

FEDORA ASAHI REMIX: BRINGING FEDORA TO APPLE SILICON MACS



DAVIDE CAVALCA

Member, Fedora Asahi SIG

✉ dcavalca@fedoraproject.org

📧 [@dcavalca@threads.net](https://www.threads.net/@dcavalca)

[m] @davide:cavalca.name

NEAL GOMPA

Chair, Fedora Asahi SIG

✉ ngompa@fedoraproject.org

📧 [@Conan_Kudo@fosstodon.org](https://www.fosstodon.org/@Conan_Kudo)

[m] @conan_kudo:matrix.org

WHO ARE WE?

Davide Cavalca

- Contributor and package maintainer in Fedora and CentOS
- Member of Fedora Asahi SIG
- Member of Fedora Cloud and Fedora Server WGs
- Co-chair of CentOS Hyperscale SIG
- Member of CentOS Alternative Images SIG
- CentOS Board Director
- Production Engineer, Linux Userspace at Meta Platforms, Inc.

Neal Gompa

- Open Source Advocate
- Contributor and package maintainer in Fedora and CentOS
- Member of Fedora Engineering Steering Committee (FESCo)
- Chair of Fedora Asahi SIG
- Chair of Fedora KDE SIG
- Member of the KDE, e.V.
- Member of Fedora Workstation, Fedora Cloud, and Fedora Server WGs
- Co-chair of CentOS Hyperscale SIG
- Member of CentOS Alternative Images SIG
- Co-host of the Sudo Show podcast
- Senior Black Belt, Managed OpenShift at Red Hat, Inc.
 - Previously: Senior DevOps Engineer at Datto, Inc.



FEDORA ASAHI OVERVIEW

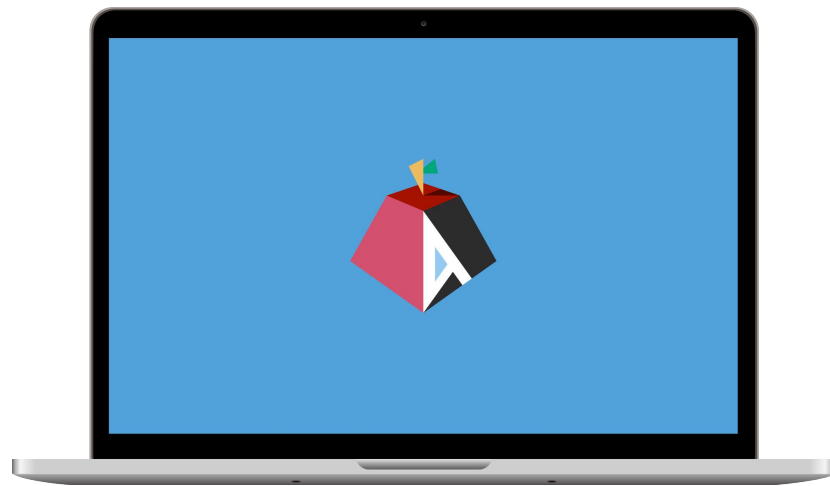


FEDORA ASAHI

Fedora Asahi SIG

The Special Interest Group (SIG) packages and maintains the software used to support Apple Silicon platforms on Fedora Linux.

We develop and maintain variants of Fedora media for Apple Silicon platforms.



Asahi Linux logo used with permission.

FEDORA ASAHI REMIX

Fedora Asahi Remix

This Remix is a special derivative of Fedora Linux that is optimized around Apple Silicon hardware.

Core changes:

- Custom kernel derived from the Fedora kernel with Asahi patches
- Custom mesa derived from the Fedora packaging with Asahi patches
- Custom u-boot derived from the Fedora packaging with Asahi patches
- Fedora Asahi Remix branding

The Remix comes in KDE, GNOME, Server, and Minimal flavors.



