Debian

Well known and respected for:

- Its long and bumpy release cycles
- Its quality

But it was not a given:

- >1000 Debian Developers
  - Mostly volunteers
- 15000 software packages
  - Some very popular packages
  - A lot of niche packages

lucas@debian.org
Debian Quality Assurance
Debian

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Quality factors

Culture: "We release when it’s ready"
- Many DDs won’t compromise on this

Packages ownership: individuals or teams
- About 600 active developers
- Many of them experts of their packages

Release Critical (RC) bugs
- Prevent packages from being part of a release
- Everybody is welcomed to fix them
  - Non-Maintainer Uploads

Debian Quality Assurance team
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- **Debian Quality Assurance team**
Debian QA team

- Goal: **Improve the quality of Debian as a whole**
- Not really a team (no membership), more a central place to discuss and work on QA
- IRC: `#debian-qa@irc.debian.org` (OFTC)
- Mailing list: `debian-qa@lists.debian.org`
Debian QA team: Tasks

- Maintain infrastructure
- Run archive-wide checks and mass bug filings
- Take care of the dirty areas of Debian
Maintaining infrastructure
Infrastructure: mitigating the data hell

- Debian: aggregation of loosely-connected services
  - No Launchpad!

- Data everywhere
  - A dozen of places to get interesting data

⇒ Tools required to gather data in a central place
Package Tracking System (PTS)

Overview of nmap source package

General information
- Latest version: 4.68-1
- Maintainer: LaMont Jones
- Conforms to: 3.7.2.2
- Priority: extra
- Section: net
- VCS: Git (browse)

Available versions (more...)
- Oldstable: 4.11-1
- Stable: 4.62-1
- Testing: 4.68-1
- Unstable: 4.68-1

Source package
- Files: .dsc .orig : .diff

Binary packages
- nmap (27 bans: 0, 12.5, 6)

Todo
- Lintian reports 8 warnings about this package. You should make the package lintian clean getting rid of them.
- mentors.debian.net has version 4.76-1 of this package, you should consider sponsoring its upload.
- The package should be updated to follow the last version of Debian Policy (Standards-Version 3.8.2 instead of 3.7.2.2).
- The BTS contains patches fixing 1 bug, consider including or untagging it.

Latest news [RSS]
- [2009-02-16] nmap 4.68-1 MIGRATED to testing (Britney)
- [2008-08-01] Accepted 4.68-1 in unstable (low) (LaMont Jones)
- [2008-06-27] nmap 4.62-1 MIGRATED to testing (Britney)
- [2008-06-14] Accepted 4.62-1 in unstable (low) (LaMont Jones)
- [2008-04-25] nmap 4.53-3 MIGRATED to testing (Britney)
- [2008-04-04] Accepted 4.53-3 in unstable (low) (LaMont Jones)

Bugs count
- All bugs (graph): 29 (32)
- RC bugs: 0
- M&N bugs: 13 (14)
- M&W bugs: 12
- F&P bugs: 4 (6)

PTS subscription
- Subscribers count: 5
- Subscribe
- Send

Other links
- Changelog / Copyright
- Buildid: logs, more, exp, ports
- Lintian report (0, 8)
- Popcon stats

Ubuntu ...
- Version: 4.76-0ubuntu4
- Patch for version 4.76-0ubuntu4
- 13 open bugs

Source package-centric view

http://packages.qa.debian.org/package

lucas@debian.org  Debian Quality Assurance
# Developer Packages Overview (DDPO)

