

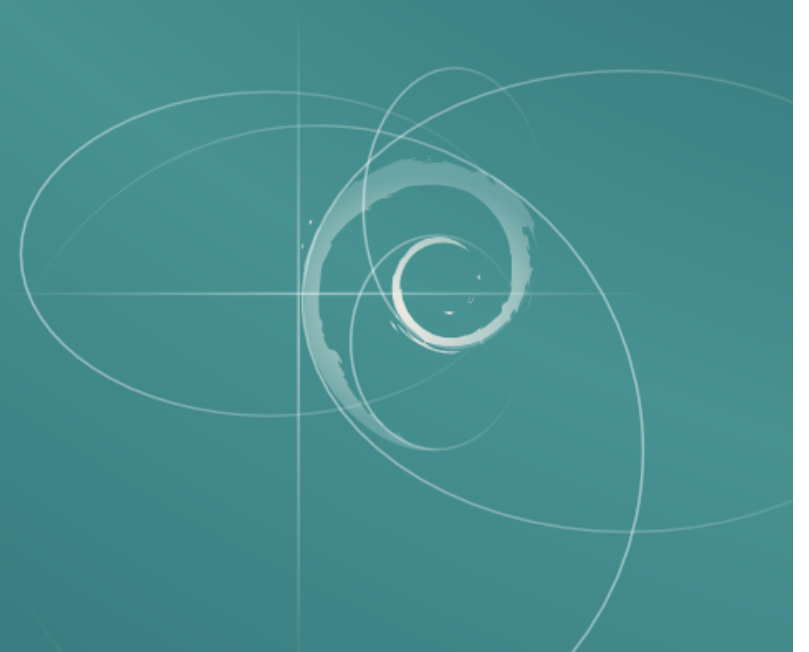
Tutorial:

**Functional Testing  
of Debian Packages**

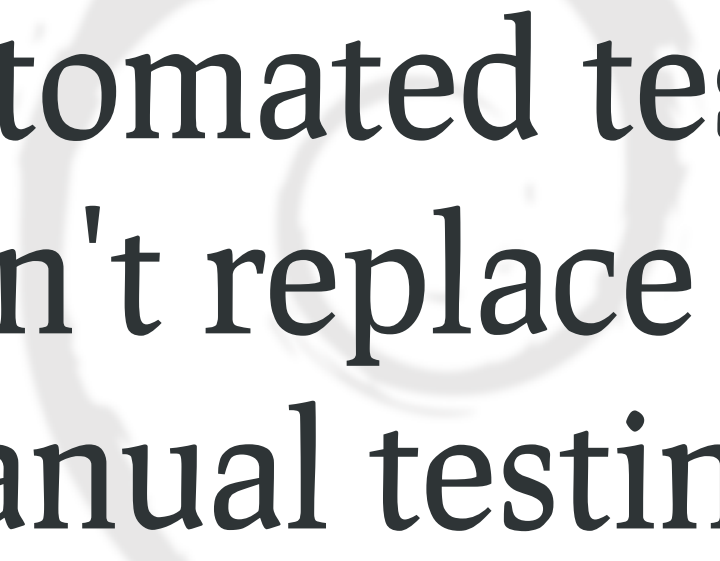
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history



automated tests  
are great and we  
need more of it



automated tests  
don't replace all  
manual testing

# Topics

- history
- specs
- tools
- functional tests  
by example

*autodebtest* (0.5.0) unstable; urgency=low

\* Initial release [...].

-- Ian Jackson <iwj@...> Fri, 20 Jan 2006 ...

