

Лабораторная работа №4

Работа с программными пакетами

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17 сентября 2025

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Цель работы

Основная цель

Получить навыки работы с репозиториями и менеджерами пакетов в Linux.

Ход выполнения работы

Работа с репозиториями

```
root@sigamberdov:/home/sigamberdov# cd /etc/yum.repos.d/
root@sigamberdov:/etc/yum.repos.d# ls
rocky-addons.repo  rocky-devel.repo  rocky-extras.repo  rocky.repo
root@sigamberdov:/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

[baseos-source]
```

Список репозиториев

```
root@sigamberdov:/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@sigamberdov:/etc/yum.repos.d# dnf search user
Last metadata expiration check: 0:38:38 ago on Wed 17 Sep 2025 01:40:21 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.x86_64 : 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
```

Поиск пакетов

```
root@sigamberdov:/etc/yum.repos.d# dnf search nmap
Last metadata expiration check: 0:39:00 ago on Wed 17 Sep 2025 01:40:21 PM 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@sigamberdov:/etc/yum.repos.d# dnf info nmap
Last metadata expiration check: 0:39:10 ago on Wed 17 Sep 2025 01:40:21 PM 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@sigamberdov:/etc/yum.repos.d#
```

Установка и удаление nmap

```
Total                                         8.1 MB/s | 5.6 MB   00:00
Rocky Linux 10 - AppStream                   1.6 MB/s | 1.6 kB   00:00
Importing GPG key 0xFEDFC85:
  Userid      : "Release Engineering (Rocky Linux 10) <releng@rockylinux.org>"
  Fingerprint: FC22 6859 C086 0BF0 DDB9 5B08 5B10 6C73 6FED FC85
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-10
Is this ok [y/N]: y
Key imported successfully
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

Complete!
root@sigamberdov:/etc/yum.repos.d# dnf install nmap\
Last metadata expiration check: 0:39:51 ago on Wed 17 Sep 2025 01:40:21 PM 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@sigamberdov:/etc/yum.repos.d# █
```

Установка и удаление nmap

```
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@sigamberdov:/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

Freed space: 470 k
Is this ok [y/N]: y
```

Работа с группами пакетов

```
root@sigamberdov:/etc/yum.repos.d# dnf groups list
Last metadata expiration check: 0:40:49 ago on Wed 17 Sep 2025 01:40:21 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
    Network Servers
    RPM Development Tools
    Scientific Support
    Security Tools
    System Tools
root@sigamberdov:/etc/yum.repos.d#
```

Работа с группами пакетов

```
root@sigamberdov:/etc/yum.repos.d# dnf groups info "RPM Development Tools"
Last metadata expiration check: 0:42:29 ago on Wed 17 Sep 2025 01:40:21 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@sigamberdov:/etc/yum.repos.d# dnf groupinstall "RPM Development Tools"
Last metadata expiration check: 0:42:42 ago on Wed 17 Sep 2025 01:40:21 PM MSK.
Dependencies resolved.
=====
 Package           Architecture   Version       Repository      Size
 =====
 Installing group/module packages:
  rpmdevtools          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
 =====
 Install 2 Packages

 Total download size: 175 k
 Installed size: 472 k
 Is this ok [y/N]: v
```

Работа с группами пакетов

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

 Freed 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      : rpmdevtools-9.6-9.el10.noarch 1/2
   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      rpmdevtools-9.6-9.el10.noarch

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

История транзакций dnf

```

root@sigamberdov:/etc/yum.repos.d# dnf history
ID      | Command line                                | Date and time   | Action(s)    | Altered
-----+-----+-----+-----+-----+-----+-----+-----+
 6 | groupremove RPM Development Tools           | 2025-09-17 14:23 | Removed     | 3
 5 | groupinstall RPM Development Tools         | 2025-09-17 14:23 | Install     | 3
 4 | remove nmap*                             | 2025-09-17 14:20 | Removed     | 1
 3 | remove nmap                            | 2025-09-17 14:20 | Removed     | 1
 2 | install nmap                          | 2025-09-17 14:19 | Install     | 1 <
 1 |                                         | 2025-09-17 12:58 | Install     | 1373 >E

root@sigamberdov:/etc/yum.repos.d# dnf history undo 6
Last metadata expiration check: 0:44:31 ago on Wed 17 Sep 2025 01:40:21 PM MSK.
Dependencies resolved.

=====
Package          Architecture Version       Repository  Size
=====
Installing group/module packages:
rpmdevtools      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
=====
Install 2 Packages

Total download size: 175 k
Installed size: 472 k
Is this ok [y/N]: y
Downloading Packages:
(1/2): python3-argcomplete-3.2.2-4.el10.noarch.rpm      554 kB/s | 88 kB   00:00
(2/2): rpmdevtools-9.6-9.el10.noarch.rpm                519 kB/s | 87 kB   00:00

Total

