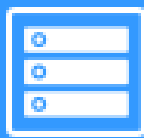


# **Getting Started with OMV**

## **Addendum B:**

### **Installing OMV5**

### **On a Raspberry PI**



openmediavault  
The open network attached storage solution



October 16th, 2019 – (rev 1.0)

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# Introduction

Before proceeding any further, users should check the [OMV download page](#) for an OMV5 image for their model of Raspberry PI (R-PI). If an image is found, using that image would be the preferred option for installing OMV.

If a pre-integrated image is not available for your R-PI, installing OMV5 on Raspbian Lite is a relatively easy task. This document is a guide for that purpose.

## ***About this Guide***

The purpose and intent of this guide is to provide a walk-through to get R-PI users up and running as quickly and as easily as possible. This guide assumes that users have a working Windows Client for installing and executing the needed utilities. It is also assumed that Mac and Linux desktop users will be able to find, install, and use utilities equivalent to those called out in [Prerequisites](#).

- This guide contains links to external sources of information and software. It's best used on an Internet connected PC.
- This is a community document and a work in progress. Input and feedback are welcome and can be sent to: [omvguide@gmail.com](mailto:omvguide@gmail.com)

## Supported Devices

OMV5 will install on R-PI models 2B and higher. Earlier models and the R-PI Zero are too slow to run a NAS application and should not be used. In fact, the model 2B is considered to be marginal for this purpose.

## Prerequisites

This installation process requires a wired Ethernet connection and Internet access.

To get started, a few utilities are needed to check, expand, and work with the Raspbian image.

- Raspbian images are compressed with a .zip extension. Users will need a utility like [7-Zip](#) to decompress the image. 7-Zip is installable on a Windows client.
- To check the decompressed image, an [MD5 – SHA Checksum utility](#) is needed. This utility is portable, meaning it's not necessary to install it. Simply run the executable.
- [h2testw\\_1.4](#) is a flash media test program. With a freshly formatted SD-card or USB thumbdrive, it writes files with known content and verifies that content in a read operation, detecting errors in the process. **h2testw\_1.4** downloads as a zip file. By right clicking on the zip file, and using “Extract All”, 7-Zip will expand the zip file to a folder named **h2testw\_1.4**. The executable inside this folder is a portable application. Run the executable.
- To burn a Raspbian image to an SD-card, [Etcher](#) is recommended. (It burns the image and verifies it in one process.) Etcher is a portable app. Run the executable.
- [PuTTY](#) is an SSH client that will allow users to connect to their SBC, from a Windows client, and get on the command line. PuTTY is installable.
- While 8GB is the minimum and will work fine, a 16GB card will provide longer life in the role of a boot drive. Users are encouraged to get two SD-cards. One is for the installation and the second is for backing up the OS installation when configuration is complete.  
For the best experience, use only quality new SD-cards such as Samsung or SanDisk, that are rated A1, Class 10.



- **\*\*Important\*\***  
When selecting a Raspbian Image, for best possible compatibility with OMV5, don't use an image with a desktop.  
On the [Raspbian download page](#), scroll down to bottom, select and download the **Raspbian Buster Lite** image.

Per the download page, the SHA-256 hash for the current **Buster Lite** image is:

**9e5cf24ce483bb96e7736ea75ca422e3560e7b455eee63dd28f66fa1825db70e**

(This may change without notice.) Make a note of the hash number found, or bookmark the download web page for reference. This will be used later.

# Working With The Image File

## Verify the Archive file

After downloading the Buster Lite archive, MD5 and SHA hashes check for file corruption that may have occurred during the download.

The Raspberry PI project provides a **SHA-256** hash check number for the downloaded Zip archive file.

