CERN

Cling bundle for most popular platforms

Anirudha Bose
Dept of Computer Science & Engineering
IIIT Bhubaneswar, India
ani07nov@gmail.com

Vassil Georgiev Vassilev
PH-SFT, ROOT Development Team
CERN, Geneva
vvasilev@cern.ch

Google Summer of Code 2014

CERN

About me

- Third year Computer Science undergraduate at International Institute of Information Technology (IIIT), Bhubaneswar.
- Python enthusiast.
- Google Summer of Code student in 2013 under GNU Project.
- Research interests: Quantum Information and Computation
- Hobbies: Cooking, collecting, and exploring.

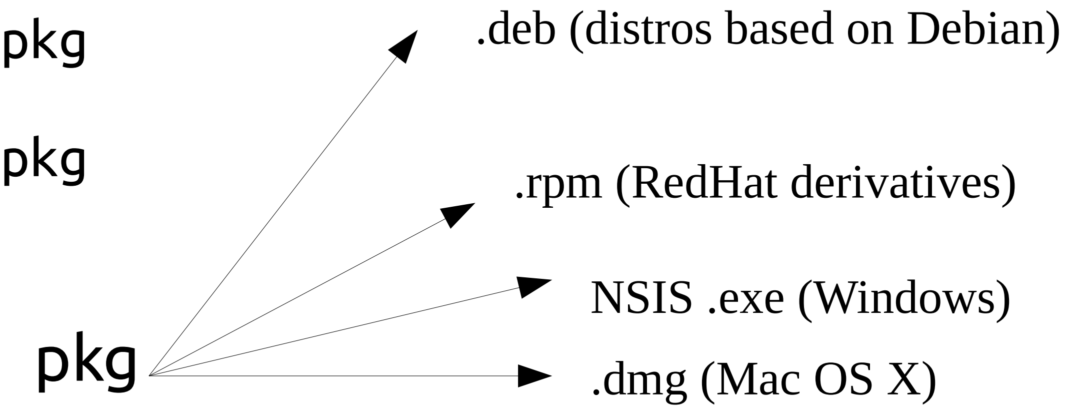
Cling Packaging Tool

- Users can run this tool to build and package Cling for their favorite platform.
- Detect platform, architecture, and operating system on the fly and create bundles accordingly.
- Integrates well with the Continuous Integration tool used by CERN – Electric Commander.
- Can be glued effectively with the build system in order to import some functionality.

CPT Usage Overview

```
--current-dev=pkg

--last-stable=pkg
```



pkg

.deb (distros based on Debian)

.rpm (RedHat derivatives)

NSIS .exe (Windows)

.dmg (Mac OS X)

```
--deb-tag={tag}
--rpm-tag={tag}
--nsis-tag={tag}
--dmg-tag={tag}

--create-dev-env={release/debug}
```

Cling Versioning

- Current version of Cling is maintained in the file VERSION in Cling's tree.

- Stable versions are tagged as v0.2, v0.3, using Git tags.

- CPT automatically performs a checkout of the most recent tag in case the `–last-stable=pkg` switch is used.

- Now that Cling has a proper versioning system, it can be submitted to the MacPorts repository, and Mac OS X users can do

```
  sudo port install cling
```

Filtering Cling-only binaries

- The current build system installs binaries and libraries of LLVM and Clang vendor clones in addition to Cling.
- CPT maintains a file dist-files.mk, which is a list of the bare minimum files required to pass all the tests in Cling.
- The file is parsed as a regular text file, and matched filenames are copied during “`make install`”.
- The file is also a custom Makefile, and hence can be stored in a Makefile variable in Cling's build system.

Python Port

- Too many external dependencies, in addition to unportable shell built-ins.
- Not all shells are POSIX compliant.
- Idiosyncrasies of Windows and unsupported features in cmd.exe.
- Win32 ports of GNU tools or MinGW MSYS do not provide a *nix environment like Cygwin. Cygwin is in itself huge in size, and rather an overkill.

UNIX tools	Python alternatives
sed	re.sub()
grep	re.match()
awk	Python built-ins
wget	urllib2.urlopen()

Current Status

- Supported platforms:

Ubuntu/Debian	→ Debian Packages (.deb)
Windows	→ NSIS Installers (.nsis)
Mac OS X	→ Apple Disk Images (.dmg)
Fedora/SLC	→ RPM packages (.rpm)

- [Documentation]

Future Work

- Integrate CPT with Electric Commander as a new step.
- Hook into LLVM build system.
- Dual compatibility with Python 2 and Python 3.
- Serve packages in a private repository.

Thank You!