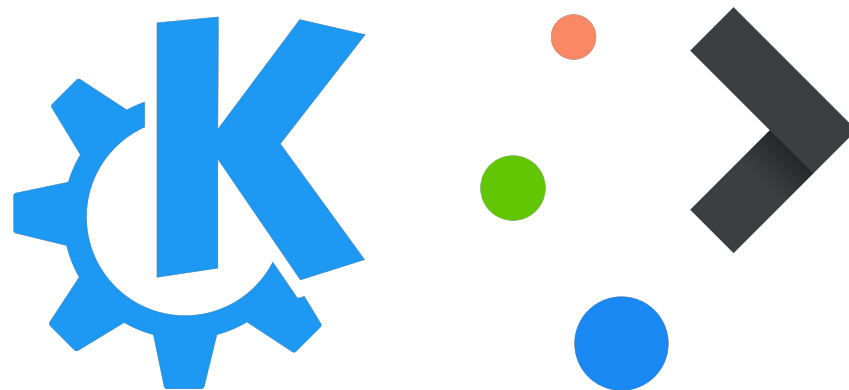
Fedora logo trademarked by Red Hat, Inc. in the United States and other countries.

FEDORA ASAHI REMIX KDE

The flagship experience

This variant is a partnership of the Fedora Asahi SIG and the Fedora KDE SIG, along with upstream Asahi Linux contributors.

- Includes a curated collection of KDE software to demonstrate the quality of the ecosystem
- Aims to provide quality KDE Plasma Desktop experience largely based on upstream defaults
 - Minor branding and usability tweaks
 - Mozilla Firefox as the browser
 - FirewallD and SELinux for security



KDE, the K Desktop Environment logo, and the KDE Plasma logo are registered trademarks of KDE, e.V.

FEDORA ASAHI REMIX GNOME

A polished experience

This variant is a derivative of Fedora Workstation for Apple Silicon platforms.

- Includes a mostly vanilla GNOME experience
 - Minor branding and usability tweaks
 - Mozilla Firefox as the browser
 - FirewallD and SELinux for security



The GNOME logo is a trademark of the GNOME Foundation..

FEDORA ASAHI REMIX SERVER AND MINIMAL

Mac servers and clouds...

These variants are intended to be used for headless and automated provisioning environments.

- The Server variant provides the software and configuration similar to Fedora Server Edition
- The Minimal variant provides a barebones Fedora environment to be used with automation for custom setups.



Credit: Fedora Websites Team.

HOW IT ALL BEGAN



BUTTERING UP FEDORA

Switching to Btrfs...

One of the more “interesting” changes Fedora Linux has implemented, but required a lot of testing across the board:

- Every desktop variant across all supported architectures
 - ARM was extremely difficult
 - Many cheap computers burned out for the cause...



*Original talk introducing Btrfs for Fedora:
<https://youtu.be/iHjhouSxIrc>*

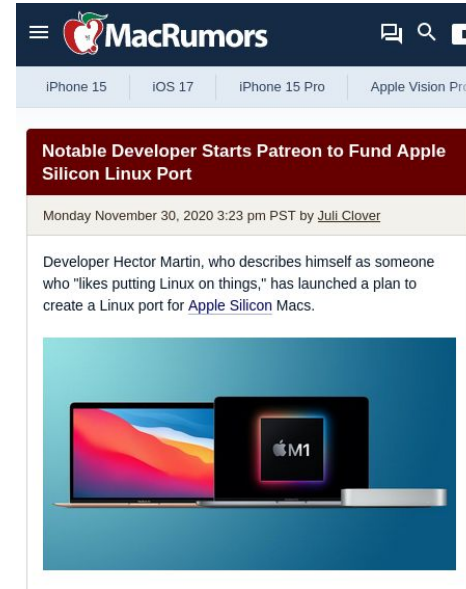
APPLE SILICON LINUX PORT ANNOUNCED

Hector Martin starts...

Hector announces the effort to port Linux to Apple Silicon with a Patreon project to raise \$4,000 to get started on November 30, 2020.

[The goal is met overnight.](#)

The Asahi Linux project is announced on Christmas Day 2020.



