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Accessing USB Flash Drive from VMWare ESXi

Sometimes you may need to directly connect an external USB flash drive (stick) to your VMWare ESXi. For example, you may need it to copy a virtual machine image to send it to a remote office (if the WAN connection between offices is slow or highly loaded), to backup VM files to an external USB media, to copy an ISO VM image to the ESXi host (when it is better not to overload your LAN). In this article we'll show how to connect a USB flash drive/stick to an ESXi host as a VMFS datastore or to copy files from a FAT32/NTFS partition directly.

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How to Connect an External USB Drive as a VMFS Datastore in

VMWare ESXi?

Suppose you want to connect a USB drive to an ESXi host and create a VMFS datastore on it to copy/m files and images of virtual machines conveniently.

Officially, VMWare doesn't support external USB drives as VMFS datastore. However, it works and y can use it. Also, ESXi doesn't support USB devices larger than 2 TB.

In VMWare ESXi 6.5 and higher, the method of connecting a USB device to a host was changed. Earlier drivers (xhci, ehci-hcd, usb-uhci, usb-storage) were used. Then a single USB driver (**vmkusb**) replaced them.

1. [Connect to the ESXi host console over SSH](#);
2. Stop the **USB arbitrator**. The service is used to [passthrough a USB device from an ESXi host to virtual machine](#) (USB Passthrough): `# /etc/init.d/usbarbitrator stop`

If you don't want the USB arbitrator to start after the host restart, run the command: `# chkconfig usbarbitrator off`

3. Connect an empty USB drive to your ESXi host;
4. You can identify the name of the USB drive in the log: `/var/log/vmkernel.log` or using `/dev/disks:`

`/dev/disks/`

The USB disk is usually named **mpx.vmhbaX** or **naa.X**.



```
[root@v _ 1:~] /etc/init.d/usbarbitrator stop
UsbUtil: Releasing all USB adapters to VMkernel
watchdog-usbarbitrator: Terminating watchdog proc
usbarbitrator stopped
[root@v _ .:~] ls -lah /dev/disks/
total 17885834952
```

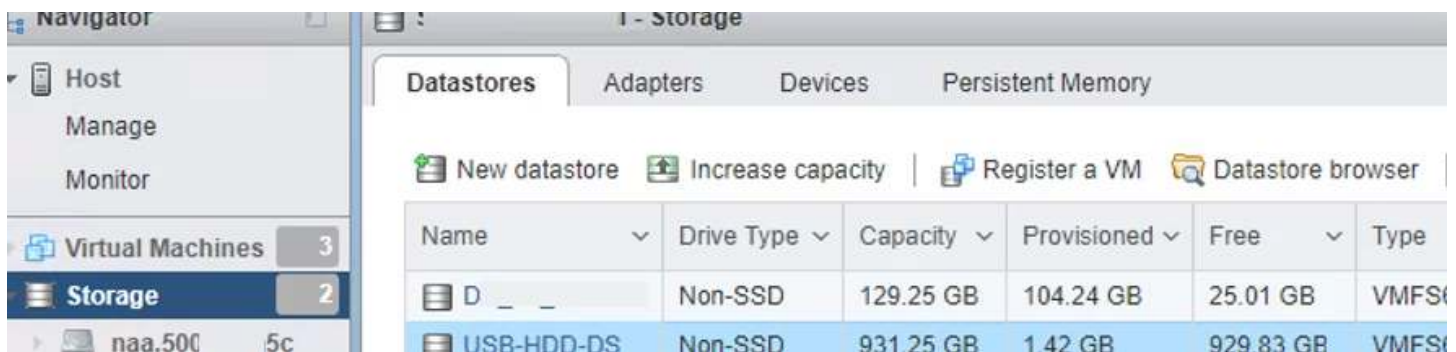
5. Create a GPT (GUID) partition table on your USB drive: `# partedUtil mklabel /dev/disks /naa.50000000000000001 gpt`
6. Then create a partition on your drive manually. To do it, specify the first and the last sector on t drive. List the information about the disk sectors: `# partedUtil getptbl /dev/disks /naa.50000000000000001`

```
[root@_____:~] partedUtil getptbl /dev/disks/t
121597 255 63 1953458176
```

7. The first sector is always **2048**. The size of the last sector is calculated based on the getptbl ou my example, it is calculated as follows: $121597 * 255 * 63 - 1 = 195345804$

If there is a partition on the drive, you can remove it: `# partedUtil delete /dev/disks /naa.5000000000000001 1`

8. Create an VMFS partition (the GUID of such a partition is always AA31E02A400F11DB9590000C2911D1B8): `# partedUtil setptbl /dev/disks/naa.500000000000000 "1 2048 195345804 AA31E02A400F11DB9590000C2911D1B8 0"`
9. Then you can format the partition with the VMFS6: `# vmkfstools -C vmfs6 -S USB-HDD-DSDatastore /dev/disks/naa.5000000000000001:1`
10. Open the graphic VMWare vSphere Client and go to **Storage**. Your USB drive will appear in the available datastores.



How to Copy Files from USB Drive (NTFS/FAT32) to ESXi Directly?

If you don't want to change a file system on your USB drive to VMFS (there is a little trick [to access VM Windows](#)), you can access files on NTFS or FAT32 formatted partitions from the ESXi console and copy you want.

Disable the USB arbitrator service before connecting a USB drive to the ESXi host.

To access FAT32 formatted partitions from ESXi, you can use the **mcopy** tool. In order to access an NTFS partition on a USB drive, use **ntfscat**. Ext3 file system is also originally supported. The basic restrictions are:

- **FAT32** and **Ext3** partitions are available to read and write;
- **NTFS** drives are read-only (it means that you can copy data from an NTFS USB drive to an ESXi but not vice versa).

To copy a file from a FAT32 USB device to ESXi, use this command:

```
# /bin/mcopy -i "/dev/disks/naa.5000000000000001:2" ::/some.iso /vmfs/volumes/12345678-ddd654321-43:aaaabbbb2222/iso/some.iso
```

where `/some.iso` is a path to a file on your USB drive. The second path shows where to copy the file on the ESXi host (for example, to VMFS datastore directly).

To copy a file back from ESXi to USB, just swap the paths in the command.

The main FAT32 problem is that it doesn't support files over 4 GB. So it is quite hard to copy VMDK files for virtual machines. As a rule, you can split a source file into some parts before copying (of 3 GB, for example).

```
# split -b 3221225472 /vmfs/volumes/xx/vm1/vm1.vmdk
```

Then you can copy all parts to a USB drive and join them on a target ESXi host:

```
# cat vm1* > vm1.vmdk
```

To copy a file from an NTFS formatted USB drive to an ESXi host, the following command is used:

```
# /bin/ntfscat -f /dev/disks/naa.5000000000000001:2" some.iso > /vmfs/volumes/12345678-ddd654321-43:aaaabbbb2222/iso/some.iso
```

You can only copy files to ESXi, not back. NTFS cannot be written with ntfscat.

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