EVE-NG Documentation

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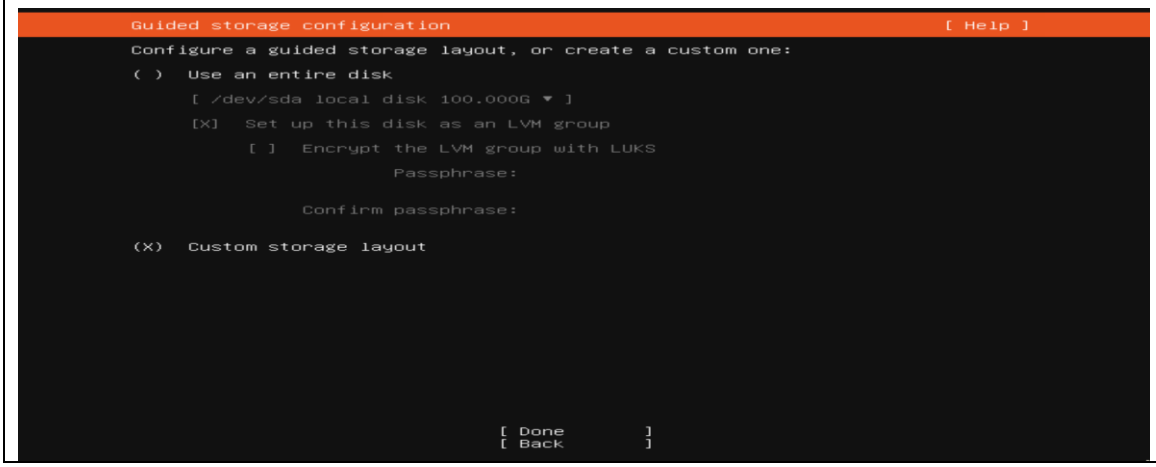
BM Custom LVM Storage Setup with Ubuntu Legacy ISO Installation

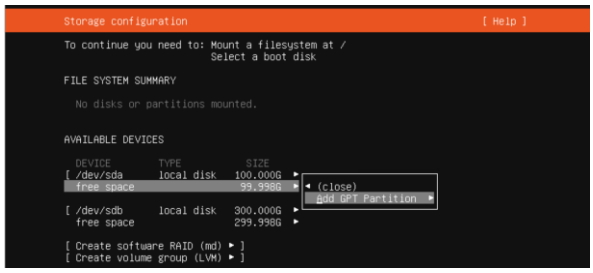
Custom storage layout

Step 1. Select [X] Custom storage layout, Done

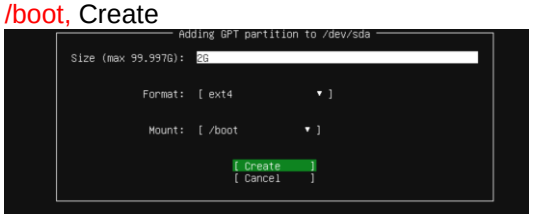


Creating Boot partition

Step 2. From first device HDD (sda), select free space and select *Add GPT Partition*



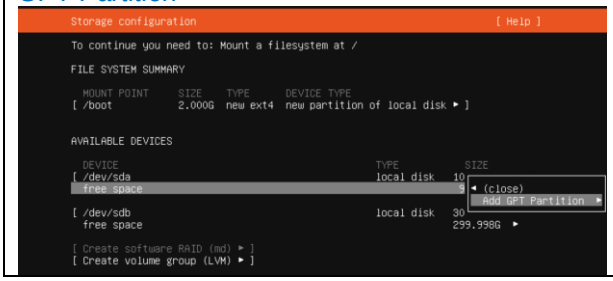
Step 3. Set 2G size, Format: ext4, Mount: /boot, Create



