The Future of Image Based Fedora

devconf.us - Boston, US - 2026



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Senior Principal Engineer at Red Hat

Agenda

- Where are we?
- How Did We End Up Here?
- Bringing Things Together (Unification!)
- Beyond
- Q&A





Where Are We?



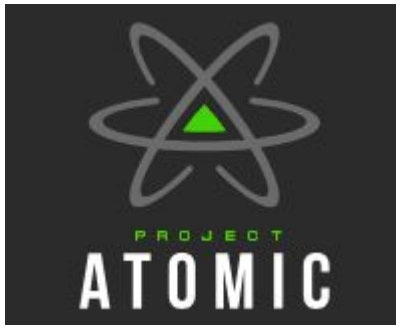
The Journey So Far

Fedora has pioneered transactional, image based systems for over a decade.

2014–2018

Atomic Host

Delivered from Project Atomic on top of maturing rpm-ostree software.



2019–Present

Fedora CoreOS

Atomic Host merges with CoreOS Container Linux.

- Ignition & auto-updates
- Zincati integration
- Stream-based releases



2023–Present

Image Mode / bootc

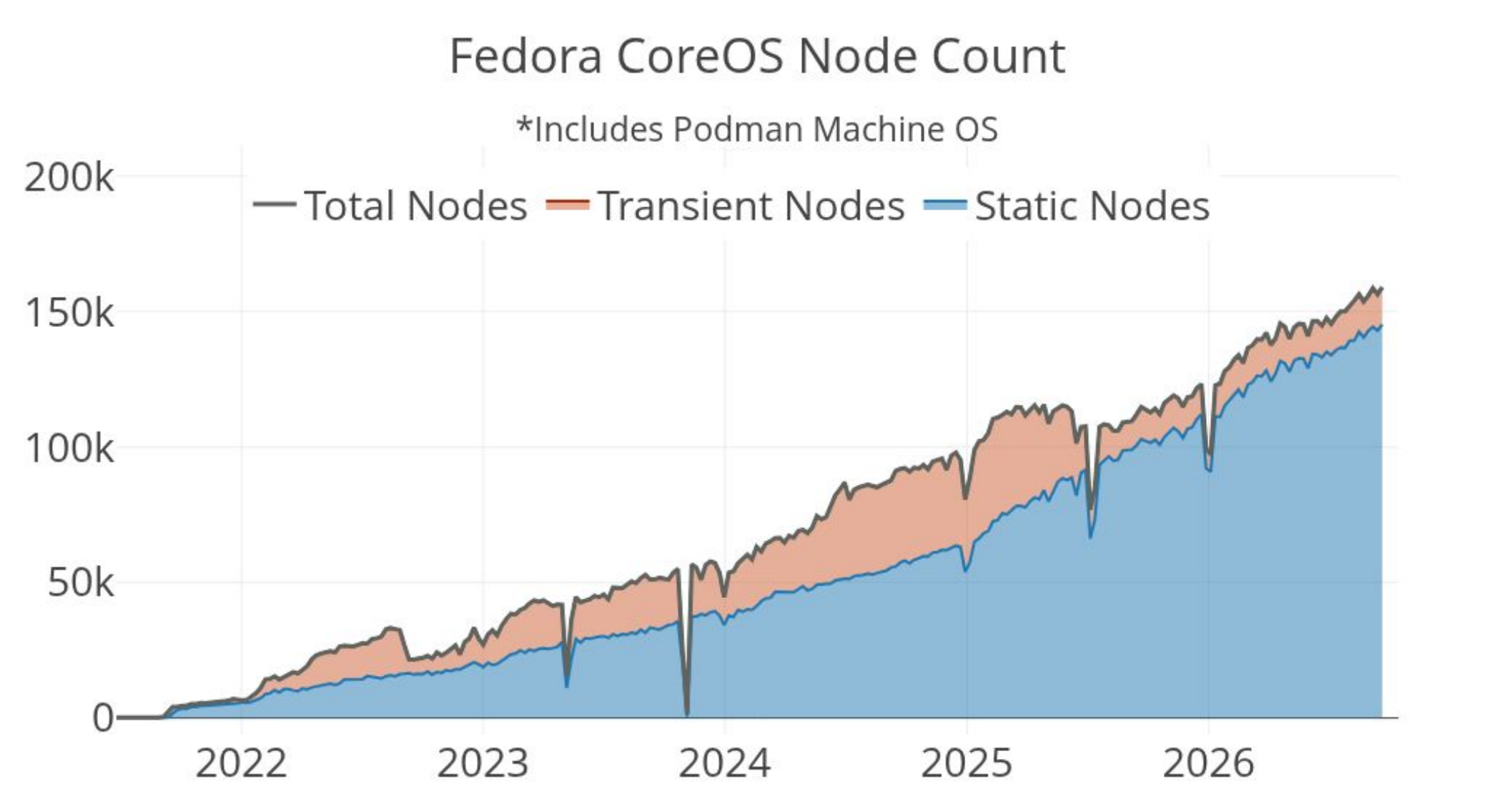
Emergence of Image Mode / bootc as a cloud-native standard.

