

TUTORIALS



Share Folder Between Windows Guest and Linux Host in KVM using virtiofs

🕒 5 min



by Arindam 2 years ago



104



88.3k views

In this guide, you will learn how to share a folder between Windows guest, running under a Linux host – such as Fedora, Ubuntu or Linux Mint using KVM.

The [virt-manager](#) application (with [libvirt](#)) and packages provide a flexible set of tools to manage virtual machines in Linux. It is free and open-source and used for KVM virtual machines and other hypervisors.

In the prior article, I explained [how to share folders between a Linux guest and a Linux host](#). However, when you are trying to create a shared folder using Windows Guest and Linux host, it's a little difficult and complex process. Because both the operating system works differently and a lot of configuration is needed.

Follow the below instructions as mentioned to share the folder between Windows guest and Linux host.

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A note about virtiofs



The sharing files and folders are powered by the libvirt shared file system called virtiofs. It provides all the features and parameters to access the directory tree on the host machine. Since most of the virt-manager virtual machine configurations are translated to XML, the share files/folders can also be specified by the XML file.

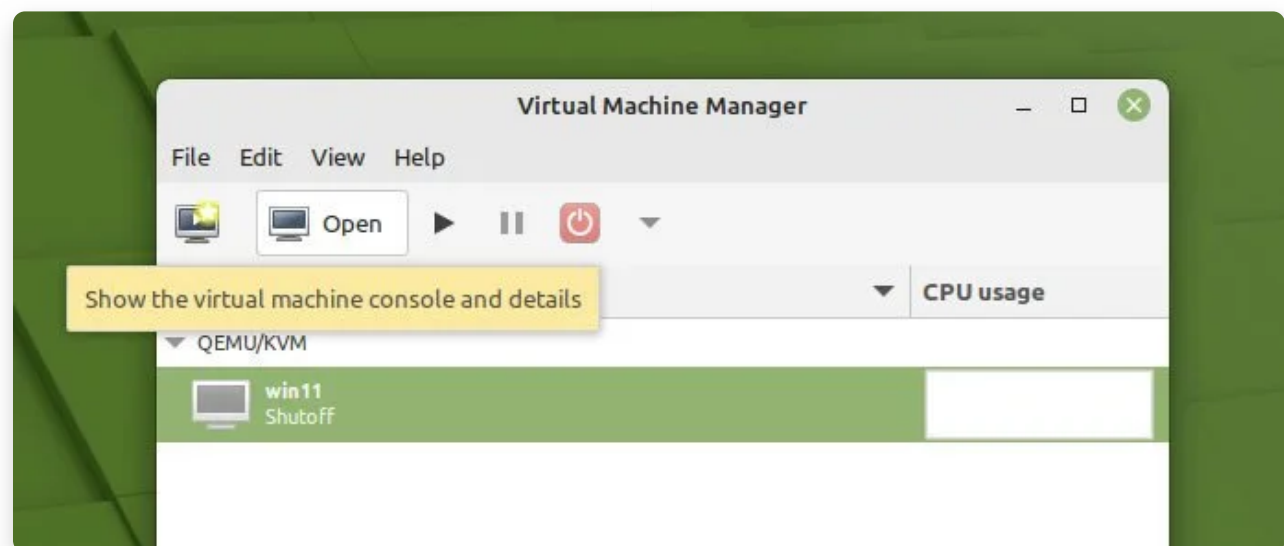
Note: If you are looking for file sharing using KVM between two Linux machines (guest and host), [read this article](#).

Share folder between Windows guest and Linux host using KVM

The following instructions assume that you have installed Windows in virt-manager in any Linux host. If not, you can read this [complete guide on how to install Windows in Linux](#).

Set up a mount tag in virt-manager

- First, make sure your guest virtual machine is powered off. From the virt-manager GUI, select the virtual machine and click on Open to pull up the console settings.



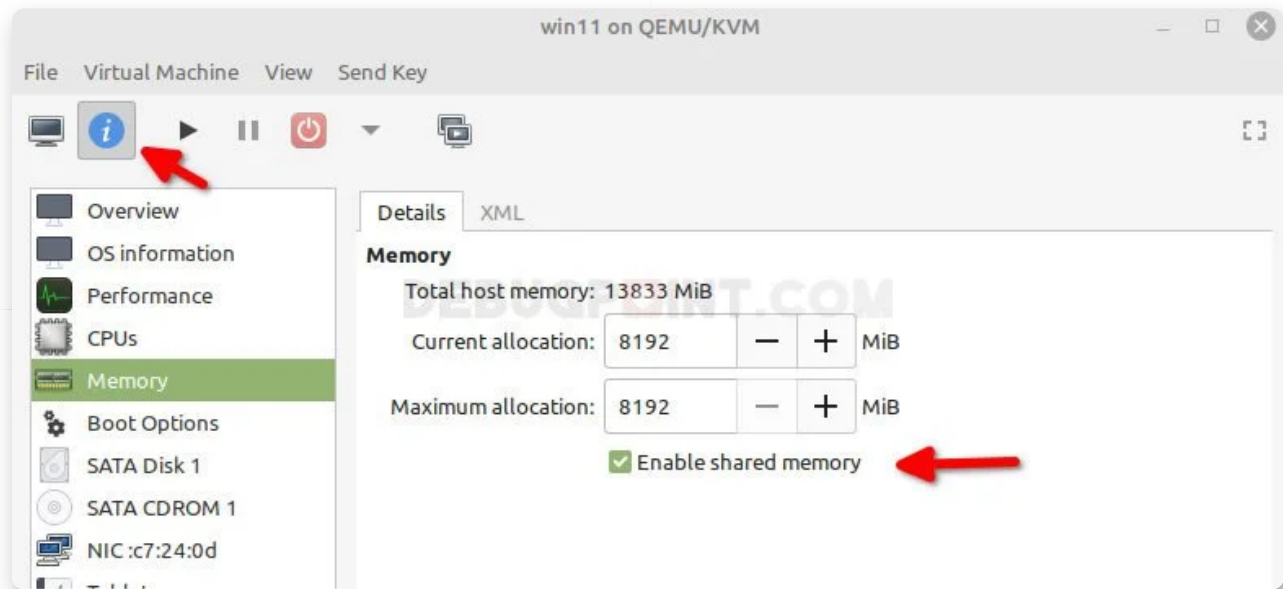
Open the console settings

- Click on the icon which says show virtual hardware details in the toolbar. And then click on Memory on the left panel.
- Select the option "Enable shared memory". Click Apply.



- Make sure the XML shows “access mode=shared” as below in the XML tab.

