

Wydział Informatyki Politechniki Białostockiej Administracja systemami GNU/Linux	Data: 27.03.2022
Cwiczenie nr 5 Temat: zarządzanie pakietami Kasper Seweryn	Prowadzacy: dr inż. Andrzej Chmielewski

1. Wylistuj wszystkie pakiety zainstalowane w systemie.

```

root@ubuntu:~# dpkg-query -f='${Package} ${Version} ${Architecture} ${Description}\n'
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
++-----+
||/ Name                               Version                               Architecture Description
++-----+
ii accountsservice                     0.6.55-0ubuntu12~20.04.5            amd64         query and manipulate user account information
ii adduser                             3.118ubuntu2                        all          add and remove users and groups
ii alsa-topology-conf                  1.2.2-1                             all          ALSA topology configuration files
ii alsa-ucm-conf                      1.2.2-1ubuntu0.11                  all          ALSA Use Case Manager configuration files
ii apparmor                           2.13.3-7ubuntu5.1                  amd64        user-space parser utility for AppArmor
ii apport                             2.20.11-0ubuntu27.21               all          automatically generate crash reports for debugging
ii apport-symptoms                    0.23                                all          symptom scripts for apport
ii apt                                 2.0.6                               amd64        commandline package manager
ii apt-utils                          2.0.6                               amd64        package management related utility programs
ii at                                  3.1.23-1ubuntu1                    amd64        Delayed job execution and batch processing
ii base-files                         11ubuntu5.5                        amd64        Debian base system miscellaneous files
ii base-passwd                        3.5.47                             amd64        Debian base system master password and group files
ii bash                               5.0-6ubuntu1.1                     amd64        GNU Bourne Again SHell
ii bash-completion                    1:2.10-1ubuntu1                    all          programmable completion for the bash shell
ii bc                                  1.07.1-2build1                     amd64        GNU bc arbitrary precision calculator language
ii bcache-tools                       1.0.8-3ubuntu0.1                   amd64        bcache userspace tools
ii bind9-dnsutils                     1:9.16.1-0ubuntu2.10               amd64        Clients provided with BIND 9
ii bind9-host                         1:9.16.1-0ubuntu2.10               amd64        DNS Lookup Utility
ii bind9libs:amd64                   1:9.16.1-0ubuntu2.10               amd64        Shared Libraries used by BIND 9
ii bolt                               0.8-4ubuntu1                       amd64        system daemon to manage thunderbolt 3 devices
ii bsdmaintools                       11.1.2ubuntu3                      amd64        collection of more utilities from FreeBSD
ii bsduutils                          1:2.34-0.1ubuntu9.3                amd64        basic utilities from 4.4BSD-Lite
ii btrfs-progs                       5.4.1-2                             amd64        Checksumming Copy on Write Filesystem utilities

```

```

nyarch# lxc shell fedora
[root@fedora ~]# rpm -qa
libgcc-11.2.1-9.fc34.x86_64
crypto-policies-20210213-1.git5c710c0.fc34.noarch
tzdata-2021e-1.fc34.noarch
fedora-release-identity-container-34-39.noarch
python-setuptools-wheel-53.0.0-3.fc34.noarch
libssh-config-0.9.6-1.fc34.noarch
dnf-data-4.9.0-1.fc34.noarch
fedora-gpg-keys-34-2.noarch
fedora-release-container-34-39.noarch
fedora-repos-34-2.noarch
fedora-release-common-34-39.noarch
setup-2.13.7-3.fc34.noarch
filesystem-3.14-5.fc34.x86_64
basesystem-11-11.fc34.noarch
publicsuffix-list-dafsa-20190417-5.fc34.noarch
pcre2-syntax-10.36-4.fc34.noarch
ncurses-base-6.2-4.20200222.fc34.noarch
bash-5.1.0-2.fc34.x86_64
ncurses-libs-6.2-4.20200222.fc34.x86_64
glibc-common-2.33-21.fc34.x86_64
glibc-minimal-langpack-2.33-21.fc34.x86_64
glibc-2.33-21.fc34.x86_64
zlib-1.2.11-26.fc34.x86_64
bzip2-libs-1.0.8-6.fc34.x86_64
xz-libs-5.2.5-5.fc34.x86_64
libzstd-1.5.2-1.fc34.x86_64
sqlite-libs-3.34.1-2.fc34.x86_64
libcap-2.48-2.fc34.x86_64
libxcrypt-4.4.28-1.fc34.x86_64
gmp-6.2.0-6.fc34.x86_64
libcom_err-1.45.6-5.fc34.x86_64
libgpg-error-1.42-1.fc34.x86_64
libuuid-2.36.2-1.fc34.x86_64
popt-1.18-4.fc34.x86_64
readline-8.1-2.fc34.x86_64
lua-libs-5.4.4-1.fc34.x86_64

