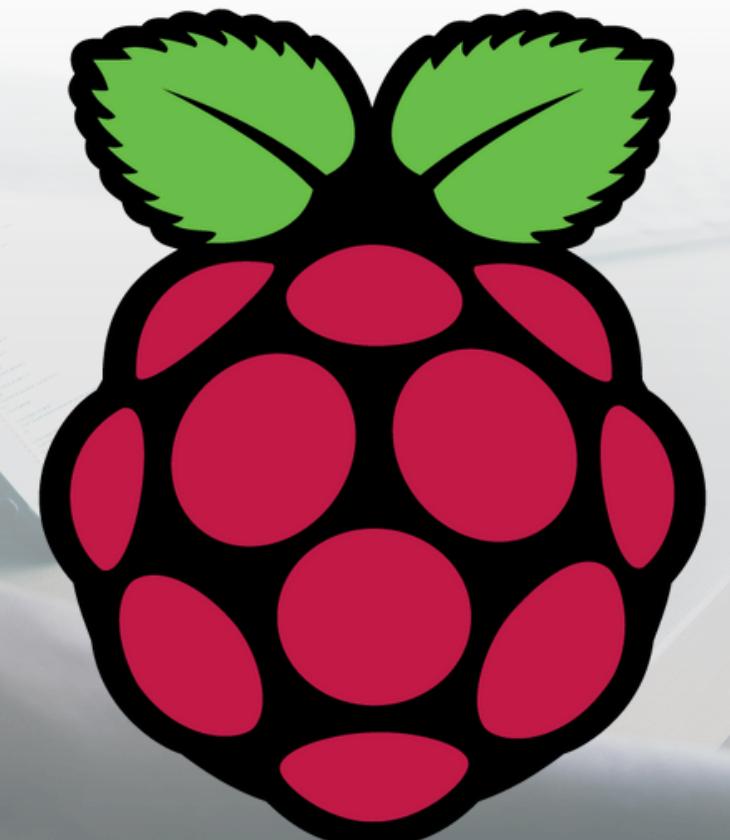


# NAS SERVER

Home Lab



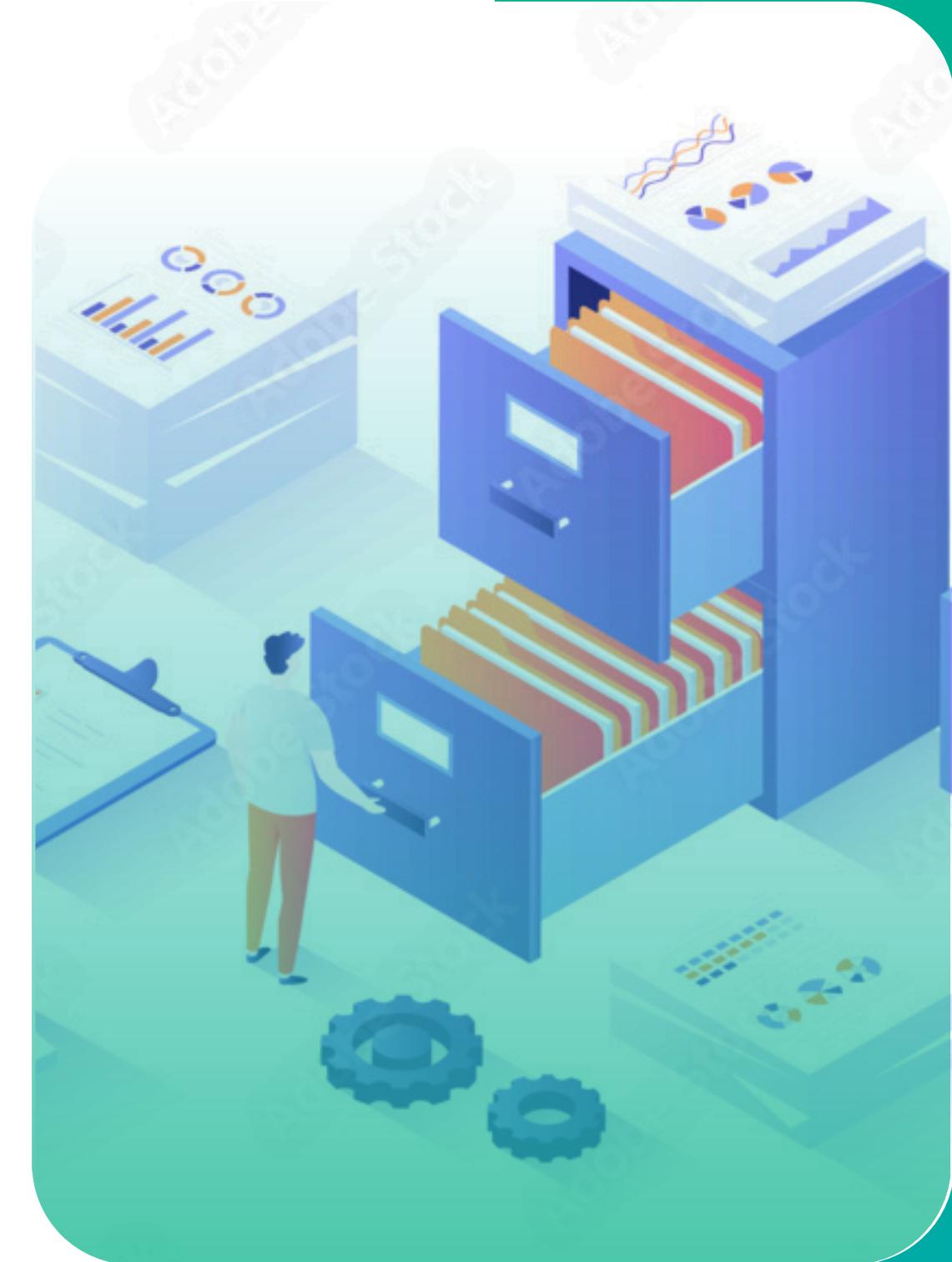
# INTRODUCTION

## 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

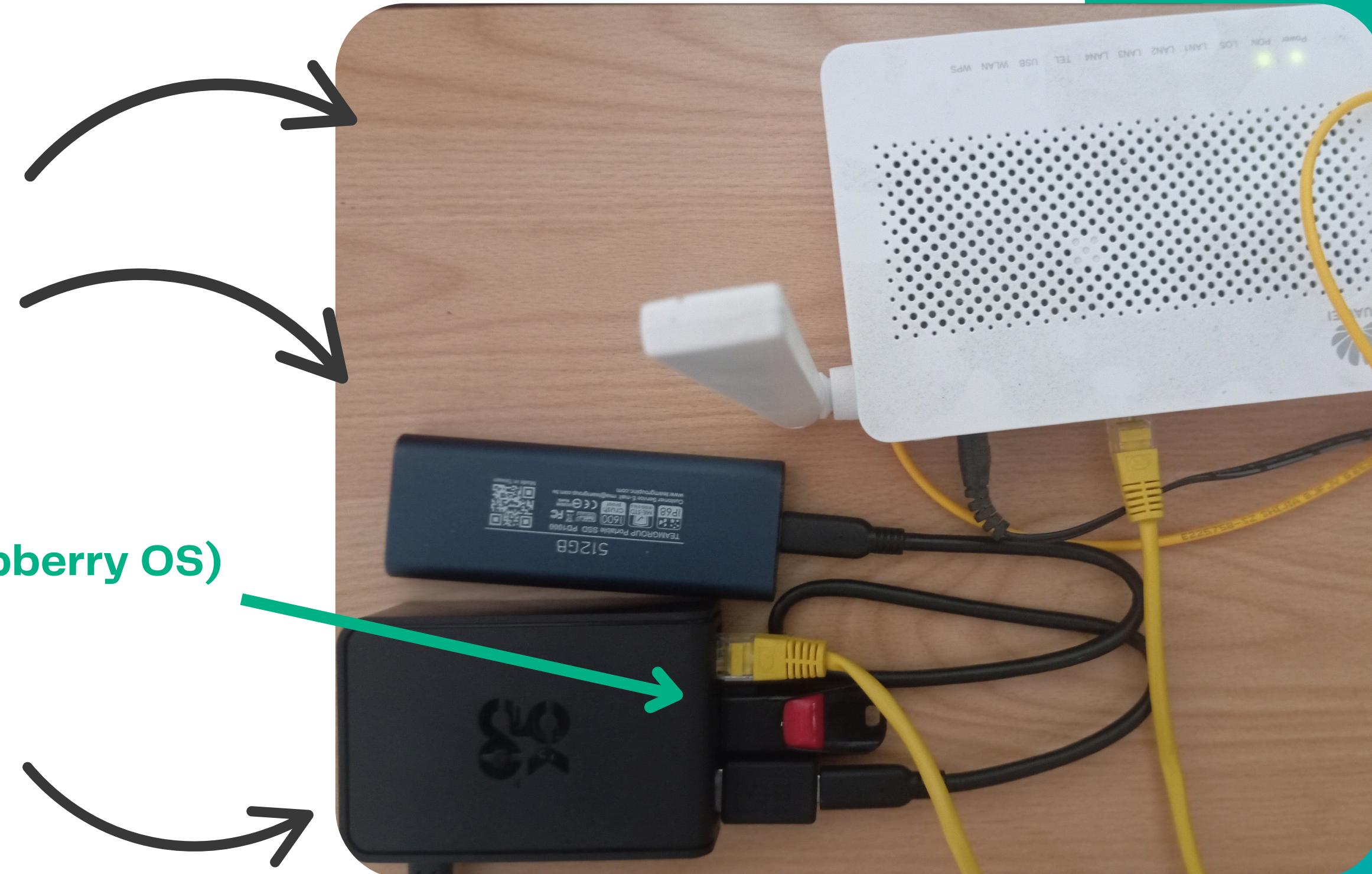
# INSTALLATION & SETUP STEPS

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 a Raspberry Pi. The left sidebar menu includes: openmediavault, Tableau de bord, Système, Réseau, Stockage, Services, Utilisateurs, and Diagnostics. The main dashboard displays several monitoring panels: Processeur (CPU usage by hour chart), Systèmes de fichiers (empty), Mémoire (8GB total, 1.80 GiB used, 1.59 GiB free), Utilisation du processeur (idle at 0.3%), Interfaces réseau (listing end0 and wlan0 with their respective IP addresses and MTU values), and Températures disques (n/a). The top right corner shows the host name 'raspberrypi' and a notification bell icon.

- 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, 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	4C530099910401121332	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

