Pkgng

Introduction to package

❑ Package

- Pre-built
- rpm, yum, dpkg, pkg, pkgng…
- FreeBSD earlier than 10.x (pkg): pkg_add, pkg_delete, pkg_info
- FreeBSD 10.x (pkgng): pkg add, pkg delete, pkg info

❑ Package benefits

- Packages do not require any additional compilation
  - ➢ Benefit for slow machines

❑ Tools

- pkg_*
- pkgng (simply called pkg)

Install Pkgng (pkg)

❑ Install pkgng

- Method1

  ```
  #  /usr/sbin/pkg
  ```

- Method2

  ```
  #  portsnap fetch update
  #  cd  /usr/ports/ports-mgmt/pkg
  #  make
  #  make install clean
  ```

  ```
  # mv pkg.conf pkg.conf.old
  # cp  pkg.conf.sample pkg.conf
  # chmod 640 /usr/local/etc/pkg.conf
  ```

- Upgrade pkg

  ```
  #  pkg2ng
  ```

Install Pkgng (pkg)

❑ Linking ports to pkgng

```
#  cat /etc/make.conf
#  WITH_PKGNG=yes
```

❑ Set repository ➔ Freebsd version (Earlier than 10)

➔ No valid repository found

```
# mkdir –p /usr/local/etc/pkg/repos
# vim /usr/local/etc/pkg/repos/FreeBSD.conf
```

```
FreeBSD: {
  url: "pkg+http://pkg.FreeBSD.org/${ABI}/latest",
  mirror_type: "srv",
  enabled: yes
}                                    FreeBSD.conf
```

Global configuration file

❑ Pkg.conf

- /usr/local/etc/pkg.conf

```
#PKG_DBDIR = "/var/db/pkg";
PKG_CACHEDIR = "/var/cache/pkg";
#PORTSDIR = "/usr/ports";
#INDEXDIR = "";
#INDEXFILE = "INDEX-10";        # Autogenerated
#HANDLE_RC_SCRIPTS = false;
#ASSUME_ALWAYS_YES = false;
#REPOS_DIR [
#    "/etc/pkg/",
#    "/usr/local/etc/pkg/repos/",
#]
#PLIST_KEYWORDS_DIR = "";
#SYSLOG = true;
#ABI = "freebsd:10:x86:64";    # Autogenerated
#DEVELOPER_MODE = false;
#VULNXML_SITE = "http://www.vuxml.org/freebsd/vuln.xml.bz2";
#FETCH_RETRY = 3;
#PKG_PLUGINS_DIR = "/usr/local/lib/pkg/";
#PKG_ENABLE_PLUGINS = true;
#PLUGINS [
#]
#DEBUG_SCRIPTS = false;
#PLUGINS_CONF_DIR = "/usr/local/etc/pkg/";
#PERMISSIVE = false;
#REPO_AUTOUPDATE = true;
#NAMESERVER = "";
#EVENT_PIPE = "";
#FETCH_TIMEOUT = 30;
#UNSET_TIMESTAMP = false;
#SSH_RESTRICT_DIR = "";
#PKG_ENV {
#}
#PKG_SSH_ARGS = "";
#DEBUG_LEVEL = 0;
#ALIAS {
#}
#CUDF_SOLVER = "";
#SAT_SOLVER = "";
#RUN_SCRIPTS = true;
#CASE_SENSITIVE_MATCH = false;
#IP_VERSION = 0
```

pkg.conf On-Line Manual Pages

Repository configuration file

❑ Repo configuration file

- At least one configuration file
- Default: /etc/pkg /usr/local/etc/pkg/repos/
- UCL format
- It is possible to specify more than one repository per file
- Environment variable: Use to overrides the value of an option set in the file

❑ Use other repository

/etc/pkg/FreeBSD.conf ⬅ /usr/local/etc/pkg/repos/FreeBSD.conf

FreeBSD: { enabled: no }

/usr/local/etc/pkg/repos/myrepo.conf

```
FreeBSD: {
  url: "pkg+http://pkg.FreeBSD.org/${ABI}/latest",
  mirror_type: "srv",
  enabled: yes
}                                           FreeBSD.conf
```