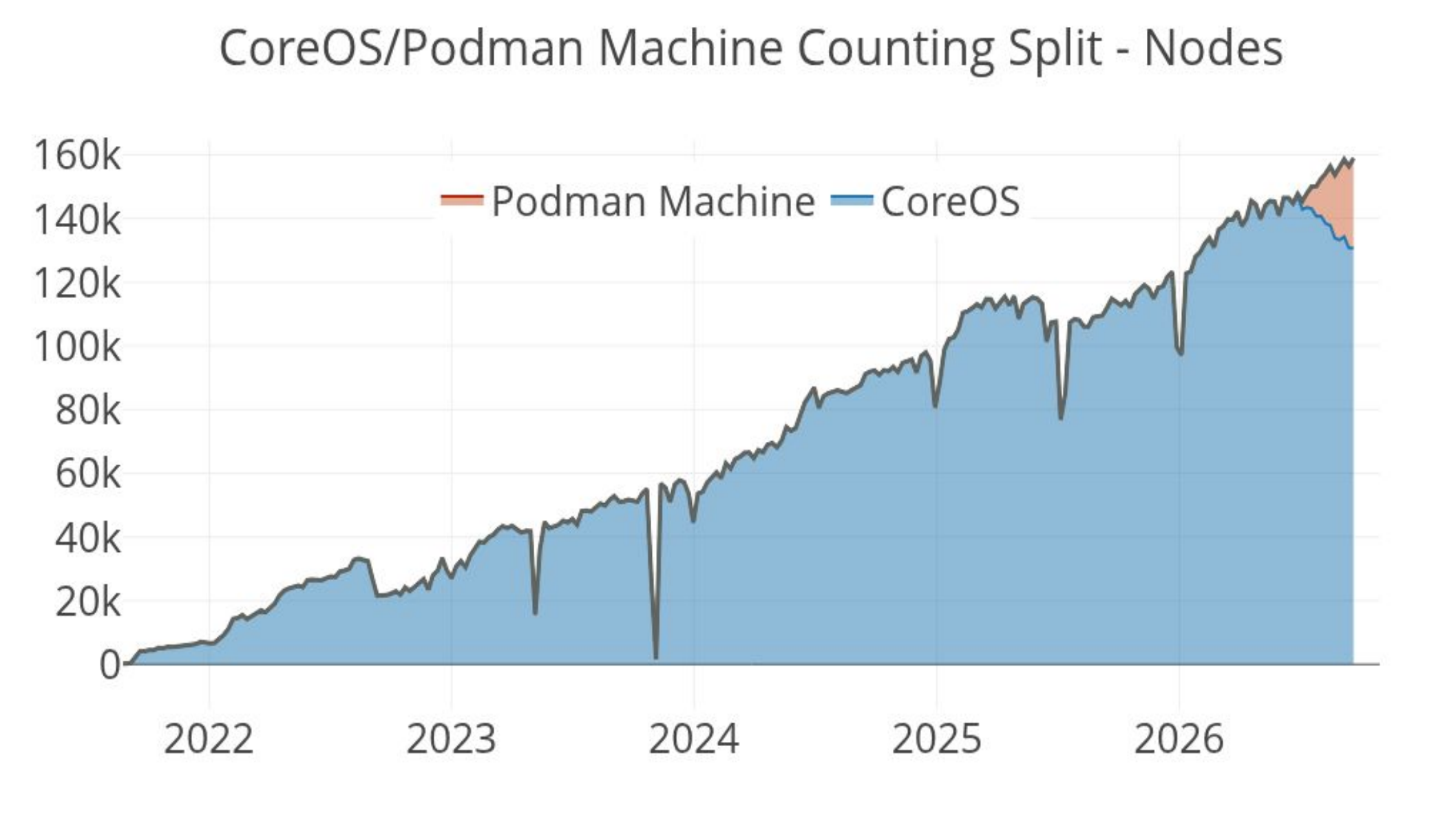
OCI containers as OS kernels/roots

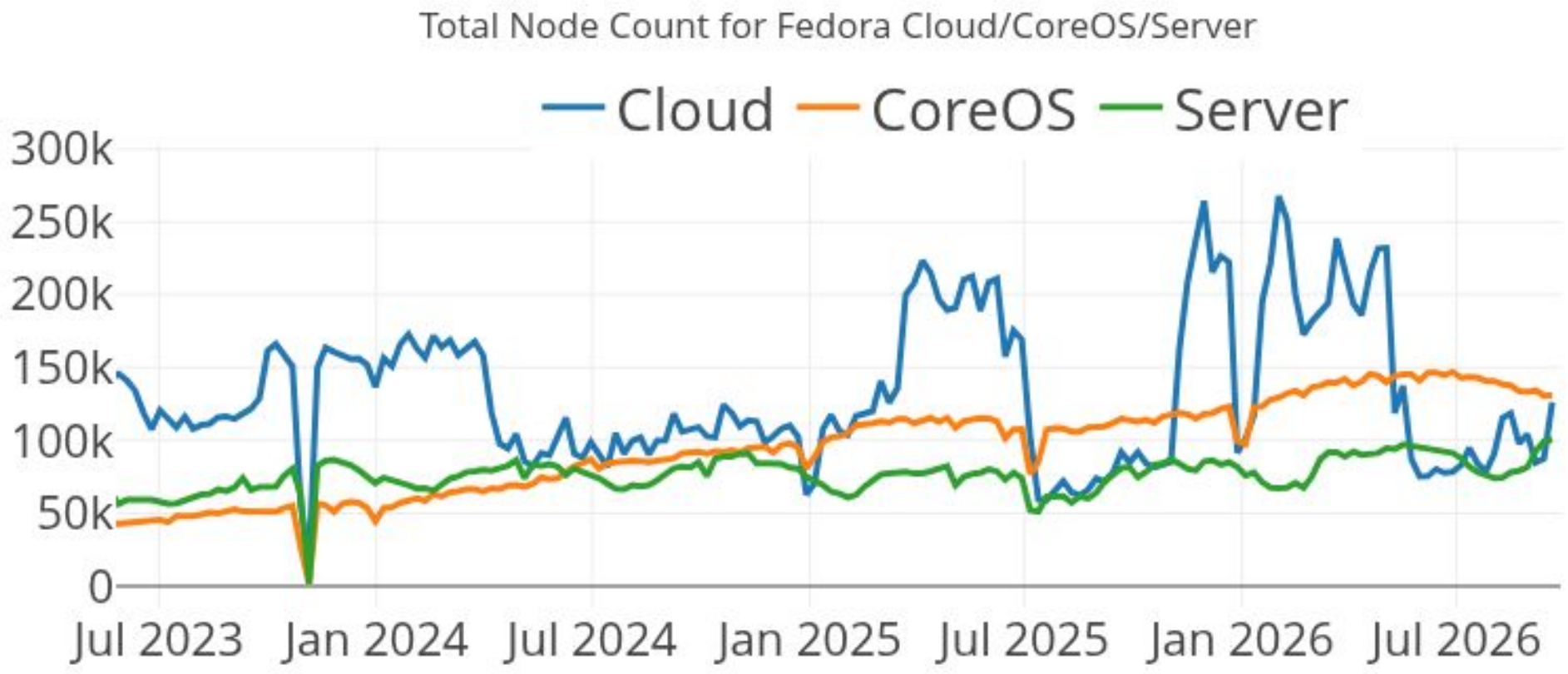


The Numbers - 2026/09




Fedora CoreOS Node Count
*Includes Podman Machine OS
Total Nodes
Transient Nodes
Static Nodes
200k
150k
100k
50k
0
2022
2023
2024
2025
2026

