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Build DEBs the RPM way with debbuild

Neal Gompa

Who am I?

- Professional technologist
- Linux user for nearly fifteen years
- Contributor and developer in Fedora, Mageia, openSUSE, and OpenMandriva Linux distributions
- Contributor to RPM, DNF, and various related projects
- Current developer of debbuild and creator of debbuild-macros
- Senior DevOps Engineer at Datto, Inc.

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All About Datto

Founded in 2007

22 global locations

1,600 employees worldwide & growing

17,000 managed service provider partners

100% channel only

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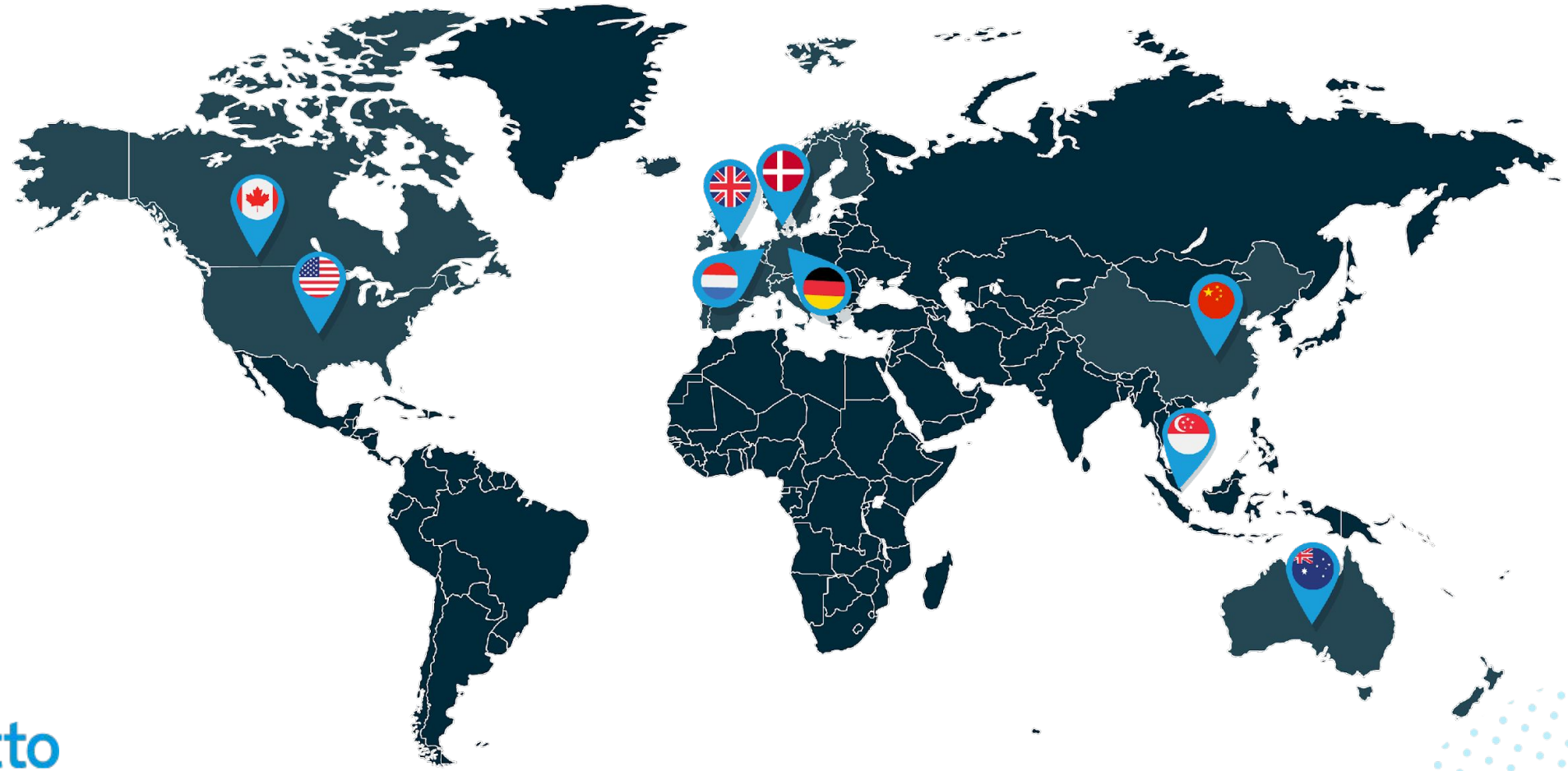
Datto Locations Around The World

Local offices in **9 countries** helping MSPs serve **over one million SMBs** around the world.



