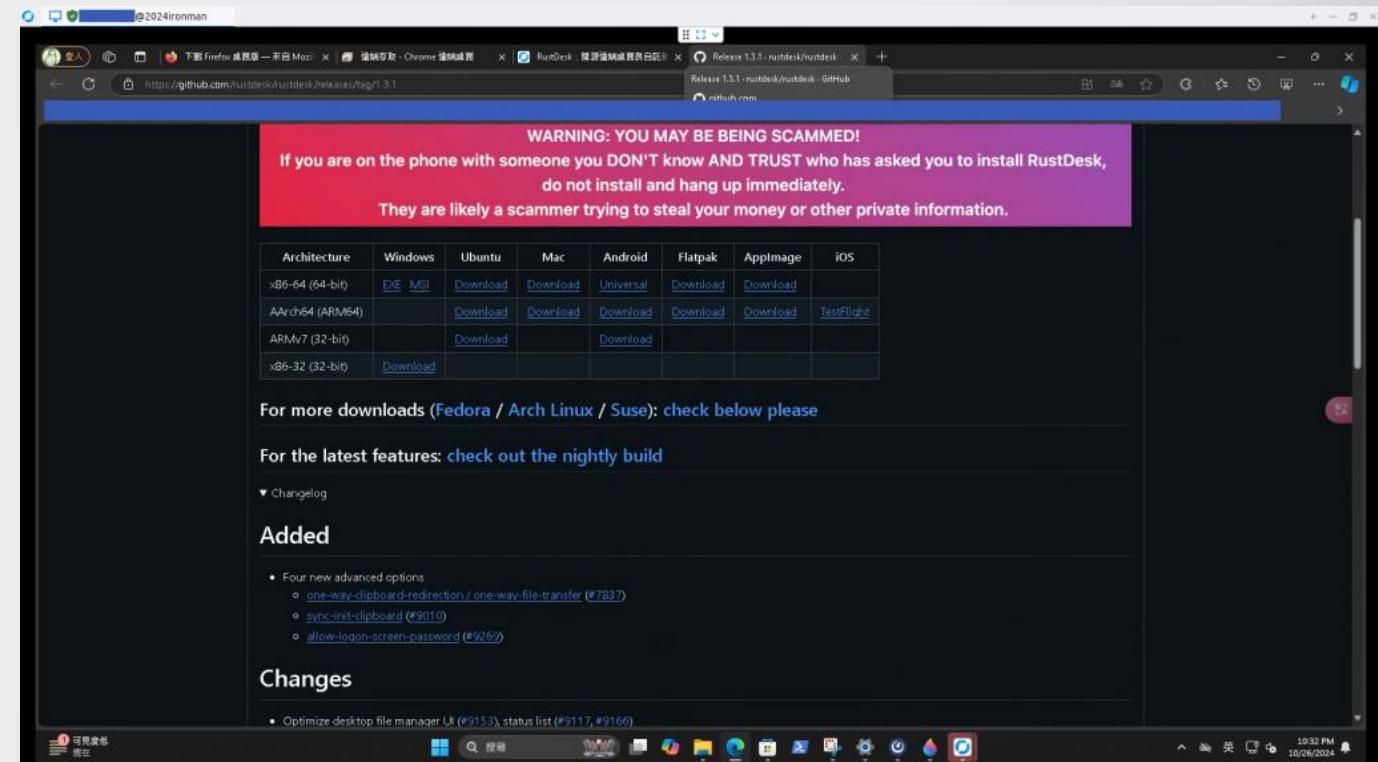
Mattermost

- <https://mattermost.com/>
- <https://github.com/mattermost/mattermost>



RustDesk

- <https://rustdesk.com/zh-tw/>
- <https://github.com/rustdesk/rustdesk>



wg-easy

- <https://github.com/wg-easy/wg-easy>

The screenshot shows the wg-easy web interface for managing WireGuard connections. At the top, there's a logo with a shield and the text "WireGuard". To the right is a user icon and a "Logout" button. Below the header, there are three tabs: "使用者" (selected), "Restore", "Backup", and "+ 建立".