```

2. Odinstaluj pakiet openssh-server (jeśli jest zainstalowany).

```

root@ubuntu:~# dpkg --remove openssh-server
(Reading database ... 31686 files and directories currently installed.)
Removing openssh-server (1:8.2p1-4ubuntu0.4) ...
Processing triggers for man-db (2.9.1-1) ...
root@ubuntu:~#

```

```
[root@fedora ~]# yum remove openssh-server
No match for argument: openssh-server
No packages marked for removal.
Dependencies resolved.
Nothing to do.
Complete!
[root@fedora ~]#
```

3. Zainstaluj pakiet openssh-server.

```
root@ubuntu:~# apt install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfreetype6
Use 'apt autoremove' to remove it.
Suggested packages:
  molly-guard monkeysphere ssh-askpass
The following NEW packages will be installed:
  openssh-server
0 upgraded, 1 newly installed, 0 to remove and 12 not upgraded.
Need to get 377 kB of archives.
After this operation, 1527 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.4 [377 kB]
Fetched 377 kB in 0s (1219 kB/s)
Preconfiguring packages ...
Selecting previously unselected package openssh-server.
(Reading database ... 31668 files and directories currently installed.)
Preparing to unpack .../openssh-server_1%3a8.2p1-4ubuntu0.4_amd64.deb ...
Unpacking openssh-server (1:8.2p1-4ubuntu0.4) ...
Setting up openssh-server (1:8.2p1-4ubuntu0.4) ...
rescue-ssh.target is a disabled or a static unit, not starting it.
Processing triggers for systemd (245.4-4ubuntu3.15) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ufw (0.36-6ubuntu1) ...
root@ubuntu:~#
```

```

[root@fedora ~]# yum install openssh-server
Fedora 34 - x86_64
Fedora 34 openh264 (From Cisco) - x86_64
Fedora Modular 34 - x86_64
Fedora 34 - x86_64 - Updates
Fedora Modular 34 - x86_64 - Updates
Dependencies resolved.
=====
Package                                                    Architecture
=====
Installing:
  openssh-server                                           x86_64

Transaction Summary
=====
Install 1 Package

Total download size: 450 k
Installed size: 1.0 M
Is this ok [y/N]: y
Downloading Packages:
openssh-server-8.6p1-5.fc34.x86_64.rpm
-----
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :
  Running scriptlet: openssh-server-8.6p1-5.fc34.x86_64
  Installing     : openssh-server-8.6p1-5.fc34.x86_64
  Running scriptlet: openssh-server-8.6p1-5.fc34.x86_64
Created symlink /etc/systemd/system/multi-user.target.wants/sshd.service → /usr/lib/systemd/sys
  Verifying      : openssh-server-8.6p1-5.fc34.x86_64

Installed:
  openssh-server-8.6p1-5.fc34.x86_64

Complete!
[root@fedora ~]#

