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Link to images

https://sitsingaporetechedu-my.sharepoint.com/:f/g/personal/2000939_sit_singaporetech_edu_sg/EgwVZEEB0x5LkO14HII1oZgBZQy9Xpc-h2wj7yeg3hOpfw?e=kG9XMJ

Pre-requisites

Hardware required:

- Raspberry Pi 4B with SD card X2
- External drive with no contents(Thumbdrive/SSD etc.) X2
- Network cables X2
- Access to router/switch
- Laptop/PC in the same network

Software required:

- Image files of KuBerry Pi Cloud (Provided)
- appdata.zip (Files for testing)
 - Extract the contents to root directory of external drives used as NAS
- Raspberry Pi Imager (Latest)
- Putty SSH client
- IP Scanner (optional)

Configuration for Images [IMPORTANT]

1. SSH login for both images
 - user: rpi
 - password: rpinas
2. main
 - Description: Main NAS storage device. Functions as a home server to run docker containers, e.g. Plex Media Server.
 - Hostname: main
 - Static IP: 192.168.1.100
3. Backup
 - Description: Backup NAS storage device, mirrors files of shared drive on main
 - Hostname: backup
 - Static IP: 192.168.1.101

Web GUI & Credentials

1. OpenMediaVault (OMV)

- Description: NAS software
- Accessed by: [IP Address of host]
- Credentials
 - * Username: admin
 - * Password: openmediavault

2. Portainer

- Description: Container management utility
- Accessed by: [IP Address of host]:9000
- Credentials
 - * Username: admin
 - * Password: raspberrypinas

3. Plex Media Server (Installed only main RPI)

- Description: Netflix but streaming with your own content. Reads files from NAS mounted as docker volumes.
- Accessed by: 192.168.1.100:32400/web
- Credentials (Login by email, not Google/Facebook etc)
 - Email: webscraperoop@gmail.com
 - Password: mmE3F3mUwc88Bhg

4. LibreOffice (Installed only main RPI)

- Description: Open Source MS Office
- Accessed by: 192.168.1.100:3000

Summarized Steps

- Flash RPI images
- Setup external drives as shared drives
- Use absolute path of shared drives to setup rsync bash script and docker compose environment variables
- Run Plex and libreoffice to test if files on NAS can be viewed/modified
- Test if mirroring to backup drive works

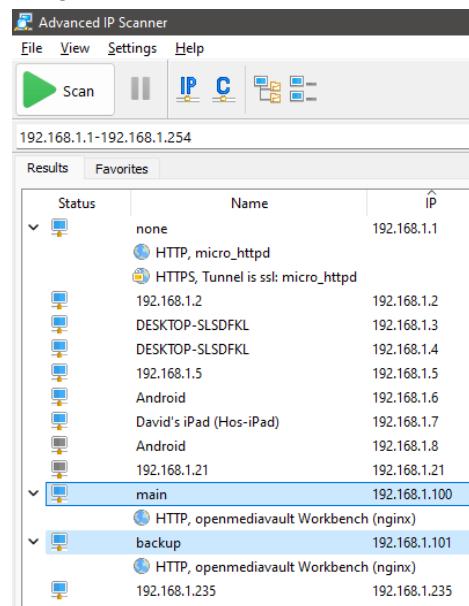
* SEE BELOW FOR DETAILED INSTRUCTIONS AND SCREENSHOTS

Full Steps to setup & test

1. Using Raspberry Pi Imager, flash the SD cards of both Raspberry Pi with the main and backup image files without enabling image customization options in the advanced settings.