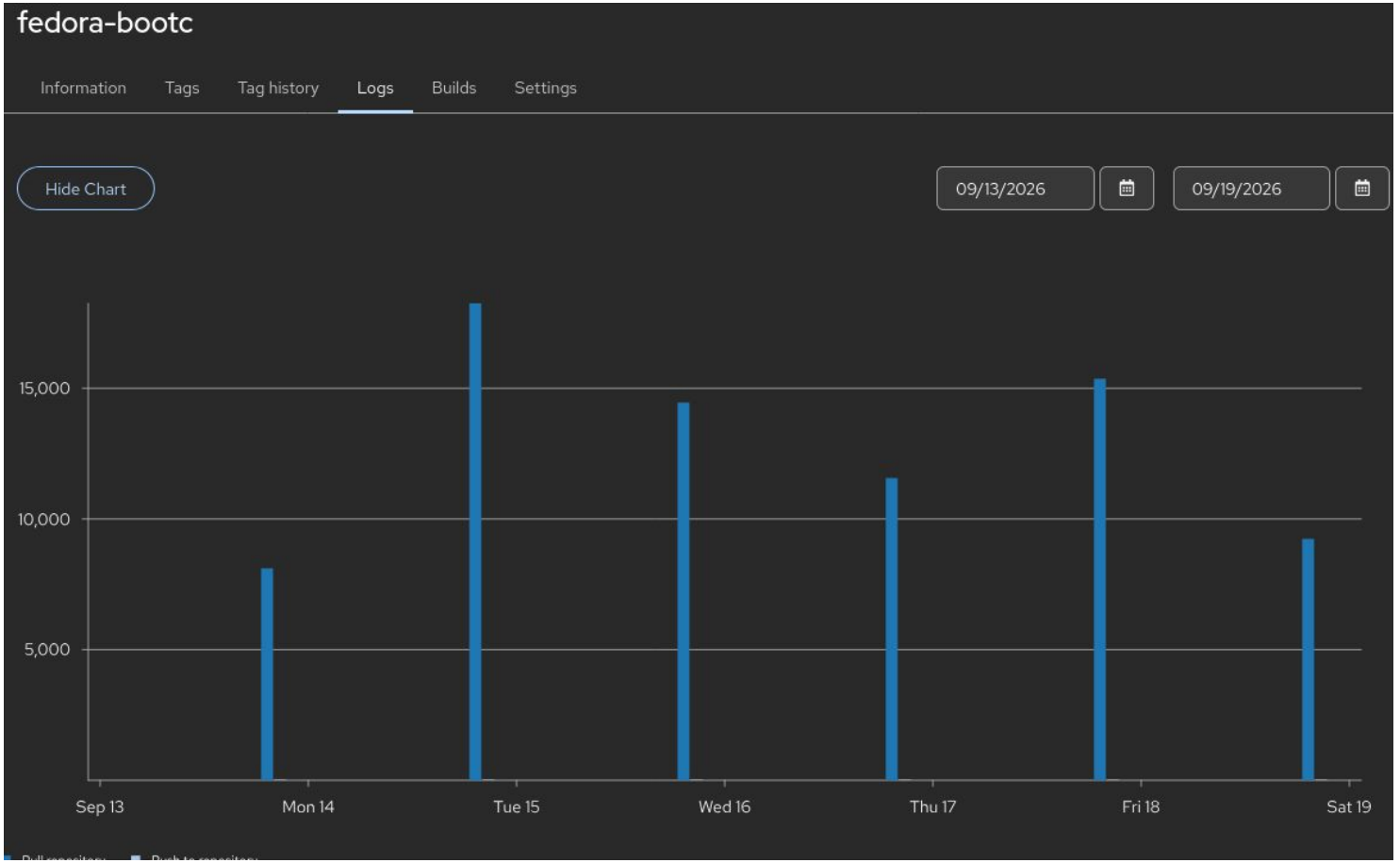

CoreOS/Podman Machine Counting Split - Nodes
160k
140k
120k
100k
80k
60k
40k
20k
0
Podman Machine
CoreOS
2022
2023
2024
2025
2026


Total Node Count for Fedora Cloud/CoreOS/Server
Cloud
CoreOS
Server
300k
250k
200k
150k
100k
50k
0
Jul 2023
Jan 2024
Jul 2024
Jan 2025
Jul 2025
Jan 2026
Jul 2026

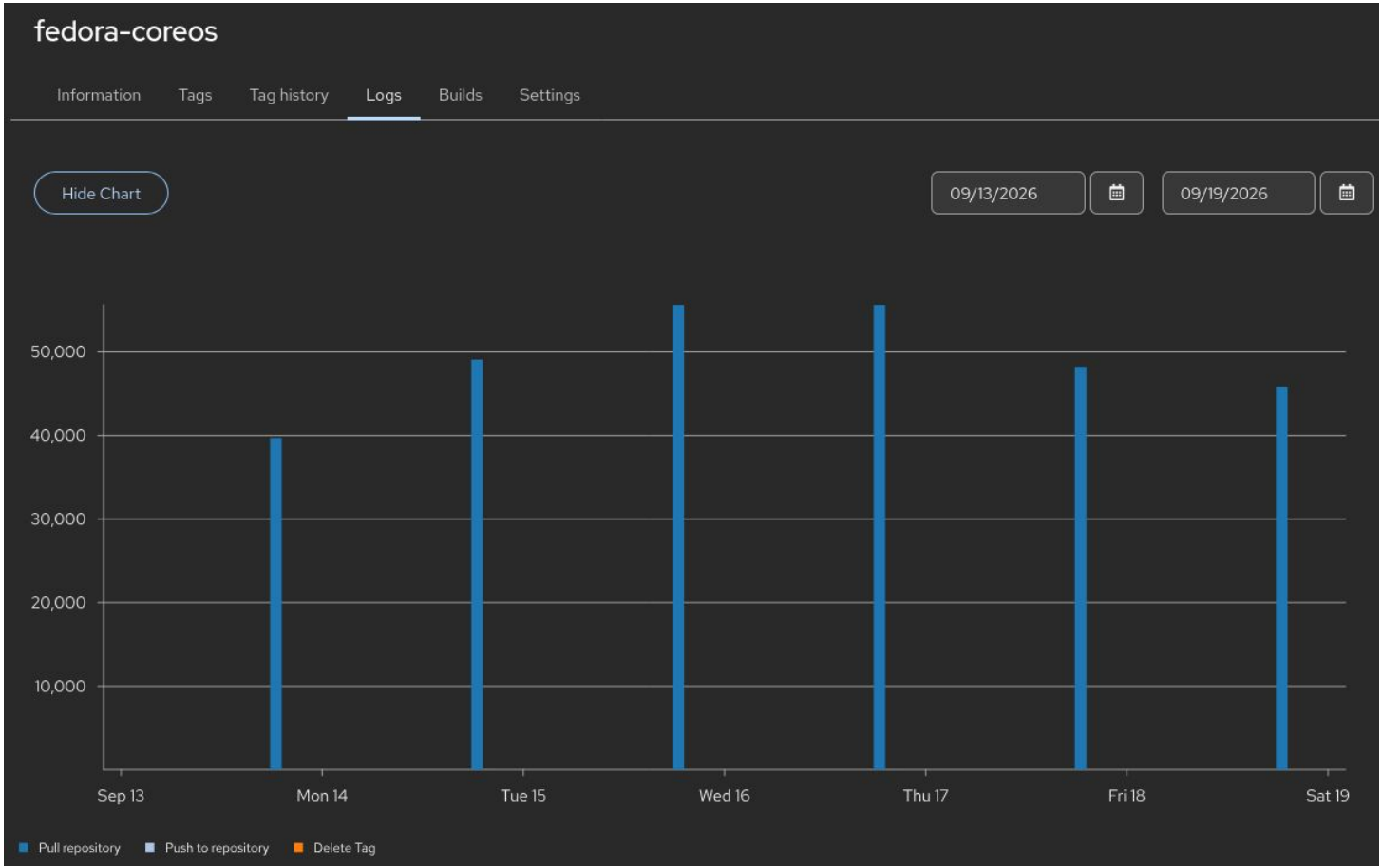
No VARIANT set in bootc images 😕

```
[dustymabe@media ~]$ podman run -it --rm --entrypoint bash quay.io/fedora/fedora-bootc:44
bash-5.3# cat /etc/os-release
NAME="Fedora Linux"
VERSION="44 (Forty Four)"
RELEASE_TYPE=stable
ID=fedora
VERSION_ID=44
VERSION_CODENAME=""
PRETTY_NAME="Fedora Linux 44 (Forty Four)"
ANSI_COLOR="0;38;2;60;110;180"
LOGO=fedora-logo-icon
CPE_NAME="cpe:/o:fedoraproject:fedora:44"
DEFAULT_HOSTNAME="fedora"
HOME_URL="https://fedoraproject.org/"
DOCUMENTATION_URL="https://docs.fedoraproject.org/en-US/fedora/f44/"
SUPPORT_URL="https://ask.fedoraproject.org/"
BUG_REPORT_URL="https://bugzilla.redhat.com/"
REDHAT_BUGZILLA_PRODUCT="Fedora"
REDHAT_BUGZILLA_PRODUCT_VERSION=44
REDHAT_SUPPORT_PRODUCT="Fedora"
REDHAT_SUPPORT_PRODUCT_VERSION=44
SUPPORT_END=2027-05-19
```

