

Ubuntu - Mount a secondary drive for Expedition

Goal: Add a second hard drive to Expedition to expand the log storage

Steps to be completed:

1. Add a second drive
2. Mount and format the new drive
3. Create a new directory on the new drive and configure it as the 'M.LEARNING' path

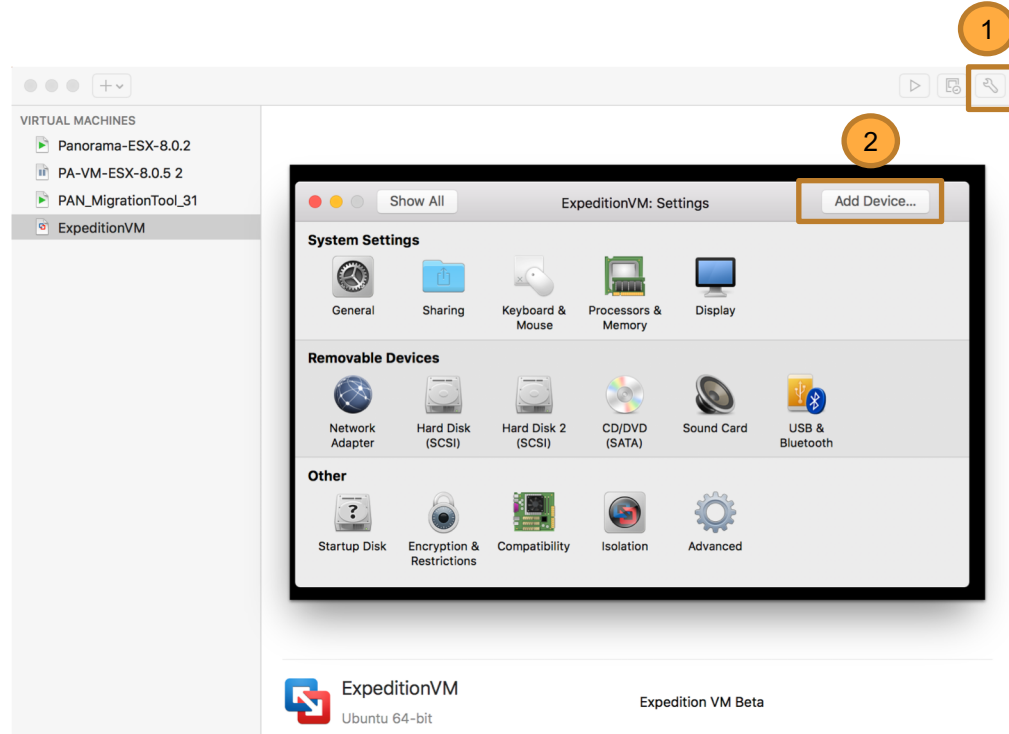
Note: The VM must be powered down to add the second drive.

1. Add a second drive

From your hypervisor management console, add a second drive to the Expedition VM.

The example in the document will use VMWare Fusion as the hypervisor. Similar options to add a second hard drive are available for VMWare Workstation and also ESXi 5.x and 6.x.

With the Expedition powered down, add a second drive.

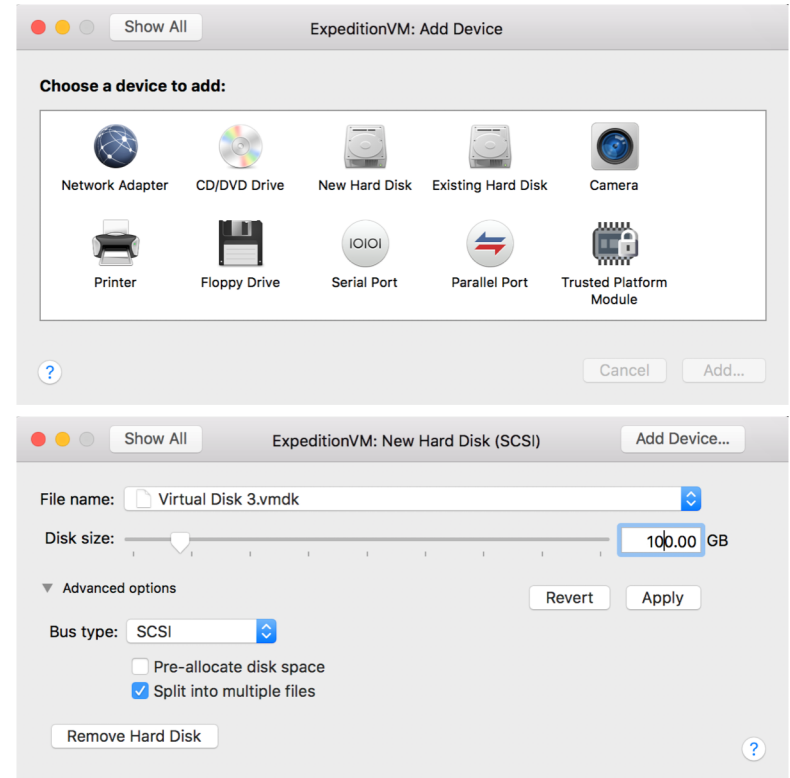


1. Add a second drive

Choose the new device: “New Hard Disk”

For Fusion and Workstation the disk type will be a of type .vmdk. Set the size of the disk to be added and choose Bus type of SCSI.

Click ‘Apply’



1. Add a second drive

You should now see 2 hard disks configured to your Expedition VM.