Packages overview for Lucas Nussbaum <lucas@lucas-nussbaum.net>

<table>
<thead>
<tr>
<th>Source Name</th>
<th>Bugs</th>
<th>Version</th>
<th>Ubuntu</th>
<th>Excuses</th>
<th>Binary Package</th>
<th>Buildd</th>
<th>Debcheck</th>
<th>Popcon</th>
<th>Watch</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>developers-reference* PTS Pool</td>
<td>65 (67)</td>
<td>3.3.8</td>
<td>3.4.0</td>
<td>3.4.3</td>
<td>3.4.3</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>More</td>
</tr>
<tr>
<td>feed2map* PTS Pool</td>
<td>2</td>
<td>0.8-2</td>
<td>0.9.3-1</td>
<td>0.9.4-1</td>
<td>0.8.4-1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>hpcct PTS Pool</td>
<td>1</td>
<td>1.3.1-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>Build More</td>
<td>-</td>
<td>Un</td>
</tr>
<tr>
<td>mpich2* PTS Pool</td>
<td>3</td>
<td>1.2.1~rc1-1</td>
<td>-</td>
<td>-</td>
<td>1.21ubuntu1 1 bug</td>
<td>Excuses More</td>
<td>1.234</td>
<td>Build More</td>
<td>-</td>
<td>Un</td>
</tr>
<tr>
<td>ruby-defaults* PTS Pool</td>
<td>8</td>
<td>1.8.2-1</td>
<td>4.2</td>
<td>-</td>
<td>1.2 1 bug</td>
<td>-</td>
<td>1.234567 ... 31</td>
<td>St</td>
<td>Te</td>
<td>Un</td>
</tr>
<tr>
<td>ruby-taglib* PTS Pool</td>
<td>-</td>
<td>1.1.2</td>
<td>1.1.7</td>
<td>-</td>
<td>1.1.7</td>
<td>-</td>
<td>1.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>taktuk* PTS Pool</td>
<td>-</td>
<td>3.6.1-1</td>
<td>3.6.3-1</td>
<td>-</td>
<td>3.6.2-1</td>
<td>-</td>
<td>1.23</td>
<td>Build More</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>webssec* PTS Pool</td>
<td>13</td>
<td>1.9.0-1</td>
<td>1.9.0-4</td>
<td>-</td>
<td>1.9.0-4ubuntu1 3 bugs</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Developer-centric view

http://qa.debian.org/developer.php

lucas@debian.org  Debian Quality Assurance
Ultimate Debian Database (UDD)

- Gather everything into a single SQL DB
- Perfect tool for data-mining Debian

Currently imported in UDD:
Debian Sources and Packages, bugs, popcon, testing migrations, upload history, orphaned packages, carnivore, lintian, debtags, translations, NEW queue, screenshots, DEHS, Idap, wanna-build, removals, **Ubuntu Sources and Packages**, **Ubuntu bugs**, **Ubuntu popcon**

Possible questions you can answer with UDD:

- RC buggy packages in testing, sorted by popcon?
- Packages for which the last 4 uploads were NMUs?
- Packages not maintained by official DDs?

http://udd.debian.org/
Archive-wide checks and Mass bug filings
Archive-wide checks and MBF

- Developers are volunteers:
  - Focus on interesting things
  - Manual testing is boring ⇒ not done

- Need for automated tests

- Other advantage: treats all packages equally
  Niche packages are very important to some users
Archive rebuilds

- Rebuild all packages from source
  7 hours on 40 8-cores build nodes (Thanks OpenOffice.Org)

- Detect packages that Fail To Build From Source (FTBFS)
  - Bugs in packages
  - Toolchain bugs
  - Failures caused by changes in other packages

- Ran every 2-3 weeks

- Scripts to analyze failures and file bugs semi-automatically
  (about 200 bugs filed per hour)

- Also used for test rebuilds with new compilers, linkers, . . .
  ⇒ Valuable information for upstream
Debcheck

- Check (statically) that dependencies can be satisfied
- Not trivial: versioned dependencies, conflicts
- 2 versions:
  - "Simple one", in PHP
    http://qa.debian.org/debcheck.php
  - Better one: edos-debcheck (EDOS project)
    - Can also work with RPMs
    - http://edos.debian.net/

<table>
<thead>
<tr>
<th>Type of Issue</th>
<th>ANY</th>
<th>EVERY</th>
<th>alpha</th>
<th>armel</th>
<th>hppa</th>
<th>i386</th>
<th>ia64</th>
<th>mips</th>
<th>mipsel</th>
<th>powerpc</th>
<th>s390</th>
<th>Sparc</th>
<th>bsd-64</th>
<th>bsd-32</th>
</tr>
</thead>
</table>
| Broken
Relationships (main only)      |     |       |       |       |      |      |      |      |        |         |      |       |        |        |
| Pre-Depends   | 1   | none  | 1     | none  | 1    | none | 1    | none | none   | none    | none | none  | 1      | 1      |
| Depends       | 556 | 47    | 234   | 115   | 165  | 251  | 111  | 140  | 209    | 210     | 123  | 131   | 138    | 436    | 427    |
| Recommends    | 423 | 73    | 151   | 103   | 149  | 158  | 94   | 181  | 137    | 139     | 126  | 141   | 142    | 313    | 297    |
| Suggests      | 791 | 316   | 473   | 398   | 475  | 483  | 381  | 500  | 451    | 459     | 420  | 451   | 435    | 650    | 609    |
| Half Broken
Broken Relationships (main only)  |     |       |       |       |      |      |      |      |        |         |      |       |        |        |
| Pre-Depends   | 3   | 4     | 4     | 4     | 4    | 4    | 4    | 4    | 4      | 4       | 4    | 4     | 5      | 5      |
| Depends       | 775 | 439   | 646   | 517   | 613  | 572  | 536  | 536  | 528    | 525     | 534  | 538   | 533    | 559    | 560    |
| Recommends    | 148 | 86    | 107   | 104   | 111  | 107  | 103  | 108  | 107    | 107     | 105  | 107   | 105    | 123    | 121    |
| Suggests      | 158 | 91    | 109   | 108   | 113  | 117  | 105  | 112  | 113    | 114     | 111  | 114   | 112    | 136    | 135    |

