

Отчет по лабораторной работе №11

Управление загрузкой системы

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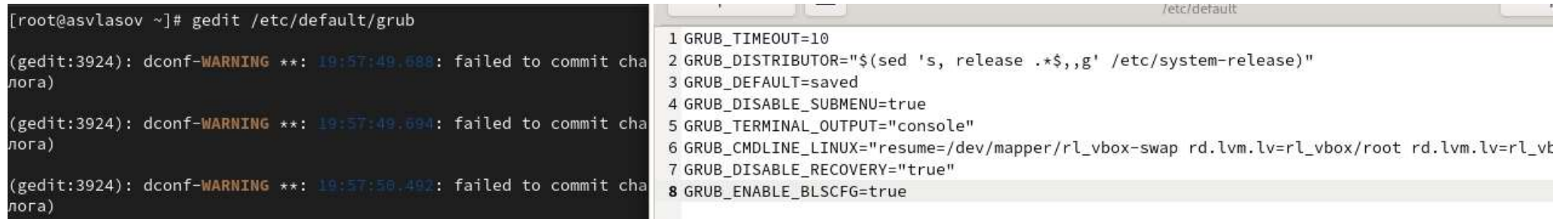
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Получить навыки работы с загрузчиком системы GRUB2.

Продemonстрировать навыки работы с изменением параметров GRUB и записи изменений в файл конфигурации, устранению неполадок при работе с GRUB, работы с GRUB без использования root.

Выполнение лабораторной работы

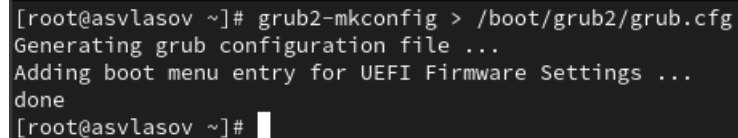
Изменяем параметр в файле и сохраняем изменения в файл конфигурации.



The image shows a terminal window on the left and a text editor window on the right. The terminal shows the command `gedit /etc/default/grub` being executed, followed by three warning messages from `dconf` indicating failed commit attempts. The text editor shows the contents of `/etc/default/grub` with the following configuration:

```
1 GRUB_TIMEOUT=10
2 GRUB_DISTRIBUTOR="$(sed 's, release .*$,,g' /etc/system-release)"
3 GRUB_DEFAULT=saved
4 GRUB_DISABLE_SUBMENU=true
5 GRUB_TERMINAL_OUTPUT="console"
6 GRUB_CMDLINE_LINUX="resume=/dev/mapper/rl_vbox-swap rd.lvm.lv=rl_vbox/root rd.lvm.lv=rl_vt
7 GRUB_DISABLE_RECOVERY="true"
8 GRUB_ENABLE_BLSCFG=true
```

Рис. 1: Изменение параметра



The image shows a terminal window with the following output:

```
[root@asvlasov ~]# grub2-mkconfig > /boot/grub2/grub.cfg
Generating grub configuration file ...
Adding boot menu entry for UEFI Firmware Settings ...
done
[root@asvlasov ~]#
```

