

Лабораторная работа №4

Работа с программными пакетами

Руслан Алиев

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Российский университет дружбы народов, Москва, Россия

Цель работы

Получение практических навыков работы с репозиториями и менеджерами пакетов **dnf** и **rpm** в операционной системе Linux.

Ход выполнения работы

Переход в режим суперпользователя

```
raliev@raliev:~$ su
Password:
root@raliev:/home/raliev#
root@raliev:/home/raliev# cd /etc/yum.repos.d/
root@raliev:/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@raliev:/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
```

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

Просмотр подключённых репозиториев

```
root@raliev:/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@raliev:/etc/yum.repos.d# dnf search user
Last metadata expiration check: 33 days, 15:30:23 ago on Mon 10 Nov 2025 08:25:06 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
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-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
```

Рис. 2: Список репозиториев

```
root@raliev:/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@raliev:/etc/yum.repos.d# dnf info nmap
Rocky Linux 10 - SIG Core Common                6.9 kB/s | 2.9 kB    00:00
Rocky Linux 10 - BaseOS                          17 kB/s | 4.3 kB    00:00
Rocky Linux 10 - BaseOS                          12 MB/s | 5.3 MB    00:00
Rocky Linux 10 - AppStream                       17 kB/s | 4.3 kB    00:00
Rocky Linux 10 - AppStream                       3.4 MB/s | 2.0 MB    00:00
Rocky Linux 10 - Extras                          9.7 kB/s | 3.1 kB    00:00
Rocky Linux 10 - Extras                          13 kB/s | 4.8 kB    00:00
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).
```

Рис. 3: Результат поиска пакетов user

```
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                                22 MB/s | 5.6 MB   00:00
-----
Total                                                    10 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

Complete!
root@raliev:/etc/yum.repos.d# dnf install nmap\*
Last metadata expiration check: 0:00:38 ago on Sun 14 Dec 2025 11:56:18 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@raliev:/etc/yum.repos.d#
```

Рис. 4: Информация о пакете nmap

Установка и удаление nmap

```
root@raliev:~# yum remove nmap
root@raliev:/etc/yum.repos.d# dnf remove nmap
Dependencies resolved.
=====
Package                Architecture          Version               Repository            Size
=====
Removing:
nmap                   x86_64                4:7.92-3.el10        @appstream            24 M

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@raliev:/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
=====
```

Рис. 5: Установка пакета nmap

```

root@raliev:/etc/yum.repos.d# dnf groupinstall "RPM Development Tools"
Last metadata expiration check: 0:02:32 ago on Sun 14 Dec 2025 11:56:18 AM MSK.
Dependencies resolved.
=====
Package                                Architecture      Version            Repository          Size
=====
Upgrading:
crypto-policies                        noarch            20250905-2.gitc7eb7b2.el10  baseos              95 k
crypto-policies-scripts               noarch            20250905-2.gitc7eb7b2.el10  baseos              134 k
openssl                               x86_64            1:3.5.1-4.el10_1          baseos              1.2 M
openssl-devel                         x86_64            1:3.5.1-4.el10_1          appstream           3.0 M
openssl-libs                         x86_64            1:3.5.1-4.el10_1          baseos              2.2 M
python3-rpm                          x86_64            4.19.1.1-20.el10          baseos              64 k
redhat-rpm-config                    noarch            293-1.el10               appstream           79 k
rpm                                   x86_64            4.19.1.1-20.el10          baseos              543 k
rpm-build                            x86_64            4.19.1.1-20.el10          appstream           76 k
rpm-build-libs                       x86_64            4.19.1.1-20.el10          baseos              93 k
rpm-libs                             x86_64            4.19.1.1-20.el10          baseos              309 k
rpm-plugin-audit                     x86_64            4.19.1.1-20.el10          baseos              17 k
rpm-plugin-selinux                   x86_64            4.19.1.1-20.el10          baseos              17 k
rpm-plugin-systemd-inhibit           x86_64            4.19.1.1-20.el10          appstream           17 k
rpm-sequoia                          x86_64            1.9.0.3-1.el10_1          baseos              968 k
rpm-sign                             x86_64            4.19.1.1-20.el10          baseos              21 k
rpm-sign-libs                        x86_64            4.19.1.1-20.el10          baseos              23 k
Installing group/module packages:
rpmdevtools                          noarch            9.6-9.el10               appstream           87 k
Installing dependencies:
openssl-fips-provider                 x86_64            1:3.5.1-4.el10_1          baseos              811 k
python3-argcomplete                   noarch            3.2.2-4.el10              appstream           88 k
Installing Groups:
RPM Development Tools