Article from MacRumors on Hector Martin starting the Asahi Linux project:
<https://www.macrumors.com/2020/11/30/linux-apple-silicon-port-patreon/>

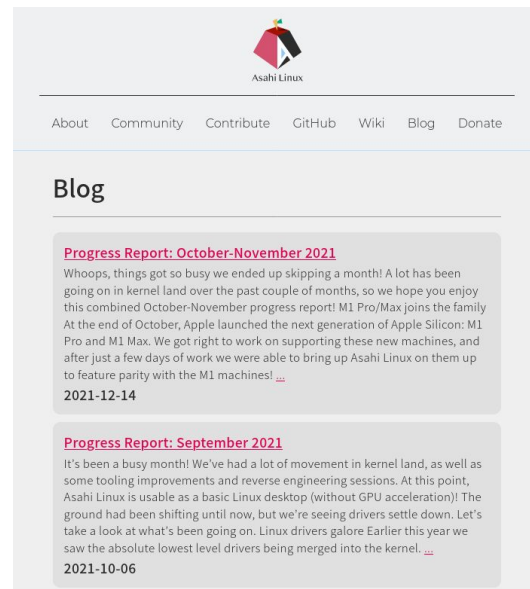
CULTIVATING ASAHI / ARM BUTTER BURNOUT

Two parallel tracks...

Over the course of 2021, the Asahi Linux project successfully implements basic platform bringup and upstreams it to Linux and U-Boot.

Meanwhile, Fedora Btrfs feature development struggles on ARM due to difficulties reliably developing and testing.

(Also, Freenode imploded during this time, which kind of sucked... But hey, [Fedora Chat](#) exists now!)



*Asahi Linux blog (snapshotted 2022-01-02):
<https://asahilinux.org/blog>*

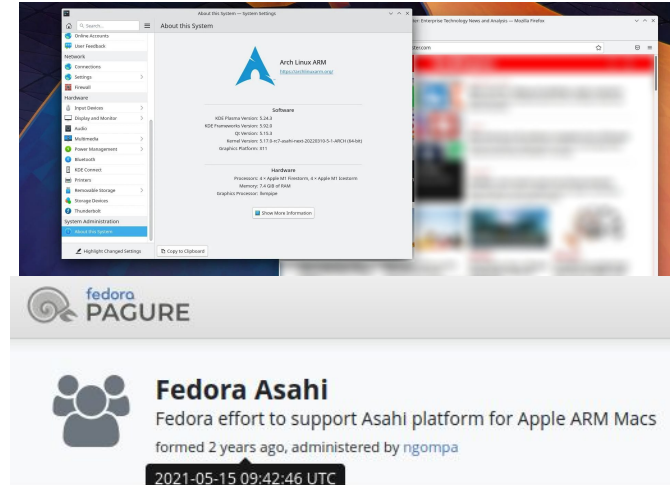
ASAHI ARCH ALPHA / FEDORA ASAHI BEGINS

Two parallel tracks...

By early 2022, [the Asahi Arch Alpha was released](#) for M1 and M1 Pro/Max systems.

The Fedora Asahi project is created in 2021, but initial porting efforts begin in 2022 due to difficulties acquiring hardware.

The first Asahi Fedora images are made in early September 2022 using [the KIWI image build tool](#).

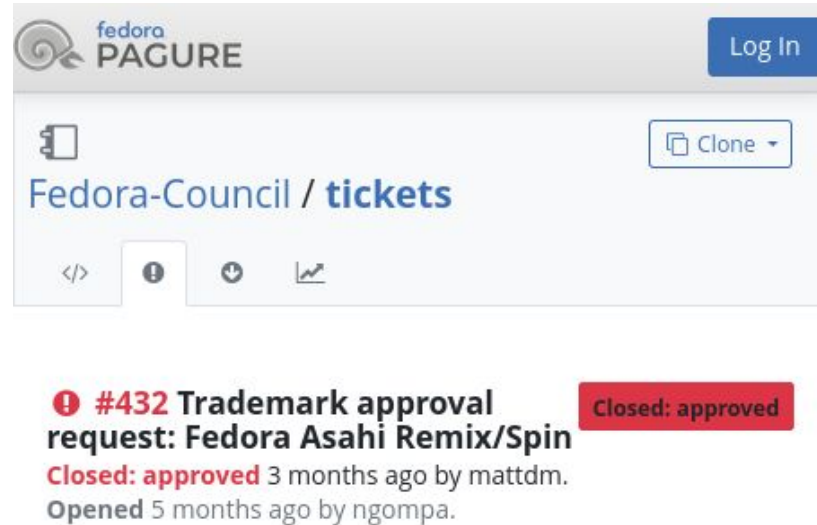


Asahi Arch Alpha screenshot from Wikipedia, sourced from The Register.

ASAHI FEDORA TO FEDORA ASAHI

Properly Fedora branded!