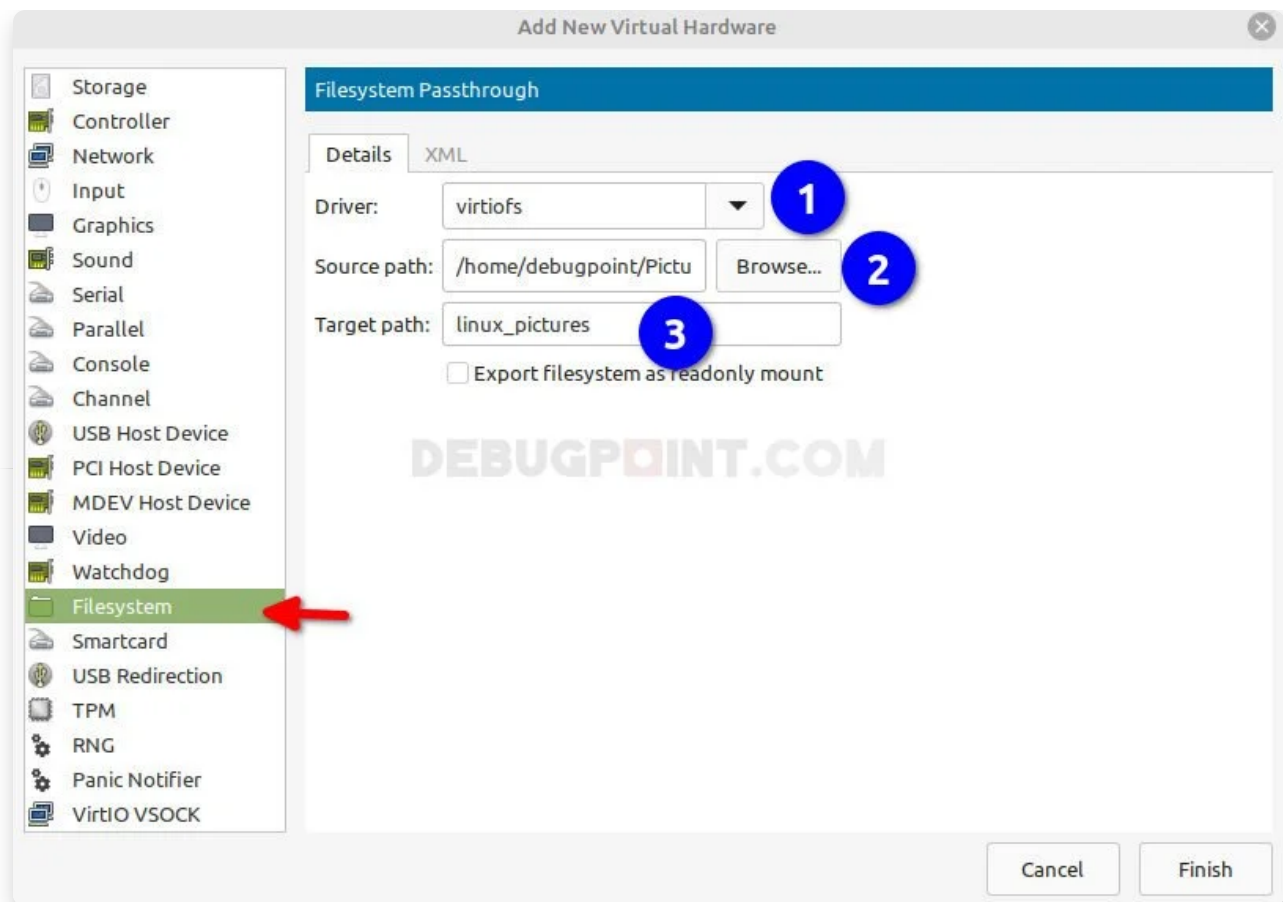
```
<memoryBacking>
  <source type="memfd"/>
  <access mode="shared"/>
</memoryBacking>
```



Enable shared memory

- Click “Add hardware” at the bottom.
- Select File system from the left panel in the add new hardware window.
- Then select Driver=virtiofs in the details tab. Click on **browse > browse local** and select the host path from your Linux system.
- In the target path, mention any name you want. It’s just a file tag which will be used during mount. This name in the target path will be mounted as Drive in Windows – My PC in Explorer.
- I have added “linux_pictures” as the target mount tag.
- So, if I want to access the Pictures folder (**/home/debugpoint/Pictures**), sample settings could be the following:
- Click Finish.





Add a file system mount for windows

The XML settings are below for the above configuration. You can find it in the XML tab.

```
<filesystem type="mount" accessmode="passthrough">
  <driver type="virtiofs"/>
  <source dir="/home/debugpoint/Pictures"/>
  <target dir="linux_pictures"/>
  <address type="pci" domain="0x0000" bus="0x05" slot="0x00" function="0x0"/>
</filesystem>
```

In the main virt-manager window, right-click on the Windows virtual machine and click Run to start the virtual machine. Make sure to click on the “show the graphical console” (monitor icon in the toolbar) – if the VM is not showing.

Set up WinFSP – FUSE for Windows

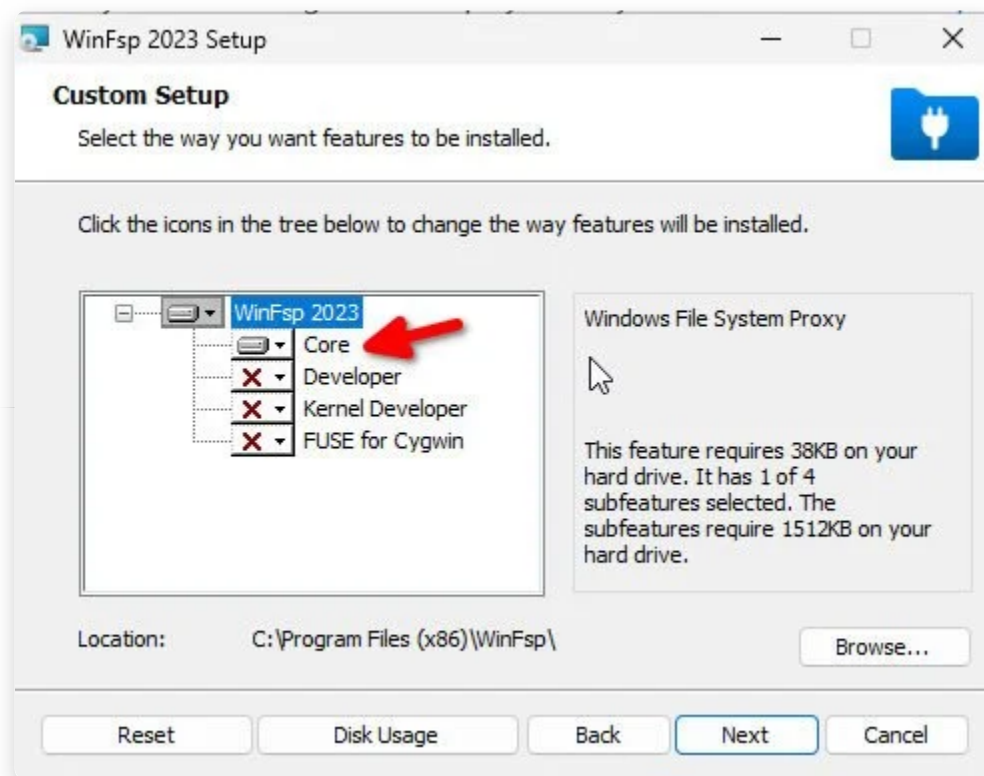
Make sure Windows virtual machine (guest) is running.