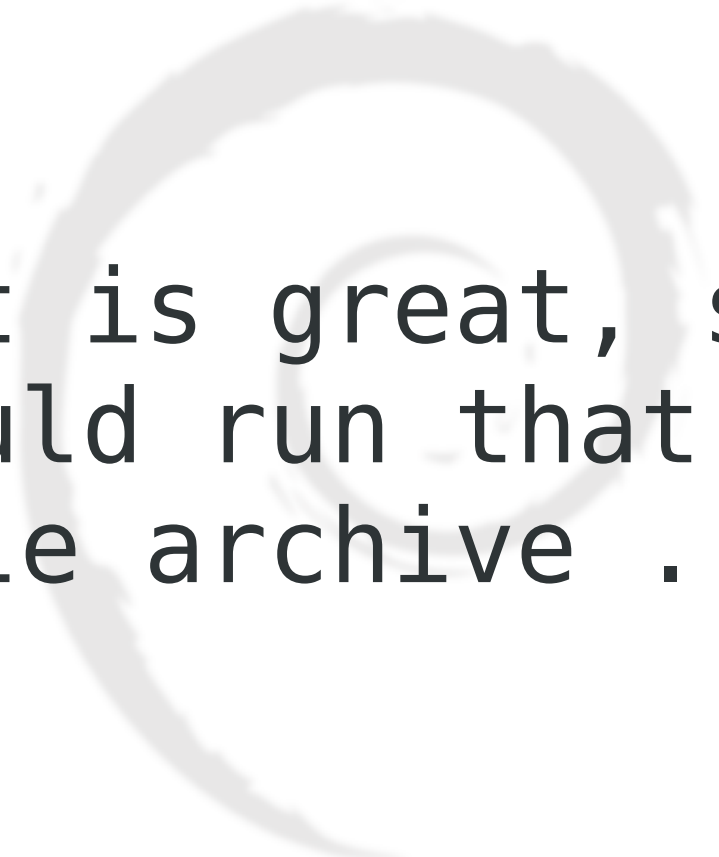
Title: autopkgtest -  
automatic as-installed package testing  
DEP: 8  
State: DRAFT  
Date: 2012-06-25  
URL: <http://dep.debian.net/deps/dep8>  
*(kind of; actually points to the  
autopkgtest git repo)*

Title: autopkgtest -  
automatic as-installed package testing

Abstract:

Establish a **standard interface** to  
define and run "as-installed" **tests of  
packages**, i.e. the testing of packages  
in a context as close as possible to a  
Debian system where the **packages  
subject to testing are properly  
installed.**





```
( that is great, someone )  
( should run that on the )  
.o0( whole archive ... )
```

Debian Continuous Integration  
comes alive in January 2014

then 1½ year, 2 GSOC projects,  
and lots of hacking time after ...

## News


 chef tests FAILED on unstable/amd64  
2015-08-15 21:49:53 UTC | **1 day(s) ago**

 libflickr-upload-perl tests FAILED on unstable/amd64  
2015-08-15 21:16:57 UTC | **1 day(s) ago**

 libcgi-simple-perl tests FAILED on unstable/amd64  
2015-08-14 09:27:50 UTC | **2 day(s) ago**

 ruby-sshkit tests PASSED on unstable/amd64  
2015-08-14 09:21:58 UTC | **2 day(s) ago**

 ruby-yaml-db tests PASSED on unstable/amd64  
2015-08-14 03:32:39 UTC | **2 day(s) ago**

 libstxxl tests FAILED on unstable/amd64  
2015-08-13 22:36:05 UTC | **3 day(s) ago**

 cucumber tests FAILED on unstable/amd64  
2015-08-13 21:01:38 UTC | **3 day(s) ago**

 ruby-patron tests PASSED on unstable/amd64  
2015-08-12 10:18:37 UTC | **4 day(s) ago**

## Packages

### Browse by prefix

- 3
- a
- b
- c
- d
- e
- f
- g
- h
- i
- j
- k
- l
- liba
- libb
- libc
- libd
- libe
- libf
- libg
- libh
- libi
- libj
- libk
- libl
- libm
- libn
- libo
- libp
- libq
- libr
- libs
- libt
- libu
- libv
- libw
- libx
- liby
- libz
- m
- n
- o
- p
- q
- r
- s
- t
- u
- v
- w
- x
- y
- z

