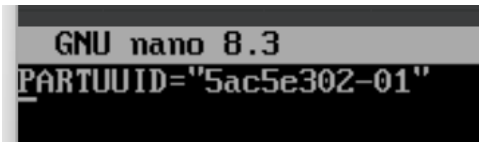
1. Создание раздела размером 500 МБ на первом добавленном диске
```
fdisk /dev/sdb <<EOF
n
p
1

+500M
w
EOF
```

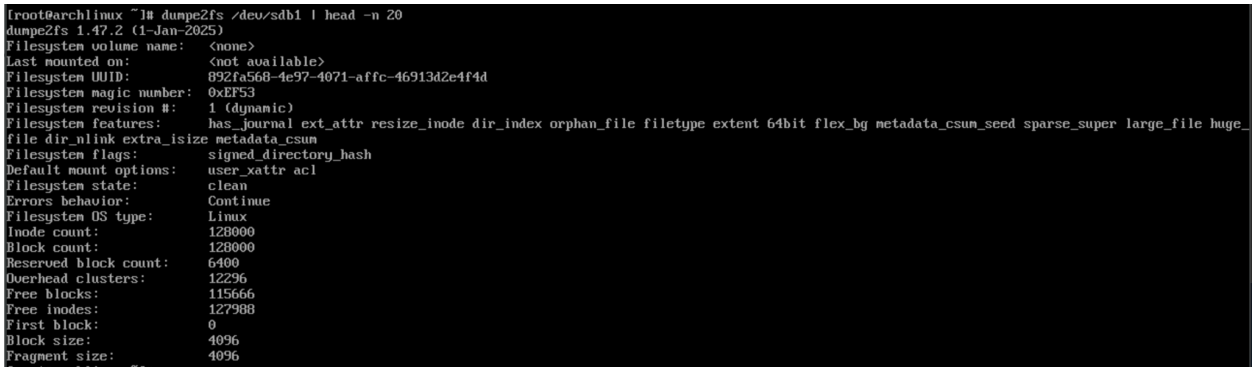
2. Сохранение UUID созданного раздела в файл
```
blkid /dev/sdb1 | awk '{print $2}' > ~/disk_uuid.txt
```

В файле disk_uuid.txt появится что-то типа:

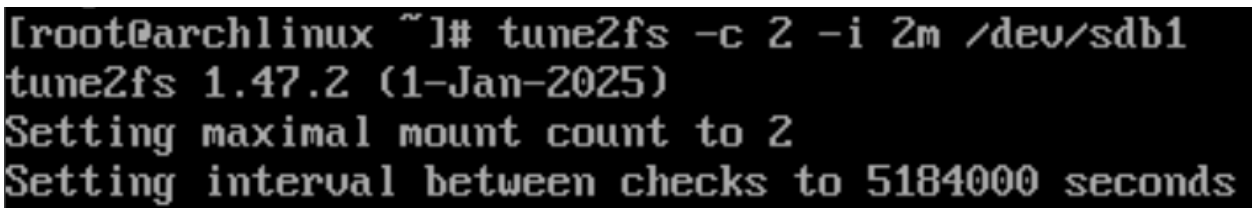


3. Создание файловой системы ext4 с размером блока 4096 байт
```
mkfs.ext4 -b 4096 /dev/sdb1
```

4. Вывод состояния суперблока
```
dumpe2fs /dev/sdb1 | head -n 20
```



5. Настройка автоматической проверки файловой системы
```
tune2fs -c 2 -i 2m /dev/sdb1
```



6. Монтирование файловой системы
mkdir -p /mnt/newdisk
mount /dev/sdb1 /mnt/newdisk

```
[root@archlinux ~]# mkdir -p /mnt/newdisk
[root@archlinux ~]# mount /dev/sdb1 /mnt/newdisk
[root@archlinux ~]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda      8:0    0    8G  0 disk
├─sda1   8:1    0    1G  0 part /boot
└─sda2   8:2    0    7G  0 part /
sdb      8:16   0    2G  0 disk
└─sdb1   8:17   0  500M  0 part /mnt/newdisk
sdc      8:32   0    2G  0 disk
sdd      8:48   0    2G  0 disk
sde      8:64   0    2G  0 disk
zram0  254:0    0  3.9G  0 disk [SWAP]
```