- First, we need to set up the WinFSP or Windows File System Proxy – FUSE for Windows. This enables you to mount any UNIX-like filesystem without any difficulties.
- Open the below page in the WinFSP GitHub from the guest Windows machine.
- Download the WinFSP .msi installer.

Download WinFSP installer

- Install the package on Windows virtual machine. Make sure to select “Core” while installing the package. Finish the installation.



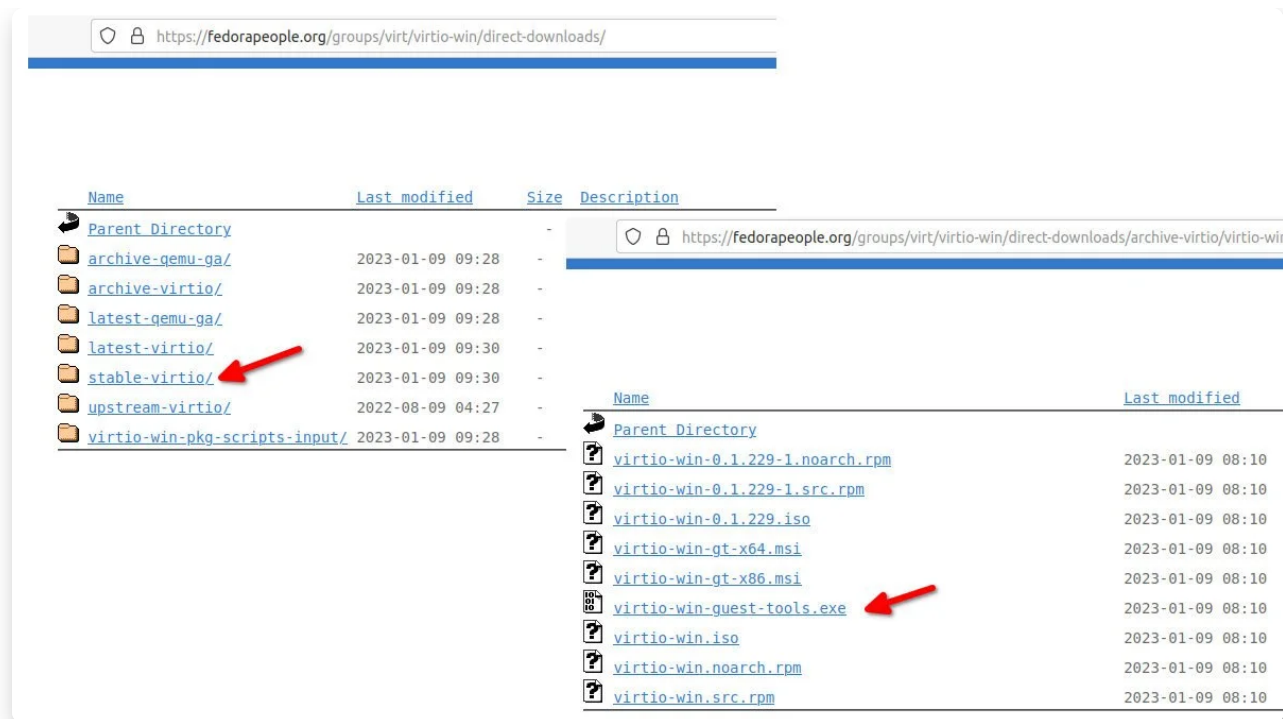
WinFSP set up

Create VirtIO-FS as a service

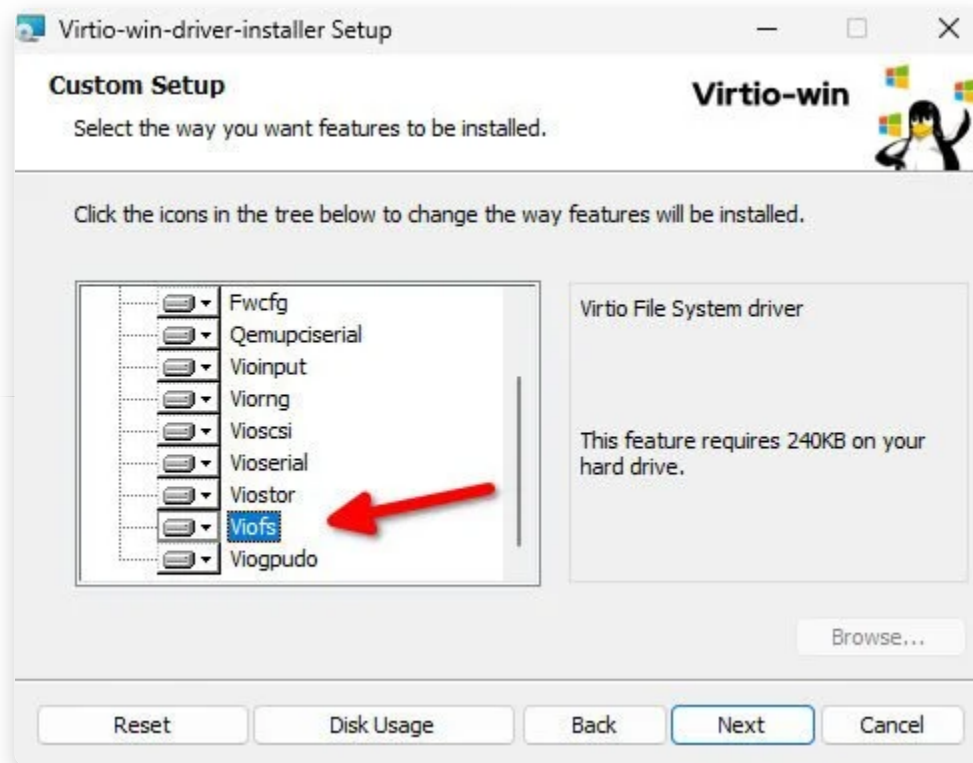
- Download the virtio-win-guest-tools.exe from the below path by going inside stable-virtio folder.

Download virtio-win-guest-tools





- Install the package on Windows virtual machine.