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What We Offer

Datto products empower our community of Managed Service Provider partners with the right technology, business tools, and support to enable each and every one of their customers to succeed. It's an approach that has made us the world's leading innovator of MSP-delivered IT solutions.

Growth Products

Unified Continuity

Reliable data protection for full IT environment maximizing up time

- SIRIS
- ALTO
- NAS

Datto Cloud Continuity for PCs

Datto File Protection

Datto SaaS Protection
- Office 365
- Google Suite

Networking

Fully cloud managed networking solutions designed for MSPs

- Datto Networking WiFi
- Datto Networking Switches
- Datto Networking Edge Routers
- Datto Managed Power

File Sync & Share

Fully managed File Sync & Share solution

- Datto Workplace

Efficiency Products

Professional Services Automation (PSA)

Autotask PSA: SaaS platform for MSPs to manage their entire business

Remote Monitoring & Management (RMM)

Datto RMM: Cloud-based Software for MSPs to manage SMB endpoints

Commerce

Simplify quoting and drive revenue growth

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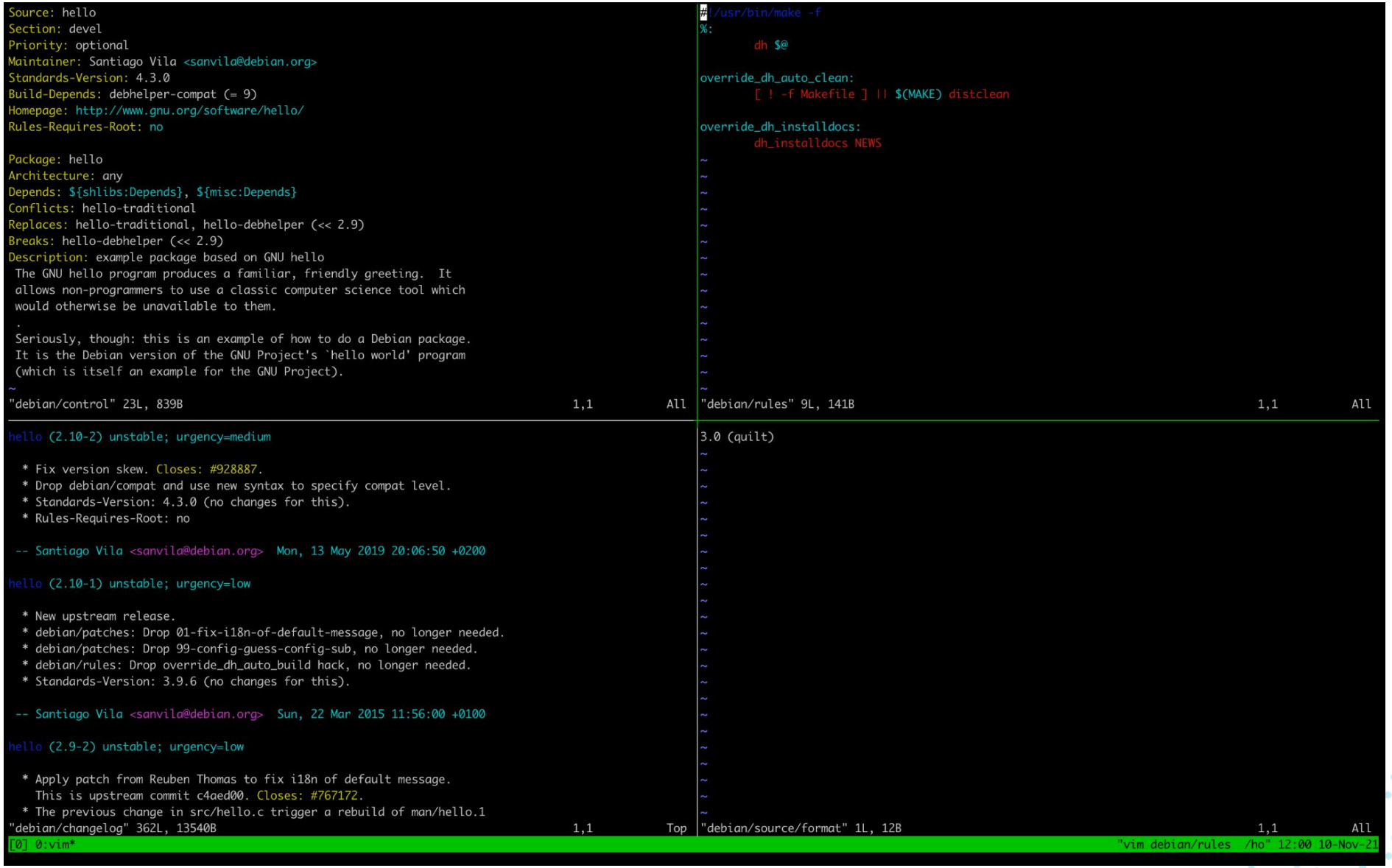
Building Debian Packages

