

Лабораторная работа №5

Управление системными службами

Лабси Мохаммед

12 декабря 2025

Российский университет дружбы народов, Москва, Россия

Цель работы

Получить практические навыки управления системными службами и целями загрузки в операционной системе Linux с использованием менеджера **systemd**.

:contentReferenceoaicite:0

Ход выполнения работы

```
root@mlabsi:/etc/yum.repos.d# systemctl status vsftpd
Unit vsftpd.service could not be found.
root@mlabsi:/etc/yum.repos.d# dnf -y install vsftpd
Last metadata expiration check: 0:18:09 ago on Fri 12 Dec 2025 07:05:55 PM MSK.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
vsftpd                 x86_64            3.0.5-10.el10     appstream         170 k

Transaction Summary
=====
Install 1 Package

Total download size: 170 k
Installed size: 344 k
Downloading Packages:
vsftpd-3.0.5-10.el10.x86_64.rpm                                2.2 MB/s | 170 kB    00:00
-----
Total                                                                126 kB/s | 170 kB    00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                                    1/1
  Installing    : vsftpd-3.0.5-10.el10.x86_64                        1/1
  Running scriptlet: vsftpd-3.0.5-10.el10.x86_64                      1/1

Installed:
  vsftpd-3.0.5-10.el10.x86_64

Complete!
root@mlabsi:/etc/yum.repos.d#
```

Рис. 1: Проверка статуса vsftpd

Установка сервиса vsftpd

```
root@mlabsi:/etc/yum.repos.d# systemctl status vsftpd
Unit vsftpd.service could not be found.
root@mlabsi:/etc/yum.repos.d# dnf -y install vsftpd
Last metadata expiration check: 0:18:09 ago on Fri 12 Dec 2025 07:05:55 PM MSK.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
vsftpd                 x86_64            3.0.5-10.el10     appstream         170 k

Transaction Summary
=====
Install 1 Package

Total download size: 170 k
Installed size: 344 k
Downloading Packages:
vsftpd-3.0.5-10.el10.x86_64.rpm                                2.2 MB/s | 170 kB    00:00
-----
Total                                                                126 kB/s | 170 kB    00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                                    1/1
  Installing     : vsftpd-3.0.5-10.el10.x86_64                        1/1
  Running scriptlet: vsftpd-3.0.5-10.el10.x86_64                      1/1

Installed:
vsftpd-3.0.5-10.el10.x86_64

Complete!
root@mlabsi:/etc/yum.repos.d#
```

Рис. 2: Установка vsftpd

Запуск сервиса vsftpd

```
root@mlabsi:/etc/yum.repos.d# systemctl start vsftpd
root@mlabsi:/etc/yum.repos.d# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
   Active: active (running) since Fri 2025-12-12 19:24:35 MSK; 8s ago
     Invocation: 9954ebef190d4056a18f039782f1ec48
   Process: 8111 ExecStart=/usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf (code=exited, status=0/SUCCESS)
    Main PID: 8112 (vsftpd)
       Tasks: 1 (limit: 23140)
      Memory: 852K (peak: 1.2M)
         CPU: 2ms
        CGroup: /system.slice/vsftpd.service
                └─8112 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@mlabsi:/etc/yum.repos.d# █
```

Рис. 3: Запуск и статус vsftpd

```
-----,---,-----
root@mlabsi:/etc/yum.repos.d# systemctl enable vsftpd
Created symlink '/etc/systemd/system/multi-user.target.wants/vsftpd.service' → '/usr/lib/systemd/system/vsftpd.service'.
root@mlabsi:/etc/yum.repos.d# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: disabled)
   Active: active (running) since Fri 2025-12-12 19:24:35 MSK; 45s ago
 Invocation: 9954ebef190d4056a18f039782f1ec48
    Main PID: 8112 (vsftpd)
      Tasks: 1 (limit: 23140)
     Memory: 852K (peak: 1.2M)
        CPU: 2ms
    CGroup: /system.slice/vsftpd.service
            └─8112 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@mlabsi:/etc/yum.repos.d#
root@mlabsi:/etc/yum.repos.d# systemctl disable vsftpd
Removed '/etc/systemd/system/multi-user.target.wants/vsftpd.service'.
root@mlabsi:/etc/yum.repos.d# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
   Active: active (running) since Fri 2025-12-12 19:24:35 MSK; 1min 9s ago
 Invocation: 9954ebef190d4056a18f039782f1ec48
    Main PID: 8112 (vsftpd)
      Tasks: 1 (limit: 23140)
     Memory: 852K (peak: 1.2M)
        CPU: 2ms
    CGroup: /system.slice/vsftpd.service
            └─8112 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@mlabsi:/etc/yum.repos.d# █
```