Daily Fedora bootc pulls from quay.io ~10k



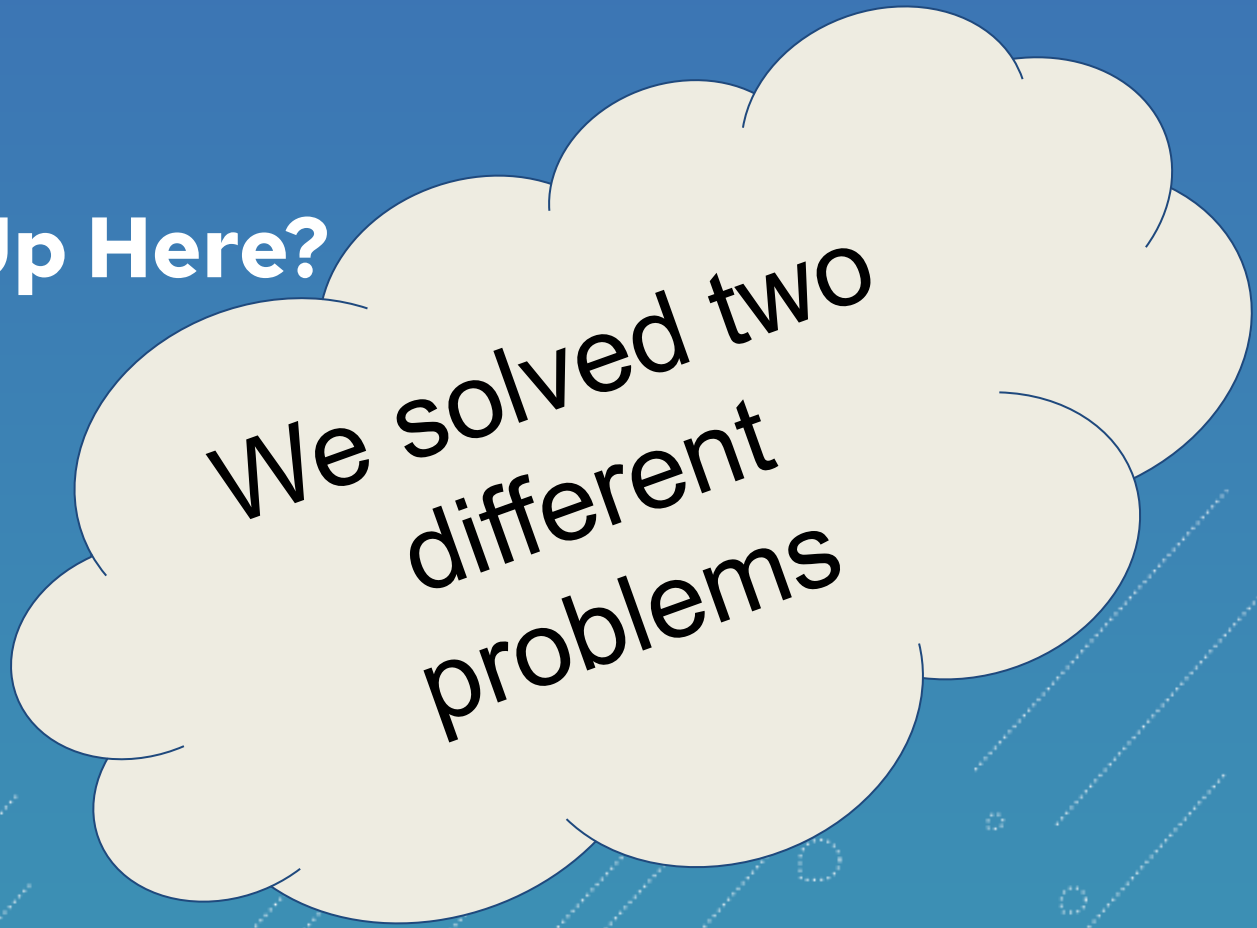
Daily Fedora CoreOS pulls from quay.io ~ 45k



How Did We End Up Here?



How Did We End Up Here?



Persona A: "Direct Consume" (CoreOS Model)

PROFILE

USER: The person wants a ready made solution for running containers

KEY NEEDS

Turnkey deployment: Fetch official AMI/ISO, pass Ignition config, walk away.

Low maintenance: Automatic (Zincati coordinated) updates and reliable rollbacks.

-> **Minimal customization:** OS as delivered serves the need.

OUTCOME

Existing Fedora CoreOS users don’t maintain a custom container build pipeline. They use trusted upstream builds, but have limited ability to make meaningful changes.

Platform Offerings for CoreOS





































Persona B: "Build Your Own" (Fedora bootc Model)

PROFILE

BUILDER: Person wants to control inputs and customize outputs (e.g., Nvidia/CUDA drivers).

KEY NEEDS

- **Custom assets:** Inject private root certificates, proprietary kernel modules, or custom agents at build time.
- **Standard tooling:**
  - building ***FROM fedora-bootc:latest*** in a Containerfile.
  - Standard OCI vulnerability scanning (Clair, Trivy)
  - GitOps CI/CD delivery.

WHY IT MATTERS

Fedora bootc excels at something CoreOS was notoriously bad at: creating your own custom build.

The Journey So Far

Key Message: Fedora has pioneered transactional, image based systems for over a decade.

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2023–Present

Image Mode / bootc

Emergence of Image Mode / `bootc` as a cloud-native standard.

OCI containers as OS kernels/roots

Takeaway: **We didn't build two parallel worlds on purpose; they came about organically. Now is the time to converge them.**

CoreOS & Fedora bootc Unification



Idea: They Belong Together

LAYER 0 (MINIMAL BASE)

Minimal Fedora bootable container base image.

BRANCH A: "BUILD YOUR OWN"

Fedora bootc Model

Base OCI image consumed directly by users in their own `Containerfile`s.

BRANCH B: "DIRECT CONSUME"

CoreOS Model

Upstream-built, opinionated host (FCOS-like: Ignition + auto-update agent preconfigured) published as ready-to-run disk images and container artifacts.

"Direct Consume" is a curated layer on top of the minimal container built with “Build Your Own” tooling.

Community Alignment

Bringing Fedora CoreOS Working Group, Atomic SIG, and bootc contributors together.

Shared Pipeline

De-duplicate looking at pipeline flakes or real issues. Invest in making the pipeline more reliable.

Shared Issue Tracker

No longer looking at the same issues in separate communities.

Shared Milestones

More opportunity to work on the future exciting tooling out there OR focusing on the hard problem of deprecating some software in favor or new tools.

Goal

Shared Ownership

Rather than siloed subprojects working on duplicate build pipelines.

Unified Outputs

What the user gets:

Official Base Images

Standardized Fedora bootable container images (OCI) that can be used for building your own or updating your direct consume Fedora instances.

Ready-to-Deploy Host Artifacts

Cloud images (AWS, GCP, OpenStack), Bare-metal ISOs/PXE, and virtual disk images generated directly from the bootable containers.

Clear Documentation

One set of documentation guiding the user toward the artifacts/tooling that suits their needs.

Ultimately a unified message on how to run, automate, and customize image-based Fedora.

Progress

Recent Milestones

- Joseph, Dusty pitched unification across community calls.
- Agreement to organize dedicated cross-SIG working sessions.
- Shifting from exploratory demos to concrete governance and architecture.

Fedora CoreOS and Bootc Unification

2026-09-10

Dusty Mabe



fedora

The Hard Technical Questions Come Next

First-Boot Provisioning

How do we cleanly reconcile the plethora of provisioning options: Ignition, Cloud-Init, Anaconda, CoreoS-Installer?

Update Streams

How to square the differing lifecycle approaches that Fedora CoreOS & Fedora bootc have taken?

Release Engineering & Infra

A unified pipeline with singular artifacts shipping means there's no longer any room for differing tooling. It will take some work to embrace konflux and push it forward as a first class citizen in Fedora.