… the traditional way

The Problem with Debian Packages

Datto uses Ubuntu for a lot of our products and service infrastructure, so in order for us to extend the OS with the capabilities we need, we need to build packages in the DEB format.

The “default” way to build DEB files is to use Debian Source Control (DSC). However, this is difficult for people to work with and the complexity of Debian Policy and conventions required by dpkg-buildpackage makes it hard for people to do it right.


Source: hello
Section: devel
Priority: optional
Maintainer: Santiago Vila <sanvila@debian.org>
Standards-Version: 4.3.0
Build-Depends: debhelper-compat (= 9)
Homepage: http://www.gnu.org/software/hello/
Rules-Requires-Root: no
Package: hello
Architecture: any
Depends: ${shlibs:Depends}, ${misc:Depends}
Conflicts: hello-traditional
Replaces: hello-traditional, hello-debhelper (<< 2.9)
Breaks: hello-debhelper (<< 2.9)
Description: example package based on GNU hello
The GNU hello program produces a familiar, friendly greeting. It
allows non-programmers to use a classic computer science tool which
would otherwise be unavailable to them.
.
Seriously, though: this is an example of how to do a Debian package.
It is the Debian version of the GNU Project's `hello world' program
(which is itself an example for the GNU Project).
"debian/control" 23L, 839B 1,1 All
#!/usr/bin/make -f
%:
dh $@
override_dh_auto_clean:
[! -f Makefile] || $(MAKE) distclean
override_dh_installdocs:
dh_installdocs NEWS
"debian/rules" 9L, 141B 1,1 All
hello (2.10-2) unstable; urgency=medium
* Fix version skew. Closes: #928887.
* Drop debian/compat and use new syntax to specify compat level.
* Standards-Version: 4.3.0 (no changes for this).
* Rules-Requires-Root: no
-- Santiago Vila <sanvila@debian.org> Mon, 13 May 2019 20:06:50 +0200
hello (2.10-1) unstable; urgency=low
* New upstream release.
* debian/patches: Drop 01-fix-i18n-of-default-message, no longer needed.
* debian/patches: Drop 99-config-guess-config-sub, no longer needed.
* debian/rules: Drop override_dh_auto_build hack, no longer needed.
* Standards-Version: 3.9.6 (no changes for this).
-- Santiago Vila <sanvila@debian.org> Sun, 22 Mar 2015 11:56:00 +0100
hello (2.9-2) unstable; urgency=low
* Apply patch from Reuben Thomas to fix i18n of default message.
This is upstream commit c4aed00. Closes: #767172.
* The previous change in src/hello.c trigger a rebuild of man/hello.1
"debian/changelog" 362L, 13540B 1,1 Top
3.0 (quilt)
"debian/source/format" 1L, 12B 1,1 All
[0] 0:vim*
"vim debian/rules /ho" 12:00 10-Nov-21

