Как расширить диск с данными KUMA в случае с lvm

Кейс 1. Увеличивается объем диска

? ?????? ??????? ??????????? ?????? ????? **sda** ? ?????? **sda3**

1. ????????? ???? ?????????? ???????????
2. ????????? ??????? ????????? ??????

```
lsblk
```

```
user@kuma-naran:~$ lsblk
NAME                      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                         8:0    0   80G  0 disk
├─sda1                      8:1    0    1M  0 part
├─sda2                      8:2    0    2G  0 part /boot
└─sda3                      8:3    0   68G  0 part
  └─ubuntu--vg-ubuntu--lv 253:0    0   68G  0 lvm  /
sr0                        11:0    1 1024M  0 rom
```

3. ????????? ????????? ?????

```
parted /dev/sda unit MB print free
```

```
root@kuma-naran:~# parted /dev/sda unit MB print free
Model: VMware Virtual disk (scsi)
Disk /dev/sda: 85899MB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start     End       Size      File system  Name  Flags
        0.02MB    1.05MB    1.03MB    Free Space
 1      1.05MB    2.10MB    1.05MB                       bios_grub
 2      2.10MB    2150MB    2147MB    ext4
 3      2150MB    75161MB   73011MB
        75161MB   85899MB   10738MB   Free Space
```

4. ???????? ??????? ?????? (??? ??????? 3)

```
parted /dev/sda resizepart 3
```

```
root@kuma-naran:~# parted /dev/sda resizepart 3
End?  [75.2GB]? 85899
Information: You may need to update /etc/fstab.
```

5. (???????????) ????????? ????????? ?????, ????? ?????????, ??? ????????? ???????????

```
parted /dev/sda unit MB print free
```

```
root@kuma-naran:~# parted /dev/sda unit MB print free
Model: VMware Virtual disk (scsi)
Disk /dev/sda: 85899MB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start    End      Size     File system  Name  Flags
        0.02MB   1.05MB   1.03MB   Free Space
 1      1.05MB   2.10MB   1.05MB                      bios_grub
 2      2.10MB   2150MB   2147MB   ext4
 3      2150MB   85899MB  83749MB
        85899MB  85899MB  0.33MB   Free Space
```

6. (???????????) ????????? ?????? ??????????? ????

```
pvdisplay
```

```
root@kuma-naran:~# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sda3
  VG Name               ubuntu-vg
  PV Size               <68.00 GiB / not usable 0
  Allocatable           yes (but full)
  PE Size               4.00 MiB
  Total PE              17407
  Free PE               0
  Allocated PE          17407
  PV UUID               JTHzWy-Vi52-3Pyk-v1nu-cjwT-1r6V-NxPEjt
```

7. ????????? ?????????? ???

```
pvresize /dev/sda3
```

```
root@kuma-naran:~# pvresize /dev/sda3
  Physical volume "/dev/sda3" changed
  1 physical volume(s) resized or updated / 0 physical volume(s) not resized
root@kuma-naran:~# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sda3
  VG Name               ubuntu-vg
  PV Size               <78.00 GiB / not usable 337.50 KiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              19967
  Free PE               2560
  Allocated PE          17407
  PV UUID               JTHzWy-Vi52-3Pyk-v1nu-cjwT-1r6V-NxPEjt
```

8. (???????????) ????????? ?????????? ??????

   `lvscan`

```
root@kuma-naran:~# lvscan
  ACTIVE            '/dev/ubuntu-vg/ubuntu-lv' [<68.00 GiB] inherit
```

9. ????????? ?????????? ??????

   `lvextend /dev/ubuntu-vg/ubuntu-lv -l +100%FREE -r`

```
root@kuma-naran:~# lvextend /dev/ubuntu-vg/ubuntu-lv -l +100%FREE -r
  Size of logical volume ubuntu-vg/ubuntu-lv changed from <68.00 GiB (17407 ext
ents) to <78.00 GiB (19967 extents).
  Logical volume ubuntu-vg/ubuntu-lv successfully resized.
resize2fs 1.46.5 (30-Dec-2021)
Filesystem at /dev/mapper/ubuntu--vg-ubuntu--lv is mounted on /; on-line resizi
ng required
old_desc_blocks = 9, new_desc_blocks = 10
The filesystem on /dev/mapper/ubuntu--vg-ubuntu--lv is now 20446208 (4k) blocks
 long.
```

10. (???????????) ?????????, ??? ??? ????????? ?????????

    `lsblk`

```
root@kuma-naran:~# lsblk
NAME                      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                         8:0    0   80G  0 disk
├─sda1                      8:1    0    1M  0 part
├─sda2                      8:2    0    2G  0 part /boot
└─sda3                      8:3    0   78G  0 part
  └─ubuntu--vg-ubuntu--lv 253:0    0   78G  0 lvm  /
sr0                        11:0    1 1024M  0 rom
```

Кейс 2. Добавляется новый диск

? ?????? ??????? ??????????? ????? ???? **sdb**

1. ?????????? ????? ???? ?????????? ??????????? ??? ? ????????? ???????
2. ????????? ??????? ????????? ??????

