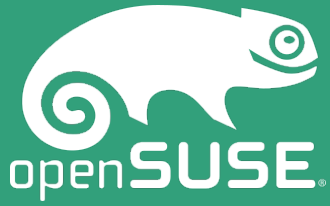


How I Learned to Stop Worrying and Love Tumbleweed

Everyone should be running a rolling release

Richard Brown
openSUSE Chairman
rbrown@opensuse.org

“Rolling Releases are the future of Linux Distributions”

In the Beginning

Regular Releases aka “Traditional Distributions”

- Most Linux Distributions follow a “Regular Release” model
- Release every X months/years
- Freeze/Reluctantly upgrade package versions between Releases
- Backport patches/fixes for frozen package versions
- e.g. Debian, Fedora, openSUSE Leap, Ubuntu

Dev Branches

- Most Linux Distributions rely on a Dev Branch to seed their Regular Releases
- Always Released
- Nothing Frozen/Backported
- Normally Broken
- e.g. Debian sid, Fedora Rawhide, openSUSE Factory, Ubuntu Daily

The Problems for Developers

- Developers need their system to be as close as possible to their relevant upstream/distribution projects
- Dev Branches accomplish this, but at the cost of stability
- If it’s not stable, Developers will not use it, they have work to do

The Problems for Distributions

- Fewer Users/Contributors of the Dev Branch is a serious, but common problem
- Fewer bugs found before each Regular Release
- Less innovation/new features in your codebase
- Increasing Technical Debt, making each Release more ‘expensive’ to clear that debt
- Stagnation/Decline, often with very public development probs

The Problems for Upstream Developers

- Upstream Developers want to put their software in the hands of users as fast as possible
- Dev Branches do not accomplish this, neither do Regular Releases
- Containerised Apps promise to solve this, but it’s not that easy

Come see my other talk “Resurrecting Dinosaurs”
Janson 13:00 TODAY

The Problems for Users

- Many Linux Users are enthusiasts with a keen interest in the upstream projects of their choice
- These users don’t want to wait, but when they use it they want it to work
- Consistency, ‘well put together’, ‘feels right’, UX, are key requirements
- These enthusiasts are the prime candidates to become contributors of tomorrow

Rolling Releases to the Rescue

Rolling Releases to the Rescue

- No Release Schedule
- Frequent Updates to all Packages
- Updates delivered “when they're ready”
- e.g. Arch, Gentoo, openSUSE Tumbleweed

Rolling Releases – Common Problems

- Unstable
- Unreliable
- Hard to Live With

Unstable

- “Always Changing”
- A fast moving codebase is going to include changes, that’s the point
- Changes must be built, tested, and integrated consistently
- Users must be shielded from behavioural changes so they can just focus on getting their work done, then change when they’re ready

Unreliable

- “Always Breaking”
- Thousands of moving parts from thousands of upstream projects are a challenge to get working together
- Changes must be built, tested, and integrated consistently
- Test-at-the-submission & Test-as-a-whole; Distributions are not a collection of packages, but a cohesive product
- Users must not be shipped something that doesn’t work

Passive Testing is not good enough!

- Many distributions, incl. rolling releases, rely on “Passive Testing”
- Put new packages in a “Testing Branch”, wait X days then assume “it’s good enough” and ship!
- Works better or worse depending on size of developer & testing communities
- Still basically Russian Roulette

Active Testing is required

Rolling Releases SHOULD actively confirm:

- “does the new package break something in isolation?”
- “does the new package break something when installed in a broader context?”
- “does the new package change behaviour users expect?”

- Answers to the above questions needed ideally BEFORE an Upstream Release or ASAP after

Hard to Live With

- The Arch Way - “Do it yourself, it’s a learning exercise”
- The Gentoo Way - “Do it yourself, and you can read the Arch wiki while everything is compiling”

- Something went wrong or changed in a way you don’t like? Too bad, good luck undoing it, you can always start again

“Who said Rolling Releases needed to be difficult?”

