# Flatcar Container Linux Monthly Community Meeting

14 September 2021

# Agenda

Welcome

News

Spotlight: Flatcar @ Equinix Metal

Status update: ARM64 (w/ special guest)

Release planning

Q&A / Discussion

# Welcome!
## (please say "hi")

# News
## The latest on Flatcar Linux

# NEWS

PRO and LTS features will merge into community images

- PRO includes GPU support for Azure, and EKS and GPU (in Alpha) support for AWS
- LTS ships FIPS kernel features compiled in

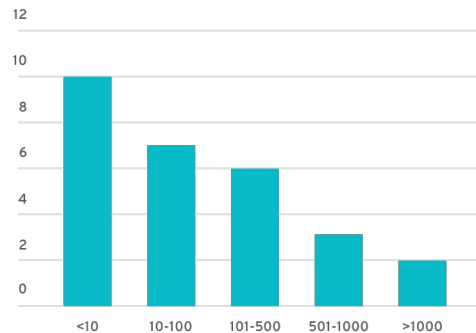Move to flatcar-linux organisation, to emphasize Flatcar's community roots

# NEWS
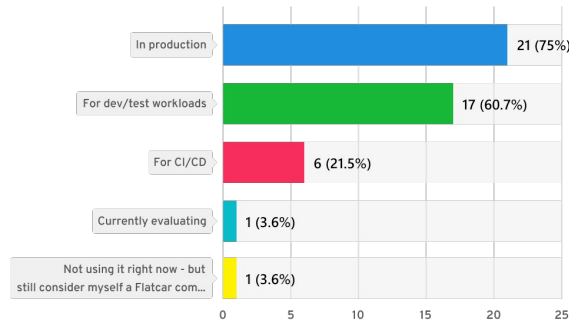
We made a survey, and you responded!

# Survey responses

- ❏ 28 respondents
- ❏ Mix of sizes
- ❏ Mix of environments

**Number of nodes running Flatcar**



source: Flatcar community survey

**How are you using Flatcar Container Linux today?**



source: Flatcar community survey

Where do you run Flatcar? (Select all that apply)
28 responses



| | |
|---|---|
| AWS | 13 (46.4%) |
| Azure | 3 (10.7%) |
| Digital Ocean | 2 (7.1%) |
| Equinix Metal | 3 (10.7%) |
| Google Cloud | 5 (17.9%) |
| On-prem (non-VMware) | 15 (53.6%) |
| Personal machine | 5 (17.9%) |
| VMware vSphere | 5 (17.9%) |
| VPS | 1 (3.6%) |
| KVM | 1 (3.6%) |
| netcup Root-Server (KVM-b... | 1 (3.6%) |
| OpenStack Inhouse Cloud | 1 (3.6%) |
| Bare Metal | 1 (3.6%) |
| Tencent Cloud | 1 (3.6%) |
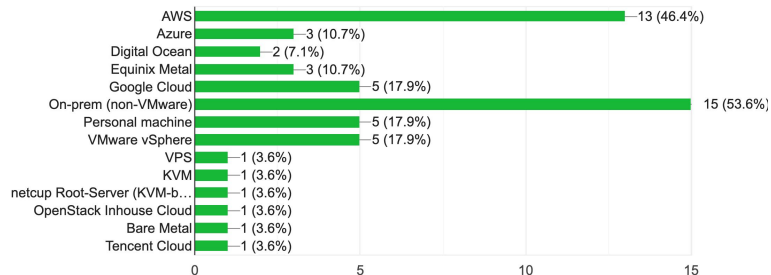
# Key Findings ("7 Fun Facts")

1. Kubernetes is deployed on more than 4 out of 5 deployments (82%)

2. Kubeadm is the most popular Kubernetes deployment tool (25%), among a wide variety (>10) of installers and distros

3. Three quarters of Flatcar users deploy in their own data centers, but more than half of those users also deploy Flatcar in the cloud

