

OPENMEDIAVAULT: NAS FOR EVERYONE

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A former FreeNAS developer brings the power of the popular FreeBSD-based NAS solution closer home to Debian.

WHY DO THIS?

- Access data from any computer on the network.
- Fuse life into a dated computer that has lots of storage but low processing power.
- Create data redundancy for important data by easily setting up a RAID array.

You can also install OMV on a Raspberry Pi, and one of the features of the 1.0 release is better performance on this resource-strapped device.

Despite being open source software, the most-popular NAS solution, FreeNAS, is at best only a cousin of the Linux operating system. It's based on FreeBSD, uses the ZFS filesystem, and is more suitable for large-scale enterprise-wide deployments than the sort of home projects beloved of Linux users. If you're a Linux user looking for a simple but effective tool for housing and managing data, the Debian-based OpenMediaVault (OMV) is a better bet.

OMV is developed by a former FreeNAS developer, and is designed to cater to the average home office user. Unlike other solutions, OMV is straightforward to roll out and simple to manage. Its browser-based user interface is also more suitable for non-technical users. You can connect to it via all the popular services, such as SSH, SMB/CIFS, FTP, rsync, etc. The distro is modular and can be extended with a variety of official and third-party plugins. For instance, you can turn the NAS into a torrent client to download data directly into the NAS storage or use it to stream stored music.

OMV has recently hit version 1.0 and is available as an installable 361 MB ISO image. The distro doesn't have exotic hardware requirements, and you can install it on an old unused computer with just 1GB of RAM. If you have multiple hard disks, you can ask OMV to organise the disks into a RAID array.

You can burn the downloaded OMV image on to an optical disc or transfer it onto a USB drive with the **dd** command. First, plug in a USB drive and find out its location by running the **fdisk -l** command as the root

user. The command lists all the connected devices and the partitions inside them. Identify the plugged-in USB disk from the list and make note of its device name, such as **/dev/sdb**. Now assuming your USB disk is **/dev/sdb** and the OMV image is under your home directory, the command **dd if=~/openmediavault_1.0.20_amd64.iso of=/dev/sdb bs=4096** will transfer it on to the USB disk. You can then use this media to install OMV on to a hard disk. OMV needs a 2 GB hard disk for installation. But remember that you can't store data on this drive. So even if you install OMV on a 20 GB disk you'll not be able to use it to keep data. If you can't find a 2 GB hard disk, the OMV website suggests using a CF Card or a USB drive for installing OMV. However, if you use removable for the OMV installation, make sure it's got static wear levelling so the constant filesystem access doesn't have an adverse effect on its lifespan.

Web interface

Installing OMV is pretty straightforward. The setup wizard will prompt you for the keyboard layout and the language. You'll then be asked to choose a hostname and the domain name for the NAS device. The hostname helps identify this computer on your network. Unless you're familiar with the settings of your network, it's best to go with the default values. Once you've configured the network, you need to specify a password for the NAS administrator. This is the password for the root user on the OMV installation. Do not confuse this root user with the admin user that you will use for logging into the web-based interface to manage the NAS device.

Next up is the partitioning step, which isn't as involved as it is in a typical Linux distro installation. That's because OMV is designed to take over the entire disk. In fact, if you have just one disk attached to the computer, the installation wizard will automatically copy files into it. But if you have multiple disks attached, which is more likely, the wizard will show you a menu and ask you to select the disk on which you wish to install OMV. It'll display the size of the disks along with their mountpoints, so make sure you select the smallest one listed.

