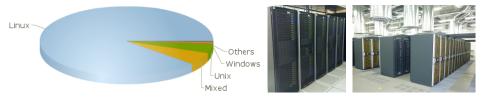
Debian Quality Assurance Gestion de la qualité dans Debian

Lucas Nussbaum lucas@debian.org

lucas@debian.org Debian Quality Assurance

Lucas Nussbaum

- Enseignant-chercheur (Maître de conférences) à l'univ. Nancy 2
- Enseignement: Licence Professionnelle ASRALL (Administration de systèmes, réseaux et applications à base de logiciels libres)
- ► Recherche: Systèmes distribués, calcul à haute performance



- Logiciel libre:
 - Développeur Debian et Ubuntu
 Quality Assurance, Buby, Collaboration Debian
 - Quality Assurance, Ruby, Collaboration Debian/Ubuntu
 - Développement en Ruby feed2imap, xmpp4r, tuns, suuntux

Debian

Well known and respected for:

Debian

Well known and respected for:

Its long and bumpy release cycles

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, with their own agendas
- 15000 software packages
 - Some very popular packages
 - A lot of niche packages

- Culture: "We release when it's ready"
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Debian Quality Assurance team

Goal: Improve the quality of Debian as a whole

- Not really a team (no strict membership), more like a central place to discuss and work on QA
- IRC: #debian-qa@irc.debian.org
- Mailing list: debian-qa@lists.debian.org

- 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 and expose it to the maintainers

Package Tracking System (PTS)



Overview of nmap source package

Go:			_
Switch style:	Default	0	

4.68-1 Lintian reports 8 warmings about this package. You should make the package <i>lintian clean</i> getting rid of them. RC bugs: Aaintainer: LaMont should make the package <i>lintian clean</i> getting rid of them. RC bugs: Conforms 3.7.2.2 Baintainer: M&W bugs: package, you should consider sponsoring is 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). M&W bugs: rection: net The package should be updated to follow the last version of 3.7.2.2). The BTS contains patches fixing 1 bug, consider including or untagging it. vallable versions The BTS contains patches fixing 1 bug, consider including or untagging it. Subscribers count Jobstable: 4.68-1 [2009-02-16] nmap 4.68-1 MIGRATED to testing (Britney) Changelog / Copyrid Buildd: logs, more. ource package [2008-06-27] nmap 4.62-1 MIGRATED to testing (Britney) [Britney) Buildd: logs, more. illes .dsc.orig [2008-06-14] Accepted 4.62-1 in unstable (low) (LaMont jones) Version: 4.76-oubur Version: 4.76-oubur illes .dsc.orig [2008-06-12] nmap 4.53-3 MIGRATED to testing Buth for version 4.76-oubur Version: 4.76-oubur	ieneral info	ormation	Todo	Bugs count
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[2008-04-04] Accepted 4.53-3 in unstable (low)				13 open bugs

Source package-centric view http://packages.qa.debian.org/package

Developer Packages Overview (DDPO)

Packages overview for Lucas Nussbaum

main (8)

Source Name	Bugs					Version				Ubuntu	Excuses	Binary	Buildd	Debo		eck		Watch		Section			
	All	RC	1&N	M&W	F&P	Oldstable	Stable	Testing	Unstable	Ехр	Obuntu	Excuses	Package	Brillag	St	t Te Ur		Popcon	Unstable Exp		Priority		
developers- reference* PTS Pool	(<u>65</u> (<u>67</u>)	-	<u>15</u>	<u>50</u> (<u>52</u>)	-	3.3.8	3.4.0	3	3.4.3		3.4.3		3.4.3	-	- 12					1036 More	-		doc optional
feed2imap* PTS Pool	2	•	-	2	÷	0.8-2	0.9.3-1	0.9.4-1		-	<u>0.9.4-1</u> -		1			•		64 <u>More</u>	0.9.4		net optional		
hpcc* PTS Pool	1	-	-		1			1.3.1-1		-	-		1	Buildd More		Te	<u>Un</u>	11 <u>More</u>	1.3.1	-	science extra		
mpich2* PTS Pool	3	2	-	1	+				1.2.1~rc1-1		1.2-1ubuntul 1 bug	Excuses More	1234	Buildd More			<u>Un</u>	24 <u>More</u>	1.2.1rc1 Details	-	devel extra		
ruby-defaults* PTS Pool	<u>8</u>	-	4	4	-	1.8.2-1		4.2		-	4.2 1 bug	-	$\begin{smallmatrix}1&2&3&4&5&6&7\\&\dots&\underline{31}\end{smallmatrix}$		<u>st</u>	<u>Te</u>	<u>Un</u>	20902 <u>More</u>	-	-	ruby optional		
ruby-taglib* PTS Pool	-		-		-	1.1-2		1.1-7	1.1-7		1.1-7		1.1-7	-	12	-				96 <u>More</u>	1.1	-	ruby optional
taktuk* PTS Pool	-		-		÷		3.6.1-1	3.	6.3-1	-	3.6.3-1	3.6.3-1		Buildd More				177 More	3.7beta2 Details		net optional		
websec* PTS Pool	13		z	5	1	1.9.0-1		1.9.0-4	1.9.0-4		1.9.0-4ubuntu1 <u>3 bugs</u>		1			·		82 <u>More</u>	-		web optional		