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Piuparts

- Testing package installation, upgrade and removal
- Find bugs in maintainer scripts
  (Shell) scripts executed during package installation/removal
- Developers don’t run it on their systems
  ⇒ Archive-wide setup

http://piuparts.debian.org
Lintian

- Static analysis of packages
- Usually run locally by the developer, before uploading
- Archive-wide setup for continuous testing
- Packages now rejected at upload time for some errors

http://lintian.debian.org
DEHS - Debian External Health Status

- Monitor upstream version of packages
- Detect when the Debian package is outdated
- HTML scraping + regular expressions configured in `debian/watch`

http://dehs.alioth.debian.org
Taking care of the dirty areas of Debian
Two complementary approaches:

- Focus on packages neglected by their maintainers
- Focus on maintainers neglecting their packages
Neglected packages

- Already orphaned:
  - Do minimalistic maintenance
  - Problem: > 500 orphaned packages

- Not (yet) orphaned:
  - Find them, orphan or remove them
  - Goal: *Put maintenance in the hands of people with time*
Bapase: finding neglected packages

- Multi-criteria search for neglected packages
- Based on Ultimate Debian Database

<table>
<thead>
<tr>
<th>Package</th>
<th>Score</th>
<th>Score</th>
<th>Action</th>
<th>O age</th>
<th>Testing</th>
<th>Migrate</th>
<th>Popcon</th>
<th>Wnpp</th>
<th>RC</th>
<th>Bugs</th>
<th>Last upload</th>
<th>NMUs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ivtools</td>
<td>124269</td>
<td>2122</td>
<td>Should be removed (since 2000-07-11)</td>
<td>2002-10-15</td>
<td>270</td>
<td>270</td>
<td>180</td>
<td>RFA</td>
<td>0</td>
<td>0</td>
<td>(2008-05-07) (Maint: 2005-08-24)</td>
<td>4</td>
<td>maintainer and possible adopter pinged, and removal proposed to maintainer</td>
</tr>
<tr>
<td>2 metanail</td>
<td>114643</td>
<td>1404</td>
<td>Should be removed (O pkg) (since 2008-01-28)</td>
<td>2004-10-01</td>
<td>0</td>
<td>0</td>
<td>3263</td>
<td>O</td>
<td>0</td>
<td>12</td>
<td>(2008-03-08)</td>
<td></td>
<td>still has revdeps. prop_rm filed on rdep.</td>
</tr>
<tr>
<td>3 electric</td>
<td>112643</td>
<td>1238</td>
<td>Should be removed (O pkg) (since 2008-01-30)</td>
<td>2005-03-17</td>
<td>0</td>
<td>0</td>
<td>415</td>
<td>O</td>
<td>0</td>
<td>2</td>
<td>(2008-01-17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 libgstreamer-perl</td>
<td>103695</td>
<td>105</td>
<td>Should be orphaned (since 2008-02-06)</td>
<td>2008-04-23</td>
<td>0</td>
<td>0</td>
<td>47</td>
<td>ITA</td>
<td>0</td>
<td>3</td>
<td>(2008-05-06)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://udd.debian.org/cgi-bin/bapase.cgi

lucas@debian.org  Debian Quality Assurance
Inactive maintainers

- **Missing In Action (MIA) team**

- Find them, track them, orphan their packages
  Mostly based on reporting by users or fellow developers
  Echelon: records activity of DDs; Carnivore: tracks identities

- Collaboration with the Account Managers:
  possible removal of their account
  (Unused accounts $\Rightarrow$ possible security problems)
Conclusion

Debian Quality Assurance:
- Mosty archive quality work
- Lots of tools and infrastructure developed within Debian
- What we don’t do:
  - Focus on specific packages
  - Bug triaging
  - Manual testing to find bugs
    - Reliance on users to find/file bugs

Join the QA team!
Debian Quality Assurance

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