



Flatcar Container Linux Monthly Community Meeting

8 June 2021

Agenda

Welcome

Spotlight: Nebraska update server

Spotlight: Mantle / Kola Nightly & Release testing

Status update: ARM64

Upcoming Releases

Q&A / Discussion



Welcome!
(please say “hi”)

**FLAT
CAR**



NEBRASKA

Omaha-protocol powered
updates manager and monitor

**Why do we need an update
manager anyway?**

Why an update manager?

Simply checking for a new version in a URL is not enough:

- ❑ Should there be machines that use a different version?
- ❑ Should an update be done as soon as a new version is available?
- ❑ What to do if an update deployment fails?
- ❑ Should all machines update at the same time?

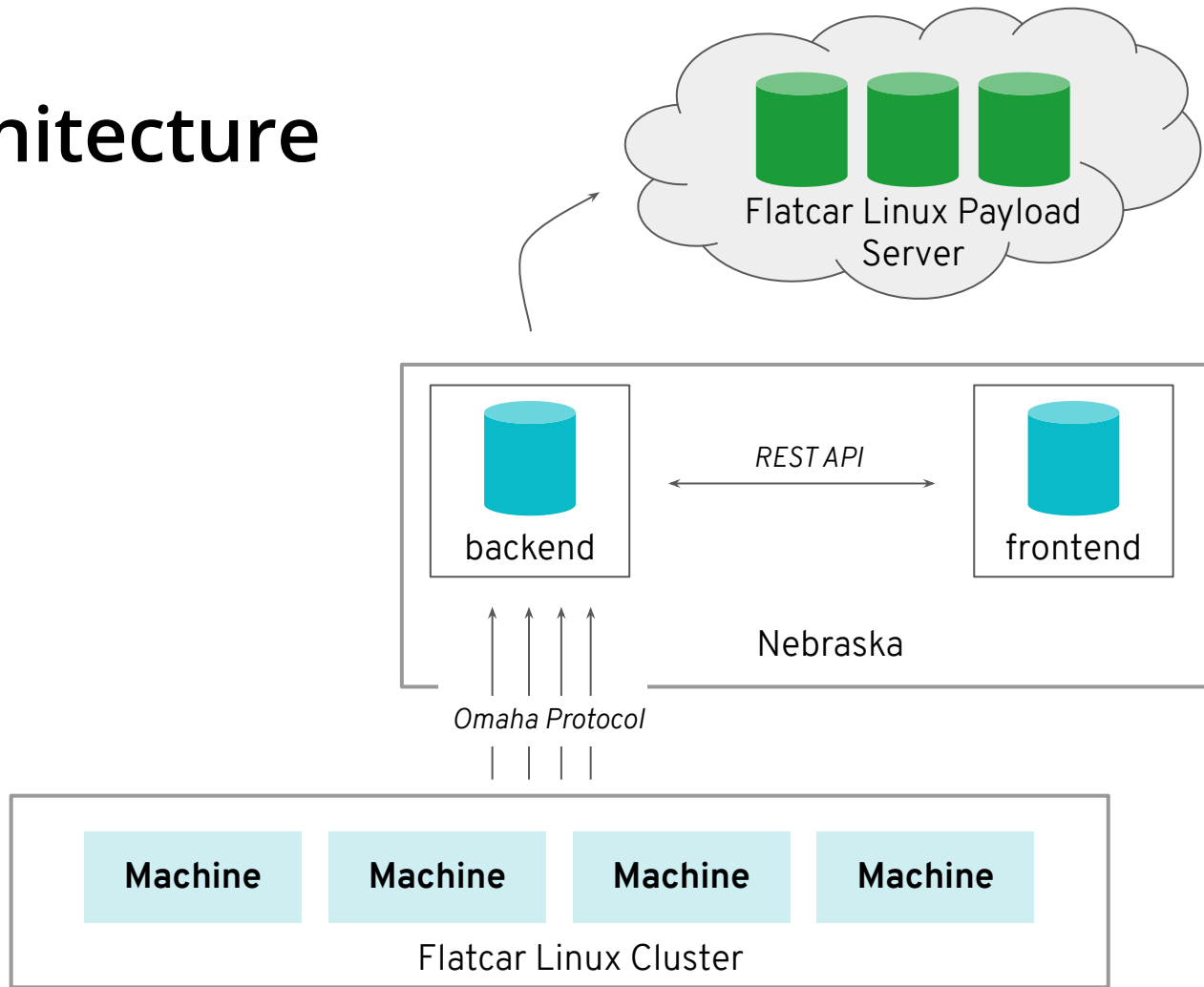
Introducing Nebraska



What it is

[Nebraska](#) is an update manager + monitor for applications using the [Omaha protocol](#), and optimized for Flatcar Linux.