Enter Tumbleweed

A Brief History of Tumbleweed

- Originally created by Greg Kroah-Hartman
- Merged with the 'Factory' rolling release on November 4th 2014

- Provides the latest updates 'at the pace of contribution', without the risk of major system issues
- Tested by openQA continuously
- Developer, Contributor & Enthusiast focus

OG Tumbleweed (Pre Nov 2014)

- Tumbleweed was originally 'rolling updates' based on regular releases
- Required an additional repository to your ‘traditional’ openSUSE release
- Focus on Kernel, KDE, GNOME and some Apps
- Would overwrite packages from regular release
- “Reset-to-zero” every regular release

Original Tumbleweed, Original Troubles

- “Partially-Rolling” does not work
- Constant breakage over the growing chasm between the ‘stable base’ and ‘rolling top’
- Ad-hoc tinkering of the ‘stable base’ stops it being stable
- “Reset-to-zero” rebase to a new stable base every 8 months was brutally disruptive for many users

Richard's Rolling Release Rule

"In order to move ANYTHING quickly, you need to be able to move EVERYTHING quickly"

Building Linux Better

- Open Build Service started in February 2006
- Used to build the openSUSE® & SUSE® distributions
- Can also build packages for other distributions (Fedora/Red Hat, Ubuntu, Debian, Arch, etc)
- Also used by ownCloud, Linux Foundation, VideoLAN (VLC), Dell, Cray, Intel and more.

http://openbuildservice.org

Testing Linux Better

- openQA started in November 2009
- Able to fully test Linux distributions from install to user applications
- Integral part of the openSUSE® Tumbleweed & Leap process
- Used by SUSE® to test SUSE Linux Enterprise
- Recently adopted by Red Hat to test Fedora

http://open.qa

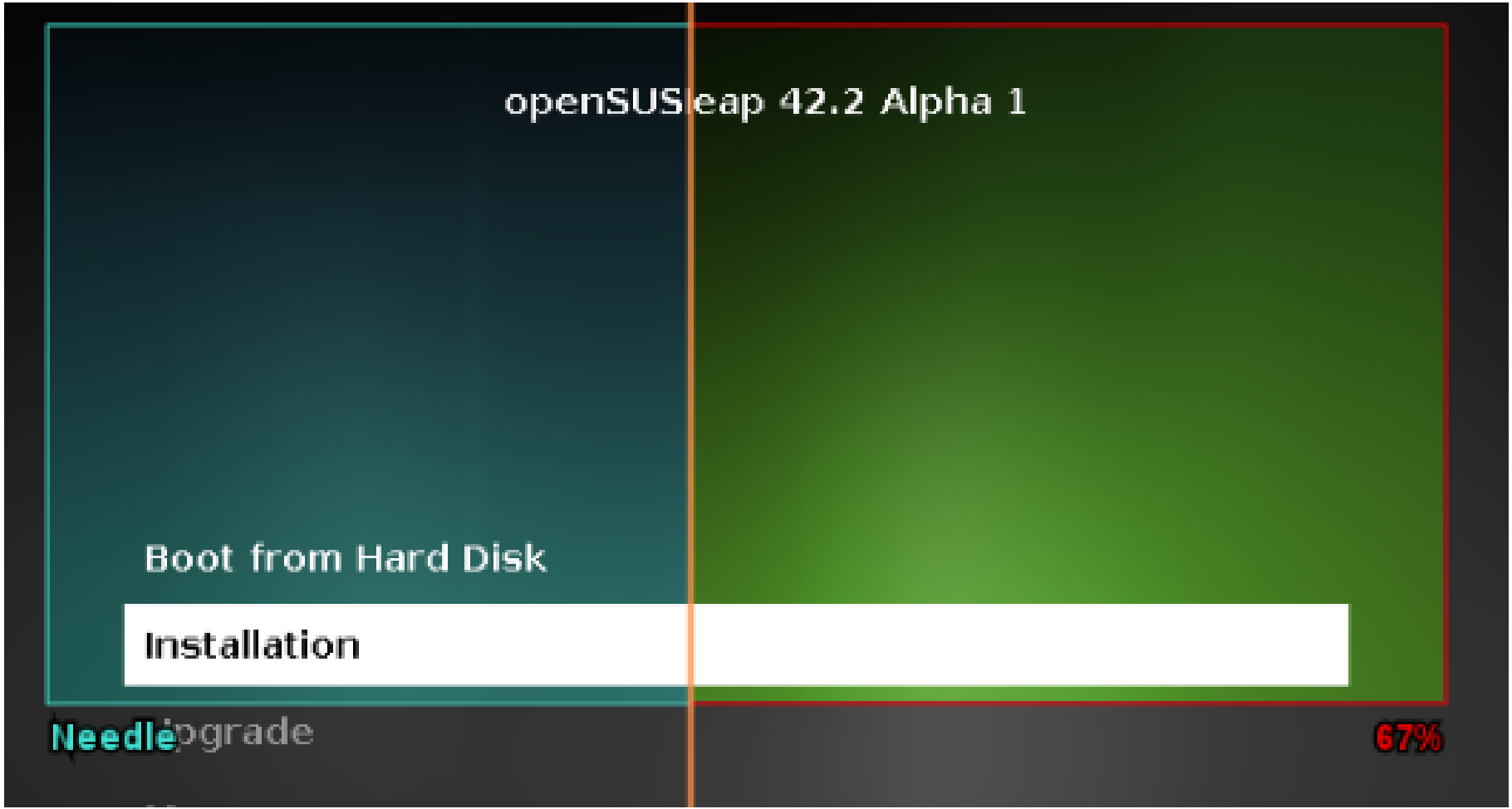
Test	x86_64
RAID0	
RAID1	
RAID10	
RAID5	
awesome	
boot_to_snapshot	
cryptlvm	
cryptlvm@uefi	
dual_windows8	
ext4	
extra_tests_on_gnome	multi_users_dm
extra_tests_on_kde	multi_users_dm

