



OpenShift Meetup - Melbourne 19 October 2023

Last Meetup - Aug 2023





19 October Meetup

Agenda:

Welcome

What is Open Hybrid Cloud?

Paul Foster

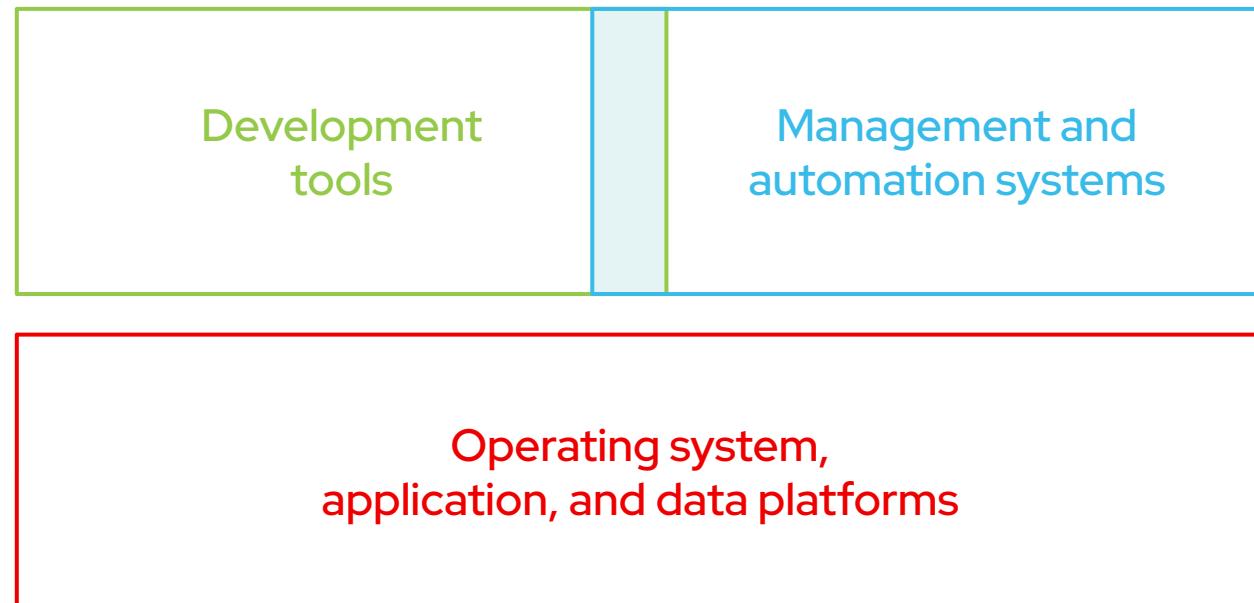
- ▶ Managed OpenShift
- ▶ Provisioning ROSA with Terraform Module
- ▶ Hosted Control Planes

Devendra Shanbhag

- ▶ Empowering the Edge: Introducing Red Hat Device Edge (RHDE) in the Cloud Native Landscape

Open hybrid cloud

Open hybrid cloud is Red Hat's recommended strategy for **architecting**, **developing**, and **operating** a hybrid mix of applications, delivering a truly flexible cloud experience with the speed, stability, and scale required for digital business transformation.



Bare metal



Virtual



Private cloud



Public cloud

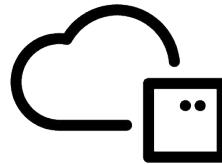


Edge

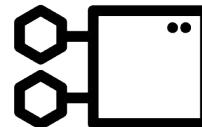
Hybrid is the new datacenter



Everything-as-a-Service



Modern Apps



Containers and
microservice



ISVs



Bare metal



Virtual



Private cloud



Public cloud



Edge

Red Hat Enterprise Linux

Paul Foster

Managed OpenShift Black Belt

<https://www.linkedin.com/in/paul-foster-5751917/>

Red Hat OpenShift cloud services

A turnkey application platform with joint and managed support from Red Hat and leading cloud providers