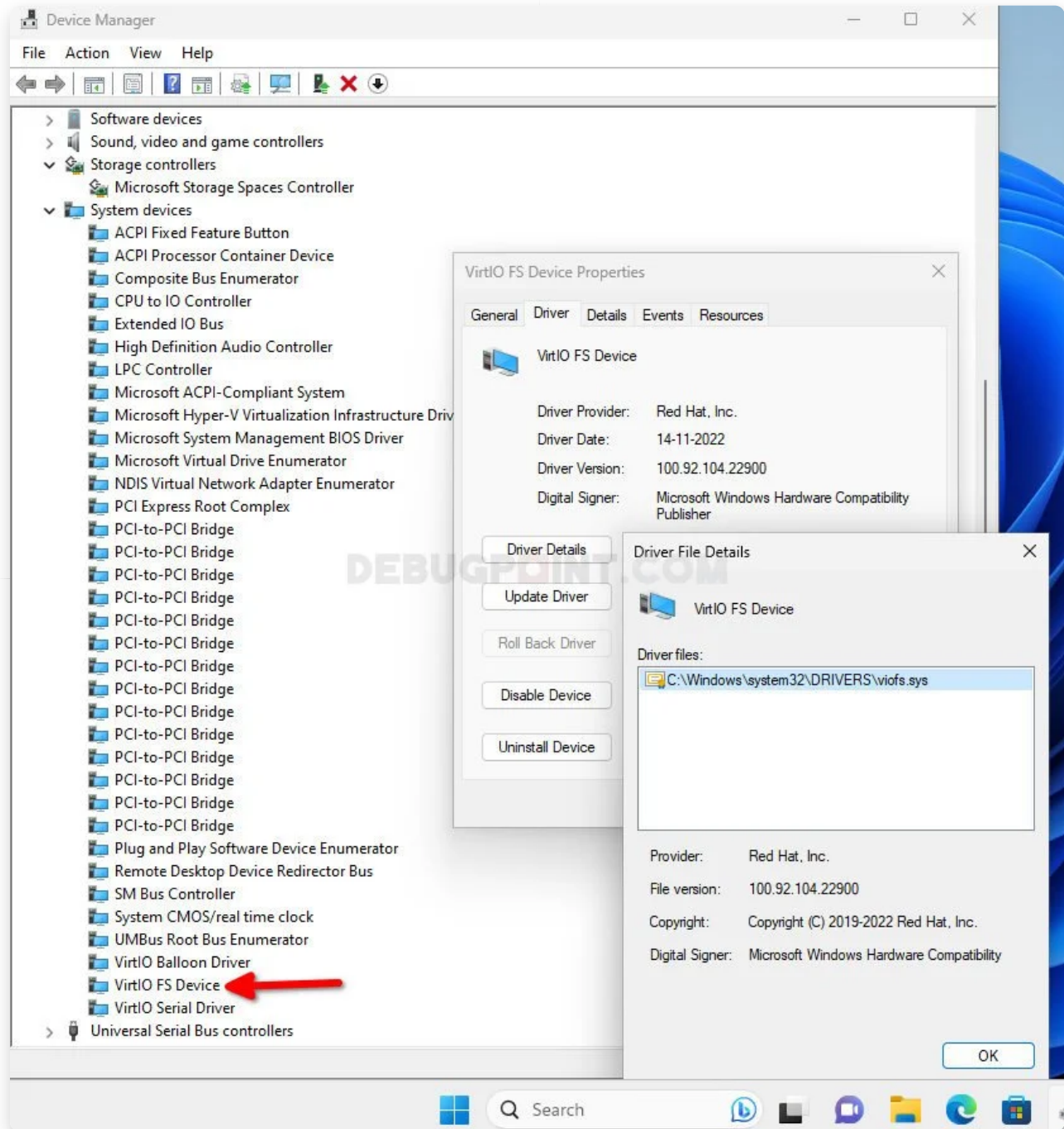


Virtio-Win-driver installation

- After installation is complete, reboot Windows virtual machine.
- After reboot, open the "Device Manager" by searching in the start menu.
- Navigate to System devices and look for "VirtIO FS Device". It should be recognized and driver should be 

signed by Red Hat.

- Note: (optional) If you see an exclamation mark i.e. driver is not detected, then follow the instructions [here](#) on how to download ISO file, mount it and manually detect the driver.



Make sure the Virt IO driver is signed and installed

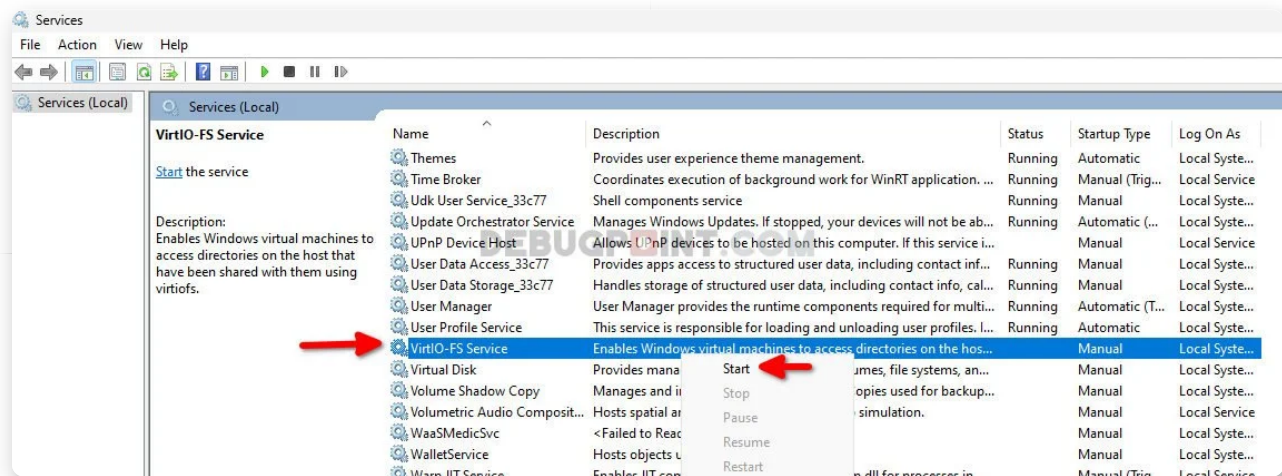
- Open the start menu and search for "Services".
- Scroll down to find out the "VirtIO-FS Service". Right-click and hit Start to start the service.
- (Optional) If you want to start the service each time you boot Windows guest, then set VirtIO-Service-FS > 

Properties > Startup type > Manual to Automatic

- Alternatively, you can run the below command from PowerShell/command prompt as admin to start the service.

```
sc create VirtioFsSvc binpath="C:\Program Files\Virtio-Win\VioFS
\virtiofs.exe" start=auto depend="WinFsp.Launcher/VirtioFsDrv" D
isplayName="Virtio FS Service"
```

