

Лабораторная работа №5

Управление системными службами

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Информация

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Цели и задачи

- Получить навыки управления системными службами операционной системы посредством systemd.
1. Выполните основные операции по запуску (останову), определению статуса, добавлению (удалению) в автозапуск и пр. службы Very Secure FTP (раздел 5.4.1).
 2. Продемонстрируйте навыки по разрешению конфликтов юнитов для служб firewalld и iptables (раздел 5.4.2).
 3. Продемонстрируйте навыки работы с изолированными целями (разделы 5.4.3, 5.4.4).

Материалы и методы

- Linux (дистрибутив Rocky 9.6)
- Linux Fedora Sway (Markdown)
- Oracle VirtualBox

Выполнение лабораторной работы

Проверка статуса и установка Very Secure FTP

```
[aeakunaeva@aeakunaeva ~]$ su -  
Password:  
[root@aeakunaeva ~]# systemctl status vsftpd  
Unit vsftpd.service could not be found.  
[root@aeakunaeva ~]# dnf -y install vsftpd  
Last metadata expiration check: 0:45:12 ago on Sat 27 Sep 2025 08:18:21 PM MSK.  
Dependencies resolved.  
=====
```

Package	Architecture	Version	Repository	Size
---------	--------------	---------	------------	------

```
=====
```

Installing:

vsftpd	x86_64	3.0.5-6.el9	appstream	157 k
--------	--------	-------------	-----------	-------

Transaction Summary

```
=====
```

Install 1 Package

Total download size: 157 k
Installed size: 347 k
Downloading Packages:

Зanyck Very Secure FTP

```
Installing      : vsftpd-3.0.5-6.el9.x86_64      1/1
Running scriptlet: vsftpd-3.0.5-6.el9.x86_64      1/1
Verifying       : vsftpd-3.0.5-6.el9.x86_64      1/1

Installed:
  vsftpd-3.0.5-6.el9.x86_64

Complete!
[root@aeakunaeva ~]# systemctl start vsftpd
[root@aeakunaeva ~]# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: >
   Active: active (running) since Sat 2025-10-04 21:50:42 MSK; 8s ago
   Process: 7098 ExecStart=/usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf (code=exit>
  Main PID: 7099 (vsftpd)
    Tasks: 1 (limit: 24613)
   Memory: 744.0K
      CPU: 5ms
   CGroup: /system.slice/vsftpd.service
           └─7099 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Starting Vsftpd ftp daemon...
Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Started Vsftpd ftp daemon.
lines 1-13/13 (END)
```

Подключение автозапуск Very Secure FTP

```
[root@aeakunaeva ~]# systemctl enable vsftpd
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /usr/lib/systemd/system/vsftpd.service.
[root@aeakunaeva ~]# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: d)
   Active: active (running) since Sat 2025-10-04 21:50:42 MSK; 1min 17s ago
 Main PID: 7099 (vsftpd)
    Tasks: 1 (limit: 24613)
   Memory: 744.0K
      CPU: 5ms
   CGroup: /system.slice/vsftpd.service
           └─7099 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Starting Vsftpd ftp daemon...
Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Started Vsftpd ftp daemon.
lines 1-12/12 (END)
```

Отключение автозапуск Very Secure FTP

```
[root@aeakunaeva ~]# systemctl disable vsftpd
Removed "/etc/systemd/system/multi-user.target.wants/vsftpd.service".
[root@aeakunaeva ~]# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
   Active: active (running) since Sat 2025-10-04 21:50:42 MSK; 2min 9s ago
     Main PID: 7099 (vsftpd)
       Tasks: 1 (limit: 24613)
      Memory: 744.0K
         CPU: 5ms
       CGroup: /system.slice/vsftpd.service
               └─7099 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Starting Vsftpd ftp daemon...
Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Started Vsftpd ftp daemon.
lines 1-12/12 (END)
```