Рис. 4: Enable и disable vsftpd

Символические ссылки systemd

```
root@mlabsi: /etc/yum.repos.d# ls
root@mlabsi: /etc/yum.repos.d# ls /etc/systemd/system/multi-user.target.wants/
atd.service      cups.path        libstoragemgmt.service  remote-fs.target  vboxadd.service
auditd.service   cups.service     mcelog.service          rsyslog.service   vboxadd-service.service
audit-rules.service  firewalld.service  mdmonitor.service       smartd.service     vmtoolsd.service
avahi-daemon.service httpd.service     ModemManager.service    sshd.service
chronyd.service   irqbalance.service NetworkManager.service  sssd.service
crond.service     kdump.service    remote-cryptsetup.target tuned.service
root@mlabsi: /etc/yum.repos.d# systemctl enable vsftpd
Created symlink '/etc/systemd/system/multi-user.target.wants/vsftpd.service' → '/usr/lib/systemd/system/vsftpd.service'.
root@mlabsi: /etc/yum.repos.d# ls /etc/systemd/system/multi-user.target.wants/
atd.service      cups.path        libstoragemgmt.service  remote-fs.target  vboxadd.service
auditd.service   cups.service     mcelog.service          rsyslog.service   vboxadd-service.service
audit-rules.service  firewalld.service  mdmonitor.service       smartd.service     vmtoolsd.service
avahi-daemon.service httpd.service     ModemManager.service    sshd.service       vsftpd.service
chronyd.service   irqbalance.service NetworkManager.service  sssd.service
crond.service     kdump.service    remote-cryptsetup.target tuned.service
root@mlabsi: /etc/yum.repos.d# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
   Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: disabled)
   Active: active (running) since Fri 2025-12-12 19:24:35 MSK; 2min 9s ago
  Invocation: 9954ebef190d4056a18f039782f1ec48
    Main PID: 8112 (vsftpd)
      Tasks: 1 (limit: 23140)
     Memory: 852K (peak: 1.2M)
        CPU: 2ms
       CGroup: /system.slice/vsftpd.service
               └─8112 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Dec 12 19:24:35 mlabsi.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@mlabsi: /etc/yum.repos.d#
```

Рис. 5: Список сервисов автозапуска

Зависимости сервиса

```

● |—sys-kernel-tracing.mount
○ |—systemd-ask-password-console.path
○ |—systemd-binsfmt.service
○ |—systemd-boot-random-seed.service
○ |—systemd-conext.service
○ |—systemd-firstboot.service
○ |—systemd-hibernate-clear.service
○ |—systemd-hwdb-update.service
○ |—systemd-journal-catalog-update.service
● |—systemd-journal-flush.service
● |—systemd-journald.service
○ |—systemd-machine-id-commit.service
● |—systemd-modules-load.service
● |—systemd-network-generator.service
○ |—systemd-pcrmachine.service
○ |—systemd-pcrphase-sysinit.service
root@mlabsi:/etc/yum.repos.d#
root@mlabsi:/etc/yum.repos.d# systemctl list-dependencies vsftpd --reverse
vsftpd.service
● └─multi-user.target
● └─graphical.target
root@mlabsi:/etc/yum.repos.d#
```

Рис. 6: Зависимости vsftpd

Firewalld и iptables

```
Upgraded:
iptables-libs-1.8.11-11.el10.x86_64                iptables-nft-1.8.11-11.el10.x86_64
Installed:
iptables-devel-1.8.11-11.el10.x86_64                iptables-nft-services-1.8.11-11.el10.noarch
iptables-utils-1.8.11-11.el10.x86_64                kernel-modules-extra-matched-6.12.0-124.16.1.el10_1.x86_64

Complete!
root@mlabsi:/etc/yum.repos.d#
root@mlabsi:/etc/yum.repos.d# systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-12-12 19:00:43 MSK; 28min ago
     Invocation: 021dfd22a5664abfb1eacfa7e96f1583
       Docs: man:firewalld(1)
    Main PID: 1137 (firewalld)
       Tasks: 2 (limit: 23140)
      Memory: 50.5M (peak: 71.9M)
         CPU: 565ms
       CGroup: /system.slice/firewalld.service
               └─1137 /usr/bin/python3 -sP /usr/sbin/firewalld --nofork --nopid

Dec 12 19:00:40 mlabsi.localdomain systemd[1]: Starting firewalld.service - firewalld - dynamic firewall daemon...
Dec 12 19:00:43 mlabsi.localdomain systemd[1]: Started firewalld.service - firewalld - dynamic firewall daemon.
root@mlabsi:/etc/yum.repos.d# systemctl status iptables
○ iptables.service - IPv4 firewall with iptables
   Loaded: loaded (/usr/lib/systemd/system/iptables.service; disabled; preset: disabled)
   Active: inactive (dead)
root@mlabsi:/etc/yum.repos.d# systemctl start firewalld
root@mlabsi:/etc/yum.repos.d# systemctl start iptables
root@mlabsi:/etc/yum.repos.d#
```