Once it's done copying the files, the wizard will ask you to select the closest Debian mirror from a list. This is required, since OMV is based on Debian and it needs to regularly fetch updates from the Debian repository to make sure your OMV install is in prime condition.

```
OpenMediaVault 1.0.20 (kralizec) openmediavault tty1
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To manage the system visit the OpenMediaVault web management
interface via a web browser:

eth0: 192.168.3.103

The default web management interface administrator account has
the username 'admin' and password 'openmediavault'.
It is recommended that you change the password for this account
via the web management interface or using the 'omv-firstaid'
CLI command.

For more information regarding this appliance, please visit
the web site: http://www.openmediavault.org

openmediavault login: _
```

That takes care of the installation. You can now remove the installation medium and restart the computer. It'll boot into the OMV installation and drop you to the login shell, but you don't need to log in here. OMV will also display the IP address of this machine. Enter this address inside a web browser on any computer on the network to access OMV's web interface, from which you can manage all aspects of OMV remotely. So once you're done installing it, you can disconnect the monitor and keyboard and run this computer as a headless NAS server.

The default login credentials for the web interface are **admin:openmediavault**. After logging in, the first order of business should be to change these default credentials. In the navigation menu on the left, head to System > General Settings. Now switch to the Web Administrator Password tab, enter the new password in the appropriate textboxes and click on the Save button to update the password for the admin user.

The navigation panel on the side of the screen is divided into several sections. The System menu enables you to configure several aspects of the NAS server, such as the web admin's password, the server's date and time, set up scheduled jobs, enable plugins (see box) and keep the system updated.

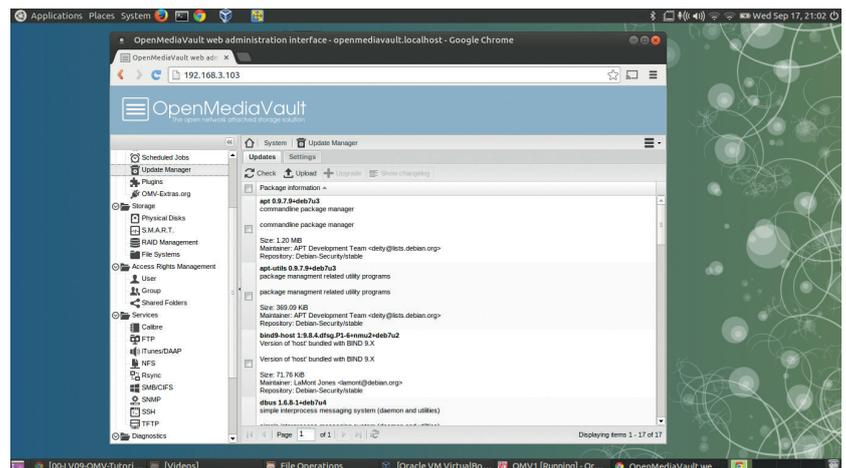
Configure storage

Next up in the navigation panel is the Storage section. As previously mentioned, you can use OMV to manage multiple physical disks individually or tie them into a RAID device that uses the different disks for added fault tolerance. While it defaults to RAID 5, OMV supports all the popular RAID levels.

If you aren't familiar with RAID, here's a quick lowdown. RAID has multiple levels, and each RAID level has a different purpose, which also dictates its disk requirements. For example, to create a RAID 1 that mirrors data across drives, you need a minimum of two disks. However, RAID 5 needs a minimum of three drives and distributes the data across the disks so that no data is lost even after the failure of a drive.

To view all the disks attached to the OMV NAS computer, head to Storage > Physical Disks. If you plan to use them individually and not as a RAID, you must format the disks from this page, which will erase them and also create a partition table. Select the drive and click the Wipe button. OMV can erase the disk securely or quickly. The former is slower but ensures that data recovery tools won't be able to carve data from the drive. Use this method when you need to remove a drive. The quick delete method is sufficient when adding a new drive to the OMV server. If you hotplugged your drive and it isn't listed, use the Scan button to ask OMV to look for new disks. After you've erased a drive, head to Storage > File Systems to create a filesystem on the drive.

However, if you wish to arrange the disks into a RAID device, head to Storage > RAID Management and click the Create button. In the dialog box that pops up, select the devices you want to use in the RAID as well



as the RAID level. Then enter the name you wish to use for the RAID device in the space provided and click the Save button. If you don't have the minimum number of disks required for the selected RAID level, OMV will not allow you to proceed. It will also display the minimum number of disks in a tooltip.