   ```
   lsblk
   ```

   ```
   root@kuma-naran:~# lsblk
   NAME                      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
   sda                         8:0    0   80G  0 disk
   ├─sda1                      8:1    0    1M  0 part
   ├─sda2                      8:2    0    2G  0 part /boot
   └─sda3                      8:3    0   78G  0 part
     └─ubuntu--vg-ubuntu--lv 253:0    0   78G  0 lvm  /
   sdb                         8:16   0    5G  0 disk
   sr0                        11:0    1 1024M  0 rom
   ```

3. ??????? ?????????? ???

   ```
   pvcreate /dev/sdb
   ```

   ```
   root@kuma-naran:~# pvcreate /dev/sdb
     Physical volume "/dev/sdb" successfully created.
   ```

4. (???????????) ????????? ??? (?????? ??????? ?????? ? ?????)

   ```
   pvdisplay
   ```

   ```
   root@kuma-naran:~# pvdisplay
     --- Physical volume ---
     PV Name               /dev/sda3
     VG Name               ubuntu-vg
     PV Size               <78.00 GiB / not usable 337.50 KiB
     Allocatable           yes (but full)
     PE Size               4.00 MiB
     Total PE              19967
     Free PE               0
     Allocated PE          19967
     PV UUID               JTHzWy-Vi52-3Pyk-v1nu-cjwT-1r6V-NxPEjt

     "/dev/sdb" is a new physical volume of "5.00 GiB"
     --- NEW Physical volume ---
     PV Name               /dev/sdb
     VG Name
     PV Size               5.00 GiB
     Allocatable           NO
     PE Size               0
     Total PE              0
     Free PE               0
     Allocated PE          0
     PV UUID               wCQ2rf-u5Nu-fICH-bNiW-hMpX-KMas-UK9on3
   ```

5. ????????? ?????? ????? ????? ?????

   ```
   vgextend ubuntu-vg /dev/sdb
   ```

   ```
   root@kuma-naran:~# vgextend ubuntu-vg /dev/sdb
     Volume group "ubuntu-vg" successfully extended
   ```

6. (???????????) ?????????, ??? ?????? ????? ??????????? ? ???????

```
vgdisplay
```

```
root@kuma-naran:~# vgdisplay
  --- Volume group ---
  VG Name               ubuntu-vg
  System ID
  Format                lvm2
  Metadata Areas        2
  Metadata Sequence No  7
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                1
  Open LV               1
  Max PV                0
  Cur PV                2
  Act PV                2
  VG Size               82.99 GiB
  PE Size               4.00 MiB
  Total PE              21246
  Alloc PE / Size       21246 / 82.99 GiB
  Free  PE / Size       0 / 0
  VG UUID               fFTNPf-AflV-axt1-CliV-Csmq-276r-BS7sb8
```

7. ????????? ?????????? ??????

```
lvextend -l +100%FREE /dev/ubuntu-vg/ubuntu-lv
```

```
root@kuma-naran:~# lvextend -l +100%FREE /dev/ubuntu-vg/ubuntu-lv
  Size of logical volume ubuntu-vg/ubuntu-lv changed from <78.00 GiB (19967 ext
ents) to 82.99 GiB (21246 extents).
  Logical volume ubuntu-vg/ubuntu-lv successfully resized.
```

8. (???????????) ?????????, ??? ?????? ??? ??????? ????????

```
lvdisplay
```

```
root@kuma-naran:~# lvdisplay
  --- Logical volume ---
  LV Path                /dev/ubuntu-vg/ubuntu-lv
  LV Name                ubuntu-lv
  VG Name                ubuntu-vg
  LV UUID                sx0R21-3za2-5ZwM-oSZP-cAAF-1ud7-zn0cfZ
  LV Write Access        read/write
  LV Creation host, time ubuntu-server, 2024-08-29 07:17:58 +0000
  LV Status              available
  # open                 1
  LV Size                82.99 GiB
  Current LE             21246
  Segments               2
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:0
```

9. ??????????? ?????? ???????? ??????? (**ext4**)

```
resize2fs /dev/ubuntu-vg/ubuntu-lv
```

```
root@kuma-naran:~# resize2fs /dev/ubuntu-vg/ubuntu-lv
resize2fs 1.46.5 (30-Dec-2021)
Filesystem at /dev/ubuntu-vg/ubuntu-lv is mounted on /; on-line resizing requir
ed
old_desc_blocks = 10, new_desc_blocks = 11
The filesystem on /dev/ubuntu-vg/ubuntu-lv is now 21755904 (4k) blocks long.
```

???? ???????? ??????? **xfs** ??????????? ????????? ???????

```
xfs_growfs /dev/ubuntu-vg/ubuntu-lv
```

10. (???????????) ?????????, ??? ??? ????????? ?????????

```
df -h
```

```
root@kuma-naran:~# df -h
Filesystem                         Size  Used Avail Use% Mounted on
tmpfs                              392M  1.2M  390M   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv   82G   20G   58G  26% /
tmpfs                              2.0G     0  2.0G   0% /dev/shm
tmpfs                              5.0M     0  5.0M   0% /run/lock
/dev/sda2                          2.0G  253M  1.6G  14% /boot
tmpfs                              392M     0  392M   0% /run/user/1000
```

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