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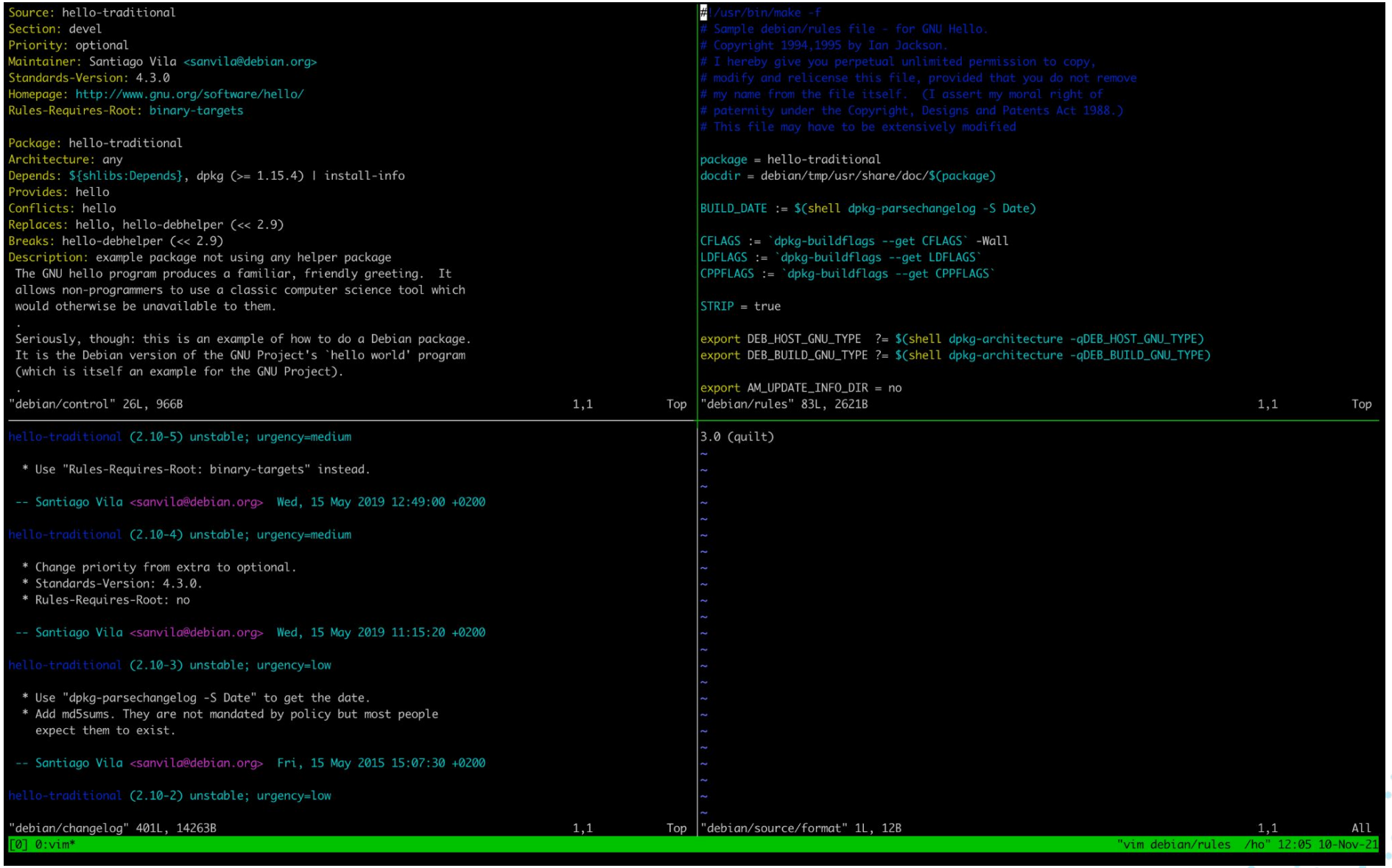
Source: hello-traditional
Section: devel
Priority: optional
Maintainer: Santiago Vila <sanvila@debian.org>
Standards-Version: 4.3.0
Homepage: http://www.gnu.org/software/hello/
Rules-Requires-Root: binary-targets
Package: hello-traditional
Architecture: any
Depends: ${shlibs:Depends}, dpkg (>= 1.15.4) | install-info
Provides: hello
Conflicts: hello
Replaces: hello, hello-debhelper (<< 2.9)
Breaks: hello-debhelper (<< 2.9)
Description: example package not using any helper package
The GNU hello program produces a familiar, friendly greeting. It
allows non-programmers to use a classic computer science tool which
would otherwise be unavailable to them.
Seriously, though: this is an example of how to do a Debian package.
It is the Debian version of the GNU Project's `hello world' program
(which is itself an example for the GNU Project).
"debian/control" 26L, 966B 1,1 Top
#!/usr/bin/make -f
# Sample debian/rules file - for GNU Hello.
# Copyright 1994,1995 by Ian Jackson.
# I hereby give you perpetual unlimited permission to copy,
# modify and relicense this file, provided that you do not remove
# my name from the file itself. (I assert my moral right of
# paternity under the Copyright, Designs and Patents Act 1988.)
# This file may have to be extensively modified
package = hello-traditional