After you've created a RAID, OMV will ask you to wait until the RAID has been initialised before you proceed to the next step and create a filesystem. You'll also get a notification to save the changes in order for them to take effect. In fact, you'll get this notification every time you make configuration changes to OMV. The RAID Management page will now list the newly created RAID device. Keep a close eye on the State column for this device, as you'll only be able to proceed once it's done syncing the device.

To use the physical disks or the RAID array you need to create a filesystem.

Head to Storage > Filesystems and click on the Create button. In the dialog box that pops up, select the device you want to format using the pull-down menu, which

will list individual drives that you have wiped as well as any RAID devices. By default the drives are formatted as EXT4 but you can select a different filesystem using the pull-down menu. Besides EXT4, OMV supports the EXT3, XFS and JFS filesystems.

After selecting the storage device and its filesystem, enter a name for the volume in the space provided and click the Save button. If you are using multiple physical disks individually and not as a RAID device, remember to create a filesystem on each of the disks.

After the filesystem has been created, and the disk has been initialised, press the Mount button to bring the disk online.

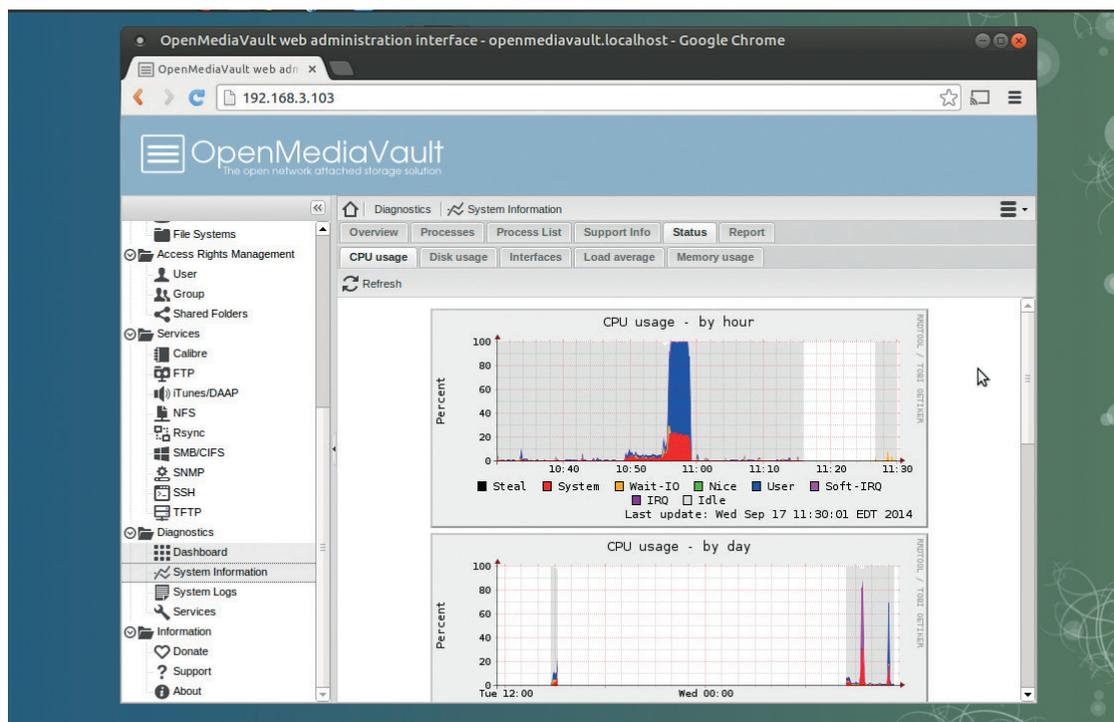
Regulate data access

Before you can store data on the NAS device, you'll have to create one or more users. Head to Access Right Management > User. The Add button on this page is a pull-down menu that lets you either add

To keep OMV updated, head to System > Update Manager. Select all the updates listed here and click the Install button to download them from OMV's online repositories.

