

# Adding storage for the Guests

The storage infrastructure is shown in the second drop-down of the tree view. flexVDI supports three kinds of storage Objects: *Image Storage*, *Media Storage* and *Direct Storage*. An *Image Storage* provides storage for *Guests'* images. A *Media Storage* stores installation media (ISO images and flexVDI appliances). Finally, a *Direct Storage* offers *Guests* the possibility to directly access a *Hosts* physical disk.

## Image Storages

The *Image Storage* objects are logical storage units for *Guests'* images. It represents a storage space accessible by a set of *Hosts*. This space is further divided into *Volumes*, which store the virtual disks of the *Guests*. The typical use of an *Image Storage* is to map a shared disk array and its volumes to the set of *Hosts* connected to it. flexVDI supports the most common SAN technologies: SAS disk arrays, Fiber Channel, iSCSI...

For now, we will focus on making a local directory available to store *Guests'* images. If you want to learn how to access a shared storage, refer to the *Storage* chapter in the *Administration Guide*.

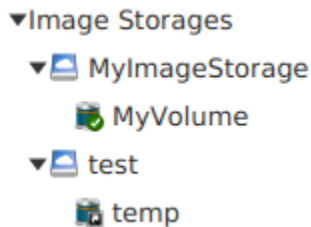
## Volumes

Volumes in an *Image Storage* can be internal or external. Internal volumes refer to volumes created and offered by the shared storage cabinet. flexVDI uses the OCFS2 cluster file system to manage internal volumes, and its configuration and management is discussed in the *Administration Guide*. OCFS2 supports reflinks and fallocate, which are particularly useful to work with large image files.

On the other hand, external volumes are not directly managed by flexVDI. The system administrator is responsible for mounting them in the same path in all the *Hosts* involved in the *Image Storage*. The two most common use cases for external volumes are:

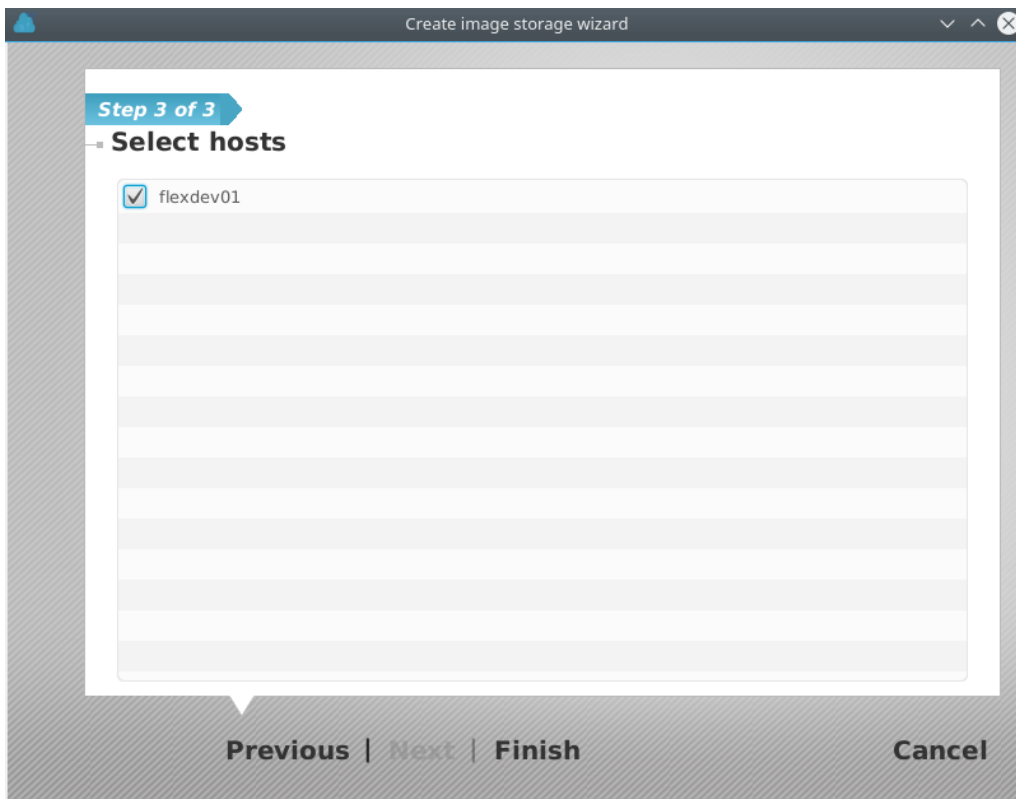
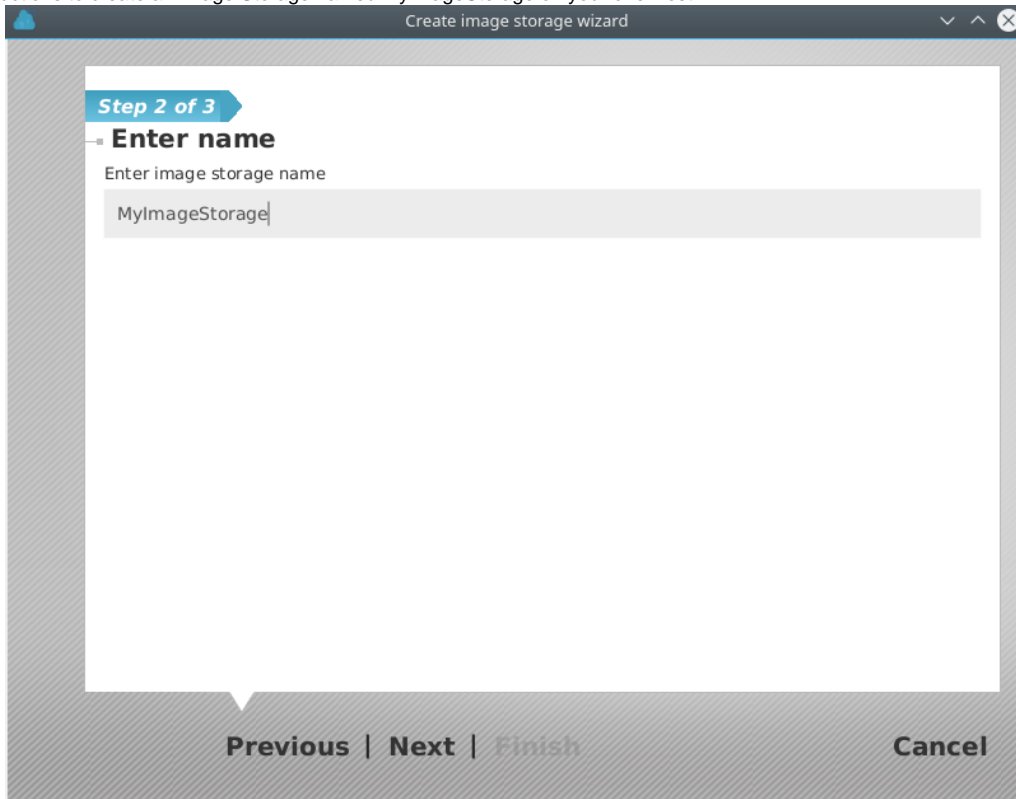
- Use local storage in a single *Host*.
- Use an NFS or CIFS shared folder accessible by a set of *Hosts* (**Beware**: neither NFS nor CIFS support fallocate, so creating new images is a slow process).

In the tree view, external volumes are identified by a small white arrow in its icon:

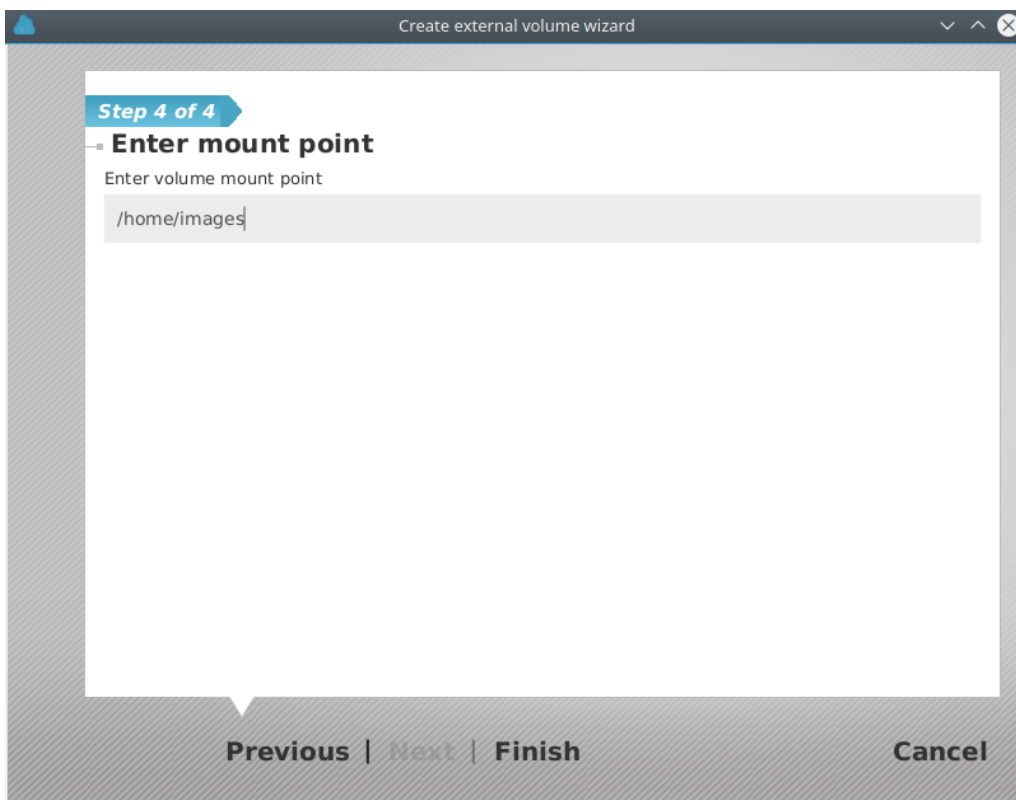
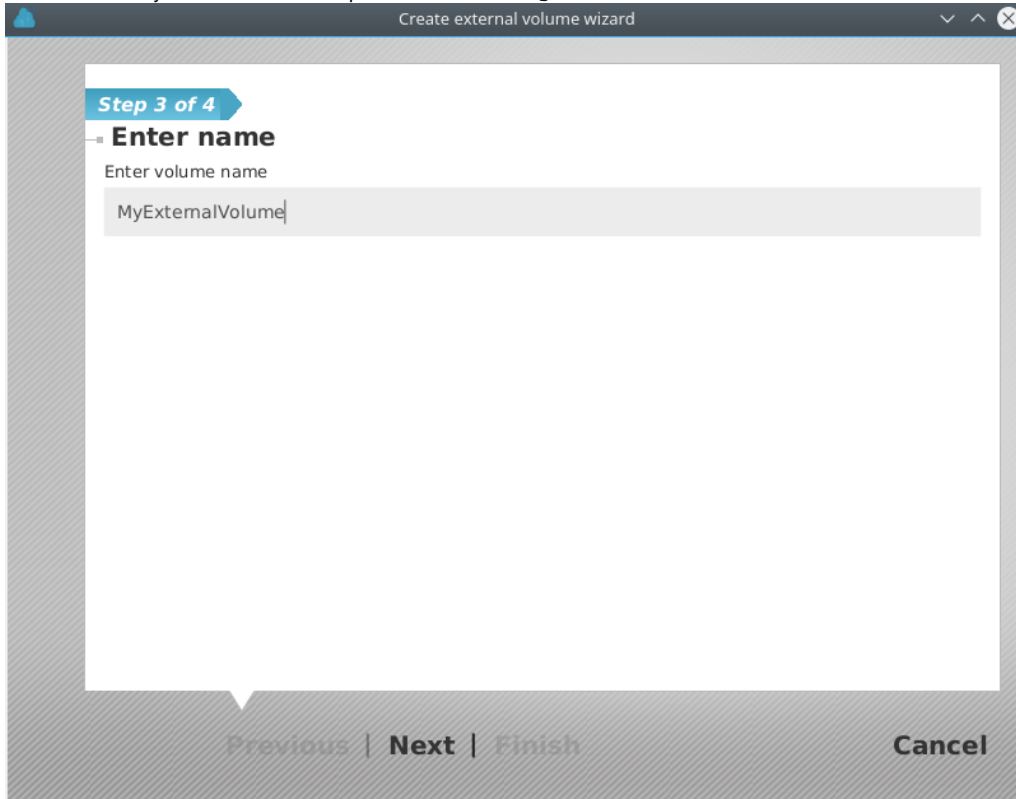


## Create an external volume

Before creating a *Guest*, you need a volume to store its image. With a single node, the easiest way is to create an external volume that maps to a local directory in your Host. Right-click on the "Image Storages" item of the tree view and select the "New Image Storage" command. A new wizard will appear. Just follow the instructions to create an Image Storage named MyImageStorage on your one Host.