```

Рис. 6: Список групп пакетов

Установка и удаление группы

```
root@raliev:/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 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       : rpmddevtools-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                rpmddevtools-9.6-9.el10.noarch

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

Рис. 7: Установка группы RPM Development Tools

```
root@raliev:/etc/yum.repos.d# dnf history
ID      | Command line                                | Date and time | Action(s) | Altered
-----|-----|-----|-----|-----
14 | groupremove RPM Development Tools          | 2025-12-14 11:59 | Removed   | 3
13 | groupinstall RPM Development Tools          | 2025-12-14 11:58 | I, U      | 21
12 | remove nmap*                               | 2025-12-14 11:57 | Removed   | 1
11 | remove nmap                               | 2025-12-14 11:57 | Removed   | 1
10 | install nmap                               | 2025-12-14 11:56 | Install   | 1
9 | install --enablerepo=core-infra gdisk -y    | 2025-11-10 20:11 | Install   | 1 <
8 | install rocky-release-core -y              | 2025-11-10 20:11 | Install   | 1 >
7 |                                              | 2025-10-31 11:14 | Install   | 2
6 | upgrade --refresh                          | 2025-10-18 11:05 | I, U      | 235 EE
5 | -y install lynx                            | 2025-10-13 18:15 | Install   | 1
4 | -y install httpd                           | 2025-10-03 17:02 | Install   | 11
3 | -y install iptables*                       | 2025-10-03 16:26 | I, U      | 5
2 | -y install vsftpd                           | 2025-10-03 16:16 | Install   | 1 <
1 |                                              | 2025-10-02 18:51 | Install   | 1373 >E

root@raliev:/etc/yum.repos.d# dnf history undo 14
Last metadata expiration check: 0:03:31 ago on Sun 14 Dec 2025 11:56:18 AM MSK.
Dependencies resolved.
=====
Package                                Architecture      Version           Repository        Size
=====
Installing group/module packages:
xpmdevtools                            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
```

Рис. 8: История использования dnf

```
root@raliev:/etc/yum.repos.d# dnf list lynx
Last metadata expiration check: 0:00:03 ago on Sun 14 Dec 2025 12:01:58 PM MSK.
Installed Packages
lynx.x86_64                                2.9.0-6.el10                                @appstream
root@raliev:/etc/yum.repos.d# dnf install lynx --downloadonly
Last metadata expiration check: 0:00:26 ago on Sun 14 Dec 2025 12:01:58 PM MSK.
Package lynx-2.9.0-6.el10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
root@raliev:/etc/yum.repos.d# find /var/cache/dnf/ -name lynx*
root@raliev:/etc/yum.repos.d# which lynx
/usr/bin/lynx
root@raliev:/etc/yum.repos.d# rpm -qf $(which lynx)
lynx-2.9.0-6.el10.x86_64
root@raliev:/etc/yum.repos.d#
```

Рис. 9: Загрузка пакета lynx

```
raliev@raliev:/etc/yum.repos.d -- man lynx
/etc/yum.repos.d

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.

OPTIONS
    At start up, Lynx will load any local file or remote URL specified at the command line. For help with URLs, press "?", or "H" while running Lynx. Then follow the link titled, "Help on URLs."

    If more than one local file or remote URL is listed on the command line, Lynx will open only the last interactively.

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

```
root@raliev:/etc/yum.repos.d#  
root@raliev:/etc/yum.repos.d# dnf list dnsmasq  
Last metadata expiration check: 0:07:39 ago on Sun 14 Dec 2025 12:01:58 PM MSK.  
Installed Packages  
dnsmasq.x86_64                                2.90-4.el10                                @AppStream  
root@raliev:/etc/yum.repos.d# dnf install dnsmasq  
Last metadata expiration check: 0:07:49 ago on Sun 14 Dec 2025 12:01:58 PM MSK.  
Package dnsmasq-2.90-4.el10.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
root@raliev:/etc/yum.repos.d# which dnsmasq  
/usr/sbin/dnsmasq  
root@raliev:/etc/yum.repos.d# rpm -qf $(which dnsmasq)  
dnsmasq-2.90-4.el10.x86_64
```

Рис. 11: Пакет dnsmasq

```
root@raliev:/etc/yum.repos.d# 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@raliev:/etc/yum.repos.d# 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@raliev:/etc/yum.repos.d#
```


Итоги работы

В ходе лабораторной работы были изучены: - принципы работы с репозиториями; - установка и удаление пакетов и групп пакетов; - анализ rpm-пакетов, их файлов, документации и скриптов.

Полученные навыки позволяют эффективно администрировать программное обеспечение в Linux-системах.