

# Лабораторная работа №4

Работа с программными пакетами (DNF и RPM)

---

Тукаев Тимур

9 декабря 2025

Российский университет дружбы народов, Москва, Россия

## Цель работы

---

## Основная цель

---

Получить практические навыки работы с репозиториями, пакетами и группами пакетов в Linux с использованием менеджеров `dnf` и `rpm`.

## Ход выполнения работы

---

# Изучение репозиториев

```
root@titukaev:/home/titukaev# cd /etc/yum.repos.d/
root@titukaev:/etc/yum.repos.d# ls
rocky-addons.repo  rocky-devel.repo  rocky-extras.repo  rocky.repo  Rocky-SIG-Core-Common.repo  Rocky-SIG-Core-Infra.repo
root@titukaev:/etc/yum.repos.d# cat rocky.repo
# rocky.repo
#
# The mirrorlist system uses the connecting IP address of the client and the
# update status of each mirror to pick current mirrors that are geographically
# close to the client. You should use this for Rocky updates unless you are
# manually picking other mirrors.
#
# If the mirrorlist does not work for you, you can try the commented out
# baseurl line instead.

[baseos]
name=Rocky Linux $releasever - BaseOS
mirrorlist=https://mirrors.rockylinux.org/mirrorlist?arch=$basearch&repo=BaseOS-$releasever$rltype
#baseurl=http://dl.rockylinux.org/$contentdir/$releasever/BaseOS/$basearch/os/
gpgcheck=1
enabled=1
countme=1
metadata_expire=6h
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-10

[baseos-debuginfo]
name=Rocky Linux $releasever - BaseOS - Debug
mirrorlist=https://mirrors.rockylinux.org/mirrorlist?arch=$basearch&repo=BaseOS-$releasever-debug$rltype
#baseurl=http://dl.rockylinux.org/$contentdir/$releasever/BaseOS/$basearch/debug/tree/
gpgcheck=1
enabled=0
metadata_expire=6h
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-10
```

Рис. 1: Просмотр содержания репозитория

# Просмотр списка репозиториев

```
root@titukaev:/etc/yum.repos.d# dnf repolist
repo id                                repo name
appstream                               Rocky Linux 10 - AppStream
baseos                                  Rocky Linux 10 - BaseOS
core-common                            Rocky Linux 10 - SIG Core Common
extras                                  Rocky Linux 10 - Extras
root@titukaev:/etc/yum.repos.d# dnf search user
Last metadata expiration check: 0:30:42 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
=====
Name & Summary Matched: user =====
gnome-user-docs.noarch : GNOME User Documentation
libuser.x86_64 : A user and group account administration library
perl-User-pwent.noarch : By-name interface to Perl built-in user name resolver
samba-usershares.noarch : Provides support for non-root user shares
usermode.x86_64 : Tools for certain user account management tasks
userspace-rcu.x86_64 : RCU (read-copy-update) implementation in user-space
xdg-user-dirs.x86_64 : Handles user special directories
=====
Name Matched: user =====
gnome-shell-extension-user-theme.noarch : Support for custom themes in GNOME Shell
xdg-user-dirs-gtk.x86_64 : Gnome integration of special directories
=====
Summary Matched: user =====
NetworkManager.x86_64 : Network connection manager and user applications
PackageKit-command-not-found.x86_64 : Ask the user to install command line programs automatically
accounts-service.x86_64 : D-Bus interfaces for querying and manipulating user account information
anaconda-gui.x86_64 : Graphical user interface for the Anaconda installer
anaconda-tui.x86_64 : Textual user interface for the Anaconda installer
audit.x86_64 : User space tools for kernel auditing
cachefilesd.x86_64 : CacheFiles user-space management daemon
cockpit-machines.noarch : Cockpit user interface for virtual machines
cockpit-ostree.noarch : Cockpit user interface for rpm-ostree
cockpit-packagekit.noarch : Cockpit user interface for packages
cockpit-storaged.noarch : Cockpit user interface for storage, using udisks
console-login-helper-messages.noarch : Combines motd, issue, profile features to show system information to the user before/on login
criu.x86_64 : Tool for Checkpoint/Restore in User-space
```

Рис. 2: Список репозиториев

Определение активных репозиториев (AppStream, BaseOS, Extras и др.).