4. Most (63%) automate updates

5. 93% cite Security and Manageability as key reasons for deploying Flatcar

6. Half adopted it as a drop-in CoreOS replacement

7. Flatcar users don't just like Flatcar, they love it (NPS = 71.4)

*Kinvolk taking over CoreOS and turning it into Flatcar is the **best thing that could have happened** to CoreOS. **It's better maintained, documented and supported** than it was before, and it continues to develop in a good direction. Great work, guys!* • ***My team loves all of you.*** • *Very **stable and reliable** container operating system* • ***It just works** and does not require any attention from us* • *I've been **very happy** with it. I moved when CoreOS stopped being maintained and it's served me well since.* • *Having been a big user of coreOS, the continuity of the technology is **a big :thumbsup: from me**.* • *A **well-maintained, professional and innovative** product that meets a real need without being too radical* • *Better than the alternatives* • *Cool product and **easy to manage*** • ***I think it's the best thing since /proc*** • *It's an **amazing evolution** of CoreOS Container Linux, keeping all the good parts and adding more of them on top.* • ***Very good project**, I hope it stays! I am thinking about taking it from personal use to business use.* • *It's flat and runs my containers without issue, thus far **I haven't had any problems** I didn't create myself.* • *It's a **perfect base for container-based workloads: lightweight, flexible, secure, easy to understand and use*** • *For most applications I encounter, a specialized container OS is a **far better solution than a traditional OS**. As a matter of fact I have already convinced several peers to trial flatcar in their environments.* • *We believe that **flatcar delivers on all of its promises.***

FLAT
CAR

# Concerns & Asks

❏ Most common ask: "Don't break it" :-)
  ❏ "I really can't think of anything I'd like to change. It is perfect right now for how we're using it."
❏ Other items mentioned:
  ❏ Raspberry Pi support/docs [*see https://github.com/kinvolk/Flatcar/issues/502*]
  ❏ Please make release notes roll up all changes [*already done*]
  ❏ Questions following Microsoft acquisition of Kinvolk ("Excellent fork but the popularity and trust in an open container linux took a hit with the CoreOS demise." / "CoreOS > RedHat > IBM + FlatCar > Microsoft == Next community fork???")
  ❏ Cloud-config / Ignition ("ignition has different version and sometimes a little hard to manage. A declarative config file would be cool", "I wish the cloud-config was the real one")
  ❏ More, faster ("Attend to GitHub issues faster, "More frequent kernel updates")
  ❏ Increased integration with AWS services (e.g. log shipper to Cloudwatch Logs, preinstalled SSM client etc)

# Flatcar @ Equinix Metal

# EM ❤s Flatcar

Andy Holtzmann (he/they)

# Where it started

# In the before times

- Ubuntu 18.04, and shortly thereafter Ubuntu 20.04
  - 5 days, no revert path
- `apt-get update` create soooo much drift.
  - New install, new packages, more drift
- General purpose OS, generally waiting for changes.

# Why Ubuntu?

- A lot of the k8s community uses it, readily available blogs/slack/docs around k8s + ubuntu
- Pretty good
- Easy to staff for
- And again, it's pretty good, can't fault anyone who elects to use Ubuntu as an OS then just worries about business problem

# Ok, so it's pretty good, but.

- Drift = risk
- Drift = debt
- Drift = version pins on packages
  - Python, kernel, docker, containerd
  - Different CVE's patched in different places
- Drift = never ending backlog of support to the OS
- General purpose OS = larger attack surface (we run on the edge)
- And upgrade fubars a node?

# Ubuntu created a huge risk level

# Everyone has risk, so what's the difference

At the time the kubernetes team at Equinix Metal was 4 human. And there were 20+ facilities to convert from Nomad, Rancher, or k3s to Kubernetes.

# Our savior, Flatcar Linux

# Why did we switch?

- Consistent installation
- Upgrade and reverting supported
- Great community support
- Specialized to containers
- Smaller attack surface
- Our Principal made us 😅
- Nebraska updates are awesome

# Results?

- Trivial to test an upgrade
- Revert path on failed upgrades
- Consistent versioning of all components in the stack form the kernel up
- Reduced cognitive load.
- Ignition 🔥
- Mitigated risk
- Pretty small team set up to scale multicluster k8s managed

# Liberation!

It liberates our very small team from a huge amount of risk and tech debt.

- 50 Kubernetes clusters
- 250+ nodes
- 4 engineers

# Q&A

# Thank you!

Status update: ARM64

# Release tests status

- Kola Test Failure modes ([#474](#))
  - ✓ SELinux: boolean, enforce
  - ✓ Etcd related: member discovery, kubeadm, docker, locksmith
    - ✓ it has been fixed by bumping etcd version to an image with multi-arch support
  - ✓ SSH / connection issues: etcdv3, flannel, TLS
  - ☐ DbusPerms test will be fixed via Polkit PR ([#1263](#))
  - ☐ `kubedam.*.calico`: waiting for official ARM64 Calico operator support([#1246](#))

# Status and WIP items

- ARM64 questions?

    Ping me on IRC/Matrix, nick "wrl"

# "Works on ARM" at Equinix Metal

[hand over to Ed]

Release Planning

⇒ [Planning Board](#)

Jump aboard!

# Calls to Action

Spread the word

Become a contributor ([github.com/flatcar-linux/Flatcar](github.com/flatcar-linux/Flatcar))

Join the community ([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**
Twitter: **flatcar_linux**