```

4. Wylistuj wszystkie pliki, które zostały dostarczone z pakietem openssh-server.


```
root@ubuntu:~# dpkg -L openssh-server
/.
/etc
/etc/default
/etc/default/ssh
/etc/init.d
/etc/init.d/ssh
/etc/pam.d
/etc/pam.d/sshd
/etc/ssh
/etc/ssh/moduli
/etc/ssh/sshd_config.d
/etc/ufw
/etc/ufw/applications.d
/etc/ufw/applications.d/openssh-server
/lib
/lib/systemd
/lib/systemd/system
/lib/systemd/system/rescue-ssh.target
/lib/systemd/system/ssh.service
/lib/systemd/system/ssh.socket
/lib/systemd/system/ssh@.service
/usr
/usr/lib
/usr/lib/openssh
/usr/lib/openssh/ssh-session-cleanup
/usr/sbin
/usr/sbin/sshd
/usr/share
/usr/share/apport
/usr/share/apport/package-hooks
/usr/share/apport/package-hooks/openssh-server.py
/usr/share/doc
/usr/share/doc/openssh-client
/usr/share/doc/openssh-client/examples
/usr/share/doc/openssh-client/examples/ssh-session-cleanup.service
/usr/share/man
/usr/share/man/man5
/usr/share/man/man5/moduli.5.gz
/usr/share/man/man5/sshd_config.5.gz
/usr/share/man/man8
/usr/share/man/man8/sshd.8.gz
/usr/share/openssh
/usr/share/openssh/sshd_config
/usr/share/openssh/sshd_config.md5sum
/usr/share/doc/openssh-server
/usr/share/man/man5/authorized_keys.5.gz
root@ubuntu:~#
```



```
root@ubuntu:~# apt-cache depends openssh-server
openssh-server
Depends: adduser
Depends: dpkg
Depends: libpam-modules
Depends: libpam-runtime
Depends: lsb-base
Depends: openssh-client
Depends: openssh-sftp-server
Depends: procs
Depends: ucf
|Depends: debconf
Depends: <debconf-2.0>
    cdebconf
    debconf
Depends: libaudit1
Depends: libc6
Depends: libcom-err2
Depends: libcrypt1
Depends: libgssapi-krb5-2
Depends: libkrb5-3
Depends: libpam0g
Depends: libselinux1
Depends: libssl1.1
Depends: libsystemd0
Depends: libwrap0
Depends: zlib1g
Conflicts: <sftp>
Conflicts: <ssh-socks>
Conflicts: <ssh2>
|Recommends: <default-logind>
    libpam-systemd
|Recommends: <logind>
    libpam-systemd
Recommends: libpam-systemd
Recommends: ncurses-term
Recommends: xauth
Recommends: ssh-import-id
Suggests: molly-guard
Suggests: monkeysphere
Suggests: ssh-askpass
    ksshaskpass
    kwalletcli
    lxqt-openssh-askpass
    ssh-askpass-fullscreen
    ssh-askpass-gnome
Suggests: ufw
Replaces: openssh-client
Replaces: ssh
Replaces: <ssh-krb5>
```

```

[root@fedora ~]# yum repoquery --requires openssh-server
Last metadata expiration check: 0:10:15 ago on Sun Mar 27 21:48:08 2022.
/bin/sh
/usr/bin/bash
/usr/sbin/useradd
crypto-policies >= 20200610-1
libaudit.so.1()(64bit)
libc.so.6(GLIBC_2.33)(64bit)
libcom_err.so.2()(64bit)
libcrypt.so.2()(64bit)
libcrypt.so.2(XCRYPT_2.0)(64bit)
libcrypto.so.1.1()(64bit)
libcrypto.so.1.1(OPENSSL_1_1_0)(64bit)
libcrypto.so.1.1(OPENSSL_1_1_1b)(64bit)
libdl.so.2()(64bit)
libgssapi_krb5.so.2()(64bit)
libgssapi_krb5.so.2(gssapi_krb5_2_MIT)(64bit)
libkrb5.so.3()(64bit)
libkrb5.so.3(krb5_3_MIT)(64bit)
libpam.so.0()(64bit)
libpam.so.0(LIBPAM_1.0)(64bit)
libresolv.so.2()(64bit)
libselinux.so.1()(64bit)
libselinux.so.1(LIBSELINUX_1.0)(64bit)
libsystemd.so.0()(64bit)
libsystemd.so.0(LIBSYSTEMD_209)(64bit)
libutil.so.1()(64bit)
libutil.so.1(GLIBC_2.2.5)(64bit)
libz.so.1()(64bit)
openssh = 8.5p1-2.fc34
openssh = 8.6p1-5.fc34
pam >= 1.0.1-3
rtld(GNU_HASH)
systemd
[root@fedora ~]#