## Поиск пакетов по ключевому слову

```
root@titukaev:/etc/yum.repos.d# dnf search nmap
Last metadata expiration check: 0:32:05 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
=====
                                               Name Exactly Matched: nmap =====
nmap.x86_64 : Network exploration tool and security scanner
=====
===== Name & Summary Matched: nmap =====
nmap-ncat.x86_64 : Nmap's Netcat replacement
root@titukaev:/etc/yum.repos.d# dnf info nmap
Last metadata expiration check: 0:32:12 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Available Packages
Name        : nmap
Epoch       : 4
Version    : 7.92
Release    : 3.el10
Architecture: x86_64
Size        : 5.6 M
Source      : nmap-7.92-3.el10.src.rpm
Repository  : appstream
Summary     : Network exploration tool and security scanner
URL         : http://nmap.org/
License     : LicenseRef-Nmap
Description : Nmap is a utility for network exploration or security auditing. It supports
              ping scanning (determine which hosts are up), many port scanning techniques
              (determine what services the hosts are offering), and TCP/IP fingerprinting
              (remote host operating system identification). Nmap also offers flexible target
              and port specification, decoy scanning, determination of TCP sequence
              predictability characteristics, reverse-identd scanning, and more. In addition
              to the classic command-line nmap executable, the Nmap suite includes a flexible
              data transfer, redirection, and debugging tool (netcat utility ncat), a utility
              for comparing scan results (ndiff), and a packet generation and response
              analysis tool (nping).
root@titukaev:/etc/yum.repos.d#
```

Рис. 3: Поиск пакетов по слову user

# Поиск и просмотр информации о пакете

```
=====
Installing:
  nmap                               x86_64           4:7.92-3.el10          appstream          5.6 M
=====
Transaction Summary
=====
Install 1 Package
=====
Total download size: 5.6 M
Installed size: 24 M
Is this ok [y/N]: y
Downloading Packages:
nmap-7.92-3.el10.x86_64.rpm
=====
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing : 1
  Installing : nmap-4:7.92-3.el10.x86_64
  Running scriptlet: nmap-4:7.92-3.el10.x86_64
=====
1/1
1/1
1/1
=====
Installed:
  nmap-4:7.92-3.el10.x86_64
=====
Complete!
root@tituskaev:/etc/yum.repos.d# dnf install nmap\*
Last metadata expiration check: 0:32:46 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Package nmap-4:7.92-3.el10.x86_64 is already installed.
Package nmap-ncat-4:7.92-3.el10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
root@tituskaev:/etc/yum.repos.d#
```

Рис. 4: Информация о пакете nmap

Получение детальной информации (`dnf info nmap`).

## Установка и сравнение режимов установки

```
running transaction test
Transaction test succeeded.
Running transaction
  Preparing : 
  Erasing   : nmap-4:7.92-3.el10.x86_64
  Running scriptlet: nmap-4:7.92-3.el10.x86_64
  Removed: nmap-4:7.92-3.el10.x86_64
  Complete!
root@titukaev:/etc/yum.repos.d# dnf remove nmap\*
Dependencies resolved.
=====
Package           Architecture      Version       Repository    Size
=====
Removing:
nmap-ncat        x86_64          4:7.92-3.el10  @AppStream     470 k

Transaction Summary
=====
Remove 1 Package

Free space: 470 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-4:7.92-3.el10.x86_64
  Erasing   : nmap-ncat-4:7.92-3.el10.x86_64
  Running scriptlet: nmap-ncat-4:7.92-3.el10.x86_64
  Removed: nmap-ncat-4:7.92-3.el10.x86_64
  Complete!
```

Рис. 5: Установка nmap

Сравнение команд `dnf install nmap` и `dnf install nmap*`.

