

Лабораторная работа №4

Работа с программными пакетами (dnf и rpm)

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Цель работы

Получить практические навыки работы с репозиториями и менеджерами пакетов в Rocky Linux: **dnf** и **rpm**.

Ход выполнения работы

- Каталог конфигураций репозиториев: `/etc/yum.repos.d`
- Изучен `rocky-extras.repo` (имя, зеркала, GPG, метаданные, enable)

```
rishard@rishardkogengar:~$ sudo -i
[sudo] password for rishard:
root@rishardkogengar:~# cd /etc/yum.repos.d/
root@rishardkogengar:/etc/yum.repos.d# ls
rocky-addons.repo rocky-devel.repo rocky-extras.repo rocky.repo
root@rishardkogengar:/etc/yum.repos.d# cat rocky-extras.repo
# rocky-extras.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.

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

Поиск пакетов по ключевому слову

- Выполнен поиск пакетов по ключу `user`
- Совпадения находились в:
 - имени пакета
 - описании
 - обоих полях

```
root@rishardkogengar:/etc/yum.repos.d# dnf repolist
repo id                                repo name
appstream                              Rocky Linux 10 - AppStream
baseos                                 Rocky Linux 10 - BaseOS
extras                                 Rocky Linux 10 - Extras
root@rishardkogengar:/etc/yum.repos.d# dnf search user
Last metadata expiration check: 23:26:30 ago on Sun 18 Jan 2026 01:18:24 PM 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
```

Поиск и изучение пакета nmap

- Подготовка к установке сетевого сканера nmap
- Найдены пакеты:
 - nmap
 - nmap-ncat
- Просмотр информации о nmap (версия, архитектура, репозиторий, размер, назначение)

```
root@rishardkogengar:/etc/yum.repos.d# dnf search nmap
===== 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@rishardkogengar:/etc/yum.repos.d# dnf info nmap
Rocky Linux 10 - BaseOS                               13 kB/s | 4.3 kB    00:00
Rocky Linux 10 - AppStream                             5.7 kB/s | 4.3 kB    00:00
Rocky Linux 10 - Extras                               2.9 kB/s | 3.1 kB    00:01
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
```

Установка nmap: точное имя и маска

- Установка по точному имени: `dnf install nmap`
- Установка по маске: `dnf install nmap*`
- точное имя → ставится только указанный пакет
- маска → могут установиться дополнительные компоненты (`nmap-ncat` и др.)

```
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                                32 MB/s | 5.6 MB    00:00
-----
Total                                                    14 MB/s | 5.6 MB    00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                1/1
  Installing     : nmap-4:7.92-3.el10.x86_64      1/1
  Running scriptlet: nmap-4:7.92-3.el10.x86_64      1/1

Installed:
  nmap-4:7.92-3.el10.x86_64
```


Удаление nmap и связанных пакетов

- Удалён nmap
- Далее удалены все пакеты по шаблону nmap*
- В результате удалены и основной пакет, и доп. компоненты

```
Transaction Summary
=====
Remove 1 Package

Freed space: 24 M
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                1/1
  Erasing        : nmap-4:7.92-3.el10.x86_64      1/1
  Running scriptlet: nmap-4:7.92-3.el10.x86_64      1/1

Removed:
  nmap-4:7.92-3.el10.x86_64

Complete!
root@rishardkogengar:/etc/yum.repos.d# dnf remove nmap\*
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Removing:
```

- Получен список групп и сред:
 - установленная среда: **Server with GUI**
 - доступные группы (пример: **RPM Development Tools**)

```
root@rishardkogengar:/etc/yum.repos.d# dnf groups list
Last metadata expiration check: 0:02:01 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
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
```

Группа RPM Development Tools

- Просмотр информации о группе RPM Development Tools
- Установка группы → установлен rpmdevtools, группа активирована

```
root@rishardkogengar:/etc/yum.repos.d# dnf groups info "RPM Development Tools"
Last metadata expiration check: 0:02:40 ago on Mon 19 Jan 2026 12:45:48 PM 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@rishardkogengar:/etc/yum.repos.d# dnf groupinstall "RPM Development Tools"
Last metadata expiration check: 0:02:52 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
Dependencies resolved.
=====
Package                                Architecture      Version           Repository        Size
=====
Installing group/module packages:
rpmdevtools                            noarch            9.6-9.el10        appstream         87 k
Installing Groups:
RPM Development Tools