Focus on innovation

Simplify operations so your teams can refocus on innovation, not managing infrastructure

Accelerate time to value

Quickly build, deploy, and manage applications that scale as needed

Clusters production ready in minutes not weeks

Hybrid cloud flexibility

Deliver a consistent experience on premises and in the cloud

Operational efficiency

Enhance operational consistency, efficiency and security through proactive management and support

Flavours of OpenShift Cloud Service

Red Hat OpenShift cloud services—Fully managed, start quickly



Red Hat OpenShift
Service on AWS



Azure Red Hat
OpenShift



Red Hat OpenShift
on IBM Cloud



Google Cloud

Red Hat OpenShift
Dedicated

Self-Managed Red Hat OpenShift—Customer managed, for control and flexibility



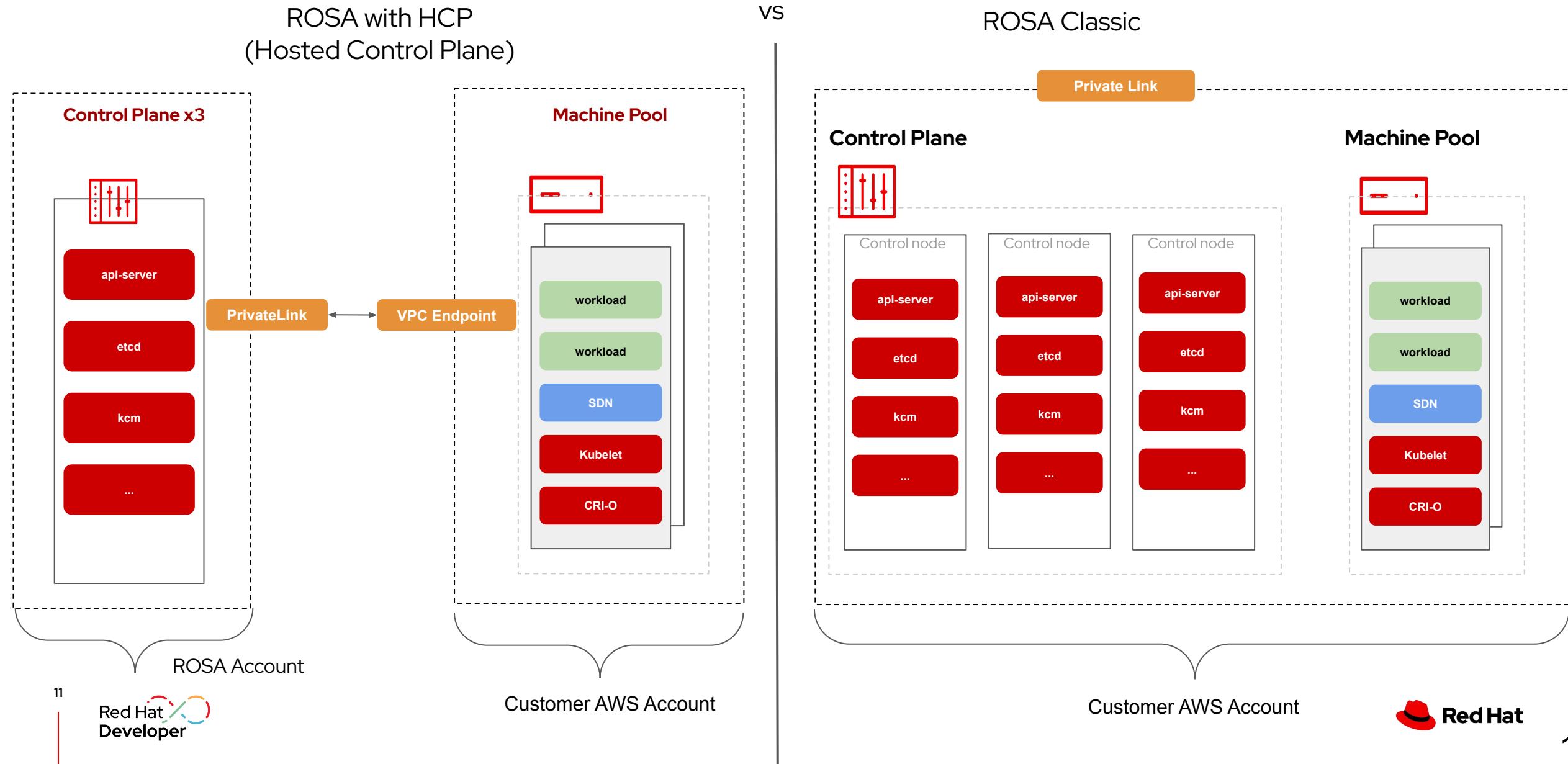
Red Hat
OpenShift

On **public cloud**, on-premises on **physical** or **virtual** infrastructure,
and at the **edge**

ARO \ ROSA Customer Benefits

- ▶ Aligns to “cloud 1st” strategy - **makes k8s easier**
- ▶ A consistent platform for multi cloud.
- ▶ Turnkey Solution with many Day 2 Operations built-in.
- ▶ Zero downtime upgrades fully automated, monitored & remediated by SRE.
- ▶ Managed Control Plane and Managed Cluster.
- ▶ Automated IAC installs - 50 minutes (10 with HCP).
- ▶ Proactive & Reactive Support - supported 24/7 by expert SREs.
- ▶ Divest from cluster ownership and management - 99.95% SLA.
- ▶ Focus on driving Business Value - not on upgrading kubernetes.
- ▶ Unified bill - Leverage your existing commit spend / EDP to use OpenShift

What is Hosted Control Plane (HCP) for ROSA

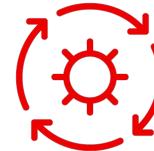


Why Hosted Control Plane



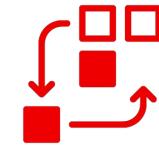
Cost savings

- ▶ Significantly reduced AWS infrastructure costs (typically \$8k/cluster/year)
- ▶ Quickly and easily spin up or tear down clusters when needed for efficiency and cost savings
