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«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»

Отчет

по лабораторной работе №2 «Управление разделами дисковой системы, создание и монтирование файловых систем»

по дисциплине «**Администрирование Linux**»

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УНИВЕРСИТЕТ ИТМО

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Ход выполнения работы.

#1
fdisk /dev/sda

      n – add a new partition
      p – primary
      3 – partition number
      default – first sector
      +300M – size of partition
      w – write table to disk and exit
> The partition table has been altered.
> Syncing disk

#2
blkid /dev/sda3 | cut -d "=" -f2 > UUID_sda3
> "b86d2976-03"

#3

```
[root@localhost my_tasks]# mkfs.ext4 -b 4096 /dev/sda3
mke2fs 1.45.4 (23-Sep-2019)
Creating filesystem with 76800 4k blocks and 76800 inodes
Filesystem UUID: 426f1a83-4657-4d0f-add2-0ee0afff60fa
Superblock backups stored on blocks:
        32768

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done
```

#4

```
[root@localhost my_tasks]# dumpe2fs -h /dev/sda3
dumpe2fs 1.45.4 (23-Sep-2019)
Filesystem volume name:   <none>
Last mounted on:          <not available>
Filesystem UUID:          426f1a83-4657-4d0f-add2-0ee0afff60fa
Filesystem magic number:  0xEF53
Filesystem revision #:    1 (dynamic)
Filesystem features:      has_journal ext_attr resize_inode dir_index filetype extent 64bit flex_bg
sparse_super large_file huge_file dir_nlink extra_isize metadata_csum
Filesystem flags:         signed_directory_hash
Default mount options:    user_xattr acl
Filesystem state:         clean
Errors behavior:          Continue
Filesystem OS type:       Linux
Inode count:              76800
Block count:              76800
Reserved block count:     3840
Free blocks:              70214
Free inodes:              76789
First block:              0
Block size:               4096
Fragment size:            4096
```

#5

```
      -c max-mount-counts
              Adjust the number of mounts after which the filesystem will be checked by
              e2fsck(8). If max-mount-counts is 0 or -1, the number of times the filesystem is
              mounted will be disregarded by e2fsck(8) and the kernel.

              Staggering the mount-counts at which filesystems are forcibly checked will avoid
              all filesystems being checked at one time when using journaled filesystems.

              Mount-count-dependent checking is disabled by default to avoid unanticipated long
              reboots while e2fsck does its work. However, you may wish to consider the conse
              quences of disabling mount-count-dependent checking entirely. Bad disk drives,
              cables, memory, and kernel bugs could all corrupt a filesystem without marking the
              filesystem dirty or in error. If you are using journaling on your filesystem, your
[root@localhost my_tasks]# tune2fs -i 2m -c 2 /dev/sda3
tune2fs 1.45.4 (23-Sep-2019)
Setting maximal mount count to 2
Setting interval between checks to 5184000 seconds
```

#6

```
[root@localhost mnt]# mkdir /mnt/newdisk
[root@localhost mnt]# ls
newdisk
[root@localhost mnt]# mount -t ext4 /dev/sda3 /mnt/newdisk
[35879.158739] EXT4-fs (sda3): mounted filesystem with ordered data mode. Opts: (null)
```

#7

```
[root@localhost /]# ln -s /mnt/newdisk newdisk_slink
[root@localhost /]# ls
bin   dev   home  lib64       media  newdisk_slink  proc  run   srv   tmp  var
boot  etc   lib   lost+found  mnt    opt            root  sbin  sys   usr
[root@localhost /]# ls -al
total 72
dr-xr-xr-x.  18 root root  4096 Sep 23 05:39 .
dr-xr-xr-x.  18 root root  4096 Sep 23 05:39 ..
lrwxrwxrwx.   1 root root     7 May 11  2019 bin -> usr/bin
dr-xr-xr-x.   6 root root  4096 Aug 28  2020 boot
drwxr-xr-x.  20 root root  3100 Sep 23 03:59 dev
drwxr-xr-x.  92 root root 12288 Sep 23 01:30 etc
drwxr-xr-x.   5 root root    44 Sep 22 20:35 home
lrwxrwxrwx.   1 root root     7 May 11  2019 lib -> usr/lib
lrwxrwxrwx.   1 root root     9 May 11  2019 lib64 -> usr/lib64
drwx------.   2 root root 16384 Aug 28  2020 lost+found
drwxr-xr-x.   2 root root  4096 May 11  2019 media
drwxr-xr-x.   3 root root  4096 Sep 23 05:37 mnt
lrwxrwxrwx.   1 root root    12 Sep 23 05:39 newdisk_slink -> /mnt/newdisk
```

#8

```
[root@localhost /]# mkdir newdisk_slink/tmp_catalog
[root@localhost /]# ls -al newdisk_slink/
total 32
drwxr-xr-x. 4 root root  4096 Sep 23 05:41 .
drwxr-xr-x. 3 root root  4096 Sep 23 05:37 ..
drwx------. 2 root root 16384 Sep 23 04:23 lost+found
drwxr-xr-x. 2 root root  4096 Sep 23 05:41 tmp_catalog
```

