

Работа с программными пакетами

Часть 1

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Информация

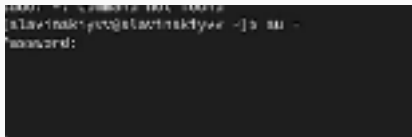
..... {.columns align=center} ::: {.column width="70%"}

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Вводная часть

В консоли перейдем в режим работы суперпользователя, используя команду `su -`.

A terminal window with a black background and white text. The prompt is 'root@alavinsktyee:~#'. The user enters 'su -' and the prompt changes to 'root@alavinsktyee:~#'. The prompt 'password:' is visible, but no password is entered.

```
root@alavinsktyee:~# su -  
root@alavinsktyee:~#  
password:
```

Рис. 1: sc1

Изучение содержания каталога и файлов

Перейдем в каталог `/etc/yum.repos.d` и изучим содержание каталога и файлов репозитория с помощью команд: `cd /etc/yum.repos`, `ls`, и изучим `cat epel.repo`.

```
[root@slavirskiy ~]# cd /etc/yum.repos.d
[root@slavirskiy ~]# ls
epel-cisco-openh264.repo  epel-testing.repo  rocky-devel.repo  rocky.repo
epel.repo                rocky-addons.repo  rocky-extras.repo
[root@slavirskiy ~]# cat epel.repo
[epel]
name=Extra Packages for Enterprise Linux 9 - Stasearch
# It is much more secure to use the metalink, but if you wish to use a local mirror
# place its address here.
#baseurl=http://download.example.org/pub/epel/9/Everything/$basearch/
metalink=http://mirrors.fedoraproject.org/metalink?repo=epel-9&arch=\$basearch&infocount=2&counted=0
enabled=1
gpgcheck=1
cost=100
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-9

[epel-debuginfo]
name=Extra Packages for Enterprise Linux 9 - Stasearch - Debug
# It is much more secure to use the metalink, but if you wish to use a local mirror
```

Рис. 2: sc2

Вывод списка репозиториев

Выведем на экран список репозиториев через команду `dnf repolist`. Нам вывелось следующее: `appstream`, `baseos`, `epel`, `epel-cisco-openh264` и `extras`. Репозиторий `appstream` включает в себе современное программное обеспечение, не входящее в базовую систему. Репозиторий `baseos` - это основной репозиторий операционной системы, который содержит важные системные пакеты, ядро, системные утилиты. `Epel` содержит популярное ПО, не включенное в официальные репозитории. `Epel-cisco-openh264` решает проблемы с воспроизведением видео в приложениях и предоставляет проприетарный видео-кодек H.264 для браузеров. `Extras` содержит в себе обновления и дополнения к базовой системе.

```
slav@rocky:~$ cat /etc/dnf/vars.repo.d/01
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-9
[rocky@slav@rocky ~]$ dnf repolist
repo id                                repo name
appstream                               Rocky Linux 9 - AppStream
baseos                                  Rocky Linux 9 - BaseOS
epel                                     Extra Packages for Enterprise Linux 9 - x86_64
epel-cisco-openh264                     Extra Packages for Enterprise Linux 9 openh264 (From Cisco) - x86_64
extras                                  Rocky Linux 9 - Extras
[rocky@slav@rocky ~]$
```

Вывод списка пакетов

Выведем на экран список пакетов, в названии или описании которых есть слово `user` через команду `dnf search user`. Эта команда выводит название пакета и краткое описание этого пакета.

```
rust-atoll-06-devel.noarch : Library that's all about cooking up terminal user interfaces
rust-uu_id-default-devel.noarch : id - (utils) display user and group information for USER
rust-uu_id-fsck-devel.noarch : id - (utils) display user and group information for USER
rust-uu_id-lslnum-devel.noarch : id - (utils) display user and group information for USER
rust-uu_id-devel.noarch : id - (utils) display user and group information for user
rust-uu_pwdm-default-devel.noarch : whoami - (utils) display name of current effective user ID
rust-uu_whoami-devel.noarch : whoami - (utils) display user name of current effective user ID
rust-usersync-devel.noarch : Library for accessing Unix users and groups
rust-usersyncfs-devel.noarch : Library for accessing Unix users and groups
rust-userseclib-devel.noarch : Library for accessing Unix users and groups
rust-userxlogging-devel.noarch : Library for accessing Unix users and groups
rust-usersmock-devel.noarch : Library for accessing Unix users and groups
rust-userantest-integration-devel.noarch : Library for accessing Unix users and groups
rust-users-devel.noarch : Library for accessing Unix users and groups
rust-users0.11-cache-devel.noarch : Library for accessing Unix users and groups
rust-users0.11-default-devel.noarch : Library for accessing Unix users and groups
rust-users0.11-log-devel.noarch : Library for accessing Unix users and groups
rust-users0.11-logging-devel.noarch : Library for accessing Unix users and groups
rust-users0.11-mock-devel.noarch : Library for accessing Unix users and groups
rust-users0.11-devel.noarch : Library for accessing Unix users and groups
rust-whoami-default-devel.noarch : Retrieve the current user and environment
rust-whoami-devel.noarch : Retrieve the current user and environment
src_layered-06_04 : Configurable multi layer QFT / user space hybrid scheduler
src_layered-06_04 : A user-space hybrid scheduler written in Rust
```