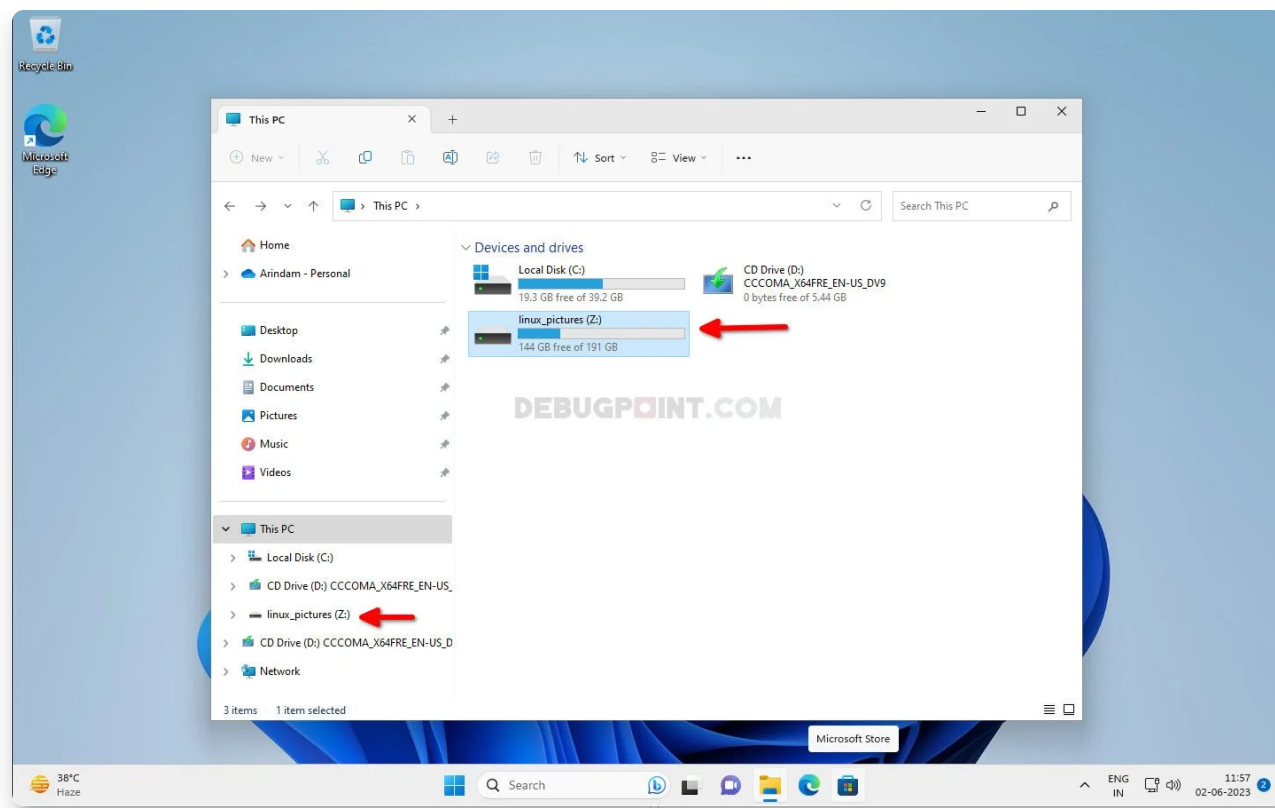
```
sc start VirtioFsSvc
```



Start the Virt IO Service

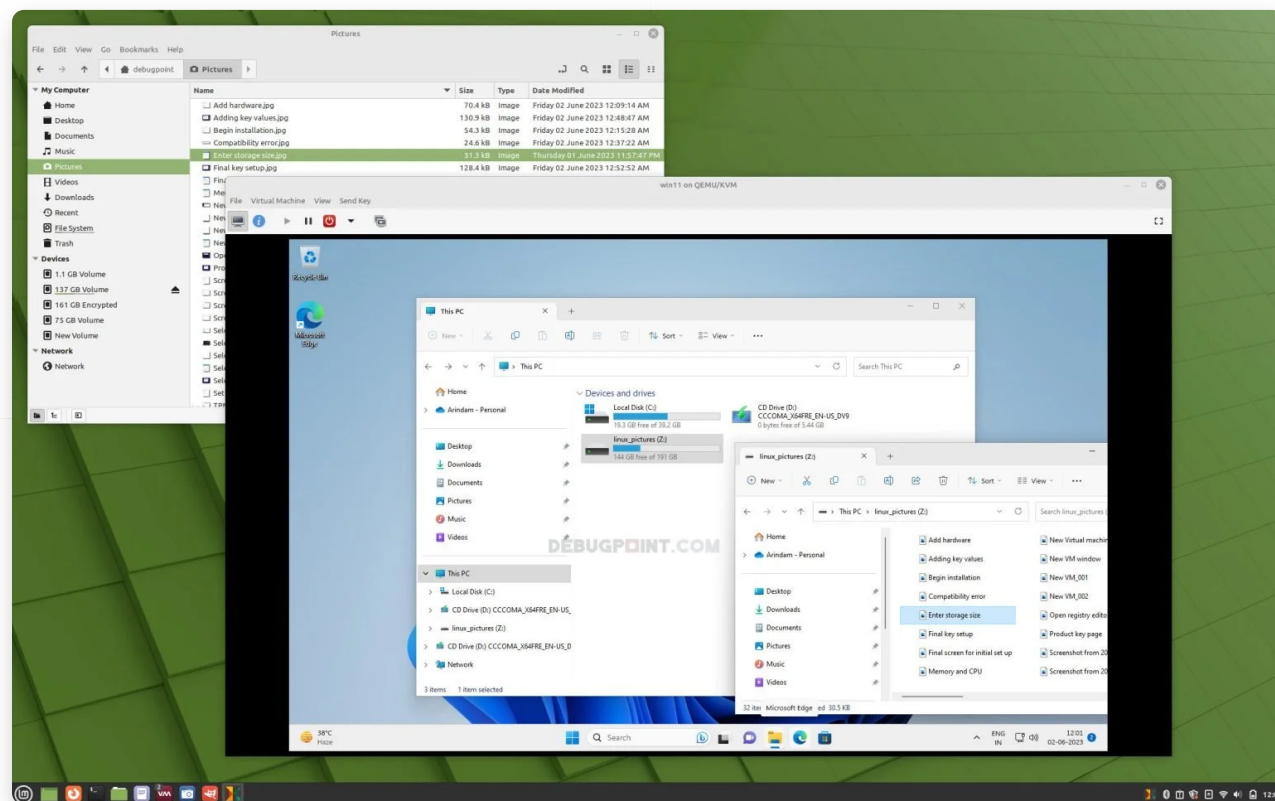
- After the service start, open Explorer, and you should see the mount tag which you have created in the first step above, which should be mapped as Z drive. See below.
- You can now access the entire Linux folder with modified permission as per your need.