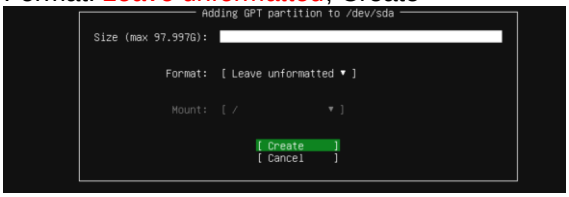
Partition sda2 is created for /boot

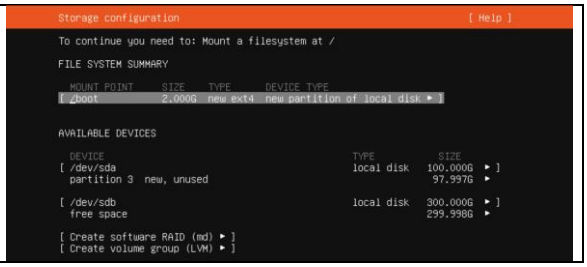
Creating LVM Volume

Step 4. Create partition sda3 from leftover on the device *sda* space. Select free space of *sda*, *Add GPT Partition*

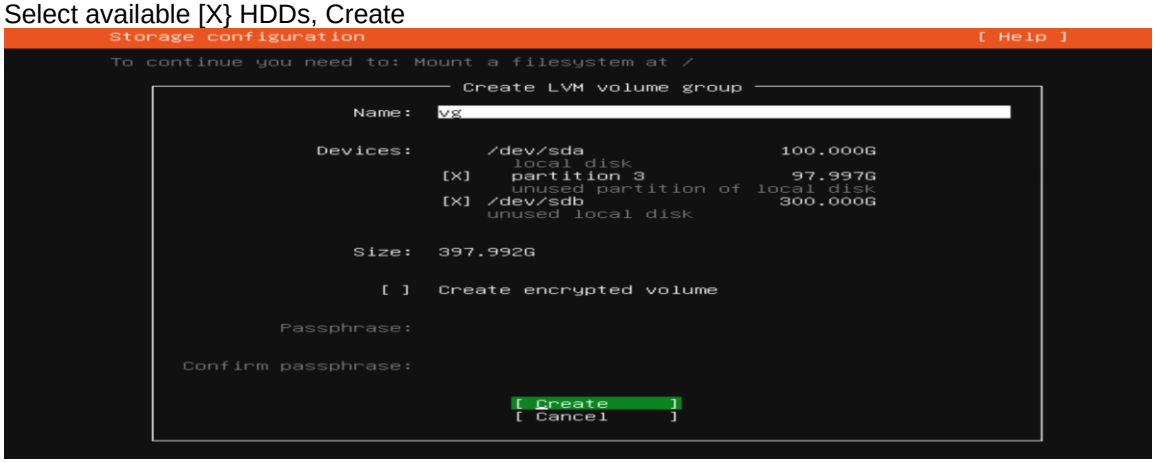


Step 5. Create partition sda3. Size: Leave empty, it will take maximum size of available, Format: *Leave unformatted*, Create



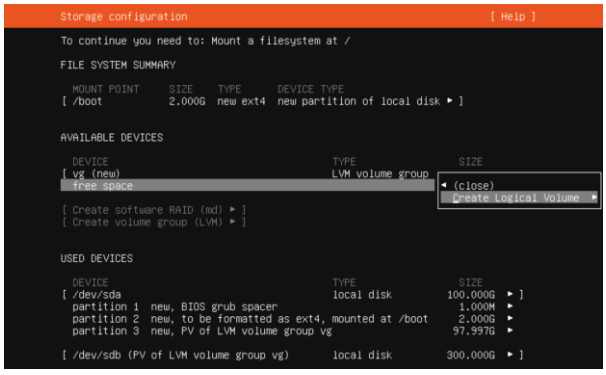


Step 6. Create new LVM group, Select *Create volume group (LVM).*
Name: vg
Select available [X} HDDs, Create

