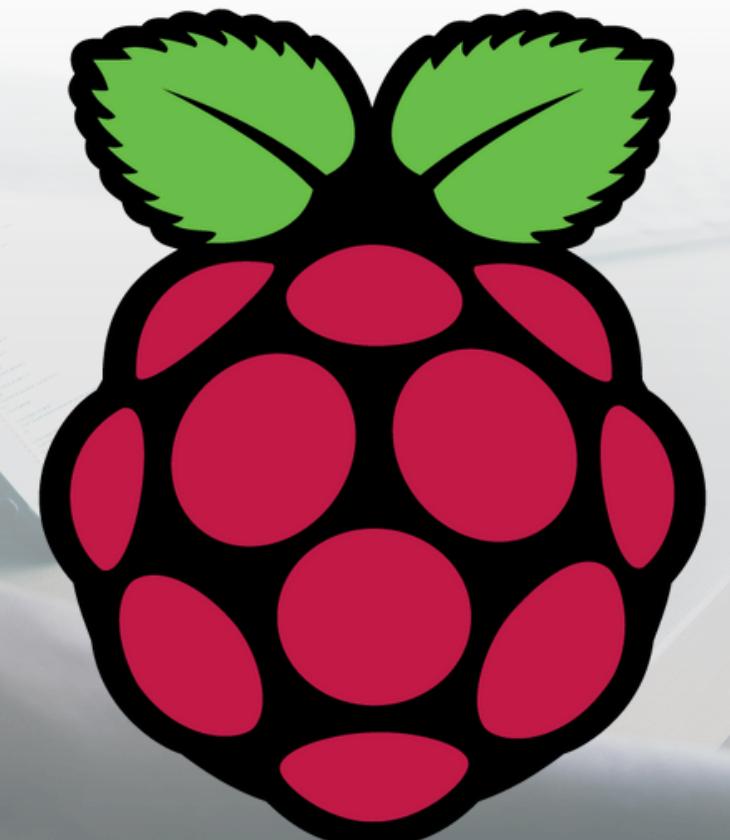


NAS SERVER

Home Lab



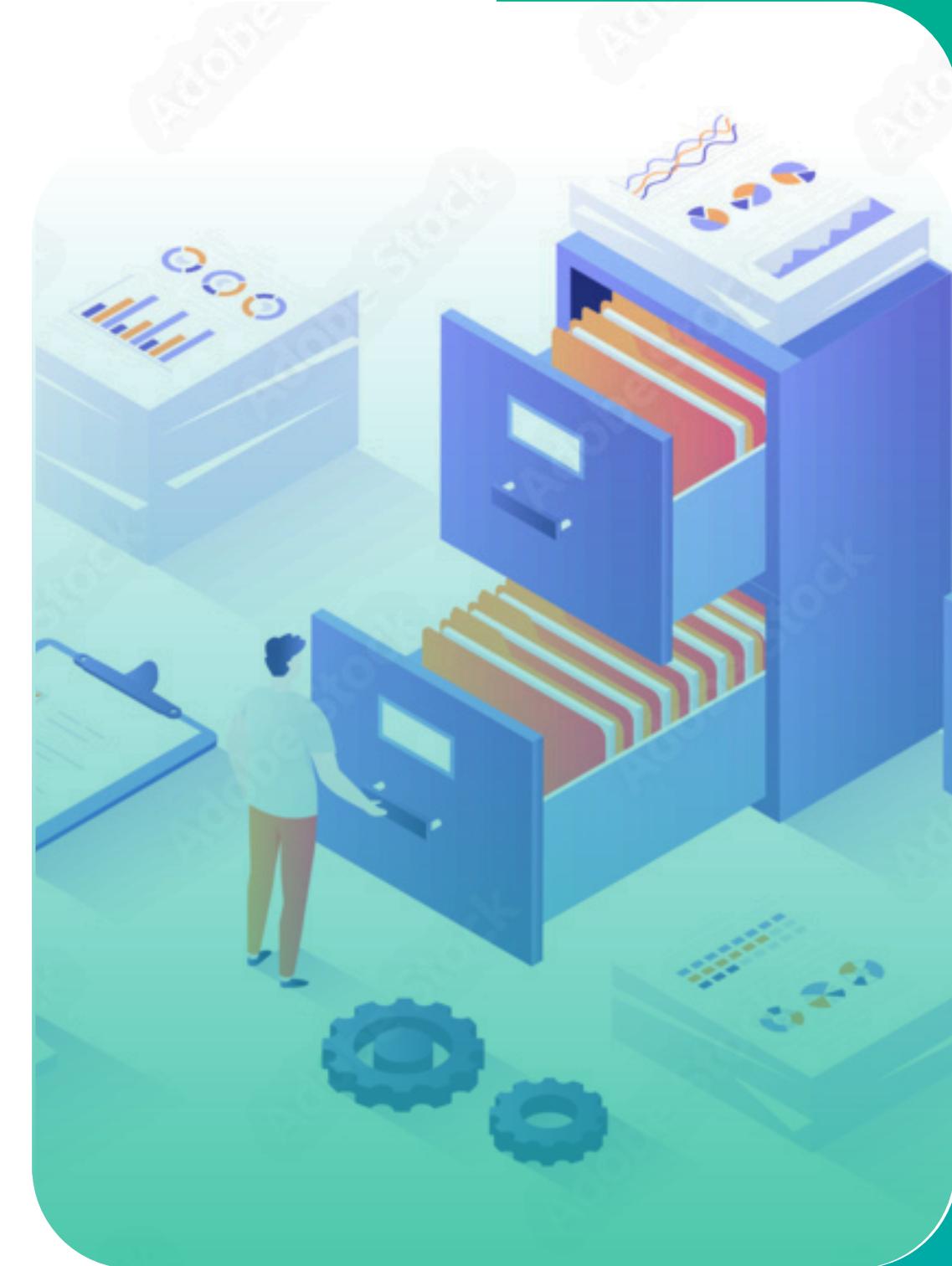
INTRODUCTION

About

In this project, I deployed a Network-Attached Storage (NAS) solution using a Raspberry Pi 4 Model B and OpenMediaVault (OMV)

Objective

The goal was to set up a reliable, accessible, and secure local file-sharing system for home or lab use.





REQUIREMENTS FOR THIS PROJECT

Hardware

- Raspberry Pi 4 Model B
- microSD card or USB drive
- External HDD or SSD
- Ethernet connection