Transaction Summary
=====
Install 1 Package

Total download size: 87 k
Installed size: 198 k
Is this ok [y/N]: y
Downloading Packages:
```

Удаление группы RPM Development Tools

- Выполнено удаление группы
- Удалены пакеты, установленные в её составе
- Освобождено дисковое пространство

```
root@ishardkogengar:/etc/yum/repos.d# dnf groupremove "RPM Development Tools"
Dependencies resolved.
=====
Package                Architecture      Version           Repository         Size
=====
Removing:
  rpmddevtools          noarch            9.6-9.el10        @appstream         198 k
Removing Groups:
  RPM Development Tools

Transaction Summary
=====
Remove 1 Package

Freed space: 198 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                  : rpmddevtools-9.6-9.el10.noarch 1/1
  Running scriptlet: rpmddevtools-9.6-9.el10.noarch          1/1
Removed:
```

История DNF и откат транзакций

- Просмотр истории транзакций DNF
- Выполнен откат выбранной транзакции
- Результат: ранее удалённая группа была восстановлена

```
root@rishardkogengar: /etc/yum.repos.d# dnf history
```

ID	Command line	Date and time	Action(s)	Altered
7	groupremove RPM Development Tools	2026-01-19 12:49	Removed	2
6	groupinstall RPM Development Tools	2026-01-19 12:48	Install	2
5	remove nmap*	2026-01-19 12:47	Removed	1
4	remove nmap	2026-01-19 12:47	Removed	1
3	install nmap	2026-01-19 12:46	Install	1
2	-y update	2026-01-18 12:27	I, U	101 E<
1		2026-01-18 12:17	Install	1389 >E

```
root@rishardkogengar: /etc/yum.repos.d# dnf history undo 7
Last metadata expiration check: 0:04:01 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
Dependencies resolved.
```

Package	Architecture	Version	Repository	Size
Installing group/module packages:				
xpmdevtools	noarch	9.6-9.el10	appstream	87 k
Installing Groups:				
RPM Development Tools				

Transaction Summary

Install	1 Package
---------	-----------

Проверка доступности и загрузка RPM без установки

- Проверка: `dnf list lynx` (пакет доступен в AppStream)
- Загрузка без установки: `dnf install lynx --downloadonly`
- RPM сохранён в локальном кэше

```
root@rishardkogengar:/etc/yum.repos.d# dnf list lynx
Last metadata expiration check: 0:05:47 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
Available Packages
lynx.x86_64                                2.9.0-6.el10                                appstream
root@rishardkogengar:/etc/yum.repos.d# dnf install lynx --downloadonly
Last metadata expiration check: 0:06:03 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
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                1.2 MB/s | 1.6 MB    00:01
-----
Total                                         909 kB/s | 1.6 MB    00:01
Completed!
```

- Поиск файла в кэше:
 - `find /var/cache/dnf/ -name lynx*`
- Установка вручную:
 - `rpm -Uhv lynx-<версия>.rpm`

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -Uhv lynx-2.9.0-6.el10.x86_64.rpm
Verifying... ##### [100%]
Preparing... ##### [100%]
Updating / installing...
 1:lynx-2.9.0-6.el10 ##### [100%]
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# which lynx
/bin/lynx
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -qf $(which lynx)
lynx-2.9.0-6.el10.x86_64
```

Рис. 11: Установка lynx из RPM-файла

Проверка установки и сведения о пакете

- Путь к бинарнику: `which lynx`
- Принадлежность файла пакету:
 - `rpm -qf $(which lynx)`
- Информация о пакете:
 - `rpm -qi lynx`

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -qi lynx
Name           : lynx
Version        : 2.9.0
Release        : 6.el10
Architecture   : x86_64
Install Date   : Mon 19 Jan 2026 12:53:03 PM MSK
Group          : Unspecified
Size           : 6283241
License        : GPL-2.0-only
Signature      :
                RSA/SHA256, Thu 22 May 2025 11:34:29 PM MSK, Key ID 5b106c736fedfc85
Source RPM     : lynx-2.9.0-6.el10.src.rpm
Build Date     : Fri 01 Nov 2024 01:03:33 PM MSK
Build Host     : pb-913aa2bb-e2a2-4928-a48c-b613e15933c9-b-x86-64
Packager       : Rocky Linux Build System (Peridot) <releng@rockylinux.org>
Vendor         : Rocky Enterprise Software Foundation
URL            : https://lynx.invisible-island.net/
Summary        : A text-based Web browser
```


- Все файлы пакета: `rpm -ql lynx`

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/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
/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
```