Architecture



Architecture

- ❑ Nebraska is a passive update manager, i.e. it doesn't "contact" any instance
- ❑ It is the machines that ask Nebraska for updates and inform it of their state
- ❑ You can think of it as an update policy dispenser and states monitor

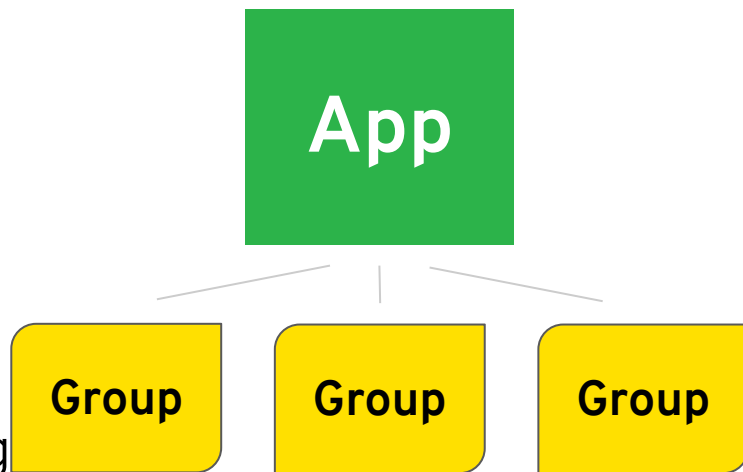
Applications

A green square with the word "App" in white, sans-serif font.

- ❑ Entities whose updates are managed through the Omaha Protocol
- ❑ Can have several groups

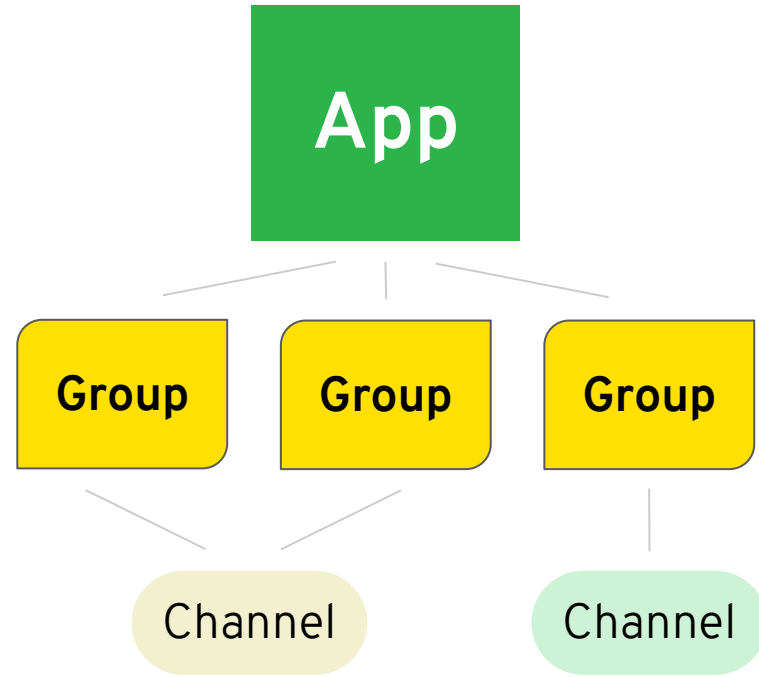
Groups

- ❑ Represent a set of instances
- ❑ Have an **ID** or ***trackname*** that is used by the instances connecting to the server
- ❑ Determine how and when updates are allowed, i.e. this is where the **policy** is defined
- ❑ Are associated with a **channel**