## Удаление пакета rpm

```
root@titukaev:/etc/yum.repos.d# LANG=C dnf groups list
Last metadata expiration check: 0:36:07 ago on Tue Dec  9 11:39:55 2025.
Available Environment Groups:
  Server
  Minimal Install
  Workstation
  Custom Operating System
  Virtualization Host
Installed Environment Groups:
  Server with GUI
Installed Groups:
  Container Management
  Development Tools
  Headless Management
Available Groups:
  Legacy UNIX Compatibility
  Smart Card Support
  Console Internet Tools
  .NET Development
  Graphical Administration Tools
  Network Servers
  RPM Development Tools
  Scientific Support
  Security Tools
  System Tools
root@titukaev:/etc/yum.repos.d#
root@titukaev:/etc/yum.repos.d# dnf groups info "RPM Development Tools"
Last metadata expiration check: 0:36:42 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Group: RPM Development Tools
  Description: Tools used for building RPMs, such as rpmbuild.
  Mandatory Packages:
    redhat-rpm-config
    rpm-build
  Default Packages:
    rpmdevtools
root@titukaev:/etc/yum.repos.d#
```

# Просмотр и установка групп

```
Cleanup      : rpm-plugin-selinux-4.19.1.1-12.el18.x86_64          38/37
Cleanup      : redhat-rpm-config-289-1.el18_0.noarch             31/37
Cleanup      : rpm-4.19.1.1-12.el18.x86_64                      32/37
Cleanup      : rpm-libs-4.19.1.1-12.el18.x86_64                 33/37
Cleanup      : rpm-sequoia-1.6.0-6.el18.x86_64                  34/37
Cleanup      : openssl-libs-1:3.2.2-16.el18_0.x86_64            35/37
Cleanup      : crypto-policies-20250214-1.gitfd0b969.el18_0.noarch 36/37
Cleanup      : rpm-plugin-audit-4.19.1.1-12.el18.x86_64          37/37
Running scriptlet: rpm-4.19.1.1-20.el18.x86_64                37/37
Running scriptlet: crypto-policies-scripts-20250905-2.gitc7eb7b2.el18.noarch 37/37
Running scriptlet: rpm-plugin-audit-4.19.1.1-12.el18.x86_64          37/37

Upgraded:
crypto-policies-20250905-2.gitc7eb7b2.el18.noarch  crypto-policies-scripts-20250905-2.gitc7eb7b2.el18.noarch  openssl-1:3.5.1-4.el18_1.x86_64      openssl-devel-1:3.5.1-4.el18_1.x86_64
openssl-libs-1:3.5.1-4.el18_1.x86_64               python3-rpm-4.19.1.1-20.el18.x86_64           redhat-rpm-config-293-1.el18.noarch  rpm-4.19.1.1-20.el18.x86_64
rpm-build-4.19.1.1-20.el18.x86_64                 rpm-build-libs-4.19.1.1-20.el18.x86_64        rpm-libs-4.19.1.1-20.el18.x86_64      rpm-plugin-audit-4.19.1.1-20.el18.x86_64
rpm-plugin-selinux-4.19.1.1-20.el18.x86_64         rpm-plugin-systemd-inhibit-4.19.1.1-20.el18.x86_64  rpm-sequoia-1.9.0.3-1.el18_1.x86_64  rpm-sign-4.19.1.1-20.el18.x86_64

Installed:
openssl-fips-provider-1:3.5.1-4.el18_1.x86_64          python3-argcomplete-3.2.2-4.el18.noarch          rpmsdevtools-9.6-9.el18.noarch

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

Рис. 7: Список групп пакетов

Определение и установка группы *RPM Development Tools*.

## Удаление групп пакетов

```
root@titukaev:/etc/yum.repos.d# dnf groupremove "RPM Development Tools"
Dependencies resolved.
=====
Package           Architecture      Version       Repository   Size
=====
Removing:
rpmsdevtools        noarch        9.6-9.el10     @appstream 190 k
Removing unused dependencies:
python3-argcomplete    noarch        3.2.2-4.el10     @appstream 274 k
Removing Groups:
RPM Development Tools

Transaction Summary
=====
Remove 2 Packages

Free disk space: 472 k
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Erasing   : rpmsdevtools-9.6-9.el10.noarch          1/1
Erasing   : python3-argcomplete-3.2.2-4.el10.noarch 2/2
Running scriptlet: python3-argcomplete-3.2.2-4.el10.noarch 2/2

Removed:
python3-argcomplete-3.2.2-4.el10.noarch

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

Рис. 8: Удаление группы RPM Development Tools

Использование `dnf groupremove`.