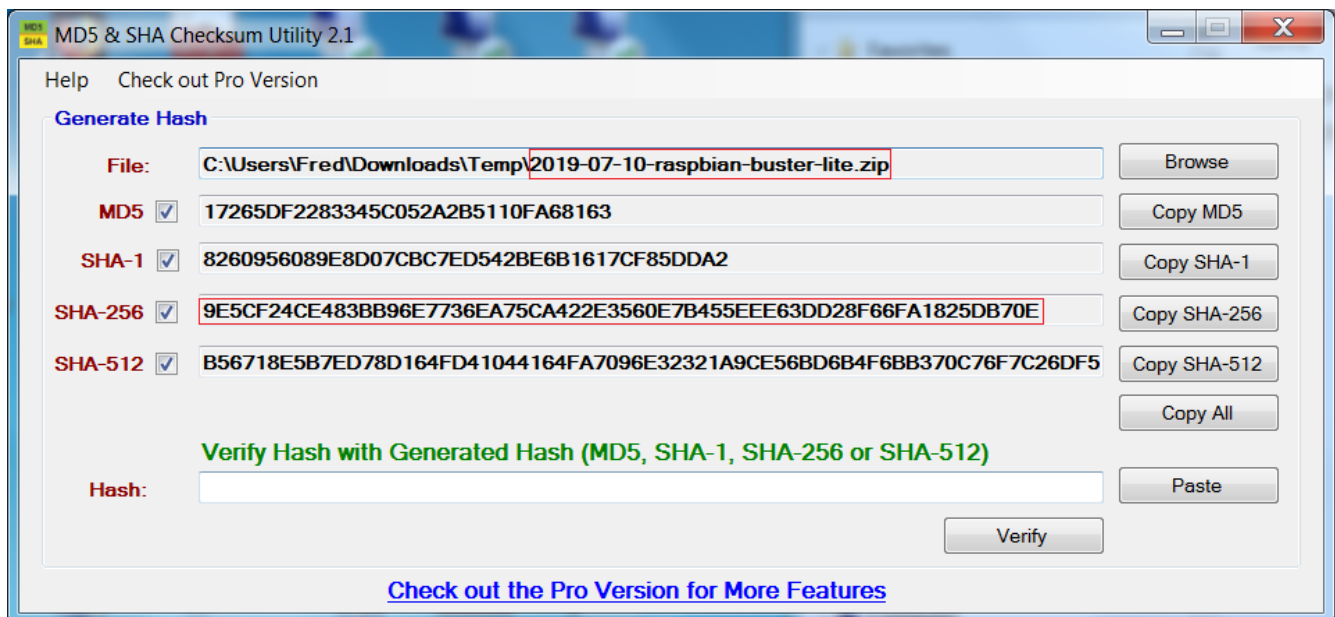
### **\*\*Beginners Note\*\***

**DO NOT SKIP THIS STEP.** The chance of corruption is highest when downloading and it's pointless to build a server with flawed software. Even the slightest amount of corruption may ruin your installation and the effects may not be noticed until well after your server is built and in use. Headaches can be avoided by checking the file.

---

Verify the downloaded Zip file with the [MD5 & SHA checksum utility](#).

(Note that it's possible to “drag and drop” the file name into the utility, on the **File** line. Otherwise, use the **Browse** button and navigate to the image file.)



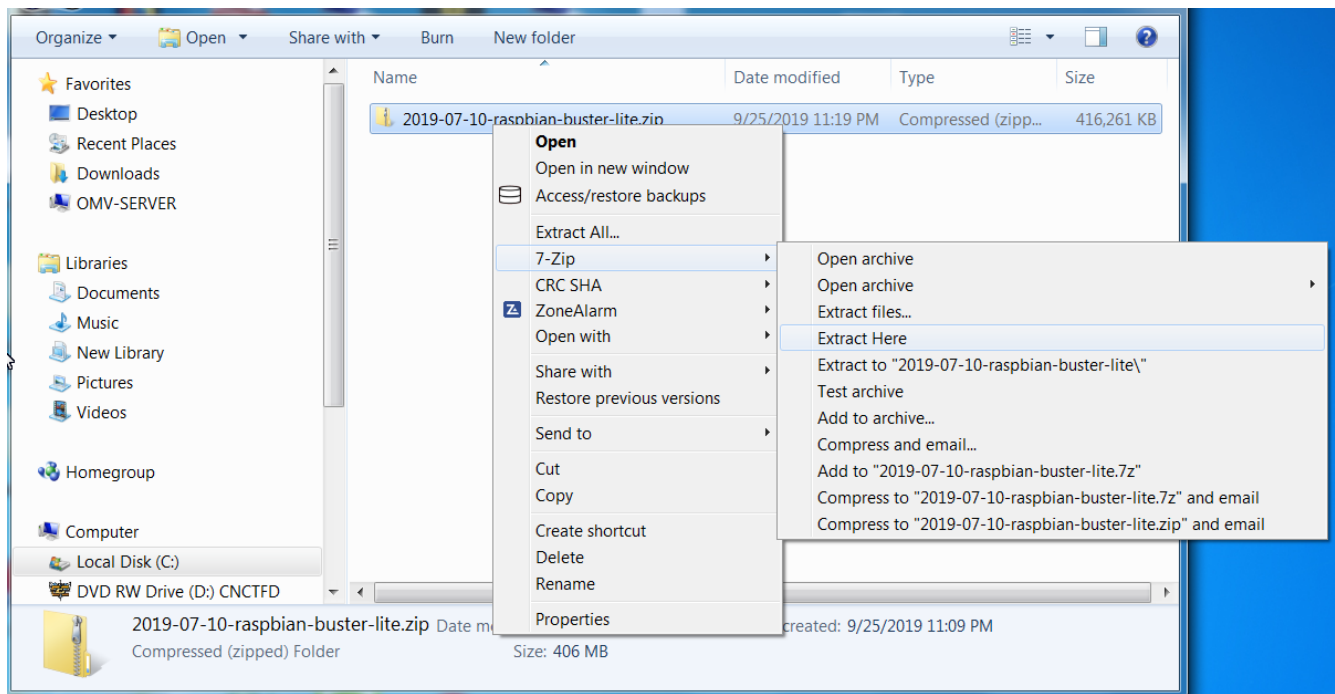
With the previously noted down SHA-256 hash, or by referencing the [Raspbian Web page](#), compare the utility's result with the SHA-256 hash provided on the download page.