Список символических ссылок запуска сервисов

```
[root@aeakunaeva ~]# ls /etc/systemd/system/multi-user.target.wants
atd.service          firewalld.service    ModemManager.service sssd.service
auditd.service       irqbalance.service   NetworkManager.service tuned.service
avahi-daemon.service kdump.service         remote-fs.target      vmtoolsd.service
crond.service         libstoragemgmt.service rsyslog.service
cups.path             mcelog.service       smartd.service
cups.service          mdmonitor.service     sshd.service

[root@aeakunaeva ~]# systemctl enable vsftpd
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /usr/lib/systemd/system/vsftpd.service.

[root@aeakunaeva ~]# ls /etc/systemd/system/multi-user.target.wants
atd.service          firewalld.service    ModemManager.service sssd.service
auditd.service       irqbalance.service   NetworkManager.service tuned.service
avahi-daemon.service kdump.service         remote-fs.target      vmtoolsd.service
crond.service         libstoragemgmt.service rsyslog.service       vsftpd.service
cups.path             mcelog.service       smartd.service
cups.service          mdmonitor.service     sshd.service          I

[root@aeakunaeva ~]#
```

Статус VSFTPD: запущенный файл юнита

```
[root@aeakunaeva ~]# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: disabled)
   Active: active (running) since Sat 2025-10-04 21:50:42 MSK; 3min 45s ago
     Main PID: 7099 (vsftpd)
        Tasks: 1 (limit: 24613)
       Memory: 744.0K
          CPU: 5ms
       CGroup: /system.slice/vsftpd.service
               └─7099 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Starting Vsftpd ftp daemon...
Oct 04 21:50:42 aeakunaeva.localdomain systemd[1]: Started Vsftpd ftp daemon.
[root@aeakunaeva ~]#
```

```
[root@aeakunaeva ~]# systemctl list-dependencies vsftpd
vsftpd.service
● └─system.slice
● └─sysinit.target
●   └─dev-hugepages.mount
●   └─dev-mqueue.mount
●   └─dracut-shutdown.service
○   └─iscsi-onboot.service
○   └─iscsi-starter.service
●   └─kmod-static-nodes.service
○   └─ldconfig.service
●   └─lvm2-lvmpolld.socket
●   └─lvm2-monitor.service
○   └─multipathd.service
●   └─nis-domainname.service
●   └─plymouth-read-write.service
```

Список юнитов, зависящих от юнита VSFTPD

```
● └─dracut-shutdown.service
○ └─iscsi-onboot.service
○ └─iscsi-starter.service
● └─kmod-static-nodes.service
○ └─ldconfig.service
● └─lvm2-lvmpolld.socket
● └─lvm2-monitor.service
○ └─multipathd.service
● └─nis-domainname.service
● └─plymouth-read-write.service
● └─plymouth-start.service
● └─proc-sys-fs-binfmt_misc.automount
○ └─selinux-autorelabel-mark.service
● └─sys-fs-fuse-connections.mount
● └─sys-kernel-config.mount
● └─sys-kernel-debug.mount
● └─sys-kernel-tracing.mount
○ └─systemd-ask-password-console.path

[root@aeakunaeva ~]# systemctl list-dependencies vsftpd --reverse
vsftpd.service
● └─multi-user.target
● └─graphical.target
[root@aeakunaeva ~]#
```


Установка iptables

```
[root@aeakunaeva ~]# dnf -y install iptables\*
Last metadata expiration check: 0:06:00 ago on Sat 04 Oct 2025 09:50:08 PM MSK.
Package iptables-libs-1.8.10-11.el9_5.x86_64 is already installed.
Package iptables-nft-1.8.10-11.el9_5.x86_64 is already installed.
Dependencies resolved.
=====
Package                Architecture Version           Repository        Size
=====
Installing:
  iptables-devel        x86_64          1.8.10-11.el9_5  appstream         16 k
  iptables-nft-services noarch          1.8.10-11.el9_5  appstream         19 k
  iptables-utils        x86_64          1.8.10-11.el9_5  baseos            41 k
Transaction Summary
=====
Install 3 Packages

Total download size: 76 k
Installed size: 142 k
Downloading Packages:
```