#9

устройство точка_монтирования файловая_система опции резерв{0,1} проверка{0,1,2}

```
#
# /etc/fstab
# Created by anaconda on Fri Aug 28 00:12:19 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/cl-root        /                      ext4     defaults        1 1
UUID=1f1297b3-3cf3-4a12-820a-c63b70b17a6a /boot           ext4    defaults       1 2
/dev/mapper/cl-home        /home                  xfs      defaults        0 0
/dev/mapper/cl-swap        swap                   swap     defaults        0 0

/dev/sda3 /mnt/newdisk ext4 auto,noexec,noatime 0 0
```

Don't work!

```
[root@localhost mnt]# systemctl start home.mount
[root@localhost mnt]# systemctl enable home.mount
Created symlink /etc/systemd/system/multi-user.target.wants/home.mount ▯ /etc/systemd/system/home.mo
unt.
```

```
[Unit]
Description=Mount my partition

[Mount]
What=/dev/sda3
Where=/mnt/newdisk
Type=ext4
Options=noexec,noatime

[Install]
WantedBy=multi-user.target
```

#10

```
[root@localhost /]# fdisk /dev/sda

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): p
Disk /dev/sda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xb86d2976

Device     Boot    Start       End   Sectors  Size Id Type
/dev/sda1  *        2048   2099199   2097152    1G 83 Linux
/dev/sda2         2099200  14551039  12451840    6G 8e Linux LVM
/dev/sda3        14551040  15165439    614400  300M 83 Linux

Command (m for help): d
Partition number (1-3, default 3): 3

Partition 3 has been deleted.

Command (m for help): n
Partition type
   p   primary (2 primary, 0 extended, 2 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (3,4, default 3): 3
First sector (14551040-16777215, default 14551040):
Last sector, +sectors or +size{K,M,G,T,P} (14551040-16777215, default 16777215): +350M

Created a new partition 3 of type 'Linux' and of size 350 MiB.
```

```
localhost login: root
Password:
Last login: Wed Sep 22 20:52:25 on tty3
[root@localhost ~]# cd /
[root@localhost /]# resize2fs /dev/sda3
resize2fs 1.45.4 (23-Sep-2019)
Filesystem at /dev/sda3 is mounted on /mnt/newdisk; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 1
[  123.104639] EXT4-fs (sda3): resizing filesystem from 76800 to 89600 blocks
[  123.108400] EXT4-fs (sda3): resized filesystem to 89600
The filesystem on /dev/sda3 is now 89600 (4k) blocks long.
```

```
[root@localhost /]# df -h
Filesystem            Size  Used Avail Use% Mounted on
devtmpfs              897M     0  897M   0% /dev
tmpfs                 914M     0  914M   0% /dev/shm
tmpfs                 914M  8.8M  905M   1% /run
tmpfs                 914M     0  914M   0% /sys/fs/cgroup
/dev/mapper/cl-root   4.1G  1.7G  2.2G  44% /
/dev/sda3             325M  328K  304M   1% /mnt/newdisk
/dev/sda1             976M  131M  778M  15% /boot
/dev/mapper/cl-home   950M   40M  911M   5% /home
tmpfs                 183M     0  183M   0% /run/user/0
```

#11

```
[root@localhost /]# fsck -N /dev/sda3
fsck from util-linux 2.32.1
[/usr/sbin/fsck.ext4 (1) -- /mnt/newdisk] fsck.ext4 /dev/sda3
```