Upgrade Path

How do existing Fedora CoreOS nodes transition to the new world without disruption or manual reinstallation?





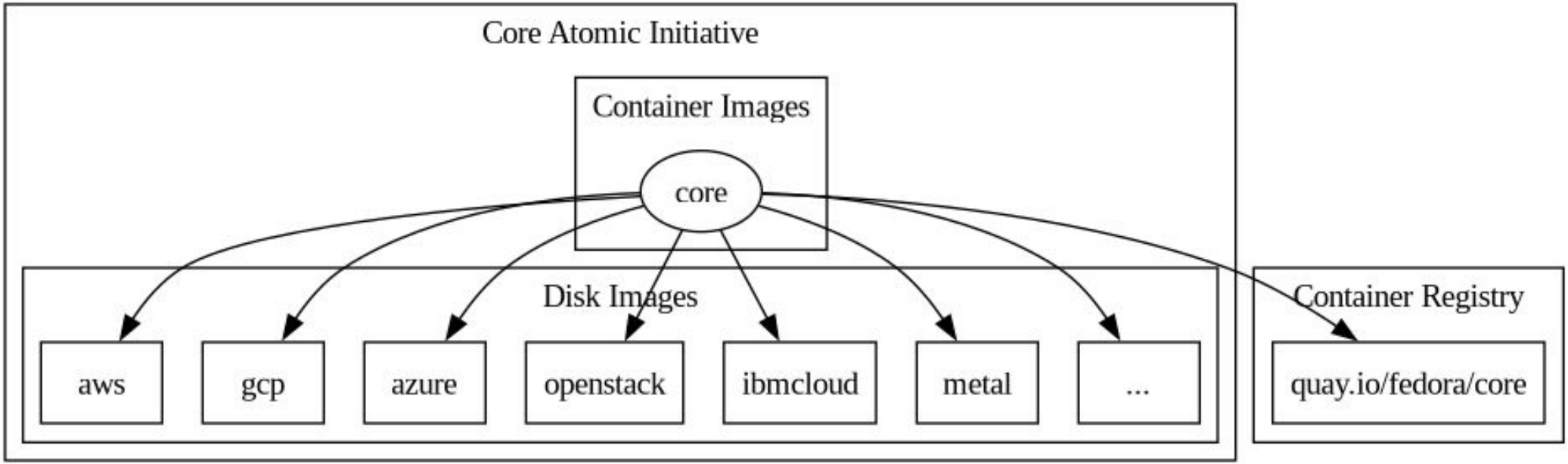
And Beyond!



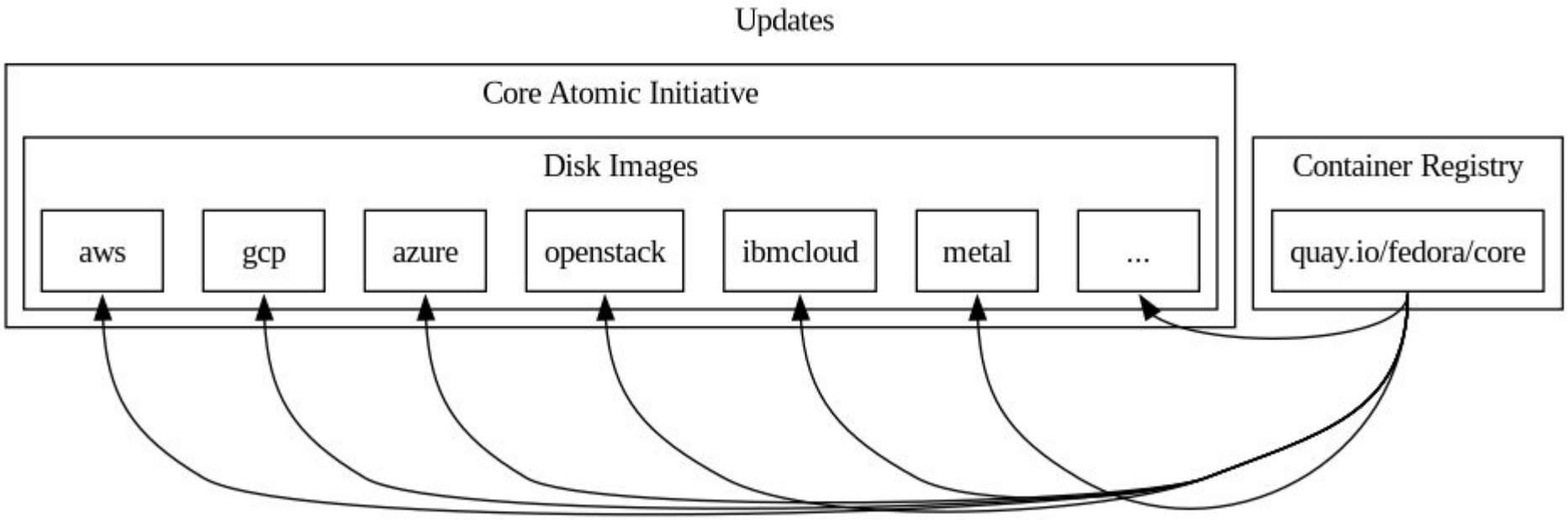
Whats the real vision here?