Включение служб firewalld и iptables

```
[root@aeakunaeva ~]# systemctl status firewalld
• firewalld.service - firewalld - dynamic firewall daemon
  Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; preset: enabl>
  Active: active (running) since Sat 2025-09-27 20:06:01 MSK; 1 week 0 days ago
    Docs: man:firewalld(1)
  Main PID: 852 (firewalld)
    Tasks: 2 (limit: 24613)
  Memory: 37.9M
    CPU: 750ms
  CGroup: /system.slice/firewalld.service
          └─852 /usr/bin/python3 -s /usr/sbin/firewalld --nofork --nopid

Sep 27 20:05:53 aeakunaeva.localdomain systemd[1]: Starting firewalld - dynamic firewa
Sep 27 20:06:01 aeakunaeva.localdomain systemd[1]: Started firewalld - dynamic firewal

[root@aeakunaeva ~]# systemctl status iptables
○ iptables.service - IPv4 firewall with iptables
  Loaded: loaded (/usr/lib/systemd/system/iptables.service; disabled; preset: disab>
  Active: inactive (dead)

[root@aeakunaeva ~]# systemctl start firewalld
[root@aeakunaeva ~]# systemctl start iptables
[root@aeakunaeva ~]#
```

Статус firewalld и iptables

```
[root@aeakunaeva ~]# systemctl status firewalld
○ firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; preset: enable)
   Active: inactive (dead) since Sat 2025-10-04 21:57:01 MSK; 25s ago
     Duration: 1w 1h 50min 59.406s
       Docs: man:firewalld(1)
    Process: 852 ExecStart=/usr/sbin/firewalld --nofork --nopid $FIREWALLD_ARGS (code=
 Main PID: 852 (code=exited, status=0/SUCCESS)
      CPU: 802ms

Sep 27 20:05:53 aeakunaeva.localdomain systemd[1]: Starting firewalld - dynamic firewa
Sep 27 20:06:01 aeakunaeva.localdomain systemd[1]: Started firewalld - dynamic firewa
Oct 04 21:57:01 aeakunaeva.localdomain systemd[1]: Stopping firewalld - dynamic firewa
Oct 04 21:57:01 aeakunaeva.localdomain systemd[1]: firewalld.service: Deactivated succ
Oct 04 21:57:01 aeakunaeva.localdomain systemd[1]: Stopped firewalld - dynamic firewal

[root@aeakunaeva ~]# systemctl status iptables
● iptables.service - IPv4 firewall with iptables
   Loaded: loaded (/usr/lib/systemd/system/iptables.service; disabled; preset: disab
   Active: active (exited) since Sat 2025-10-04 21:57:01 MSK; 47s ago
    Process: 7552 ExecStart=/usr/libexec/iptables/iptables.init start (code=exited, st
 Main PID: 7552 (code=exited, status=0/SUCCESS)
```

Настройки конфликтов firewalld и iptables

```
[root@aeakunaeva ~]# cat /usr/lib/systemd/system/firewalld.service
[Unit]
Description=firewalld - dynamic firewall daemon
Before=network-pre.target
Wants=network-pre.target
After=dbus.service
After=polkit.service
Conflicts=iptables.service ip6tables.service ebtables.service ipset.service
Documentation=man:firewalld(1)

[Service]
EnvironmentFile=-/etc/sysconfig/firewalld
ExecStart=/usr/sbin/firewalld --nofork --nopid $FIREWALLD_ARGS
ExecReload=/bin/kill -HUP $MAINPID
# supress to log debug and error output also to /var/log/messages
StandardOutput=null
StandardError=null
Type=dbus
BusName=org.fedoraproject.FirewallD1
KillMode=mixed

[Install]
```

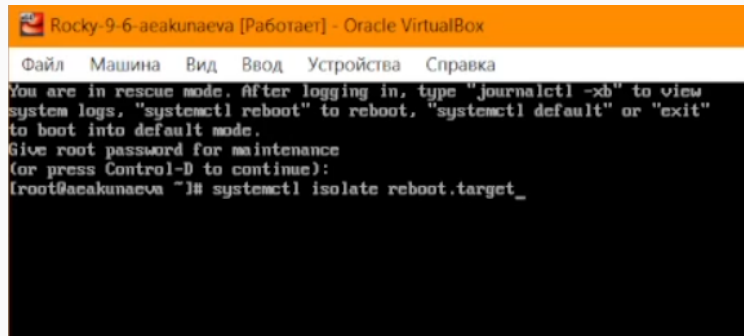
Блокирование службы iptables

```
WantedBy=multi-user.target
Alias=dbus-org.fedoraproject.FirewallD1.service
[root@aeakunaeva ~]# systemctl stop iptables
[root@aeakunaeva ~]# systemctl start firewalld
[root@aeakunaeva ~]# systemctl mask iptables
Created symlink /etc/systemd/system/iptables.service → /dev/null.
[root@aeakunaeva ~]# systemctl start iptables
Failed to start iptables.service: Unit iptables.service is masked.
[root@aeakunaeva ~]# systemctl enable iptables
Failed to enable unit: Unit file /etc/systemd/system/iptables.service is masked.
[root@aeakunaeva ~]#
```

