Лабораторная работа 5

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2022

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Задача

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1. Выполните основные операции по запуску (останову), определению статуса, добавлению (удалению) в автозапуск и пр. службы Very Secure FTP (раздел 5.4.1).

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2. Продемонстрируйте навыки по разрешению конфликтов юнитов для служб firewalld и iptables (раздел 5.4.2).

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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).

Выполнение

Запуск, включение и отключение службы

```
[root@dmgeneralov ~]# systemctl status vsftpd.service
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; vendor preset: disabled)
     Active: inactive (dead)
[root@dmgeneralov ~]# dnf install -y vsftpd
Last metadata expiration check: 0:22:51 ago on Fri 25 Nov 2022 12:47:21 AM MSK.
Package vsftpd-3.0.3-49.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@dmgeneralov ~]# systemctl start vsftpd.service
[root@dmgeneralov ~]# systemctl status vsftpd.service
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-25 01:10:25 MSK; 4s ago
    Process: 1307 ExecStart=/usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf (code=exited, status=0/SUCCESS)
   Main PID: 1308 (vsftpd)
      Tasks: 1 (limit: 11104)
     Memory: 896.0K
        CPU: 7ms
     CGroup: /system.slice/vsftpd.service
             └─1308 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Nov 25 01:10:25 dmgeneralov systemd[1]: Starting Vsftpd ftp daemon...
Nov 25 01:10:25 dmgeneralov systemd[1]: Started Vsftpd ftp daemon.
[root@dmgeneralov ~]# systemctl enable vsftpd.service
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /usr/lib/systemd/system/vsftpd.service.
[ 3344.410647] systemd-rc-local-generator[1324]: /etc/rc.d/rc.local is not marked executable, skipping.
[root@dmgeneralov ~]# systemctl status vsftpd.service
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-25 01:10:25 MSK; 36s ago
   Main PID: 1308 (vsftpd)
      Tasks: 1 (limit: 11104)
     Memory: 896.0K
        CPU: 7ms
     CGroup: /system.slice/vsftpd.service
             └─1308 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Nov 25 01:10:25 dmgeneralov systemd[1]: Starting Vsftpd ftp daemon...
Nov 25 01:10:25 dmgeneralov systemd[1]: Started Vsftpd ftp daemon.
[root@dmgeneralov ~]# systemctl disable vsftpd.service
Removed /etc/systemd/system/multi-user.target.wants/vsftpd.service.
[ 3362.668575] systemd-rc-local-generator[1354]: /etc/rc.d/rc.local is not marked executable, skipping.
```

multi-user.target.wants

```
[root@dmgeneralov ~]# ls /etc/systemd/system/multi-user.target.wants/
auditd.service   crond.service      irqbalance.service  NetworkManager.service  rsyslog.service  sssd.service
chronyd.service  firewalld.service  kdump.service       remote-fs.target        sshd.service
[root@dmgeneralov ~]# systemctl status vsftpd.service
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; disabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-25 01:10:25 MSK; 3min 32s ago
   Main PID: 1308 (vsftpd)
      Tasks: 1 (limit: 11104)
     Memory: 896.0K
        CPU: 7ms
     CGroup: /system.slice/vsftpd.service
             └─1308 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Nov 25 01:10:25 dmgeneralov systemd[1]: Starting Vsftpd ftp daemon...
Nov 25 01:10:25 dmgeneralov systemd[1]: Started Vsftpd ftp daemon.
[root@dmgeneralov ~]# systemctl enable vsftpd.service
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /usr/lib/systemd/system/vsftpd.service.
[ 3536.854549] systemd-rc-local-generator[1445]: /etc/rc.d/rc.local is not marked executable, skipping.
[root@dmgeneralov ~]# systemctl status vsftpd.service
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-25 01:10:25 MSK; 3min 40s ago
   Main PID: 1308 (vsftpd)
      Tasks: 1 (limit: 11104)
     Memory: 896.0K
        CPU: 7ms
     CGroup: /system.slice/vsftpd.service
             └─1308 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf

Nov 25 01:10:25 dmgeneralov systemd[1]: Starting Vsftpd ftp daemon...
Nov 25 01:10:25 dmgeneralov systemd[1]: Started Vsftpd ftp daemon.
[root@dmgeneralov ~]# ls /etc/systemd/system/multi-user.target.wants/
auditd.service   crond.service      irqbalance.service  NetworkManager.service  rsyslog.service  sssd.service
chronyd.service  firewalld.service  kdump.service       remote-fs.target        sshd.service     vsftpd.service
[root@dmgeneralov ~]#
```

