Automated Testing of Debian Packages Status Update

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debian

Summary

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Introduction

At the end of the etch release cycle, quite a lot of QA was done :

- Several builds of all packages in etch
- Several piuparts runs on all packages in etch

$\Rightarrow$ about 200 RC bugs filed and fixed in etch

Such tests are a good thing

- give the same level of attention to all packages in Debian
- not only rely on humans to find bugs
- avoid regressions
- keep maintainers busy :-)

Such tests are a good thing, but ...

- They were run too late in the release process
- They caused some packages to miss etch
- Lots of things weren't tested

$\Rightarrow$ We need to be more efficient/organized during the lenny cycle

Summary

Tests

- Rebuilding packages from source
- Piuparts runs
- Other tests : lintian, linda, ...

Rebuilding packages

- packages with "`Arch : all`" are only built on the developer's machine
- packages with "`Arch : any`" are only built automatically before they reach unstable (and only on $ARCH != Uploader's arch)

After that, the build environment changes :

- newer/older compiler and libraries
- build-dependencies not available anymore (b-deps are not considered for testing propagation)

Problems :

- Everyone should be able to build your package
- Stable releases must be self-contained (security updates !)

Rebuilding packages : tools

pbuilder :

- builds a package inside a chroot
- very easy to set up
- you should use it !
- talk on saturday afternoon

sbuild (the Debian package) :

- relies on schroot
- a bit harder to set up, but more powerful

Piuparts

Tests installation and removal of packages

Process :

- cleans up a chroot (removes everything except apt)
- installs the package to test and its dependencies
- Removes everything, purge all dependencies
- Purges the package to test

⇒ test of the package maintainer scripts
(`preinst`, `postinst`, `prerm`, `postrm`)
under the most extreme conditions

Piuparts (2)

Also tests other things :

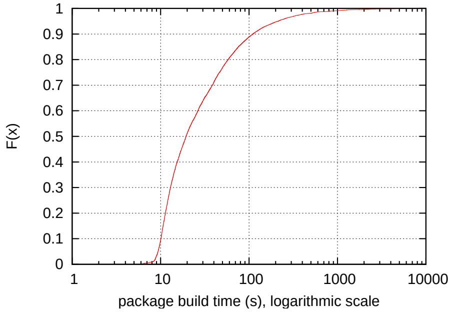
- upgrades
- running processes after removal
- dangling symlinks
- files left after removal/purge, files from other packages modified

Summary

Rebuilding packages : resources usage

Rebuilding all packages in Debian Etch :
about 10 days on a single computer

Most packages are fast to build :



Rebuilding packages : resources usage (2)

But some packages take a long time (numbers from etch) :

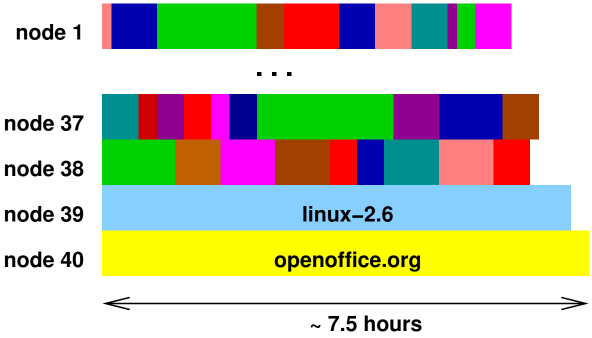
Source package	Time
openoffice.org	7 h 14 min
latex-cjk-chinese-arphic	6 h 18 min
linux-2.6	5 h 43 min
gcc-4.1	2 h 52 min
gcj-4.1	2 h 44 min
gnat-4.1	1 h 52 min
gcc-3.4	1 h 50 min
installation-guide	1 h 45 min
axiom	1 h 44 m
k3d	1 h 39 min

(On Dual-Opteron 2 GHz, 2 GB RAM)

Parallel Rebuilds on an HPC grid

Rebuilding Debian on a computer grid

- I could use 100s of nodes
- But it's useless because openoffice.org takes too long



