

Лабораторная работа №11

Управление загрузкой системы

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Цель работы

Получить навыки работы с загрузчиком системы **GRUB2** и изучить способы управления загрузкой, восстановления системы и сброса пароля root.

Ход выполнения работы

Модификация параметров GRUB2



```
mlabsi@mlabsi:/home/mlabsi - 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=b51e98a0-6553-4626-8a2a-7a339e0f9743 rd.lvm.lv=rl_vbox/root rd.lvm"
GRUB_DISABLE_RECOVERY="true"
GRUB_ENABLE_BLSCFG=true
```

Рис. 1: Редактирование параметров GRUB

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

Рис. 2: Обновление конфигурации GRUB2



Рис. 3: Меню загрузчика GRUB с выбором ядра

Режим восстановления
(`rescue.target`)

```
GRUB version 2.12

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-6.12.0-55.39.1.el10_0.x86_64 root=/dev/mapper/rl_vbox\
-root ro resume=UUID=b51e98a0-6553-4626-8a2a-7a339e0f9743 rd.lvm.lv=rl_vbox\
/root rd.lvm.lv=rl_vbox/swap systemd.unit=rescue.target
initrd ($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: Добавление параметра `systemd.unit=rescue.target`

Проверка активных модулей

```
systemd-journald-dev-log.socket loaded active running Journal Sock
systemd-journald.socket loaded active running Journal Sock
systemd-udev-control.socket loaded active running udev Control
systemd-udev-kernel.socket loaded active running udev Kernel
dev-disk-by\x2duuid-b51e98a0\x2d6553\x2d4626\x2d8a2a\x2d7a339e0f9743.swap loaded active active /dev/disk/by
cryptsetup.target loaded active active Local Encryp
integritysetup.target loaded active active Local Integr
local-fs-pre.target loaded active active Preparation
local-fs.target loaded active active Local File S
network-pre.target loaded active active Preparation
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 Init
veritysetup.target loaded active active Local Verity

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@mlabsi:~#
root@mlabsi:~# systemctl [ 48.178398] clocksource: Long readout interval, skipping watchdog check: cs_nsec: 1117297774 wd_nsec:
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@mlabsi:~#
root@mlabsi:~# _
```

Рис. 5: Список активных модулей в режиме rescue

Аварийный режим
(emergency.target)

```
GRUB version 2.12

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-6.12.0-55.39.1.el10_0.x86_64 root=/dev/mapper/r1_vbox\
-root ro resume=UUID=b51e98a0-6553-4626-8a2a-7a339e0f9743 rd.lvm.lv=r1_vbox\
/root rd.lvm.lv=r1_vbox/swap systemd.unit=emergency.target_
initrd ($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: Добавление параметра systemd.unit=emergency.target

Минимальный набор модулей

```
• sys-devices-pci0000:00-0000:00:0d.0-ata3-host1-target1:0:0-1:0:0:0-block-sda-sda3.device
• sys-devices-pci0000:00-0000:00:0d.0-ata3-host1-target1:0:0-1:0:0:0-block-sda.device
• sys-devices-platform-serial8250-serial8250:0-serial8250:0.0-tty-ttyS0.device
• sys-devices-platform-serial8250-serial8250:0-serial8250:0.1-tty-ttyS1.device
• sys-devices-platform-serial8250-serial8250:0-serial8250:0.2-tty-ttyS2.device
• sys-devices-platform-serial8250-serial8250:0-serial8250:0.3-tty-ttyS3.device
sys-devices-virtual-block-dm\x2d0.device
sys-devices-virtual-block-dm\x2d1.device
• sys-module-configfs.device
• sys-module-fuse.device
-.mount
sys-kernel-config.mount
init.scope
emergency.service
plymouth-start.service
systemd-journald.service
-.slice
system-modprobe.slice
system.slice
systemd-journald-dev-log.socket
systemd-journald.socket
emergency.target

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.

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@mlabs1:~# _
```

Рис. 7: Минимальный набор активных модулей в emergency-режиме

Сброс пароля root

```
GRUB version 2.12

load_video
set gfxpayload=keep
insmod gzio
linux ($root)/vmlinuz-6.12.0-55.39.1.el10_0.x86_64 root=/dev/mapper/rl_vbox\
-root ro resume=UUID=b51e98a0-6553-4626-8a2a-7a339e0f9743 rd.lvm.lv=rl_vbox\
/root rd.lvm.lv=rl_vbox/swap rd.break_
initrd ($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: Добавление параметра rd.break для сброса пароля

```
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# _
```

Рис. 9: Попытка сброса пароля в initramfs

Заключение

В ходе лабораторной работы были изучены методы настройки и управления загрузчиком **GRUB2**.

Освоены приёмы изменения конфигурации, восстановления системы и сброса пароля root, что позволяет администратору эффективно управлять процессом загрузки и устранять неполадки.