docdir = debian/tmp/usr/share/doc/$(package)
BUILD_DATE := $(shell dpkg-parsechangelog -S Date)
CFLAGS := `dpkg-buildflags --get CFLAGS` -Wall
LDFLAGS := `dpkg-buildflags --get LDFLAGS`
CPPFLAGS := `dpkg-buildflags --get CPPFLAGS`
STRIP = true
export DEB_HOST_GNU_TYPE ?= $(shell dpkg-architecture -qDEB_HOST_GNU_TYPE)
export DEB_BUILD_GNU_TYPE ?= $(shell dpkg-architecture -qDEB_BUILD_GNU_TYPE)
export AM_UPDATE_INFO_DIR = no
"debian/rules" 83L, 2621B 1,1 Top
hello-traditional (2.10-5) unstable; urgency=medium
* Use "Rules-Requires-Root: binary-targets" instead.
-- Santiago Vila <sanvila@debian.org> Wed, 15 May 2019 12:49:00 +0200
hello-traditional (2.10-4) unstable; urgency=medium
* Change priority from extra to optional.
* Standards-Version: 4.3.0.
* Rules-Requires-Root: no
-- Santiago Vila <sanvila@debian.org> Wed, 15 May 2019 11:15:20 +0200
hello-traditional (2.10-3) unstable; urgency=low
* Use "dpkg-parsechangelog -S Date" to get the date.
* Add md5sums. They are not mandated by policy but most people
expect them to exist.
-- Santiago Vila <sanvila@debian.org> Fri, 15 May 2015 15:07:30 +0200
hello-traditional (2.10-2) unstable; urgency=low
"debian/changelog" 401L, 14263B 1,1 Top
3.0 (quilt)
"debian/source/format" 1L, 12B 1,1 All
[0] 0:vim* "vim debian/rules /ho" 12:05 10-Nov-21