In this case it's: **9e5cf24ce483bb96e7736ea75ca422e3560e7b455eee63dd28f66fa1825db70e**

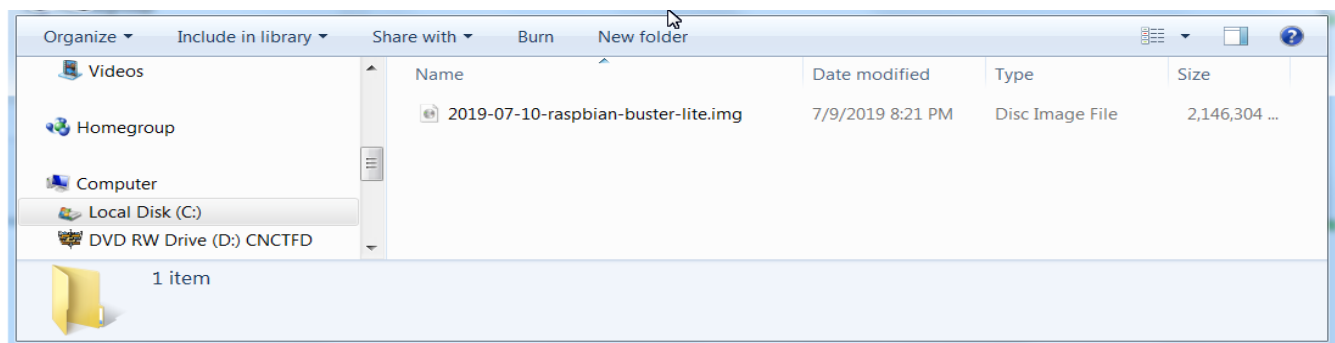
With a SHA-256 match, the downloaded file is verified.

## Decompress the Image

Raspbian images are compressed and will need to be extracted with 7-Zip. (The following process assumes 7-Zip has been installed.) Highlight the compressed file, right click the mouse, and make the menu selections shown below.



The result of the above action is the extraction of an uncompressed folder, with the image file inside. Open that folder. The image file's extension is **.img**



## ***Format and Test Flash Media***

Using SDFormatter, do a clean format on the new SD-card:

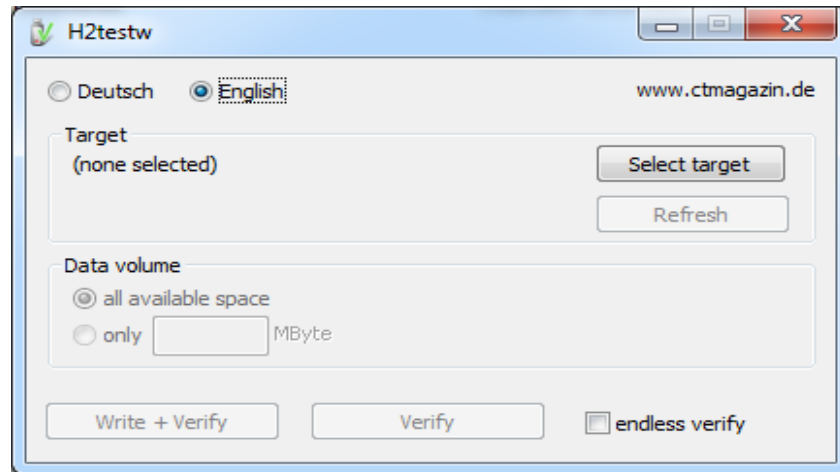
(Note that SDFormatter does a trim operation on the card which cleans up remnants of deleted or previously existing files.)