### Search

<https://ci.debian.net/>



### News



👍 libreoffice tests PASSED on wily/i386  
 2015-08-17 06:36:48 UTC | 05 hour(s) ago

👎 pytables tests FAILED on wily/amd64  
 2015-08-17 06:25:32 UTC | 05 hour(s) ago

👎 libreoffice tests FAILED on wily/i386  
 2015-08-17 06:08:16 UTC | 06 hour(s) ago

👍 lintian tests PASSED on wily/amd64  
 2015-08-17 01:51:38 UTC | 10 hour(s) ago

👍 lintian tests PASSED on wily/i386  
 2015-08-17 01:46:05 UTC | 10 hour(s) ago

👎 ubuntu-drivers-common tests FAILED on wily/i386  
 2015-08-16 08:25:31 UTC | 1 day(s) ago

👎 libapache2-mod-perl2 tests FAILED on wily/amd64  
 2015-08-15 23:51:14 UTC | 1 day(s) ago

### Packages

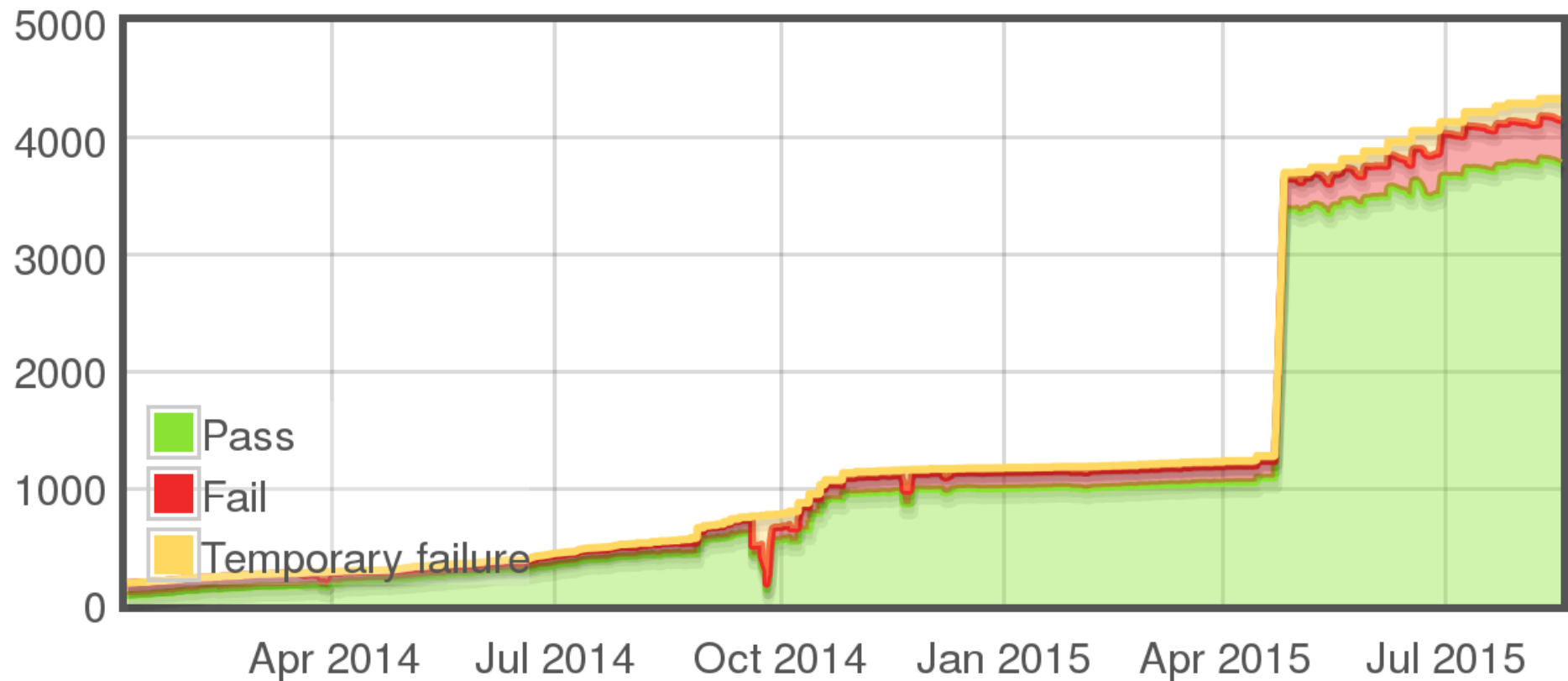
#### Browse by prefix

- a b c d e f
- g h i j k l
- liba libb libc libd
- libe libf libg libh
- libi libj libk libl
- libm libn libo libp
- libq libr libs libt
- libu libv libw libx
- liby libz m n o
- p q r s t u
- v w x y z

#### Search

<http://autopkgtest.ubuntu.com/>

# packages in ci.debian.net


















**~18.5%** of the *source packages* in the archive is currently being tested

up from ~1% in  
January 2014

[d](#) / [debci](#) / unstable/amd64

## debci [ unstable/amd64 ]

Version	Date	Duration	Status	Results
0.12	2015-08-02 17:07:55 UTC	0h 3m 37s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-07-15 15:54:59 UTC	0h 3m 43s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-07-05 05:49:29 UTC	0h 3m 24s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-06-16 18:38:06 UTC	0h 3m 50s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-06-13 14:34:00 UTC	0h 0m 17s	 tmpfail	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-05-28 00:29:55 UTC	0h 3m 55s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-05-24 12:01:43 UTC	0h 0m 19s	 tmpfail	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-05-18 06:05:16 UTC	0h 3m 22s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-05-11 08:07:12 UTC	0h 3m 28s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-05-03 