

Лабораторная работа №4

Работа с программными пакетами

Шаханеоядж Хаоладар

24 сентября 2025

Российский университет дружбы народов, Москва, Россия

Цель работы

Основная цель

Получение навыков работы с репозиториями, пакетным менеджером **dnf** и утилитой **rpm** в Linux.

Ход выполнения работы

Работа с репозиториями

```
haoladar@haoladar:~$ su
Password:
root@haoladar:/home/haoladar# cd /etc/yum.repos.d/
root@haoladar:/etc/yum.repos.d# ls
rocky-addons.repo  rocky-devel.repo  rocky-extras.repo  rocky.repo
root@haoladar:/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-$releasever$rftype
#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-$releasever-debug$rftype
#baseurl=http://dl.rockylinux.org/$contentdir/$releasever/BaseOS/$basearch/debug/tree/
gpgcheck=1
enabled=0
```

Рис. 1: Каталог /etc/yum.repos.d и файл rocky.repo

Работа с репозиториями

```
root@haoladar:/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@haoladar:/etc/yum.repos.d# dnf search user
Rocky Linux 10 - BaseOS                  14 MB/s | 18 MB   00:01
Rocky Linux 10 - AppStream                608 kB/s | 2.1 MB   00:03
Rocky Linux 10 - Extras                  3.0 kB/s | 5.1 kB   00:01
=====
===== 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
accountsservice.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-machine-search : Cockpit user interface for virtual machines
```

Рис. 2: Список репозиториев

Работа с пакетом nmap

```
root@haoladar:/etc/yum.repos.d# dnf search nmap
Last metadata expiration check: 0:00:41 ago on Mon 22 Sep 2025 07:14:09 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@haoladar:/etc/yum.repos.d# dnf info nmap
Last metadata expiration check: 0:00:48 ago on Mon 22 Sep 2025 07:14:09 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
```

Рис. 3: Информация о пакете nmap

Работа с пакетом nmap

```
Rocky Linux 10 - AppStream  
Importing GPG key 0x6FEDFC85:  
    Userid : "Release Engineering (Rocky Linux 10) <releng@rockylinux.org>"  
    Fingerprint: FC22 6859 C086 0BF0 DD89 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@haoladar:/etc/yum.repos.d# dnf install nmap\  
Last metadata expiration check: 0:01:55 ago on Mon 22 Sep 2025 07:14:09 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@haoladar:/etc/yum.repos.d#
```

Рис. 4: Установка пакета nmap

Работа с пакетом nmap

```
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@haoladar:/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
```

Рис. 5: Удаление пакета nmap

Работа с группами пакетов

```
root@haoladar:/etc/yum.repos.d#  
root@haoladar:/etc/yum.repos.d# dnf groups list  
Last metadata expiration check: 0:02:45 ago on Mon 22 Sep 2025 07:14:09 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@haoladar:/etc/yum.repos.d#
```

Рис. 6: Список групп пакетов

Работа с группами пакетов

```
root@haoladar:/etc/yum.repos.d# dnf groups info "RPM Development Tools"
Last metadata expiration check: 0:03:14 ago on Mon 22 Sep 2025 07:14:09 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@haoladar:/etc/yum.repos.d# dnf groupinstall "RPM Development Tools"
Last metadata expiration check: 0:03:26 ago on Mon 22 Sep 2025 07:14:09 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          1.6 MB/s | 88 kB     00:00
```

Рис. 7: Информация о группе RPM Development Tools

Работа с группами пакетов

```
root@haoladar: /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

```

Рис. 8: Удаление группы RPM Development Tools

История операций dnf

Рис. 9: История dnf и откат действия

Использование rpm (lynx)

```
root@haoladar:/etc/yum.repos.d#
root@haoladar:/etc/yum.repos.d# dnf list lynx
Last metadata expiration check: 0:07:13 ago on Mon 22 Sep 2025 07:14:09 PM MSK.
Available Packages
lynx.x86_64          2.9.0-6.el10           appstream
root@haoladar:/etc/yum.repos.d# dnf install lynx --downloadonly
Last metadata expiration check: 0:07:29 ago on Mon 22 Sep 2025 07:14:09 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          810 kB/s | 1.6 MB  00:01
=====
Total                                         653 kB/s | 1.6 MB  00:02
Complete!

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

Рис. 10: Загрузка пакета lynx

Использование rpm (lynx)