Software

- OpenMediaVault 6
- Raspberry Pi Imager
- Windows

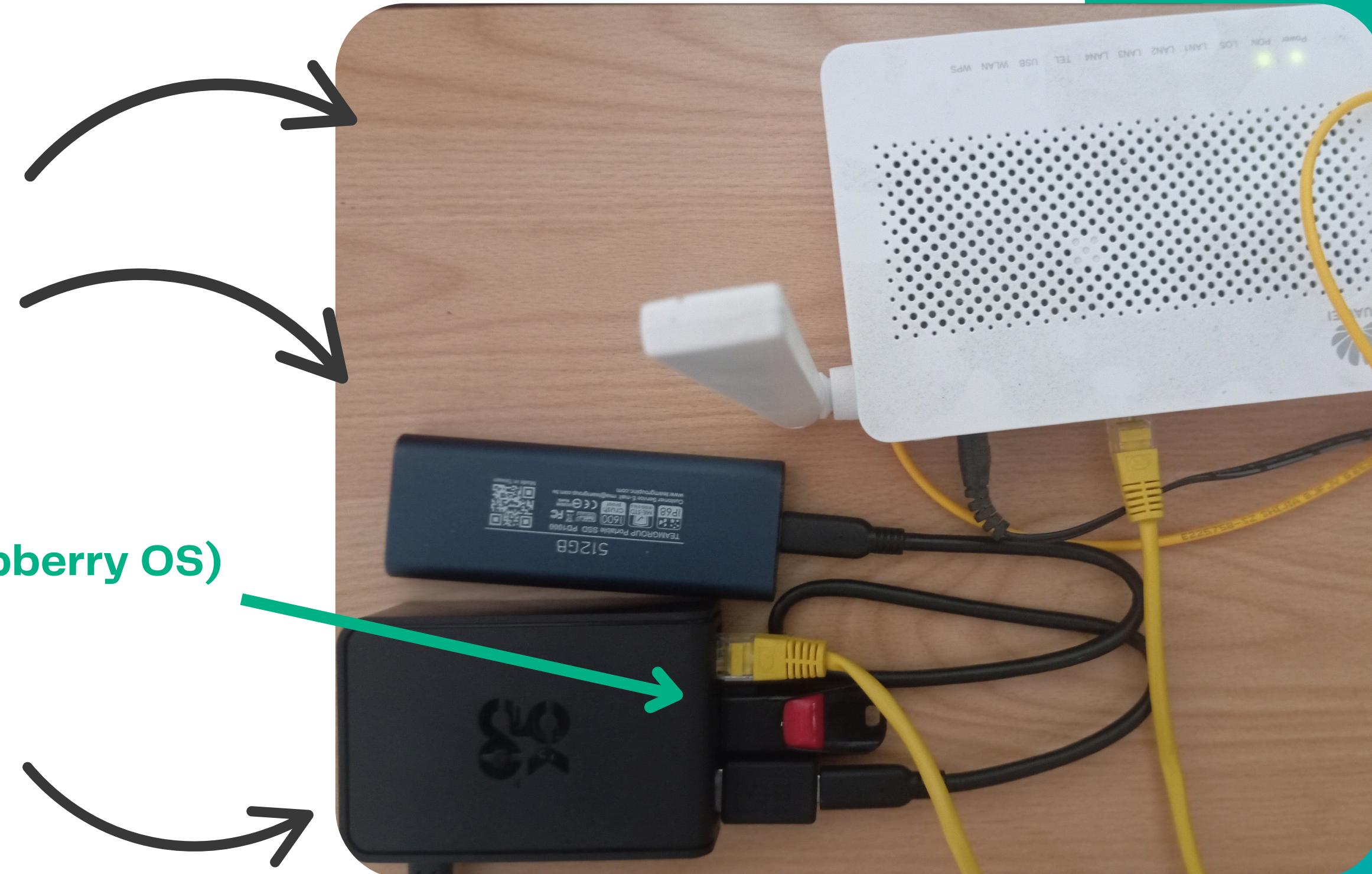
INSTALLATION & SETUP STEPS

Home Router

SDD Drive

USB Drive (Raspberry OS)

Raspberry Pi 4



IDENTIFYING THE RASPBERRY PI ON THE NETWORK

```
C:\Users\████████>nmap -sn 192.168.████/24
Starting Nmap 7.95 ( https://nmap.org ) at 2025-08-02 20:48 Afr. centrale Ouest
Nmap scan report for 192.168.████
Host is up (0.0030s latency).
MAC Address: E8:F6:54:9D:CD:69 (Huawei Technologies)
Nmap scan report for 192.168.████
Host is up (0.11s latency).
MAC Address: 6C:60:EB:B7:8E:A6 (ZHI Yuan Electronics, Limited)
Nmap scan report for 192.168.████
Host is up (0.078s latency).
MAC Address: B2:82:75:D3:70:4D (Unknown)
Nmap scan report for 192.168.████
Host is up (0.014s latency).
MAC Address: D8:3A:DD:15:DE:83 (Raspberry Pi Trading)
Nmap scan report for 192.168.████
Host is up.
Nmap done: 256 IP addresses (5 hosts up) scanned in 4.71 seconds
```

Before starting installation, I needed to find the IP address of the Raspberry Pi:

- Used nmap on my local machine to scan the network:

CONNECTING TO THE PI VIA SSH

```
C:\Users[REDACTED]>ssh pi@192.168.[REDACTED]
The authenticity of host '192.168.[REDACTED] (192.168.[REDACTED])' can't be established.
ED25519 key fingerprint is SHA256:nsbGoGKxi2wdhRb61nvWxVEVPzXs3bMrLacDkyzwN4M.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.[REDACTED]' (ED25519) to the list of known hosts.
pi@192.168.[REDACTED]'s password:
Linux raspberrypi 6.12.25+rpt-rpi-v8 #1 SMP PREEMPT Debian 1:6.12.25-1+rpt1 (2025-04-30) aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

Wi-Fi is currently blocked by rfkill.
Use raspi-config to set the country before use.

pi@raspberrypi:~ $
```

