Презентация по лабораторной работе №5

Управление системными службами (systemd)

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Цели и задачи работы

Цель работы

Получить навыки управления системными службами операционной системы посредством systemd.

Ход выполнения работы

Управление сервисом vsftpd

```
aradzhigalieva@aradzhigalieva:~$ su
Password:
root@aradzhigalieva:/home/aradzhigalieva# systemctl status vsftpd
Unit vsftpd.service could not be found.
root@aradzhigalieva:/home/aradzhigalieva# dnf -y install vsftpd
Rocky Linux 10 - BaseOS                                                    11 kB/s | 3.9 kB     00:00
Rocky Linux 10 - BaseOS                                                    22 MB/s |  18 MB     00:00
Rocky Linux 10 - AppStream                                                9.6 kB/s | 3.9 kB     00:00
Rocky Linux 10 - AppStream                                                3.7 MB/s | 2.1 MB     00:00
Rocky Linux 10 - Extras                                                   7.5 kB/s | 3.1 kB     00:00
Rocky Linux 10 - Extras                                                    12 kB/s | 4.9 kB     00:00
Dependencies resolved.
================================================================================================
 Package                 Architecture            Version                       Repository                  Size
================================================================================================
Installing:
 vsftpd                  x86_64                  3.0.5-9.el10                  appstream                  170 k

Transaction Summary
================================================================================================
Install  1 Package

Total download size: 170 k
Installed size: 348 k
Downloading Packages:
vsftpd-3.0.5-9.el10.x86_64.rpm                                             1.2 MB/s | 170 kB     00:00
------------------------------------------------------------------------------------------------
Total                                                                      365 kB/s | 170 kB     00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
```

Управление сервисом vsftpd

```
root@aradzhigalieva:/home/aradzhigalieva#
root@aradzhigalieva:/home/aradzhigalieva# systemctl start vsftpd
root@aradzhigalieva:/home/aradzhigalieva# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
     Active: active (running) since Sun 2025-09-21 12:06:16 MSK; 4s ago
 Invocation: 7504dbd85194440e912d6fd1bb2c8cfb
    Process: 4251 ExecStart=/usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf (code=exited, status=0/SUCCESS)
   Main PID: 4252 (vsftpd)
      Tasks: 1 (limit: 24779)
     Memory: 748K (peak: 1.2M)
        CPU: 2ms
     CGroup: /system.slice/vsftpd.service
             └─4252 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@aradzhigalieva:/home/aradzhigalieva#
```

Рис. 2: Запуск и проверка статуса vsftpd

Управление сервисом vsftpd

```
root@aradzhigalieva:/home/aradzhigalieva#
root@aradzhigalieva:/home/aradzhigalieva# systemctl enable vsftpd
Created symlink '/etc/systemd/system/multi-user.target.wants/vsftpd.service' → '/usr/lib/systemd/system/vsftpd.service
'.
root@aradzhigalieva:/home/aradzhigalieva# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: disabled)
     Active: active (running) since Sun 2025-09-21 12:06:16 MSK; 29s ago
 Invocation: 7504dbd85194440e912d6fd1bb2c8cfb
   Main PID: 4252 (vsftpd)
      Tasks: 1 (limit: 24779)
     Memory: 748K (peak: 1.2M)
        CPU: 2ms
     CGroup: /system.slice/vsftpd.service
             └─4252 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@aradzhigalieva:/home/aradzhigalieva#
```

Рис. 3: Включение и отключение автозапуска

Управление сервисом vsftpd

```
root@aradzhigalieva:/home/aradzhigalieva# systemctl disable vsftpd
Removed '/etc/systemd/system/multi-user.target.wants/vsftpd.service'.
root@aradzhigalieva:/home/aradzhigalieva# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; preset: disabled)
     Active: active (running) since Sun 2025-09-21 12:06:16 MSK; 4min 34s ago
 Invocation: 7504dbd85194440e912d6fd1bb2c8cfb
   Main PID: 4252 (vsftpd)
      Tasks: 1 (limit: 24779)
     Memory: 748K (peak: 1.2M)
        CPU: 2ms
     CGroup: /system.slice/vsftpd.service
             └─4252 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@aradzhigalieva:/home/aradzhigalieva#
```