```
root@haoladar:/etc/yum.repos.d# find /var/cache/dnf -name lynx*
/var/cache/dnf/appstream-8f18e4146890fdfc/packages/lynx-2.9.0-6.el10.x86_64.rpm
root@haoladar:/etc/yum.repos.d# cd /var/cache/dnf/appstream-8f18e4146890fdfc/packages/
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -Uvh lynx-2.9.0-6.el10.x86_64.rpm
Verifying... #####
Preparing... #####
Updating / installing...
  1:lynx-2.9.0-6.el10 #####
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# which lynx
/usr/bin/lynx
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -qf $(which lynx)
lynx-2.9.0-6.el10.x86_64
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#
```

Рис. 11: Поиск и установка lynx

Использование rpm (lynx)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -qi lynx
Name        : lynx
Version     : 2.9.0
Release     : 6.el10
Architecture: x86_64
Install Date: Mon 22 Sep 2025 07:22:48 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@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#
```

Рис. 12: Информация о пакете lynx

Использование rpm (lynx)

```
root@haoladar:/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
```

Рис. 13: Документация lynx

Использование rpm (lynx)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd9c/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/diagn_kev
```

Рис. 14: Руководство man lynx

Использование rpm (lynx)

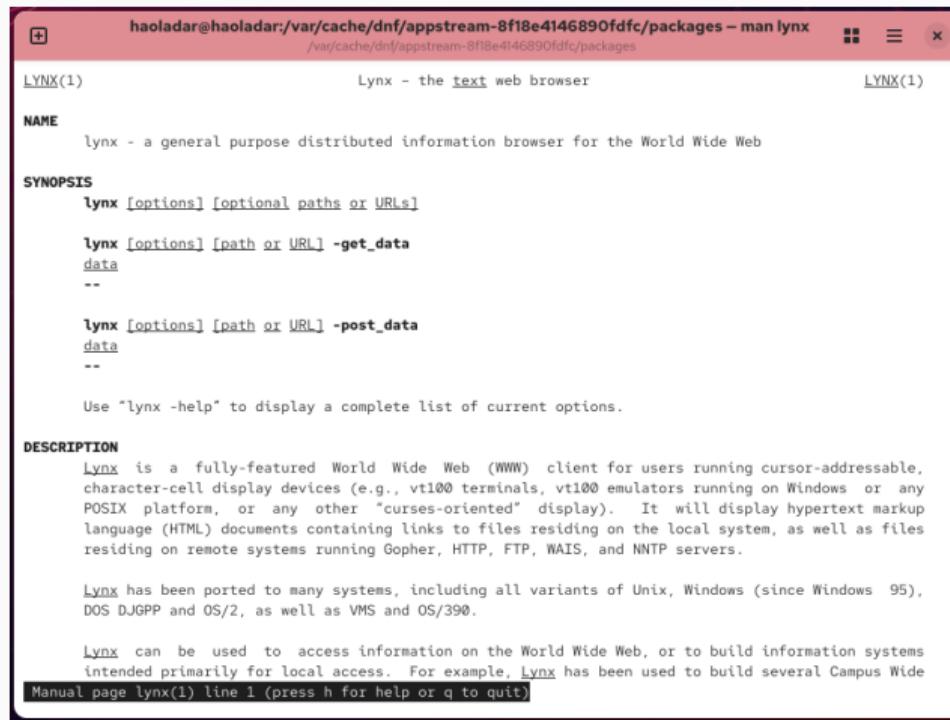
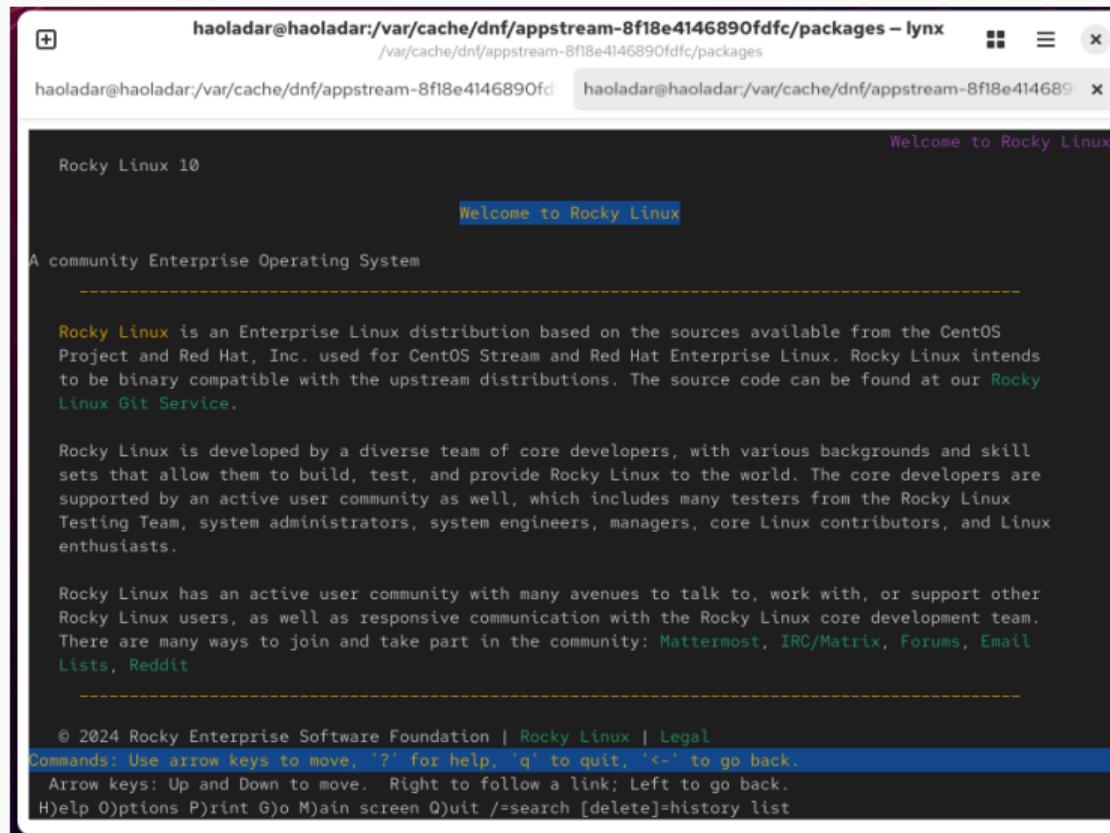


Рис. 15: Запуск lynx

Использование rpm (lynx)



Использование rpm (lynx)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages# man lynx
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages#
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages# rpm -qc lynx
/etc/lynx-site.cfg
/etc/lynx.cfg
/etc/lynx.1ss
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages# rpm -q --scripts lynx
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages# rpm -e lynx
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages# ls
lynx-2.9.0-6.el10.x86_64.rpm
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fd0c/packages#
```