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The Diagnostics tab enables you to monitor the state of the OMV NAS server in great detail.



individual users or import a bunch of users by adding them in the specified format. When adding an individual user you can also add them to an existing group. By default all users are added to the Users Group. You also get an option to prevent a user from making changes to their own account.

If you wish users to have their own home directories in the OMV server, switch to the Settings tab and mark the checkbox to enable the home directory for the user. You'll also have to specify the location for the home directory by selecting an existing shared folder on the NAS server or creating a new one.

Next you'll have to add a shared folder. Depending on how you plan to use the NAS, and whether it'll be used by a single individual or by multiple users, you can create one or more folders with varying user permissions to meet your requirements.

To add a folder, head to Access Rights Management > Shared Folders and click the Add button. In the dialog box that pops up, select the volume in which you wish to create the folder from the pull-down list. Then give the shared folder a name, such as Files, and enter the path of the folder you wish to share, such as **file/**. Since this is a newly formatted disk, OMV will automatically create the folder you specify here. You can also optionally add a comment to describe the type of content the folder will hold.

Play close attention to the Permissions setting. By default, OMV will only allow the administrator and any users you've added to read and write data to this folder, while others can only read its contents. This is a pretty safe default for most installations, but you can select a more restrictive or a more liberal permission setting from the pull-down list.

Even if you select the default Permissions setting when creating folders, which lets all users read and

write data to the folder, you can fine-tune the access permissions and disable certain users from accessing or modifying the contents of a particular folder. For this, after adding a user, head to the Shared Folders section, select the folder that you want to control access to and click the Privileges button. This will open a window with a list of all the users you've added, along with checkboxes for controlling their access to that folder.

Enable shares

With the users and shared folders set, you're now ready to share the NAS storage with your network. The only thing left to do is enable a network service that users will use to access the shared folders on the NAS. OMV supports various popular protocols and services, including NFS, SMB/CIFS, FTP, TFTP, SSH, rsync and more.

We'll use the SMB protocol popularly known as Samba, as it's supported by all popular operating systems and even works across devices. To share folders via Samba you'll first have to enable the service in OMV. Head to Servers > SMB/CIFS and in the General settings section under the Settings tab toggle the Enable checkbox. The other settings in the page are optional. When you're done, click the Save button to save the changes.

Next, you'll have to add the shared folders as Samba shares. To do this, switch to the Shares tab and click the Add button. In the window that pops up, select a shared folder from the pull-down list or click on the green + button to create a new one. You'll also have to give the folder a name, which will identify the folder on the network.

When adding a Samba folder, OMV will make sure it follows the permissions defined when you created the

Extend OMV

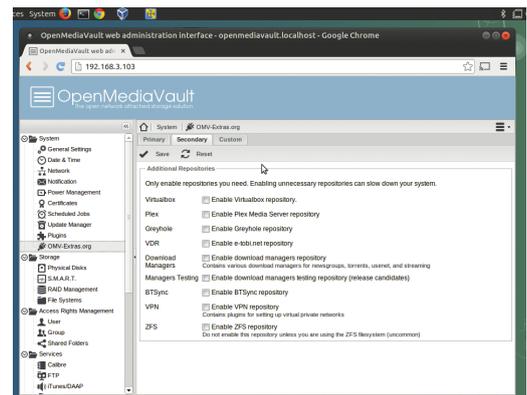
In addition to the core functionality you can teach OMV new tricks via official and third-party plugins. Head to System > Plugins to browse the list of 11 officially supported plugins, which are included with the base install but not enabled by default.

One interesting plugin is the **forked-daap** plugin, which will let you stream the music stored on your NAS device to other computers on the network. To use it, select it from the list of plugins and click the Install button. This will fetch the plugin from OMV's online repositories. After the plugin has been installed, you'll now notice a new entry under the Services section called iTunes/DAAP.