Managing Packages

❑ pkg search

> # pkg search <key words>

❑ pkg install

> # pkg install <package name>

```
root@wutzh2:/var/cache/pkg # pkg install p5-Java-4.7_5
Updating FreeBSD repository catalogue...
FreeBSD repository is up-to-date.
All repositories are up-to-date.
The following 8 packages will be affected (of 0 checked):

New packages to be INSTALLED:
        p5-Java: 4.7_5
        openjdk: 7.71.14_1,1
        libXtst: 1.2.2_2
        recordproto: 1.14.2
        dejavu: 2.34_4
        javavmwrapper: 2.5
        java-zoneinfo: 2014.j
        alsa-lib: 1.0.28

The process will require 167 MB more space.
52 MB to be downloaded.

Proceed with this action? [y/N]: n
```

```
dmjava-1.05_2
dnsjava-2.1.6
drjava-20100913.r5387
ftjava-1.3_3
geoip-java-1.2.8_1
hdf-java-2.10_1
hs-language-javascript-0.5.13_1
java-access-bridge-1.18.0_8
java-beepcore-0.9.08_3
java-checkstyle-5.8
java-cup-11.a_2
java-findbugs-1.3.9
java-games-suite-1.0
java-getopt-1.0.14
java-mybatis-3.0.3_1
java-sigar-1.7.3_1
java-subversion-1.8.11
java-util-concurrent-1.3.4_2
java-zoneinfo-2014.j
java2html-0.9.2_1
java3d-1.5.2_3
javahelp-2.0.05_1
javamail-1.5.1
javaservicewrapper-3.5.21
javatar-2.5_1
javatari-4.1
javavmwrapper-2.5
jgraph-java-5.13.0.4
libreadline-java-0.8.0_3
libvirt-java-0.5.1_4
luajava-1.1_2
mysql-connector-java-5.1.34
netscape-java40-1999.11.15_2
ocaml-camljava-0.3_3
opencv-java-2.4.9_1
p5-Data-JavaScript-1.13_1
p5-Data-JavaScript-Anon-1.03_1
p5-Inline-Java-0.540_1
p5-Java-4.7_5
p5-JavaScript-Minifier-1.12_1
p5-JavaScript-Minifier-XS-0.09_1
p5-JavaScript-Packer-1.006003
p5-JavaScript-RPC-0.3_1
p5-JavaScript-SpiderMonkey-0.21_2
p5-JavaScript-Squish-0.07_1
p5-JavaScript-Value-Escape-0.06_1
p5-Template-Plugin-Filter-Minify-JavaScript-0.94_1
p5-Template-Plugin-Filter-Minify-JavaScript-XS-0.94_1
p5-Template-Plugin-JavaScript-0.02_1
p5-URI-Escape-JavaScript-0.04_1
p5-WWW-Scripter-Plugin-JavaScript-0.008_1
p5-XML-RSS-JavaScript-0.65_1
pear-HTML_Javascript-1.1.2
pear-Horde_JavascriptMinify-1.1.1
scimark2-java-2.0_2
snappyjava-1.0.4.1_1
```

Managing Packages

❑ pkg info

pkg info

```
libXcomposite-0.4.4_2,1        X Composite extension library
libXcursor-1.1.14_2            X client-side cursor loading library
libXdamage-1.1.4_2             X Damage extension library
libXdmcp-1.1.1_2               X Display Manager Control Protocol library
libXext-1.3.3,1               X11 Extension library
libXfixes-5.0.1_2             X Fixes extension library
libXft-2.3.1_2                Client-sided font API for X applications
libXi-1.7.4,1                 X Input extension library
libXinerama-1.1.3_2,1         X11 Xinerama library
libXmu-1.1.2_2,1              X Miscellaneous Utilities libraries
libXrandr-1.4.2_2            X Resize and Rotate extension library
libXrender-0.9.8_2           X Render extension library
libXt-1.1.4_2,1              X Toolkit library
libXxf86vm-1.1.3_2           X Vidmode Extension
libcheck-0.9.14              Unit test framework for C
libdevq-0.0.2                Generic Device Query and Monitor interface
libdrm-2.4.58_1,1            Userspace interface to kernel Direct Rendering Module services
libexecinfo-1.1_3           Library for inspecting program's backtrace
libffi-3.0.13_3             Foreign Function Interface
libfontenc-1.1.2_2          The fontenc Library
libgcrypt-1.6.1_5           General purpose crypto library based on code used in GnuPG
libglapi-9.1.7_2            Common GL api library used by Mesa based ports
libgpg-error-1.17           Common error values for all GnuPG components
```