Рис. 17: Удаление lynx

Использование rpm (dnsmasq)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/packages#  
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/packages# dnf list dnsmasq  
Last metadata expiration check: 0:13:54 ago on Mon 22 Sep 2025 07:14:09 PM MSK.  
Installed Packages  
dnsmasq.x86_64 2.90-4.el10 @AppStream  
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/packages# dnf install dnsmasq  
Last metadata expiration check: 0:14:04 ago on Mon 22 Sep 2025 07:14:09 PM MSK.  
Package dnsmasq-2.90-4.el10.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/packages# which dnsmasq  
/usr/sbin/dnsmasq  
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/packages# rpm -qf $(which dnsmasq)  
dnsmasq-2.90-4.el10.x86_64
```

Рис. 18: Установка dnsmasq

Использование rpm (dnsmasq)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages# rpm -qi dnsmasq
Name        : dnsmasq
Version     : 2.90
Release    : 4.el10
Architecture: x86_64
Install Date: Mon 22 Sep 2025 06:38:39 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@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#
```

Рис. 19: Информация о пакете dnsmasq

Использование rpm (dnsmasq)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/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@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/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@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages#
```

Рис. 20: Список файлов и документация dnsmasq

Использование rpm (dnsmasq)

```
+ haoladar@haoladar:/var/cache/dnf/appstream-8f18e4146890fdfc/packages – man dnsmasq
/var/cache/dnf/appstream-8f18e4146890fdfc/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.

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

Использование rpm (dnsmasq)

```
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/packages# rpm -qc dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
root@haoladar:/var/cache/dnf/appstream-8f18e4146890fdcc/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):
```

Рис. 22: Конфигурационные файлы dnsmasq

Итоги работы

Вывод

- Изучена работа с репозиториями, установкой и удалением пакетов через **dnf**
- Получены навыки работы с группами пакетов
- Освоены приёмы установки, анализа и удаления пакетов через **rpm**
- Сформированы практические умения администрирования ПО в Linux