Рис. 2: multi-user.target.wants

list-dependencies

```
[root@dmgeneralov ~]# systemctl list-dependencies vsftpd.service
vsftpd.service
● ├─system.slice
● └─sysinit.target
●   ├─dev-hugepages.mount
●   ├─dev-mqueue.mount
●   ├─dracut-shutdown.service
●   ├─kmod-static-nodes.service
■   ├─ldconfig.service
●   ├─lvm2-lvmpolld.socket
●   ├─lvm2-monitor.service
●   ├─nis-domainname.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
■   ├─systemd-binfmt.service
■   ├─systemd-firstboot.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-random-seed.service
■   ├─systemd-repart.service
●   ├─systemd-sysctl.service
■   ├─systemd-sysusers.service
●   ├─systemd-tmpfiles-setup-dev.service
●   ├─systemd-tmpfiles-setup.service
●   ├─systemd-udev-trigger.service
●   ├─systemd-udevd.service
■   ├─systemd-update-done.service
●   ├─systemd-update-utmp.service
●   ├─cryptsetup.target
●   ├─integritysetup.target
●   ├─local-fs.target
●   │ ├─-.mount
●   │ ├─boot.mount
●   │ └─systemd-remount-fs.service
●   ├─swap.target
●   │ └─dev-mapper-rl\x2dswap.swap
●   └─veritysetup.target
[root@dmgeneralov ~]# _
```

list-dependencies

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

Рис. 4: –reverse

dnf install iptables

```
 pkgconf                                    x86_64                    1.7.3-9.el9                    baseos                          40 k
 pkgconf-m4                                 noarch                    1.7.3-9.el9                    baseos                          14 k
 pkgconf-pkg-config                         x86_64                    1.7.3-9.el9                    baseos                         9.9 k

Transaction Summary
================================================================================================================================
Install  7 Packages

Total download size: 184 k
Installed size: 307 k
Downloading Packages:
(1/7): pkgconf-pkg-config-1.7.3-9.el9.x86_64.rpm                                                  23 kB/s | 9.9 kB     00:00
(2/7): pkgconf-m4-1.7.3-9.el9.noarch.rpm                                                          32 kB/s |  14 kB     00:00
(3/7): iptables-utils-1.8.7-28.el9.x86_64.rpm                                                     97 kB/s |  44 kB     00:00
(4/7): pkgconf-1.7.3-9.el9.x86_64.rpm                                                            733 kB/s |  40 kB     00:00
(5/7): libpkgconf-1.7.3-9.el9.x86_64.rpm                                                         481 kB/s |  35 kB     00:00
(6/7): iptables-devel-1.8.7-28.el9.x86_64.rpm                                                    333 kB/s |  19 kB     00:00
(7/7): iptables-nft-services-1.8.7-28.el9.noarch.rpm                                             164 kB/s |  22 kB     00:00
--------------------------------------------------------------------------------------------------------------------------------
Total                                                                                            139 kB/s | 184 kB     00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                                        1/1
  Installing       : libpkgconf-1.7.3-9.el9.x86_64                                                                          1/7
  Installing       : pkgconf-1.7.3-9.el9.x86_64                                                                             2/7
  Installing       : pkgconf-m4-1.7.3-9.el9.noarch                                                                          3/7
  Installing       : pkgconf-pkg-config-1.7.3-9.el9.x86_64                                                                  4/7
  Installing       : iptables-devel-1.8.7-28.el9.x86_64                                                                     5/7
  Installing       : iptables-nft-services-1.8.7-28.el9.noarch                                                              6/7
  Running scriptlet: iptables-nft-services-1.8.7-28.el9.noarch                                                              6/7
  Installing       : iptables-utils-1.8.7-28.el9.x86_64                                                                     7/7
  Running scriptlet: iptables-utils-1.8.7-28.el9.x86_64                                                                     7/7
[ 3752.858016] systemd-rc-local-generator[1506]: /etc/rc.d/rc.local is not marked executable, skipping.
  Verifying        : iptables-utils-1.8.7-28.el9.x86_64                                                                     1/7
  Verifying        : pkgconf-pkg-config-1.7.3-9.el9.x86_64                                                                  2/7
  Verifying        : pkgconf-m4-1.7.3-9.el9.noarch                                                                          3/7
  Verifying        : pkgconf-1.7.3-9.el9.x86_64                                                                             4/7
  Verifying        : libpkgconf-1.7.3-9.el9.x86_64                                                                          5/7
  Verifying        : iptables-nft-services-1.8.7-28.el9.noarch                                                              6/7
  Verifying        : iptables-devel-1.8.7-28.el9.x86_64                                                                     7/7

Installed:
  iptables-devel-1.8.7-28.el9.x86_64    iptables-nft-services-1.8.7-28.el9.noarch    iptables-utils-1.8.7-28.el9.x86_64      libpkgconf-1.7.3-9.el9.x86_64
  pkgconf-1.7.3-9.el9.x86_64            pkgconf-m4-1.7.3-9.el9.noarch                pkgconf-pkg-config-1.7.3-9.el9.x86_64

Complete!
[root@dmgeneralov ~]#
```