- Документация: `rpm -qd lynx`

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/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
```

- Просмотр руководства: `man lynx`

```
LYNX(1)                                Lynx - the text web browser                                LYNX(1)

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

SYNOPSIS
    lynx [options] [optional paths or URLs]

    lynx [options] [path or URL] -get_data
    data
    --

    lynx [options] [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 (e.g., vt100 terminals, vt100 emulators running on Windows or any POSIX platform, or any other "curses-oriented" display). It will display hypertext markup language (HTML) documents containing links to files residing on the local system, as well as files residing on remote systems running Gopher, HTTP, FTP, WAIS, and NNTP servers.

    Lynx has been ported to many systems, including all variants of Unix, Windows (since Windows 95), DOS DJGPP and OS/2, as well as VMS and OS/390.

    Lynx can be used to access information on the World Wide Web, or to build information systems intended primarily for local access. For example, Lynx has been used to build several Campus Wide Information
```

Конфигурация, scripts и проверка запуска

```
Rocky Linux 10
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 and Red Hat Enterprise Linux. Rocky Linux intends to be binary
compatible with the upstream distributions. The source code can be found at our Rocky Linux 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: Mattermost, IRC/Matrix, Forums, Email Lists, Reddit

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Commands: Use arrow keys to move, '?' for help, 'q' to quit, '<-' to go back.
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

- Удаление пакета: `rpm -e lynx`

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages#  
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -qc lynx  
/etc/lynx-site.cfg  
/etc/lynx.cfg  
/etc/lynx.lss  
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -q --scripts lynx  
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -e lynx  
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# ls  
lynx-2.9.0-6.el10.x86_64.rpm  
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages#
```

Рис. 17: Удаление lynx и проверка содержимого каталога

- Пакет `dnsmasq` обнаружен в системе (AppStream)
- Повторная установка подтвердила отсутствие необходимости действий
- Бинарный файл расположен в: `/sbin`

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# dnf list dnsmasq
Last metadata expiration check: 0:13:12 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
Installed Packages
dnsmasq.x86_64                                2.90-4.el10                                @AppStream
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# dnf install dnsmasq
Last metadata expiration check: 0:13:22 ago on Mon 19 Jan 2026 12:45:48 PM MSK.
Package dnsmasq-2.90-4.el10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages#
```

Рис. 18: Проверка наличия и установки dnsmasq

Принадлежность файла и расширенная информация

- Принадлежность:
 - `/sbin/dnsmasq` → пакет `dnsmasq-...`
- Информация:
 - версия, релиз, лицензия, поставщик, назначение
- Назначение: лёгковесный DNS-кэш + DHCP/TFTP для локальных сетей

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# which dnsmasq
/sbin/dnsmasq
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -qf $(which dnsmasq)
dnsmasq-2.90-4.el10.x86_64
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -qi dnsmasq
Name           : dnsmasq
Version        : 2.90
Release        : 4.el10
Architecture   : x86_64
Install Date   : Sun 18 Jan 2026 12:18:40 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
```

Файлы пакета и документация

- Все файлы: `rpm -ql dnsmasq`
- Документация: `rpm -qd dnsmasq`
- Руководство: `man dnsmasq`

```
root@rishaikogengar: /var/cache/dnf/appstream-0110e41400901d1c/packages#  
root@rishaikogengar: /var/cache/dnf/appstream-8f18e4146890fd9c/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
```


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.

Конфигурационные файлы

- Список конфигурации: `rpm -qc dnsmasq`
- Основной файл: `/etc/dnsmasq.conf`
- Используется для настройки DNS/DHCP/TFTP

```
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/packages# rpm -qc dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
root@rishardkogengar:/var/cache/dnf/appstream-8f18e4146890fdcf/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
```

Итоги работы

- Изучены принципы управления ПО через **dnf** и **rpm** в Rocky Linux
- Отработаны сценарии:
 - работа с репозиториями и поиском пакетов
 - установка/удаление пакетов и групп
 - установка из локального RPM и детальный анализ состава пакетов
- На практике проанализированы пакеты **lynx** и **dnsmasq**:
 - бинарные файлы, документация, конфигурации, скрипты
- Подтверждено:
 - **dnf** удобен для зависимостей и управления из репозиториев
 - **rpm** даёт низкоуровневый контроль над пакетом и его содержимым