03:18:19 UTC	0h 3m 35s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-04-30 21:21:25 UTC	0h 0m 52s	 tmpfail	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-04-26 22:18:07 UTC	0h 3m 23s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-04-10 13:02:01 UTC	0h 3m 20s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-04-07 02:20:41 UTC	0h 3m 22s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>
0.12	2015-04-02 12:41:29 UTC	0h 3m 15s	 pass	<a href="#">debci log</a> <a href="#">test log</a> <a href="#">artifacts</a>

# CI data is also in

- UDD/DMD
- DDPO
- package tracker(s)



# Debian CI future

- almost ready to migrate to a distributed setup with lots of CPU power
- will be able to also test testing and more architectures

specs

DEP-8: full text available from  
<http://dep.debian.net/deps/dep8>

## **debian/control**

Source: foo

[...]

Testsuite: autopkgtest

## **debian/tests/control**

Tests: foo bar baz

**Tests:** foo bar baz

*foo, bar and baz must be  
executables in debian/tests/*

**Test-Command:** `foo --version \  
| grep 'foo version [0-9.]+'`

*no need to write one-line shell scripts*

Tests: test-my-package  
**Depends:** @, test-tool

*install extra dependencies*

Tests: test-my-package

Depends: @, test-tool

Tests: smoke-test

*tests with different  
characteristics*

Tests: upstream-tests

**Depends: @, @builddeps@**

*need build dependencies  
to run tests*



Tests: my-tests

**Restrictions:** [...]

*additional requirements for tests*

Tests: break-the-world

Restrictions: **breaks-testbed**

*testbed will not be reused  
for other tests*

Tests: play-with-danger

Restrictions: **needs-root**

*tests need to be run as root*

*(think twice before doing this)*

Tests: complain-but-succeed  
Restrictions: **allow-stderr**

*does not fail if test program  
produces output on stderr*

Tests: mess-with-services

Restrictions: **isolation-container**

*skip if testbed is not at least as isolated  
from the host system as a container*