```

7. Które z pakietów do instalacji wymagają zainstalowanego pakietu openssh-server.


```
root@ubuntu:~# apt-cache rdepends openssh-server
openssh-server
Reverse Depends:
  ssh
  openssh-tests
  ssh
  openssh-sftp-server
  openssh-sftp-server
| openssh-sftp-server
  openssh-sftp-server
  google-compute-engine-oslogin
  openssh-tests
  ldm-server
  walinuxagent
  walinuxagent
  rsync
  openssh-sftp-server
  openssh-sftp-server
| openssh-sftp-server
  openssh-sftp-server
  google-compute-engine-oslogin
  ec2-instance-connect
  zsnapd-rcmd
  zsnapd
  xpra
  x2goserver
  x2goclient
| watch-maildirs
  vpnc-scripts
| sslh
| sshcommand
  ssh-contact-service
  slack
  sidedoor
  rsbackup-graph
  rsbackup
  progress-linux-ssh-keys
  progress-linux
  piuparts-master-from-git-deps
  piuparts-master
  openssh-tests
  oar-server
  oar-node
  mysecureshell
  monkeysphere
  molly-guard
  ltsp
```

```

[root@fedora ~]# yum repoquery --provides openssh-server
Last metadata expiration check: 0:10:52 ago on Sun Mar 27 21:48:08 2022.
config(openssh-server) = 8.5p1-2.fc34
config(openssh-server) = 8.6p1-5.fc34
openssh-server = 8.5p1-2.fc34
openssh-server = 8.6p1-5.fc34
openssh-server(x86-64) = 8.5p1-2.fc34
openssh-server(x86-64) = 8.6p1-5.fc34
[root@fedora ~]# rpm -q --whatrequires openssh-server
no package requires openssh-server
[root@fedora ~]# yum repoquery --whatrequires openssh-server
Last metadata expiration check: 0:12:03 ago on Sun Mar 27 21:48:08 2022.
WALinuxAgent-0:2.2.52-5.fc34.noarch
WALinuxAgent-0:2.3.1.1-1.fc34.noarch
rssh-0:2.3.4-20.fc34.x86_64
safekeep-client-0:1.5.1-2.fc34.noarch
ssh-contact-0:0.7-18.fc34.x86_64
ssh-key-dir-0:0.1.2-7.fc34.x86_64
torque-server-0:6.1.3-2.fc34.x86_64
x2goclient-0:4.1.2.2-4.fc34.x86_64
x2goserver-0:4.1.0.3-10.fc34.x86_64
x2goserver-0:4.1.0.3-17.fc34.x86_64
[root@fedora ~]#

```

8. Sprawdź, które pliki dostarczone z pakietem openssh-server zostały zmodyfikowane od czasu instalacji. Wybierz jeden z plików, który nadal jest w postaci oryginalnej, dodaj do niego drobne zmiany (np. spację) i sprawdź, czy ta zmiana spowoduje, że menadżer pakietów rozpozna ten plik jako zmodyfikowany.

```

root@ubuntu:~# dpkg --verify openssh-server
root@ubuntu:~# vim /etc/default/ssh
root@ubuntu:~# dpkg --verify openssh-server
??5?????? c /etc/default/ssh
root@ubuntu:~#

```

```

[root@fedora ~]# rpm -V openssh-server
.....T. c /etc/pam.d/sshd
[root@fedora ~]# vim /etc/sysconfig/sshd
[root@fedora ~]# rpm -V openssh-server
.....T. c /etc/pam.d/sshd
s.5.....T. c /etc/sysconfig/sshd
[root@fedora ~]#

```

9. Znajdź w repozytoriach pakiety, które są np. grami (lub edytorami).

```
root@ubuntu:~# apt-cache search game
aisleriot - GNOME solitaire card game collection
gamemode - Optimise Linux system performance on demand
gnome-mahjongg - classic Eastern tile game for GNOME
gnome-mines - popular minesweeper puzzle game for GNOME
gnome-sudoku - Sudoku puzzle game for GNOME
grilo-plugins-0.3-base - Framework for discovering and browsing media - Plugins
libgamemode-dev - Optimise Linux system performance on demand (dev files)
```

```
[root@fedora ~]# yum groupinfo Games\ and\ Entertainment
Last metadata expiration check: 0:16:38 ago on Sun Mar 27 21:48:08 2022.
Group: Games and Entertainment
Description: Various ways to relax and spend your free time.
Optional Packages:
 0ad
 BlockOutII
 CardManager
 CriticalMass
 FlightGear
 KoboDeluxe
 Maelstrom
 PySolFC
 PySolFC-cardsets
 PySolFC-music
 Ri-li
 abe
 adanaxisgpl
 agistudio
 alex4
```