7. Создание символической ссылки
ln -s /mnt/newdisk ~/newdisk_link

```
[root@archlinux ~]# ln -s /mnt/newdisk ~/newdisk_link
[root@archlinux ~]# ls
disk_uuid.txt  newdisk_link
```

8. Создание каталога в смонтированной ФС
mkdir /mnt/newdisk/mydir

# 9. Настройка автомонтирования
UUID=$(blkid -s UUID -o value /dev/sdb1)
echo "UUID=$UUID /mnt/newdisk ext4 defaults,noexec,noatime 0 2" >> /etc/fstab
reboot

10. Увеличение размера раздела и ФС до 1 ГБ
fdisk /dev/sdb <<EOF
d
n
p

1

+1G
w
EOF
resize2fs /dev/sdb1

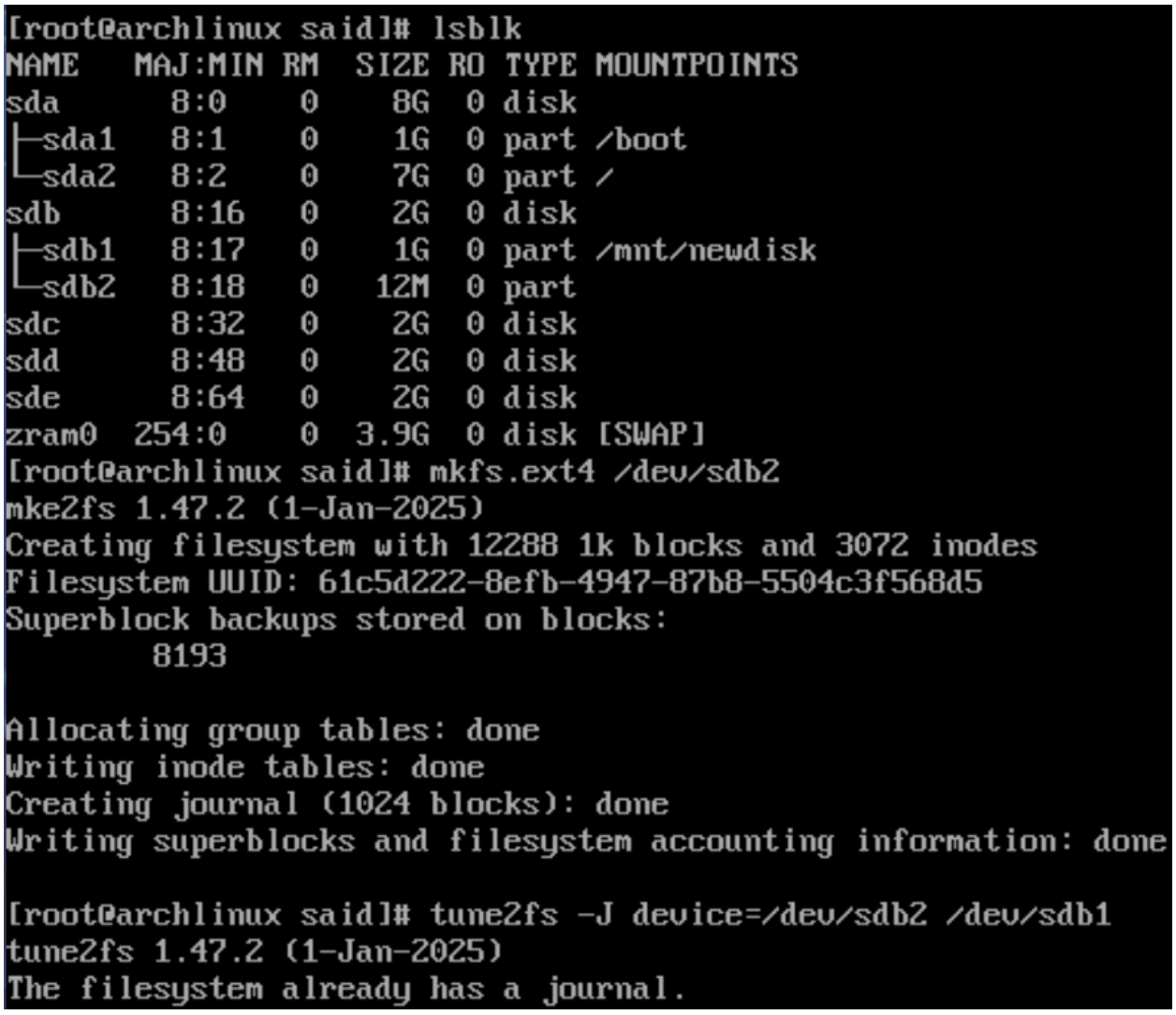
```
[root@archlinux said]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda      8:0    0    8G  0 disk
├─sda1   8:1    0    1G  0 part /boot
└─sda2   8:2    0    7G  0 part /
sdb      8:16   0    2G  0 disk
└─sdb1   8:17   0    1G  0 part /mnt/newdisk
sdc      8:32   0    2G  0 disk
sdd      8:48   0    2G  0 disk
sde      8:64   0    2G  0 disk
zram0  254:0    0  3.9G  0 disk [SWAP]
[root@archlinux said]# resize2fs /dev/sdb1
resize2fs 1.47.2 (1-Jan-2025)
Filesystem at /dev/sdb1 is mounted on /mnt/newdisk; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 1
The filesystem on /dev/sdb1 is now 262144 (4k) blocks long.
```

