Testing latest KDE software, from Apps to the Plasma desktop

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Agenda

- Testing: what, when, how?
- KDE Apps in Flatpaks in Flathub & GitLab CI
- KDE Plasma in Fedora Kinoite
- Plasma 6?
Testing: what, when, how?

- Goal: Make testing changes accessible to **non-developers**
- Has to be reasonably **safe** regarding user’s **data**
- Users must be able to go back to a **stable state**
- Test changes as **early** as possible:
  - ideally **before** they are committed
  - otherwise **right after**
Let’s start with KDE Apps
KDE Apps as Flatpaks

- **Flatpak** is a distribution independent **packaging** and **delivery** format
- **Flathub** is a distribution independent **publishing** platform for Flatpaks
- We’re now publishing **most** of KDE Apps on Flathub
- Track **latest** stable releases
- Updates **directly shipped** to users

**Akademy 2023: Flatpak and KDE, Albert Astals Cid**
Flatpaks: Testing changes?

- Pull-request workflow **enforced** on Flathub
- Each PR will build a “test” Flatpak
- Installed with a **single** command
- Test fixes on top of **stable releases**

```bash
flathubbobot commented 2 days ago

Build 31611 successful
To test this build, install it from the testing repository:

Flatpak install --user https://dl.flathub.org/build-repo/34240/org.kde.dolphin.flatpakref
```
Demo: Testing a Flatpak fix from Flathub
Demo transcript:
Testing a Flatpak fix from Flathub

# Go to PR:
https://github.com/flathub/org.kde.gwenview/pull/97

# Download Flatpak:
$ flatpak install --user \\nhttps://dl.flathub.org/build-repo/35177/org.kde.gwenview.flatpakref

# Run Flatpak
$ flatpak --user run org.kde.gwenview

# Run Gwenview from the host to compare versions

# Cleanup
$ flatpak --user uninstall org.kde.gwenview
Flatpaks in GitLab CI (invent.kde.org)

- Progressively enabling Flatpak builds in **GitLab CI**
- Flatpak manifests stored in **applications repos**
- Every pull request creates a **Flatpak bundle**
- Can be tested **before** the change is merged
Fix KActivities and Purpose detection in KF6

Overview: 0  Commits: 1  Pipelines: 2  Changes: 4

Merge request pipeline #431543 passed for 831fff11 2 days ago
Test coverage 20.00% from 1 job

View 0 exposed artifacts

Approve additionally

Code Quality scans found 200 new findings.

Test summary: 12 failed, 62 total tests

Ready to merge!
Demo: Testing a Flatpak from GitLab CI
Demo transcript:
Testing a Flatpak from GitLab CI

# Go to PR:
https://invent.kde.org/graphics/gwenview/-/merge_requests/208

# Download the artifact:
https://invent.kde.org/graphics/gwenview/-/jobs/1041125/artifacts/download?file_type=archive

# Unzip and install the Flatpak bundle
$ unzip Flatpak_artifacts.zip
$ flatpak --user install --bundle ./gwenview.flatpak

# Run the Flatpak
$ flatpak --user run org.kde.gwenview

# Cleanup
$ flatpak --user uninstall org.kde.gwenview
More advanced Flatpak usage

- Flatpak content is stored in an **ostree repo**
- Fetch **any previous build** to test regressions or compare behavior
- Works with Flatpaks from **Flathub**
- Apps strictly tied to Qt versions will also need an **older Runtime**
Demo: Bisecting a Flatpak from Flathub
Demo transcript: Bisecting a Flatpak from Flathub

# Install a Flatpak from Flathub
$ flatpak --user install org.kde.kcalc

# Look at the log of versions (ostree commit log)
$ flatpak --user remote-info --log flathub org.kde.kcalc | less

# “Checkout” an older version
$ flatpak --user update --commit=... org.kde.kcalc

# Run the older version
$ flatpak --user run org.kde.kcalc

# Reset to latest version
$ flatpak update

# Skipping updates for a Flatpak
$ flatpak --user mask org.kde.kcalc
$ flatpak --user mask
Can we do the same for KDE Plasma?
(Re-)introducing Fedora Kinoite