- ▶ Smaller overall footprint (2 nodes vs 7)
- ▶ Scale worker nodes to 0 (post GA)



Operational efficiency

- ▶ Provisioning time ~ 10 minutes
- ▶ Seamless autoscaling of control plane at no additional cost
- ▶ Installer runs in ROSA Service account reducing required permissions
- ▶ Designed to be managed



Reliability

- ▶ Control plane is always HA over multiple availability zones
- ▶ Selectively upgrade control plane and worker nodes separately, giving increased control and flexibility for customers
- ▶ Increased resiliency from offloading control plane infra management

Comparison – Classic vs Hosted Control Plane

	Classic	Hosted Control Plane	So what?
TL; DR	Worker nodes AND Control Plane (Master and Infra nodes) all live in customer's AWS account	Control Plane components (e.g., etcd, API server, oauth and Master nodes) are hosted on AWS in a Red Hat owned and managed OpenShift cluster	Reliability: Control plane is always HA and seamlessly autoscales Secured: Reduced permissions needed to install/run
Provisioning Time	~40 minutes	< 10 minutes	Faster access to clusters
Minimum footprint	7 nodes (3 control plane, 2 infra, 2 worker nodes)	2 worker nodes	Cost savings via reduced AWS compute
Upgrades	Entire cluster is upgraded at one time	Selectively upgrade control plane and worker nodes separately	Flexibility in upgrade schedule
Deployment	Via ROSA CLI or web UI; Full cluster provisioning occurs in customer's AWS account	Via ROSA CLI (web UI coming soon); Provision "Hosted Clusters" that deploy the control plane components into Red Hat's Management clusters; Request "Machine Pools" that deploy worker nodes into the customer's AWS account	Simplified, more secure installation;
Compliance	ISO 27001, 17, 18; SOC 2 Type 2, SOC 3, PCI-DSS, HIPAA, IRAP*	No compliance certifications or FIPS at GA	Matching compliance standards a priority
Add-ons	RHOAM, RHODS	No add-ons support at GA	Add-on support a priority