The Asahi SIG requested approval to use Fedora branding for the Remix, including permission to use the Fedora logos. This was granted and thus the Asahi Fedora Remix became the Fedora Asahi Remix.



The screenshot shows a web interface for the Fedora PAGURE system. At the top left is the 'fedora PAGURE' logo, and at the top right is a 'Log In' button. Below the header, there is a breadcrumb trail 'Fedora-Council / tickets' and a 'Clone' button. A navigation bar contains icons for code, information, a clock, and a document. The main content area displays a ticket titled '#432 Trademark approval request: Fedora Asahi Remix/Spin'. To the right of the title is a red badge that says 'Closed: approved'. Below the title, it states 'Closed: approved 3 months ago by mattdm.' and 'Opened 5 months ago by ngompa.'

WHERE WE ARE TODAY

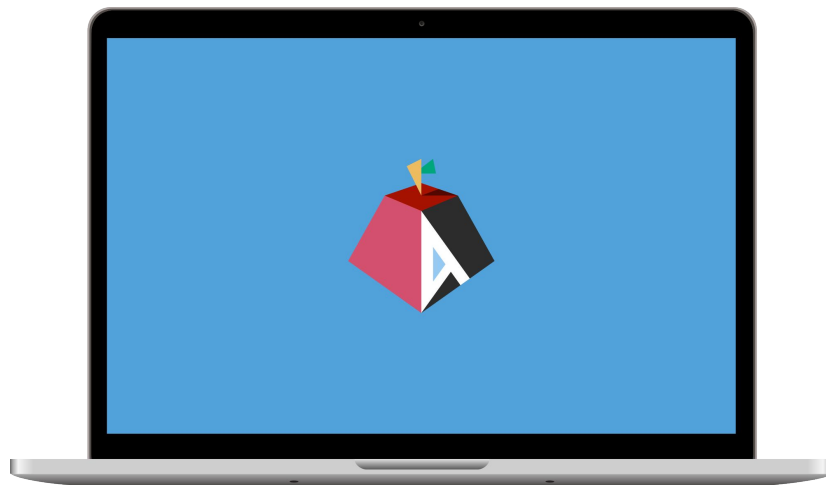


FEDORA ASAHI CURRENT STATUS

Slightly well-oiled now...

Several components are actively maintained with collaboration with upstream:

- [Fedora Asahi Linux kernel](#)
 - Maintained by Neal Gomba with contributions by Eric Curtin
- [Fedora Asahi Mesa](#)
 - Maintained by Neal Gomba with contributions by Leif Liddy
 - Originally created by Leif Liddy
- [Fedora Asahi U-Boot](#)
 - Maintained by Davide Cavalca
- [Fedora Asahi Remix website](#)
 - Maintained by Davide Cavalca
- [Fedora Asahi Remix kiwi descriptions](#)
 - Maintained by Neal Gomba with contributions from Davide Cavalca and Leif Liddy
- [Fedora Asahi Remix automated image build infrastructure](#)
 - Maintained by Davide Cavalca



Asahi Linux logo used with permission.

FEDORA ASAHI CURRENT STATUS

Asahi-relevant Fedora work

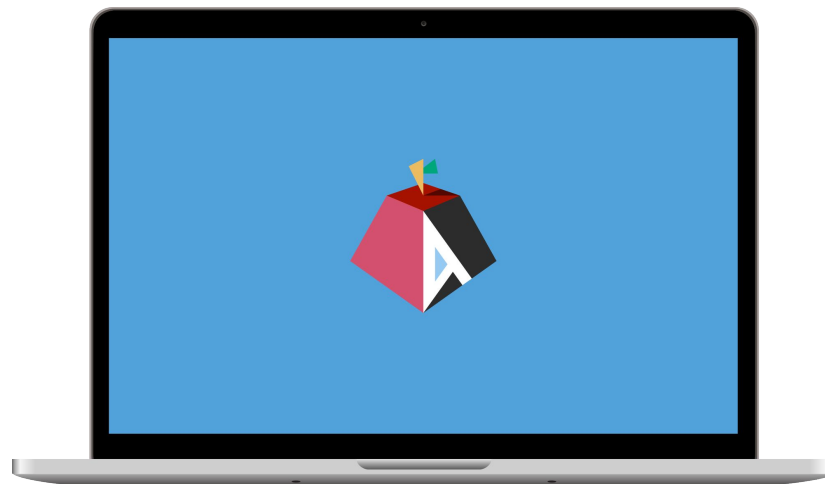
Fedora KDE uses Wayland from beginning to end