Рис. 5: dnf install iptables

Конфликт с firewalld

```
[root@dmgeneralov ~]# systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
     Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2022-11-25 00:15:14 MSK; 1h 4min ago
       Docs: man:firewalld(1)
   Main PID: 704 (firewalld)
      Tasks: 2 (limit: 11104)
     Memory: 40.6M
        CPU: 654ms
     CGroup: /system.slice/firewalld.service
             └─704 /usr/bin/python3 -s /usr/sbin/firewalld --nofork --nopid

Nov 25 00:15:13 dmgeneralov systemd[1]: Starting firewalld - dynamic firewall daemon...
Nov 25 00:15:14 dmgeneralov systemd[1]: Started firewalld - dynamic firewall daemon.
[root@dmgeneralov ~]# systemctl status iptables
● iptables.service - IPv4 firewall with iptables
     Loaded: loaded (/usr/lib/systemd/system/iptables.service; disabled; vendor preset: disabled)
     Active: inactive (dead)
[root@dmgeneralov ~]# systemctl start firewalld
[root@dmgeneralov ~]# systemctl start iptables
[ 3898.621486] Warning: Deprecated Driver is detected: nft_compat will not be maintained in a future major release and may be disabled
[root@dmgeneralov ~]# systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
     Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: enabled)
     Active: inactive (dead) since Fri 2022-11-25 01:20:06 MSK; 8s ago
       Docs: man:firewalld(1)
    Process: 704 ExecStart=/usr/sbin/firewalld --nofork --nopid $FIREWALLD_ARGS (code=exited, status=0/SUCCESS)
   Main PID: 704 (code=exited, status=0/SUCCESS)
        CPU: 813ms

Nov 25 00:15:13 dmgeneralov systemd[1]: Starting firewalld - dynamic firewall daemon...
Nov 25 00:15:14 dmgeneralov systemd[1]: Started firewalld - dynamic firewall daemon.
Nov 25 01:20:06 dmgeneralov systemd[1]: Stopping firewalld - dynamic firewall daemon...
Nov 25 01:20:06 dmgeneralov systemd[1]: firewalld.service: Deactivated successfully.
Nov 25 01:20:06 dmgeneralov systemd[1]: Stopped firewalld - dynamic firewall daemon.
[root@dmgeneralov ~]# systemctl status iptables
● iptables.service - IPv4 firewall with iptables
     Loaded: loaded (/usr/lib/systemd/system/iptables.service; disabled; vendor preset: disabled)
     Active: active (exited) since Fri 2022-11-25 01:20:06 MSK; 13s ago
    Process: 1776 ExecStart=/usr/libexec/iptables/iptables.init start (code=exited, status=0/SUCCESS)
   Main PID: 1776 (code=exited, status=0/SUCCESS)
        CPU: 44ms

Nov 25 01:20:06 dmgeneralov systemd[1]: Starting IPv4 firewall with iptables...
Nov 25 01:20:06 dmgeneralov iptables.init[1776]: iptables: Applying firewall rules: [  OK  ]
Nov 25 01:20:06 dmgeneralov systemd[1]: Finished IPv4 firewall with iptables.
[root@dmgeneralov ~]#
```