使用者	版本	最后更新	下行速率	上行速率	状态	操作
frakw-zenfone6	10.8.0.2	2 weeks ago	↓ 0 B/s 4.14 GB	↑ 0 B/s 26.18 GB	<input checked="" type="checkbox"/>	
frakw-rosemary	10.8.0.3	1 day ago	↓ 0 B/s 15.05 GB	↑ 0 B/s 1.65 GB	<input checked="" type="checkbox"/>	
frakw-tillandsia	10.8.0.4	1 month ago	↓ 0 B/s 1.59 MB	↑ 0 B/s 1.07 MB	<input checked="" type="checkbox"/>	

Zipline

- Image Hosting Service
- <https://github.com/quantopian/zipline>

Zipline				
Home	alYDee.jpg	image/jpeg	108.3 kB	10/27/2024, 3:39:15 AM
Files	mVlpSz.txt	text/plain	12.0 B	10/27/2024, 3:41:19 AM
Folders	jNpNav.png	image/png	182.5 kB	10/27/2024, 3:43:12 AM
Stats	VWjhJ3.png	image/png	2.7 MB	10/27/2024, 3:47:36 AM
URLs	NAgQgG.gif	image/gif	4.9 MB	11/7/2024, 12:03:22 AM
Upload	G5qjvN.jpg	image/jpeg	727.2 kB	11/19/2024, 4:14:22 PM
Administration	mol42B.png	image/png	119.4 kB	12/10/2024, 5:09:20 PM
	bS0VPo.png	image/png	127.0 kB	12/10/2024, 5:09:40 PM
Zipline	8Fm11s.jpg	image/jpeg	5.9 MB	12/26/2024, 9:23:40 PM
Documentation	6xHT0H.jpg	image/jpeg	6.1 MB	12/26/2024, 9:27:51 PM
	CreUjJ.jpg	image/jpeg	4.6 MB	12/26/2024, 9:33:21 PM
	BM5R0h.png	image/png	1.8 kB	12/26/2024, 9:39:57 PM