Установка nmap

Установим nmap, предварительно изучив информацию по имеющимся пакетам через команды `dnf search nmap`, `dnf info nmap`, `dnf install nmap`, `dnf install nmap*`. Разница между `install nmap` и `install nmap*` в том, что просто nmap устанавливает только основной пакет nmap, а nmap* устанавливает все пакеты, начинающиеся с “nmap”.

```
nmap-7.92-3.el9.x86_64.rpm                5.5 MB/s | 5.4 MB    00:00
-----
Total                                     4.5 MB/s | 5.4 MB    00:01
Warning: transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Warning: transaction
  Installing      : nmap-7.92-3.el9.x86_64                1/1
  Running scriptlet: nmap-7.92-3.el9.x86_64                1/1
  Verifying       : nmap-7.92-3.el9.x86_64                1/1
Installed:
  nmap-7.92-3.el9.x86_64

Complete!
[root@salavfreskiy ~]# dnf install nmap
Last metadata expiration check: 0:18:57 ago on Sat 27 Sep 2025 12:26:49 PM MSK.
Package nmap-7.92-3.el9.x86_64 is already installed.
Package nmap-ncat-7.92-3.el9.x86_64 is already installed.
Dependencies resolved.
```

Удаление nmap

Удалим nmap через команды `dnf remove nmap`, `dnf remove nmap*`.

```
Complete!
[root@galactickiy ~]# dnf remove nmap*
Dependencies resolved.

=====
Package                               Architecture                               Version
=====
Removing:
nmap-ncat                             x86_64                                     3:7.92-3.el9

Transaction Summary
=====
Remove 1 Package

Total space: 400 k
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      : 
  Running scriptlet: nmap-ncat-3:7.92-3.el9.x86_64
  Erasing        : nmap-ncat-3:7.92-3.el9.x86_64
  Running scriptlet: nmap-ncat-3:7.92-3.el9.x86_64
  Verifying      : nmap-ncat-3:7.92-3.el9.x86_64

Removed:
nmap-ncat-3:7.92-3.el9.x86_64
```

Установка группы пакетов RPM Development Tools

Получим список имеющихся групп пакетов, затем установим группу пакетов RPM Development Tools через команды `dnf groups list LANG=C`, `dnf groups list`, `dnf groups info "RPM Development Tools"`, `dnf groupinstall "RPM Development Tools"`

```
Installing Groups:
RPM Development Tools

Transaction Summary
-----
Install 1 Packages

Total download size: 135 k
Installed size: 414 k
Is this ok [y/N]: y
Downloading Packages:
(1/2): python3-argcomplete-1.12.0-5.el9.nosarch.rpm                2.1 MB/s | 61 kB
(2/2): rpmdevtools-8.5-1.el9.nosarch.rpm                          2.4 MB/s | 75 kB
-----
total                                                                521 kB/s | 186 kB
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      : 
  Installing     : python3-argcomplete-1.12.0-5.el9.nosarch
  Installing     : rpmdevtools-8.5-1.el9.nosarch
  Running scriptlet: rpmdevtools-8.5-1.el9.nosarch
  Verifying     : python3-argcomplete-1.12.0-5.el9.nosarch
  Verifying     : rpmdevtools-8.5-1.el9.nosarch
```

Удаление группы пакетов

Для удаления группы пакетов RPM Development Tools мы можем воспользоваться командой `dnf groupremove "RPM Development Tools"`.

```
Package Architecture Version Repository
-----
Removing:
python3-argcomplete noarch 1.12.0-5.el9 dappstream
Removing unused dependencies:
python3-argcomplete noarch 1.12.0-5.el9 dappstream
Removing Groups:
RPM Development Tools

Transaction Summary
Remove 3 Packages

Total space: 414 k
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing :
Installing : python3-argcomplete-1.12.0-5.el9.noarch
Installing : python3-argcomplete-1.12.0-5.el9.noarch
Running scriptlet: python3-argcomplete-1.12.0-5.el9.noarch
Verifying : python3-argcomplete-1.12.0-5.el9.noarch
Verifying : python3-argcomplete-1.12.0-5.el9.noarch
```

Просмотр истории использования команды dnf

Посмотрим историю использования команды `dnf` с помощью команды `dnf history`.