The mount tag is mapped as Z drive in Windows

Here is a side-by-side comparison of the same folder accessed in Linux Mint and Windows guest.



Access and share folder in Windows guest and Linux host



Conclusion

I hope you can now able to share a folder between Windows guest and Linux host system. The above method is tested in Linux Mint for this article. It should work for Ubuntu, Fedora as well.

If the above method works, drop a comment below for the benefit of others.

References

- <https://virtio-fs.gitlab.io/howto-windows.html>
- <https://docs.fedoraproject.org/en-US/quick-docs/creating-windows-virtual-machines-using-virtio-drivers/>
- <https://github.com/virtio-win/virtio-win-pkg-scripts/blob/master/README.md>
- <https://github.com/virtio-win/kvm-guest-drivers-windows/issues/473>

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NEXT



VIRT-MANAGER

VIRTUAL MACHINE

WINDOWS 11





Posted by
Arindam

Creator and author of debugpoint.com. Connect with me via [Telegram](#), [X \(Twitter\)](#), or send us an [email](#).

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104 COMMENTS



Newest ▼



Windows 10 mit 3D Grafik als virtuelle Maschine mit Qemu & KVM - Dirk Wouters

🕒 2 days ago

[...] https://wiki.debianforum.de/QEMU/KVM_mit_GPU_Passthroughhttps://wiki.archlinux.org/index.php/PCI_passthrough_via_OVMF<https://>



www.debugpoint.com/kvm-share-folder-windows-guest<https://github.com/gnif/vendor-reset><https://github.com/virtio-win/virtio-win-pkg-scripts/blob/master/README.md><https://de.wikipedia.org/wiki/X86-Virtualisierung#Intel-VT-d><https://looking-glass.io/><https://www.spice-space.org/download.html#windows-binaries><https://github.com/virtio-win/kvm-guest-drivers-windows/wiki/Virtiofs:-Shared-file-system> [...]

👍 0 🗨️ Reply



Linux und eine WindowsVM teilen sich ein Laufwerk - Dirk Wouters

🕒 10 days ago

[...] <https://virtio-fs.gitlab.io/><https://github.com/virtio-win/kvm-guest-drivers-windows/wiki/Virtiofs:-Shared-file-system><https://www.debugpoint.com/kvm-share-folder-windows-guest/><https://github.com/winfsp/winfsp> [...]

👍 0 🗨️ Reply



Andre

🕒 21 days ago

Great, thx!

👍 0 🗨️ Reply



Judit

🕒 22 days ago

Absolut Perfect !!! Working with MX-Linux (host) and Win10.

👍 0 🗨️ Reply



Nick

🕒 1 month ago

Perfect instructions, thank you!!! Fedora 42 host + Windows 11 guest

👍 1 🗨️ Reply





Noone

🕒 1 month ago

Yes, indeed.

👍 0



Reply



Alin

🕒 1 month ago

I can see my host linux folder in my windows guest now, but when i try to move anything i get “Can’t read from the source file or disk” i’ve tried changing permissions of the folder on the linux host and windows quest but i’m stuck. Any suggestions?

👍 0



Reply



German

🕒 2 months ago

Thanks, work for me with opensuse leap 15.6..!

👍 0



Reply



Nota Person

🕒 4 months ago

It worked like a charm

👍 1



Reply



Edoardo

🕒 5 months ago

Amazing!!!

👍 1



Reply





Marcelo Tomim

🕒 5 months ago

Thank you very much! It worked perfectly for me!

👍 1 🗨️ Reply



Captain Krunch

🕒 6 months ago

Since I'm sharing a folder on a NTFS drive, I don't need WinFSP and it work. I had also to install virtiofsd manually (thanks to synaptic package manager). I wonder now how to change the drive letter in windows side from Z:\ to E:\ for instance...

👍 1 🗨️ Reply



CN das

🕒 7 months ago

Brilliant!

Thanks for this article!

All the best!

👍 2 🗨️ Reply



kevin

🕒 7 months ago

Thanks a lot for this article, it is a very good explained.

I have got it.

Have a nice day!

✎ Last edited 7 months ago by kevin

👍 0 🗨️ Reply



Vladislav

🕒 9 months ago



The easiest guide I could found. Thanks.

👍 2 🗨️ Reply



Bill

🕒 10 months ago

Thanks for this! It worked. I really appreciate the clear directions for the new user. Graphics helped.

👍 1 🗨️ Reply



Frost

🕒 10 months ago

It's working! Thanks

👍 0 🗨️ Reply



Don

🕒 10 months ago

There's a lot of stuff out there that tries to deal with this problem, but this one works. It's as good a step-by-step as you are likely to find. All the others either assume a deeper knowledge of Linux than the user may have or they leave out at least one critical step. I found this easy to follow after several weeks of trying other proposed solutions.

Caveat: For those coming over to libvirt after using VMware Workstation (I can't speak for Virtual Box), copying and pasting is not quite as easy in libvirt, but it can be done. And since VMware Workstation 16 does not play well with the newest Linux versions and Workstation 17 seems not to be available, this is a thoroughly serviceable option.

👍 0 🗨️ Reply

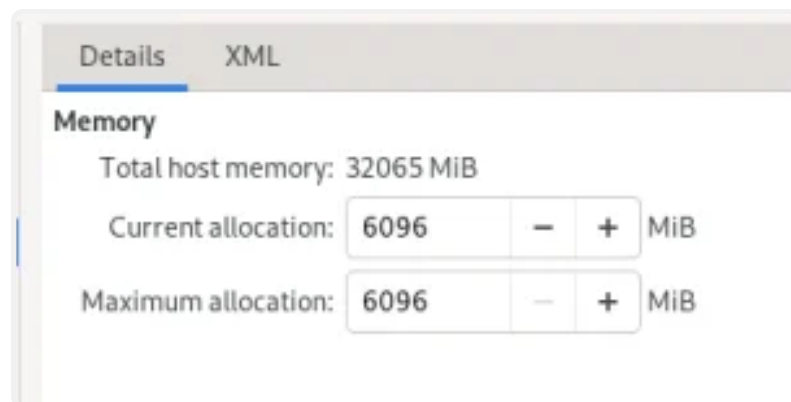


Kevin

🕒 11 months ago

"Share memory" is not an option, which makes "Driver" not an option





👍 0 🗨️ Reply



john dow

🕒 11 months ago

Thank you so much for this! Works perfectly.

👍 0 🗨️ Reply



Harold Chattaway

🕒 1 year ago

Worked like a charm! Lot of steps but well explained! the only issue i had was when I set up the file system using virtiofs driver, and then try and start the VM, I get the error “Unable to find a satisfying virtiofsd”. But after installing that package from the terminal, everything else worked!