Рис. 2: Сохранение в файл конфигурации

Открываем меню GRUB для редактирования и задаем параметр rescue.target.
Загружаем систему и видим режим восстановления.

```
OK | Mounted FUSE Control File System.
OK | Mounted Kernel Configuration File System.
OK | Finished Monitoring of LVM2 mirrors, snapshots etc. using dmeventd or progress polling.
13.5486771 systemd-journald[645]: Received client request to flush runtime journal.
OK | Finished Load/Save OS Random Seed.
13.5728651 systemd-journald[645]: File /var/log/journal/632ddcdda5794c52ad928429cbc91d0b/systemd.journal corrupted or uncleanly shut down, renaming and replacing.
OK | Finished Coldplug All udev Devices.
Starting Wait for udev To Complete Device Initialization...
OK | Finished Apply Kernel Variables.
OK | Finished Flush Journal to Persistent Storage.
OK | Finished Create Static Device Nodes in /dev.
Starting Rule-based Manager for Device Events and Files...
OK | Started Rule-based Manager for Device Events and Files.
Starting Load Kernel Module configfs...
Starting Load Kernel Module fuse...
OK | Finished Load Kernel Module configfs.
OK | Finished Load Kernel Module fuse.
OK | Started /usr/sbin/lvm vgchange -ay --autoactivation event rl_vbox.
OK | Finished Wait for udev To Complete Device Initialization.
OK | Reached target Preparation for Local File Systems.
Mounting /boot...
15.9088841 NFS (sdal): Mounting US Filesystem def4cb95-81bd-4d7c-b3b5-b11c858288eb
16.8518681 NFS (sdal): Ending clean mount
OK | Mounted /boot.
OK | Reached target Local File Systems.
Starting Tell Plymouth To Write Out Runtime Data...
Starting Automatic Boot Loader Update...
Starting Create Volatile Files and Directories...
OK | Finished Tell Plymouth To Write Out Runtime Data.
OK | Finished Automatic Boot Loader Update.
OK | Finished Create Volatile Files and Directories.
Starting Record System Boot/Shutdown in UTMP...
OK | Finished Record System Boot/Shutdown in UTMP.
OK | Reached target System Initialization.
Starting Restore /run/initramfs on shutdown...
OK | Started Rescue Shell.
OK | Reached target Rescue Mode.
Starting Record Runlevel Change in UTMP...
OK | Finished Restore /run/initramfs on shutdown.
OK | Finished Record Runlevel Change in UTMP.
You are in rescue mode. After logging in, type "journalctl -xb" to view
system logs, "systemctl reboot" to reboot, "systemctl default" or "exit"
to boot into default mode.
Use parentheses around service names, root
then hit Ctrl-D and press enter!
```

Рис. 3: Режим восстановления

Смотрим список всех файлов модулей и задействованные переменные среды оболочки

```
systemd-ask-password=plymouth.path loaded active waiting Forward Pas
init.scope loaded active running System and
dracut-shutdown.service loaded active exited Restore /ru
lvm2-monitor.service loaded active exited Monitoring
nis-domainname.service loaded active exited Read and se
plymouth-read-write.service loaded active exited Tell Plymou
plymouth-start.service loaded active exited Show Plymou
rescue.service loaded active running Rescue Shell
systemd-boot-update.service loaded active exited Automatic B
systemd-journal-flush.service loaded active exited Flush Journ
systemd-journald.service loaded active running Journal Ser
systemd-modules-load.service loaded failed failed Load Kernel
systemd-network-generator.service loaded active exited Generate ne
systemd-random-seed.service loaded active exited Load/Save U
systemd-remount-fs.service loaded active exited Remount Roc
systemd-sysctl.service loaded active exited Apply Kerne
systemd-tmpfiles-setup-dev.service loaded active exited Create Stat
systemd-tmpfiles-setup.service loaded active exited Create Uola
systemd-udev-settle.service loaded active exited Wait for ud
systemd-udev-trigger.service loaded active exited Coldplug Al
systemd-udevld.service loaded active running Rule-based
systemd-update-utmp.service loaded active exited Record Syst
[root@asvlasov ~]# systemctl show-environment
LANG=ru_RU.UTF-8
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin
[root@asvlasov ~]# _
```

Рис. 4: Режим восстановления информация

Перезагружаем систему и ставим параметр emergency.target.

```
GRUB version 2.06

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-5.14.0-570.58.1.el9_6.x86_64 root=/dev/mapper/rl_vbox\
-root ro resume=/dev/mapper/rl_vbox-swap rd.lvm.lv=rl_vbox/root rd.lvm.lv=r\
l_vbox/swap crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M systemd.unit=emerg\
ency.target_
initrd ($root)/initramfs-5.14.0-570.58.1.el9_6.x86_64.img $tuned_initrd

Minimum Emacs-like screen editing is supported. TAB lists
completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for
a command-line or ESC to discard edits and return to the GRUB menu.
```

Рис. 5: Параметр загрузки

Вводим те же команды и видим, что загруженный файлов модулей меньше.