15	groupremove RPM Development Tools	2025-09-17 02:53	Removed	3
14	groupinstall RPM Development Tools	2025-09-17 02:54	Install	8
13	remove nmap	2025-09-17 02:50	Removed	1
12	remove nmap	2025-09-17 02:50	Removed	1
11	install nmap	2025-09-17 02:47	Install	1
10		2025-09-17 02:05	I, L	19
9	-y install pandoc	2025-09-06 18:18	Install	1
8	remove pandoc-stanford	2025-09-06 18:18	Removed	1
7	-y install beclio	2025-09-06 03:09	Install	270
6	-y install pandoc	2025-09-06 03:05	Install	1
5		2025-09-06 02:17	Install	1
4	install xclip	2025-09-06 02:06	install	1
3	install epel-release	2025-09-06 02:06	install	1
2		2025-09-04 22:46	I, L	194
1		2025-09-04 22:29	Install	1102

Рис. 9: sc9

Отмена последнего действия

И теперь отменим последнее действие, стоящее на пятнадцатой позиции с помощью команды `dnf history undo 15`.

```
root@cloudrock:~/etc/yum.repos.d

Installing Groups:
 RPM Development Tools

Transaction Summary
-----
Install 2 Packages

Total download size: 115 K
Installed size: 414 K
Is this ok [y/N]: y
Downloading Packages:
(1/2): python3-argcomplete-3.12.0-5.el9.noarch.rpm 2.5 MB/s | 61 KB 00:
(2/2): rpmdevtools-9.5-2.el9.noarch.rpm 2.0 MB/s | 75 KB 00:
-----
Total 537 KB/s | 135 KB 00:
Running transaction check
Transaction check succeeded.
Running transaction test:
Transaction test succeeded.
Running transaction:
  Preparing      : 
  Installing     : python3-argcomplete-3.12.0-5.el9.noarch
  Installing     : rpmdevtools-9.5-2.el9.noarch
  Running scriptlet: rpmdevtools-9.5-2.el9.noarch
  Verifying      : python3-argcomplete-3.12.0-5.el9.noarch
  Verifying      : rpmdevtools-9.5-2.el9.noarch

Installed:
```

Установка rpm-пакета lynx

Скачаем rpm-пакет lynx: `dnf list lynx`, `dnf install lynx --downloadonly`.

```
Preparing      : python3-argcomplete-3.12.4-5.el9.noarch                1/3
Installing     : python3-argcomplete-3.12.4-5.el9.noarch                1/3
Installing     : nghttp2-tools-5.9-3.el9.noarch                        2/3
Running scriptlet: nghttp2-tools-5.9-3.el9.noarch                        2/3
Verifying      : python3-argcomplete-3.12.4-5.el9.noarch                1/3
Verifying      : nghttp2-tools-5.9-3.el9.noarch                        2/3

Installed:
  python3-argcomplete-3.12.4-5.el9.noarch                                nghttp2-tools-5.9-3.el9.noarch

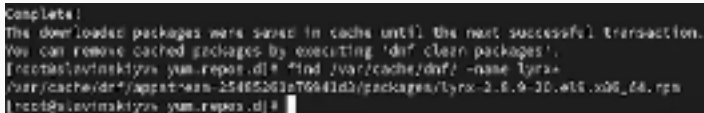
Complete!
[root@elavimakiyus yum.repos.d]# dnf list lynx
Last metadata expiration check: 6:27:36 ago on Sat 29 Sep 2024 12:28:43 AM MSK.
Available Packages
lynx.x86_64                                     2.8.9-20.el9                                appstream
[root@elavimakiyus yum.repos.d]# dnf install lynx --downloadonly
Last metadata expiration check: 6:27:37 ago on Sat 29 Sep 2024 12:28:43 AM MSK.
Dependencies resolved.
=====
Package                               Architecture          Version                               Repository                               Size
-----
Installing:
lynx                                   x86_64                2.8.9-20.el9                         appstream                                1.5 M

Transaction Summary
-----
Install 1 Package

Total download size: 1.5 M
Installed size: 6.1 M
DNF will only download packages for the transaction.
Is this ok [y/N]: y
```

Рис. 11: sc11

Найдем каталог, в который был помещён пакет после загрузки с помощью команды: `find /var/cache/dnf/ -name lynx*`. Пакет был помещен в каталог `/var/cache/dnf/appstream-25485261a76941d3/packages lynx-2.8.9-20.el9.x86_64.rpm`.



```
Complete!  
The downloaded packages were saved in cache until the next successful transaction.  
You can remove cached packages by executing 'dnf clean packages'.  
[root@salavinskiy ~]# yum.repos.d]# find /var/cache/dnf/ -name lynx*  
/var/cache/dnf/appstream-25485261a76941d3/packages/lynx-2.8.9-20.el9.x86_64.rpm  
[root@salavinskiy ~]# yum.repos.d]#
```