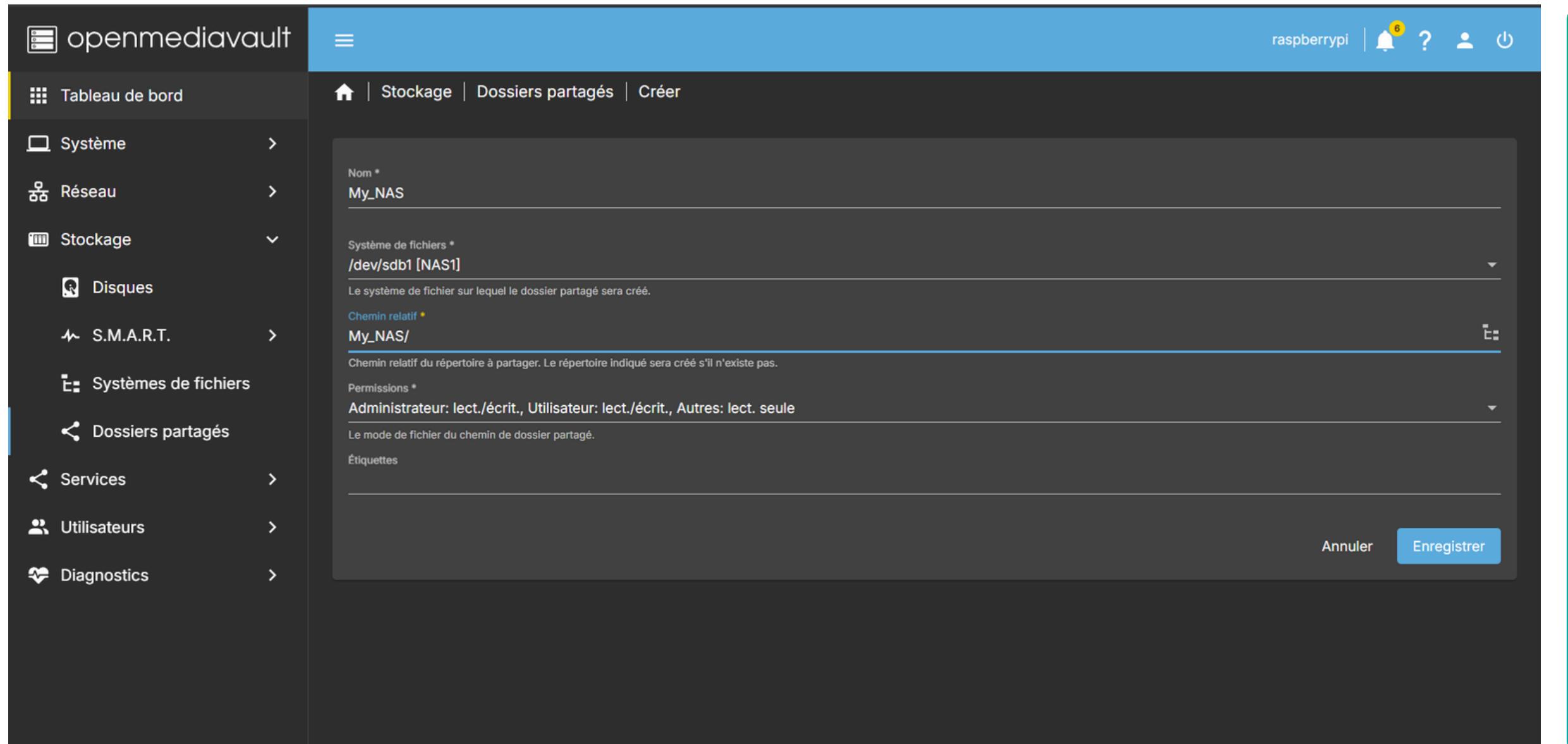
The screenshot shows the OpenMediaVault web interface. The left sidebar contains navigation links: Tableau de bord, Système, Réseau, Stockage (with Disques, S.M.A.R.T., Systèmes de fichiers, Dossiers partagés), Services, Utilisateurs, and Diagnostics. The main content area has a blue header bar with the text "raspberrypi" and a notification icon with "5". Below the header is a yellow banner with the message "Changements de configuration en attente" and "Vous devez appliquer les changements pour qu'ils prennent effet." The main content is titled "Stockage | Systèmes de fichiers". It displays a table with one row:

Périphérique	Type	Disponible	Utilisé	Monté	Référencé	Etat
/dev/sdb1	EXFAT	-	-	-	-	Online

At the bottom of the table, it says "0 sélectionné / 1 total".