#12

```
[root@localhost /]# fdisk /dev/sda

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): n
Partition type
   p   primary (3 primary, 0 extended, 1 free)
   e   extended (container for logical partitions)
Select (default e): p

Selected partition 4
First sector (15267840-16777215, default 15267840):
Last sector, +sectors or +size{K,M,G,T,P} (15267840-16777215, default 16777215): +12M

Created a new partition 4 of type 'Linux' and of size 12 MiB.

Command (m for help): w
The partition table has been altered.
Syncing disks.
```

```
[root@localhost /]# mkfs.ext4 /dev/sda4
mke2fs 1.45.4 (23-Sep-2019)
Creating filesystem with 12288 1k blocks and 3072 inodes
Filesystem UUID: f920ca05-6d68-4363-b207-3df87b097477
Superblock backups stored on blocks:
        8193

Allocating group tables: done
Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done

[root@localhost /]# umount /dev/sda3
```

```
        -O [^]feature[,...]
                Create a filesystem with the given features (filesystem options), overriding the
                default filesystem options.  The features that are enabled by default are specified
                by    the    base_features    relation, either  in  the  [defaults]  section  in  the
                /etc/mke2fs.conf configuration file, or in the [fs_types] subsections for the usage
                types  as  specified  by  the  -T option, further modified by the features relation
                found  in  the  [fs_types] subsections for the filesystem and usage  types.   See   the
                mke2fs.conf(5) manual page for more details.  The filesystem type-specific configu
                ration setting found  in  the  [fs_types] section will  override  the  global  default
                found  in  [defaults].

                The  filesystem  feature  set  will  be further edited using either the feature set
                specified by this option, or if this option is not given, by  the  default_features
                relation for the filesystem type being created, or in the [defaults] section of the
                configuration file.

                The filesystem feature set is comprised of a list of features, separated by commas,
                that  are  to  be enabled.  To disable a feature, simply prefix the feature name with
                a caret ('^') character.  Features with dependencies will not  be  removed  success
                fully.  The pseudo-filesystem feature "none" will clear all filesystem features.

        For more information about the features which can be set, please see
                the manual page ext4(5).

        -q      Quiet execution.  Useful if mke2fs is run in a script.

[root@localhost /]# mke2fs -O journal_dev /dev/sda4
mke2fs 1.45.4 (23-Sep-2019)
/dev/sda4 contains a ext4 file system
        created on Thu Sep 23 01:58:59 2021
Proceed anyway? (y,N) y
Creating filesystem with 12288 1k blocks and 0 inodes
Filesystem UUID: 7bd02451-572d-4c9e-9e1f-8d2fc750e09e
Superblock backups stored on blocks:

Zeroing journal device:
```

```
[root@localhost /]# mke2fs -t ext4 -J device=/dev/sda4 /dev/sda3
mke2fs 1.45.4 (23-Sep-2019)
Using journal device's blocksize: 1024
/dev/sda3 contains a ext4 file system
        last mounted on Thu Sep 23 01:51:04 2021
Proceed anyway? (y,N) y
Creating filesystem with 358400 1k blocks and 89760 inodes
Filesystem UUID: 8935f4c1-65ea-4fce-ba30-bca3c0c1d63b
Superblock backups stored on blocks:
        8193, 24577, 40961, 57345, 73729, 204801, 221185

Allocating group tables: done
Writing inode tables: done
Adding journal to device /dev/sda4: done
Writing superblocks and filesystem accounting information: done
```

#13

```
[root@localhost /]# fdisk /dev/sda

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): d
Partition number (1-4, default 4): 3

Partition 3 has been deleted.

Command (m for help): d
Partition number (1,2,4, default 4): 4

Partition 4 has been deleted.

Command (m for help): n
Partition type
   p   primary (2 primary, 0 extended, 2 free)
   e   extended (container for logical partitions)
Select (default p): e
Partition number (3,4, default 3):
First sector (14551040-16777215, default 14551040):
Last sector, +sectors or +size{K,M,G,T,P} (14551040-16777215, default 16777215):

Created a new partition 3 of type 'Extended' and of size 1.1 GiB.
```

```
Command (m for help): n
All space for primary partitions is in use.
Adding logical partition 5
First sector (14553088-16777215, default 14553088):
Last sector, +sectors or +size{K,M,G,T,P} (14553088-16777215, default 16777215): +100M

Created a new partition 5 of type 'Linux' and of size 100 MiB.

Command (m for help): n
All space for primary partitions is in use.
Adding logical partition 6
First sector (14759936-16777215, default 14759936):
Last sector, +sectors or +size{K,M,G,T,P} (14759936-16777215, default 16777215): +100M

Created a new partition 6 of type 'Linux' and of size 100 MiB.

Command (m for help): w
```

```
[root@localhost ~]# fdisk /dev/sda

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): p
Disk /dev/sda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xb86d2976


Device     Boot    Start      End   Sectors   Size Id Type
/dev/sda1  *        2048  2099199   2097152    1G 83 Linux
/dev/sda2        2099200 14551039  12451840    6G 8e Linux LVM
/dev/sda3       14551040 16777215   2226176  1.1G  5 Extended
/dev/sda5       14553088 14757887    204800  100M 83 Linux
/dev/sda6       14759936 14964735    204800  100M 83 Linux
```

#14
PV (Physical Volume)
VG (Volume Group)
LV (Logical Volume)

```
[root@localhost ~]# pvcreate /dev/sda5 /dev/sda6
  Physical volume "/dev/sda5" successfully created.
  Physical volume "/dev/sda6" successfully created.
[root@localhost ~]# vgcreate vg1 /dev/sda5 /dev/sda6
  Volume group "vg1" successfully created
[root@localhost ~]# lvcreate -L200K -n lv1 vg1
  Rounding up size to full physical extent 4.00 MiB
  Logical volume "lv1" created.
```

```
[root@localhost ~]# mkfs.ext4 /dev/vg1/lv1
mke2fs 1.45.4 (23-Sep-2019)
Creating filesystem with 4096 1k blocks and 1024 inodes

Allocating group tables: done
Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done

[root@localhost ~]# mkdir /mnt/supernewdisk
[root@localhost ~]# mount /dev/vg1/lv1 /mnt/supernewdisk
[  774.180154] EXT4-fs (dm-3): mounted filesystem with ordered data mode. Opts: (null)
```

#15

```
[root@localhost /]# mkdir /mnt/share
[root@localhost /]# mount.cifs //192.168.56.1/share_dir /mnt/share -o user=guest,password=guest
```