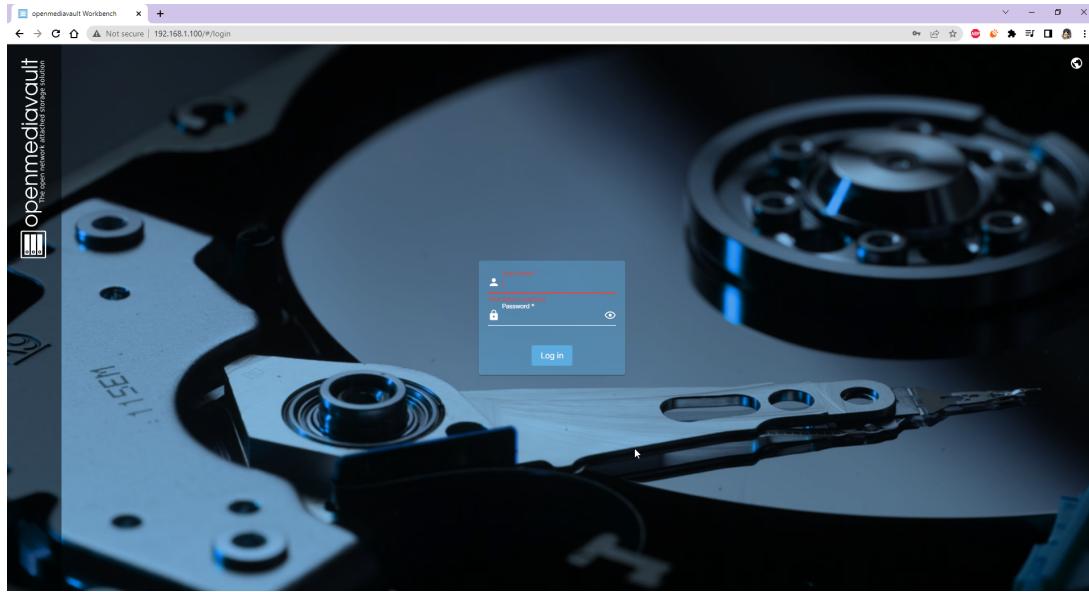


2. Plug both SD cards back into the Raspberry Pi, connect them to the network via ethernet and power on.
3. Connect your external drives to the Raspberry Pi.
4. SSH into both Raspberry Pi with details provided above with hostname or static IP address.
 - a. Optionally, you can use an IP scanner to verify if both Raspberry Pi are connected to the network with the static IP and hostname displayed like the image below then SSH.