# Просмотр и откат операций

```
root@titukaev:/etc/yum.repos.d# dnf history
ID | Command line
-----|-----
13 | groupremove RPM Development Tools
12 | groupinstall RPM Development Tools
11 | remove nmap*
10 | remove nmap
9 | install nmap
8 | install --enablerepo=core-infra gdisk -y
7 | install rocky-release-core -y
6 |
5 | upgrade --refresh
4 | -y install lynx
3 |
2 | -y install httpd
1 |

root@titukaev:/etc/yum.repos.d# dnf history undo 13
No transaction which manipulates package 'ubdo' was found.
ID | Command line
-----|-----
13 | groupremove RPM Development Tools
root@titukaev:/etc/yum.repos.d# dnf history undo 13
Last metadata expiration check: 0:39:28 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Dependencies resolved.

=====
Package           Architecture      Version       Repository      Size
=====
Installing group/module packages:
  rpmsdeveltools      noarch        9.6-9.el10     appstream      87 k
Installing dependencies:
  python3-argcomplete      noarch        3.2.2-4.el10     appstream      88 k
Installing Groups:
  RPM Development Tools

Transaction Summary
=====
  0:rpmsdeveltools
  0:python3-argcomplete
  0:RPM Development Tools

root@titukaev:~#
```

Рис. 9: История dnf и отмена транзакции

Анализ выполненных операций и использование `dnf history undo`.

# Загрузка и установка rpm-пакета

```
root@tituukav:/etc/yum.repos.d# dnf list lynx
Last metadata expiration check: 0:39:25 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Available Packages
lynx.x86_64                                2.9.0-6.el10                               appstream
root@tituukav:/etc/yum.repos.d# dnf install lynx --downloadonly
Last metadata expiration check: 0:39:46 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Dependencies resolved.
=====
Package          Architecture Version       Repository      Size
=====
lynx            x86_64      2.9.0-6.el10   appstream      1.6 M
Transaction Summary
=====
Install 1 Package

Total download size: 1.6 M
Installed size: 6.0 M
DNF will only download packages for the transaction.
Is this ok [y/N]: y
Downloading Packages:
lynx-2.9.0-6.el10.x86_64.rpm                25 MB/s | 1.6 MB  00:00
Total
Complete!
The downloaded packages were saved in cache until the next successful transaction.
You can remove cached packages by executing 'dnf clean packages'.
root@tituukav:/etc/yum.repos.d# find /var/cache/dnf -name lynx*
/var/cache/dnf/appstream-Bf18e4146800fdfc/packages/lynx-2.9.0-6.el10.x86_64.rpm
root@tituukav:/etc/yum.repos.d# cd /var/cache/dnf/appstream-Bf18e4146800fdfc/packages/
root@tituukav:/var/cache/dnf/appstream-Bf18e4146800fdfc/packages# rpm -Uhv lynx-2.9.0-6.el10.x86_64.rpm
Verifying...
Preparing...
Updating / installing...
1:lynx-2.9.0-6.el10  ################################################ [100%]
root@tituukav:/var/cache/dnf/appstream-Bf18e4146800fdfc/packages#
```

Рис. 10: Загрузка пакета lynx

Установка через `rpm -Uvh` после загрузки через `dnf`.

## Информация о пакете

```
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfe/packages# rpm -ql lynx
/etc/lynx-site.cfg
/etc/lynx.cfg
/etc/lynx.lss
/usr/bin/lynx
/usr/lib/.build-id
/usr/lib/.build-id/69
/usr/lib/.build-id/69/febb96205311acd4b77a65d52b8e6f7eea76c3
/usr/share/doc/lynx
/usr/share/doc/lynx/README
/usr/share/doc/lynx/docs
/usr/share/doc/lynx/docs/CHANGES2.3
/usr/share/doc/lynx/docs/CHANGES2.4
/usr/share/doc/lynx/docs/CHANGES2.5
/usr/share/doc/lynx/docs/CHANGES2.6
/usr/share/doc/lynx/docs/CHANGES2.7
/usr/share/doc/lynx/docs/CHANGES2.8
/usr/share/doc/lynx/docs/CRAWL.announce
/usr/share/doc/lynx/docs/FM.announce
/usr/share/doc/lynx/docs/IBMPC-Charsets.announce
/usr/share/doc/lynx/docs/README.TRST
/usr/share/doc/lynx/docs/README.chartrans
/usr/share/doc/lynx/docs/README.cookies
/usr/share/doc/lynx/docs/README.defines
```