11. Проверка файловой системы на ошибки
umount /dev/sdb1
e2fsck -n /dev/sdb1
mount /dev/sdb1 /mnt/newdisk

```
[root@archlinux said]# umount /dev/sdb1
[root@archlinux said]# e2fsck -n /dev/sdb1
e2fsck 1.47.2 (1-Jan-2025)
/dev/sdb1 has been mounted 2 times without being checked, check forced.
Pass 1: Checking inodes, blocks, and sizes
Pass 2: Checking directory structure
Pass 3: Checking directory connectivity
Pass 4: Checking reference counts
Pass 5: Checking group summary information
/dev/sdb1: 13/256000 files (0.0% non-contiguous), 20471/262144 blocks
[root@archlinux said]# mount /dev/sdb1 /mnt/newdisk
```

12. Создание раздела 12 МБ и перенос журнала
fdisk /dev/sdb <<EOF
n
p
2

+12M
w
EOF
mkfs.ext4 /dev/sdb2
tune2fs -J device=/dev/sdb2 /dev/sdb1



# 13. Создание разделов на 2 и 3 дисках
for disk in /dev/sdc /dev/sdd; do
  echo -e "n\np\n1\n\n\nw" | fdisk $disk
done

```
[root@archlinux said]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda      8:0    0    8G  0 disk
├─sda1   8:1    0    1G  0 part /boot
└─sda2   8:2    0    7G  0 part /
sdb      8:16   0    2G  0 disk
├─sdb1   8:17   0    1G  0 part /mnt/newdisk
└─sdb2   8:18   0   12M  0 part
sdc      8:32   0    2G  0 disk
└─sdc1   8:33   0    2G  0 part
sdd      8:48   0    2G  0 disk
└─sdd1   8:49   0    2G  0 part
sde      8:64   0    2G  0 disk
zram0  254:0    0  3.9G  0 disk [SWAP]
```

14. Инициализация и создание LVM
pvcreate /dev/sdc1 /dev/sdd1
vgcreate vgdata /dev/sdc1 /dev/sdd1
lvcreate -L 3.8G -i2 -n lvstriped vgdata
mkfs.ext4 /dev/vgdata/lvstriped

```
[root@archlinux said]# pvcreate /dev/sdc1 /dev/sdd1
  Physical volume "/dev/sdc1" successfully created.
  Physical volume "/dev/sdd1" successfully created.
[root@archlinux said]# vgcreate vgdata /dev/sdc1 /dev/sdd1
  Volume group "vgdata" successfully created
[root@archlinux said]# lvcreate -L 3.8G -i2 -n lvstriped vgdata
  Using default stripesize 64.00 KiB.
  Rounding up size to full physical extent 3.80 GiB
  Rounding size 3.80 GiB (973 extents) up to stripe boundary size 3.80 GiB (974 extents).
  Logical volume "lvstriped" created.
[root@archlinux said]# mkfs.ext4 /dev/vgdata/lvstriped
mke2fs 1.47.2 (1-Jan-2025)
Creating filesystem with 997376 4k blocks and 249488 inodes
Filesystem UUID: 8fd05964-2229-4e60-b5b9-b685917da095
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done
```