Tests: mess-with-kernel

Restrictions: **isolation-machine**

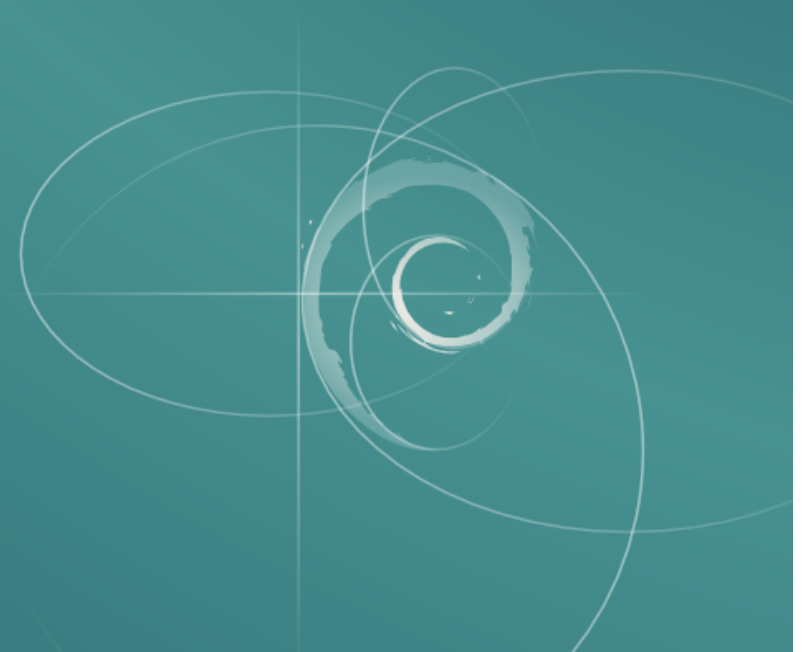
*skip if testbed is not at least as isolated  
from the host system as a VM*

Tests: test-extra-features

Restrictions: **needs-recommends**

*installs Recommends: into the testbed*

tools





**sadt(1)** from devscripts

```
$ sadt
```

*runs tests from source package  
at current directory, on the current  
system — somewhat limited*

## **adt-run(1)** from autopkgtest

Usage:

```
$ adt-run [adt-run options] \  
  --- [virt. args]
```

*Yes, those are THREE dashes*

```
$ adt-run ./ --- null
```

*runs the tests from the source package  
at the current directory, on the current  
system ("null" virtualization)*

*IMO `adt-run` should default  
to this -- that's bug #795274*

```
$ adt-run -u debci \  
  /path/to/foo_1.2.3-1_amd64.changes \  
  --- schroot debci-unstable-amd64
```

*run tests from the source referenced by the changes file, using its binaries, under a user called debci, in a schroot(1) session based on the debci-unstable-amd64 chroot*

```
$ adt-run -u debci \  
  /path/to/foo_1.2.3-1_amd64.changes \  
  --- lxc adt-sid-amd64
```

*also supported: qemu, ssh*  
*requested: pbuilder, docker*

# functional tests by example

(plus tips and tricks)



pinpoint

tip 1: `shunit2(1)`





redmine

tip 4: testing services

a random Ruby package  
(let's try ruby-minitest)

tip 5: autodep8(1)

## **autodep8(1)**

Testsuite: autopkgtest - pkg - ruby

Testsuite: autopkgtest - pkg - perl

Testsuite: autopkgtest - pkg - nodejs

Testsuite: autopkgtest - pkg - dkms

debci

tip 6: running "upstream"  
test suite

autodep8

tip 7: adding DEP-8 tests  
for package without them

vagrant

tip 8: really simple  
smoke tests

tip 9:

```
$ adt - run - - shell
```

```
$ adt - run - - shell - fail
```

# Join the automated testing movement

- add tests to your packages
- add generic tests for your packaging team to autodep8
- help improving/maintaining [ci.debian.net](http://ci.debian.net)



# thanks

- Ian Jackson — created autopkgtest
- Martin Pitt — maintains autopkgtest  
(and *autopkgtest.ubuntu.com*)
- Brandon Fairchild — debci UI work
- Lucas Kanbashiro — DEP-8 patches

# contact

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terceiro on OFTC

#debian-qa

#debian-devel