



Ubuntu Development Primer

How to stop monkey patching and start committing



bit.ly/ubuntudevelopment

ubuntu[®]

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chiluk.

- Dave Chiluk
- Ubuntu Core Developer
- Currently
 - Linux Platform Engineer for Indeed.com
- Previously
 - Canonical – Sustaining Engineering / Engineering Support for Ubuntu Advantage
 - IBM - Linux Technology Center
- <https://wiki.ubuntu.com/chiluk>



Topics

- Getting support
- Launchpad
- Modifying sources
- Building
- Submitting changes
- stretch Topic – Ubuntu Kernels



Why you might care!

- Self-maintained packages
- Interested in giving back to the community
- Tired of the maintenance burden of one-off packages
- Mentorship beats reading wiki pages
(but there will still be plenty of pages)
- Outdated documentation



Where do you go for support?



Where do you go for support?

- google.com
- askubuntu.com
- ubuntuforums.org
- Ubuntu Advantage – paid support through Canonical
- IRC – Freenode
 - #ubuntu – general user support
 - #ubuntu-devel – if you have a fix and need sponsorship or guidance
 - #ubuntu-bugs – specific bug related discussion
- Launchpad
 - This is not a forum. Keep all conversations technical and on topic.

Launchpad.net

- So you found your bug on launchpad?
- Click this affects me too.

The screenshot shows the Ubuntu Launchpad interface for a bug report. At the top, the Ubuntu logo and 'network-manager package' are visible. Navigation tabs include Overview, Code, Bugs (selected), Blueprints, Translations, and Answers. The bug title is 'DNS resolution stops working after some time'. It was reported by Akash Rawal on 2015-12-02. A large orange arrow points to the 'Affects' table, specifically to the 'network-manager (Ubuntu)' row. The table has columns for Affects, Status, Importance, Assigned to, and Milestone. The 'network-manager (Ubuntu)' row is highlighted in yellow and shows 'Confirmed', 'Critical', 'Unassigned', and 'Target to milestone'. Below the table, there are links to 'Also affects project', 'Also affects distribution/package', and 'Nominate for series'. The 'Bug Description' section starts with 'DNS resolution stops working after sometime (usually 10-20 minutes) in Ubuntu 15.10'. On the right, there's a 'Report a bug' button and a sidebar with options like 'Mark as duplicate', 'Convert to a question', 'Link a related branch', and 'Link to CVE'. A notification at the bottom right states: 'You have subscriptions that may cause you to receive notifications, but you are not directly subscribed to this bug's notifications.'

Ubuntu network-manager package

Overview Code **Bugs** Blueprints Translations Answers

DNS resolution stops working after some time

Bug #1522057 reported by Akash Rawal on 2015-12-02

This bug affects 5 people. Does this bug affect you?

Affects	Status	Importance	Assigned to	Milestone
dnsmasq (Ubuntu)	Confirmed	Critical	Unassigned	Target to milestone
network-manager (Ubuntu)	Confirmed	Critical	Unassigned	Target to milestone

[Also affects project](#) [Also affects distribution/package](#) [Nominate for series](#)

Bug Description

DNS resolution stops working after sometime (usually 10-20 minutes) in Ubuntu 15.10

The problem can be temporarily corrected after restarting network-manager

[Report a bug](#)

This report contains **Public** information

Everyone can see this information.

[Mark as duplicate](#)

[Convert to a question](#)

[Link a related branch](#)

[Link to CVE](#)

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Ubuntu network-manager package

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Launchpad.net

- Subscribe yourself

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Ubuntu
network-manager package

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Launchpad.net


- Assign yourself if you have a fix or are pretty sure you'll get one. Unassign yourself If you give up.






Ubuntu













network-manager package





Overview Code **Bugs** Blueprints Translations Answers

DNS resolution stops working after some time 

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Launchpad.net

- All of these result in karma.



lp Colin Watson in Launchpad x +

Canonical Group L | https://launchpad.net...

Dave Chiluk (chiluk) • Log Out

Colin Watson

Overview Code Bugs Blueprints Translations Answers

Irish Launchpad engineer and Ubuntu developer, living in Cambridge, England.

Contact this user

Related packages Related projects

User information

Launchpad Id: cjwtatson	IRC: cjwtatson on irc.canonical.com	OpenPGP keys: AC0A4FF12611B6FCCF01C111393587D97D86500B
Email: ✉ cjwtatson@canonical.com ✉ cjwtatson+test@chiark.greenend.org.uk ✉ cjwtatson@chiark.greenend.org.uk ✉ cjwtatson@debian.org ✉ cjwtatson@flatline.org.uk ✉ cjwtatson@ubuntu.com ✉ colin.watson@canonical.com ✉ colin.watson@ubuntu.com	cjwtatson on irc.freenode.net cjwtatson on irc.oftc.net	SSH keys: cjwtatson+canonical@niejwein
	Time zone: Europe/London (UTC+0000)	Languages: English, English (United Kingdom)
		Karma: 80670 ?



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What if there's no related bug?

- Is your package up to date?
- Include
 - Logs?
 - Debug output (using `--verbose` or `--debug` flags)
 - Memory dump?
- Test Ubuntu development packages?
 - Bisect/backport if it's fixed there.



What if there's no related bug?

- Create one by using the ubuntu-bug utility:
 - `$ ubuntu-bug <affected package>`
 - This will package up a number of logs, and create a bug for you.



