Slackware Software Packaging: How and Where To Start

How many of you are aware of the steps in creating Slackware packages

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13 March 2015

Outline

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Prerequisites

The Shell and Coreutils

Shell

- Some basic shell programming skills
- GNU Coreutils

Example

GNU Coreutils

- mkdir
- cat
- ls

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Packaging tools

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- cp/mv/install
- wget/curl
- chmod/chown
- mktemp/mkdir
- strip
- autotools/make/cmake/python/perl/ruby/
- find/xargs/grep

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Compression Utilities

Compression Utility
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bzip2
xz/lzma

mime
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tbz
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- pkgtool - The Package Manager
- `http://tukaani.org/pkgtools/` an old forked version
- installpkg
- removepkg
- upgradepkg
- explodepkg
- makepkg - The Package Creator/Maker
- slackbuild scripting

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Definition of a package

A Slacker's goal to world domination

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Definition: An archive format with/out instructions used for the installation of files on a system

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- t?z
- deb
- rpm

mime

- Slackware
- Debian
- Red Hat
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How to install Packages

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A package manager is a collection of software tools that

- install
- upgrade
- configure
- remove
- performs other related jobs

on software packages for a Linux Distribution.

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Prepare The Build Directory

Sanitize The Build Directory

```
mktmp
cd /tmp/$"The Temporary File Just Created"
```

mktmp

Create temporary files/directories that are predictable, safe and to avoid possible race conditions.

/tmp

The /tmp directory is assumed to cleaned regularly, sometimes assumed a tmpfs is mount over tmp
The source code is often extracted into /tmp directly.

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Prepare The Build Directory

Putting The Source Code in /tmp

Copy The Source Code

Copy the source code archive into the tmp dir

```
cp ${old path}/${source code archive} .
```

Download The Source Code

Or Download the source code archive into the tmp dir

```
wget/curl
protocol://url/${source code archive}
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Populating The Build Directory

Extracting the source code into The Build Directory

Extracting The Source Code

This step is optional

```
mkdir build
cd build
```

Extracting The Source Code

Extract files into the ‘mktmp‘/tmp directory

```
tar -xvvf ../"${source_code_archive}"
```

$/tmp \xrightarrow[D]{} \$PKG \xrightarrow[D]{} build$

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Configuration of the source code

Pre-Configuration and Configuration

pre-configuration

Rarely is pre-configuration performed.

Example

autotools

- aclocal
- autoconf
- automake

configuration

Most of the times configuration is needed.

Example

- ./configure
- cmake
- python setup.py
- gem
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After configuration, the code has to be compiled into machine code.

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Summary

A Summary

A summary of the job done

$$Pre - Configuration \longrightarrow\!\!\!\!\!\rightarrow Configuration \longrightarrow\!\!\!\!\!\rightarrow Building$$

Outline

The Creation of a Package

Populating the package directory

Installation of Package Files in tmp directory

The package files are installed in a directory using the $PKG = \$TMP/package - \$PRGNAM$ shell path parameter.

```
make install DESTDIR=$PKG
python setup.py install --root=$PKG
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The Creation of a Package