Developer-centric view

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

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 \rightarrow not done

Need 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

http://wiki.debian.org/qa.debian.org/ArchiveTesting

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/

Type of Issue	of Issue ARCH														
	ANY	EVERY	alpha	amd64	armel	hppa	i386	ia64	mips	mipsel	powerpc	s390	sparc	bsd-64	bsd-32
Broken Relationsh	iips (n	nain only	0												
Pre-Depends	1	none	1	none	1	1	none	none	none	none	none	none	none	1	1
Depends	<u>656</u>	47	234	115	<u>165</u>	251	111	140	209	210	<u>123</u>	<u>131</u>	<u>138</u>	<u>436</u>	427
Recommends	423	73	151	103	149	158	94	181	137	139	126	141	142	313	297
Suggests	791	316	473	398	<u>476</u>	483	381	500	451	459	420	<u>451</u>	435	680	609
Half Broken Broke	en Rela	ationship	os (mai	n only)											
Pre-Depends	5	4	4	4	4	4	4	4	4	4	4	4	4	5	<u>5</u>
Depends	<u>775</u>	439	<u>646</u>	517	<u>613</u>	572	536	<u>536</u>	<u>528</u>	<u>525</u>	<u>534</u>	<u>538</u>	<u>533</u>	<u>559</u>	<u>560</u>
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



- 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

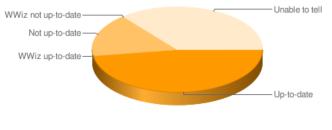
Lintian

- 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

lucas@debian.org Debian Quality Assurance

Taking care of the dirty areas of Debian

Two complementary approaches:

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

	Package	Score	Action	O age	Testing	Migrate	Popcon	Wnpp	RC	Bugs	Last upload	NMUs	
1	ivtools	124269	Should be removed (since 2008-07-11)	2122 (2002-10-15)	270	270	180	REA	٥	9	91 (2008-05-07) (Maint: 2005-08-24)	4	maintainer and possible adopter pinged, and removal proposed to maintainer
2	<u>metamail</u>		Should be removed (O pkg) (since 2008-01-28)	1404 (2004-10-01)	0	0	3263	٥	Q	12	151 (2008-03-08)		still has revdeps. prop_rm filed on rdep.
3	<u>electric</u>	112643	Should be removed (O pkg) (since 2008-01-30)	1238 (2005-03-17)	0	0	415	<u>0</u>	0	2	202 (2008-01-17)		
4	epplets	104381	Should be removed (since 2008-03-26)	132 (2008-03-27)	270	270	475	٥	2	8	940 (2006-01-09) (Maint: 2005-03-30)	2	
5	subcommander	103864	Should be orphaned (since 2008-05-22)	21 (2008-07-16)	270	270	329	٥	3	5	123 (2008-04-05) (Maint: 2006-11-20)	1	
6	libgstreamer-perl	103699	Should be orphaned (since 2008-02-06)	105 (2008-04-23)	0	0	47	ITA	Q	3	92 (2008-05-06)		

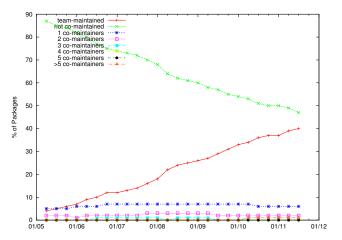
http://udd.debian.org/bapase.cgi

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

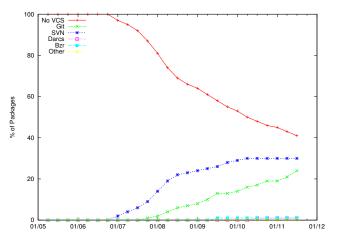
Open challenges: following Debian evolutions

Co-maintenance



Open challenges: following Debian evolutions

Use of VCSes



Open challenges: following Debian evolutions

Need to improve QA infrastructure

- ► Team-aware
- VCS-aware
 - Abstraction layer?

If I've learned anything, it's that OSS projects can't make a choice. And when you can't make a choice, what do you do? You support all options! Yay! How do we support all options? An abstraction layer! Yay! Abstraction layers are fun to write! Yay! – – Linux Hater's Blog

- Standard workflows?
 - Keep track of sponsorship requests
 - Manage state of packages in VCS

Conclusion

Debian Quality Assurance:

- Mostly archive quality work
- Lots of tools and infrastructure developed within Debian
 - Evolutions needed to keep track of Debian evolutions
- What we do not do:
 - Focus on specific packages
 - Bug triaging
 - Manual testing to find bugs
 - We rely on you to find & file bugs

Join the QA team!