Рис. 12: sc12

Перейдем в этот каталог и затем установим rpm-пакет: `rpm -Uvh lynx-2.8.9-20.el9.x86_64.rpm`.

```
the downloaded packages were saved in cache files; the next successful transaction
You can remove cached packages by executing 'dnf clean packages'.
[root@slavinskiy yum.repos.d]# find /var/cache/dnf/ -name lynx-
/var/cache/dnf/appstream-15431261a70911c1/packages/lynx-2.8.9-20.el9.x86_64.rpm
[root@slavinskiy yum.repos.d]# rpm -Uvh lynx-2.8.9-20.el9.x86_64.rpm
-bash: rpm: No such file or directory
[root@slavinskiy yum.repos.d]# cd /var/cache/dnf/
[root@slavinskiy dnf]# rpm -Uvh lynx-2.8.9-20.el9.x86_64.rpm
error: open of lynx-2.8.9-20.el9.x86_64.rpm failed: No such file or directory
[root@slavinskiy dnf]# cd /var/cache/dnf/appstream-15431261a70911c1/packages/
[root@slavinskiy packages]# rpm -Uvh lynx-2.8.9-20.el9.x86_64.rpm
Verifying...                               ##### [100%]
Preparing...                               ##### [100%]
Updating / Installing...
 1:lynx-2.8.9-20.el9                         ##### [100%]
[root@slavinskiy packages]# which lynx
```

Рис. 13: sc13

Определение расположения исполняемого файла

Определим расположение исполняемого файла с помощью команды: `which lynx`.

```
Preparing... [100%]
Updating / installing...
 1:lynx-2.8.9-20.el9 [100%]
[root@alexfinskiy ~]# packagesle which lynx
/usr/bin/which: no lynx in (/root/.local/bin:/root/bin:/usr/local/bin:/usr/sbin:/usr/bin)
[root@alexfinskiy ~]# packagesle which lynx
/usr/bin/lynx
[root@alexfinskiy ~]# packagesle r
```

Рис. 14: sc14

Определение по имени файла, к какому пакету принадлежит lynx

Используя rpm, определим по имени файла, к какому пакету принадлежит lynx: rpm -qf \$(which lynx).

```
/usr/bin/which: no lynx in (/root/.local/bin:/root/bin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin)
[root@slave1 ~]# rpm -qf $(which lynx)
lynx-2.8.9-20.el9.x86_64
[root@slave1 ~]#
```

Рис. 15: sc15

Получение дополнительной информации

Получим дополнительную информацию о содержимом пакета, введя: `rpm -qi lynx`.

```
root@kali:~# rpm -qi lynx
lynx-2.8.9-20.el9.aarch64
root@kali:~# rpm -qi lynx
Name           : lynx
Version        : 2.8.9
Release        : 20.el9
Architecture   : aarch64
Install Date   : Sat 27 Sep 2025 10:50:00 AM MSK
Group          : Unspecified
Size           : 650815
License        : GPLv2
Signature      : RSA/SHA256, Tue 16 Apr 2024 02:10:34 AM MSK, key ID 702d0c6d30ed237d
Source RPM     : lynx-2.8.9-20.el9.src.rpm
Build Date     : Tue 16 Apr 2024 02:10:31 AM MSK
Build Host     : pb-aad3bacc-a1ab-40b4-a8bc-9a4cc0b20b0d-b-abb-b4
Packager       : Rocky Linux Build System (Peridot) <releng@rockylinux.org>
Vendor         : Rocky Enterprise Software Foundation
URL            : http://lynx.brower.org/
Summary        : A text-based Web browser
Description    :
Lynx is a text-based Web browser. Lynx does not display any images,
but it does support frames, tables, and most other HTML tags. One
advantage Lynx has over graphical browsers is speed; Lynx starts and
exits quickly and swiftly displays web pages.
root@kali:~#
```

Список всех файлов в пакете

Получим список всех файлов в пакете, используя: `rpm -ql lynx`.

```
root@elavinsk:~# rpm -ql lynx
/usr/share/doc/lynx/test/cond-r.html
/usr/share/doc/lynx/test/quickbrown.html
/usr/share/doc/lynx/test/quotebit.html
/usr/share/doc/lynx/test/sgnl.html
/usr/share/doc/lynx/test/spaces.html
/usr/share/doc/lynx/test/special_urls.html
/usr/share/doc/lynx/test/square.html
/usr/share/doc/lynx/test/tabtest.html
/usr/share/doc/lynx/test/tags.html
/usr/share/doc/lynx/test/test-styles.html
/usr/share/doc/lynx/test/triangle.html
/usr/share/doc/lynx/test/unisoke.html
/usr/share/doc/lynx/test/utf-8-demo.html
/usr/share/doc/lynx
/usr/share/licenses/lynx/COPYING
/usr/share/locale/ca/LC_MESSAGES/lynx.mo
/usr/share/locale/cs/LC_MESSAGES/lynx.mo
/usr/share/locale/de/LC_MESSAGES/lynx.mo
/usr/share/locale/en/LC_MESSAGES/lynx.mo
/usr/share/locale/es/LC_MESSAGES/lynx.mo
/usr/share/locale/fr/LC_MESSAGES/lynx.mo
/usr/share/locale/he/LC_MESSAGES/lynx.mo
/usr/share/locale/hr/LC_MESSAGES/lynx.mo
/usr/share/locale/id/LC_MESSAGES/lynx.mo
/usr/share/locale/it/LC_MESSAGES/lynx.mo
/usr/share/locale/ja/LC_MESSAGES/lynx.mo
```