Performing the usual Slackware Business

Slackware GNU/Linux

stripping of binaries

After installation of object files/binaries, they need to be stripped off of unnecessary symbols.

```
find $PKG -print0 | xargs -0 file \
| grep -e "executable" -e "shared object" \
| grep ELF | cut -f 1 -d : \
| xargs strip --strip-unneeded \
2> /dev/null || true
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The Creation of a Package

Performing the usual Slackware Business

strip and the rest

stripping is one of a few more steps in making a more acceptable package, others include compressing the man and info pages, removing excess data and adding documentation

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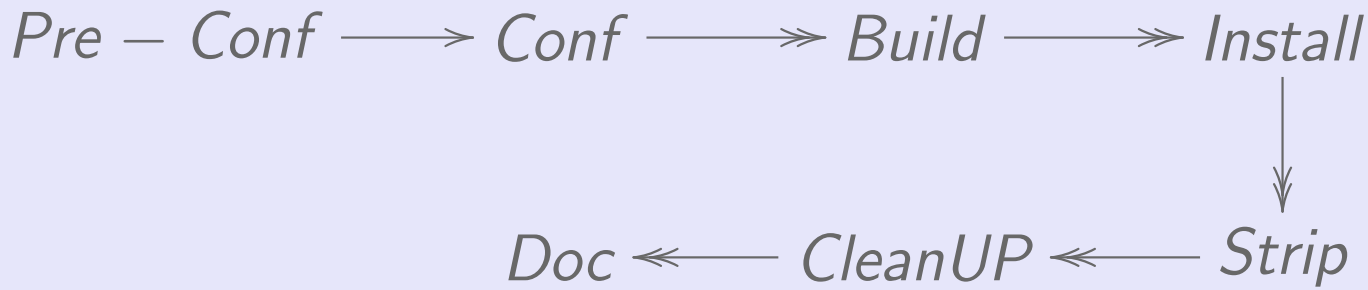

The Creation of a Package

install directory

$PKG/install directory

An extra install directory exist in all Slackware Packages. This folder normally contains two files.

- slack-desc : This contains a summary and full description of the package.
- doinst.sh : contains instructions for the post installation stage, most of the time linking of files.

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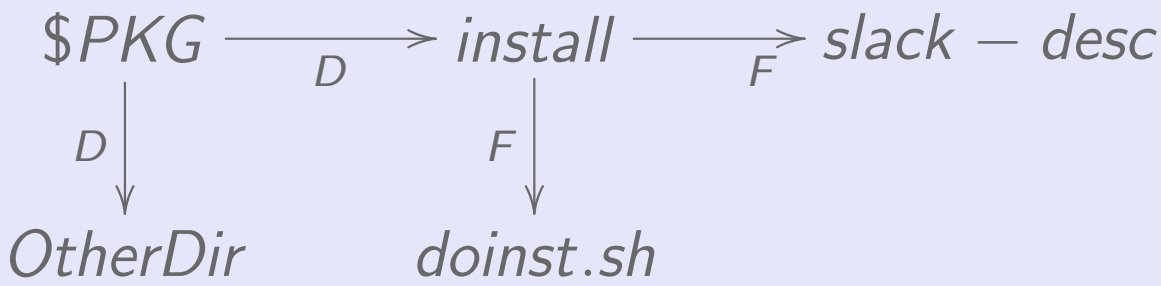

The Creation of a Package

install directory

$PKG/install directory

Copy the slack-desc and a custom doinst.sh if necessary into ./install

```
mkdir -p $PKG/install

cat $CWD/slack-desc > \
$PKG/install/slack-desc

cat $CWD/doinst.sh > \
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```

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The Creation of a Package

Using makepkg

Makepkg

makepkg creates a Slackware compatible package. The package is constructed using the contents of the current directory and all sub directories.

```
cd $PKG
makepkg $PRGNAM.tgz
```

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makepkg options

Example

makepkg options

- option -l :: add any symbolic links found to the install script (doinst.sh) and delete them.
- option -c :: makepkg will reset all directory permissions to 755 and ownership to root:root

The Creation of a Package

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The Creation of a Package

makepkg options

Makepkg

with makepkg full options

```
/sbin/makepkg \
-l y \
-c n \
/tmp/$PRGNAM-$VERSION-$ARCH-$BUILD$TAG.tgz
```

Package

This is it, your package is ready and waiting for you in /tmp.

The Creation of a Package

makepkg options

Makepkg

with makepkg full options

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Slackbuilds

Scripting

Slackbuilds

Want to Automate your package building, then the only sane way is maintaining a script that we commonly call slackbuild script. All the steps above are entered into a script and tada, its done.

```
#!/bin/bash
PKG=/tmp/package-$PRGNAM
rm -rf $PKG
mkdir -p $TMP $PKG
cd /tmp
rm -rf $PRGNAM-$VERSION
```

Slackbuilds

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rm -rf $PKG
mkdir -p $TMP $PKG
cd /tmp
rm -rf $PRGNAM-$VERSION
```

Slackbuilds

Scripting - continued

```
tar xvf $CWD/$PRGNAM-$VERSION.tar.gz
cd $PRGNAM-$VERSION
chown -R root:root .
./configure
make
make install DESTDIR=$PKG
find ... | xargs strip ...
mkdir -p $PKG/install
cat $CWD/slack-desc > $PKG/install/slack-des
cat $CWD/doinst.sh > $PKG/install/doinst.sh
cd $PKG
/sbin/makepkg /tmp/$PRGNAM.tgz
```

Slackbuilds

slackbuilds.org

slackbuilds.org

Templates can be found at http://slackbuilds.org/templates

Outline

Goal

A Slacker's goal to world domination

Goal

- slack the hard way
- sip some beer
- Take over the world
- Relax...

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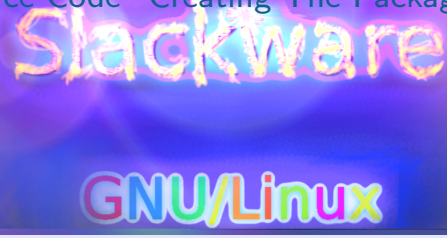

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Resources

If you want to improve this style

LaTeX Beamer

`http://latex-beamer.sourceforge.net/`

KDE Presentations

`http://www.kde.org/kdeslides/`

My Prezz at Github

`https://github.com/Bluetailedgecko/Slackware-Software-Packaging-Presentation`

Questions ?

Pritvi Jheengut
z.coldplayer@gmail.com