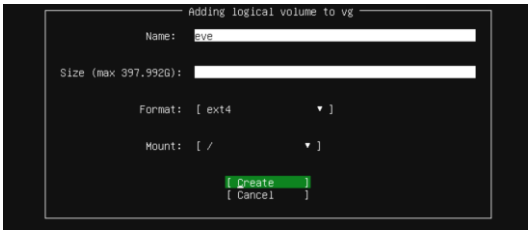


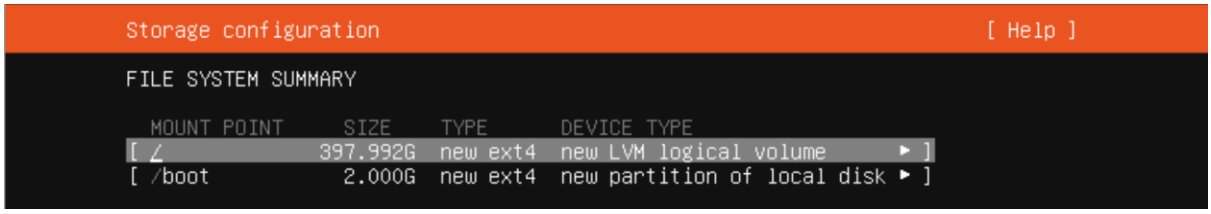
Mount created LVM partition to the file system

Step 7. Select free space from LVM volume group, *Create Logical Volume*



Step 8. Name: eve, Size: Leave empty to set maximum available, Format: ext4, Mount: /, Create





Expand BM LVM system with new HDD

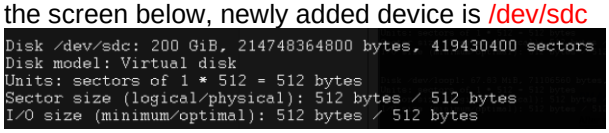
Installation and new HDD detection

Step 1. After your new HDD is installed in the eve BM, using fdisk command check this HDD name
`fdisk -l`

This may not however be the case for you, to avoid reboot you may need to rescan your devices, you can try this with the below command. Note that you may need to change host0 depending on your setup.

```
echo "- - -" >/sys/class/scsi_host/host0/scan
```

If you have issues detecting the new disk, just perform a reboot and it should then display correctly. In the screen below, newly added device is /dev/sdc



As this method focuses on working with LVM, Linux LVM Partition HEX code is 8e. This code will be used later when we will create partition of newly added HDD.

Partition the new disk

Step 2. We now need to partition the new /dev/sdb disk so that it can be used, this is done by using fdisk.

```
fdisk /dev/sdc
```

This should provide us with the below prompt, the inputs I have entered in are shown in bold.

'n' was selected for adding a new partition.

```
root@eve-ng:~# fdisk /dev/sdc
Command (m for help): n
```

'p' is then selected as we are making a primary partition.

```
Command action
   e   extended
   p   primary partition (1-4)
p
```

As this is a new disk, we do not yet have any partitions on it so we will use partition 1 here.

```
Partition number (1-4): 1
```

Next, we press the enter key twice, as by default the first and last cylinders of the unallocated space should be correct.

```
First sector (2048-419430399, default 2048): "enter"
Using default value 1
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-419430399, default
419430399): "enter"
```

```
Created a new partition 1 of type 'Linux' and of size 200 GiB.
```

't' is selected to change to a partitions system ID, in this case we change to '1' automatically as this is currently our only partition.

```
Command (m for help): t
Selected partition 1
```

The hex code '8e' was entered as this is the code for a Linux LVM which is what we want this partition to be, as we will be joining it with the original Linux LVM which is currently using /dev/sda3.

```
Hex code (type L to list codes): 8e
Changed type of partition 'Linux' to 'Linux LVM'.
```

'w' is used to write the table to disk and exit, all changes that have been done will be saved and then you will be exit from fdisk.

```
Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
```

To check if the partition created for new HDD, use fdisk:

```
fdisk -l
```

```
Device     Boot Start       End   Sectors  Size Id Type
/dev/sdc1        2048 419430399 419428352  200G 8e Linux LVM
```

Increasing the logical volume

Step 3. Next, we will use the pvcreate command to create a physical volume for later use by the LVM. In this case the physical volume will be our new **/dev/sdc1** partition.

```
root@eve-ng:~# pvcreate /dev/sdc1
  Physical volume "/dev/sdc1" successfully created
```