Вывод перечня файлов с документацией пакета

Выведем перечень файлов с документацией пакета с помощью команды `rpm -qd lynx`.

```
usr/share/doc/lynx/lynx_help/keystrokes/print_help.html
usr/share/doc/lynx/lynx_help/keystrokes/scrolling_help.html
usr/share/doc/lynx/lynx_help/keystrokes/test_display.html
usr/share/doc/lynx/lynx_help/keystrokes/visited_help.html
usr/share/doc/lynx/lynx_help/keystrokes/xterm_help.html
usr/share/doc/lynx/lynx_help/lynx-dev.html
usr/share/doc/lynx/lynx_help/lynx_help_main.html
usr/share/doc/lynx/lynx_help/lynx_url_support.html
usr/share/doc/lynx/samples/blue-background.lss
usr/share/doc/lynx/samples/bright-blue.lss
usr/share/doc/lynx/samples/camin.lss.txt
usr/share/doc/lynx/samples/rome.htm
usr/share/doc/lynx/samples/installdiffs.html
usr/share/doc/lynx/samples/jumpc.htm
usr/share/doc/lynx/samples/jumpc.html
usr/share/doc/lynx/samples/jumpcMS.html
usr/share/doc/lynx/samples/jumpcower
usr/share/doc/lynx/samples/lynx-1000.cfg
usr/share/doc/lynx/samples/lynx-1000p
usr/share/doc/lynx/samples/lynx.com
usr/share/doc/lynx/samples/lynx.ico
usr/share/doc/lynx/samples/lynx.lss
usr/share/doc/lynx/samples/lynx_cookmarks.htm
usr/share/doc/lynx/samples/lynxdump
usr/share/doc/lynx/samples/natloap
usr/share/doc/lynx/samples/natlo_4orn.pl
usr/share/doc/lynx/samples/midnight.lss
usr/share/doc/lynx/samples/mild-colors.lss
```

Просмотр файлов документации через man lynx

Посмотрим файлы документации, применив команду man lynx.

```
root@palavinskijvpc:/var/cache/apt/aptarchive/55483361a7624f1d3/packages
man(1)                                     General Commands Manual

lynx
lynx - a general purpose distributed information browser for the World Wide Web

SYNOPSIS
lynx [optional] [path or URL]
lynx [optional] [path or URL] -get_data
data
--
lynx [optional] [path or URL] -post_data
data
--


Use "lynx -help" to display a complete list of current options.

DESCRIPTION
lynx is a fully-featured World Wide Web (WWW) client for users running cursor-addressable, character-cell display devices
vt100 emulators running on Windows 95/NT/9x/7/8 or any POSIX platform, or any other "course-oriented" display. It will d
language (-URL) documents containing links to files residing on the local system, as well as files residing on remote syst
FTP, NNTP, and NNTP servers. Current versions of lynx run on Unix, VMS, Windows 95/NT/9x/7/8, OS/2, and OS/2.

lynx can be used to access information on the World Wide Web, or to build information systems intended primarily for local
lynx has been used to build several Campus Wide Information Systems (CWIS). In addition, lynx can be used to build systems
```

Вывод перечня и месторасположения конфигурационных файлов пакета

Выведем на экран перечень и месторасположение конфигурационных файлов пакета через команду `rpm -qc lynx`.



```
/usr/share/man/man1/lynx.1.gz  
[root@elavinskiy ~]# man lynx  
[root@elavinskiy ~]# rpm -qc lynx  
/etc/lynx-site.cfg  
/etc/lynx.cfg  
/etc/lynx.lss  
[root@elavinskiy ~]#
```

Рис. 20: sc20

Выведем на экран расположение и содержание скриптов, выполняемых при установке пакета: `rpm -q --scripts lynx`. Скриптов у нас не оказалось.