```

Установка lynx

```
root@sigamberdov:/etc/yum.repos.d# dnf list lynx
Last metadata expiration check: 0:45:26 ago on Wed 17 Sep 2025 01:40:21 PM MSK.
Available Packages
lynx.x86_64                                2.9.0-6.el10                               appstream
root@sigamberdov:/etc/yum.repos.d# dnf install lynx --downloadonly
Last metadata expiration check: 0:45:40 ago on Wed 17 Sep 2025 01:40:21 PM MSK.
Dependencies resolved.
=====
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                3.4 MB/s | 1.6 MB   00:00
-----
Total                                         2.0 MB/s | 1.6 MB   00:00
Complete!

The downloaded packages were saved in cache until the next successful transaction.
You can remove cached packages by executing 'dnf clean packages'.
root@sigamberdov:/etc/yum.repos.d#
```

Установка lynx

```
root@sigamberdov:/etc/yum.repos.d# find /var/cache/dnf/ -name lynx*
/var/cache/dnf/appstream-8f18e4146890fd9c/packages/lynx-2.9.0-6.el10.x86_64.rpm
root@sigamberdov:/etc/yum.repos.d# cd /var/cache/dnf/appstream-8f18e4146890fd9c/packages/
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -Uhv lynx-2.9.0-6.el10.x86_64.rpm
Verifying... #####
Preparing... #####
Updating / installing...
 1:lynx-2.9.0-6.el10 #####
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# which lynx
/usr/bin/lynx
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -qf $(which lynx)
lynx-2.9.0-6.el10.x86_64
```

Рис. 11: Поиск и установка пакета lynx

Проверка и информация о lynx

```
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -qi lynx
Name        : lynx
Version     : 2.9.0
Release     : 6.el10
Architecture: x86_64
Install Date: Wed 17 Sep 2025 02:26:51 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
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@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#
```

Рис. 12: Проверка принадлежности файла пакету

Проверка и информация о lynx

```
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/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.sslcerts
/usr/share/doc/lynx/docs/SOCKETSHR.announce
/usr/share/doc/lynx/docs/TCPWARE.announce
/usr/share/doc/lynx/docs/VMSWAIS.announce
/usr/share/doc/lynx/docs/djgpp.key
/usr/share/doc/lynx/docs/djgpp.key
```

Содержимое и документация lynx

```
root@sigamberdov:/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
/usr/share/doc/lynx/docs/VMSWAIS.announce
/usr/share/doc/lynx/docs/djgpp.key
/usr/share/doc/lynx/docs/pdcurses.key
/usr/share/doc/lynx/docs/lang.key
/usr/share/doc/lynx/docs/win-386.announce
/usr/share/doc/lynx/lynx.hlp
/usr/share/doc/lynx/lynx_help/Lynx_users_guide.html
/usr/share/doc/lynx/lynx_help/about_lynx.html
```

Содержимое и документация 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.