Results for opensuse-Tumbleweed-DVD-x86_64-Build20160407-kde

Result: **passed** finished about 15 hours ago (01:09 hours)

Details | Logs & Assets | Settings | Comments (0) | Previous results (10)

Test	Result	References
isosize !	passed	
bootloader	passed	
welcome	passed	
good_buttons	passed	
installation_mode	passed	
partitioning	passed	
partitioning_finish	passed	
installer_timezone	passed	


openSUSEleap 42.2 Alpha 1
Boot from Hard Disk
Installation
Needle
pgrade
67%

PRE-INTEGRATION
TESTING
SUBMISSION
AUTOMATIC REVIEW
MANUAL REVIEW
FACTORY
TUMBLEWEED
QA

Help make openQA & Tumbleweed better

- Main Website
  - http://open.qa
- Documentation
  - http://open.qa/documentation/
- Bug Reports & Feature Requests
  - https://progress.opensuse.org/projects/openqav3

Learn More

“Continuous Integration with the Open Build Service”

Christian Bruckmayer

This Room

13:30 TODAY

“Fancy, but I don’t want to wait for all that build & test nonsense”

Working with Upstream Projects

- GNOME 3.22 – Shipped <48 hours after Upstream Release
- KDE Plasma 4.9 – Shipped on Upstream Release Day

- “GNOME:Next” – Tumbleweed derivative testing GNOME git
  - LiveCD’s provided for Upstream Release Day
- openSUSE Krypton – Tumbleweed derivative testing KDE git

A “quiet” Tumbleweek

- 3 Snapshots
- 146 Package Updates
- 15 New Packages on the DVD
- 38 Packages Removed from the DVD
- 1 new Kernel

A “quiet” Tumbleweek

- 3 Snapshots
- 146 Package Updates
- 15 New Packages on the DVD
- 38 Packages Removed from the DVD
- 1 new Kernel

QUIET?!

