



# boot LVM.


- 
- 
- LVM
- boot
- boot
- boot
- 
- 

 :

- Astra Linux Special Edition .10015-01 ( 1.7)
- Astra Linux Special Edition .10015-01 ( 1.6)
- Astra Linux Special Edition .10015-16 . 1
- Astra Linux Common Edition 2.12

 .:

- /boot

 , -

, , , : -

, ( . ) .

, , , ,

```

1. LVM boot:
  a. , , , ;
  b. - , ;
  c. , , , , LVM -, LVM.
     , , , LVM , LVM LVM;
  d. - (LVM - LVM);
  e. ( LVM) ( ) .
  f. ( ) ( ), , .
     LVM - .

2. boot.

-, :
• ;
• , , , ( , swap). , ( (swap): ). , , , LVM;
• , , , .

:
• 32;
• :
  • lvs ( LVM-);
  • LVM;
  • , :
    • /boot /dev/sda1 ext2 243. , boot LVM - boot LVM ;
    • (extended) sda2, :
      • sda5, LVM. sda5 sda2 LVM, sda5:
        • /root LVM ( root);
        • /home LVM ( home);
        • (swap) LVM ( swap_1);
  
```

```
lsblk
```

```

NAME      MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda        8:0    0  32G  0 disk
sda1       8:1      0 243M  0 part /boot
sda2       8:2      0    1K  0 part
sda5       8:5      0 31,3G  0 part

```

- sda1 - /boot, 243
- sda2 - ;
- sda5 - LVM, 31.3, LVM root, home, swap\_1, , , /root, /home ( lsblk LVM , , , ).

### LVS

LVS, sda5:

```
sudo pvs
```

```

-----
PV          VG      Fmt  Attr PSize  PFree
/dev/sda5   lvs-vg  lvm2 a--  31,76g  0

```

### LVS

LVS:

```
sudo vgs
```

```

-----
VG      #PV #LV #SN Attr   VSize  VFree
lvs-vg   1   3   0 wz--n- 31,76g  0

```

### LVS

LVS:

```
sudo lvs
```

```

-----
LV      VG      Attr          LSize  Pool Origin Data%  Meta%  Move Log Cpy%
Sync Convert
home    lvs-vg  -wi-ao----- 16,68
g
root    lvs-vg  -wi-ao----- 11,08
g
swap_1  lvs-vg  -wi-ao----- 4,00g

```

```
sudo pvs -v --segments /dev/sda5
```

```

-----
Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG      Fmt  Attr PSize  PFree Start  SSize LV      Start
Type  PE Ranges
/dev/sda5  lvs-vg  lvm2 a--  31,76g  0      0    2836 root    0 linear
/dev/sda5:0-2835
/dev/sda5  lvs-vg  lvm2 a--  31,76g  0    2836  1023 swap_1  0 linear
/dev/sda5:2836-3858
/dev/sda5  lvs-vg  lvm2 a--  31,76g  0    3859  4271 home    0 linear
/dev/sda5:3859-8129

```



swap\_1 root home, - , .



, live-USB (. [USB flash drive](#) [ALP-live \(Live-CD/Live-USB\) Astra Linux](#)), /boot . , , .



1. :

```
sudo swapon
```

NAME	TYPE	SIZE	USED	PRIO
/dev/dm-1	partition	4G	0B	-2

```
sudo swapoff /dev/dm-1
```

:

```
sudo swapoff -a
```

2. ( /etc/fstab):

```
#/dev/mapper/lvs--vg-swap_1 none swap sw 0 0
```

3. swap\_1:

```
sudo lvremove /dev/`hostname`-vg/swap_1
```

```
Do you really want to remove active logical volume lvs-vg/swap_1? [y/n]: y
Logical volume "swap_1" successfully removed
```

4. , , , /etc/initramfs-tools/conf.d/resume :

```
#RESUME=/dev/mapper/lvs--vg-swap_1
```

:

```
sudo update-initramfs -t -u -k `uname -r`
sudo update-grub
```

- .

, pvs "" :

```
sudo pvs -v --segments /dev/sda5
```

```
Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG          Fmt  Attr PSize  PFree Start  SSize LV      Start Type   PE
Ranges
/dev/sda5   lvs-vg  lvm2  a--  31,76g 4,00g    0  2836 root    0  linear /dev
/sda5:0-2835
/dev/sda5   lvs-vg  lvm2  a--  31,76g 4,00g  2836  1023      0
free
/dev/sda5   lvs-vg  lvm2  a--  31,76g 4,00g  3859  4271 home    0  linear /dev
/sda5:3859-8129
```

, , 1023, home 4271,, home, .