Step 4. Now we need to confirm the name of the current volume group using the vgdisplay command. The name will vary depending on your setup, for me it is the name of my test server. vgdisplay provides plenty of information on the volume group, I have only shown the name and the current size of it for this example.

```
root@eve-ng:~# vgdisplay
  --- Volume group ---
  VG Name               vg
  VG Size               397.99 GiB
```

Step 5. Now using the vgextend command, we extend the '**vg**' volume group by adding in the physical volume of /dev/sdc1 which we created using the pvcreate command just before.

```
root@eve-ng:~# vgextend vg /dev/sdc1
  Volume group "vg" successfully extended
```

Step 6. Using the pvscan command we scan all disks for physical volumes, this should confirm the original /dev/sda3 partition and the newly created physical volume **/dev/sdc1**

```
root@eve-ng:~# pvscan
  PV /dev/sdb    VG vg              lvm2 [<250.00 GiB / 0    free]
  PV /dev/sda3   VG vg              lvm2 [<148.00 GiB / 0    free]
  PV /dev/sdc1   VG vg              lvm2 [<200.00 GiB / <200.00 GiB free]
  Total: 3 [<597.99 GiB] / in use: 3 [<597.99 GiB] / in no VG: 0 [0   ]
```

Step 7. Next, we need to increase the logical volume with the lvextend command (rather than the physical volume which we have already done). This means we will be taking our original logical volume and extending it over our new disk/partition/physical volume of **/dev/sdc1**.

Firstly, confirm the name of the logical volume using lvdisplay. The name will vary depending on your setup.

```
root@eve-ng:~# lvdisplay
  --- Logical volume ---
  LV Path                /dev/vg/eve
  LV Name                eve
  VG Name                vg
  LV Size                397.99 GiB
```

Step 8. The logical volume is then extended using the lvextend command. We are extending the original logical volume of **/dev/vg/eve** over the newer **/dev/sdc1**

```
root@eve-ng:~# lvextend /dev/vg/eve /dev/sdc1
  Size of logical volume vg/eve changed from 397.99 GiB (101886 extents) to
<597.99 GiB (153085 extents).
  Logical volume vg/eve successfully resized.
```

If you like you can then run vgdisplay and lvdisplay again to confirm the size of the volume group and logical volume respectively, I have done this and I now have the following.

```
  VG Size               <597.99 GiB
  LV Size               <597.99 GiB
```

Step 9. However, if you run a “df” command to see available disk space it will not have changed yet as there is one final step, we need to resize the file system using the resize2fs command in order to make use of this space.

```
root@eve-ng:~# resize2fs /dev/vg/eve
resize2fs 1.45.5 (07-Jan-2020)
Filesystem at /dev/vg/eve is mounted on /; on-line resizing required
old_desc_blocks = 50, new_desc_blocks = 75
The filesystem on /dev/vg/eve is now 156759040 (4k) blocks long.
```

The resize took a minute or so to complete (it will depend on the disk speed and size), running the “df -h” command now shows the correct disk space for /dev/mapper/vg-eve

```
root@eve-ng:~# df -h
Filesystem          Size  Used Avail Use% Mounted on
udev                7.8G     0  7.8G   0% /dev
tmpfs               1.6G  1.3M  1.6G   1% /run
/dev/mapper/vg-eve  588G  6.4G  554G   2% /
tmpfs               7.9G     0  7.9G   0% /dev/shm
tmpfs               5.0M     0  5.0M   0% /run/lock
tmpfs               7.9G     0  7.9G   0% /sys/fs/cgroup
```

```
/dev/loop0           62M   62M     0 100% /snap/core20/1611
/dev/sda2           2.0G  108M  1.7G   6% /boot
/dev/loop1           68M   68M     0 100% /snap/lxd/22753
/dev/loop2           47M   47M     0 100% /snap/snapd/16292
tmpfs               1.6G     0  1.6G   0% /run/user/0
root@eve-ng:~#
```