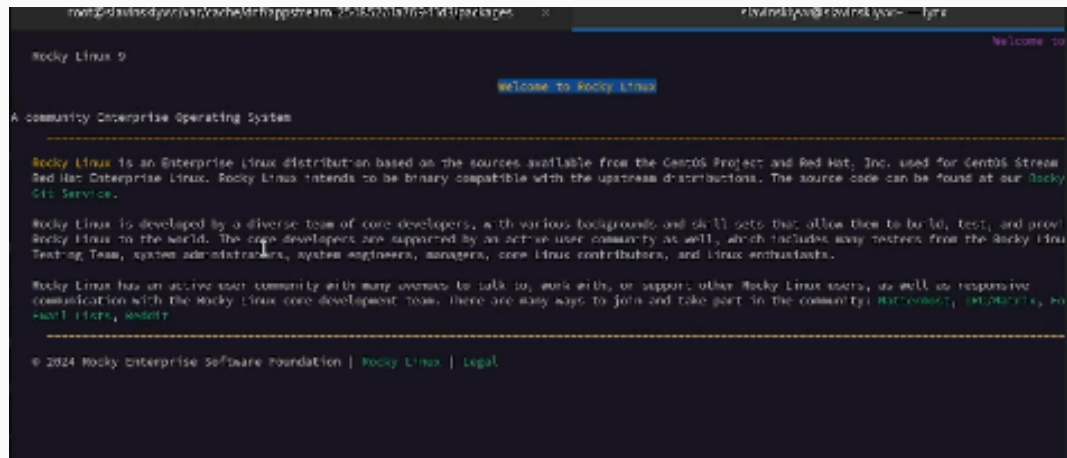


```
root@lynx:/etc/lynx:~# rpm -q --scripts lynx
root@lynx:/etc/lynx:~#
```

Рис. 21: sc21

Запустим текстовый браузер lynx

В отдельном терминале под своей учётной записью запустим текстовый браузер lynx, чтобы проверить корректность установки пакета.



```
root@davids-dynic:/var/cache/dnf/httpstream-202402041705140/packages x  elv@rockypw@rockylinux ~ — lynx
Rocky Linux 9
Welcome to
welcome to Rocky Linux
A community Enterprise Operating System
-----
Rocky Linux is an Enterprise Linux distribution based on the sources available from the CentOS Project and Red Hat, Inc. used for CentOS Stream
Red Hat Enterprise Linux. Rocky Linux intends to be binary compatible with the upstream distributions. The source code can be found at our Rocky
Git Service.
Rocky Linux is developed by a diverse team of core developers, with various backgrounds and skill sets that allow them to build, test, and provide
Rocky Linux to the world. The core developers are supported by an active user community as well, which includes many testers from the Rocky Linux
Testing Team, system administrators, system engineers, managers, core Linux contributors, and Linux enthusiasts.
Rocky Linux has an active user community with many avenues to talk to, work with, or support other Rocky Linux users, as well as responsive
communication with the Rocky Linux core development team. There are many ways to join and take part in the community: Matrixchat, IRC/Slack, Email, Twitter, Facebook, LinkedIn, Reddit.
-----
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```

Вернемся в терминал с учётной записью root и удалим пакет: `rpm -e lynx`.



```
root@latvinskijv ~  
/etc/lynx.lss  
[root@latvinskijv packages]# rpm -q --scripts lynx  
[root@latvinskijv packages]# rpm -e lynx  
[root@latvinskijv packages]# ls  
lynx-2.8.9-29.el9.x86_64.rpm  
[root@latvinskijv packages]#
```

Рис. 23: sc23

Установка пакета dnsmasq

Установим пакет dnsmasq: `dnf list dnsmasq`, `dnf install dnsmasq`.

```
root@slavinskiyy:~/cache/dnfppstream-20250916/004/packages x rslavinskiyy@slavinskiyy:~$ lyna
lynx-2.8.9-29.el9.x86_64.rpm
[root@slavinskiyy packages]# dnf list dnsmasq
Last metadata expiration check: 0:09:26 ago on Sat 27 Sep 2025 11:28:43 AM MSK.
Error: No matching Packages to list
[root@slavinskiyy packages]# dnf install dnsmasq
Last metadata expiration check: 0:10:09 ago on Sat 27 Sep 2025 11:28:43 AM MSK.
No match for argument: dnsmasq
Error: Unable to find a match: dnsmasq
[root@slavinskiyy packages]# dnf list dnsmasq
Last metadata expiration check: 0:40:14 ago on Sat 27 Sep 2025 11:28:43 AM MSK.
Installed Packages
dnsmasq.x86_64                                2.85-16.el9_4
Available Packages
dnsmasq.x86_64                                2.85-17.el9_4
[root@slavinskiyy packages]# dnf install dnsmasq
Last metadata expiration check: 0:40:23 ago on Sat 27 Sep 2025 11:28:43 AM MSK.
Package dnsmasq-2.85-16.el9_4.x86_64 is already installed.
Dependencies resolved.

=====
Package                                Architecture          Version                Repository
=====
Upgrading:
dnsmasq                                x86_64                2.85-17.el9_4         appstream

Transaction Summary
=====
Upgrade 1 Package

Total download size: 325 k
Is this ok [y/M]:
Operation aborted.
```

И определим расположение исполняемого файла с помощью команды `which dnsmasq`.