Connected to the Pi using credentials configured while preparing the OS

- User: pi
- Password: @dmlnRas2*25

UPDATING THE RASPBERRY PI

```
pi@raspberrypi:~ $ sudo apt update && sudo apt upgrade
Get:1 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:2 http://archive.raspberrypi.com/debian bookworm InRelease [55.0 kB]
Get:3 http://deb.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Get:4 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:5 http://deb.debian.org/debian bookworm/main armhf Packages [8,508 kB]
Get:6 http://archive.raspberrypi.com/debian bookworm/main armhf Packages [554 kB]
Get:7 http://archive.raspberrypi.com/debian bookworm/main arm64 Packages [551 kB]
36% [5 Packages 5,692 kB/8,508 kB 67%] [7 Packages 81.6 kB/551 kB 15%]
```

- Before installing OMV, updating the system to ensure stability

INSTALLING OPENMEDIAVault FROM GITHUB

```
pi@raspberrypi:~ $ sudo wget -O - https://raw.githubusercontent.com/OpenMediaVault-Plugin-Developers/installScript/master/install | sudo bash

Redirecting output to 'wget-log.2'.
[2025-08-02 21:05:40+0100] [omvinstall] script version :: 2.3.10
[2025-08-02 21:05:40+0100] [omvinstall] Starting ...
[2025-08-02 21:05:40+0100] [omvinstall] Current / permissions = 755
mode of '/' retained as 0755 (rwxr-xr-x)
[2025-08-02 21:05:40+0100] [omvinstall] New / permissions = 755
[2025-08-02 21:05:40+0100] [omvinstall] Forcing IPv4 only for apt...
[2025-08-02 21:05:40+0100] [omvinstall] Updating repos before installing...
Hit:1 http://deb.debian.org/debian bookworm InRelease
Hit:2 http://archive.raspberrypi.com/debian bookworm InRelease
Hit:3 http://deb.debian.org/debian-security bookworm-security InRelease
Hit:4 http://deb.debian.org/debian bookworm-updates InRelease
Reading package lists...
[2025-08-02 21:05:44+0100] [omvinstall] Installing lsb_release...
Reading package lists...
Building dependency tree...
Reading state information...
0 upgraded, 0 newly installed, 1 reinstalled, 0 to remove and 102 not upgraded.
Need to get 6416 B of archives.
After this operation, 0 B of additional disk space will be used.
Get:1 http://deb.debian.org/debian bookworm/main arm64 lsb-release all 12.0-1 [6416 B]
Fetched 6416 B in 0s (86.3 kB/s)
(Reading database ... 56180 files and directories currently installed.)
Preparing to unpack .../lsb-release_12.0-1_all.deb ...
Unpacking lsb-release (12.0-1) over (12.0-1) ...
Setting up lsb-release (12.0-1) ...
Processing triggers for man-db (2.11.2-2) ...
```

ACCESSING THE OMV WEB INTERFACE

The screenshot shows the OpenMediaVault web interface. On the left is a sidebar with the following menu items:

- openmediavault
- Tableau de bord
- Système
- Réseau
- Stockage
- Services
- Utilisateurs
- Diagnostics

The main content area is the "Tableau de bord" (Dashboard). It features several cards:

- Processeur:** CPU usage - by hour chart (last update: Sat Aug 2 21:45:01 2025).
- Systèmes de fichiers:** No data to display.
- Interfaces réseau:** Shows network interfaces end0 and lo with their respective IPv4 and IPv6 addresses.
- Mémoire:** Memory usage chart (Total: 1.80 GiB, Used: 214.76 MiB, Free: 1.59 GiB).
- Utilisation du processeur:** Processor usage (0.3%).
- Interfaces réseau:** Network interface status (end0: 192.168.100.46/24, wlan0: -).
- Températures disques:** Disk temperature (n/a for /dev/sda).
- Informations système:** System information (Nom de l'hôte: raspberrypi, Version: 7.7.13-2 (Sandworm), Processeur: Raspberry Pi 4 Model B Rev 1.5, Horloge système: Sat Aug 2 21:55:50 2025, Mise à jour disponible: ✓).