Рис. 11: Информация о пакете lynx

## Просмотр содержимого пакета

```
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfe/packages# rpm -qd lynx
/usr/share/doc/lynx/README
/usr/share/doc/lynx/docs/CHANGES2.3
/usr/share/doc/lynx/docs/CHANGES2.4
/usr/share/doc/lynx/docs/CHANGES2.5
/usr/share/doc/lynx/docs/CHANGES2.6
/usr/share/doc/lynx/docs/CHANGES2.7
/usr/share/doc/lynx/docs/CHANGES2.8
/usr/share/doc/lynx/docs/CRAWL.announce
/usr/share/doc/lynx/docs/FM.announce
/usr/share/doc/lynx/docs/IBMPC-Charsets.announce
/usr/share/doc/lynx/docs/README.TRST
/usr/share/doc/lynx/docs/README.chartrans
/usr/share/doc/lynx/docs/README.cookies
/usr/share/doc/lynx/docs/README.defines
/usr/share/doc/lynx/docs/README.metrics
/usr/share/doc/lynx/docs/README.options
/usr/share/doc/lynx/docs/README.release
/usr/share/doc/lynx/docs/README.rootcerts
/usr/share/doc/lynx/docs/README.ssl
/usr/share/doc/lynx/docs/README.sslcerts
/usr/share/doc/lynx/docs/SOCKETSHR.announce
/usr/share/doc/lynx/docs/TCPWARE.announce
```

Рис. 12: Список файлов lynx

# Просмотр документации man



The screenshot shows a terminal window with a red header bar containing the text "titukaev@titukaev:~/.cache/dnf/appstream-8f18e4146890fdff/packages - man lynx". The main area of the terminal displays the man page for the "lynx" command. The page is titled "lynx(1)" and describes it as "Lynx - the text web browser". It includes sections for NAME, SYNOPSIS, DESCRIPTION, and OPTIONS. The SYNOPSIS section shows examples of the command usage. The DESCRIPTION section provides a detailed overview of Lynx's capabilities as a World Wide Web client. The OPTIONS section explains how multiple files or URLs can be specified and how options are named. At the bottom of the page, there is a footer with the text "Manual page lynx(1) ltime 1 (press h for help or q to quit)".

Рис. 13: man lynx

Открытие справочной страницы.

## Установка dnsmasq

```
root@titukaevi:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# dnf list dnsmasq
Last metadata expiration check: 0:48:05 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Available Packages
dnsmasq.x86_64
root@titukaevi:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# dnf install dnsmasq
Last metadata expiration check: 0:48:13 ago on Tue 09 Dec 2025 11:39:55 AM MSK.
Dependencies resolved.
=====
                                               Package          Architecture      Version       Repository      Size
=====
Installing:
dnsmasq           x86_64            2.98-4.el10      appstream      364 k
Installing dependencies:
nettle            x86_64            3.18.1-1.el10     baseos        558 k
=====
Transaction Summary
=====
Install 2 Packages

Total download size: 922 k
Installed size: 1.9 M
Is this ok [y/N]: y
Downloading Packages:
(1/2): dnsmasq-2.98-4.el10.x86_64.rpm   6.9 MB/s | 364 kB  00:00
(2/2): nettle-3.18.1-1.el10.x86_64.rpm  2.2 MB/s | 558 kB  00:00
=====
Total                                         1.2 MB/s | 922 kB  00:00
Running transaction check
Transaction check succeeded.
```

Рис. 14: Установка dnsmasq

Установка сервера DNS/DHCP/TFTP.