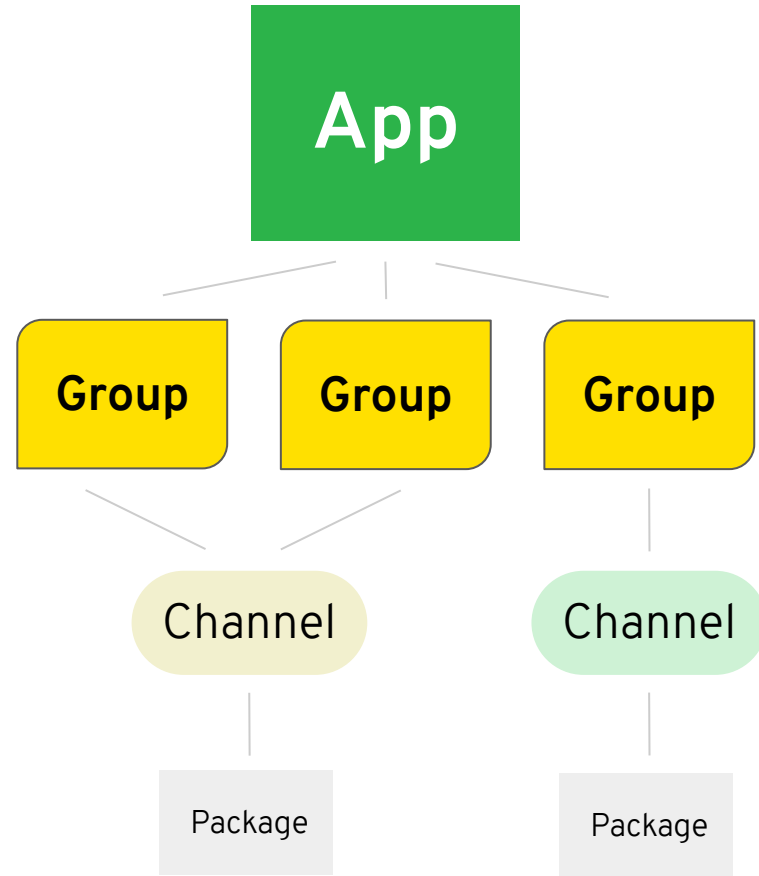
Channels

- ❑ Can be assigned to one or more groups
- ❑ Are associated with one **package**