firewalld.service

```
[root@dmgeneralov ~]# 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 nftables.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]
WantedBy=multi-user.target
Alias=dbus-org.fedoraproject.FirewallD1.service
[root@dmgeneralov ~]# 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@dmgeneralov ~]#
```

systemctl mask

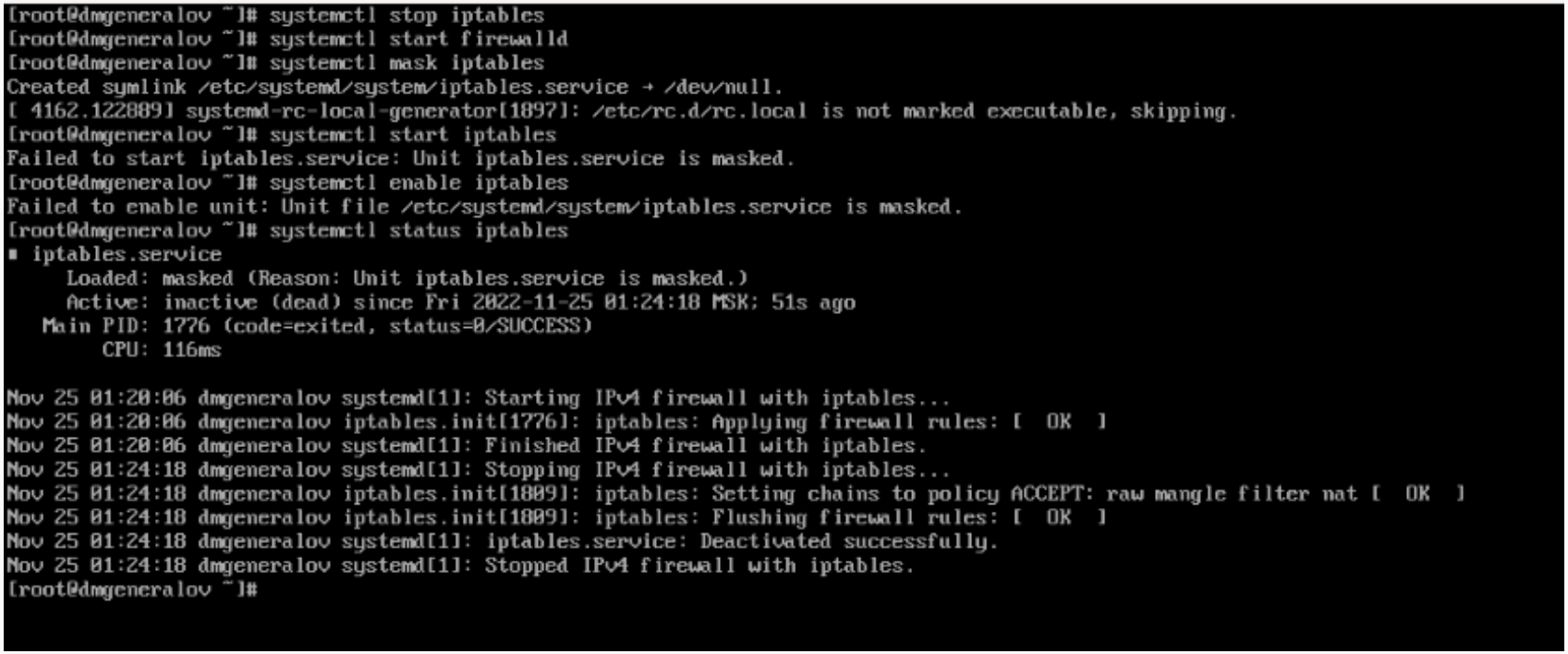

Рис. 8: systemctl

AllowIsolate

```
Rocky Linux 9.0 (Blue Onyx)
Kernel 5.14.0-70.13.1.el9_0.x86_64 on an x86_64

dmgeneralov login: root
Password:
Last login: Fri Nov 25 00:41:02 on tty1
[root@dmgeneralov ~]# cd /usr/lib/systemd/system
[root@dmgeneralov 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@dmgeneralov system]# _
```