- After reboot, accessing OMV from my browser using the Pi's IP address:
- <http://192.168.x.x>
- Default credentials:
User: **admin**
Password: **openmediavault**

VERIFYING EXTERNAL DRIVE DETECTION

The screenshot shows the openmediavault web interface. The left sidebar menu includes: Tableau de bord, Système, Réseau, Stockage (selected), Disques (selected), S.M.A.R.T., Systèmes de fichiers, Dossiers partagés, Services, Utilisateurs, and Diagnostics. The main content area is titled "Stockage | Disques". It displays a table with the following data:

Périphérique	Modèle	N° de série	Vendeur	Capacité
/dev/sda	Cruzer Edge	4C53009910401121332	SanDisk	14.56 GiB
/dev/sdb	Tech	72FF4089D0809	JMicron	476.94 GiB

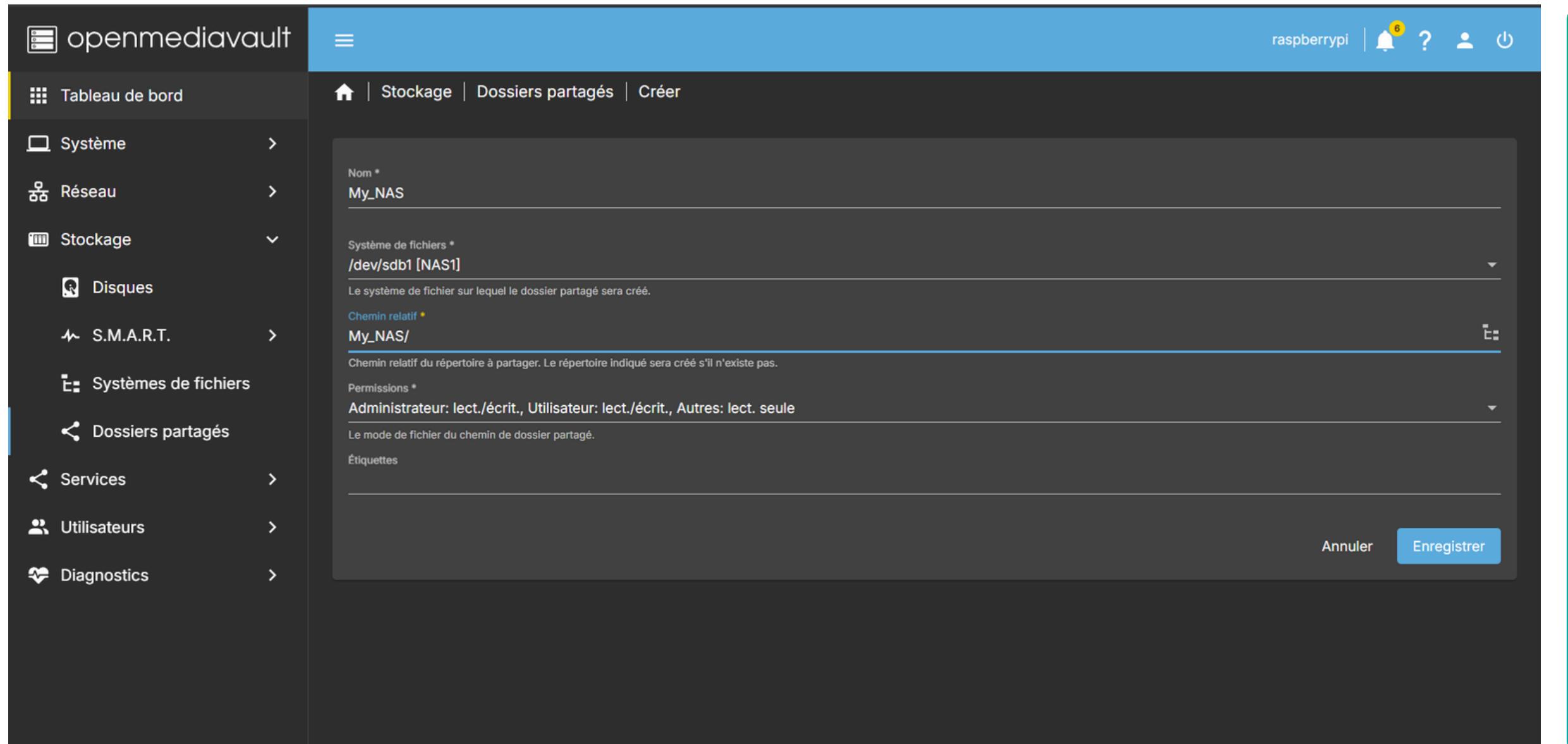
Below the table, a status message reads "0 sélectionné / 2 total". The top right corner of the interface shows the user "raspberrypi" with a notification count of 5, a help icon, a user icon, and a power icon.