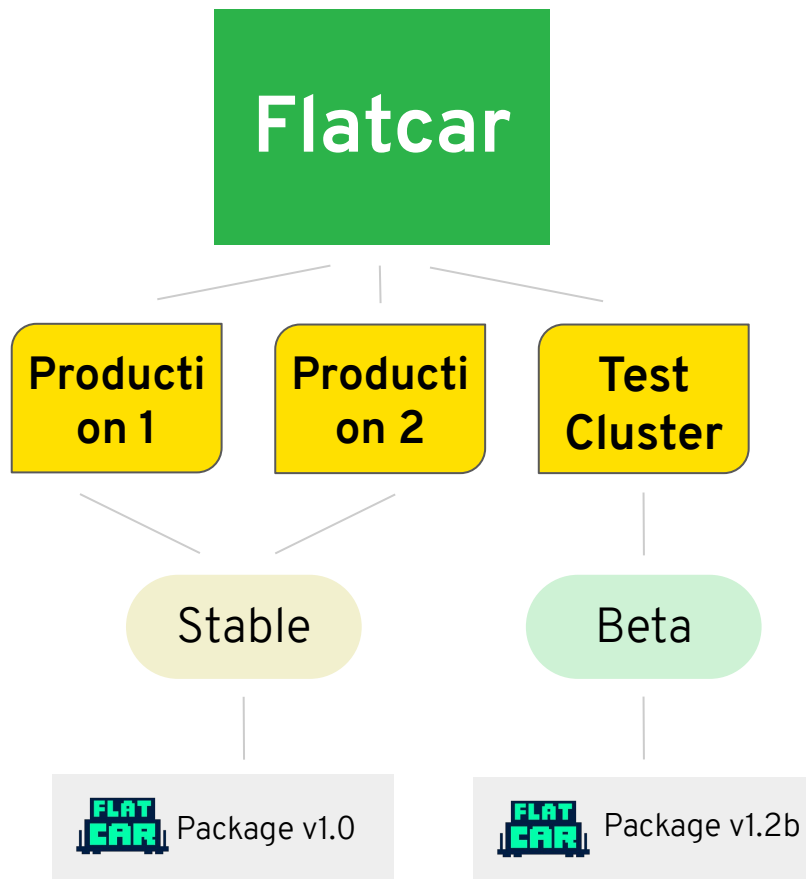


Packages

- ❑ Represent a **version** of some software
- ❑ Are assigned to one or more channels
- ❑ Can be blocked from selected channels



Example



Features



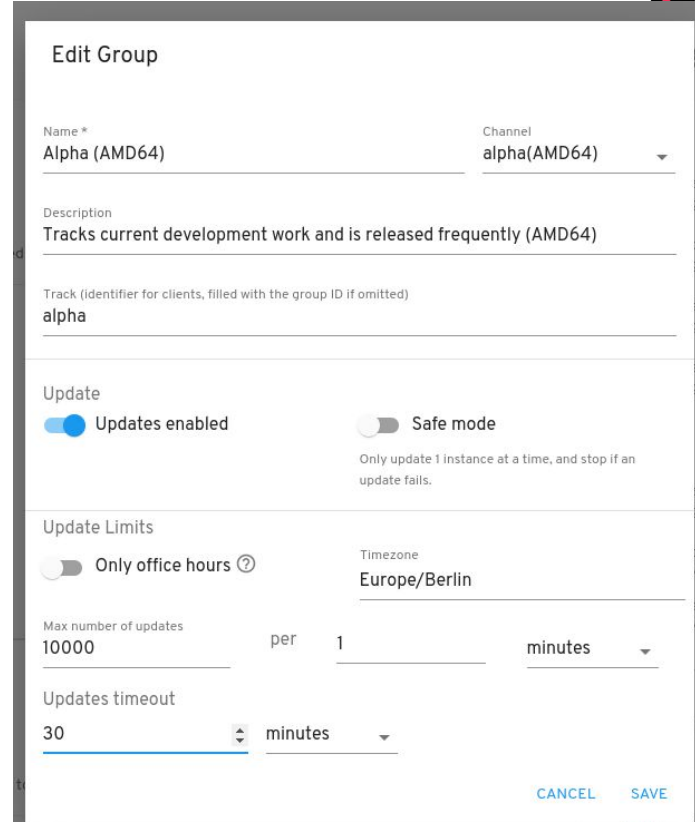
Feature List

- ❑ Control of updates behavior / rate limiting
- ❑ Custom groups and channels
- ❑ Update progress overview
- ❑ Versions evolution timeline
- ❑ Detailed history per machine (including issues)
- ❑ Authentication through ~~GitHub~~ OIDC
- ❑ Activity overview + issue highlighting
- ❑ Distribution of updates payload or redirection
- ❑ Automatic fetch of new packages' metadata
- ❑ ...



Feature: Control Updates' Behavior

- ❑ Disable/Enable updates for a group whenever needed;
- ❑ Set the updates rate limit
- ❑ Set whether updates are parallel or one at a time
- ❑ Set hours allowed for updates



The screenshot shows a 'Edit Group' configuration window with the following fields and settings:

- Name ***: Alpha (AMD64)
- Channel**: alpha(AMD64)
- Description**: Tracks current development work and is released frequently (AMD64)
- Track (Identifier for clients, filled with the group ID if omitted)**: alpha
- Update**:
 - ☒ Updates enabled
 - ☐ Safe mode (Only update 1 instance at a time, and stop if an update fails.)
- Update Limits**:
 - ☐ Only office hours ?
 - Timezone**: Europe/Berlin
 - Max number of updates**: 10000 per 1 minutes
 - Updates timeout**: 30 minutes