Рис. 4: Проверка и добавление ссылки для vsftpd

Управление сервисом vsftpd

```
root@aradzhigalieva:/home/aradzhigalieva# ls /etc/systemd/system/multi-user.target.wants/
atd.service            cups.path              mcelog.service             rsyslog.service  vboxadd-service.service
auditd.service         cups.service           mdmonitor.service          smartd.service   vmtoolsd.service
audit-rules.service    firewalld.service      ModemManager.service       sshd.service
avahi-daemon.service   irqbalance.service     NetworkManager.service     sssd.service
chronyd.service        kdump.service          remote-cryptsetup.target   tuned.service
crond.service          libstoragemgmt.service remote-fs.target           vboxadd.service
root@aradzhigalieva:/home/aradzhigalieva# systemctl enable vsftpd
Created symlink '/etc/systemd/system/multi-user.target.wants/vsftpd.service' → '/usr/lib/systemd/system/vsftpd.service
'.
root@aradzhigalieva:/home/aradzhigalieva# ls /etc/systemd/system/multi-user.target.wants/
atd.service            cups.path              mcelog.service             rsyslog.service  vboxadd-service.service
auditd.service         cups.service           mdmonitor.service          smartd.service   vmtoolsd.service
audit-rules.service    firewalld.service      ModemManager.service       sshd.service     vsftpd.service
avahi-daemon.service   irqbalance.service     NetworkManager.service     sssd.service
chronyd.service        kdump.service          remote-cryptsetup.target   tuned.service
crond.service          libstoragemgmt.service remote-fs.target           vboxadd.service
root@aradzhigalieva:/home/aradzhigalieva# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: disabled)
     Active: active (running) since Sun 2025-09-21 12:06:16 MSK; 5min ago
 Invocation: 7504dbd85194440e912d6fd1bb2c8cfb
   Main PID: 4252 (vsftpd)
      Tasks: 1 (limit: 24779)
     Memory: 748K (peak: 1.2M)
        CPU: 2ms
     CGroup: /system.slice/vsftpd.service
             └─4252 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Starting vsftpd.service - Vsftpd ftp daemon...
Sep 21 12:06:16 aradzhigalieva.localdomain systemd[1]: Started vsftpd.service - Vsftpd ftp daemon.
root@aradzhigalieva:/home/aradzhigalieva#
```