15. Монтирование LVM и автомонтирование
mkdir -p /mnt/vol01
mount /dev/vgdata/lvstriped /mnt/vol01
echo "/dev/vgdata/lvstriped /mnt/vol01 ext4 defaults 0 2" >> /etc/fstab

```
[root@archlinux said]# mkdir -p /mnt/vol01
[root@archlinux said]# mount /dev/vgdata/lvstriped /mnt/vol01
[root@archlinux said]# echo "/dev/vgdata/lvstriped /mnt/vol01 ext4 defaults 0 2" >> /etc/fstab
```

16. Получение информации LVM
pvdisplay
vgdisplay
lvdisplay

```
[root@archlinux said]# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sdc1
  VG Name               vgdata
  PV Size               <2.00 GiB / not usable 3.00 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              511
  Free PE               24
  Allocated PE          487
  PV UUID               7vymbe-rGc1-2fPY-Y7k4-ZeSY-GWPI-aXafGI

  --- Physical volume ---
  PV Name               /dev/sdd1
  VG Name               vgdata
  PV Size               <2.00 GiB / not usable 3.00 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              511
  Free PE               24
  Allocated PE          487
  PV UUID               7tEyD1-a2M8-i3sB-CTP9-ksiU-SUJ1-5LCHIz
```

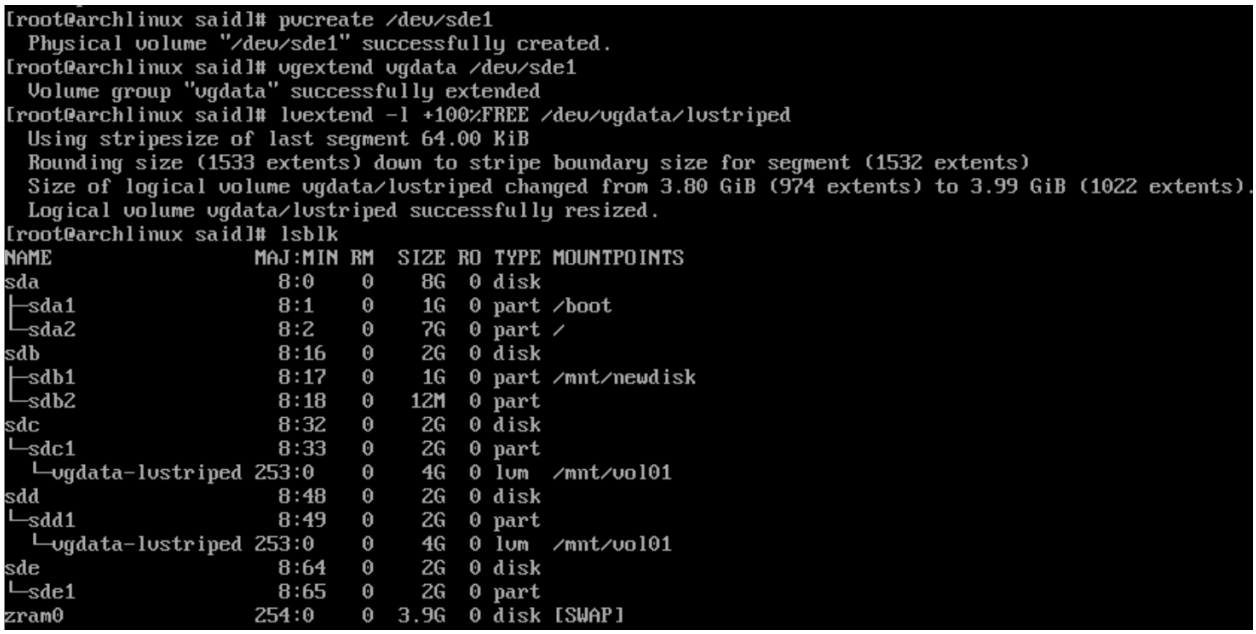
```
[root@archlinux said]# vgdisplay
  --- Volume group ---
  VG Name               vgdata
  System ID
  Format                lvm2
  Metadata Areas        2
  Metadata Sequence No  2
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                1
  Open LV               1
  Max PV                0
  Cur PV                2
  Act PV                2
  VG Size               3.99 GiB
  PE Size               4.00 MiB
  Total PE              1022
  Alloc PE / Size       974 / 3.80 GiB
  Free  PE / Size       48 / 192.00 MiB
  VG UUID               En1Dvv-zNjH-uzX2-QyH0-eXvJ-JbDN-5NNmp4
```

```
[root@archlinux said]# lvdisplay
  --- Logical volume ---
  LV Path                /dev/vgdata/lvstriped
  LV Name                lvstriped
  VG Name                vgdata
  LV UUID                H5QKDP-3Owl-UY5G-CIPT-ayGc-3ioL-TCh8bi
  LV Write Access        read/write
  LV Creation host, time archlinux, 2025-03-09 19:45:12 +0300
  LV Status              available
  # open                 1
  LV Size                3.80 GiB
  Current LE             974
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     512
  Block device           253:0
```