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The Problem with Debian Packages

PEOPLE GOT IT WRONG

All the time!

The Core Problem

Building Debian packages the traditional way involves either a lot of boilerplate or a lot of magic guesswork, with a lot of people getting it wrong more often than not.

Additionally, as we started supporting RPM distributions for software installed by customers, having multiple packaging methods was untenable.

Building Debian Packages

… using debbuild!

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Introducing debbuild & debbuild-macros

debbuild is a tool that emulates the rpmbuild tool from RPM to produce Debian packages. That is, it takes an RPM spec file and processes it to run a package build like rpmbuild does, but produces a Debian package instead of an RPM package.

debbuild-macros is an addon to debbuild that defines many common packaging macros used in RPM packaging for building Debian packages easily from RPM spec files from RPM-based distributions (such as Fedora Linux).

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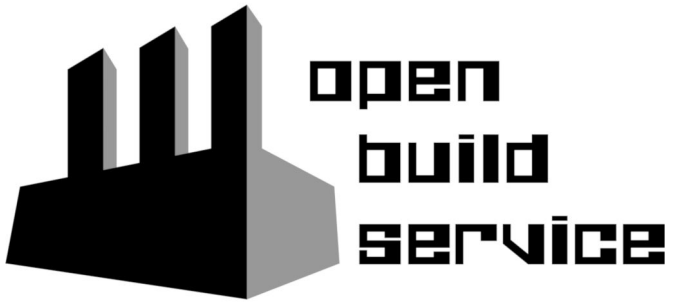
Introducing the Open Build Service

The Open Build Service (OBS) is a software solution created by SUSE to build and manage the openSUSE and SUSE Linux Enterprise distributions. It's similar to Koji, the RHEL/Fedora build system.

However, it was designed from the beginning to support a wide variety of Linux based platforms. Notably, it can build packages, repositories, and images for Red Hat/Fedora, SUSE, and Debian/Ubuntu systems.

SUSE offers a hosted version as the openSUSE Build Service, and the appliance image is freely available for you to set up your own.



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Why we use the Open Build Service?

- Source input flexibility through “source services” that allow scripted retrieval and processing of sources
- Easy scaling of resources through OBS workers that detect the orchestrator and auto-connect
- Automatic reverse dependency rebuilding on package updates to ensure dependencies are linked correctly
- Easy to deploy and get started with using the official appliance provided on the website
- Lets us build packages natively for RPM and Debian distributions using RPM spec files (using debbuild for Debian/Ubuntu)

Building with debbuild (on OBS)

File hello.spec of Package hello

Undo Redo

```
Name:           hello
Version:        2.10
Release:        1%{?dist}
Summary:        A Hello World application from the GNU Project

License:        GPLv3+
URL:            https://www.gnu.org/software/hello/
Source0:        http://ftp.gnu.org/gnu/hello/%{name}-%{version}.tar.gz

%if "%{_vendor}" == "debbuild"
Group:          devel
Packager:       Neal Gompa <ngompa13@gmail.com>
%endif

BuildRequires:  gettext


%description
The GNU Hello program is a Free Software take on
the classical Hello World application. It uses autotools
and offers extensive language support. It is often used
as an example of how Free Software can be written and packaged.

%prep
%autosetup

%build
%configure
%make_build

%install
%make_install
rm -fv %{buildroot}%{_infodir}/dir

%find_lang %{name}

%files -f %{name}.lang
%{_bindir}/%{name}
%{_infodir}/%{name}.info*
%{_mandir}/man1/%{name}.1*
%doc README NEWS ChangeLog AUTHORS TODO THANKS
%license COPYING


%changelog
* Wed Nov 10 2021 Neal Gompa <ngompa13@gmail.com>
```