10. Zaktualizuj cały system.

```
root@ubuntu:~# apt-get update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Fetched 293 kB in 1s (252 kB/s)
Reading package lists... Done
```



```
[root@fedora ~]# yum update
Last metadata expiration check: 0:17:17 ago on Sun Mar 27 21:48:08 2022.
Dependencies resolved.
=====
Package
=====
Upgrading:
  libreport-filesystem

Transaction Summary
=====
Upgrade 1 Package

Total download size: 12 k
Is this ok [y/N]: y
Downloading Packages:
libreport-filesystem-2.15.2-4.fc34.noarch.rpm
-----
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      : 
  Upgrading      : libreport-filesystem-2.15.2-4.fc34.noarch
  Cleanup        : libreport-filesystem-2.15.2-3.fc34.noarch
  Verifying      : libreport-filesystem-2.15.2-4.fc34.noarch
  Verifying      : libreport-filesystem-2.15.2-3.fc34.noarch

Upgraded:
  libreport-filesystem-2.15.2-4.fc34.noarch

Complete!
[root@fedora ~]#
```



```
root@ubuntu:~# apt-get upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libfreetype6
Use 'apt autoremove' to remove it.
The following packages have been kept back:
  fwupd
The following packages will be upgraded:
  alsa-ucm-conf cloud-init command-not-found fwupd-signed libfwupd2 libjcat1 libnetplan0 netplan.io open-vm-tools python3-commandnotfound sosreport
11 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
Need to get 1789 kB of archives.
After this operation, 1243 kB of additional disk space will be used.
Do you want to continue? [Y/n]
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 open-vm-tools amd64 2:11.3.0-2ubuntu0~ubuntu20.04.2 [647 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libnetplan0 amd64 0.103-0ubuntu5~20.04.6 [53.4 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 netplan.io amd64 0.103-0ubuntu5~20.04.6 [125 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 command-not-found all 20.04.6 [5264 B]
Get:5 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-commandnotfound all 20.04.6 [10.4 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 alsa-ucm-conf all 1.2.2-1ubuntu0.12 [27.1 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 fwupd-signed amd64 1.27.1ubuntu7+1.2-2~20.04.1 [26.4 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libjcat1 amd64 0.1.4-0ubuntu0.20.04.1 [25.9 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libfwupd2 amd64 1.7.5-3~20.04.1 [91.7 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 sosreport amd64 4.3-1ubuntu0.20.04.1 [294 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 cloud-init all 22.1-14-g2e17a0d6-0ubuntu1~20.04.3 [483 kB]
Fetched 1789 kB in 1s (1661 kB/s)
Preconfiguring packages ...
(Reading database ... 31686 files and directories currently installed.)
Preparing to unpack .../00-open-vm-tools_2%3a11.3.0-2ubuntu0~ubuntu20.04.2_amd64.deb ...
Unpacking open-vm-tools (2:11.3.0-2ubuntu0~ubuntu20.04.2) over (2:11.0.5-4) ...
Preparing to unpack .../01-libnetplan0_0.103-0ubuntu5~20.04.6_amd64.deb ...
Unpacking libnetplan0:amd64 (0.103-0ubuntu5~20.04.6) over (0.103-0ubuntu5~20.04.5) ...
Preparing to unpack .../02-netplan.io_0.103-0ubuntu5~20.04.6_amd64.deb ...
Unpacking netplan.io (0.103-0ubuntu5~20.04.6) over (0.103-0ubuntu5~20.04.5) ...
Preparing to unpack .../03-command-not-found_20.04.6_all.deb ...
Unpacking command-not-found (20.04.6) over (20.04.5) ...
```