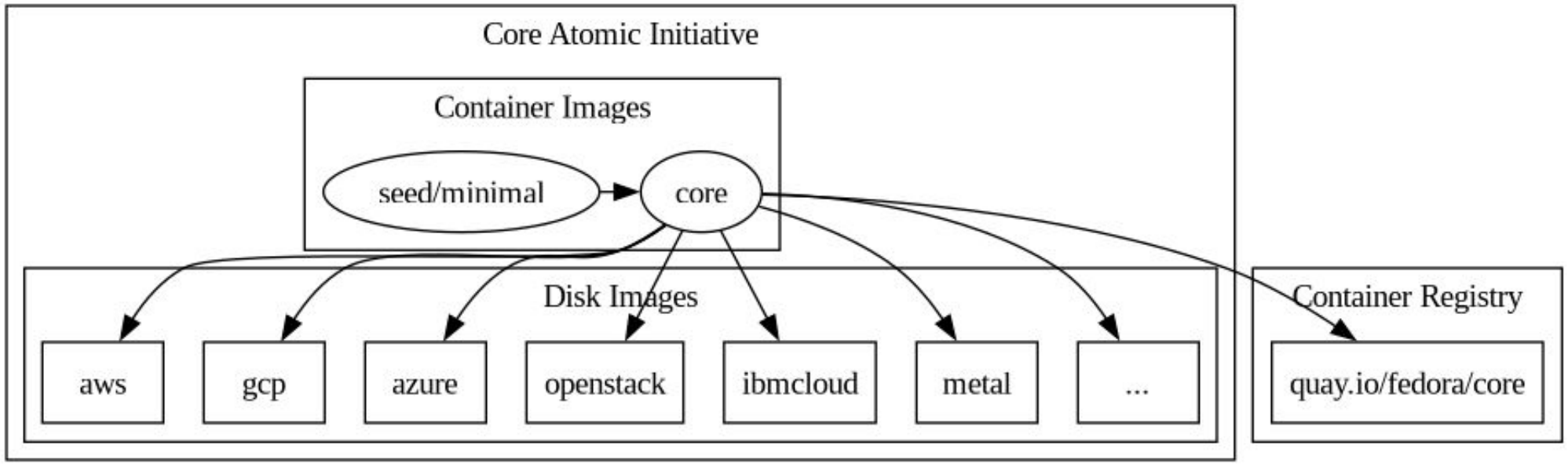


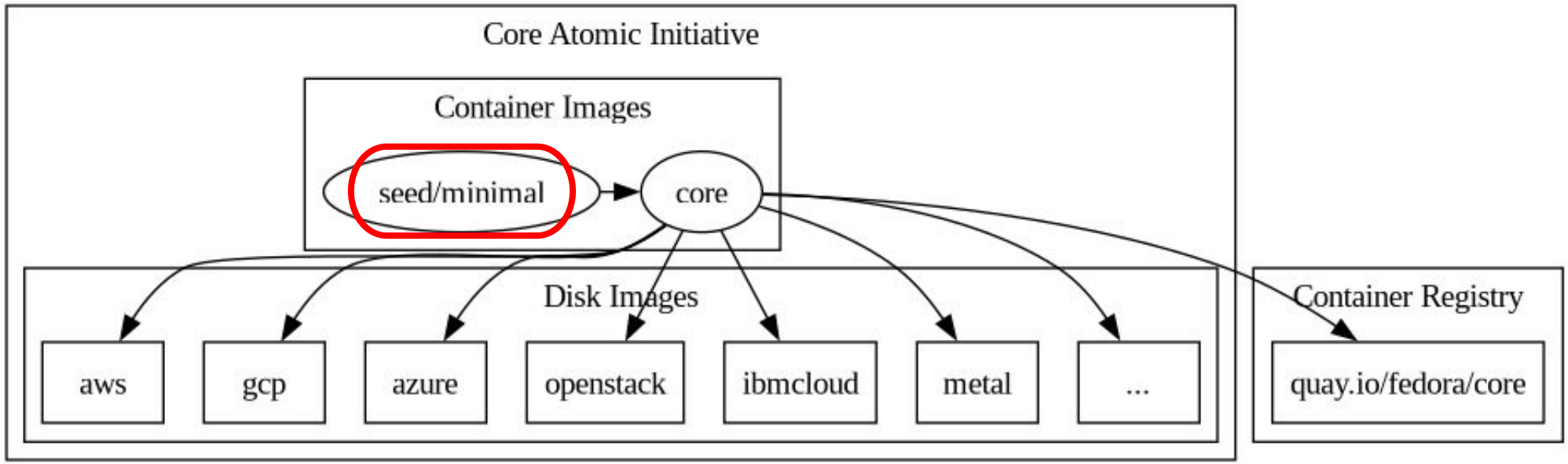


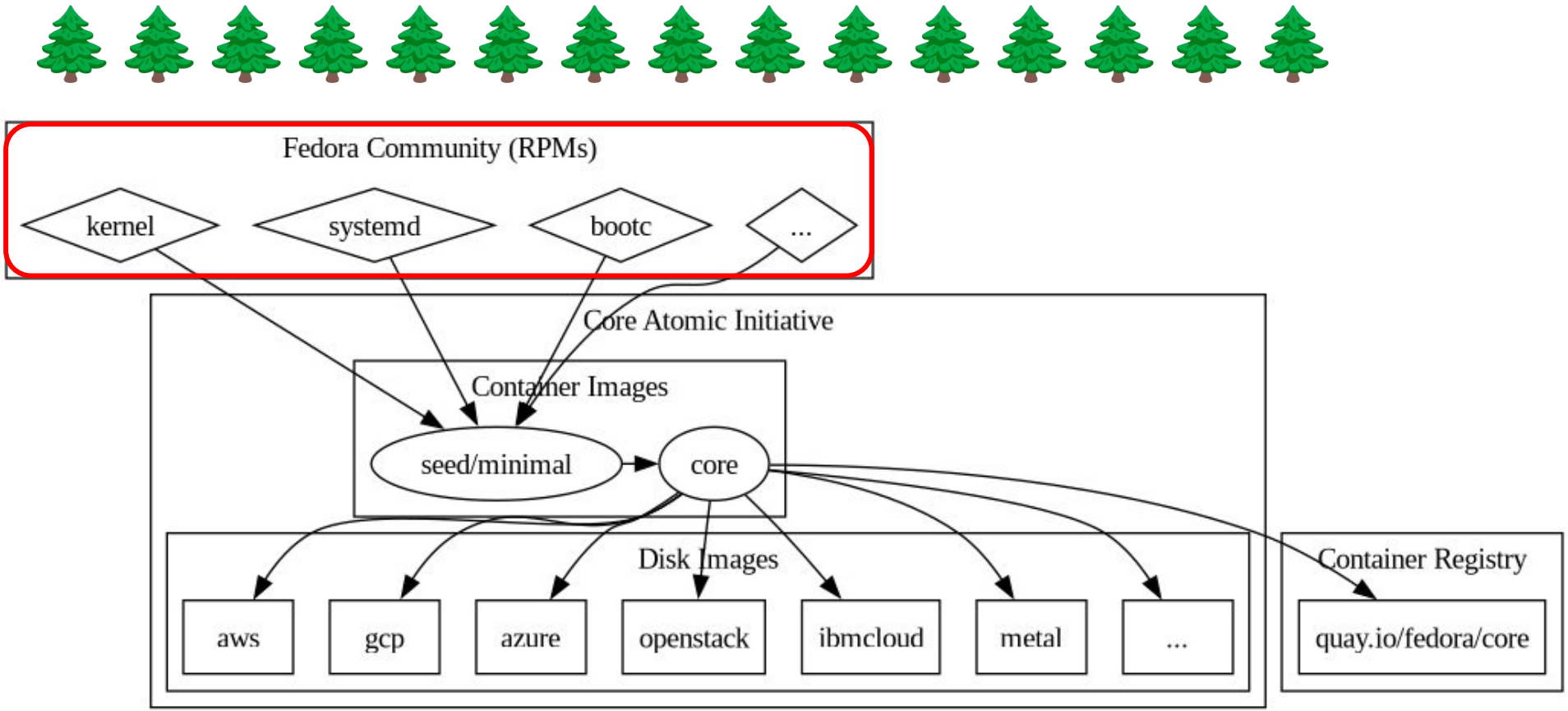

Core Atomic Initiative
Container Images
core
Disk Images
aws
gcp
azure
openstack
ibmcloud
metal
...
Container Registry
quay.io/fedora/core