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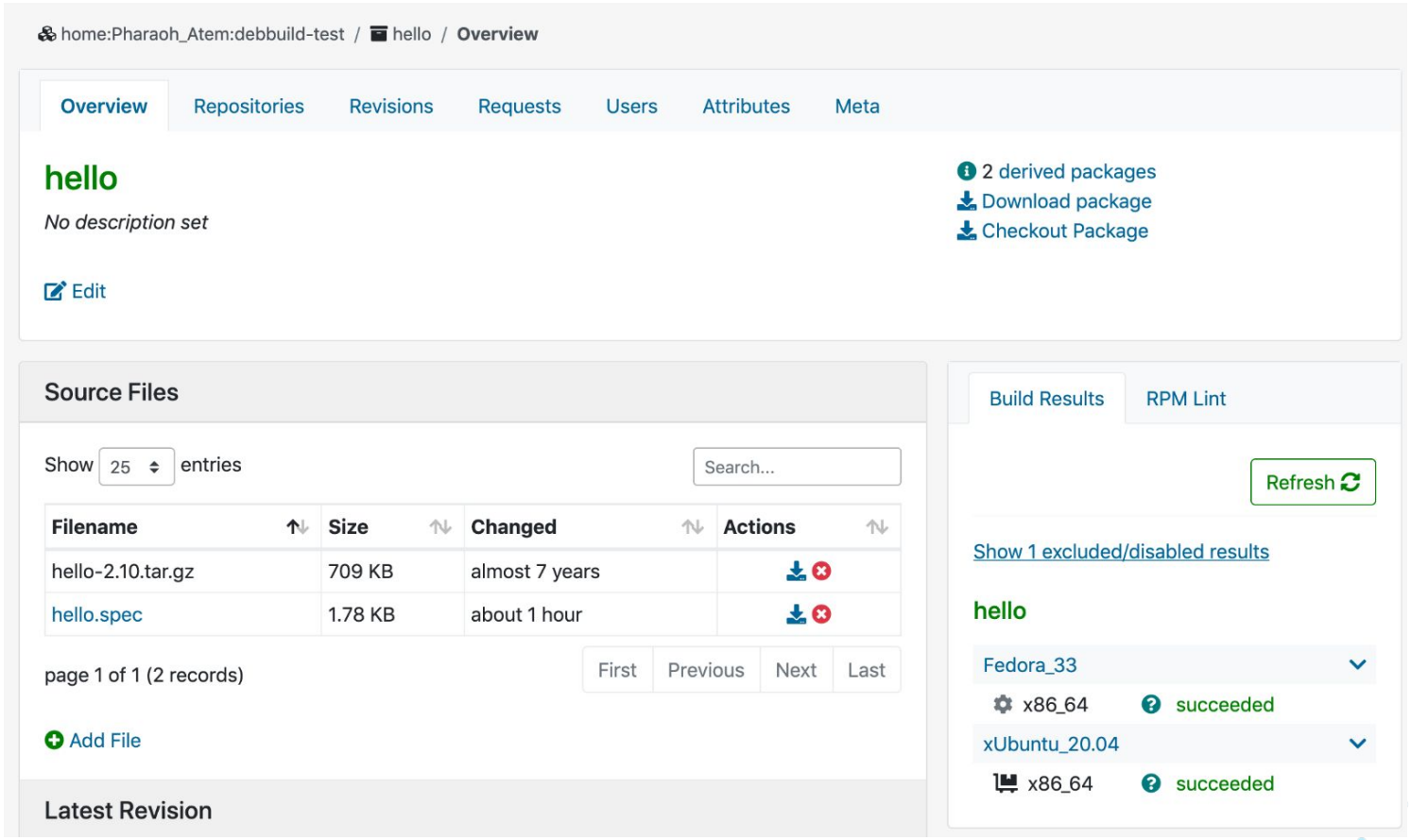
Building with debbuild (on OBS)



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Debian Packages the RPM Way is Easy!

With debbuild, crafting Debian packages is considerably simpler than the traditional way, while still (mostly) complying with Debian Policy due to following Fedora/openSUSE Packaging Guidelines.

Additionally, we can (and regularly do!) backport packages from Fedora to our Ubuntu systems with great success, leveraging the quality packaging and simplified maintenance in the process. (We do have to account for distro differences, though!)

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References

- debbuild GitHub organization: https://github.com/debbuild
- Sample spec files
  - libvirt: https://pagure.io/libvirt-deb
  - golang: https://pagure.io/golang-deb
  - rpmdevtools: https://pagure.io/rpmdevtools-deb
  - dattobd: https://github.com/datto/dattobd/blob/master/dist/dattobd.spec
- RPM packaging guide: https://rpm-packaging-guide.github.io/
- Datto Engineering blog post about debbuild + OBS: https://datto.engineering/post/flexible-and-fast-software-delivery-with-the-open-build-service

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