Another Tumbleweek

- 5 Snapshots
- 298 Package Updates
- 47 New Packages on the DVD
- 42 Packages Removed from the DVD
- 2 new Kernels

btrfs & snapper – our secret sauce

- Tumbleweeds default install uses btrfs & snapper
- Automatically configured to snapshot root filesystem when packages are installed
- Unwanted changes can be safely rolled back, even from GRUB

“Transactional Updates with btrfs” - Thorsten Kukuk

This Room 15:30 TODAY

“What about openSUSE Factory?”

Who needs a Dev Branch anyway?

+ tumbleweed =

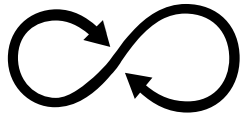
Tumbleweed

“What about the openSUSE Regular Release?”

Tumbleweed
openSUSE
Leap

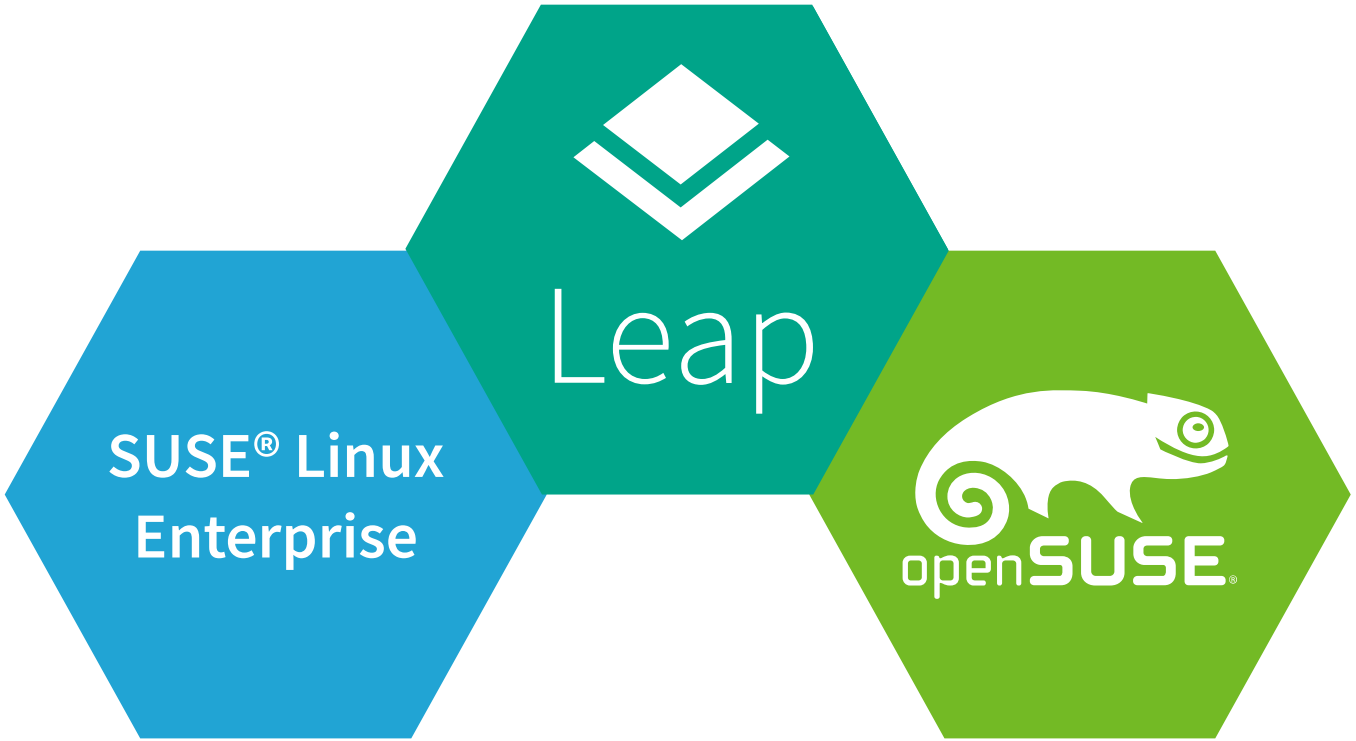
The New openSUSE Distributions

- openSUSE Tumbleweed
  - Rolling Release
  - Continuously Updated & Tested
  - Perfect for Developers & Power Users
- openSUSE Leap
  - Regular Release
  - Shared Core with SUSE Linux Enterprise
  - Perfect for SysAdmins, Enterprise Developers, and Users



