Integrating new major components on fast and slow moving distributions
How latest GNOME desktop was integrated into latest SUSE / openSUSE releases

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What we don’t do
What we do
Distribution delivery styles
Three distributions styles

• Rolling:
  - Bleeding edge
  - Release as soon as possible
  - Example: openSUSE Tumbleweed, ArchLinux, Gentoo

• Regular:
  - Release one to twice a year
  - Update their entire stack for each release
  - Example: Ubuntu, Fedora, Debian

• LTS / Enterprise:
  - Slow cadence (yearly or even less than that)
  - Very few things move between sub-releases
  - Example: openSUSE Leap, Ubuntu LTS, SLES/SLED, RHEL
openSUSE/SUSE terminology

- OBS = OpenBuildService
- SLE = SUSE Linux Enterprise (Server / Desktop)
  - Enterprise distribution, developed by SUSE
- openSUSE Tumbleweed:
  - openSUSE Rolling release, by openSUSE, using only Factory packages, tested by openQA
- openSUSE Factory:
  - Development repository for Tumbleweed
- openSUSE Leap:
  - openSUSE Stable release, based on SLE common code + Packages from Factory (or specific repository)
Integration process
OBS and Devel project

• On OBS, every source package is handled in a project which can build several packages together

• openSUSE Tumbleweed uses devel project per “topic” (KDE, GNOME, X11, …)

• Changes (patch, version update) are done in Devel projects and then, pushed to “main” distribution for integration, either by human or a bot.
Submitting to a distribution

SRs are moved to a specific staging for testing

Submit Request

Target: Distro

Distro:Staging:Foobar

Mini-ISO is generated

Check-in team and various bot review SR

openQA runs a small testsuite

Everything is fine (openQA is green and review was ok)

Developer creates Submit Request(s) (SR)

Submit

ISO are generated for all arch

SR committed to Distro

OpenQA runs full testsuite
Factory first policy (for SLE)

- New guidelines in effect for development since 2017
- Whenever possible, development should be done on OBS (openSUSE:Factory) and pushed back to SLE15-SP2
- When submission is reviewed and accepted on Factory, it is automatically submitted to SLE15 (unless packages was branched in SLE15). This was in place for most of the development period.
- When a submission is sent to SLE15, a automated check will ensure similar submission was done to openSUSE:Factory
- Based on this knowledge, review team decides what to do with those submit requests
- You can see SLE15(SP2) development “live” since we are in Beta phase
Updating to GNOME 3.34
Devel projects

• Two layered projects:
  - **GNOME:Factory**: contains the latest stable version of packages
  - **GNOME:Next**: packages for the upcoming release (usually packages are updated with version .90 aka upstream RC)

• Allow to get bugfixes into Tumbleweed while preparing next major version

• **GNOME:Next** is layered on top of **GNOME:Factory**
  - Ensure changes in stable branch aren’t lost
Update to GNOME 3.34 in Tumbleweed 1/3

- All relevant packages were updated in GNOME:Next during GNOME 3.33.9x releases:
  - An live image was automatically built
  - It was then tested by openQA: system boot, login and GNOME desktop and applications ability start properly
- Once GNOME 3.34.0, work started to merge GNOME:Next into GNOME:Factory
  - This requires 4 eyes review by openSUSE GNOME team
Update to GNOME 3.34 in Tumbleweed 2/3

- Once GNOME 3.34.0 had landed into GNOME:Factory, it was then pushed to Tumbleweed:
  - Another 4 eyes review (by openSUSE check-in team)
  - Legal review
  - Staging
    - Ensure everything in Tumbleweed would still build properly
    - Ensure openQA staging tests still pass (often requires tests adaptation or needles updates)
Update to GNOME 3.34 in Tumbleweed 3/3

• Once Staging was accepted, a bigger testsuite is run on the result

• If success, a new Tumbleweed snapshot is released (happen several times per week)

• GNOME 3.34.0 was available in Tumbleweed with snapshot 20191018, less than a month after GNOME 3.34.0 was release upstream (September 14, 2019). Join openSUSE GNOME team to make it even faster.
What about SLE and openSUSE Leap
openSUSE & SUSE Linux Enterprise
Developed together - Reminder

- openSUSE Tumbleweed
  - Leap 15.0
  - Shared Core 15.0
  - SLE 15
  - Leap 15.1
  - Shared Core 15.1
  - SLE 15 SP1
  - Leap 15.2
  - Shared Core 15.2
  - SLE 15 SP2
Getting GNOME in SLE 15 SP2 1/2

- Building GNOME:Next with SLE-15-SP2 repository as base
  - Discover all SLE patches which were no longer applicable (were already part of TW sources)
  - Discover all non-GNOME packages which are new to SLE or which requires updates in SLE (compared to TW)
  - Find missing or obsoletes build requirements
- Create a Staging project, with core GNOME components and add what is missing to get it building and passing staging openQA tests (not all packages from GNOME:Next should end-up on SLE product, the rest is available through PackageHub)
Getting GNOME in SLE 15 SP2 2/2

- Took one month to get things into acceptable state
- Once staging was accepted, we discovered other failures on aarch64 / ppc64le and s390x (some in non-GNOME dependencies such as mozjs60), staging being done on x86_64 only
- Update the rest of the GNOME applications to 3.34
- Fun fact: we forgot for a while to update some core GNOME component (dconf) but everything was still working fine
- ATM, running 3.34.2, will update soon to 3.34.3/4
Getting GNOME in openSUSE Leap 15.2 (1/2)

- Leap is based on SLE codebase, GNOME would then be inherited in Leap once accepted in SLE
- Easy? Not really
- SLE Service Packs are layered on top of each other: unmodified packages are inherited at binary level (not rebuild)
  - Only packages modified in SLE15 SP2 are built
- openSUSE Leap is a standalone distribution
  - All packages are built (including bootstrap) for each release
  - Leap contains more packages than SLE
  - Some packages were not building anymore with GNOME 3.34 update, but this wasn’t visible in SLE (binary import or not present in SLE)
Getting GNOME in openSUSE Leap 15.2 (2/2)

- Took 45 days (Christmas break included ;)
- GNOME 3.34 staging was accepted in openSUSE Leap 15.2 this week, just in time for FOSDEM!
- It will become available with next openSUSE Leap 15.2 milestone release
Summary

Thanks to OpenBuildService, openQA and our processes (Factory first policy), we were able to update a major component in our 3 distributions (including two LTS distributions) in 4 months, while maintaining quality. We could be even faster next time!

Questions?
We adapt. You succeed.