

Лабораторная работа №11

Управление загрузкой системы

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Цель работы

Получить навыки работы с загрузчиком системы **GRUB2** и научиться управлять параметрами загрузки, а также выполнять восстановление доступа через консольные режимы.

Ход выполнения работы

Модификация параметров GRUB2



```
raliev@raliev:/home/raliev - nano /etc/default/grub
GNU nano 8.1 /etc/default/grub Modified
GRUB_TIMEOUT=10
GRUB_DISTRIBUTOR="$(sed 's, release .*$,,g' /etc/system-release)"
GRUB_DEFAULT=saved
GRUB_DISABLE_SUBMENU=true
GRUB_TERMINAL_OUTPUT=console
GRUB_CMDLINE_LINUX="resume=UUID=43296ceb-b959-4fcf-8f70-625d0f6dfe00 rd.lvm.lv=rl_vbox/root rd.lvm.lv=rl_vbox/swap"
GRUB_DISABLE_RECOVERY="true"
GRUB_ENABLE_BLSCFG=true
```

Рис. 1: Редактирование файла /etc/default/grub

Пересоздание конфигурации GRUB2

```
raliev@raliev:~$ su
Password:
root@raliev:/home/raliev#
root@raliev:/home/raliev# nano /etc/default/grub
root@raliev:/home/raliev#
root@raliev:/home/raliev# grub2-mkconfig > /boot/grub2/grub.cfg
Generating grub configuration file ...
Adding boot menu entry for UEFI Firmware Settings ...
done
root@raliev:/home/raliev# █
```

Рис. 2: Пересоздание конфигурации GRUB2

Меню загрузчика GRUB

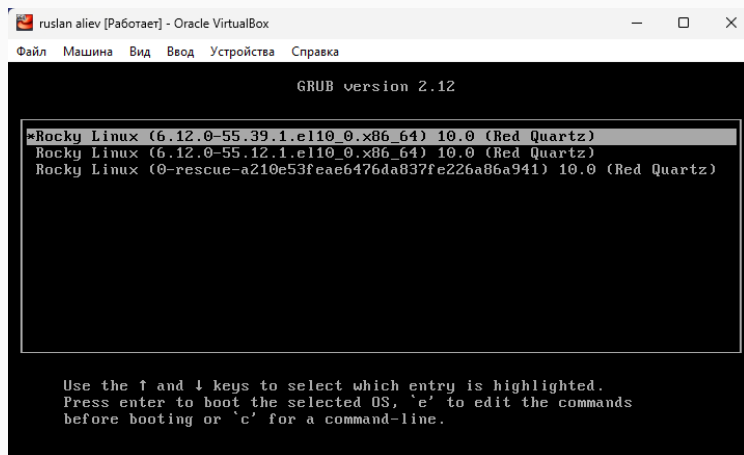


Рис. 3: Меню загрузчика GRUB

```
GRUB version 2.12

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-6.12.0-55.39.1.el10_0.x86_64 root=/dev/mapper/rl_vbox\
-root ro resume=UUID=43296ceb-b959-4fcf-8f70-625d0f6dfe00 rd.lvm.lv=rl_vbox\
/root rd.lvm.lv=rl_vbox/swap systemd.unit=rescue.target
initrd ($root)/initramfs-6.12.0-55.39.1.el10_0.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. 4: Редактирование параметров загрузки — режим rescue

Режим восстановления (rescue)

```
lvmd-lvmpld.socket loaded active listening LVM2 poll daemon
systemd-journald-dev-log.socket loaded active running Journal Socket (
systemd-journald.socket loaded active running Journal Sockets
systemd-udev-control.socket loaded active running udev Control Soc
systemd-udev-kernel.socket loaded active running udev Kernel Sock
dev-disk-by\x2duuid-43296ceb\x2db959\x2d44cf\x2d8f70\x2d625d0f6dfe80.swap loaded active active /dev/disk/by-uni
cryptsetup.target loaded active active Local Encrypted
integritysetup.target loaded active active Local Integrity
local-fs-pre.target loaded active active Preparation for
local-fs.target loaded active active Local File System
network-pre.target loaded active active Preparation for
rescue.target loaded active active Rescue Mode
sound.target loaded active active Sound Card
swap.target loaded active active Swaps
sysinit.target loaded active active System Initializ
veritysetup.target loaded active active Local Verity Pro

Legend: LOAD + Reflects whether the unit definition was properly loaded.
          ACTIVE + The high-level unit activation state, i.e. generalization of SUB.
          SUB + The low-level unit activation state, values depend on unit type.