## LVM

LVM , , .

, (. "").

 live-USB . , /home, :

1. ;
2. (Ctrl+Alt+F1);
3. , :

```
cd /
```

4. /home:

```
sudo umount /home
```

5. (Ctrl+Alt+F7) ( , );
6. ;
7. :

```
sudo mount /home
```

, , . root, root, live-USB .

, LVM, :

```
sudo pvmove --alloc anywhere /dev/sda5:XXXX+YYY /dev/sda5:ZZZZ+YYY
```

+YYY - (. sudo pvs -v --segmens), ZZZZ+YYY - , (. "").

LVM, pvmove :

```
sudo pvmove --alloc anywhere /dev/sda5:3859-8129
```

```
Insufficient free space: 4271 extents needed, but only 1023 available
Unable to allocate mirror extents for lvs-vg/pvmove0.
Failed to convert pvmove LV to mirrored
```

, . 1023, :

```
sudo pvmove --alloc anywhere /dev/sda5:3859+1000 /dev/sda5:2836+1000
```



### sudo pvs -v --segments /dev/sda5

```

Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG      Fmt  Attr PSize  PFree  Start  SSize LV      Start Type  PE Ranges
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g   0      2836 root    0 linear /dev/sda5:0-2835
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g  2836   1001 home    0 linear /dev/sda5:2836-3836
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g  3837   1023             0 free
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g  4860   3270 home   1001 linear /dev/sda5:4860-8129

```

```

sudo pvmove --alloc anywhere /dev/sda5:4860+1000 /dev/sda5:3837+1000
sudo pvmove --alloc anywhere /dev/sda5:5861+1000 /dev/sda5:4838+1000
sudo pvmove --alloc anywhere /dev/sda5:6862+1000 /dev/sda5:5839+1000
sudo pvmove --alloc anywhere /dev/sda5:7863- /dev/sda5:6840-

```

```
sudo pvs -v --segments /dev/sda5
```

```

-----
sudo pvs -v --segments /dev/sda5
Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG      Fmt  Attr PSize  PFree  Start  SSize LV      Start Type  PE
Ranges
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g   0      2836 root    0 linear
/dev/sda5:0-2835
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g  2836   4271 home    0 linear
/dev/sda5:2836-7106
/dev/sda5   lvs-vg lvm2 a--  31,76g 4,00g  7107   1023             0
free

```



16. . . .

( )

( - LVM) live-USB gparted (" - " - " Gparted").  
pvresize:

```
sudo pvresize -v --setphysicalvolumesize 32778240K /dev/sda5
```