MOUNTING THE FILE SYSTEM

The screenshot shows the OpenMediaVault web interface. The left sidebar contains navigation links: Tableau de bord, Système, Réseau, Stockage (with Disques, S.M.A.R.T., Systèmes de fichiers, Dossiers partagés), Services, Utilisateurs, and Diagnostics. The main content area shows a yellow notification bar with the message "Changements de configuration en attente" and "Vous devez appliquer les changements pour qu'ils prennent effet." Below this, the "Systèmes de fichiers" section is visible, showing a table with one entry: /dev/sdb1 (Type: EXFAT, Monté: -, Référencé: -, Etat: Online). The status bar at the top right shows "raspberrypi" and a notification count of 5.

Created a file system in exFAT format on the external drive, then mounted it via the OpenMediaVault interface.

CREATING A SHARED FOLDER



- Created a new folder My NAS pointing to the mounted file system.
- Set default permissions for access read/write for users and read only for groups

CREATING A SHARED FOLDER

i Changements de configuration en attente
Vous devez appliquer les changements pour qu'ils prennent effet.

▽ ↵ ✓

⌂ | Stockage | Dossiers partagés | Permissions @ My_NAS

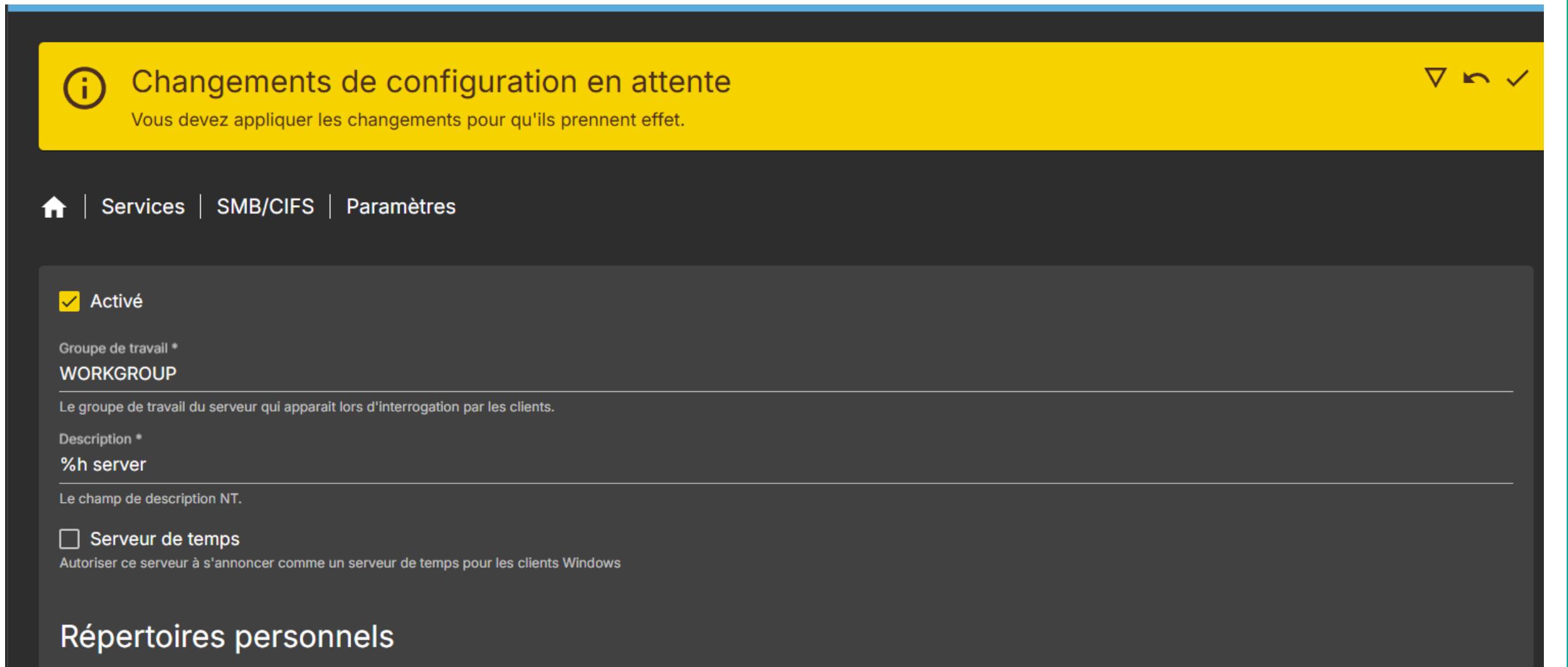
i Ces paramètres sont utilisés par les services pour configurer les droits d'accès des utilisateurs. Notez que ces paramètres n'affectent pas les permissions du système de fichiers.