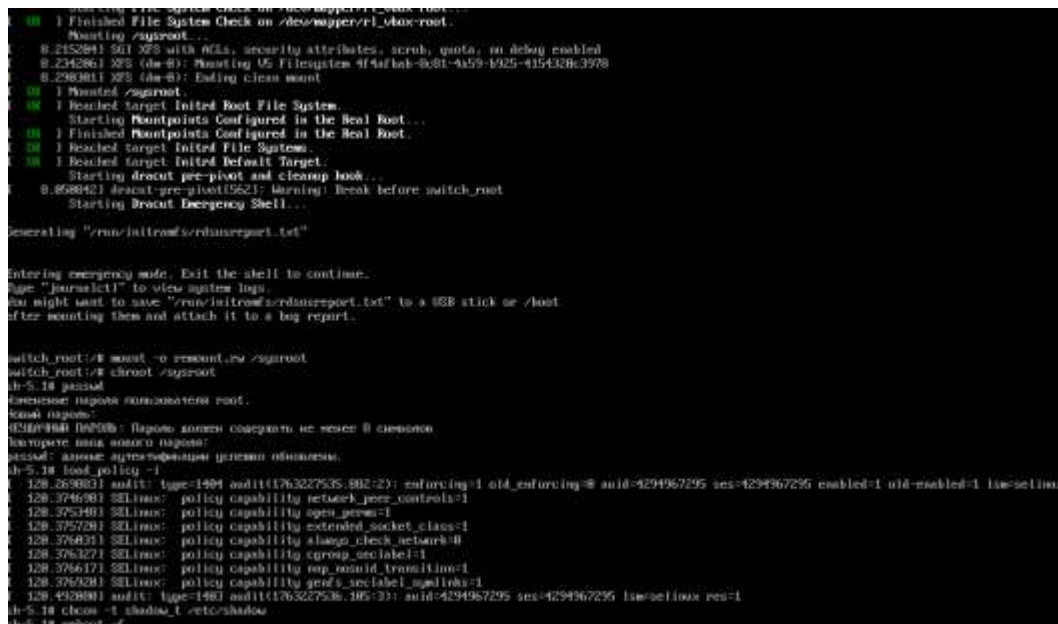
```
dev-disk-by\x2did-ata\x2dUBOX_HARDDISK_UB2c87e69d\x2d30134c42\x2dpart2.device loaded activating tentative /dev/disk/by-id/ata-UBOX_HARDDISK_UB2c87e69d\x2d30134c42\x2dpart2
dev-disk-by\x2dlabel-UBox_GAS_7.1.device loaded activating tentative /dev/disk/by-label/UBox_GAS_7.1
dev-disk-by\x2dpartuuid-9448a3fe\x2d01.device loaded activating tentative /dev/disk/by-partuuid/9448a3fe-01
dev-disk-by\x2dpartuuid-9448a3fe\x2d02.device loaded activating tentative /dev/disk/by-partuuid/9448a3fe-02
dev-disk-by\x2dpath-pci\x2d0000:00:01.1\x2data\x2d2.0.device loaded activating tentative /dev/disk/by-path/pci-0000:00:01.1-ata-2.0
dev-disk-by\x2dpath-pci\x2d0000:00:01.1\x2data\x2d2.device loaded activating tentative /dev/disk/by-path/pci-0000:00:01.1-ata-2
dev-disk-by\x2dpath-pci\x2d0000:00:0d.0\x2data\x2d1.0.device loaded activating tentative /dev/disk/by-path/pci-0000:00:0d.0-ata-1.0
dev-disk-by\x2dpath-pci\x2d0000:00:0d.0\x2data\x2d1.0\x2dpart1.device loaded activating tentative /dev/disk/by-path/pci-0000:00:0d.0-ata-1.0-part1
dev-disk-by\x2dpath-pci\x2d0000:00:0d.0\x2data\x2d1.0\x2dpart2.device loaded activating tentative /dev/disk/by-path/pci-0000:00:0d.0-ata-1.0-part2
dev-disk-by\x2dpath-pci\x2d0000:00:0d.0\x2data\x2d1.device loaded activating tentative /dev/disk/by-path/pci-0000:00:0d.0-ata-1
dev-disk-by\x2dpath-pci\x2d0000:00:0d.0\x2data\x2d1\x2dpart1.device loaded activating tentative /dev/disk/by-path/pci-0000:00:0d.0-ata-1-part1
dev-disk-by\x2dpath-pci\x2d0000:00:0d.0\x2data\x2d1\x2dpart2.device loaded activating tentative /dev/disk/by-path/pci-0000:00:0d.0-ata-1-part2
dev-disk-by\x2duuid-2024\x2d10\x2d10\x2d17\x2d52\x2d15\x2d90.device loaded activating tentative /dev/disk/by-uuid/2024-10-10-17-52-15-90
dev-disk-by\x2duuid-de64cb86\x2d81bd\x2d4d7e\x2db385\x2db11c858208eb.device loaded activating tentative /dev/disk/by-uuid/de64cb86-81bd-4d7e-b385-b11c858208eb
dev-sda.device loaded activating tentative /dev/sda
dev-sda1.device loaded activating tentative /dev/sda1
dev-sda2.device loaded activating tentative /dev/sda2
dev-sr0.device loaded activating tentative /dev/sr0
dev-ttyS0.device loaded activating tentative /dev/ttyS0