In most cases, SDFormatter will detect the SD-card or thumb-drive. A volume label is not necessary, at this point, and the default options are fine.



After the SD-card format is completed, open **h2testw** and select your language.

Then, click on **Select target**

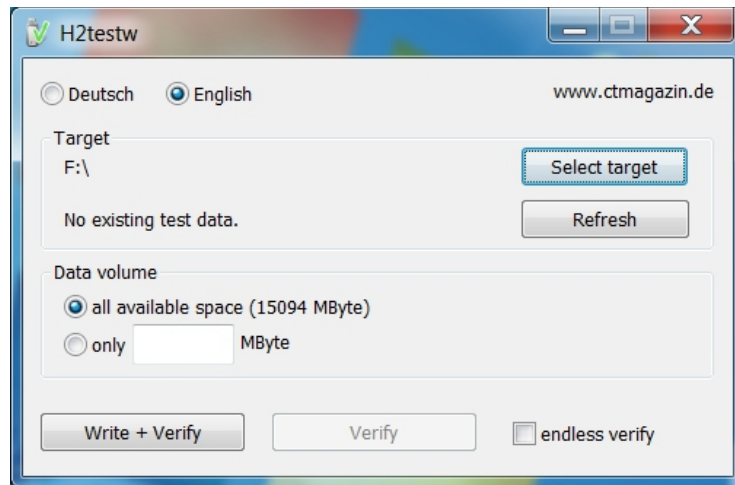


Under **Computer**, select the flash media previously formatted.





Select **Write+Verify**. (**DO NOT** check the **endless verify** box)



A dialog similar to the following may pop up, showing a 1MB difference. Ignore it and click on **OK**.



**“Without errors”** is the desired outcome. If the media tests with errors or is much smaller than is indicated by the SD-card's labeled size, don't use it.



After H2testw verifies the SD-card; **do one more clean format**, using **SDFormatter**, before flashing the card. While optional, at this point, a volume label could be applied.

## Flashing Raspbian Buster Lite onto an SD-card

### Start Etcher:

Etcher, in most cases, will auto detect the SD-card or a USB thumb-drive. Click on “**Select Image**” and navigate to the decompressed Raspbian image. Then click on **Flash!**

- A windows confirmation dialog may pop up. (Click on **OK**.)
- Etcher will write the image, then verify it in one operation.



A “**Success**” flag will pop up when the job is finished and the Etcher window will display “Flash Another?”. The flash operation is complete.

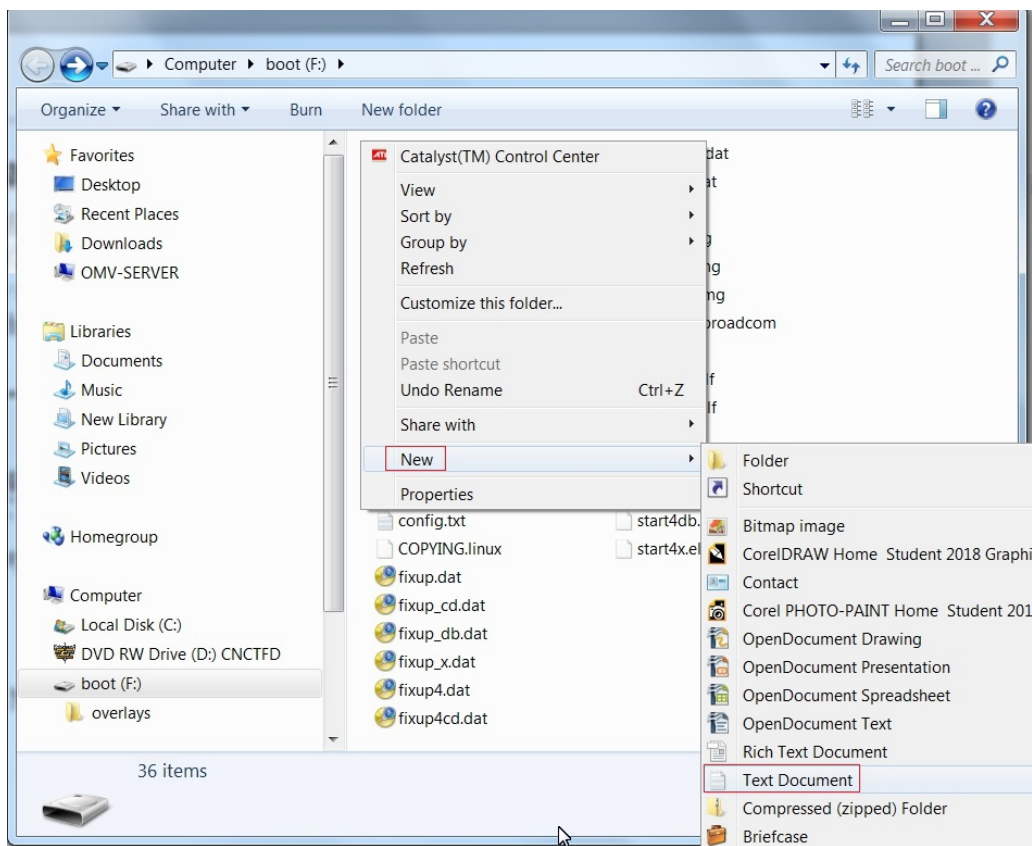
## Enabling Raspbian's SSH Server for Remote Access