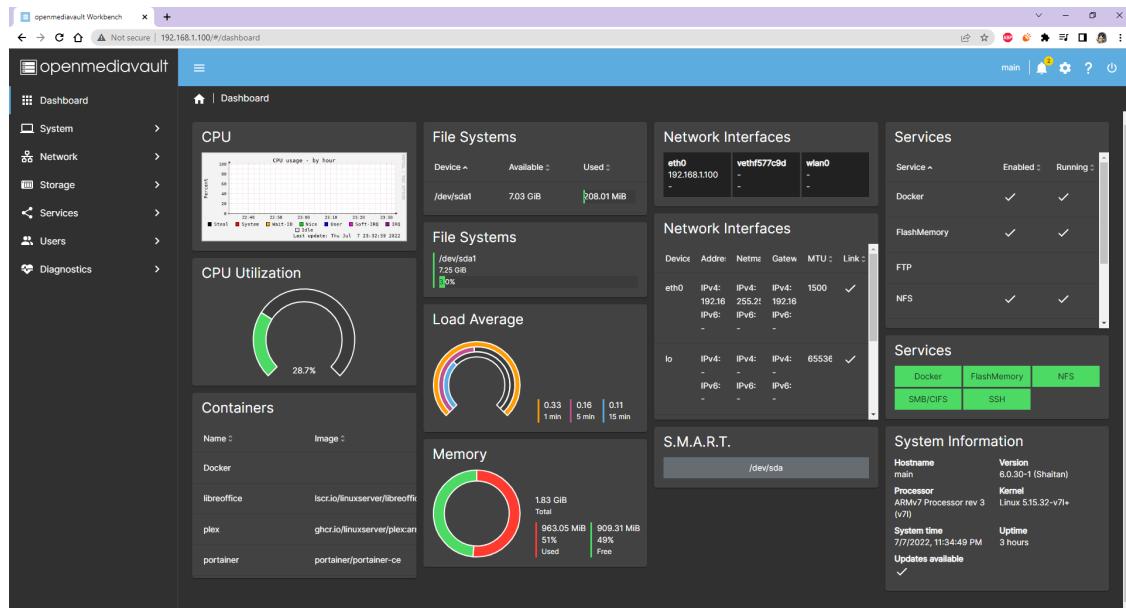


<<NOTE: Step 5 to 7 done on BOTH Raspberry Pi!>>

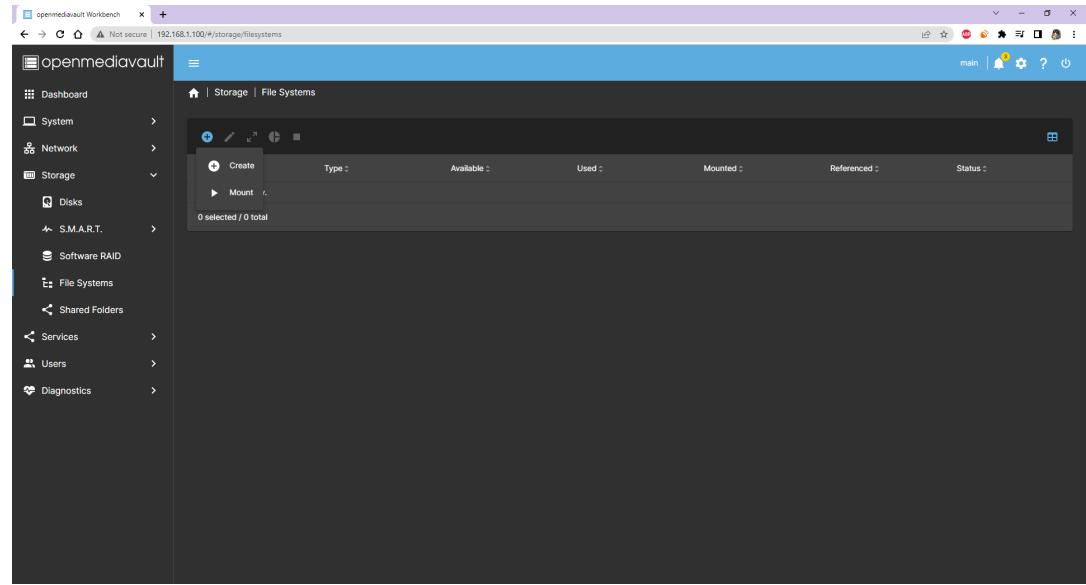
5. Open OpenMediaVault(OMV) web GUI on your browser with the IP address of the main Raspberry Pi. You should see the login screen below. Login with the credentials provided above.



6. After logging in, you will see the dashboard page but it will be empty by default.

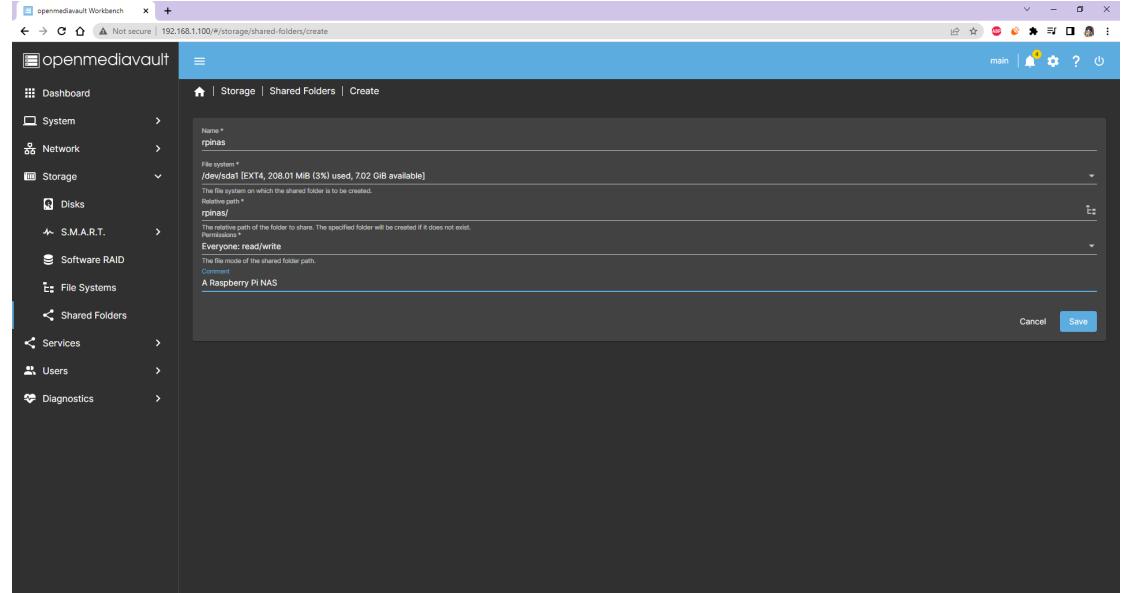


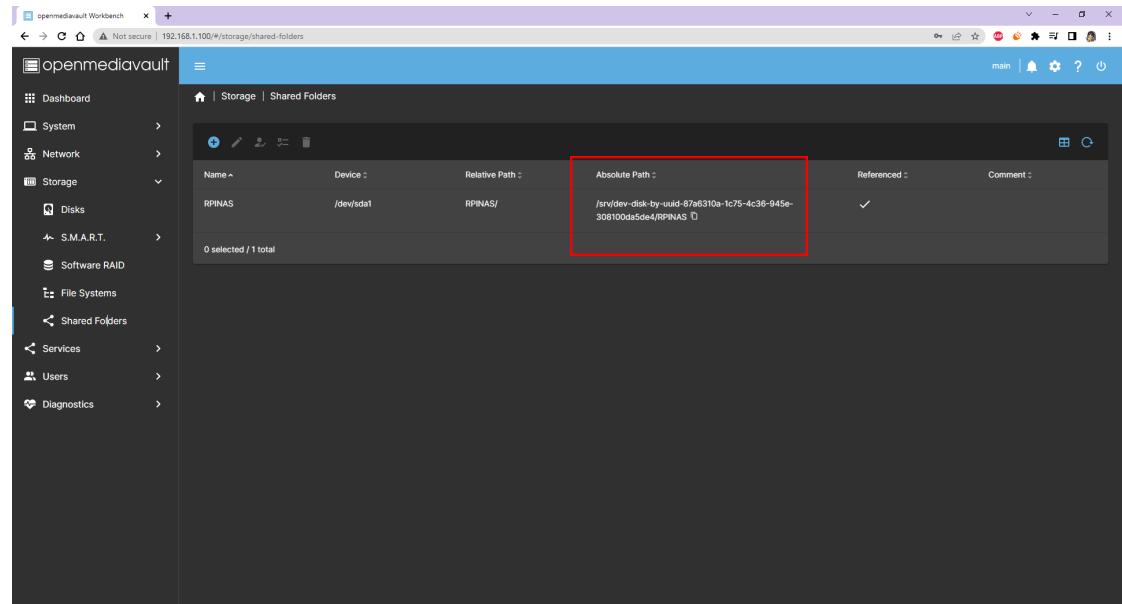
7. Next, we can setup the external drive's file system as a shared drive.
 - a. First, mount the file system of the external drive under Storage > File Systems