Tumbleweed

Leap


SUSE® Linux
Enterprise
Leap
openSUSE

Tumbleweed

>8000 Packages
Community Developed
Rolling Updates

Rolling Base System

openSUSE Leap

Over 6000 Packages
Community Developed

Shared Core

Stable Base System
Regular Updates

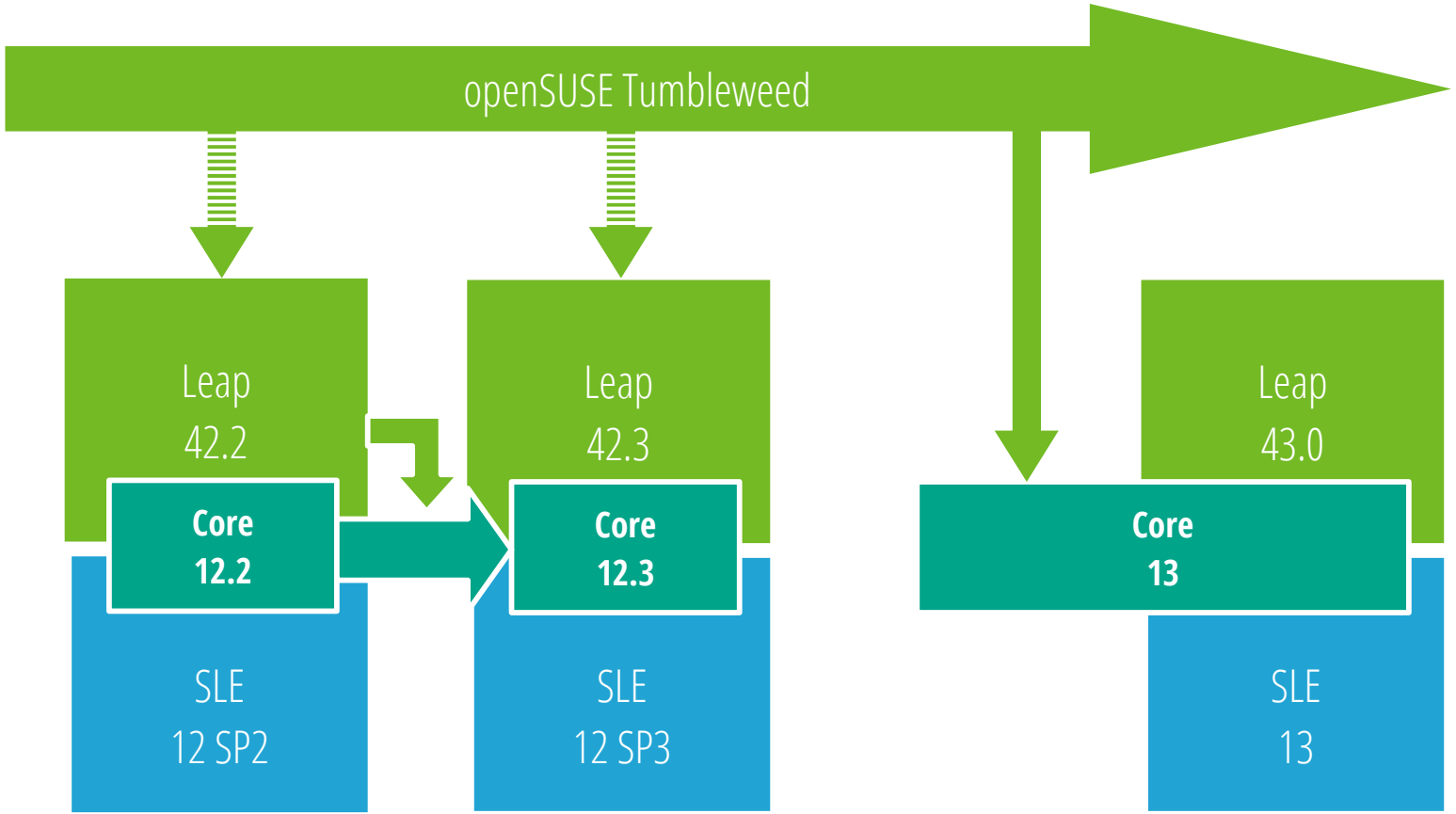
SUSE® Linux Enterprise

Enterprise Packages
SUSE Developed

Shared Core

Stable Base System
Regular Updates