Buttons: CANCEL, SAVE

Feature: Monitoring

- ❑ How many instances communicated in a certain period of time
- ❑ Overall update status:
 - ❑ Percentage of machines that have completed the update, are downloading, on hold, etc..
- ❑ The timeline of the version/states evolution

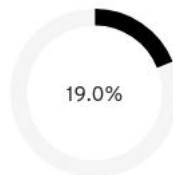
Update Progress

30 days · 7 days · 1 day · 1 hour

INSTANCES

3762

[See all instances](#)



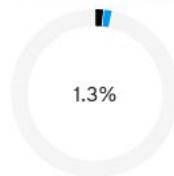
✓ Complete



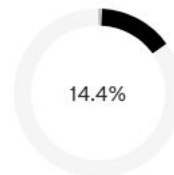
📦 Installed



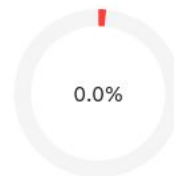
⬇ Downloaded



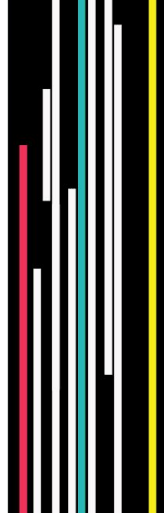
⬇ Downloading



? Other



❗ Error

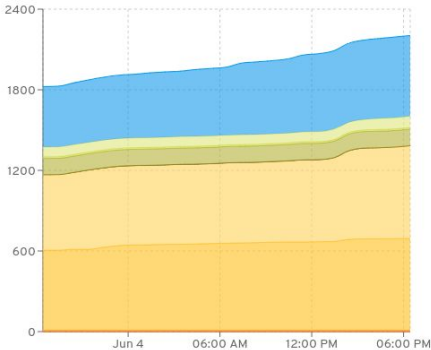


Feature: Monitoring

❏ The timeline of the version/states evolution

Version Breakdown

30 days · 7 days · 1 day · 1 hour

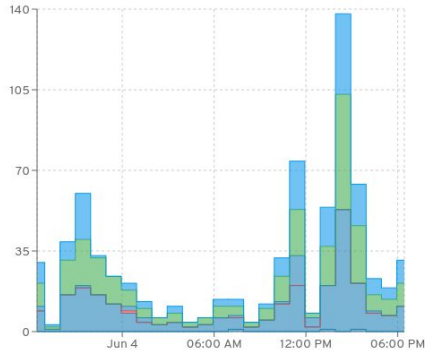


Showing data for the last time point.
Click the chart to choose a different time point.

Version	Count	Percentage
2765.1.0	689	31.3
2705.1.2	684	31.0
2823.1.2	601	27.3

Status Breakdown

30 days · 7 days · 1 day · 1 hour



Showing data for the last time point.
Click the chart to choose a different time point.

Status	Version	Instances
Update Granted	2823.1.2	11
Downloaded	2823.1.2	10
Downloading	2823.1.2	10

Feature: Monitoring

- ❑ List/filter machines in a certain state/version
- ❑ The status history for a single machine



Applications > Flatcar Container Linux > Alpha (AMD64) > Instances

Instance List

Alpha (AMD64)