Список доступных для блокировки целей

```
[root@aeakunaeva ~]# cd /usr/lib/systemd/system
[root@aeakunaeva system]# grep Isolate *.target
ctrl-alt-del.target:AllowIsolate=yes
default.target:AllowIsolate=yes
emergency.target:AllowIsolate=yes
exit.target:AllowIsolate=yes
graphical.target:AllowIsolate=yes
halt.target:AllowIsolate=yes
initrd-switch-root.target:AllowIsolate=yes
initrd.target:AllowIsolate=yes
kexec.target:AllowIsolate=yes
multi-user.target:AllowIsolate=yes
poweroff.target:AllowIsolate=yes
reboot.target:AllowIsolate=yes
rescue.target:AllowIsolate=yes
runlevel0.target:AllowIsolate=yes
runlevel1.target:AllowIsolate=yes
runlevel2.target:AllowIsolate=yes
runlevel3.target:AllowIsolate=yes
runlevel4.target:AllowIsolate=yes
runlevel5.target:AllowIsolate=yes
runlevel6.target:AllowIsolate=yes
system-update.target:AllowIsolate=yes
```

```
[root@aeakunaeva system]# systemctl isolate rescue.target
```



The screenshot shows a terminal window titled "Rocky-9-6-aeakunaeva [Работает] - Oracle VirtualBox". The menu bar includes "Файл", "Машина", "Вид", "Ввод", "Устройства", and "Справка". The terminal text indicates it is in rescue mode and provides instructions for logging in, viewing logs, and rebooting. The command `systemctl isolate reboot.target_` has been entered.

```
Rocky-9-6-aeakunaeva [Работает] - Oracle VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка
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.
Give root password for maintenance
(or press Control-D to continue):
[root@aeakunaeva ~]# systemctl isolate reboot.target_
```



```
[aeakunaeva@aeakunaeva ~]$ systemctl get-default  
graphical.target  
[aeakunaeva@aeakunaeva ~]$ systemctl set-default multi-user.target  
Removed "/etc/systemd/system/default.target".  
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/multi-user.target.  
[aeakunaeva@aeakunaeva ~]$ reboot
```

Установка графического режима системы

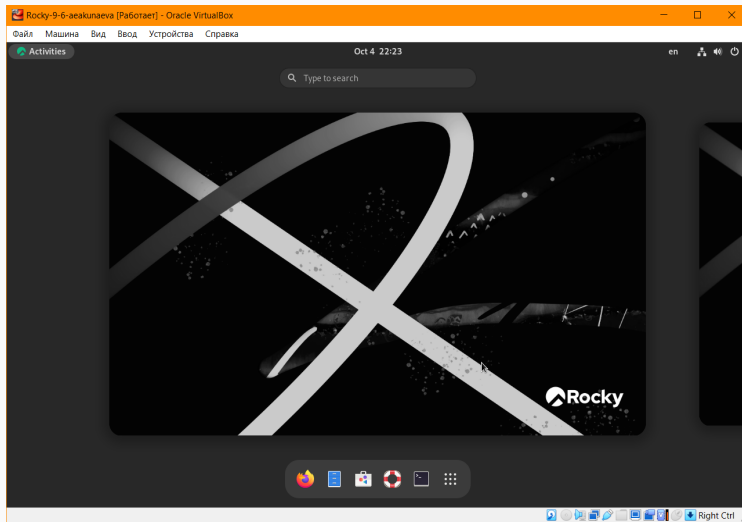
```
Rocky Linux 9.6 (Blue Onyx)
Kernel 5.14.0-570.17.1.el9_6.x86_64 on x86_64

Activate the web console with: systemctl enable --now cockpit.socket

aeakunaeva login: 1
Password:
Login incorrect

aeakunaeva login: root
Password:
Last login: Sat Oct  4 22:06:47 on pts/0
[root@aeakunaeva ~]# systemctl set-default graphical.target
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/graphical.target.
[root@aeakunaeva ~]# reboot
```

Графический режим системы



Выводы

Я получила навыки управления системными службами операционной системы посредством systemd.