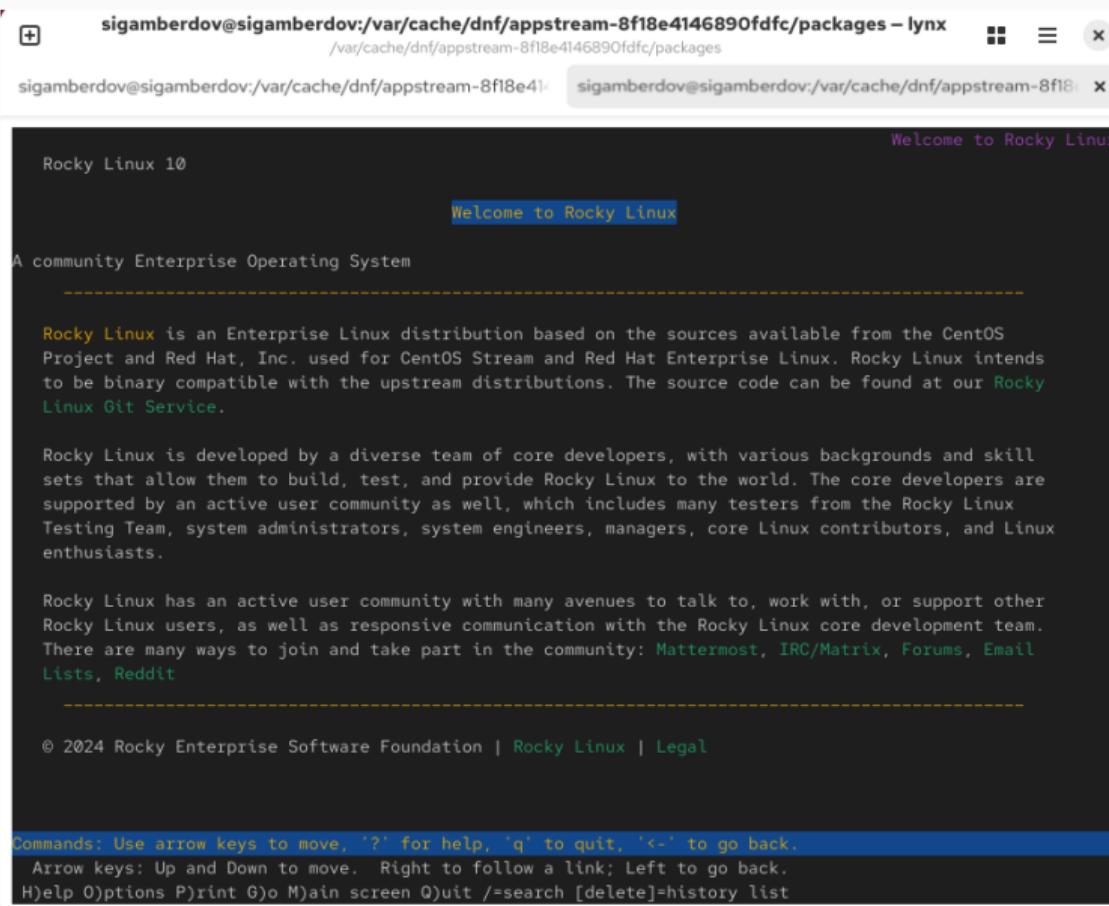
DESCRIPTION
Lynx is a fully-featured World Wide Web (WWW) client for users running cursor-addressable, character-cell display devices (e.g., vt100 terminals, vt100 emulators running on Windows or any POSIX platform, or any other "curses-oriented" display). It will display hypertext markup language (HTML) 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 Systems (CWIS). In addition, Lynx can be used to build systems isolated within a single LAN.

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

Конфигурация и запуск lynx



Конфигурация и запуск lynx

```
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# man lynx  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -qc lynx  
/etc/lynx-site.cfg  
/etc/lynx.cfg  
/etc/lynx.lss  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -q --scripts lynx  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -e lynx  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# ls  
lynx-2.9.0-6.el10.x86_64.rpm  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#
```

Рис. 17: Конфигурационные файлы lynx

Установка и проверка файла

```
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# dnf list dnsmasq  
Last metadata expiration check: 0:51:55 ago on Wed 17 Sep 2025 01:40:21 PM MSK.  
Installed Packages  
dnsmasq.x86_64          2.90-4.el10          @AppStream  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# dnf install dnsmasq  
Last metadata expiration check: 0:52:08 ago on Wed 17 Sep 2025 01:40:21 PM MSK.  
Package dnsmasq-2.90-4.el10.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# which dnsmasq  
/usr/sbin/dnsmasq  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -qf $(which dnsmasq)  
dnsmasq-2.90-4.el10.x86_64  
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# █
```

Рис. 18: Установка и проверка расположения исполняемого файла

Информация о пакете

```
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -qi dnsmasq
Name        : dnsmasq
Version     : 2.90
Release     : 4.el10
Architecture: x86_64
Install Date: Wed 17 Sep 2025 12:59:39 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@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#
```

Содержимое и документация

```
root@sigamberdov:/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
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#
```

Рис. 20: Список файлов пакета

```
sigamberdov@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages - man d...
/var/cache/dnf/appstream-8f18e4146890fd9c/packages

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

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

Конфигурационные файлы dnsmasq

```
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/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@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# man dnsmasq
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages#
root@sigamberdov:/var/cache/dnf/appstream-8f18e4146890fd9c/packages# rpm -qc dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
root@sigamberdov:/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
```

Итоги работы

Вывод

В ходе работы были изучены приёмы управления пакетами в Linux с помощью **dnf** и **rpm**: установка, удаление, работа с группами, проверка документации и анализ содержимого пакетов.