Nom ^	Type ^	Permissions ^
pi	User	Read/Write Read-only No access
pi	Group	Read/Write Read-only No access

Annuler Enregistrer

The screenshot shows a user interface for managing shared folder permissions. At the top, a yellow banner displays a warning about pending configuration changes that need to be applied. Below the banner, the navigation path is shown as 'Stockage | Dossiers partagés | Permissions @ My_NAS'. A blue information bar states that these settings are used by services to configure user access rights, noting they do not affect file system permissions. The main table lists two entries: 'pi' under 'User' and 'pi' under 'Group'. For each user, there are three permission options: 'Read/Write' (selected), 'Read-only', and 'No access'. For each group, the same three options are listed. At the bottom right are 'Annuler' (Cancel) and 'Enregistrer' (Save) buttons.

CONFIGURING SMB/CIFS SERVICE



- Allow other devices on the local network to access shared folders on the NAS using the SMB protocol.
- Activating the service on the shared folder

CONFIGURING SMB/CIFS SERVICE

(i) Changements de configuration en attente
Vous devez appliquer les changements pour qu'ils prennent effet.

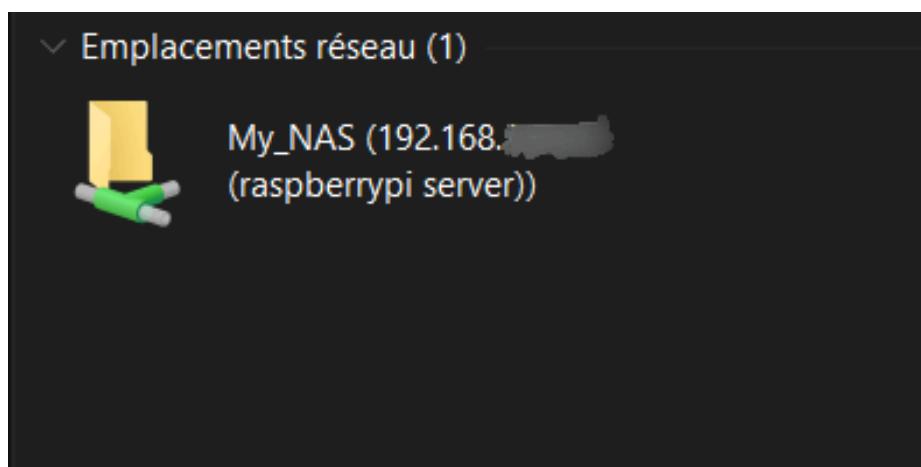
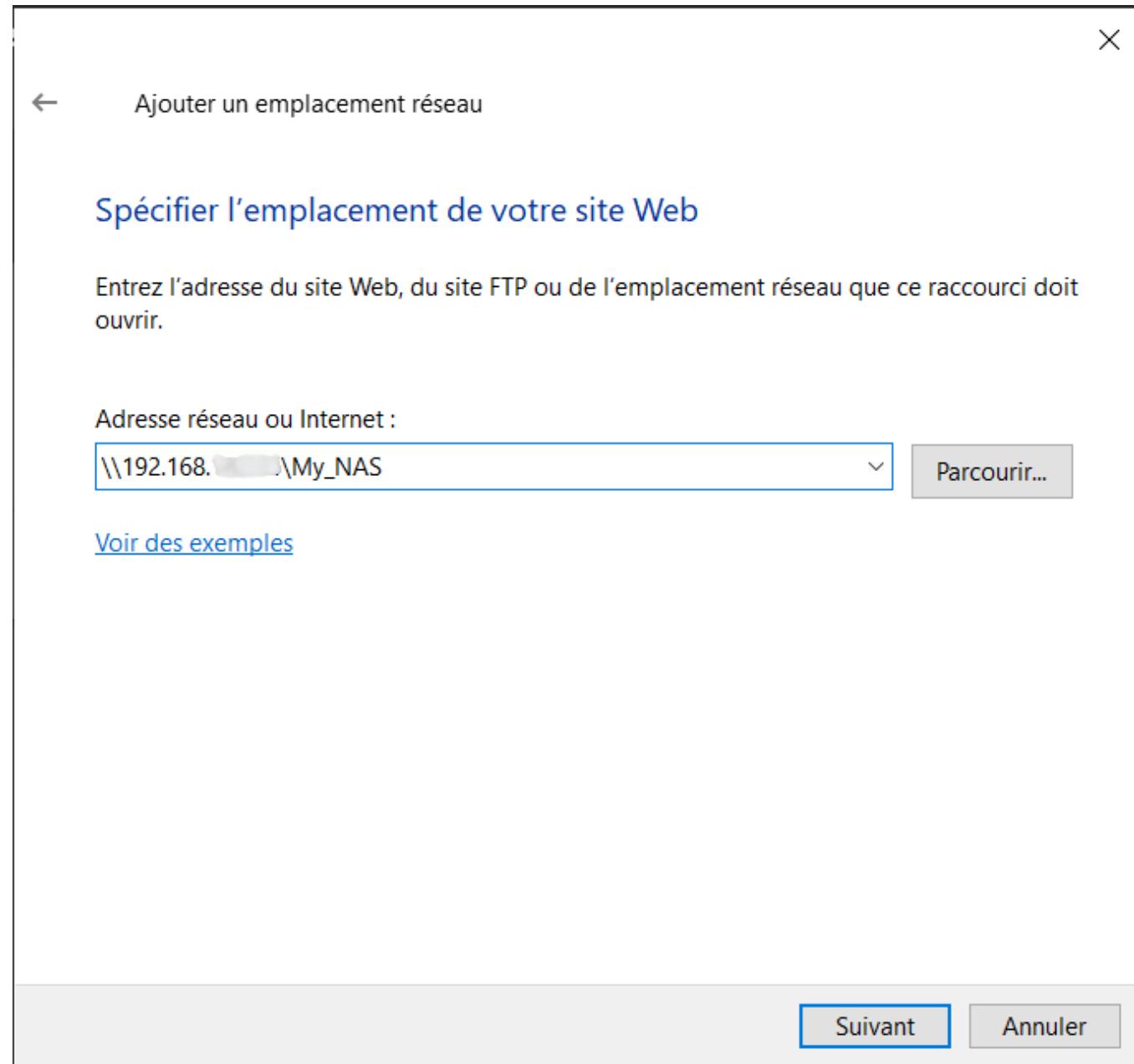
▽ ↺ ✓

⌂ | Services | SMB/CIFS | Partages

Activé	Dossier partagé	Commentaire	Public	Lecture seule	Navigable
✓	My_NAS	No		✓	

0 sélectionné / 1 total

ACCESSING THE SHARE FROM WINDOWS



FIREWALL RULES CONFIGURATION

The screenshot shows a firewall rule configuration interface with the following details:

Direction	Action	Source	Port	Destination	Port	Protocole	Options supplémentaires	Étiquettes
INPUT	ACCEPT	192.168.100.0/24		192.168.100.46	80	TCP		Allow WEB GUI
INPUT	ACCEPT	192.168.100.0/46		192.168.100.46	443	TCP		Allow over HTTPS
INPUT	ACCEPT	192.168.100.0/24			22	TCP		allow ssh
INPUT	ACCEPT	192.168.100.0/24			137-139	TCP		allow SMB
INPUT	ACCEPT	192.168.100.0/24			445	TCP		allow SMB
INPUT	DROP	0.0.0.0/0				TCP		Deny all other traffic

0 sélectionné / 6 total



**THANK
YOU**

FOR YOUR ATTENTION