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

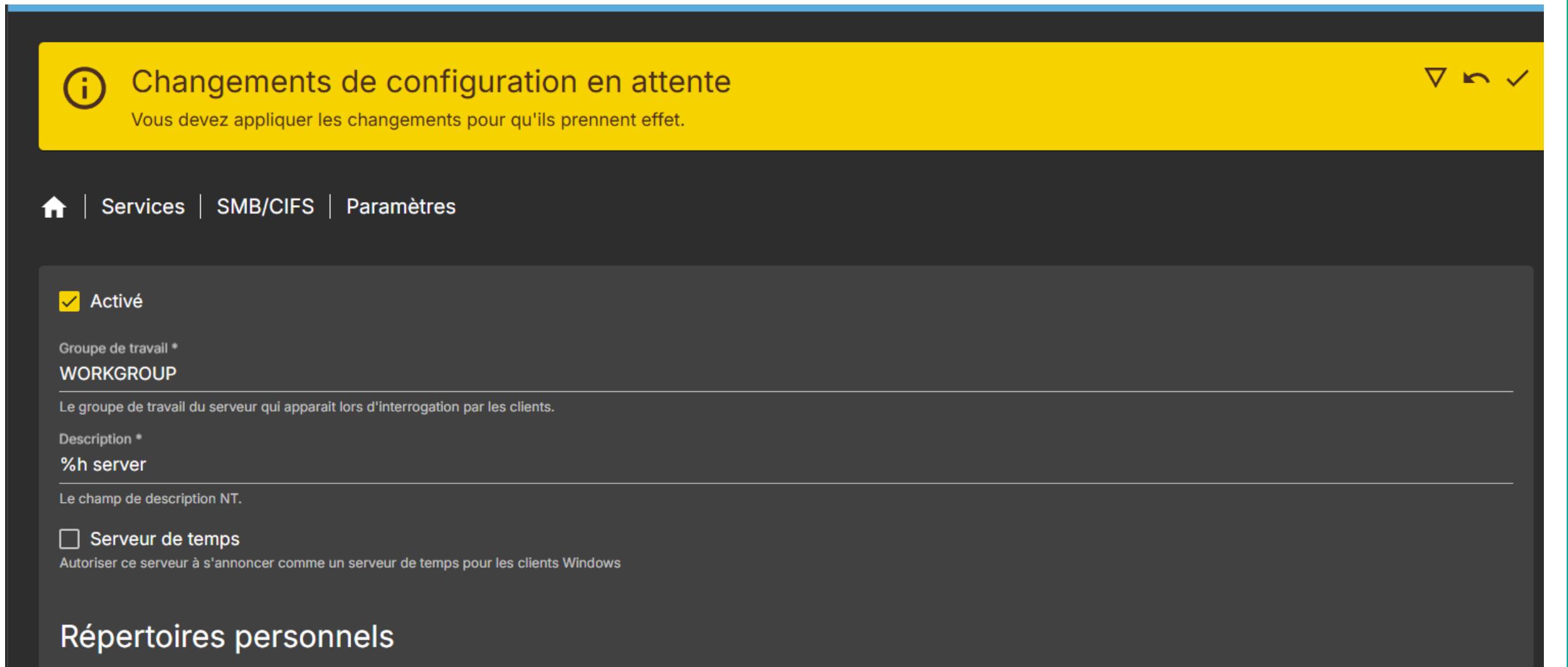
**i** Ces paramètres sont utilisés par les services pour configurer les droits d'accès des utilisateurs. Notez que ces paramètres n'affectent pas les permissions du système de fichiers.

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.