Raspbian is designed to have its configuration finalized with a monitor and keyboard attached. There's little to no benefit in doing this with OMV which is designed, from the ground up, to take over the OS and operate as a headless server. For the sake of convenience, Raspbian can be configured to start its SSH server, so it can be accessed with PuTTY.

---

**\*\*To insure the file system on the Raspbian flashed card is recognized, unplug the SD-card for a few moments and plug it back into the PC used to flash the SD-Card.\*\***

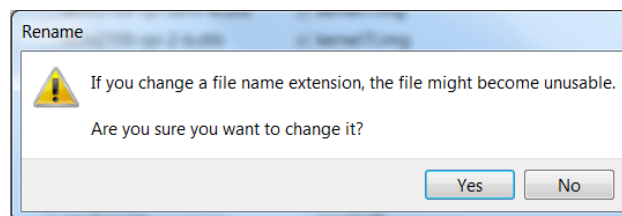
- Open a file manager window, displaying the file contents of the of the SD-card.
- Right click in the files side (right window) and select, **New**, and **Text Document**.



A file is created. Name the file **ssh** with no extension.



This warning may pop up, regarding a file without an extension. Ignore it and select “Yes”.





## The First Boot

**\*\*At this point, to connect to the SBC with PuTTY and to install OMV in a later process, a wired Ethernet connection is required.\*\***

- Insert the SD-card, into the SBC, and apply power.
- Wait 3 to 5 minutes.

The IP address to use for logging into the console is available from your DHCP server. In most cases, your DHCP server will be running on your LAN's router.

(The following is an example.)

DHCP Clients				
Hostname	IP Address	MAC Address	Client Lease Time	Delete
raspberrypi	192.168.1.71	B8:27:EB:58:92:49	0 days 00:02:00	
hotrod	192.168.1.94	10:7B:44:7B:CA:C9	0 days 00:02:00	

With the IP address noted, proceed to **First Time Login**.

---

### **\*\*If there's a problem with obtaining a DHCP assigned IP address:\*\***

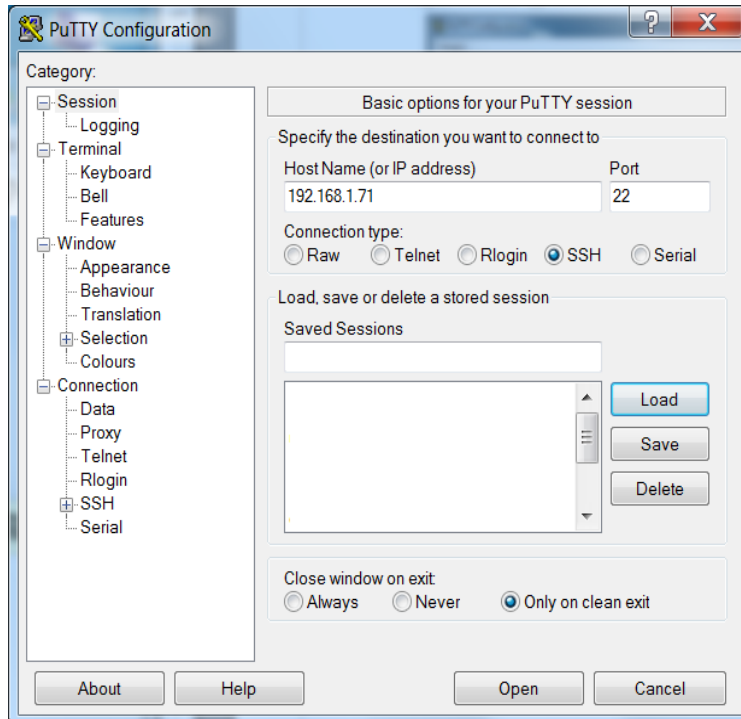
- In the event that an IP address is not issued to your SBC, check the wired Ethernet connection and reboot the device. In some cases this will mean unplugging and plugging the power supply back in. Allow time for boot up (5 minutes or so) and check the DHCP server again.
- If an address is not issued, or if the user doesn't know how to find the Raspberry Pi's IP address on their DHCP server, connect a monitor and keyboard to watch the boot process until it completes. If the IP address is not displayed at the end of the boot cycle, login with the user **pi** and password **raspberrypi**