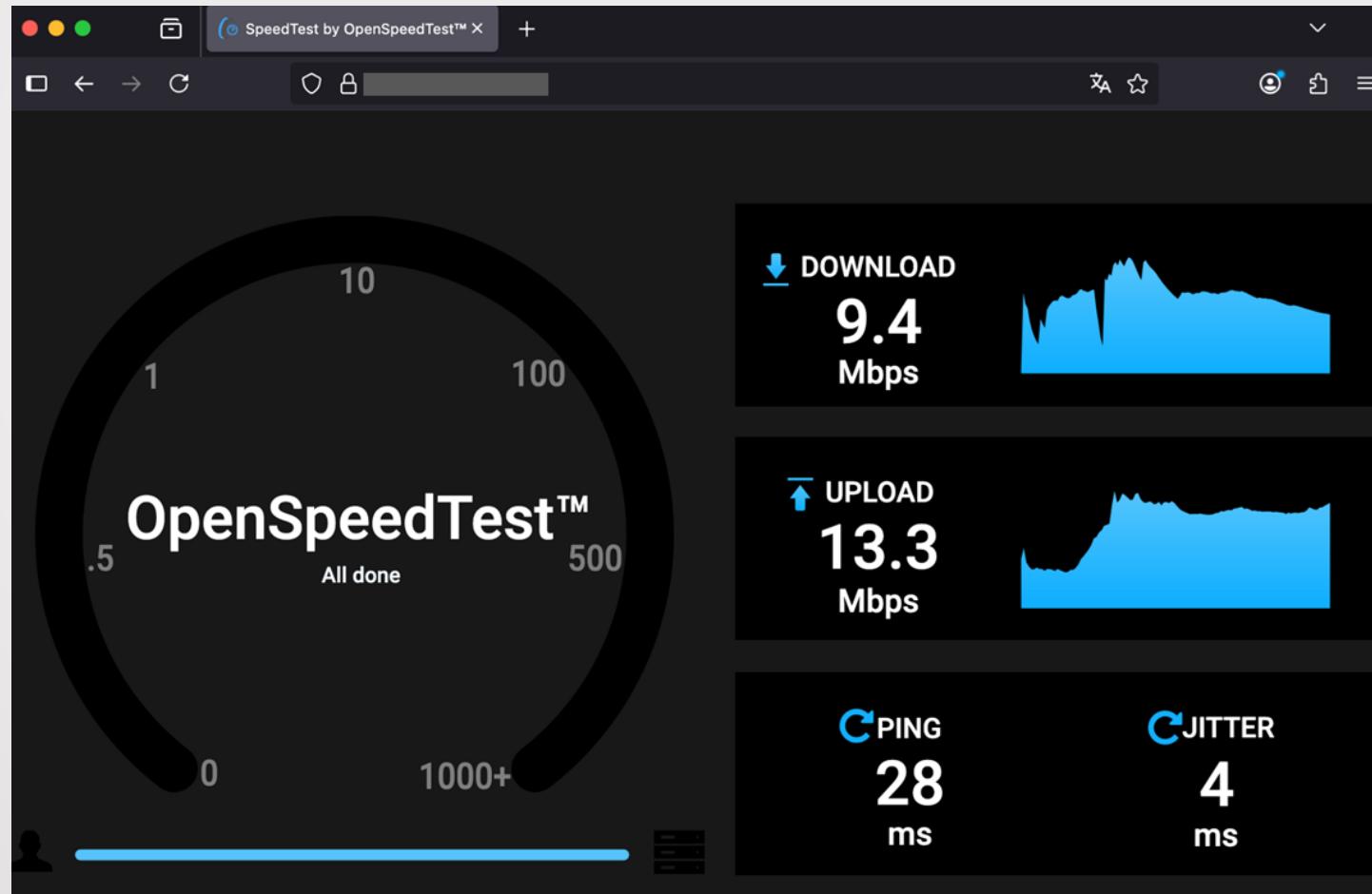
Stirling-PDF

- <https://www.stirlingpdf.com/>
- <https://github.com/Stirling-Tools/Stirling-PDF>