```
Complete!  
[root@slavinskiyvv packages]# which dnsmasq  
/usr/sbin/dnsmasq  
[root@slavinskiyvv packages]#
```

Рис. 25: sc25

К какому пакету принадлежит dnsmasq

Определим по имени файла, к какому пакету принадлежит dnsmasq: `rpm -qf $(which dnsmasq)`.

```
Upgraded:
  dnsmasq-2.85-17.el9_6.x86_64
Completed:
[root@slavinskiy ~]# packages=$(which dnsmasq)
[root@slavinskiy ~]# packages=$(which dnsmasq)
dnsmasq-2.85-17.el9_6.x86_64
[root@slavinskiy ~]# packages=$(which dnsmasq)
```

Рис. 26: sc26

Дополнительная информация о содержимом пакета

Получим дополнительную информацию о содержимом пакета через команду `rpm -qi dnsmasq`.

```
[root@slavinskiy ~]# rpm -qf $(which dnsmasq)
dnsmasq-2.85-17.el9_6.x86_64
[root@slavinskiy ~]# rpm -qi dnsmasq
Name           : dnsmasq
Version        : 2.85
Release        : 17.el9_6
Architecture   : x86_64
Install Date   : Sat 27 Sep 2025 01:06:39 AM MSK
Group          : Unspecified
Size           : 718888
License        : GPLv2 or GPLv3
Signature      : RSA/SHA256, Tue 16 Sep 2025 07:35:16 PM MSK, Key ID 703c626d350d375d
Source RPM     : dnsmasq-2.85-17.el9_6.src.rpm
Build Date     : Tue 16 Sep 2025 07:24:01 PM MSK
Build Host     : gb-46200025-a2db-4436-8235-10240036100d-b-ksb-h4
Packager       : Rocky Linux Build System [ecidnt] <neleng@rockylinux.org>
Vendor         : Rocky Enterprise Software Foundation
URL            : http://www.thekelleys.org.uk/dnsmasq/
Summary        : A lightweight DHCP/caching DNS server
Description    :
Dnsmasq is lightweight, easy to configure DNS forwarder and DHCP server.
It is designed to provide DNS and, optionally, DHCP, to a small network.
It can serve the names of local machines which are not in the global
DNS. The DHCP server integrates with the DNS server and allows machines
with DHCP-allocated addresses to appear in the DNS with names configured
either in each host or in a central configuration file. Dnsmasq supports
static and dynamic DHCP leases and BOOTP for network booting of diskless
```

Список всех файлов в пакете

Получим список всех файлов в пакете: `rpm -ql dnsmasq`.

```
static and dynamic DHCP leases and bootp for network booting of diskless
machines.
[inscr@slavinskiyvv packages]$ rpm -ql dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
/etc/dnsmasq.d
/usr/lib/.dir.0-1.d
/usr/lib/.dir.0-1.d/ce
/usr/lib/.dir.0-1.d/ce/796ed7c3ea78c5796b0fad60ee946aa1aca3c6
/usr/lib/systemd/system/dnsmasq.service
/usr/lib/systemd/system/dnsmasq.conf
usr/share/dnsmasq
usr/share/dnsmasq
usr/share/dnsmasq
usr/share/dnsmasq/trust-anchors.conf
usr/share/doc/dnsmasq
usr/share/doc/dnsmasq/CHANGES
usr/share/doc/dnsmasq/dbus-interface
usr/share/doc/dnsmasq/Faq
usr/share/doc/dnsmasq/doc.html
usr/share/doc/dnsmasq/setup.html
usr/share/licenses/dnsmasq
usr/share/licenses/dnsmasq/COPYING
usr/share/licenses/dnsmasq/COPYING-v3
usr/share/man/man5/dnsmasq.5.gz
/usr/lib/dnsmasq
[inscr@slavinskiyvv packages]$
```


Вывод перечня файлов с документацией

Выведем перечень файлов с документацией пакета: `rpm -qd dnsmasq`.

```
machines.  
[root@slavinskiy ~]# rpm -ql dnsmasq  
/etc/dbus-1/system.d/dnsmasq.conf  
/etc/dnsmasq.conf  
/etc/dnsmasq.d  
/usr/lib/.burld-td  
/usr/lib/.burld-td/ce  
/usr/lib/.burld-td/ce/79ed7c1ea7ed5796b2fad62ee9f6a20ca3ce  
/usr/lib/systemd/system/dnsmasq.service  
/usr/lib/sysusers.d/dnsmasq.conf  
/usr/sbin/dnsmasq  
/usr/share/dnsmasq  
/usr/share/dnsmasq/trust-on-chord.conf  
/usr/share/doc/dnsmasq  
/usr/share/doc/dnsmasq/CHANGELOG  
/usr/share/doc/dnsmasq/DBus-interface  
/usr/share/doc/dnsmasq/FAQ  
/usr/share/doc/dnsmasq/doc.html  
/usr/share/doc/dnsmasq/setup.html  
/usr/share/licenses/dnsmasq  
/usr/share/licenses/dnsmasq/COPYING  
/usr/share/licenses/dnsmasq/COPYING-v3  
/usr/share/man/man8/dnsmasq.8.gz  
/var/lib/dnsmasq  
[root@slavinskiy ~]# rpm -qd dnsmasq  
/usr/share/doc/dnsmasq/CHANGELOG  
/usr/share/doc/dnsmasq/DBus-interface  
/usr/share/doc/dnsmasq/FAQ  
/usr/share/doc/dnsmasq/doc.html
```

Просмотр файлов документации

И посмотрим файлы документации, используя команду `man dnsmasq`.