69 loaded units listed. Pass --all to see loaded but inactive units, too.
To show all installed unit files use 'systemctl list-unit-files'.
root@raliev:~#
root@raliev:~# systemctl show-environment
LANG=en_US.UTF-8
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin
XDG_DATA_DIRS=/var/lib/flatpak/exports/share:/usr/local/share:/usr/share/
root@raliev:~#
```

Рис. 5: Список активных модулей и переменные среды в режиме rescue

```
GRUB version 2.12

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-6.12.0-55.39.1.el10_0.x86_64 root=/dev/mapper/rl_vbox\
-root ro resume=UUID=43296ceb-b959-4fcf-8f70-625d0f6dfe00 rd.lvm.lv=rl_vbox\
/root rd.lvm.lv=rl_vbox/swap systemd.unit=emergency.target_
initrd ($root)/initramfs-6.12.0-55.39.1.el10_0.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. 6: Редактирование параметров загрузки — режим emergency

Аварийный режим (emergency)

```
• sys-devices-platform-serial18250-serial18250-0-0-ata3-host2-target2:0:0-Z:0:0-0-block-sda.device loaded activating tentat
• sys-devices-platform-serial18250-serial18250-0-0-tty-ttyS0.device loaded activating tentat
• sys-devices-platform-serial18250-serial18250-0-1-tty-ttyS1.device loaded activating tentat
• sys-devices-platform-serial18250-serial18250-0-2-tty-ttyS2.device loaded activating tentat
• sys-devices-platform-serial18250-serial18250-0-3-tty-ttyS3.device loaded activating tentat
sys-devices-virtual-block-dmxx240.device loaded active plugged
sys-devices-virtual-block-dmxx241.device loaded active plugged
• sys-module-configfs.device loaded activating tentat
• sys-module-fuse.device loaded activating tentat
- .mount loaded active mountp
sys-kernel-config.mount loaded active mountp
init.scope loaded active running
emergency.service loaded active running
plymouth-start.service loaded active exited
systemd-journald.service loaded active running
- .slice loaded active active
system-madprobe.slice loaded active active
system.slice loaded active active
systemd-journald-dev-log.socket loaded active running
systemd-journald.socket loaded active running
emergency.target loaded active active

Legend: LONB → Reflects whether the unit definition was properly loaded.
        ACTIVE → The high-level unit activation state, i.e. generalization of SUB.
        SUB → The low-level unit activation state, values depend on unit type.

68 loaded units listed. Pass --all to see loaded but inactive units, too.
To show all installed unit files use 'systemctl list-unit-files'.
root@reliev:~#
```

Рис. 7: Список активных модулей в режиме emergency

```
GRUB version 2.12

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-6.12.0-55.39.1.el10_0.x86_64 root=/dev/mapper/rl_vbox\
-root ro resume=UUID=43296ceb-b959-4fcf-8f70-625d0f6dfe00 rd.lvm.lv=rl_vbox\
/root rd.lvm.lv=rl_vbox/swap rd.break_
initrd ($root)/initramfs-6.12.0-55.39.1.el10_0.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. 8: Редактирование параметров загрузки для сброса пароля root

```
Generating "/run/initramfs/rdsosreport.txt"

Entering emergency mode. Exit the shell to continue.
Type "journalctl" to view system logs.
You might want to save "/run/initramfs/rdsosreport.txt" to a USB stick or /boot
after mounting them and attach it to a bug report.

Give root password for maintenance
(or press Control-D to continue):
sh-5.2# mount -o remount,rw /sysroot
sh-5.2# chroot /sysroot
sh: chroot: command not found
sh-5.2# passwd
sh: passwd: command not found
sh-5.2# reboot
```

Рис. 9: Работа в режиме initramfs при сбросе пароля root

Итоги работы

В ходе работы были изучены принципы настройки и модификации загрузчика **GRUB2** в Linux. Были выполнены действия по изменению конфигурационных параметров, пересозданию файла загрузки и проверке работы системы в режимах **rescue**, **emergency**, а также при сбросе пароля **root**.

Полученные навыки позволяют администратору уверенно управлять процессом загрузки системы и восстанавливать доступ при сбоях.