

Flatpak and Portals: A Status Update

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Flatpak Status (LAS 2025)

- Flatpak itself is stagnant
- Maintenance and security work is happening
- Feature PRs just sit there for month and years
- Maintainers have left the project
- Newcomers don't get the opportunity to get familiar with the code base, get feedback, etc.
- Vicious cycle to stagnation
- Maybe this is fine...?
- Flatpak is stable!
- Have to figure out how to improve the ecosystem without changing flatpak itself too much

Flatpak Releases

- Georges released Flatpak 1.16.1 with a few improvements
- Finally did my first release in November: 1.17.0 (unstable)
- I took over releases completely
- About to release stable 1.18.0
- Some distros are shipping the unstable releases
- I actually appreciate this; we get real testing
- Jordan will add Flatpak git to GNOME OS
- I want to get rid of the stable/unstable versioning scheme

Flatpak Maintainership

- I'm trying to review the bulk of PRs, doing triaging
- bbhatt is reviewing and triaging as well
- Adrian and Matthias help out when necessary
- Please send your PRs!
- Please coordinate with us first for bigger changes

Flatpak Status (LAS 2026)

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- ~~Vicious cycle to stagnation~~
- Maybe this is fine...?
- Flatpak is stable!
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Flatpak Status (LAS 2026)

- Making big changes to Flatpak is still not viable
- Missing/bad abstractions
- 15 years of legacy and backwards compatibility
- Flatpak Next (talk tomorrow)

Flathub License Compliance

- A concerned community member noticed missing LICENSE files
- We fixed this in the flatpak runtimes and in flatpak-builder
- Lots of work to backport to older runtime versions
- Many different communities involved (fdo, GNOME, KDE, Flathub)
- bbhttp still has some improvements in the pipeline
- <https://docs.flathub.org/blog/enhanced-license-compliance-tools>

Flatpak New Stuff: Pre-Installing

- Code was merged
- RHEL, Universal Blue adopted it already
- Other are experimenting with it as well
- RHEL 10.2 is shipping Firefox as Flatpak
- <https://blog.sebastianwick.net/posts/flatpak-pre-installation/>

Flatpak New Stuff: OCI

- Support for OCI lookaside signatures
- OCI now supports extra-data (downloading at install time, h.264)
- Support for zstd compression
- Sideloaded improvements so they can be pre-installed
- TLS certificate authorization via `/etc/containers/certs.d`

Flatpak New Stuff: Conditional Permissions

- `--device-if=DEVICE:CONDITION` (`--socket-if, ...`)
- Apps using USB devices need `--device=all`
- Apps could be using the Portal, but old systems don't have it
- Removing `--device=all` breaks the Apps on those systems
- `--device-if=all:has-usb-portal` only makes `--device=all` available if the system does not have the USB Portal
- Not great, but backwards compatible

Flatpak Security

- Security Audit by Codean Labs
- Found a few issues which were easy to fix
- Found a sandbox escape which was really hard to fix
- Similar results for xdg-desktop-portal

Flatpak Security: path-traversal

- Mainly some forms of path-traversal issues
- glib does not have a good answer for this, neither did libglnx
- glnx_chase, which we now use in flatpak, flatpak-builder, xdg-desktop-portal
- Released the fixes, broke Steam, Epiphany, all Chromium based apps
- A week of debugging and fixing the regressions
- Lessons learned: more tests, more manual tests, better tests, release on monday
- <https://blog.sebastianwick.net/posts/how-hard-is-it-to-open-a-file/>

Flatpak Security: slop

- Receiving slop security issue reports
- Unfortunately, LLMs also find real issues now

Flatpak Experiments

- GPU drivers
 - <https://blog.sebastianwick.net/posts/flatpak-graphics-drivers/>
- Xwayland-satellite and X11 runtime extension

Portals Releases

- A few stable releases from Georges
- Started doing unstable release in 2026 (3 so far)
- About to release stable 1.22.0
- Same issues with unstable versions as Flatpak

Portals Maintainership

- Shared by committers
- Portal interface changes require GNOME and KDE to agree
- Specific people are responsible for Flatpak, Snap, etc. integration
- Established a process for specialists to care for relevant portals
- Review capacity is still a bottleneck

Portals Testing

- "Testing with Portals" talk at LAS 2025
- Merged!
- New features usually come with tests now, often without me even having to ask for it
- Seems to have helped to prevent regressions
- Prevented lots of memory leaks together with ASAN/Valgrind
- Allows us to make bigger changes without fear

Portals New Stuff

- Fix the bug where the Document Portal loses track of your files after a reboot
- Clipboard and Session Persistence support for the Input Capture Portal
- Reduced Motion Setting in the Settings Portal
- Simplify prompting process for screenshot apps
- Support for Linyaps applications
- Misc. improvements to the Global Shortcuts, Print, Screen Cast, and Notification Portals

Portals libdex

- Portals written in C
- Lots and lots of async operations
 - multiple clients, multiple ongoing calls
- Async in C is hard
 - either lots of boilerplate and callbacks or
 - threads with locks and lots of overhead
- libdex provides Futures and Fibers
- Portals use a lot of async with GDBus
- Extended libdex and GDBus to work well together
- Re-architected internals to work via async, threads and fibers
- Code is ready to land after the stable release
- Going to rewrite one portal at a time to use fibers
- Eventually get rid of all threads and classic callback-async

Get Involved

- There are lots of things we want to improve
 - Get Involved, talk to us
 - Also come to the Flatpak Next talk tomorrow
- Entitlements
 - Systemd-appd
 - D-Bus filtering in the D-Bus daemons
 - Network sandboxing
 - PipeWire socket and related security
 - X11-less app runtimes, xwayland-satellite
 - GPU driver improvements
 - Replace flatpak-builder with buildstream
 - Audio Portal, PipeWire support
 - Writing Assistance Portal
 - VPN Portal
 - Password managers and AutoFill Portal
 - Credentials, FIDO2, Passkeys Portal
 - hidraw and serial devices Portals
 - Document Portal improvements

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