30 days · 7 days · 1 day · 1 hour

INSTANCES

110

Show All

Filter Version

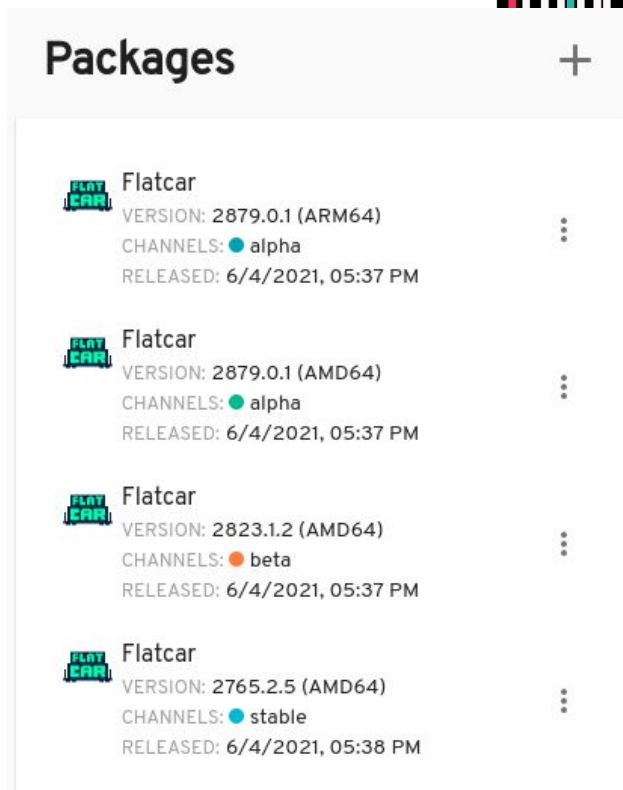
Show All

Instance	IP	Current Status	Filter Version
deadbeefb3ce67388046f5c1d6c8b1a5	::1		109:34 PM
deadbeefb3ce69ea448bc1fa955eb44	::1		109:34 PM
deadbeefa2946a929f7cb543a2d41c97	::1		105:40 PM
deadbeefa2946aa6834f01e0ca30b53	::1	2879.0.1	6/4/2021 05:40 PM
deadbeefb3ce650b24ab43cfa8fc4c9	::1	2879.0.1	6/4/2021 09:34 PM
deadbeefb3ce6994903811fa54e8ea	::1	2879.0.1	6/4/2021 09:38 PM

Feature: Flatcar Linux Syncer*

- ❏ When there is an update available for Flatcar Linux, a package for it will be created automatically, and the official channels will be updated when needed

* This is optional!



The screenshot shows a 'Packages' page with a list of Flatcar Linux packages. Each entry includes the Flatcar logo, the package name 'Flatcar', the version number, the architecture (ARM64 or AMD64), the channel (alpha or beta), and the release date and time. A plus sign is visible in the top right corner of the package list area.

Package Name	Version	Architecture	Channel	Released
Flatcar	2879.0.1	ARM64	alpha	6/4/2021, 05:37 PM
Flatcar	2879.0.1	AMD64	alpha	6/4/2021, 05:37 PM
Flatcar	2823.1.2	AMD64	beta	6/4/2021, 05:37 PM
Flatcar	2765.2.5	AMD64	stable	6/4/2021, 05:38 PM

Feature: Store & Serve Flatcar Linux Payloads*

- ❑ Instead of just pointing to the payloads' location, Nebraska can store and serve those payloads for Flatcar Linux.

* This is optional too!



Example Use Cases

Rate Limited Updates

1 cluster that should update only 10 machines per hour to the latest Flatcar Linux *stable*:

- ❑ Run Nebraska with the **syncer** on,
to get the *stable* channel updated automatically
- ❑ Create a group for the cluster, pointing to the channel
- ❑ Watch the success rate for updates as they happen



Deployment at different times

2 clusters, Public + Dogfooding:

- ❑ Dogfooding updates can be triggered automatically, for as many instances and as soon as available to the new *stable*
- ❑ Public's updates can/should be triggered manually, and rolled-out safely (1 instance at a time, abort on first failure) after QA pass

Different geo-locations

Half of a cluster in the US, half in Europe. They should update automatically but only at the local office hours:

- ❑ Set up a group for each location
- ❑ Set up the timezone/office hours for each group
- ❑ Enable updates

Configuring Flatcar



FCL configuration

Edit the update.conf:

```
SERVER=https://mynebraska.example.com/v1/update  
GROUP=stable  
MACHINE_ALIAS="email server"
```

More options at:

<https://kinvolk.io/docs/flatcar-container-linux/latest/setup/releases/update-conf/>



Demo

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Future

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Future plans

- ❑ REST API + CLI
- ❑ Advanced search (for instances)
- ❑ Downgrade support
- ❑ Fine-tune how channels are synchronized
- ❑ UX improvements
- ❑ ...

Follow the roadmap at:

<https://github.com/kinvolk/nebraska/projects/3>



Take part!