- **Fedora variant** featuring the KDE Plasma desktop
- Follows **latest upstream KDE releases**
- **Stable** and **up to date** software stack from Fedora
  - Wayland, Pipewire, systemd user sessions, etc.
- **Immutable** desktop operating system
- **Flatpak** and **container** focused desktop

[Akademy 2021: Kinoite, a new Fedora variant with the KDE Plasma desktop (slides, video)]
Benefits of rpm-ostree

- System is shipped as a **single consistent image**
- **Atomic** updates
- Keeps all your data and Flatpak apps **as-is**
- Easy rollback to a previous **known good version**
- **Package diff** between versions
- **No broken update**: always in a working state
rpm-ostree ❤ containers

- Operating system delivered as a **container image**
- Manage versions with **containers tags**
- Store operating system versions inside a container registry
- Rebase to almost **any version**
Demo: Rebasing to a container on Kinoite
Demo transcript: Rebasing to a container on Kinoite

# Looking at current state
$ rpm-ostree status

# Find the version to rebase to in the repo on Quay.io:
https://quay.io/repository/fedora-ostree-desktops/kinoite?tab=tags

# Rebase to this version
$ sudo rpm-ostree rebase \
ostree-unverified-registry:quay.io/fedora-ostree-desktops/kinoite:38.20230710.xyz
$ reboot

# Package diff
$ rpm-ostree db diff

# Cleanup and rollback
$ rpm-ostree cleanup
$ rpm-ostree rollback
Looking forward to Plasma 6
Fedora Kinoite Beta & Nightly

- Fedora Kinoite images with
  - official **beta** KDE Plasma releases
  - **nightly builds** directly from KDE Plasma Git repos
- Started for Plasma 5.27 beta release
- Based on **stable** Fedora releases (not Rawhide)
- Pushed as container images on Quay.io:
  - [https://quay.io/repository/fedora-ostree-desktops/kinoite-nightly](https://quay.io/repository/fedora-ostree-desktops/kinoite-nightly)
  - [https://quay.io/repository/fedora-ostree-desktops/kinoite-beta](https://quay.io/repository/fedora-ostree-desktops/kinoite-beta)
Plasma 6 Kinoite images?

- We’re working on it!
- Fedora Kinoite Nightly images
- with Plasma 6 packages
- on top of stable Fedora
- Hopefully coming soon!
Fedora Kinoite Beta & Nightly

- Builds currently **paused** (waiting for Plasma 6)
- **Pre-merge** checks?
- Testing with **OpenQA**? [https://open.qa/](https://open.qa/)
- Likely too much overhead of **single PRs**
- **Daily** or **weekly** checks?
- Bringing **RPM specfiles** to Git Repos (RPM in CI)?
Join us!

- **Fedora KDE SIG:**
  - **Wiki:** [https://fedoraproject.org/wiki/SIGs/KDE](https://fedoraproject.org/wiki/SIGs/KDE)
  - **Tracker:** [https://pagure.io/fedora-kde/SIG/issues](https://pagure.io/fedora-kde/SIG/issues)
  - **Matrix room:** [https://matrix.to/#/#kde:fedoraproject.org](https://matrix.to/#/#kde:fedoraproject.org)

- **Fedora Kinoite:**
  - **Website:** [https://fedoraproject.org/kinoite/](https://fedoraproject.org/kinoite/)
  - **Matrix room:** [https://matrix.to/#/#kinoite:fedoraproject.org](https://matrix.to/#/#kinoite:fedoraproject.org)

- **Flathub team:**
  - **Tracker:** [https://invent.kde.org/teams/flathub/issues/-/issues](https://invent.kde.org/teams/flathub/issues/-/issues)
  - **Matrix room:** [https://matrix.to/#/#flatpak:kde.org](https://matrix.to/#/#flatpak:kde.org)

- **KDE Flatpaks:** [https://invent.kde.org/packaging/flatpak-kde-applications](https://invent.kde.org/packaging/flatpak-kde-applications)
KDE development on Fedora Kinoite
Guide on how to develop on Kinoite:

https://tim.siosm.fr/blog/2021/12/10/fedora-kinoite-silverblue-dev-guide/