The next steps will be to format and mount the new drive.

The Expedition VM should be powered on at this point to format and mount the new hard disk.



2. Mount and format the new drive

Log into the Expedition CLI via SSH.

Default username and password are:

Username: 'expedition'

Password: 'paloalto'

Issue the command: `sudo fdisk -l`

Disk /sda is the existing disk

Disk /sdb is the new drive

```
expedition@Expedition:~$ sudo fdisk -l
Disk /dev/sda: 100 GiB, 107374182400 bytes, 209715200 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xe5054db8
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sda1	*	2048	999423	997376	487M	83	Linux
/dev/sda2		1001470	41940991	40939522	19.5G	5	Extended
/dev/sda5		1001472	41940991	40939520	19.5G	8e	Linux LVM

```
Disk /dev/sdb: 50 GiB, 53687091200 bytes, 104857600 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xf98dc7ff
```

2. Mount and format the new drive

2.1 View the disk

```
~$sudo fdisk -l
```

2.2 Format the disk

```
~$sudo fdisk /dev/sdb
```

```
Welcome to fdisk (util-linux 2.31.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
The size of this disk is 3.7 TiB (4000787030016 bytes). DOS partition table form
at cannot be used on drives for volumes larger than 2199023255040 bytes for 512-
byte sectors. Use GUID partition table format (GPT).

Created a new DOS disklabel with disk identifier 0x17227a34.

Command (m for help):
```

Note: the process to format and mount use the steps documented from the website:

<https://medium.com/@sh.tsang/partitioning-formatting-and-mounting-a-hard-drive-in-linux-ubuntu-18-04-324b7634d1e0>

2. Mount and format the new drive

If we enter **m** for help, we can see the command list.

To partition, **enter n**. I then just choose primary by **entering p**. And **enter 1** for only one partition number.

```
Help:
DOS (MBR)
a  toggle a bootable flag
b  edit nested BSD disklabel
c  toggle the dos compatibility flag

Generic
d  delete a partition
F  list free unpartitioned space
l  list known partition types
n  add a new partition
p  print the partition table
t  change a partition type
v  verify the partition table
i  print information about a partition

Misc
m  print this menu
u  change display/entry units
x  extra functionality (experts only)
```

2. Mount and format the new drive

Enter **w** to write the partition table to disk.

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-4294967295, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-4294967294, default 4294967294):

Created a new partition 1 of type 'Linux' and of size 2 TiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

cnn@cnn:~$
```


2. Mount and format the new drive

Format the newly partitioned
harddisk:

```
~$sudo mkfs.ext4 /dev/sdb
```

```
cnn@cnn:~$ sudo mkfs.ext4 /dev/sdb
mke2fs 1.44.1 (24-Mar-2018)
Found a dos partition table in /dev/sdb
Proceed anyway? (y,N) y
Creating filesystem with 976754646 4k blocks and 244195328 inodes
Filesystem UUID: bd62e33e-d38c-41b7-94f1-a5b7c9d6e791
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
    102400000, 214990848, 512000000, 550731776, 644972544

Allocating group tables: done
Writing inode tables: done
Creating journal (262144 blocks): done
Writing superblocks and filesystem accounting information: done

cnn@cnn:~$ █
```

2. Mount and format the new drive

2.1 Mount and create a mount point

```
~$sudo mkdir /hdd
```

2.2 Edit /etc/fstab

Open /etc/fstab file with root permissions:

```
~$sudo vim /etc/fstab
```

And add following to the end of the file: /dev/sdb1 /hdd ext4 defaults 0 0 (this will mount the new disk on bootup)

2.3 Mount partition

```
~$sudo mount /hdd
```


3. Create a new directory on the new disk and configure it as the 'M.LEARNING' path

Create a directory on the new disk.

Add the appropriate and ownership and permissions to the new directory

```
~$chown www-data:www-data  
new-directory  
~$chmod 755 new-directory
```

From the Expedition UI, add the new directory as the path for the M.LEARNING configuration

The screenshot shows the Expedition UI Settings page for the 'M.LEARNING' configuration. The page is divided into two main sections: 'SERVER INFORMATION' and 'TEMPORARY DATA STRUCTURE FOLDER'. The 'SERVER INFORMATION' section contains a description of the Expedition Machine Learning VM (ML) and a text input field for the 'Expedition ML Address' with the value '192.168.252.136'. The 'TEMPORARY DATA STRUCTURE FOLDER' section contains a description of the folder's purpose and a text input field for the 'PATH' with the value '/new-directory'. A red button labeled 'DELETE ALL DATA STRUCTURE FILES' is located below the path input field. A 'Save' button is visible at the bottom right of the page.

DASHBOARD PROJECTS DEVICES SNIPPETS SETTINGS LOGS HELP

USERS SERVERS JOBS M.LEARNING

SERVER INFORMATION

Description: The Expedition Machine Learning VM (ML) can run locally on the same VM where Expedition it's seated or it can run on a separate VM. Please assign localhost as a IP Address in case both Services are located at the same VM or add the IP Address where you installed Expedition ML

Expedition ML Address: 192.168.252.136

TEMPORARY DATA STRUCTURE FOLDER

Description: Log analysis and data discovery will require creating temporary data structures (as system files). Enter the path in which Expedition will store those temporary files. (Minimum: > 2GB disk space)

PATH: /new-directory

DELETE ALL DATA STRUCTURE FILES

Save