# Информация о dnsmasq

```
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# which dnsmasq
/usr/sbin/dnsmasq
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -qf $(which dnsmasq)
dnsmasq-2.90-4.el10.x86_64
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -qi dnsmasq
Name        : dnsmasq
Version     : 2.90
Release    : 4.el10
Architecture: x86_64
Install Date: Tue 09 Dec 2025 12:28:12 PM MSK
Group       : Unspecified
Size        : 794976
License     : GPL-2.0-only OR GPL-3.0-only
Signature   :
               RSA/SHA256, Thu 22 May 2025 03:17:11 AM MSK, Key ID 5b106c736fedfc85
Source RPM  : dnsmasq-2.90-4.el10.src.rpm
Build Date  : Thu 31 Oct 2024 02:46:28 PM MSK
Build Host  : pb-6df20f45-04b4-477b-bded-5a041ce1b59d-b-x86-64
Packager    : Rocky Linux Build System (Peridot) <releng@rockylinux.org>
Vendor      : Rocky Enterprise Software Foundation
VCS         : git:git://thekelleys.org.uk/dnsmasq.git
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 disk-less
machines.
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#
```

## Просмотр файлов и документации

```
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfe/packages# rpm -ql dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
/etc/dnsmasq.d
/usr/lib/.build-id
/usr/lib/.build-id/c9
/usr/lib/.build-id/c9/a4bb4576977dbef150b40955510f869d246b34
/usr/lib/systemd/system/dnsmasq.service
/usr/lib/sysusers.d/dnsmasq.conf
/usr/sbin/dnsmasq
/usr/share/dnsmasq
/usr/share/dnsmasq/trust-anchors.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@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfe/packages# 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
/usr/share/doc/dnsmasq/setup.html
/usr/share/man/man8/dnsmasq.8.gz
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fdfe/packages#
```

# Просмотр man-страницы dnsmasq

```
DNSMASQ(8)                               System Manager's Manual                               DNSMASQ(8)

NAME
    dnsmasq - A lightweight DHCP and caching DNS server.

SYNOPSIS
    dnsmasq [OPTION]...

DESCRIPTION
    dnsmasq is a lightweight DNS, TFTP, PXE, router advertisement and DHCP server. It is intended to provide coupled DNS and DHCP service to a LAN.

    dnsmasq accepts DNS queries and either answers them from a small, local, cache or forwards them to a real, recursive, DNS server. It loads the contents 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 configured 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 configured to do DNSSEC validation.

    The dnsmasq DHCP server supports static address assignments and multiple networks. It automatically sends a sensible default set of DHCP options, and can be configured to send any desired set of DHCP options, including vendor-encapsulated options. It includes a secure, read-only, TFTP server to allow net/PXE boot of DHCP hosts and also supports BOOTP. The PXE support is full featured, and includes a proxy mode which supplies PXE information 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 neat feature which allows naming for clients which use DHCPv4 and stateless autoconfiguration only for IPv6 configuration. There is support for doing address 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 functions, 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, unless 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 configuration file.

    --test Read and syntax check configuration file(s). Exit with code 0 if all is OK, or a non-zero code otherwise. Do not start up dnsmasq.

    -w, --help
        Display all command-line options. --help dhcp will display known DHCPv4 configuration options, and --help dhcp6 will display DHCPv6 options.

    -h, --no-hosts
        Don't read the hostnames in /etc/hosts.

Manual page dnsmasq(8) line 1 (press h for help or q to quit)
```

Рис. 17: man dnsmasq

# Конфигурационные файлы

```
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -qc dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# 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 [ $1 -eq 1 ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Initial installation
    /usr/lib/systemd/systemd-update-helper install-system-units dnsmasq.service || :
fi
preuninstall scriptlet (using /bin/sh):

if [ $1 -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
postuninstall scriptlet (using /bin/sh):

if [ $1 -ge 1 ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Package upgrade, not uninstall
    /usr/lib/systemd/systemd-update-helper mark-restart-system-units dnsmasq.service || :
fi
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -e dnsmasq
root@titukaev:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# █
```

Рис. 18: Конфигурационные файлы dnsmasq

## Заключение

---

Освоены операции установки, удаления, анализа и аудита пакетов с использованием `dnf` и `rpm`.

Изучены:

- репозитории и группы пакетов;
- установка и удаление пакетов;
- работа с rpm-файлами, документами и конфигурациями;
- служебные скрипты rpm;
- история транзакций.