dev-ttyS1.device loaded activating tentative /dev/ttyS1
dev-ttyS2.device loaded activating tentative /dev/ttyS2
dev-ttyS3.device loaded activating tentative /dev/ttyS3
sys-devices-pci0000:00-0000:00:01.1-ata2-host1-target1:0:0-1:0:0:0-block-sr0.device loaded activating tentative /sys/devices/pci0000:00/0000:00:01.1-ata2-host1-target1:0:0-1:0:0:0-block-sr0
sys-devices-pci0000:00-0000:00:03.0-net-enp0s3.device loaded activating tentative /sys/devices/pci0000:00/0000:00:03.0-net-enp0s3
sys-devices-pci0000:00-0000:00:0d.0-ata3-host2-target2:0:0-2:0:0:0-block-sda-sda1.device loaded activating tentative /sys/devices/pci0000:00/0000:00:0d.0-ata3-host2-target2:0:0-2:0:0:0-block-sda-sda1
sys-devices-pci0000:00-0000:00:0d.0-ata3-host2-target2:0:0-2:0:0:0-block-sda-sda2.device loaded activating tentative /sys/devices/pci0000:00/0000:00:0d.0-ata3-host2-target2:0:0-2:0:0:0-block-sda-sda2
sys-devices-pci0000:00-0000:00:0d.0-ata3-host2-target2:0:0-2:0:0:0-block-sda.device loaded activating tentative /sys/devices/pci0000:00/0000:00:0d.0-ata3-host2-target2:0:0-2:0:0:0-block-sda
sys-devices-platform-serial18250-tty-ttyS0.device loaded activating tentative /sys/devices/platform/serial18250-tty-ttyS0
sys-devices-platform-serial18250-tty-ttyS1.device loaded activating tentative /sys/devices/platform/serial18250-tty-ttyS1
sys-devices-platform-serial18250-tty-ttyS2.device loaded activating tentative /sys/devices/platform/serial18250-tty-ttyS2
sys-devices-platform-serial18250-tty-ttyS3.device loaded activating tentative /sys/devices/platform/serial18250-tty-ttyS3
sys-devices-virtual-block-dm\x2d0.device loaded active plugged /sys/devices/virtual/block/dm-0
sys-devices-virtual-block-dm\x2d1.device loaded active plugged /sys/devices/virtual/block/dm-1
sys-module-configfs.device loaded activating tentative /sys/module/configfs
sys-module-fuse.device loaded activating tentative /sys/module/fuse
sys-subsystem-net-devices-enp0s3.device loaded activating tentative /sys/subsystem/net/devices/enp0s3
```

Рис. 6: Информация о запуске

Меняем параметр запуска на `rd.break`. Получаем доступ к системному образу, создаем новый корневой каталог, меняем пароль `root`.



Рис. 7: Параметр загрузки



Мы научились работать с загрузчиком системы GRUB2.