Debian Quality Assurance

Lucas Nussbaum

`lucas@debian.org`

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- ▶ 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

Quality factors

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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 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`

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
  and expose it to the maintainers**

Package Tracking System (PTS)

Source package-centric view

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

Developer Packages Overview (DDPO)

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

main (8)

Source Name	Bugs						Version						Ubuntu	Excuses	Binary Package	Buildd	Debcheck			Popcon	Watch		Section Priority
	All	RC	I&N	M&W	F&P		Oldstable	Stable	Testing	Unstable	Exp						St	Te	Un		Unstable	Exp	
developers-reference† PTS Pool	65 (67)	-	15	50 (52)	-		3.3.8	3.4.0	3.4.3	-			3.4.3 -		1 2	-	-	-	-	1036 More	-	-	doc optional
feed2imap* PTS Pool	2	-	-	2	-		0.8-2	0.9.3-1	0.9.4-1				0.9.4-1 -	-	1	-	-	-	-	64 More	0.9.4	-	net optional
hpcc* PTS Pool	1	-	-	1			-		1.3.1-1				-	-	1	Buildd More	-	Te	Un	11 More	1.3.1	-	science extra
mpich2* PTS Pool	3	2	-	1	-		-			1.2.1~rc1-1			1.2-1ubuntu1 1 bug	Excuses More	1 2 3 4	Buildd More	-	-	Un	24 More	1.2.1rc1 Details	-	devel extra
ruby-defaults* PTS Pool	8	-	4	4	-		1.8.2-1		4.2				4.2 1 bug	-	1 2 3 4 5 6 7 ... 31	-	St	Te	Un	20902 More	-	-	ruby optional
ruby-taglib† PTS Pool	-	-	-	-	-		1.1-2		1.1-7				1.1-7 -	-	1 2	-	-	-	-	64 More	1.1	-	ruby optional
taktuk† PTS Pool	-	-	-	-	-		-	3.6.1-1	3.6.3-1				3.6.3-1 -	-	1 2 3	Buildd More	-	-	-	177 More	3.7beta2 Details	-	net optional
websec† PTS Pool	13	-	7	5	1		1.9.0-1		1.9.0-4			-	1.9.0-4ubuntu1 3 bugs	-	1	-	-	-	-	82 More	-	-	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, ldap, 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, . . .
  $\rightarrow$ 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/`

Type of Issue	ARCH														
	ANY	EVERY	alpha	amd64	armel	hppa	i386	ia64	mips	mipsel	powerpc	s390	sparc	bsd-64	bsd-32
Broken Relationships (main only)															
Pre-Depends	1	none	1	none	1	1	none	none	none	none	none	none	none	1	1
Depends	656	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	476	483	381	500	451	459	420	451	435	680	609
Half Broken Broken Relationships (main only)															
Pre-Depends	5	4	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

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
  $\rightarrow$ 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`
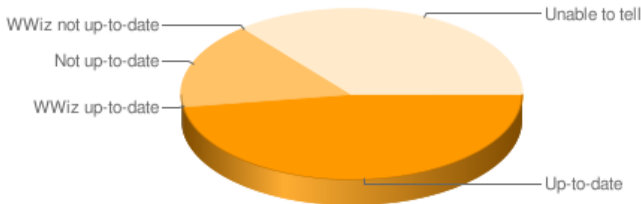
Taking care of the dirty areas of Debian

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

	Package	Score	Action	O age	Testing	Migrate	Popcon	Wnpp	RC	Bugs	Last upload	NMUs	Comments
1	ivtools	124269	Should be removed (since 2008-07-11)	2122 (2002-10-15)	270	270	180	RFA	0	9	91 (2008-05-07) (Maint: 2005-08-24)	4	maintainer and possible adopter pinged, and removal proposed to maintainer
2	metamail	114643	Should be removed (O pkg) (since 2008-01-28)	1404 (2004-10-01)	0	0	3263	O	0	12	151 (2008-03-08)		still has revdeps. prop_rm filed on rdep.
3	electric	112643	Should be removed (O pkg) (since 2008-01-30)	1238 (2005-03-17)	0	0	415	O	0	2	202 (2008-01-17)		
4	epplets	104381	Should be removed (since 2008-03-26)	132 (2008-03-27)	270	270	475	O	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	O	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	0	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

- 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 !