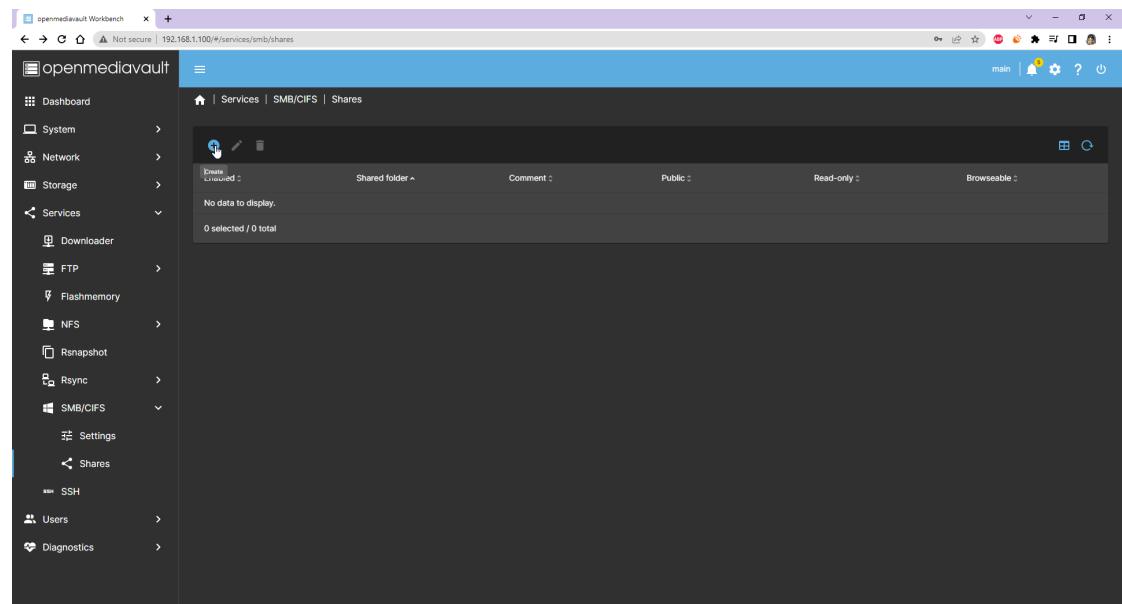
- b. Create a shared folder with the mounted file system under Storage > Shared Folders. Permissions should be set to "Everyone: read/write". Then click save, take note of the **absolute path** as this will be important later.

* Do note that the name of the shared folder is case sensitive!