Fix it

- Check upstream?
 - If fixed
 - Backport the change
 - If not
 - Fix it in the upstream project first
- Submit it back into Ubuntu



Submitting it to Ubuntu

- 1) Get the sources.
- 2) Create the patch.
- 3) Edit the changelog.
- 4) Build it.
- 5) Test it.
- 6) Submit a debdiff.
- 7) Test it some more.



Getting the sources

- Get the tools:
 - `$ sudo apt install sbuild debhelper ubuntu-dev-tools devscripts build-essential fakeroot kernel-wedge kernel-package dpatch quilt`
- `rmadison <source package name>`
 - Shows the version of the package in every supported version of Ubuntu
- `mkdir bash`
- `pull-lp-source bash bionic`



The debian directory

- changelog
- rules – makefile
- control – package definition, including depends, build-depends, recommends, and replaces.
- patches/
 - Patches because Ubuntu is a delta applied on top of Debian, and this helps when new versions need to be brought into Ubuntu
 - From before Git was created
- patches/series
- \$ what-patch
- <https://wiki.debian.org/Packaging>



Demo

- rmadison
- pull-lp-source
- debian directory



Create the patch - quilt

- quilt top
 - What is the current patch we are at
- quilt push -a
 - applies all patches
- quilt new+add or quilt import
 - Create a new quilt patch
- quilt refresh
- quilt header -e --dep3
- Update Changelog (dch -i)



Create the patch - dpkg-source

- Make changes
- Update Changelog (dch -i)
- dpkg-source --commit
 - Creates the debian/patches file
 - Adds it to debian/patches/series
 - Launches text editor for filling out a dep3 Header



Edit the Changelog

- `dch -i`
 - adds a changelog entry
 - Include description and LP#
 - Follow format of other changes in the changelog
- Double check that patch is listed in `debian/patches/series`



Demo

- Edit bash
- dch -i
- dpkg-source --commit



Build the source package

- `debuild -d -S`
 - Signs the package with the key owned by the last editor of the changelog



Build the binary package

- `sbuild -A -d bionic-amd64 <new.dsc>`
 - <https://wiki.ubuntu.com/SimpleSbuild>
- `debdiff <orig.dsc> <new.dsc> >`
`lp#.<series>.debdiff`



Demo

- `dbuild -S`
- `sbuild -A -j 8 -d bionic-amd64 bash_4.4.18-2ubuntu2.dsc`



Test the Package

- YES YOU!





Submit the change

- Attach the debdiff to the launchpad bug:
 - `$ debdiff <original.dsc> <fixed.dsc>`
- Is the patch for a released series?
 - Fill out the SRU Template



Stable Release Updates (SRU)

- <https://wiki.ubuntu.com/StableReleaseUpdates>
- Copy the SRU Template to the top of the bug description and fill it out.
- Helps reviewers understand what's going on without having to wade through the entirety of the bug text



Sponsorship

- Get Sponsorship – Core dev
 - Subscribe ubuntu-sponsors to the bug
 - Ask on #ubuntu-devel
 - <https://launchpad.net/ubuntu/bionic/+queue>
- Get SRU Sponsorship – SRU Team member
 - Subscribe ubuntu-sru
- Package is built by launchpad and added to the -proposed archive



Test it again!

- Integration and build test
- The original submitter is expected to test the package as it exists in -proposed.
- verification-needed tag → verification-done
- Wait 2-6 weeks for promotion to -updates



Submit to Debian

- There's a tool for that too!
 - Submittodebian
- Why?
 - Because we want to be good members of the Debian community,
 - We don't want to have to maintain an Ubuntu the delta indefinitely.





The Kernel

- gitweb - <https://kernel.ubuntu.com/git/ubuntu>
- git clone --reference ../linux
[git://kernel.ubuntu.com/ubuntu/ubuntu-bionic.git](https://kernel.ubuntu.com/ubuntu/ubuntu-bionic.git)
- Git Branches
 - master
 - master-next – kernel in -proposed being tested.



Cherrypicks of Upstream patches

- Test Upstream
 - <https://wiki.ubuntu.com/Kernel/MainlineBuilds>
 - <http://kernel.ubuntu.com/~kernel-ppa/mainline/>
- git bisect to find correct upstream commit.
- git cherry-pick -sex <upstream commit>
- Submit the cherry-picks to linux-stable:
 - Documentation/stable_kernel_rules.txt
- This will eventually get included into Ubuntu via linux-stable patch streams
- Consider HWE kernels (linux-*-hwe*).



For New fixes

- Submit to upstream kernel
- Documentation/process/submitting-patches.rst
- Then submit to linux-stable
 - Will be automatically applied to Ubuntu kernels if they cleanly apply



Building the kernel

- make
 - make oldconfig ; make
 - for quick iteration
 - Not recommended for distributing
- alias fdr='fakeroot debian/rules' in ~/.bashrc
- \$ fdr prepare-generic
 - creates config
- \$ fdr binary-generic
 - build portable deb packages
- Build a portion of the tree
 - make -C debian/build/build-generic M=`pwd`/fs/gfs2



Other fixes

- Sauce Patches - patches that are not accepted by stable, but are still needed in Ubuntu
- Submit to `kernel-team@lists.ubuntu.com`
- Follow patch submission guidelines
 - <https://wiki.ubuntu.com/Kernel/Dev/KernelBugFixing>

Questions please

Thank you

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