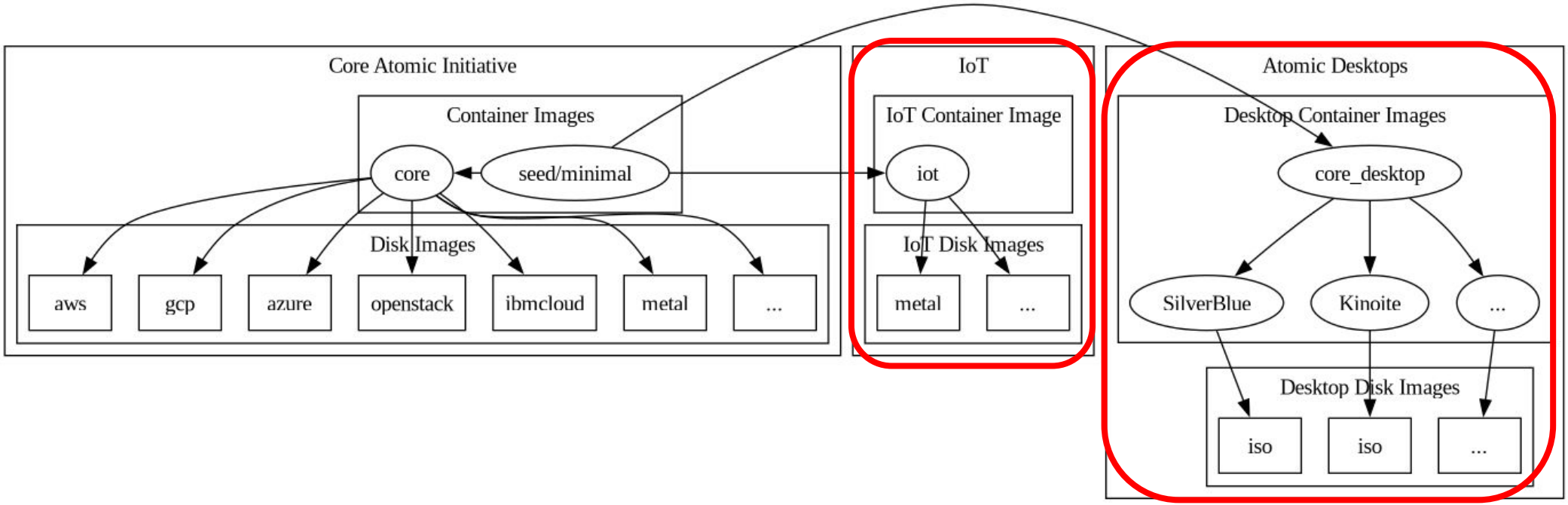

Updates
Core Atomic Initiative
Disk Images
aws
gcp
azure
openstack
ibmcloud
metal
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Container Registry
quay.io/fedora/core


Core Atomic Initiative
Container Images
seed/minimal
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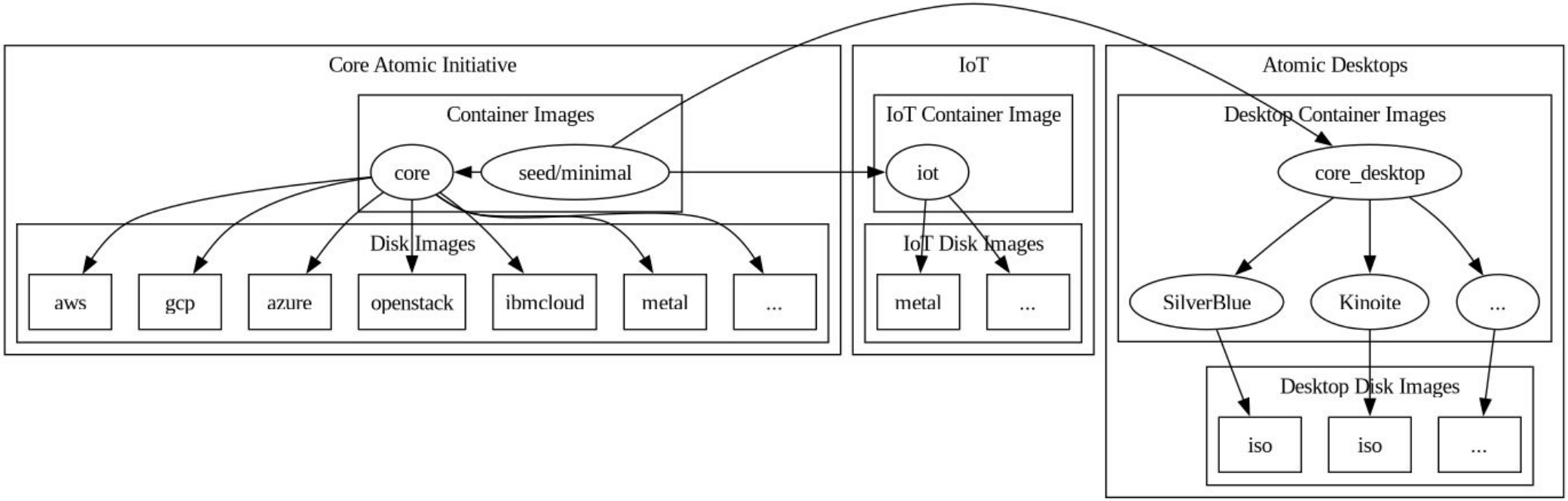

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Fedora Community (RPMs)
kernel
systemd
bootc
...
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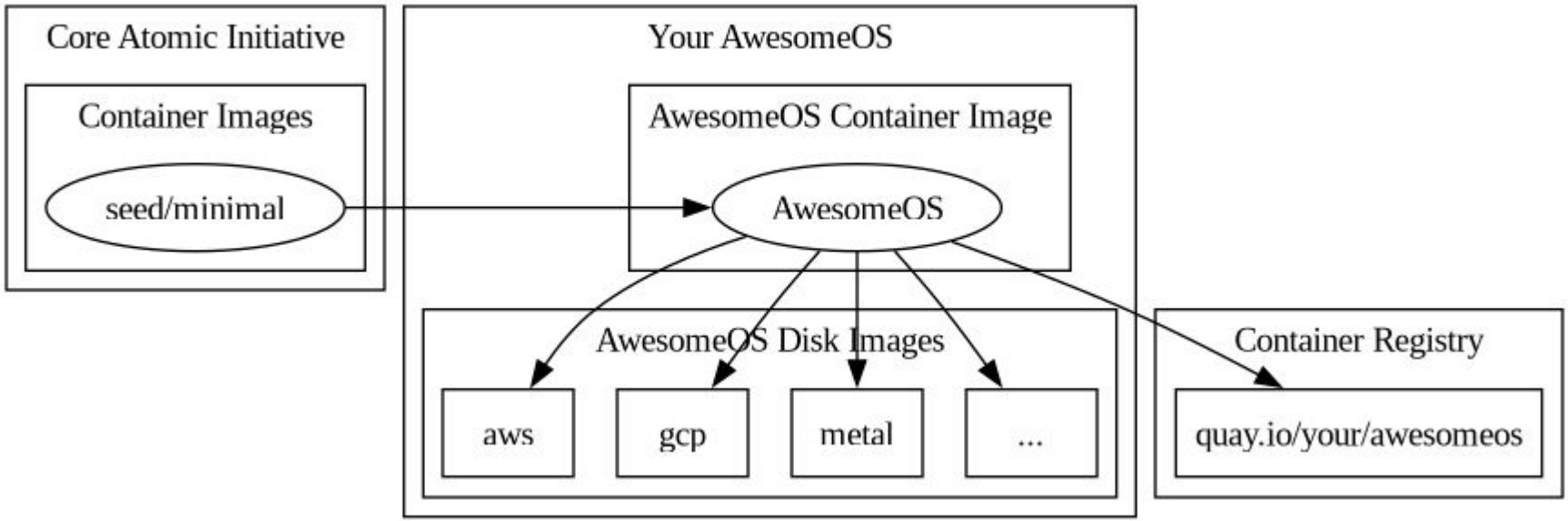



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gcp
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openstack
ibmcloud
metal
...
IoT
IoT Container Image
iot
IoT Disk Images
metal
...
Atomic Desktops
Desktop Container Images
core_desktop
SilverBlue
Kinoite
...
Desktop Disk Images
iso
iso
...