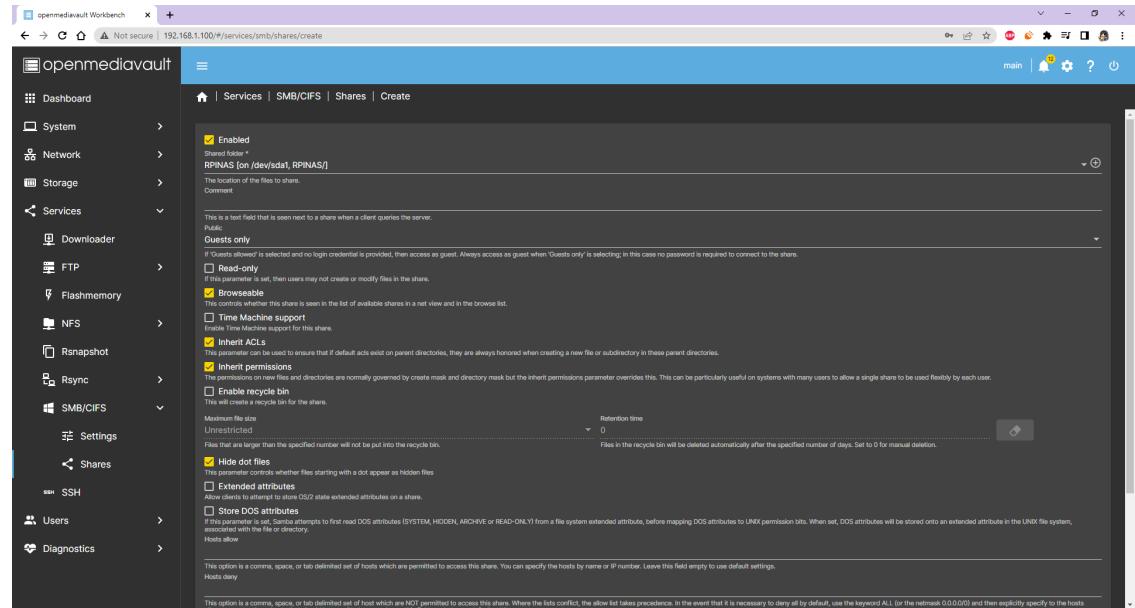




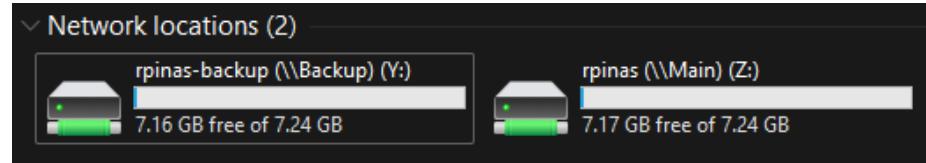
- c. With the shared folder setup, we can set up SMB CIFS to create the shared drive under Services > SMB/CIFS > Shares and click the create button.



- d. Select your shared folder and follow the settings in the screenshot below and save.



- e. You can now map the network drive on windows file explorer. Unzip the contents of the provided appdata.zip folder and add it to the root directory of the thumbdrive of the main Raspberry Pi. The contents will be mirrored to the backup once the bashscript is set up in the next step.