Once these processes are complete, type **ip add** on the command line. Note the IP address of the Ethernet interface, in the output, and proceed to First Time Login.

(For having the ability to Copy + Paste, working with the R-PI using SSH, as detailed in First Time Login, is recommended.)

# Raspbian - First Time Logon

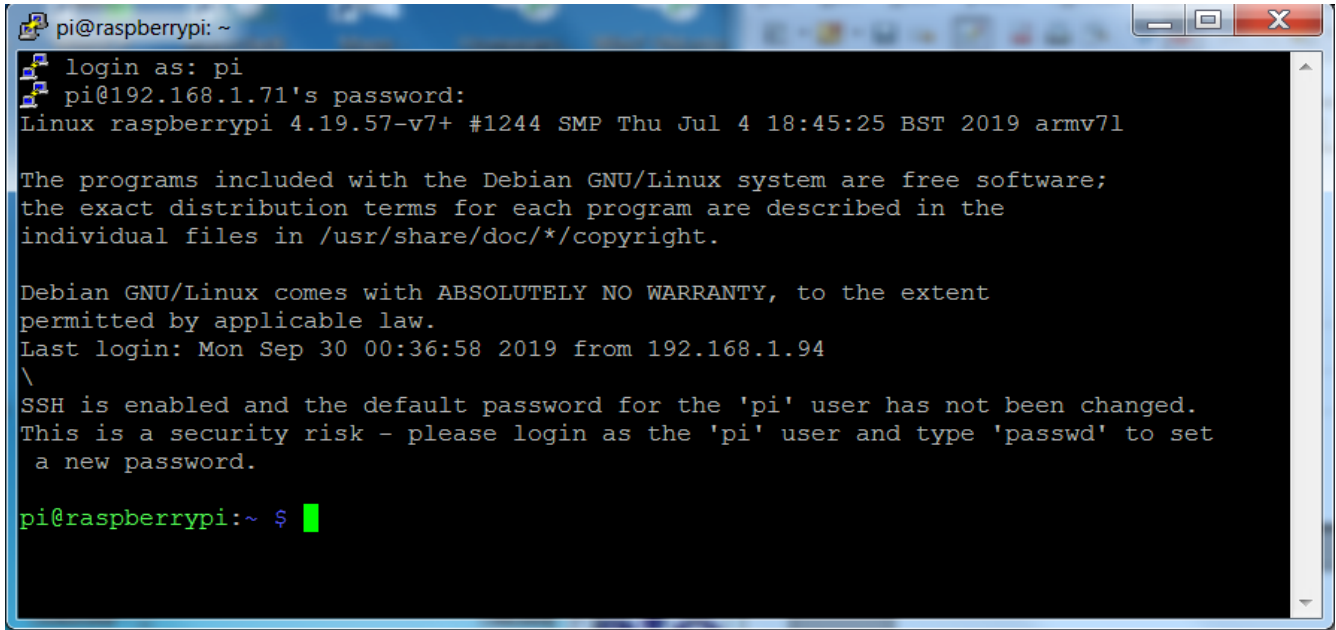
Open PuTTY and type in the IP address as previously found.



A PuTTY Security Alert will pop up in a first time connection.  
This is normal. Ignore it and select **Yes**.

## When the SSH window opens:

Login as: **pi** The Raspbian default password is: **raspberrypi**



```
pi@raspberrypi: ~
login as: pi
pi@192.168.1.71's password:
Linux raspberrypi 4.19.57-v7+ #1244 SMP Thu Jul 4 18:45:25 BST 2019 armv7l

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.
Last login: Mon Sep 30 00:36:58 2019 from 192.168.1.94
\
SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set
a new password.

pi@raspberrypi:~ $
```

After logging in with the default password, it's strongly recommended that the password for the **pi** user be changed.