Рис. 5: Статус vsftpd после добавления в автозапуск

Управление сервисом vsftpd

Рис. 6: Вывод зависимостей vsftpd

Конфликты юнитов

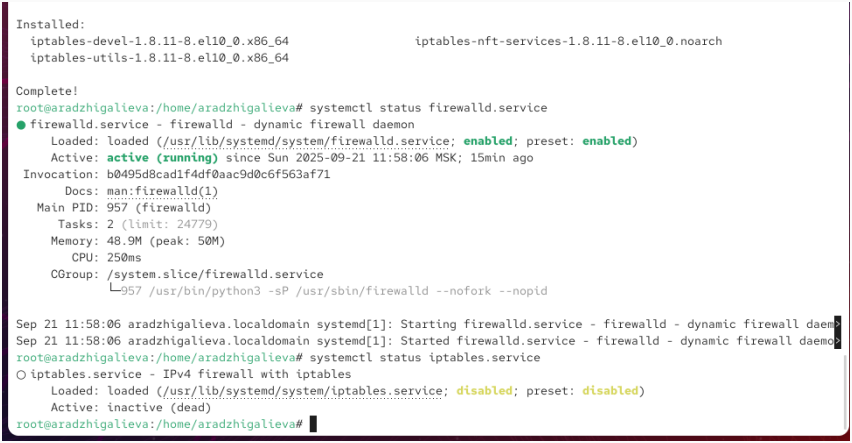

Рис. 7: Проверка статуса сервисов

Конфликты юнитов

```
root@aradzhigalieva:/home/aradzhigalieva# systemctl start iptables.service
root@aradzhigalieva:/home/aradzhigalieva# systemctl status firewalld.service
○ firewalld.service - firewalld - dynamic firewall daemon
     Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; preset: enabled)
     Active: inactive (dead) since Sun 2025-09-21 12:14:16 MSK; 11s ago
   Duration: 16min 10.032s
 Invocation: b0495d8cad1f4df0aac9d0c6f563af71
       Docs: man:firewalld(1)
    Process: 957 ExecStart=/usr/sbin/firewalld --nofork --nopid $FIREWALLD_ARGS (code=exited, status=0/SUCCESS)
   Main PID: 957 (code=exited, status=0/SUCCESS)
   Mem peak: 50M
        CPU: 264ms

Sep 21 11:58:06 aradzhigalieva.localdomain systemd[1]: Starting firewalld.service - firewalld - dynamic firewall daem>
Sep 21 11:58:06 aradzhigalieva.localdomain systemd[1]: Started firewalld.service - firewalld - dynamic firewall daemo>
Sep 21 12:14:16 aradzhigalieva.localdomain systemd[1]: Stopping firewalld.service - firewalld - dynamic firewall daem>
Sep 21 12:14:16 aradzhigalieva.localdomain systemd[1]: firewalld.service: Deactivated successfully.
Sep 21 12:14:16 aradzhigalieva.localdomain systemd[1]: Stopped firewalld.service - firewalld - dynamic firewall daemo>
root@aradzhigalieva:/home/aradzhigalieva# systemctl status iptables.service
● iptables.service - IPv4 firewall with iptables
     Loaded: loaded (/usr/lib/systemd/system/iptables.service; disabled; preset: disabled)
     Active: active (exited) since Sun 2025-09-21 12:14:16 MSK; 18s ago
 Invocation: 57d2d79be13f479d829c4158a3ad9eb9
    Process: 6100 ExecStart=/usr/libexec/iptables/iptables.init start (code=exited, status=0/SUCCESS)
   Main PID: 6100 (code=exited, status=0/SUCCESS)
   Mem peak: 1.4M
        CPU: 8ms

Sep 21 12:14:16 aradzhigalieva.localdomain systemd[1]: Starting iptables.service - IPv4 firewall with iptables...
Sep 21 12:14:16 aradzhigalieva.localdomain iptables.init[6100]: iptables: Applying firewall rules: [  OK  ]
Sep 21 12:14:16 aradzhigalieva.localdomain systemd[1]: Finished iptables.service - IPv4 firewall with iptables.
root@aradzhigalieva:/home/aradzhigalieva# q
```

Конфликты юнитов

```
root@aradzhigalieva:/home/aradzhigalieva#
root@aradzhigalieva:/home/aradzhigalieva# 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
DevicePolicy=closed
KeyringMode=private
LockPersonality=yes
MemoryDenyWriteExecute=yes
PrivateDevices=yes
ProtectClock=yes
ProtectControlGroups=yes
ProtectHome=yes
ProtectHostname=yes
ProtectKernelLogs=yes
```

Конфликты юнитов

```
root@aradzhigalieva:/home/aradzhigalieva# 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@aradzhigalieva:/home/aradzhigalieva#
```

Рис. 10: Маскирование службы iptables

Конфликты юнитов

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

Рис. 11: Попытка запуска и добавления iptables в автозагрузку

Изолируемые цели

```
root@aradzhigalieva:/home/aradzhigalieva#
root@aradzhigalieva:/home/aradzhigalieva# cd /usr/lib/systemd/system
root@aradzhigalieva:/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@aradzhigalieva:/usr/lib/systemd/system#
```

Изолируемые цели

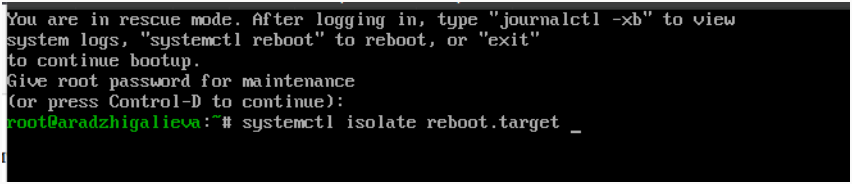

Рис. 13: Переход в rescue.target

Цель по умолчанию

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

Рис. 14: Установка multi-user.target по умолчанию

Цель по умолчанию

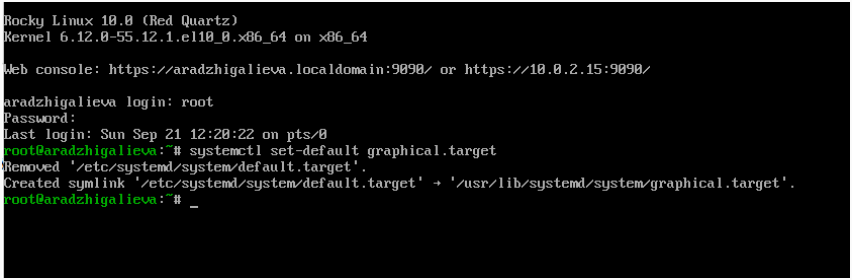

Рис. 15: Установка graphical.target по умолчанию

Вывод

Вывод

В ходе выполнения лабораторной работы я изучила основы управления сервисами и целями в системе **systemd**.

Я установила и настроила службу **vsftpd**, рассмотрела конфликты между сервисами **firewalld** и **iptables**, освоила работу с изолируемыми целями и целями по умолчанию.

Полученные знания позволяют уверенно управлять службами в Linux и повышать надёжность работы операционной системы.