Tumbleweed and SUSE Linux Enterprise



In Review

Tumbleweed for Developers

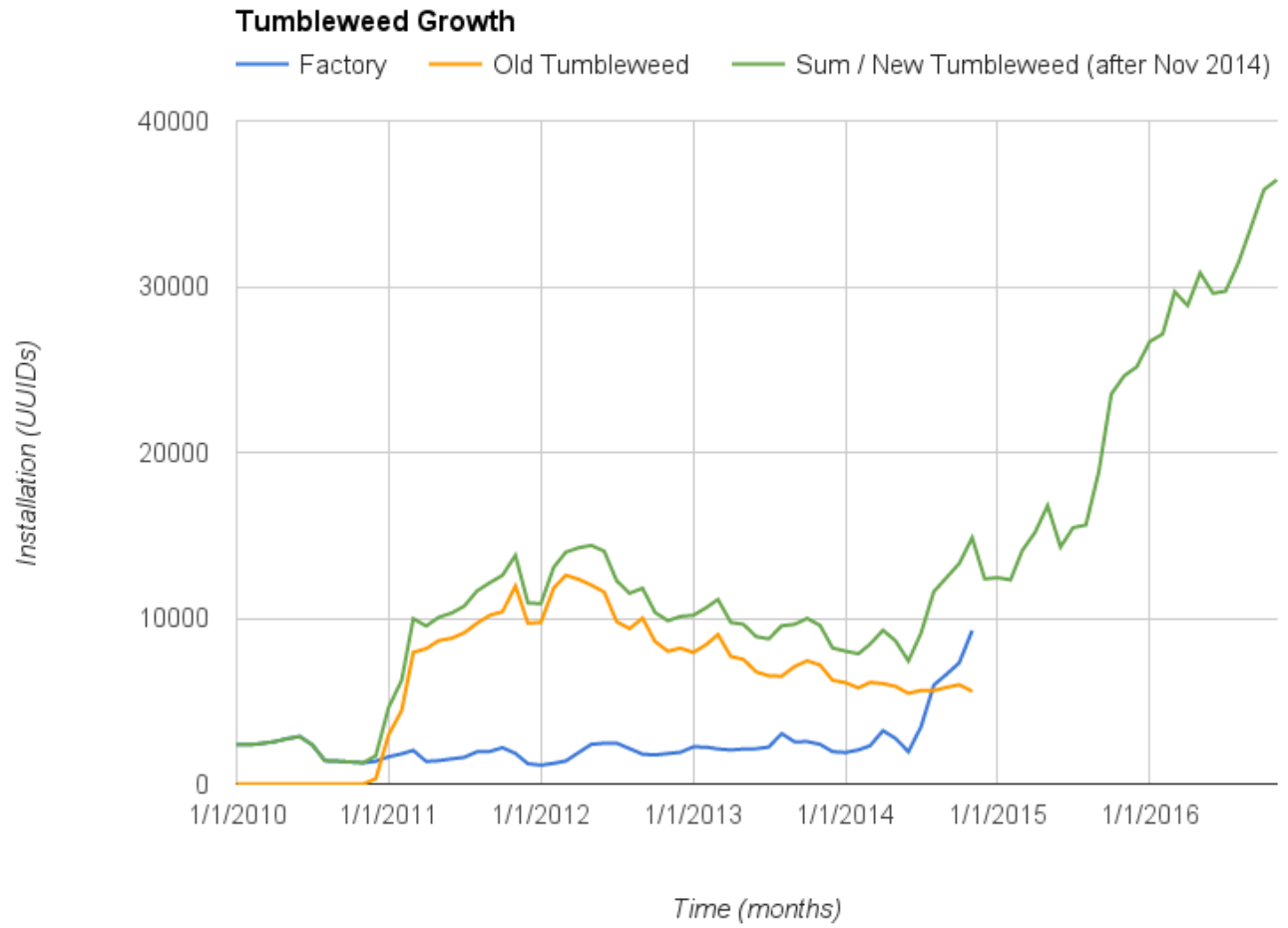
- Keep close to your chosen upstream projects
- Get the latest and greatest versions of everything
- “It just works”, and if it doesn’t work the way you want any more, snapper rollbacks keep you working
- Something not quite perfect? Please contribute back, so we can help make Tumbleweed even better for you