## boot

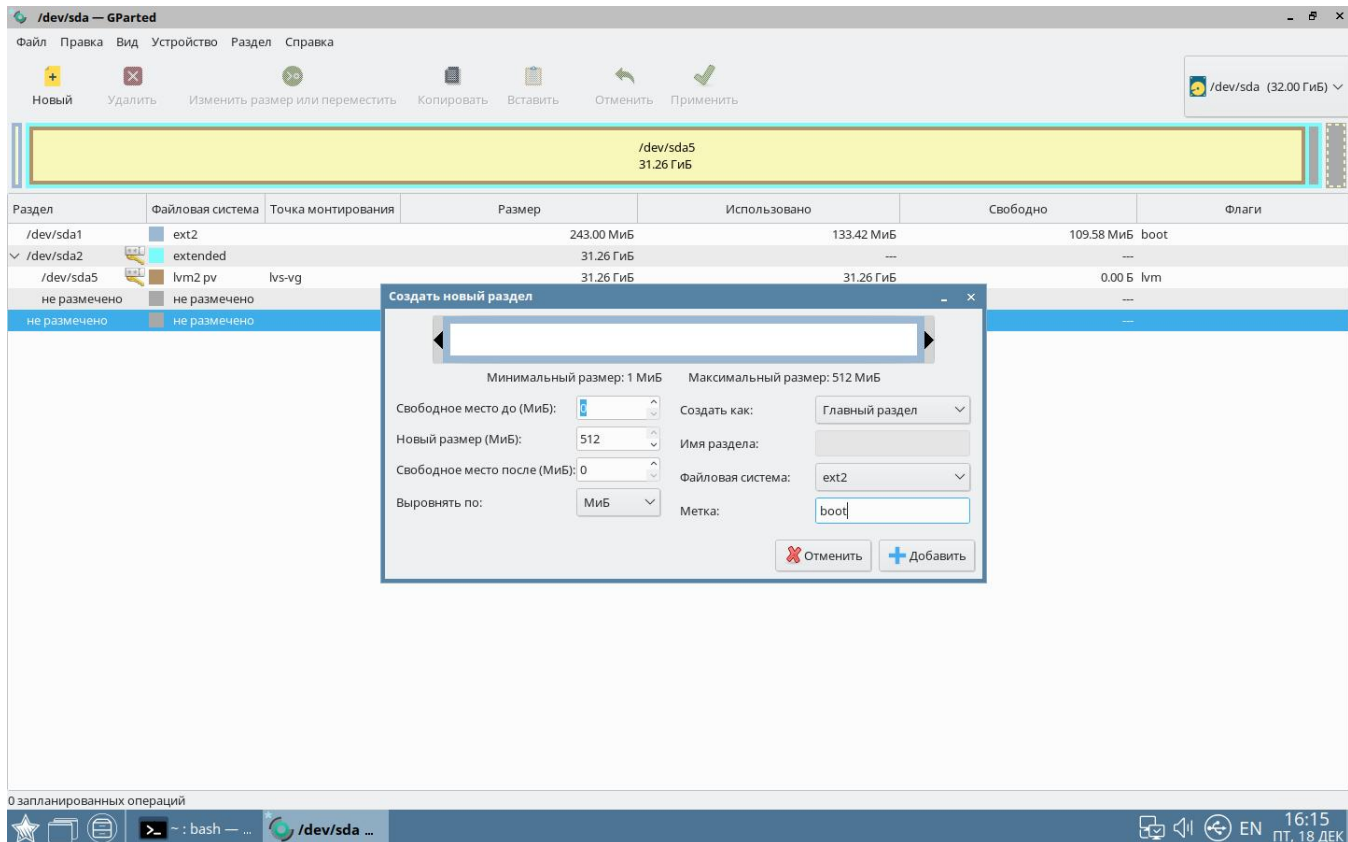
. :

1. live-USB;
2. gparted.

live-USB ( live-USB Astra Linux) LVM, LVM, "".

" " .

boot:



ext2, boot, (boot ).

:

parted:

```
sudo parted
```

```
GNU Parted 3.2
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted)
```

```
print (2, extended):
```

```
(parted) print
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 34,4GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type    File system  Flags
  1      1049kB  256MB   255MB   primary ext2          boot
  2      257MB   34,4GB  34,1GB   extended
  5      257MB   33,8GB  33,6GB   logical                lvm
```

:

```
(print) resizepart 2 33.8G
```

- 2- ;
  - 33.8G- ( );
- ( ):

```
(print) mkpart primary ext2 33.8G 34.4G
```

```
(parted) print
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 34,4GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:
```

Number	Start	End	Size	Type	File system	Flags
1	1049kB	256MB	255MB	primary	ext2	
2	257MB	33,8GB	33,6GB	extended		
5	257MB	33,8GB	33,6GB	logical		lvm
3	33,8GB	34,4GB	537MB	primary	ext2	boot

boot:

```
(print) toggle 3 boot
```

parted:

```
q
```

, :

```
lsblk
```

```
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda 8:0 0 32G 0 disk
sda1 8:1 243M 0 part /boot
sda3 8:3 512M 0 part /boot
sda5 8:5 0 31,3G 0 part
```

, "boot":

```
sudo e2label /dev/sda5 boot
```

## boot

live-USB, , :

1. :

```
lsblk
```

```
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda 8:0 0 32G 0 disk
sda1 8:1 243M 0 part /boot
sda2 8:2 0 1K 0 part
```

```
sda3 8:3 512M 0 part
sda5 8:5 0 31,3G 0 part
```