systemctl isolate

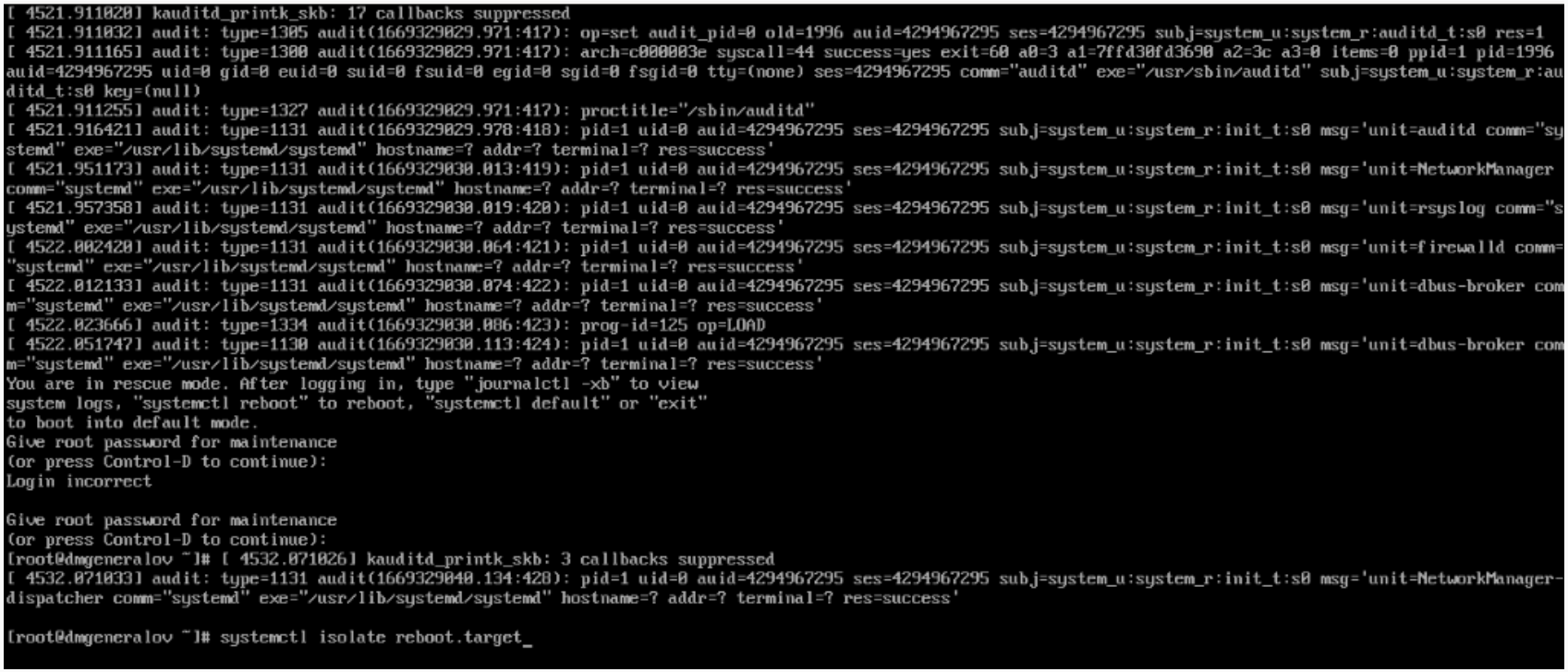

Рис. 10: systemctl

Вывод

Я получил опыт работы с `systemd` и научился управлять сервисами.