⇒ Full rebuild of etch in about 7.5 hours on 40 nodes

Leveraging multi-cores

- dual-core laptops
- quad-core desktops

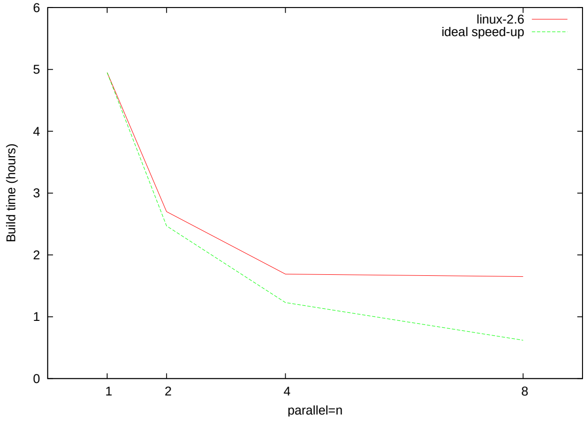
Already available.
Wouldn't it be nice to make use of them ?

#209008 : common interface for parallel building

- `DEB_BUILD_OPTIONS_PARALLEL=n`
  or
- `DEB_BUILD_OPTIONS="parallel=n"`

Red bike shed problem ?
Will hopefully be included in the next policy update (no ETA, AFAIK)

Parallel build of linux-2.6



On a dual-Opteron (both dual-cores), 2 GB RAM

Summary

Piuparts and false positives

Piuparts generates A LOT of false positives

To be tested, a package must be able to install non-interactively

- debconf is nice (`Noninteractive` frontend)
- but doesn't solve everything (e.g packages that need access a database)

$\Rightarrow$ Make all packages use debconf (except essential ones) : policy bug #206684

$\Rightarrow$ After that, not much to do about false positives

Piuparts : Future work

- Improve piuparts
  - now (supposed to be) maintained collaboratively !
- piatti.debian.org : dual Xeon in helsinki
  - Used by liw to run piuparts over the archive
  - Idea : Xen instances for interested DD to reproduce/investigate results
  - Other ideas ?

Summary

Trivia

- john - active password cracking tool
- webcalendar - PHP-Based multi-user calendar

What do john and webcalendar have in common ?

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- john - active password cracking tool
- webcalendar - PHP-Based multi-user calendar

What do john and webcalendar have in common ?

- both were in sarge, and are in unstable
- both are useful software (I use both)
- **neither john nor webcalendar are in etch**

Many packages missed the release

Packages in unstable, but not in etch, were reviewed after the etch release

- 433 packages (excl. packages uploaded after the freeze)
- in many cases (>50%), the maintainer simply forgot to request an *unblock*
- or wasn't aware of his package's RC bugs

Example bugs : #402245, #381817, #384558, #414845, and many others

⇒ We need a way to keep maintainers informed of their packages' status

Proposal : DDPO by mail

- DDPO is nice
  - But only if you use it
  - Ideally : browser's start page for maintainers, but...
- Idea : send one monthly email to each maintainer
- with the most important information about his packages
  - open RC bugs
  - packages not in testing
  - important bugs with patches

Proposal : DDPO by mail (2)

- opt-out, so it has to stay as useful as possible
- *ignore* mechanism (per package, per bug, per problem)

Current implementation status :

- BTS metadata imported to a postgres DB on merkel.d.o (could be used to generate interesting stats as well)
  - But bugs need to be fixed
  - Use bts.turmzimmer.net as input instead (easier !)
- Testing status for all packages

$\Rightarrow$ Ready to start sending mails

Summary

Collaborative Quality Assurance : collab-qa project

- QA tasks used to be done by (motivated) individuals
- Working as a team brings more fun
- And is more scalable

`collab-qa` project on alioth :

- share results of QA tests (archive rebuilds, piuparts runs)
- keep them for history
- makes things more fun and more efficient

collab-qa status

<Lunar> I think I'm becoming a perverse...
I enjoy reporting FTBFS.

Worked on :

- Packages that missed etch (not finished yet)
- Archive rebuilds (up to date for 14/06/2007)
- File conflicts between packages

Plans to work on :

- Piuparts runs
- *put your idea here*

Don't hesitate to join !

Summary

Conclusion

- Let’s make QA rock for lenny !
- Join the collab-qa team
  - /join #debian-qa
  - subscribe to debian-qa@lists.debian.org
  - request membership on alioth
- Open questions :
  - What do you think of that "DDPO by mail" idea ?
  - What about a "Packages in a questionable state" team ?