sda3, 512M

2. :

```
sudo mount /dev/sda3 /mnt
```

3. boot boot:

```
sudo cp -R /boot/* /mnt
```

4. , boot , :  
a. :

```
sudo blkid
```

```
/dev/sda1: UUID="86418b1a-525a-4614-a600-749403a542b2" TYPE="ext2"
PARTUUID="9326d1ae-01"
/dev/sda3: LABEL="boot" UUID="7fb61205-3f42-44ff-8886-
a394991bfac0" TYPE="ext2" PARTUUID="9326d1ae-03"
/dev/sda5: UUID="Xqsuis-3sj7-VEHQ-uUXX-RzJu-lozK-OkbqN9" TYPE="
LVM2_member" PARTUUID="9326d1ae-05"
/dev/mapper/lvs--vg-root: UUID="589855d1-25f5-4151-bfa4-
8d1d1861a954" TYPE="ext4"
/dev/mapper/lvs--vg-home: UUID="88356e6b-7920-4357-a21e-
733435f1aa72" TYPE="ext4"
```

b. /etc/fstab boot, , blkid:

```
UUID=7fb61205-3f42-44ff-8886-a394991bfac0 /boot ext2 defaults 0 2
```

, , :

```
LABEL=boot /boot ext2 defaults 0 2
```

c. boot :

```
sudo umount /boot
sudo mount /boot
```

d. , , , /etc/initramfs-tools/conf.d/resume :

```
#RESUME=/dev/mapper/lvs--vg-swap_1
```

e. :

```
sudo update-initramfs -t -u -k `uname -r`
sudo update-grub
```



# boot

boot :

```
sudo grub-install /dev/sda
```

1. , :

```
df -h
```

		%	C				
udev		2,0G		0	2,0G		0% /dev
tmpfs		395M		8,0M	387M		3% /run
/dev/mapper/lvs--vg-root		11G		3,9G	6,4G		38% /
tmpfs		2,0G		4,0K	2,0G		1% /dev
/shm							
tmpfs		5,0M		4,0K	5,0M		1% /run
/lock							
tmpfs		2,0G		0	2,0G		0% /sys/fs
/cgrouop							
/dev/sda1		236M		126M	98M		57% /boot
/dev/mapper/lvs--vg-home		17G		57M	16G		1% /home
tmpfs		395M		0	395M		0% /run
/user/999							
tmpfs		395M		8,0K	395M		1% /run
/user/1000							

, /home, 17, 57(, , ).

2. live-USB /home .

3. :

```
sudo e2fsck -ff /dev/mapper/lvs--vg-home
```

4. 2GB:

```
sudo resize2fs /dev/mapper/lvs--vg-home 2G
```

5. 2GB:

```
sudo lvreduce -L 2G /dev/mapper/lvs--vg-home
```

```
WARNING: Reducing active logical volume to 2,00 GiB.
THIS MAY DESTROY YOUR DATA (filesystem etc.)
Do you really want to reduce lvs-vg/home? [y/n]: y
Size of logical volume lvs-vg/home changed from 16,68 GiB (4271
extents) to 2,00 GiB (512 extents).
Logical volume lvs-vg/home successfully resized.
```

6. .

```
sudo pvs -v --segments /dev/sda5
```

```
Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG          Fmt  Attr PSize  PFree  Start  SSize LV    Start Type  PE
Ranges
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g    0  2836 root    0 linear
/dev/sda5:0-2835
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g  2836  1023          0
free
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g  3859   512 home    0 linear
/dev/sda5:3859-4370
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g  4371  3759          0
free
```

```
, home , , :
```

```
sudo pvmove --alloc anywhere /dev/sda5:3859+512 /dev/sda5:2836+512
```

```
sudo pvs -v --segments /dev/sda5
```

```
Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG          Fmt  Attr PSize  PFree  Start  SSize LV    Start Type  PE
Ranges
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g    0  2836 root    0 linear
/dev/sda5:0-2835
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g  2836   512 home    0 linear
/dev/sda5:2836-3347
/dev/sda5   lvs-vg   lvm2 a--  31,76g 18,68g  3348  4782          0
free
```

```
1. home ( - swap , home ):
```

```
sudo lvextend -l +4654 /dev/mapper/lvs--vg-home
```

```
2. - swap,:
```

```
sudo lvcreate -n swap_1 -L 4G lvs-vg
```

```
sudo pvs -v --segments /dev/sda5
```

```
Wiping internal VG cache
Wiping cache of LVM-capable devices
PV          VG          Fmt  Attr PSize  PFree  Start  SSize LV    Start Type  PE
Ranges
/dev/sda5   lvs-vg   lvm2 a--  31,26g    0    0  2836 root    0 linear /dev
/sda5:0-2835
/dev/sda5   lvs-vg   lvm2 a--  31,26g    0  2836  5166 home    0 linear /dev
/sda5:2836-8001
```

live-USB - /home:

```
sudo mount /home
```

, .