

EVE-NG Documentation

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BM Custom LVM Storage Setup with Ubuntu Legacy ISO Installation

Custom storage layout

Configure a guided storage layout, or create a custom one:	
() Use an entire disk	
(X) Custom storage layout	

Creating Boot partition

Step 2. From first device HDD (sda), select free space and select <i>Add GPT Partition</i>		Step 3. Set 2G size, Format: ext4, Mount: /boot, Create
Storage configuration	[Help]	
To continue you need to: Mount a filesystem at ∕ Select a boot disk		Format: [ext4 ▼]
FILE SYSTEM SUMMARY		Mount: [/boot 🔻]
No disks or partitions mounted.		[Create] [Cancel]
AVAILABLE DEVICES		
OFVICE TYPE SIZE [/dev/sds local disk 100.0006 ► Tree space 39.9886 ► (close) And PET Partition ■		
[/dev/sdb local disk 300.0006		Storage configuration [Help]
[Create software RAID (md) ▶]		FTLE SYSTEM SIMMARY
[Create volume group (LVM) ►]		MOUNT POINT SIZE TYPE DEVICE TYPE
		[/boot 2.000G new ext4 new partition of local disk ▶]
		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	Step 5. Create partition sda3. Size: Leave empty, it will take maximum size of available,
GPT Partition	Format: Leave unformatted, Create
Storage configuration [Help]	Adding GPT partition to /dev/sda
To continue you need to: Mount a filesystem at ∕	Size (max 97.997G):
FILE SYSTEM SUMMARY	Format: [Leave unformatted ▼]
HOUNT FOINT SIZE TYPE DEVICE TYPE [/boot 2.0000 new ext4 new partition of local disk ►]	Mount: [/ *]
AVAILABLE DEVICES	[Create]
DEVICE TYPE SIZE	[Cancel]
free space	
[/dev/sdb local disk 30 free space 299.998G ►	
[Create software RAID (md) ►] [Create volume group (LVM) ►]	

Storage configuration	[Help]
To continue you need to: Mount a filesystem	at /
FILE SYSTEM SUMMARY	
MOUNT POINT SIZE TYPE DEVICE [boot 2.000G new ext4 new part	TYPE tition of local disk •]
AVAILABLE DEVICES	
DEVICE [/dev/sda partition 3 new, unused	TYPE SIZE local disk 100.0006 ►] 97.9976 ►
[/dev/sdb free space	local disk 300.0006 ►] 299.9986 ►
[Create software RAID (md) ▶] [Create volume group (LVM) ▶]	

Step 6. Create new LVM gro	oup, Sel	ect Create volume group (LVM).	
Name: vg			
Select available [X] HDDs, (Create		
Storage configurat.	ion		[Help]
To continue you nee	εα το: Μ	ount a filesystem at /	
	Name:		
De	evices:	/dev/sda 100.000G local disk [X] partition 3 97.997G unused partition of local disk [X] /dev/sdb 300.000G unused local disk	
	Size:	397.992G	
		Create encrypted volume	
Pass			
Confirm pass;			
		[<u>C</u> reate] [Cance1]	
		[Cance1]	

Mount created LVM partition to the file system



Storage configu	ration			[Help]
FILE SYSTEM SUM	MARY			
MOUNT POINT	SIZE	TYPE	DEVICE TYPE	
[/boot	2.000G	new ext4	new partition of local disk >]	

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 -1

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

Disk /dev/sdc: 200 GiB, 214748364800 bytes, 419430400 sectors Disk model: Virtual disk Units: sectors of 1 * 512 = 512 bytes Sector size (logical/physical): 512 bytes / 512 bytes I/O size (minimum/optimal): 512 bytes / 512 bytes

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: $\tt fdisk \ -l$

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	vorume	
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.</pre>

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 응	/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:~#					