17-18. Расширение LVM и файловой системы
fdisk /dev/sde <<EOF
n

p
1

\nw
EOF
pvcreate /dev/sde1
vgextend vgdata /dev/sde1
lvextend -l +100%FREE /dev/vgdata/lvstriped
resize2fs /dev/vgdata/lvstriped



19. Проверка LVM после расширения
vgdisplay
lvdisplay

```
[root@archlinux said]# vgdisplay
  --- Volume group ---
  VG Name               vgdata
  System ID
  Format                lvm2
  Metadata Areas        3
  Metadata Sequence No  4
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                1
  Open LV               1
  Max PV                0
  Cur PV                3
  Act PV                3
  VG Size               <5.99 GiB
  PE Size               4.00 MiB
  Total PE              1533
  Alloc PE / Size       1022 / 3.99 GiB
  Free  PE / Size       511 / <2.00 GiB
  VG UUID               En1Dvv-zNjH-uzX2-QyH0-eXvJ-JbDN-5NNmp4
```

```
[root@archlinux said]# lvdisplay
  --- Logical volume ---
  LV Path                /dev/vgdata/lvstriped
  LV Name                lvstriped
  VG Name                vgdata
  LV UUID                H5QKDP-3Owl-UY5G-CIPT-ayGc-3ioL-TCh8bi
  LV Write Access        read/write
  LV Creation host, time archlinux, 2025-03-09 19:45:12 +0300
  LV Status              available
  # open                 1
  LV Size                3.99 GiB
  Current LE             1022
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     512
  Block device           253:0
```

20. Установка и запуск NFS
pacman -S nfs-utils
systemctl enable nfs-server
systemctl start nfs-server

```
[root@archlinux said]# systemctl enable nfs-server
Created symlink '/etc/systemd/system/multi-user.target.wants/nfs-server.service' → '/usr/lib/systemd/system/nfs-server.service'.
[root@archlinux said]# systemctl start nfs-server
```

21. Настройка экспорта каталога через NFS
echo "/mnt/vol01 10.0.2.15/24(rw,sync,no_root_squash)" >> /etc/exports
exportfs -ra
systemctl restart nfs-server

```
[root@archlinux said]# echo "/mnt/vol01 192.168.1.0/24(rw,sync,no_root_squash)" >> /etc/exports
[root@archlinux said]# exportfs -ra
[root@archlinux said]# systemctl restart nfs-server
```

22-23. Монтирование NFS на клиенте и проверка
mkdir -p /var/remotenfs
mount -t nfs 10.0.2.15:/mnt/vol01 /var/remotenfs
touch /var/remotenfs/testfile