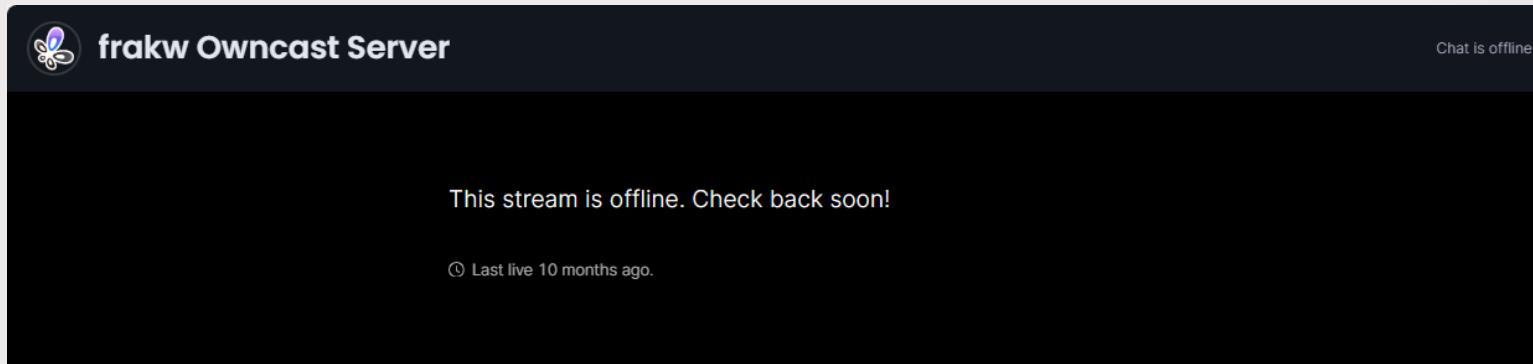
OpenSpeedTest

- <https://github.com/openspeedtest/Speed-Test>



Owncast

- Streaming server
- <https://github.com/owncast/owncast>



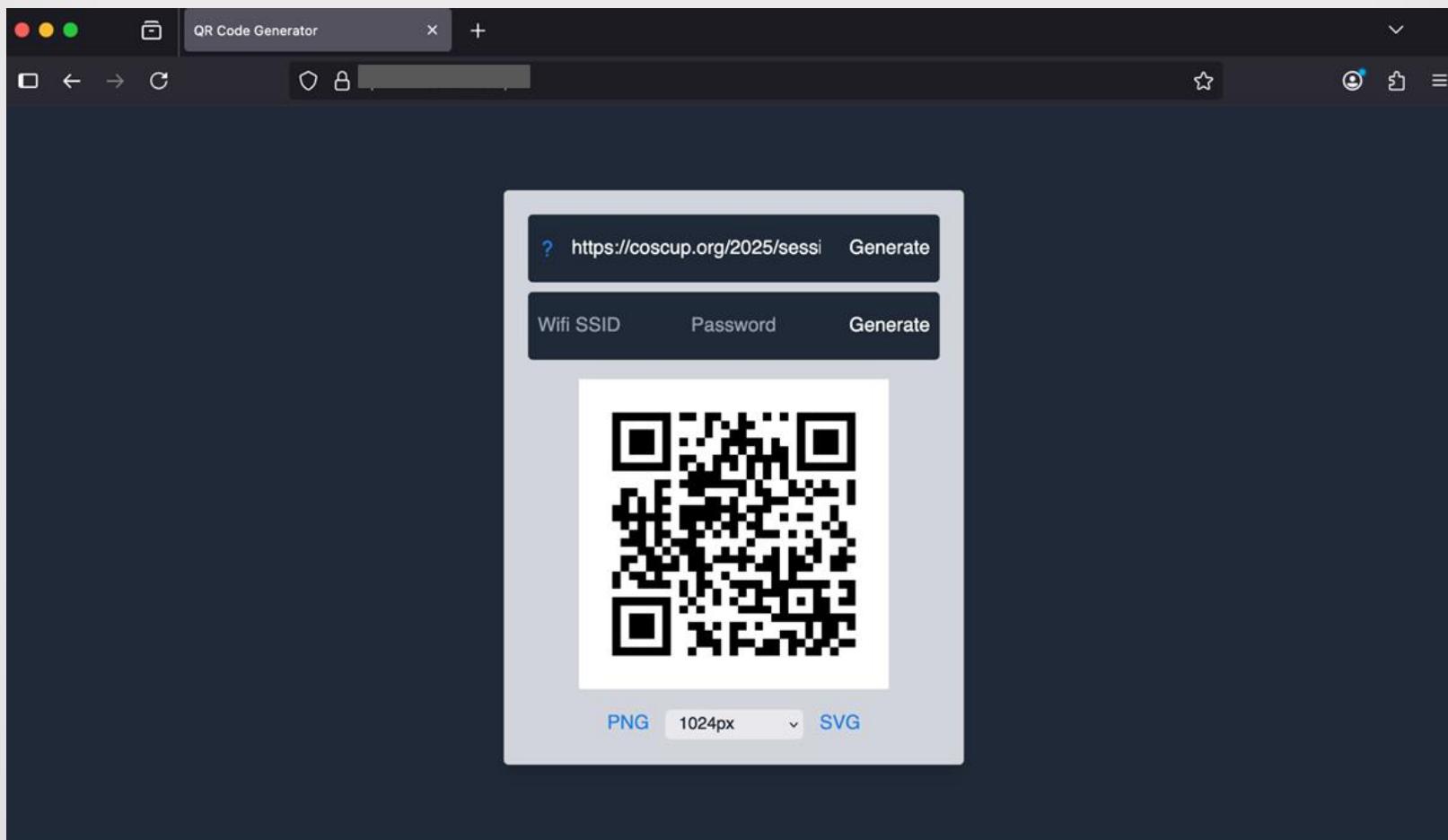
The screenshot shows the Owncast landing page. It features a profile icon for 'frakw', the name 'Owncast Server', and a brief description: 'This is a new live video streaming server powered by Owncast.' Below this, there are hashtags '#owncast #streaming' and a GitHub icon. A large call-to-action box at the bottom contains the heading 'Welcome to Owncast!' and a bulleted list of information about the service.

Welcome to Owncast!

- This is a live stream powered by [Owncast](#), a free and open source live streaming server.
- To discover more examples of streams, visit [Owncast's directory](#).
- If you're the owner of this server you should visit the admin and customize the content on this page.

QR Code Generator

- <https://github.com/bizzycola/qrcode-generator>



Shlink

- <https://github.com/shlinkio/shlink>

The screenshot shows the Shlink dashboard interface. The top navigation bar includes the Shlink logo, Settings, and Servers options. On the left, a sidebar menu lists Overview, List short URLs, Create short URL, Manage tags, and Manage domains, with Overview selected and highlighted in blue. The main content area displays four key metrics in large boxes: VISITS (1,259), ORPHAN VISITS (131), SHORT URLs (3), and TAGS (0). Below these metrics is a form titled "Create a short URL" with fields for "URL to be shortened" and "Custom slug", and a "Save" button. An "Advanced options »" link is also present.

Thanks for listening !



Q&A

• • •

Please feel free to ask any questions !

(or contact me privately)

contact@frakw.com

2025/08/10

Materials

- <https://www.facebook.com/photo/?fbid=882194310615730&set=a.558218699679961>
- <https://chatgpt.com/>
- <https://www.fabiaoqing.com/biaoqing/detail/id/599314.html>
- <https://mikrotik.com/software>
- <https://www.asuswrt-merlin.net/>
- <https://zh.wikipedia.org/zh-tw/DD-WRT>
- <https://opnsense.org/>
- <https://openwrt.org/>
- https://www.amazon.com/-/zh_TW/CH341-UART-%E5%B9%B3%E8%A1%8C%E9%80%A3%E6%8E%A5%E5%9F%A0%E8%BD%89%E6%8F%9B%E5%99%A8-%E5%85%A7%E5%BB%BA%E6%93%8D%E4%BD%9C%E6%8C%87%E7%A4%BA%E7%87%88-%E7%87%88%E6%9D%BF%E6%A8%A1%E7%B5%84/dp/B0C1JW1PVN