- [F34 Change to use Plasma Wayland](#)
- [F35 Change to sdl12-compat for SDL1 applications](#)
- [F38 Change to use SDDM Wayland](#)

Fedora uses PipeWire

- [F34 Change to use PipeWire](#)
- [F35 Change to use WirePlumber with PipeWire](#)

Fixes to various packages to support ARM systems running with 16K page sizes (e.g. Chromium, WebKitGTK, QtWebEngine, etc.)



Asahi Linux logo used with permission.

FEDORA ASAHI CURRENT STATUS

Broad support for ARM Macs

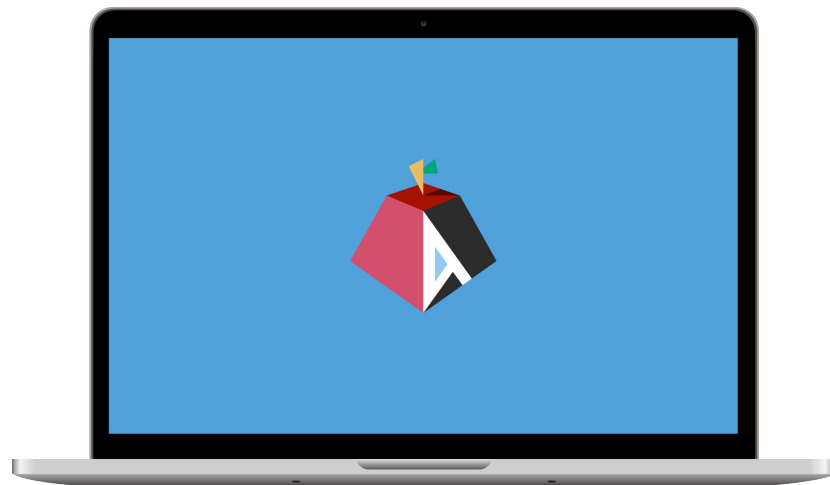
Today, Fedora Asahi Remix has decent coverage of Apple Silicon hardware:

- Device support: All M1+ machines, M2 2022 laptops
- Firmware support: All on v13.5
- Hardware accelerated graphics by default

A few things are **not** supported (yet!)

- Speaker support
- Camera support
- DP Alt Mode, Thunderbolt DisplayPort, or HDMI support on laptops

More details on [the Asahi Linux wiki](#).



Asahi Linux logo used with permission.

NEXT UP

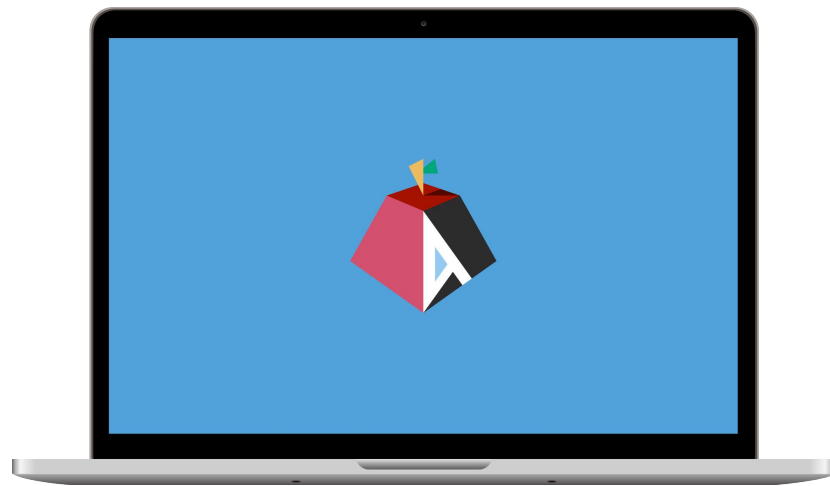


FEDORA ASAHI RELEASE

New Asahi Linux flagship!

Asahi Linux and Fedora Asahi SIG are proud to reveal that the **Fedora Asahi Remix** is the new flagship distribution, developed in partnership between Asahi Linux and the Fedora Project.