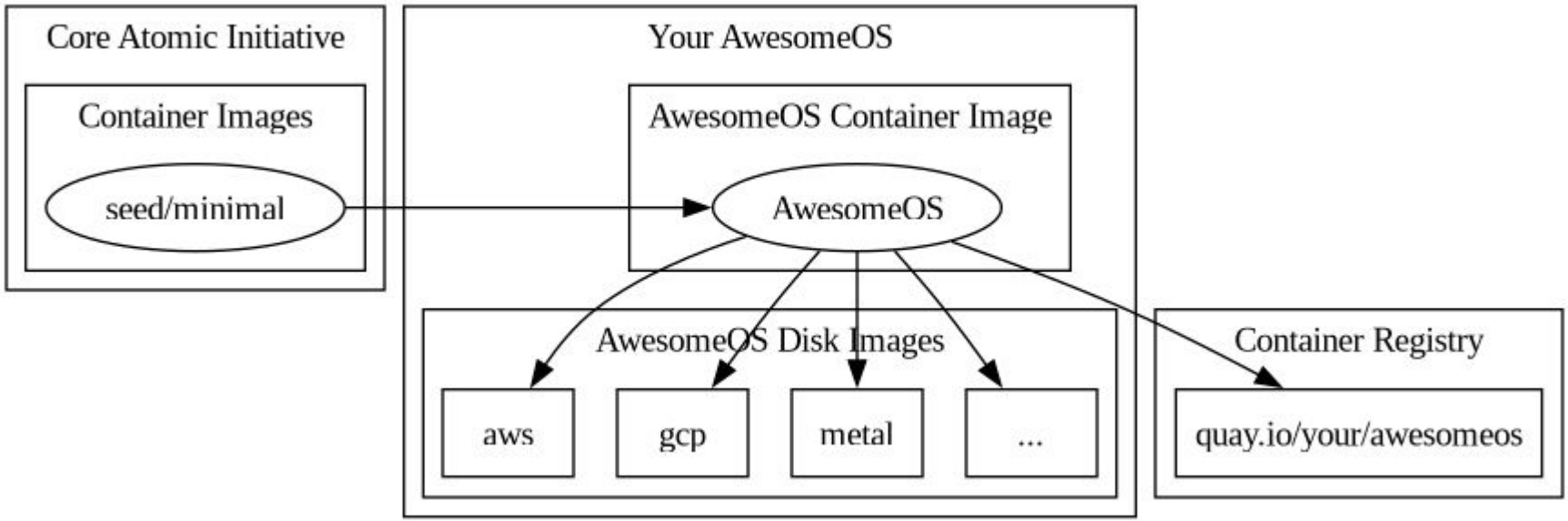



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...
IoT
IoT Container Image
iot
IoT Disk Images
metal
...
Atomic Desktops
Desktop Container Images
core_desktop
SilverBlue
Kinoite
...
Desktop Disk Images
iso
iso
...




Core Atomic Initiative
Container Images
seed/minimal
Your AwesomeOS
AwesomeOS Container Image
AwesomeOS
AwesomeOS Disk Images
aws
gcp
metal
...
Container Registry
quay.io/your/awesomeos




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AwesomeOS
AwesomeOS Disk Images
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Podman Machine/Desktop

podman desktop

Documentation Core Values Features Downloads Extend Blog

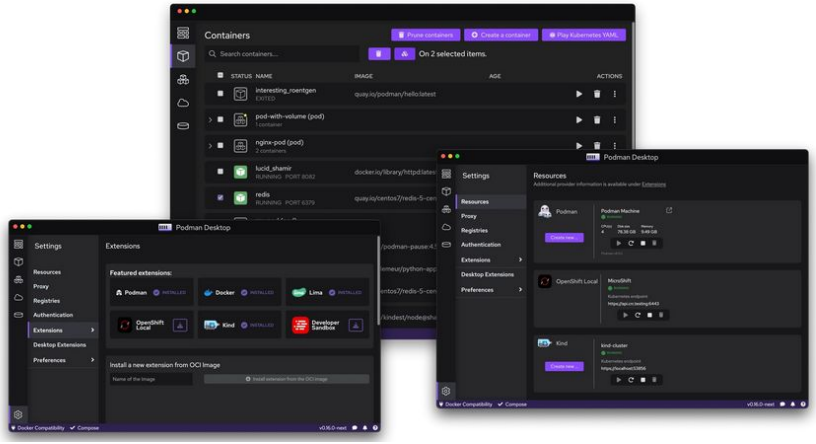
Containers and Kubernetes for application developers

Podman Desktop is an open source graphical tool enabling you to seamlessly work with containers and Kubernetes from your local environment.

Download Now

For Linux *(browser-detected)*

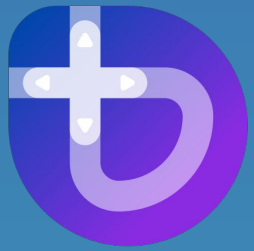
Other downloads





universal blue

bluefin

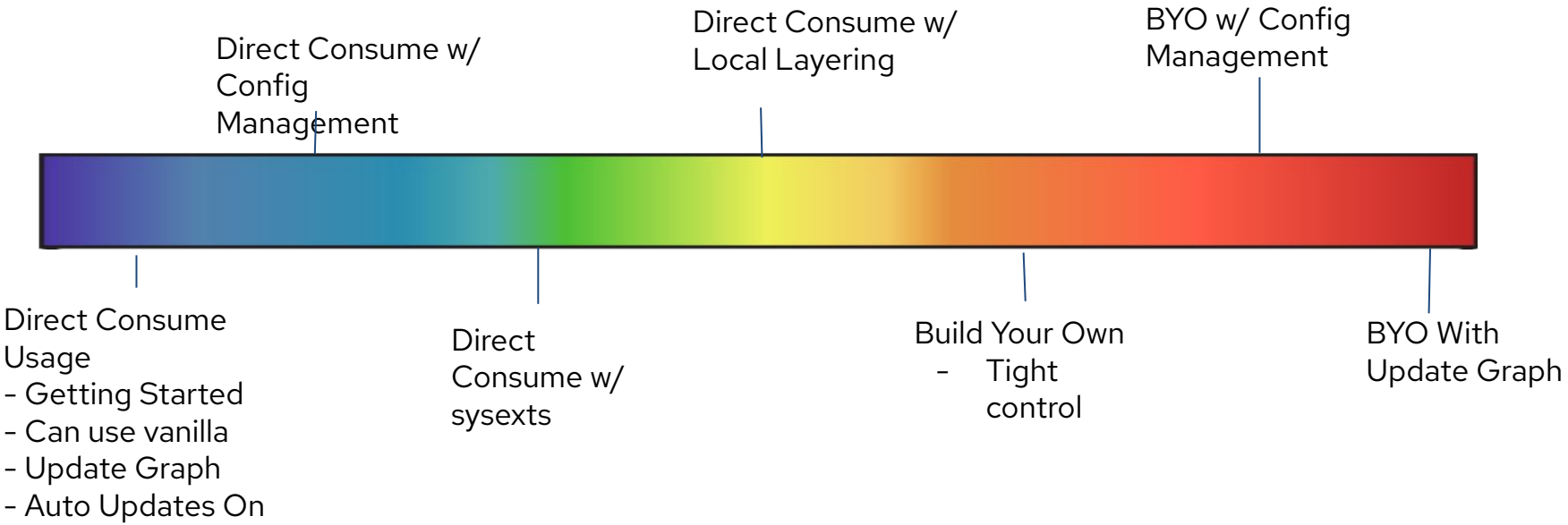


bazzite

uCore

Unification

Provide a Spectrum of Solutions



Questions?



Get involved!

- Issues: https://forge.fedoraproject.org/atomic/tracker
- Project Board: https://forge.fedoraproject.org/atomic/-/projects/750
- Meeting Recordings/Notes:

  https://nimbinatus.fedorapeople.org/#unification
- Matrix: **#bootc:fedoraproject.org**