8. After setting up the shared drives for both Raspberry Pi, setup the rsync bash script in the home directory by replacing the existing absolute paths with the absolute paths of the newly created shared folders from step 7b.

```

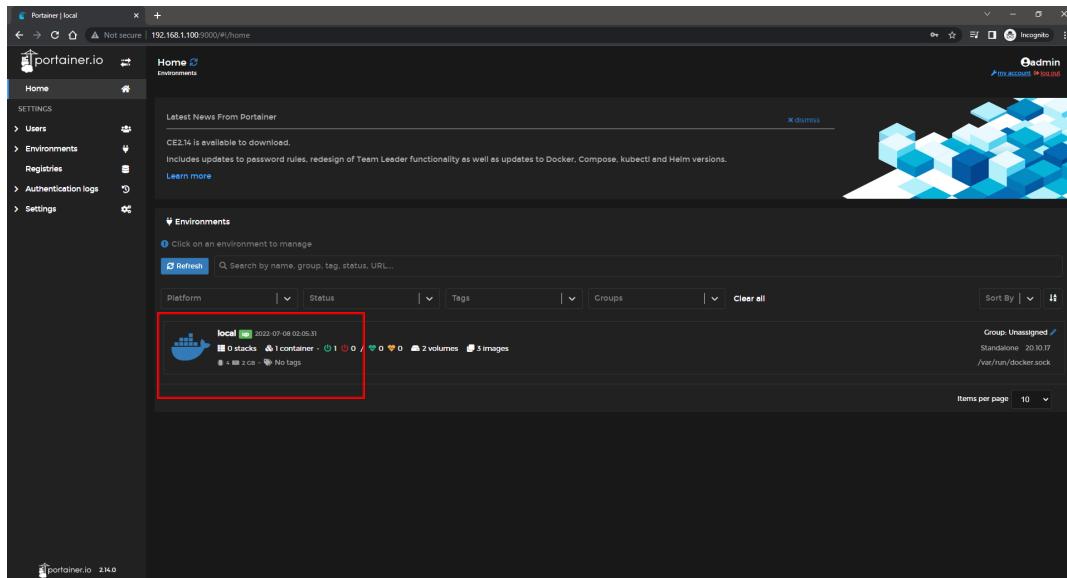
pi@main: ~
GNU nano 5.4
#!/bin/bash
#
# Script Name: backup.sh
# Author: David Ho Guo Hao
# Date of Creation: 06/07/2022
# Description: This script is configured to run every 10th minute of an hour as a cronjob to mirror the contents of the main RPI shared drive with the backup RPI shared drive.
#
# If you are setting up mirroring for the first time, replace:
# SOURCE_DRIVE current value with the absolute path of the main RPI shared drive;
# DEST_DRIVE current value with the absolute path of the backup RPI shared drive;
#
# Logs: List of files transferred/deleted will be stored in rsync_logs.txt in the home directory.

export SOURCE_DRIVE= '/srv/dev-disk-by-uuid-87a6310a-1c75-4c36-945e-308100da5de4/RPINAS'
export BACKUP_DRIVE= '/srv/dev-disk-by-uuid-d27b3597-8ecb-4c49-bb01-07b6b1e23cd5/RPINAS-BACKUP'

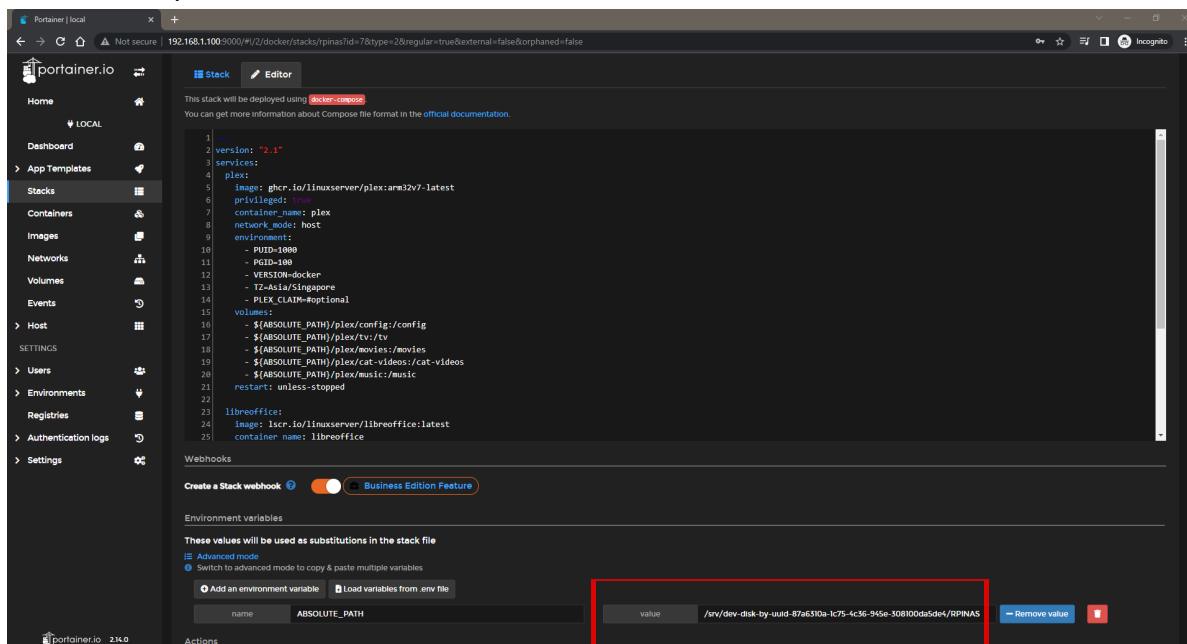
#Mirrors contents of main drive to backup drive
rsync -zaPO -e ssh --delete $SOURCE_DRIVE/ rpi@192.168.1.101:$BACKUP_DRIVE

```

9. Navigate to Portainer's web GUI on the main Raspberry Pi at 192.168.1.100:9000 and login with the provided credentials above. You should see the dashboard below. Click on the local environment.