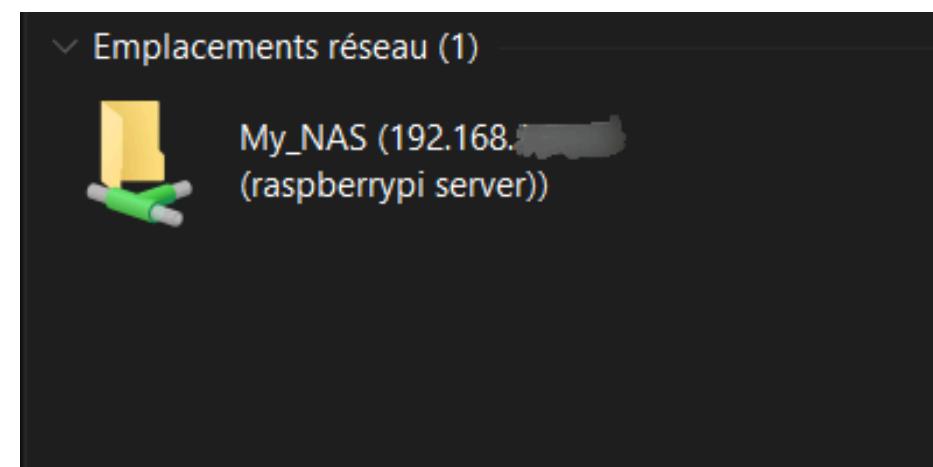
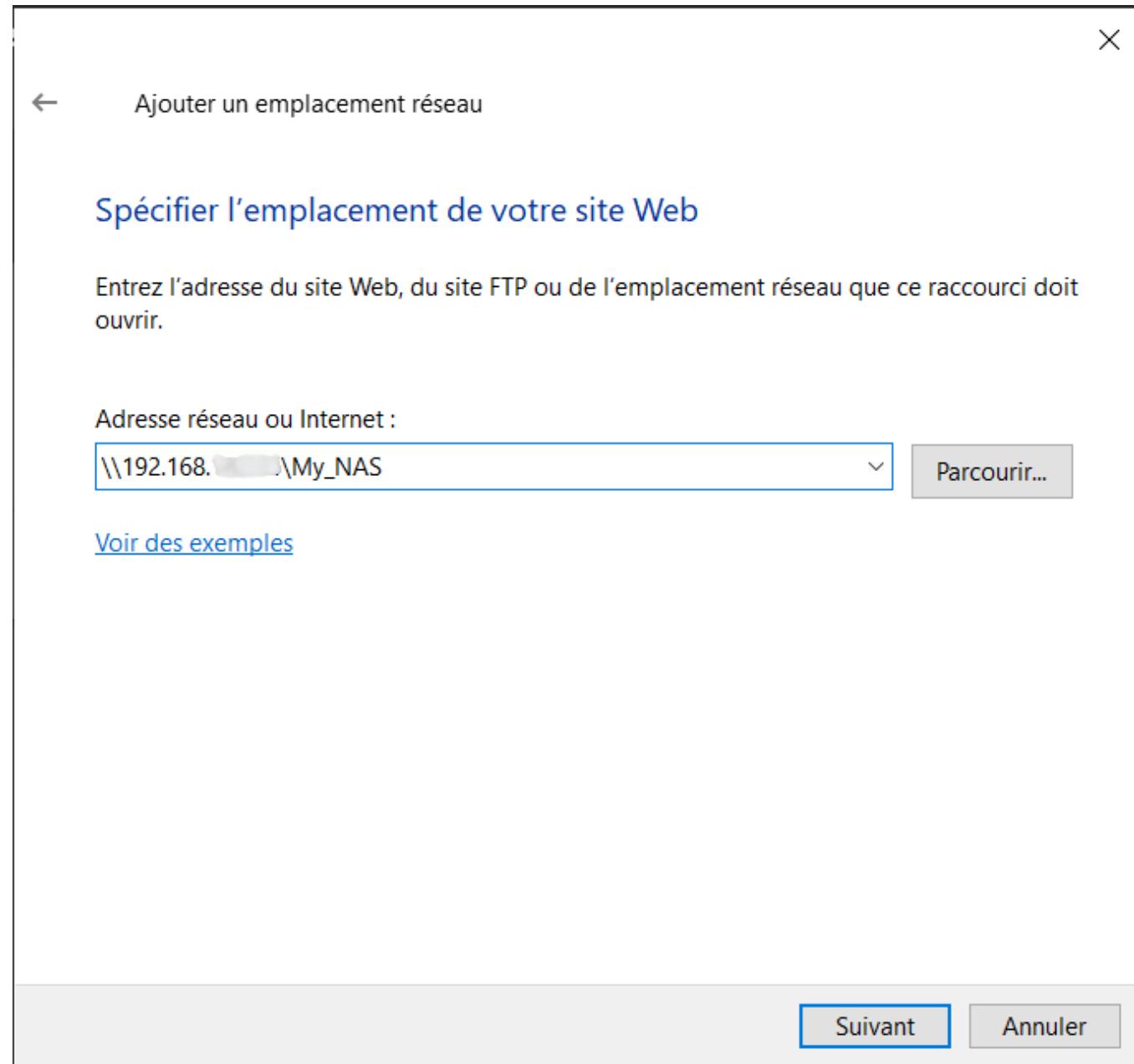
▽ ↺ ✓

⌂ | 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

123 Anywhere St., Any City



[www.reallygreatsite.com](http://www.reallygreatsite.com)



123-456-7890