As shown in the SSH window, on the command line, type;

**passwd**

Re-enter the current password **raspberrypi**, then follow the prompts to enter and confirm a new password for the **pi** user password. (Remember this password.)

---

When the password change is complete, one more change is needed to insure the **pi** user can log in, more than once, VIA SSH.

On the command line type or copy and paste in the following command;

**sudo adduser pi ssh**

---

## Install OMV

Installing OMV on Raspberry's is very easy, thanks to **Ryecoaaron** for providing a comprehensive installation script that's executed from a single line.

Copy the following line complete (**Ctrl+C**) and paste it into PuTTY's SSH window, with a right mouse click. Then hit **Enter**.

```
wget -O - https://github.com/OpenMediaVault-Plugin-Developers/installScript/raw/master/install | sudo bash
```

Once the script is running, click out of the SSH window so the script will not be interrupted. Depending on several factors, running this script will take approximately 30 minutes.

When the script is complete, the device command prompt will return:

```
pi@raspberrypi:~$
```

Type the following command into the PuTTY/SSH window:

```
sudo reboot
```

---

(Continued)



## First Time GUI Logon

After 3 to 5 minutes, OMV can be logged in using the same IP address that was used for the SSH client, entered in a web browser address bar. The web GUI user is **admin** and the default password is **openmediavault**

## Configuring the Network

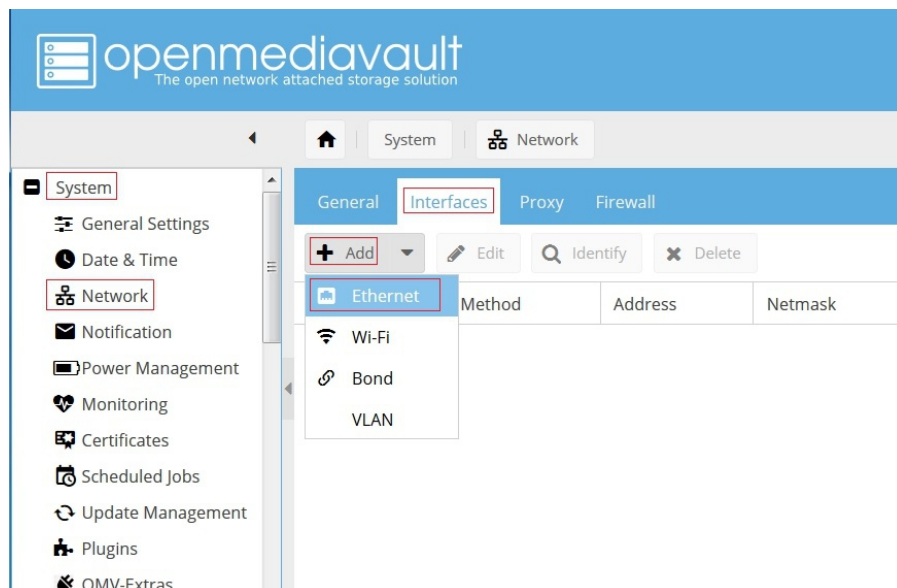
### \*Required\*:

This process is covered separately from the **New User Guide**, due to the interaction of Docker with Raspbian Buster in OMV5. If Docker is to be used with the R-PI (new users should assume that it will be used eventually) the following is **required** for Docker and Portainer to load and work correctly.

### Recommended:

It may be useful to change the default logout time to 60 minutes in **System, General Settings, Web Administration**, and to change the web user's logon password in **Web Administrator Password** before proceeding.

Navigate to **System, Network**, the **Interfaces** tab, click on the + **ADD** button and select **Ethernet**.



(Continued)

The following dialog box will popup:

Under **General Settings**:

- In the **Name** drop down, there will be one choice. Select **eth0**.
- In the **Method** drop down, select **Static**.