👍 0 🗨️ Reply



Krzysiek

🗨️ Reply to [Harold Chattaway](#) 🕒 8 months ago

For completeness:

My distro does not contain virtiofsd. I’ve cloned <https://gitlab.com/virtio-fs/virtiofsd.git> built it with cargo build and copied resulting binary from target/release/virtiofsd to /usr/local/bin

Then I’ve modified filesystem section of domain.xml to look like this:



```
<filesystem type="mount" accessmode="passthrough">
  <driver type="virtiofs"/>
  <binary path="/usr/local/bin/virtiofsd"/>
  <source dir="/home/user/tmp"/>
  <target dir="home_tmp"/>
  <alias name="fs0"/>
  <address type="pci" domain="0x0000" bus="0x06" slot="0x0
0" function="0x0"/>
</filesystem>
```

👍 0 🗨️ ➡️ Reply



F Samba

🗨️ Reply to [Krzysiek](#) ⌚ 4 months ago

After many, many, many hours across many different attempts to locate vfio filesharing shangri-la, yours is the first mention i've EVER seen of the *binary path* entry. Hell, I'd even cloned and built virtiofsd several times but nothing would ever work. Though your handle implies residency in some manner of -stan country I'm still half-tempted to track you down and buy you a \$beverage_of_choice.

👍 0 🗨️ ➡️ Reply



Aleksei

⌚ 1 year ago

Hi! It didn't work. I add in my VM file system. I have set driver as 'virtiofs' and set path and tag name. Then I do Apply and when I'd try to start my VM I get an error "Unable to find a satisfying virtiofsd"

👍 0 🗨️ ➡️ Reply



Harold Chattaway

🗨️ Reply to [Aleksei](#) ⌚ 1 year ago

i had the same issue.. just posted that above...



Solution was to just install that package with:

```
sudo apt install virtiofsd
```

👍 1 🗨️ Reply



Kenny Dave

🕒 1 year ago

Just a quick note: Upgrading from Mint 21 to 21 (so from Ubuntu 22 base to 24) removed Virtiofs. And it's not available in the Software Manager. But Virtiofsd is, installing that makes the shared folder work again.

👍 1 🗨️ Reply



Ruwen

🕒 1 year ago

Hi, thanks for the great guide, worked perfectly!

👍 0 🗨️ Reply



Erika

🕒 1 year ago

Hej!

Thank you for a very nice tutorial.

I managed to mount the folde and on "This PC" tab I can see how much space it takes.

When I open the folde, however, it says it is empty.

Do you have any idea why and how I can solve it?

Regards,

Erika

👍 0 🗨️ Reply



flex

🕒 1 year ago

Yes, agreed, the only one that actually works!



Thanks!

👍 0 🗨️ Reply



atax

🕒 1 year ago

Finally, a guide that works 😊

Thx!

👍 1 🗨️ Reply



mark

🕒 1 year ago

Oh wow, thank you! It worked perfectly with BigLinux Host and w11 guest! TThank you!

👍 0 🗨️ Reply



von Jutta

🕒 1 year ago

Thank you... I owe you one! Have a nice day!

👍 0 🗨️ Reply



hans

🕒 1 year ago

Hello, Arindam.

This is a super cool tutorial.

It works very well and the shared folder that appears in the guest's windows explorer is fully usable.

It is not noticeable that it is a shared folder.

Thank you.

But it necessary for me to include several separate paths.



/home/hans/music

/home/hans/video

/media/hans/Other-Partition-on-internel-Data-Drive

So I have created a separate virtual file system for each of these paths in the Virt-Manager settings for this VM.

But in the Win11 guest, only the directory created first is displayed as a drive (Z) in Explorer.

The other shared folders are not mounted.

What do I have to do to gain access to more than one virtual directory from the guest?

Regards

Hans

Translated with DeepL.com (free version)

👍 0 🗨️ ➡️ Reply



Arindam Author

🗨️ Reply to [hans](#) ⌚ 1 year ago

This is a problem we could not resolve. The only option is create one parent folder which you mount. Then have windows shortcut to other folders.

👍 0 🗨️ ➡️ Reply



hans

🗨️ Reply to [Arindam](#) ⌚ 11 months ago

Hello, Arindam

Thank you for your answer.

I also had the idea with the parent folder.

The symlinks placed there can also be recognized in Windows.

But unfortunately windows is not able to follow symlinks.

What can I do?

👍 0 🗨️ ➡️ Reply





smol chungus

Reply to [hans](#) 9 months ago

you can make windows symlinks

0

Reply



Spidrena

1 year ago

Thanks,
Works perfectly on my Fedora 40 fresh install.

0

Reply



strongfire

1 year ago

Works on Linux Mint Edge as well!

0

Reply



Stephen P. Molnar

1 year ago

I'm happy to report that I think I may have solved the problem.

Computer Management -> Services and Applications ->
VirtIO-Service-FS -> Properties -> Startup type ->
Manual -> Automatic

Now, when I restart the guest the Z: drive is accessible.

1

Reply



Arindam

Author

Reply to [Stephen P. Molnar](#) 1 year ago

Thanks! I have added this step above as an additional item.



 1   Reply**Stephen P. Molnar**

🕒 1 year ago

I am running Debian Bookworm as the Host and have installed Windows10-22H2 as the guest. The first time I completed the tutorial I was able to transfer files between the guest and host. However, after closing and restarting the guest that capability was gone. I tried the following:

```
PS C:\Windows\system32> sc create VirtioFsSvc binpath="C:\Program Files\Virtio-Win\VioFS\virtiofs.exe" start=auto depend="WinFsp.Launcher/VirtioFsDrv"
DisplayName="Virtio FS Service"
```

```
Set-Content : A positional parameter cannot be found that accepts argument
'binpath=C:\Program
Files\Virtio-Win\VioFS\virtiofs.exe'.
```

```
At line:1 char:1
```

```
+ sc create VirtioFsSvc binpath="C:\Program Files\Virtio-Win\VioFS\virt ...
```

```
+ ~~~~~
```

```
+ CategoryInfo          : InvalidArgument: (:) [Set-Content], ParameterBindingException
+ FullyQualifiedErrorId :
```

```
PositionalParameterNotFound,Microsoft.PowerShell.Commands.SetContentCommand
```