The *tentative* “official” release planned for **end of August 2023**.



Asahi Linux logo used with permission.

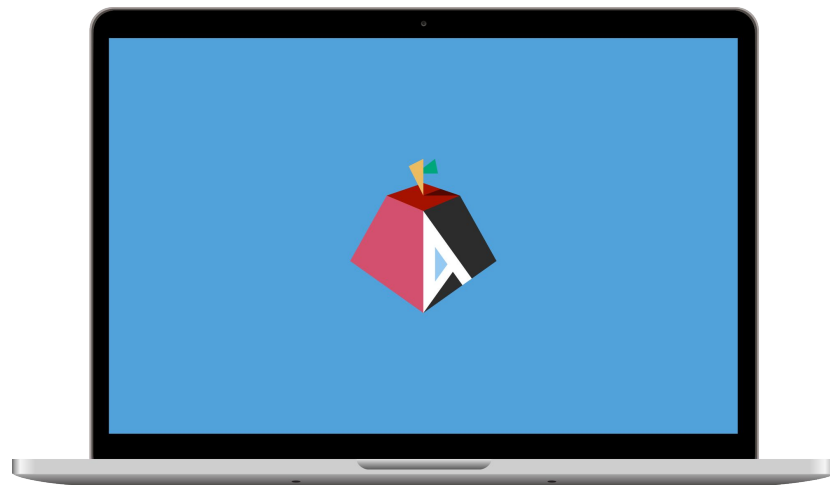
ASAHI UPSTREAM EFFORTS

Working through patches...

Asahi Linux platform patches are (slowly!) getting reviewed and integrated in various projects (kernel, u-boot, mesa, etc.)

Most of this effort is driven by Hector Martin, Mark Kettenis, Alyssa Rosenzweig, and Asahi Lina.

Rust for Linux continues to sluggishly keep up with new Rust compiler versions...



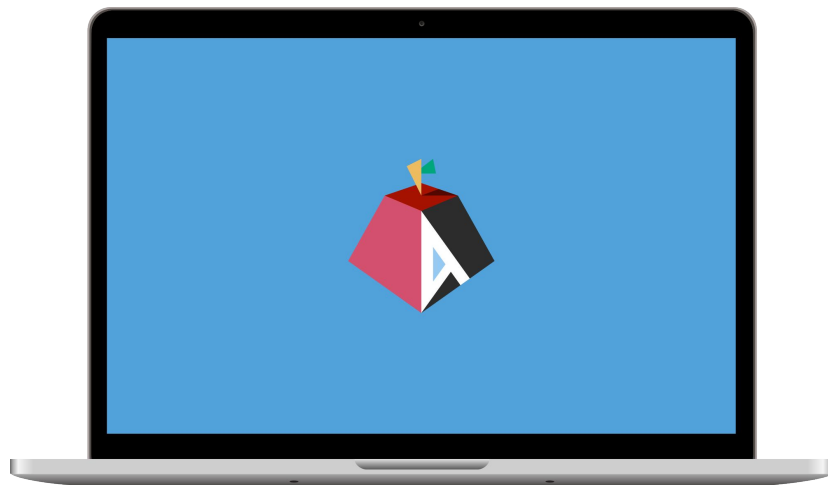
Asahi Linux logo used with permission.

FEDORA ASAHI SIG EFFORTS

Working through packages...

One of the main focuses is on reducing the packaging delta between Fedora Asahi and upstream Fedora packages that have been forked by the Asahi SIG.

Some effort has succeeded thus far, more to come on this...

















Asahi Linux logo used with permission.

FEDORA ASAHI SIG

Join Us

- Project issue tracker:
pagure.io/fedora-asahi/project
- Mailing list:
asahi@lists.fedoraproject.org
- Forums:
<https://discussion.fedoraproject.org/c/neighbors/asahi>
- Matrix:
[#asahi:fedoraproject.org](https://matrix.fedoraproject.org/#asahi:fedoraproject.org)

Members **7**

	asahilina Lina Asahi	
	dcavalca Davide Cavalca	
	ecurtin Eric Curtin	
	leifliddy Leif Liddy	
	marcan Hector Martin	
	ngompa Neal Gomba	
	salimma Michel Alexandre Salim	



QUESTIONS?