Settings for the **Ipv4**:

- **Address**:

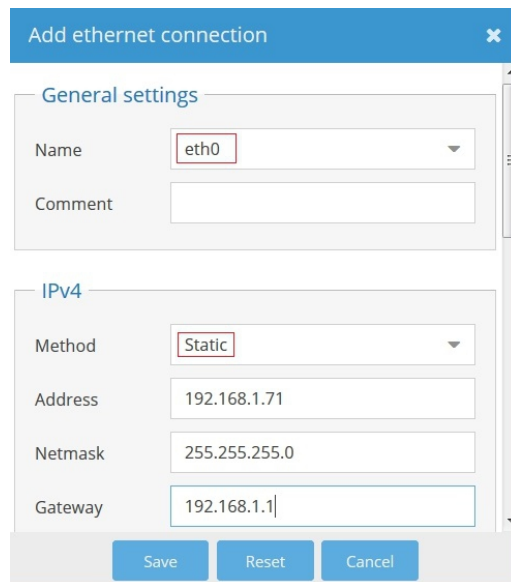
Select an IP address that is outside the Router's DHCP range, to be the static IP address for your R-PI.  
(If this seems unclear, see the Address Note below.)

- **Netmask**:

The LAN's network mask

- **Gateway**:

Typically the Router's address



The screenshot shows a window titled "Add ethernet connection" with a close button (X) in the top right corner. The window is divided into two main sections: "General settings" and "IPv4". In the "General settings" section, there is a "Name" dropdown menu with "eth0" selected, and a "Comment" text input field. In the "IPv4" section, there is a "Method" dropdown menu with "Static" selected, and three text input fields for "Address" (192.168.1.71), "Netmask" (255.255.255.0), and "Gateway" (192.168.1.1). At the bottom of the window, there are three buttons: "Save", "Reset", and "Cancel".

**\*\*Static Address Note\*\***

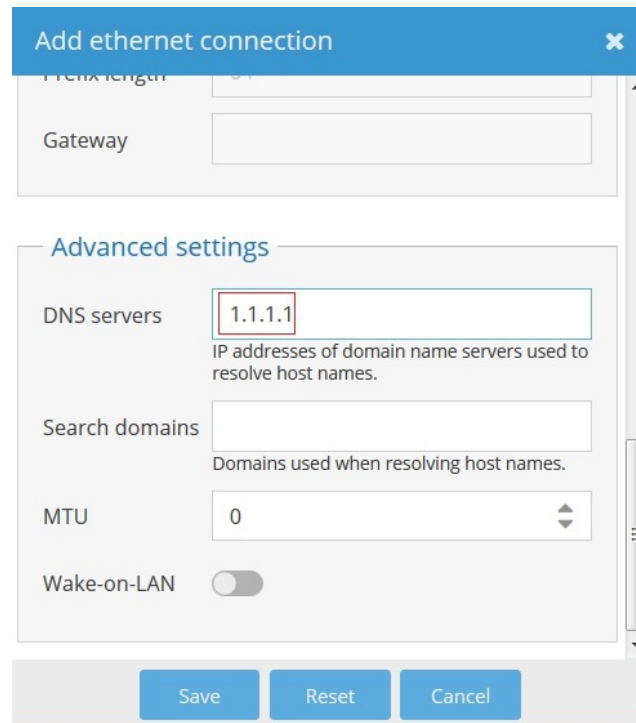
If the user is not sure what a "DHCP address range" is, or how to determine what IP address may be assigned:

- Using the same IP address assigned by the DHCP server will work temporarily. To use this address permanently it will be advisable to set the address as a "permanent" or "static" DHCP lease, at the router. (Consult your router's documentation or the router's OEM web site, for configuration details.)

In the same dialog box, scroll down to **Advanced settings**.

### Advanced settings.

In **DNS Servers**, set your routers Gateway IP address, or the address of a [Public DNS server](#). (A public server is shown.)



The screenshot shows a web-based configuration window titled "Add ethernet connection". It has a blue header bar with a close button (X). Below the header, there are several input fields. The "DNS servers" field is highlighted with a red rectangular box and contains the text "1.1.1.1". Below this field, there is a small text description: "IP addresses of domain name servers used to resolve host names." Other visible fields include "Search domains", "MTU" (set to 0), and "Wake-on-LAN" (which is a toggle switch currently turned off). At the bottom of the window, there are three buttons: "Save", "Reset", and "Cancel".

Click the **SAVE** button.

**\*\*Note that if the IP address is changed from the address used to login to the Web GUI, when saved, the connection will be cut.\*\*** This is to be expected. It will be necessary to enter the new IP address in the Web Browsers address bar, to login again.

---

## Finishing Up:

New users can continue the Setup of OMV using this [Guide](#), starting in the section titled **OMV - Initial Configuration**. Network settings, and other settings made as part of this installation, should be skipped.

All users are encouraged to review the section titled **Operating System Backup** for an easy process to clone your Raspberry PI's SD-Card.