Links

- ▶ <https://github.com/orgs/MOBB-PF/repositories>
- ▶ https://registry.terraform.io/providers/terraform-redhat/rhcs/latest/docs/sources/rosa_oidc_config
- ▶ <https://console.redhat.com/openshift>
- ▶ <https://github.com/rh-mobb/>
- ▶ <https://cloud.redhat.com/experts/>

Devendra Shanbhag

Principal Architect

<https://www.linkedin.com/in/devshanbhag>



Empowering the Edge: Introducing Red Hat Device Edge (RHDE) in the Cloud Native Landscape

OpenShift Meetup - Melbourne (Oct 2023)

Dev Shanbhag



**Red Hat named a “Leader” in the 2023 Forrester Wave™:
Multicloud Container Platforms**

**Red Hat Recognized as a Leader in 2023 Gartner® Magic
Quadrant™ for Container Management**

**Red Hat placed in 2023 Gartner® Magic Quadrant™ for
DevOps platforms**





Image by Brett Sayles (unsplash.com)

🚧 Obstacles

- **Connectivity Issues**
- **No Physical Access Control**
- **Security Concerns**
- **Field Constraints**

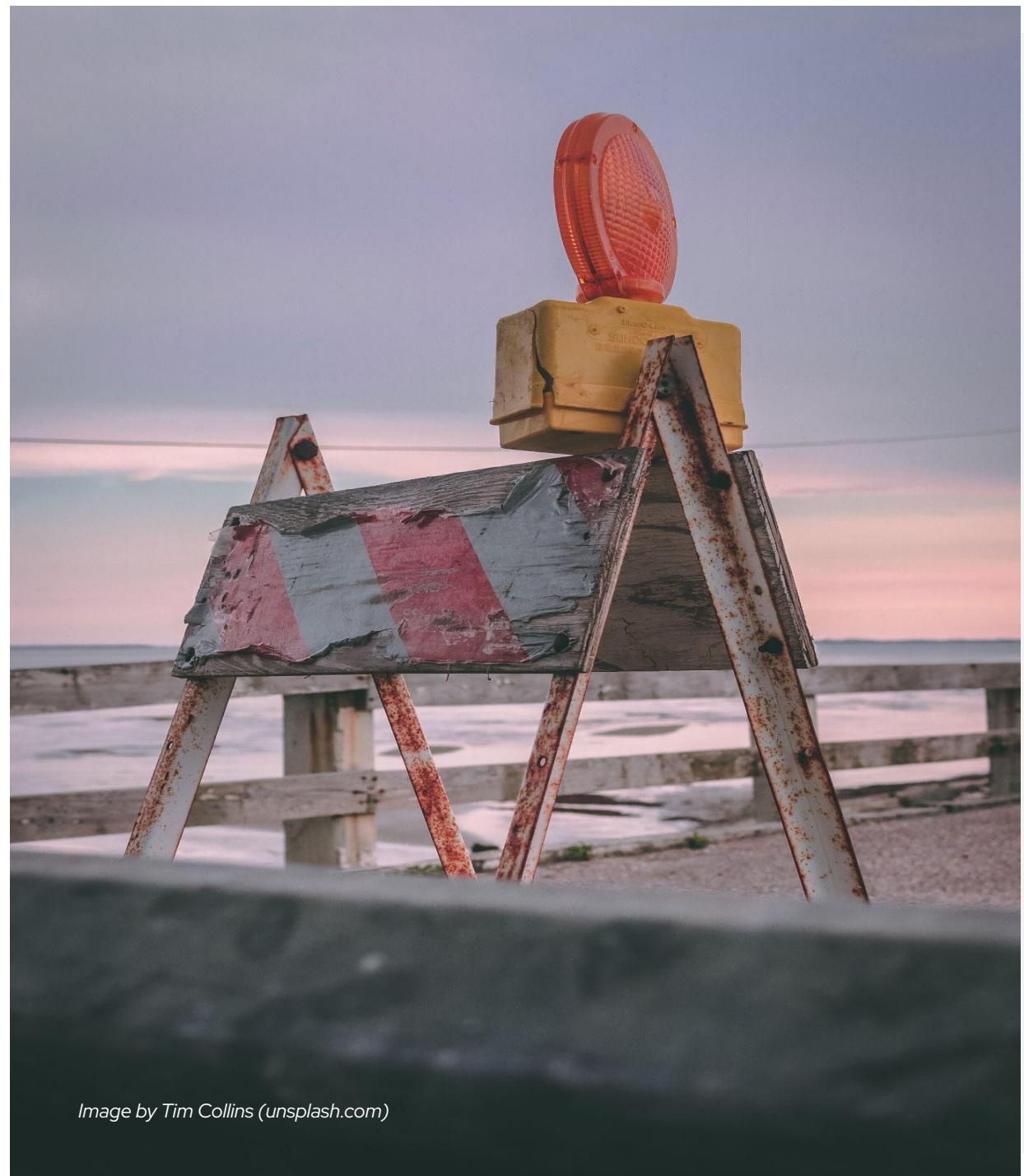
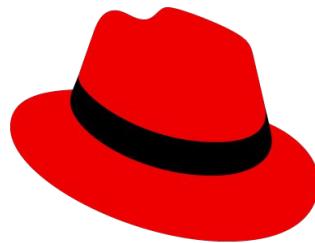


