Dual boot from

Andrew Gregory performs quite a simple task, and manages to hit every possible snag along the way – so you don't have to!

Our expert

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Perennial newbie Andrew has been making words look nice since 2003, and breaking things in Linux since 2005.

This issue, we're answering a question set by Alan Vamplew, who wanted to know how to get rid of Fedora 18, which he'd set up to boot from an external hard disk, and replace it with a dual-boot system running Fedora 19 and Mint 15. Thanks for writing Alan!

One of the advantages of booting from an external device is that you get your own setup, wherever you are. A USB flash drive is often too small to move lots of files, around so an external hard drive is the next logical solution.

VirtualBox enables us to mess about without putting our base system at risk, so that's what we're going to use here.

❯ **Proto-success: Fedora's installer recognises the external drive, so we can use it as a target to install Fedora 19.**

There is another aspect to VirtualBox that makes it attractive for this tutorial, and that's that you can use it to install from ISO files – downloaded disc images rather than physical discs – which is handy when your DVD drive is broken.

The first thing that we need to do is get *VirtualBox* talking to our USB external hard drive. If you've installed the stock *VirtualBox* installation from your distro's repositories, you most likely installed the **virtualbox-ose** package (OSE as in open source edition). While this is fine for most uses, it doesn't include the USB functionality that the proprietary version has. To prevent clashes, go into your package manager, search for 'Virtualbox' and opt for Complete Removal, then go to **www.virtualbox.org** and download the latest version for your distro from the **VirtualBox 4.2.16 for Linux hosts** link.

Once you have *VirtualBox* installed, go back to **www.virtualbox.org/wiki/Downloads** and click on the link near the top of the page to install the extension pack, which provides support for USB 2.0 devices.

Now, go back to *VirtualBox* and set up a virtual machine. Once you've created the VM, click on the USB tab. What's this? It's an error message, telling us: *"VirtualBox is not currently allowed to access USB devices. You can change this by adding your user to the 'vboxusers' group. Please see the user manual for a more detailed explanation."*

Error message

This is a classic example of the unhelpful error message. There's no link to the user manual under the Help tab, so you have to go to Documentation in **virtualbox.org** to find the User Manual, which is a PDF with 335 pages running to a length of 156,609 words.

It turns out that to add yourself as a user to the vboxusers group, we have to open a terminal and enter:

```
sudo usermod -aG vboxusers <your username>
```

This will give you permission to use *VirtualBox* to access the hardware plugged into your physical machine. Log out, then back in to effect the change.

If you start up a virtual machine now, and plug in a USB device, you should be able to see it as a volume in the file manager of the virtualised Linux distro. Except that it's not quite as simple as that; it turns out that we have to explicitly enable the USB connector.

Back in *VirtualBox*, go into the USB tab, tick the boxes next to Enable USB Controller and Enable USB EHCI Controlling. Underneath that, on the right-hand side, there's an icon that looks like a USB stick with a green plus sign on it. Clicking on this will give you a list of all USB devices plugged into the machine – in our case, a webcam and a USB to SATA adaptor. The USB to SATA adaptor is the one we want, so with that selected we should, at last, be able to connect to a USB device with our virtual machine. Now that's working, we can turn our attention to Alan's question.
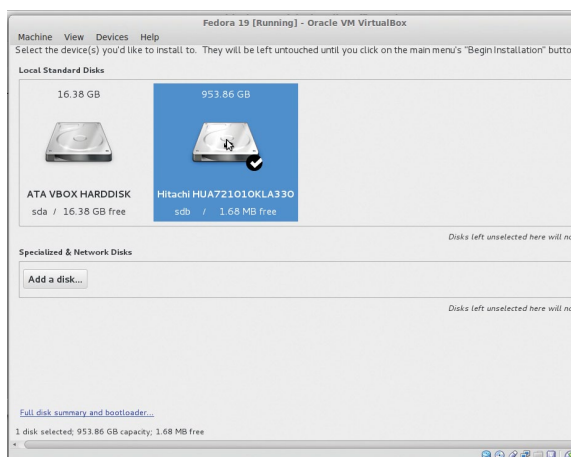
an external HDD

Dual boot

The good news is that you don't have to do anything special to get rid of Fedora 18; as long as you tell it to, the Fedora 19 and Mint installers will overwrite anything on the disk, so you'll have the full space on the hard drive to play with.
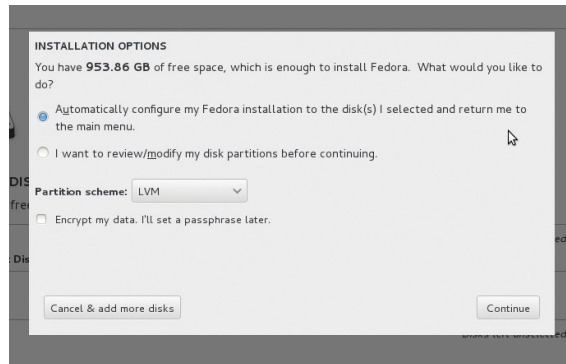
To begin, boot Fedora 19 and click the icon to start the installation process. You'll be asked where you want to install Fedora: either on your local drive, or on the external hard drive, so select the external drive and click Done at the top of the screen.