```
PS C:\Windows\system32> sc start VirtioFsSvc
```

```
PS C:\Windows\system32>
```

I would greatly appreciate your comments on this problem.

Thanks in advance

 0   Reply**bright alexander**

🕒 1 year ago

Thanks.

 0   Reply



Victor Rafael

🕒 1 year ago

Excellent! Thanks a lot!

👍 0



➡ Reply



Randy Strong

🕒 1 year ago

Thank you thank you thank you!!!

👍 0



➡ Reply



Kemran

🕒 1 year ago

Thank you very much, really really helpfull

👍 0



➡ Reply



Pmcneil

🕒 1 year ago

Thanks, works for me and, may I say great write up.

Cheers

👍 0



➡ Reply



Esteban

🕒 1 year ago

Thanks Arindam, it worked smoothly in my Debian (Debian GNU/Linux 12 (bookworm) linux distro with Windows 11 guest.

👍 0



➡ Reply



**sidhu**

🕒 1 year ago

Thanks for the tutorial. After installing both winscp and viofs from virtio-win-guest-tools.exe, 'Virtio FS Device' doesnot show up in system devices. Any advice. Host is Debian, VM is Windows Server 2022.

✎ Last edited 1 year ago by sidhu

👍 0 🗨️ Reply

**Arindam**

Author

🗨️ Reply to sidhu 🕒 1 year ago

Try rebooting the guest Windows VM once more.

👍 0 🗨️ Reply

**Boby**

🕒 1 year ago

This works, but I'm running into some issues (NixOS host, Win 11 guest).

Some apps completely refuse to launch from that drive (e.g. Wallpaper Engine).

Some apps can't properly write data to it (e.g. Microsoft Office suite (Word/Excel/...) can't save files / Python pip can't install packages).

Some apps get confused sometimes (e.g. opening .txt file in Windows Notepad may open multiple tabs for the same file).

Also, there seems to be no way of changing the drive letter?

👍 0 🗨️ Reply

**Boby**

🗨️ Reply to Bobby 🕒 1 year ago

Seems like changing the drive letter is possible: [Virtiofs: Shared file system · virtio-win/kvm-guest-drivers-windows Wiki · GitHub](#)

There're also limitations listed at the bottom of the page.



👍 0 🗨️ Reply



Arindam Author

🗨️ Reply to [Boby](#) ⌚ 1 year ago

Are you trying to write to the Linux share (which you mounted as a drive) directly from Microsoft office suites?

I need to try these use cases once. And report here if I found any issues/solutions. thanks for reporting

👍 0 🗨️ Reply



Boby

🗨️ Reply to [Arindam](#) ⌚ 1 year ago

Yes. For example, I can open an .xlsx file from my share in Excel 2021, do some changes, and upon trying to save back to the share it'll corrupt the file and Excel will complain that the file is in use.

👍 0 🗨️ Reply



Willie

🗨️ Reply to [Boby](#) ⌚ 1 year ago

Same here. Maybe it could be a problem with apparmor/selinux rules?

👍 0 🗨️ Reply



aruro

⌚ 1 year ago

Hi, when trying to add the filesystem I get an error:

“virtiofs is not yet supported in session mode”

what's going on?

👍 0 🗨️ Reply





Arindam Author

Reply to [aruro](#) 1 year ago

Looks like your libvirt conf issue. Try below commands and then reboot, then try.

```
sudo usermod -a -G libvirt
sudo systemctl enable libvirtd
sudo systemctl start libvirtd

reboot
```

0 Reply



apokryfos

1 year ago

Thanks for this. Most of the other sources on the internet seem to be insanely outdated.

0 Reply



Joseph

1 year ago

Thank you so much for this easy to understand and thorough tutorial.
I have looked for a way to share files between my Linux host and Windows guest.
Your guide was the clearest and most accurate.
Thank you! Very much appreciated!

1 Reply



JonSlow

1 year ago

Nice and easy.
Thank you.

0 Reply





JonSlow

Reply to JonSlow 1 year ago

Fedora

0

Reply



MrUmbrella

1 year ago

I can't install virtio-win-guest-tools.exe.

I receive an error when I do so.

My error

There is a problem with this Windows Installer package. A program required for this install to complete could not be run. Contact your support personnel or package vendor.

Log



://privatebin.io/?

9782fefe6b3d0b7b#8DQApKYZhRoPkobCFqv1Cc3mnjiuVi6JGRJwoKenCdP

Last edited 1 year ago by MrUmbrella

0

Reply



Arindam

Author

Reply to MrUmbrella 1 year ago

Looks like a reboot is needed. Can you reboot your Windows guest and try again to install?

0

Reply



**Svetoslav**

🕒 1 year ago

Worsk on Debian as well. Huge thanks.

👍 0 🗨️ ➡️ Reply

**Foofa**

🕒 1 year ago

homie deserve a nobel prize

👍 2 🗨️ ➡️ Reply

**jomper16**

🕒 1 year ago

Works great on Windows 11 VM inside Nobara Linux. Thank you for the tutorial 😊

👍 1 🗨️ ➡️ Reply

**Willie**🗨️ Reply to [jomper16](#) 🕒 1 year ago

Hi, I'm on Nobara too, did u make any changes to this guide to make it work? I have issues with some programs that can't write or function properly, did you experience any problems?

👍 0 🗨️ ➡️ Reply

Load More Comments

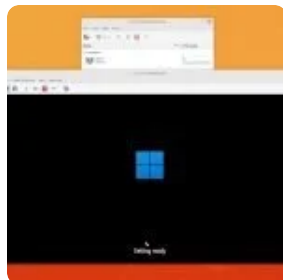


How to Install Latest Kernel in Ubuntu, Linux Mint

by Arindam



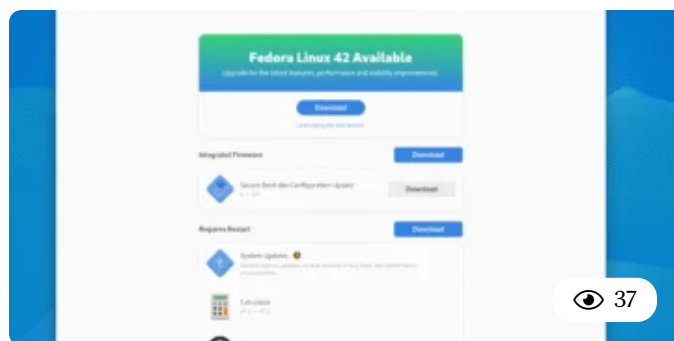
NEXT POST



Install Windows 11 as Guest in Ubuntu using virt-manager

by Arindam

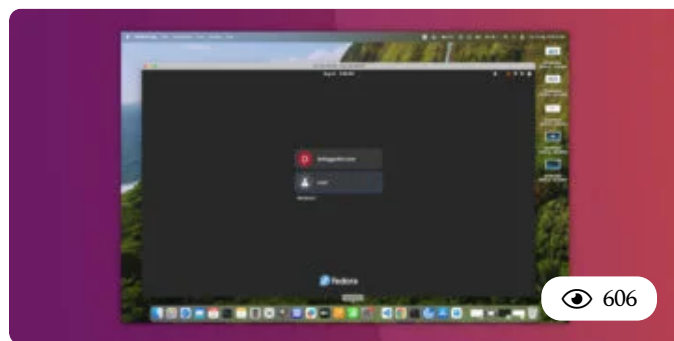
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