Join the community

We welcome everyone to contribute:

<https://kinvolk.io/docs/nebraska/latest/contributing/>

Issue tracker (includes *good first issue* label):

<https://github.com/kinvolk/nebraska/issues>





Testing Flatcar



mantle

- mantle (github.com/kinvolk/mantle)
 - cork
 - plume
 - ore
 - gangue
 - kola
- kola tests
- CI



kola

- <https://asciinema.org/a/418997>
- (https://youtu.be/X4m_JEtIVok?t=1721)

Status update: ARM64

Status and WIP items

- ARM64 Alpha works & performs well on
 - Equinix Metal Ampere hosts
 - AWS Graviton / Graviton2
- Some release tests still fail though
 - For the qemu_uefi target, there are 72 tests, 51 are ok, 21 fail.
 - Etcd, SELinux, and others
- There's a WIP PR on fixing polkit
 - <https://github.com/kinvolk/coreos-overlay/pull/863>
Currently updating for a more current version of polkit



Upcoming Releases

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Current Release

May 19th, 2021

<https://www.flatcar-linux.org/releases/>

- Alpha
 - Major Release: **2879.0.1**
 - Includes patch level updates to Linux kernel, bug fixes.
 - The Linux kernel IOMMU-related crash introduced in the 5.10.37 update got fixed through the 5.10.38 update
 - Package upgrades for **dbus, go, cmake, rust**.
- Beta
 - Minor Release: **2823.1.2**
 - Package upgrades for **nvidia-drivers**
 - Includes patch level updates to Linux kernel (includes the Linux kernel IOMMU-related crash).
- Stable
 - Minor Release: **2765.2.5**
 - Package upgrades for **nvidia-drivers**.
 - Includes patch level updates to Linux kernel (includes the Linux kernel IOMMU-related crash).
- LTS 2021
 - Release: **2605.16.1**
 - Include patch level updates to Linux kernel and systemd.



Upcoming Releases

June 14th, 2021

<https://www.flatcar-linux.org/releases/>

- Alpha
 - Major Release: **2905.0.0**
 - Includes patch level updates to Linux kernel
 - Planned Package upgrades for **curl**, **openssh**, **iptables**, **binutils**, **containerd** and others.
- Beta
 - Minor Release: **2823.1.3**
 - Plans to include patch level updates to Linux kernel and bug-fixes
- Stable
 - Minor Release: **2765.2.6**
 - Plans to include patch level updates to Linux kernel and bug-fixes
- LTS 2021
 - Release: **2605.17.1**
 - Include patch level updates to Linux kernel



Work in progress

Help is welcome!

<https://www.flatcar-linux.org/releases/>

- Long Term
 - ARM64 polkit PR: <https://github.com/kinvolk/coreos-overlay/pull/863>
- Alpha
 - systemd-resolved randomly failing on 2765.2.1 <https://github.com/kinvolk/Flatcar/issues/374>
 - Raspberry Pi no network after PXE boot with Flatcar due to missing kernel config <https://github.com/kinvolk/Flatcar/issues/375>
 - Update iptables from 1.6.2 to 1.8.x in Flatcar OS version 2605.8.0 <https://github.com/kinvolk/Flatcar/issues/394>
 - DHCPv6 broken since 2765.2.0/systemd 247 <https://github.com/kinvolk/Flatcar/issues/397>
 - IPv6 address auto-configuration doesn't work on AWS EC2 instances <https://github.com/kinvolk/Flatcar/issues/384>
- Beta
 - Latest stable Flatcar 2765.2.2 dev image cannot build latest Nvidia drivers (460.32.03) <https://github.com/kinvolk/Flatcar/issues/376>





Jump aboard!

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Calls to Action

Spread the word

Become a contributor (github.com/kinvolk/Flatcar)

Join the community ([IRC/Matrix, email list](#))

Join us for the next community call

Share your feedback - how can we better support and grow the community? What should we cover in future community calls?



Q&A / Discussion



Thank you!

Github: [kinvolk/flatcar](https://github.com/kinvolk/flatcar)

Twitter: [flatcar_linux](https://twitter.com/flatcar_linux)