❑ pkg version

pkg version

```
libfontenc-1.1.2_2          =
libgcrypt-1.6.1_5           <
libglapi-9.1.7_2            =
libgpg-error-1.17           =
libiconv-1.14_6             =
libidn-1.29                 =
libpciaccess-0.13.2_2       =
libpthread-stubs-0.3_6      =
libsigsegv-2.10_1           =
libtool-2.4.2.418           =
libxcb-1.11                 =
libxml2-2.9.2_2             =
libxshmfence-1.1_3          =
libxslt-1.1.28_5            <
```

Managing Packages

❑ pkg which

> # pkg which /usr/local/bin/perl

```
root@wutzh2:/root # pkg which /usr/local/bin/perl
/usr/local/bin/perl was installed by package perl5-5.18.4_11
```

❑ pkg delete

> # pkg delete <package name>

Ex. pkg delete perl

Upgrading package

❑ pkg upgrade

pkg upgrade

```
Updating CSrepo repository catalogue...
Fetching meta.txz: 100%   264 B   0.3k/s   00:01
Fetching packagesite.txz: 100%  152 KB 155.3k/s   00:01
Processing entries: 100%
CSrepo repository update completed. 634 packages processed
Checking for upgrades (195 candidates): 100%
Processing candidates (195 candidates):   0%
pkg: gtk12 has a missing dependency: gettext
Processing candidates (195 candidates): 100%
The following 41 packages will be affected (of 0 checked):

New packages to be INSTALLED:
        pinentry-tty: 0.9.0

Installed packages to be UPGRADED:
        wx28-gtk2-unicode: 2.8.12_4 -> 2.8.12_5
        wx28-gtk2-common: 2.8.12_4 -> 2.8.12_5
        vim: 7.4.542 -> 7.4.560
        texlive-base: 20140525_4 -> 20140525_5
        tex-xetex: 0.99991_1 -> 0.99991_2
        tex-web2c: 20140525 -> 20140525_1
        tex-luatex: 0.79.1_2 -> 0.79.1_3
        tex-dvipdfmx: 20140317_1 -> 20140317_2
        sqlite3: 3.8.7.2 -> 3.8.7.4
        python27: 2.7.8_6 -> 2.7.9
        poudriere: 3.0.19 -> 3.1.1
        poppler: 0.26.3 -> 0.26.3_1
        polkit: 0.105_3 -> 0.105_4
        png: 1.5.20 -> 1.6.16
        plotutils: 2.6_5,1 -> 2.6_6,1
        pinentry: 0.9.0 -> 0.9.0_1
        php5: 5.4.35 -> 5.4.36
        pciids: 20141123 -> 20141222
        openjpeg15: 1.5.2 -> 1.5.2_1
        open-motif: 2.3.4_1 -> 2.3.4_2
        libslang2: 2.2.4_6 -> 2.2.4_7
        libgd: 2.1.0_4,1 -> 2.1.0_5,1
        libcaca: 0.99.b19 -> 0.99.b19_1
        jbig2dec: 0.11_2 -> 0.11_4
        indexinfo: 0.2 -> 0.2.2
        imlib2: 1.4.6_3,2 -> 1.4.6_5,2
        gstreamer-plugins-libpng: 0.10.31_1,3 -> 0.10.31_2,3
        gstreamer-plugins: 0.10.36_4,3 -> 0.10.36_5,3
        graphviz: 2.38.0_5 -> 2.38.0_6
        gnupg: 2.1.0_1 -> 2.1.1
        ghostscript9: 9.06_9 -> 9.06_10
        gdk-pixbuf2: 2.31.2 -> 2.31.2_1
        gconf2: 3.2.6_2 -> 3.2.6_3
        freetype2: 2.5.4 -> 2.5.4_1
        emacs-nox11: 24.4_3,3 -> 24.4_4,3
        doxygen: 1.8.8,1 -> 1.8.8,2
        dconf: 0.22.0 -> 0.22.0_1
        cairo: 1.12.18,2 -> 1.12.18_1,2
        binutils: 2.24_1 -> 2.25

Installed packages to be REINSTALLED:
        gnuplot-4.6.6_1 (needed shared library changed)

The operation will free 24 MB.
136 MB to be downloaded.

Proceed with this action? [y/N]: █
```