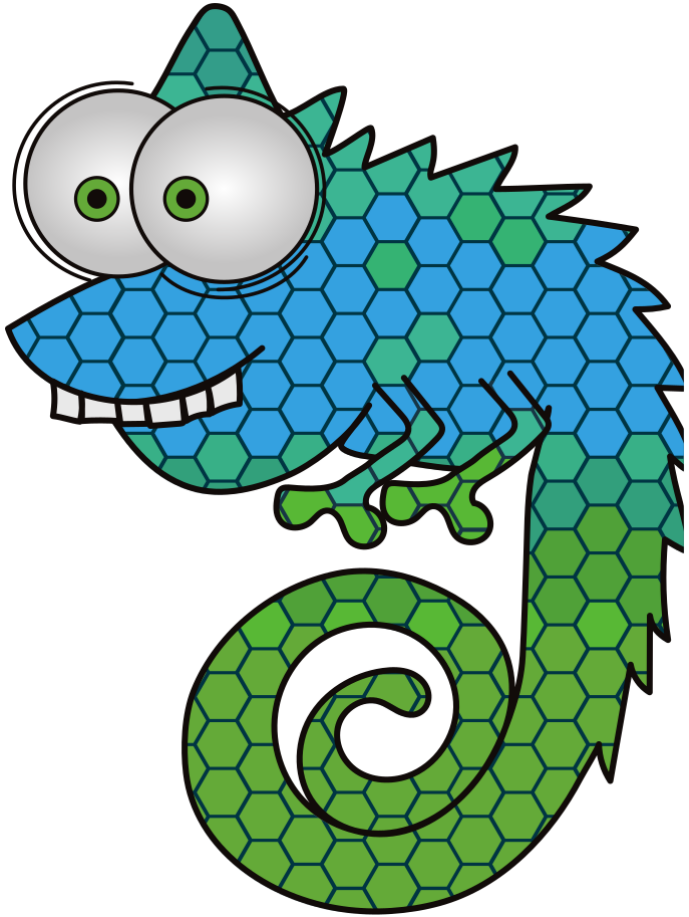
Tumbleweed for Upstream Developers

- Roll with us and you get packaging experts to help, cross-distro packaging tools, and unparalleled automated functional testing
- Containerised Applications are cool for those ‘other’ distributions, but are more work for you

Tumbleweed for Users

- Get the latest and greatest versions of everything
- “It just works”, and if it doesn’t work the way you want any more, snapper rollbacks keep you working
- Having a lot of fun? Please contribute back, so we can help make Tumbleweed even better for you


Tumbleweed Growth
Factory
Old Tumbleweed
Sum / New Tumbleweed (after Nov 2014)
40000
30000
20000
10000
0
Installation (UUIDs)
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
Time (months)



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