```
DNMASQ(8)                                     System Manager's Manual                               DN
NAME
    dnsmasq - A lightweight DHCP and caching DNS server.

SYNOPSIS
    dnsmasq [OPTION]...

DESCRIPTION
    dnsmasq is a light-weight DNS, TFTP, PXE, router advertisement and DHCP server. It is intended to provide coupled DNS and DHCP service to a L
    dnsmasq accepts DNS queries and either answers them from a small, local, cache or forwards them to a real, recursive, DNS server. It loads
    tents of /etc/hosts so that local hostnames which do not appear in the global DNS can be resolved and also answers DNS queries for DHCP co
    hosts. It can also act as the authoritative DNS server for one or more domains, allowing local names to appear in the global DNS. It can be
    used to do DNSSEC validation.

    The dnsmasq DHCP server supports static address assignments and multiple networks. It automatically sends a sensible default set of DHCP
    and can be configured to send any desired set of DHCP options, including vendor-encapsulated options. It includes a secure, read-only, IP
    to allow netbios boot of DHCP hosts and also supports RARP. The RARP support is full featured, and includes a proxy mode which supplies RARP
    tion to clients whilst DHCP address allocation is done by another server.

    The dnsmasq DHCPv6 server provides the same set of features as the DHCPv4 server, and in addition, it includes router advertisements and a n
    ture which allows naming for clients which use DHCPv6 and stateless autoconfiguration only for IPv6 configuration. There is support for ad
    dress allocation (both DHCPv6 and RA) from subnets which are dynamically delegated via DHCPv6 prefix delegation.

    Dnsmasq is coded with small embedded systems in mind. It aims for the smallest possible memory footprint compatible with the supported fu
    and allows unneeded functions to be omitted from the compiled binary.

OPTIONS
    Note that in general missing parameters are allowed and switch off functions, for instance "--pid-file" disables writing a PID file. On BSD,
    the GNU getopt library is linked, the long form of the options does not work on the command line; it is still recognised in the configuratio
```

Выведем на экран перечень и месторасположение конфигурационных файлов пакета через команду `rpm -qc dnsmasq`.



```
[root@slavinskii ~]# rpm -qc dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
[root@slavinskii ~]#
```

Рис. 31: sc31

Вывод расположения и содержания скриптов

Выведем на экран расположение и содержание скриптов, выполняемых при установке пакета: `rpm -q --scripts dnsmasq`. Скрипт предварительно создает пользователей, чтобы rpm мог устанавливать файлы с соответствующим владельцем.

```
/etc/dnsmasq-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
froot@slavinskiyy:~# rpm -q --scripts dnsmasq
preinstall scriptlet (using /bin/sh):
#precreate users so that rpm can install files owned by that user

# generated from dnsmasq-systemd-sysusers.conf
getent group 'dnsmasq' >/dev/null || groupadd -r 'dnsmasq' || :
getent passwd 'dnsmasq' >/dev/null || {
    useradd -r -g 'dnsmasq' -d '/var/lib/dnsmasq' -s '/usr/sbin/nologin' -c 'Dnsmasq DHCP and DNS server' 'dnsmasq' || :
    postinstall scriptlet (using /bin/sh):

if [ $(id -eq 0) ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Initial installation
    /usr/lib/systemd/systemd-update-helper install-system-units dnsmasq.service || :
fi
preinstall scriptlet (using /bin/sh):

if [ $(id -eq 0) ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Package removal, not upgrade
    /usr/lib/systemd/systemd-update-helper remove-system-units dnsmasq.service || :
fi
```

Удалим пакет dnsmasq: `rpm -e dnsmasq`.

```
postuninstall scriptlet (using /bin/sh):

if [ $1 -ge 1 : 44 ] -a "/usr/lib/systemd/systemd-update-helper" ; then
    # Package upgrade, not uninstall
    /usr/lib/systemd/systemd-update-helper mark-restart-system-units dnsmasq.s
fi
[root@elavinskiiya packages]# rpm -e dnsmasq
error: package dnsmasq is not installed
[root@elavinskiiya packages]# rpm -e dnsmasq
[warning]elavinskiiya packages]#
```

Рис. 33: sc33