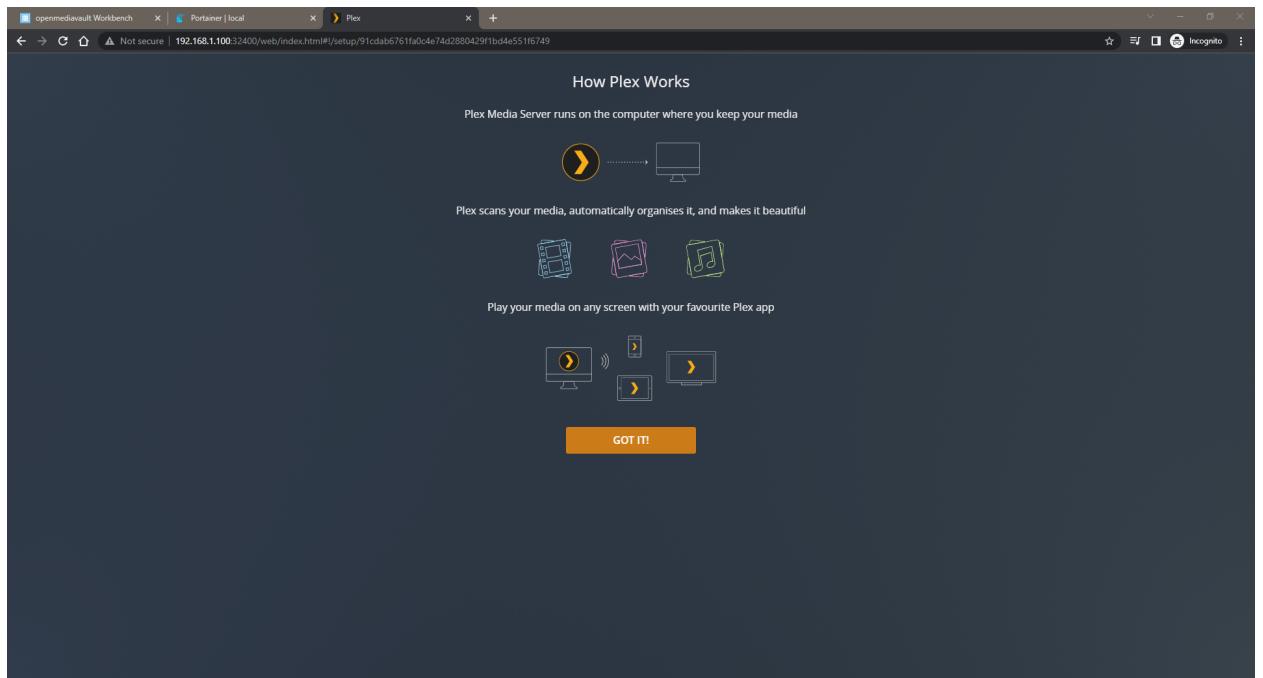


10. Click on “Stacks” on the left-hand menu and edit the existing stack called “rpinas” with the docker-compose editor. Update the existing value of the ABSOLUTE_PATH environment variable with the absolute path of the main Raspberry Pi’s shared folder. Then click “Update the stack”.

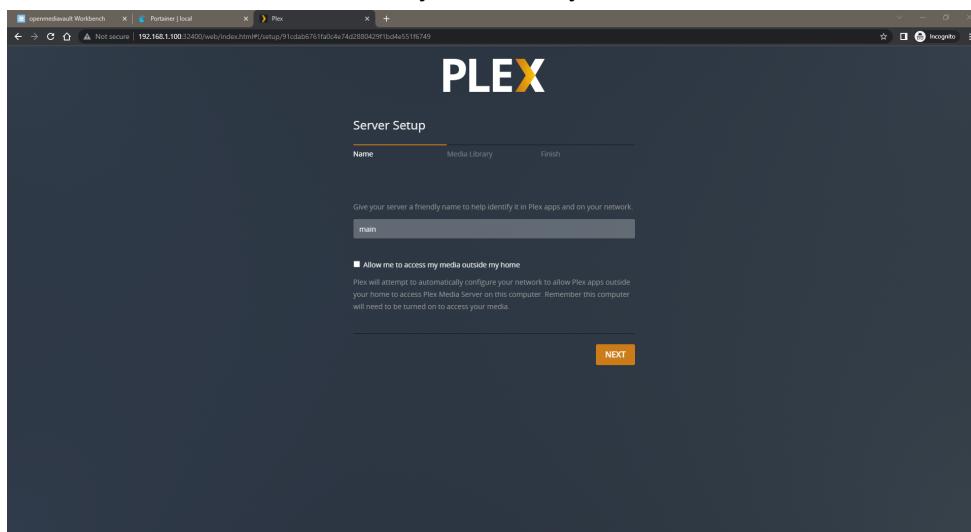


11. The containers for Plex Media Server and libreoffice will now run.

12. Navigate to Plex Media Server on the main Raspberry Pi at 192.168.1.100:32400/web
Login via email address with the provided account above. You will see the screen below and get a prompt to set up the server after clicking “GOT IT!”.
*** You might have to refresh if it takes a while to load!**