In the Reclaim Disk Space screen, highlight the hard disk and click Delete at the bottom of the window, then click on Reclaim Space. This will clear space for Fedora 19, so you can proceed with the installation. You'll be asked whether you want to accept the automatic storage configuration, or create your own. It's OK to accept the default here, because Fedora automatically creates a separate **/boot**, root (**/**) and **/home** partition. At this stage, make sure you select Standard Partition, rather than LVM, because otherwise you'll have problems getting the Linux Mint system (which we're going to install next) to work with Fedora. We wasted loads of time at this stage, and it's all because Fedora is just too clever – Logical Volume Management (LVM) may be more efficient if you only have one distro set up, but getting it to work with other systems is tricky.

Virtual machine

After you've created a root password and a normal user account, make a cup of tea and wait for the installer to copy the files across to the hard drive. Because all the data is going across the USB connection, and Fedora 19's DVD edition is a pretty large 2.9GB, this may take a while.

When you're done, create a virtual machine for Linux Mint, remembering to add a USB filter for the external hard drive. You'll be asked whether you want to unmount the **sdb** partition (this is the external drive), which you do, because it's
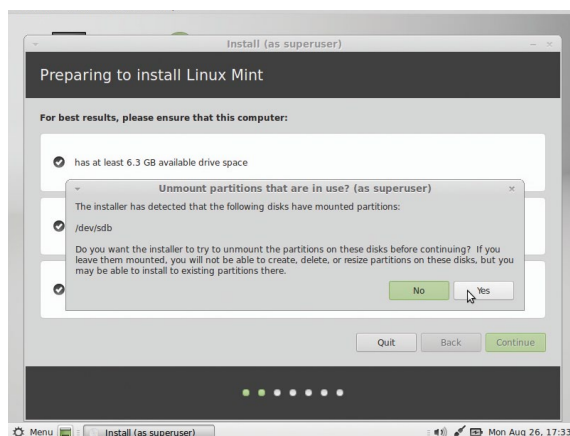

only possible to make changes to an unmounted system. After asking you for language and keyboard preferences, the installer will notify you that there's a Fedora installation on the disk, and ask what you want to do. Create partition for the Mint installation, using the tools in the Mint installer.

One reason for doing it this way round (Fedora first, then Mint) is that Mint's partitioning tool is a lot more user-friendly; just make sure that the device for the bootloader installation is set to the external hard disk rather than the laptop or virtual machine. Another good reason is that Fedora, as with the LVM issue noted earlier, isn't the greatest at playing nicely with other systems. If you were to install Mint first, then Fedora, the latter tends to delete the other distro from the menu of distros to choose from at boot time (the files are still all there, but the entry needed to get into the other system is mysteriously hidden). Mint is much more co-operative. There are ways to fix this problem with Fedora, but as we're aware of it from the start we can avoid it completely.

We found that the resulting hard drive, with Mint and Fedora dual-booting, wasn't recognised in *VirtualBox*, but it was picked up by our laptop's BIOS, which enabled us to boot into either system. **LXF**

❯ **Alert! Choose Standard, rather then LVM partition, if you want Mint to be able to share a /home partition with Fedora.**

❯ **You can't resize a live filesystem, so you have to click Yes to unmount the Fedora disk before you can install Mint.**
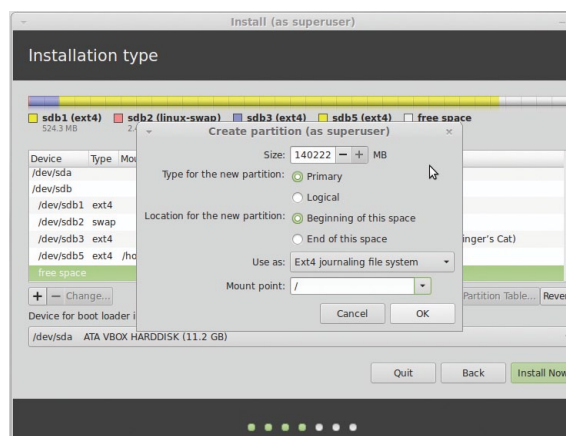
❯ **In the Mint partitioner, shrink Fedora's /home partition and create a / (root) partition for Mint.**