Before you can use it, you'll need to configure the service by pointing it to the shared folder on the NAS that contains the music files. To listen to music over the

network, use a player that automatically picks up and tunes into DAAP streams, such as *Rhythmbox*, *Amarok*, *Banshee*, *Kodi*, etc. You can also pick up the stream on an Android device using the DAAP Media Player app.

In addition to the official plugins, you also have access to a variety of third-party plugins made by the **omv-extras.org** project. To install these plugins, SSH into the OMV machine and download the repository package with **wget http://omv-extras.org/debian/pool/main/o/openmediavault-omvextrasorg/openmediavault-omvextrasorg_1.0.7_all.deb**. Once downloaded you can install it with **dpkg -i openmediavault-omvextrasorg_1.0.7_all.deb**. Now log into the web interface, and the third-party plugins will be listed under the System > Plugins section.



The OMV-Extras plugin repository also adds an OMV-Extras.org entry under the System section, from which you can install plugins that haven't been tested yet.

shared folder in the NAS. By default the folders are not Public, but if you wish to make the folder accessible to everyone, select the Guests allowed option from the Public pull-down menu. Also, if you select the Set Read Only checkbox, OMV will ensure that no user can modify the contents of the folder.

One Samba setting that might save you in the future is the Recycle Bin. It's not enabled by default, so when a user deletes a file it's zapped from the NAS permanently. When the Recycle Bin setting is enabled the deleted file will be moved into a virtual Recycle Bin inside the shared folder. Additionally, you can specify the time that needs to elapse before files are permanently deleted from the share. If you have multiple shared folders you'll have to add them as separate Samba shares. Save the configuration when you've added them all to restart the Samba service.

That's all there's to it! You should now be able to access all the shared folders you've created on the NAS device from any computer on the network, irrespective of whether they reside on an individual disk or a RAID array. You can either use your file manager's built-in Network feature to access the network shares or enter the IP address of the NAS device in the location area, such as:

smb://192.168.2.101. You'll be prompted for a username and password before you can access the folders, unless of course you have marked them as public when adding them via Samba. Enter the credentials of the user that has the appropriate permission to access the folder. Once verified, OMV will mount the shared folder. You can now upload files into the shared folder or delete them, if you have the permission, just like in a regular folder.

Enable other services

While Samba is a wonderful protocol to access the NAS server, there are a couple of other services you should enable to make better use of your NAS server. One of the first services you should enable is the SSH

service. Once it's enabled, you can remotely log in to your OMV installation and manage it from the command line. Head to Services > SSH and click the Enable checkbox followed by the Save button. If there is a new release available, you can use the **omv-release-upgrade** command to switch to the new version.

If you wish to use the NAS as the target location for storing backups, you should enable the FTP service as well. Almost every backup solution will let you save backups to a remote location via FTP.

To enable the FTP service, head to Services > FTP. The default FTP settings should work for most users, so you can safely select the Enable checkbox to activate the service. Now switch to the Shares tab and click on the Add button to add a shared folder for storing backups. Here you can pick an existing folder from the list of shared folders on the NAS device or add a new one by clicking on the + icon.

One thing you have to ensure is that your user has read/write permissions on this folder. To check or change a newly created shared folder's permissions, head to Access Rights Management > Shared Folders. Highlight the folder and click on the Privileges button to configure the permission for individual users. Once you've done all this you only need to configure your backup app to point to the NAS device. Depending on the backup app's permission you'll be prompted for the login credentials of the user that has access to the backup folder.

Open Media Vault is a wonderfully versatile NAS solution that's just hit the psychologically important 1.0 version. It's got the right amount of features to be of use to a wide variety of users yet isn't too complicated and cumbersome to setup and administer. Give it a go – it's a world beater. 

Mayank Sharma has been tinkering with Linux since the 90s and contributes to a variety of technical publications on both sides of the pond.