Next, right-click on the newly created Image Storage in the tree view and select the "New External Volume" command. Follow the wizard's instructions to create an External Volume named MyExternalVolume that points to /home/images.



#### Read-write permissions


Be careful that the /home/images directory is read-writable by the qemu user. Otherwise guests will not be able to start.

In the end, you should see something like this in the tree view:

- ▼ Datacenter
  - ▼ Image Storages
    - ▼ myImageStorage
      - myExternalVolume

Click on the External Volume, and you will see something like this in the details view:

### External volume info



**MyExternalVolu...**

state	State
	ok

**State message**

Symbolic link created

**Mount point**

/home/images

**Total space**

253.1 GB


**Free space**

53.6 GB

#### Disk images

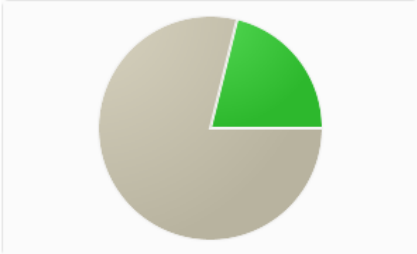
Filter:

Image name	Size	Guest
Free	53 GB	
Not available	199 GB	



MyExternalVolume

Legend: In use (Red), Free (Green)



## Media Storages

*Media Storages* are repositories of ISO image files. These files can be mounted as disks by *Guests* and are useful for the initial installation of the OS. [At the end of the Getting Started guide](#), you activated the local CIFS server, so you should already have a *Media Storage* called cifs. Copy some installation ISOs there in order to install a new *Guest* later. Click on it, and information about it will be displayed in the details view:

Media storage info



cifs

state	State
	ok

State message

IP address

10.111.9.5

Path

/cifs

User name

flexvdi

Host list

[flexpre02]

Media images

Filter:

File	Size	Last modification
CentOS-6.9-x86_64-minim...	408 MB	2017-10-04 17:41:36
CentOS-7-x86_64-Minimal-...	603 MB	2017-10-04 17:41:36
CentOS-7-x86_64-Minimal-...	792 MB	2017-10-04 17:41:36
centos7_kde.fvm	38.97 MB	2017-10-04 17:41:36
debian-6.0.10-amd64-neti...	168 MB	2017-10-04 17:41:36
debian-6.0.10-i386-netinst...	190 MB	2017-10-04 17:41:36
debian-9.1.0-amd64-netin...	290 MB	2017-10-04 17:41:36
Fedora-KDE-Live-x86_64-2...	1.29 GB	2017-10-04 17:41:36
flexvdi-guest-tools-2.2.12.i...	48.36 MB	2017-10-04 17:41:36
flexvdi-webportal-2.2.10.fvm	437.93 MB	2017-10-04 17:41:36
flexvdi-webportal-2.2.12.fvm	447.81 MB	2017-10-04 17:41:36
foo	0 Bytes	2017-10-04 17:41:36
Igel.fvm	675.12 MB	2017-10-04 17:41:36
openSUSE-Tumbleweed-N...	92 MB	2017-10-04 17:41:36
Porteus-XFCE-v3.2.2-i586.iso	239.48 MB	2017-10-04 17:41:36
rhel-server-7.3-x86_64-dv...	3.53 GB	2017-10-04 17:41:36
slackware-14.2-install-dvd...	2.62 GB	2017-10-04 17:41:36

As usual, a table with basic information is shown on the left, and the list of files the Media Storage contains is shown on the right. The file list displays all kind of files, but only two of them are useful for flexVDI:

- ISO images, that will be seen as read-only optical units by the *Guest*. They are attached to a Guest when it is created or modified.
- FVM (flexVDI Virtual Machine) files, that contain fully exported virtual machines in flexVDI format. These files are used by the Guest Import Wizard.

From a technical point of view, Media Storages are shared folders accessed with CIFS/SMB. The table on the left shows the IP address, path and username that is used to establish the connection. It also shows the result message of the last operation on the storage and the list of Hosts that should mount and have access to it. If you right-click on a Media Storage and select the Modify command, you will be presented with a wizard to change these properties, including the password for the connection to the CIFS server.