Vulnerabilities of installed packages

❑ pkg audit

pkg audit

pkg audit -F

```
root@wutzh2:/root # pkg audit -F
Fetching vuln.xml.bz2: 100%   462 kB  18.2k/s     00:26
0 problem(s) in the installed packages found.
```

```
pkg: vulnxml file up-to-date
png-1.5.20 is vulnerable:
png -- heap overflow for 32-bit builds
WWW: http://vuxml.FreeBSD.org/freebsd/c564f9bd-8ba7-11e4-801f-0022156e8794.html

1 problem(s) in the installed packages found.
```

Managing Packages

Command	usage
help	Display usage information of the specified command.
add	Install a package from either a local source or a remote one.
annotate	Add, modify or delete tag-value style annotations on packages.
audit	Audit installed packages against known vulnerabilities.
autoremove	Delete packages which were automatically installed as dependen-cies and are not required any more.
backup	Dump the local package database to a file specified on the command-line.
check	Sanity checks installed packages.
clean	Clean the local cache of fetched remote packages.
convert	Convert to and from the old pkg_add(1) format.
create	Create a package.
delete	Delete a package from the database and the system.
fetch	Fetch packages from a remote repository.
info	Display information about installed packages.
install	Install a package from a remote package repository.
lock	Prevent modification or deletion of a package.

Managing Packages

Command	usage
plugins	List the available plugins.
query	Query information about installed packages.
register	Register a package in the database.
repo	Create a local package repository for remote usage.
rquery	Query information for remote repositories.
search	Search for the given pattern in the remote package repositories.
set	Modify information in the installed database.
shell	Open a SQLite shell to the local or remote database.
shlib	Displays which packages link to a specific shared library.
stats	Display package database statistics.
unlock	Unlocks packages, allowing them to be modified or deleted.
update	Update the available remote repositories as listed in pkg.conf
updating	Display UPDATING entries of installed packages.
upgrade	Upgrade a package to a newer version.
version	Summarize installed versions of packages.
which	Query the database for package(s) that installed a specific file.

backup

❑ Use package backup mechanism

> # pkg backup –d pkgng.db   (manually)

❑ Use periodic to backup package everyday

periodic.conf

```
# 220.backup-pkgdb
daily_backup_pkgdb_enable="YES"                    # Backup /var/db/pkg
daily_backup_pkgdb_dir="/var/backups"
```

```
root@wutzh2:/var/backups # ls
pkg.sql.xz          pkg.sql.xz.2          pkgdb.bak.tbz          pkgdb.bak.tbz.2
```

❑ Restore contents of package database

> # pkg backup –r pkgng.db

Removing Stale Packages

❑ pkg.conf

PKG_CACHEDIR = "/var/cache/pkg"

pkg clean

Nothing to do!!

pkg clean -a

pkg clean is used to cleanup the local cache of packages downloaded from remote repositories. It removes packages that have been superseded by newer versions, and any packages that are no longer provided.

```
fpc-2.6.4.txz@
freetype-1.3.1_5-3750c434fe.txz
freetype-1.3.1_5.txz@
freetype2-2.5.3_2-72167f2d28.txz
freetype2-2.5.3_2.txz@
freetype2-2.5.3_3-52426de044.txz
freetype2-2.5.3_3.txz@
freetype2-2.5.4-25f78ed83f.txz
freetype2-2.5.4.txz@
fusefs-libs-2.9.3_3-c2da6eb6fc.txz
fusefs-libs-2.9.3_3.txz@
gcc-4.8.3_2-1d9610d43f.txz
gcc-4.8.3_2.txz@
gcc-ecj-4.5-4ae1d6fcf2.txz
gcc-ecj-4.5.txz@
gconf2-2.32.0_6-a269479cf3.txz
gconf2-2.32.0_6.txz@
gconf2-3.2.6_2-a06267ff4d.txz
gconf2-3.2.6_2-a5b48823b5.txz
gconf2-3.2.6_2.txz@
gdb-7.8.1_1-733a30bbc5.txz
gdb-7.8.1_1.txz@
gdb-7.8_3-25694dad66.txz
gdb-7.8_3.txz@
gdbm-1.11_2-0784ef07c7.txz
gdbm-1.11_2-af2051b999.txz
```

❑ Resources

- pkg freebsd man page
- pkg.conf On-Line Manual Pages
- pkg freebsd handbook