13. Uncheck “Allow me to access my outside my home”. Then click “Next” .

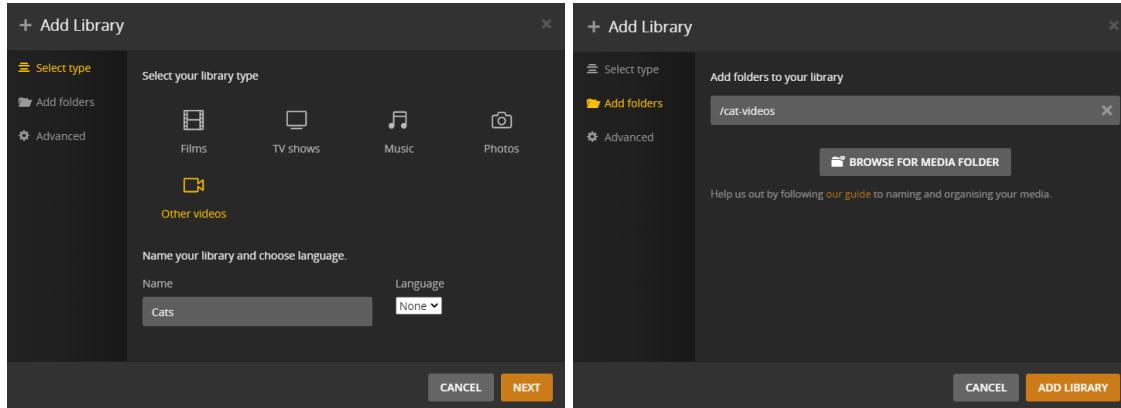


14. Click add library

Select type: Choose “Other videos”, Name: Cats

Add folders: /cat-videos

Click “Add”.

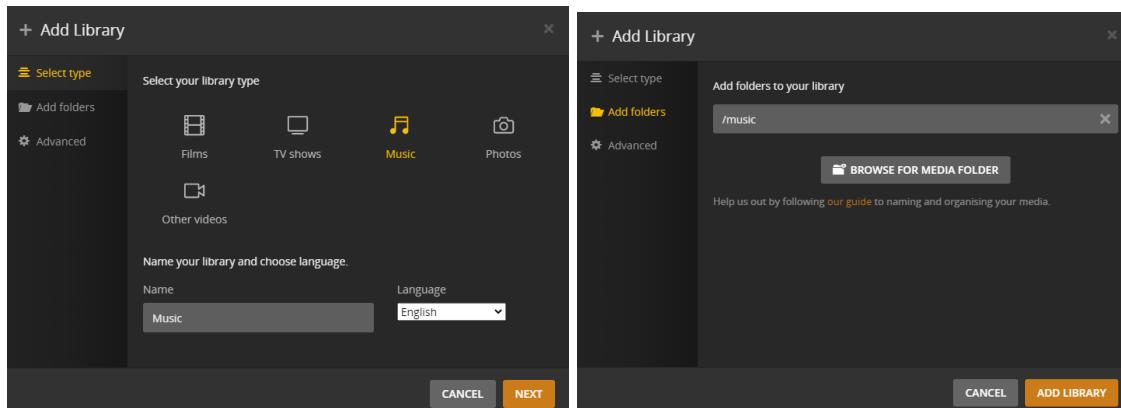


15. Click add library

Select type: Choose “Music”, Name: Music

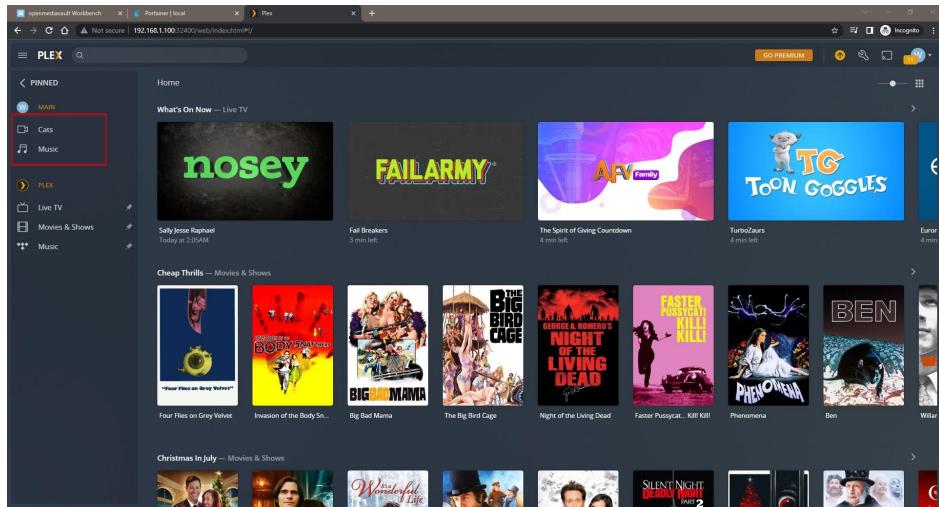
Add folders: /music

Click “Add”.



16. Finish the setup. If any warning appears saying that the server is unclaimed, click on “CLAIM IT NOW” and complete the claim process.

17. Return to the home screen and click on “MORE” on the left hand side of the menu. You should see the libraries added earlier in the setup process.



18. Click on any of the 2 created libraries. You should see the files on the NAS reflected here and ready to be streamed (/plex/cat-videos & /plex/music).

19. If you have uploaded files, click on the 3-dot button to scan library files to update the library on Plex.