Рис. 7: Статус firewalld и iptables

Конфигурация firewalld

```
root@mlabsi:/etc/yum.repos.d# 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
ExecStartPost=/usr/bin/firewall-cmd --state
# don't fail ExecStartPost on RUNNING_BUT_FAILED
SuccessExitStatus=251
ExecReload=/bin/kill -HUP $MAINPID
StandardOutput=null
StandardError=null
Type=dbus
BusName=org.fedoraproject.FirewallD1
KillMode=mixed
DevicePolicy=closed
KeyringMode=private
```

Рис. 8: Файл firewalld.service

```
root@mlabsi:/etc/yum.repos.d#  
root@mlabsi:/etc/yum.repos.d# cat /usr/lib/systemd/system/iptables.service  
[Unit]  
Description=IPv4 firewall with iptables  
AssertPathExists=/etc/sysconfig/iptables  
Before=network-pre.target  
Wants=network-pre.target  
  
[Service]  
Type=oneshot  
RemainAfterExit=yes  
ExecStart=/usr/libexec/iptables/iptables.init start  
ExecReload=/usr/libexec/iptables/iptables.init reload  
ExecStop=/usr/libexec/iptables/iptables.init stop  
Environment=BOOTUP=serial  
Environment=CONSOLETYPE=serial  
  
[Install]  
WantedBy=multi-user.target  
root@mlabsi:/etc/yum.repos.d# █
```

Рис. 9: Файл iptables.service

```
root@mlabsi:/etc/yum.repos.d#  
root@mlabsi:/etc/yum.repos.d# systemctl stop iptables  
root@mlabsi:/etc/yum.repos.d# systemctl start firewalld  
root@mlabsi:/etc/yum.repos.d# systemctl mask iptables.service  
Created symlink '/etc/systemd/system/iptables.service' → '/dev/null'.  
root@mlabsi:/etc/yum.repos.d# systemctl start iptables  
Failed to start iptables.service: Unit iptables.service is masked.  
root@mlabsi:/etc/yum.repos.d# systemctl enable iptables  
Failed to enable unit: Unit /etc/systemd/system/iptables.service is masked  
root@mlabsi:/etc/yum.repos.d# █
```

Рис. 10: Маскирование iptables

Просмотр изолируемых целей

```
root@mlabsi:/etc/yum.repos.d# cd /usr/lib/systemd/system
root@mlabsi:/usr/lib/systemd/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
soft-reboot.target:AllowIsolate=yes
system-update.target:AllowIsolate=yes
root@mlabsi:/usr/lib/systemd/system#
```

```
You are in rescue mode. After logging in, type "journalctl -xb" to view
system logs, "systemctl reboot" to reboot, or "exit"
to continue bootup.
Give root password for maintenance
(or press Control-D to continue):
root@mlabsi:~# systemctl isolate reboot.target
```

Рис. 12: Rescue mode


```
m1absi@m1absi:~$ su
Password:
root@m1absi:/home/m1absi#
root@m1absi:/home/m1absi# systemctl get-default
graphical.target
root@m1absi:/home/m1absi# 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'.
root@m1absi:/home/m1absi# █
```

Рис. 13: multi-user.target

```
Rocky Linux 10.0 (Red Quartz)
Kernel 6.12.0-55.39.1.el10_0.x86_64 on x86_64

Web console: https://mlabsi.localdomain:9090/ or https://10.0.2.15:9090/

mlabsi login: root
Password:
Last login: Fri Dec 12 19:37:12 on pts/0
root@mlabsi:~# systemctl get-default
multi-user.target
root@mlabsi:~# 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@mlabsi:~#
```

Рис. 14: graphical.target

Заключение

В ходе лабораторной работы были изучены механизмы управления сервисами и целями в системе **systemd**. Освоены навыки установки, запуска, добавления в автозапуск, анализа зависимостей и разрешения конфликтов юнитов. Полученные знания позволяют эффективно администрировать службы и управлять процессом загрузки Linux-систем.