Image by Tim Collins (unsplash.com)

How do we solve this?



Introducing Red Hat Device Edge



Red Hat Device Edge

Combines Kubernetes * + Red Hat Enterprise Linux

Address the needs of small devices at the farthest edge

I know what's RHEL... what's the difference with RHEL for Edge?

RHEL for Edge is **immutable**

RED HAT® ENTERPRISE LINUX®

General purpose Operating System

- Package-based Operating System
- Packages are integrated with OS directory
- Rollbacks based on OS images or backups
- Traditional update system
- yum/dnf packet managers systems

RED HAT® ENTERPRISE LINUX for Edge

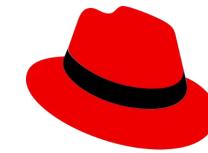
Immutable Operating System

- Image-based Operating System
- Package are isolated from root directory
- Package installs create layers easy to rollback
- Support for multiple OS branches and repositories
- rpm-ostree system

RHEL For EDGE

- Image Based
- A/B deployments
- GreenBoot Healthchecks
- FIDO Device Onboard
- Built for Container and VM workloads
- Ability to run K8s workloads

What is Red Hat Device Edge? (explained with a metaphor)



Red Hat
Enterprise Linux

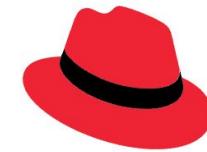
What is Red Hat Device Edge? (explained with a metaphor)



Red Hat
Enterprise Linux

Your longtime best friend

What is Red Hat Device Edge? (explained with a metaphor)



**Red Hat
OpenShift**

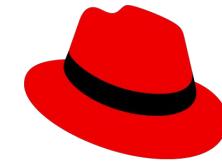
What is Red Hat Device Edge? (explained with a metaphor)



**Red Hat
OpenShift**

Agile, powerful, feature rich...

What is Red Hat Device Edge? (explained with a metaphor)



**Red Hat
Device Edge**

What is Red Hat Device Edge? (explained with a metaphor)



kubernetes



Red Hat
Enterprise Linux

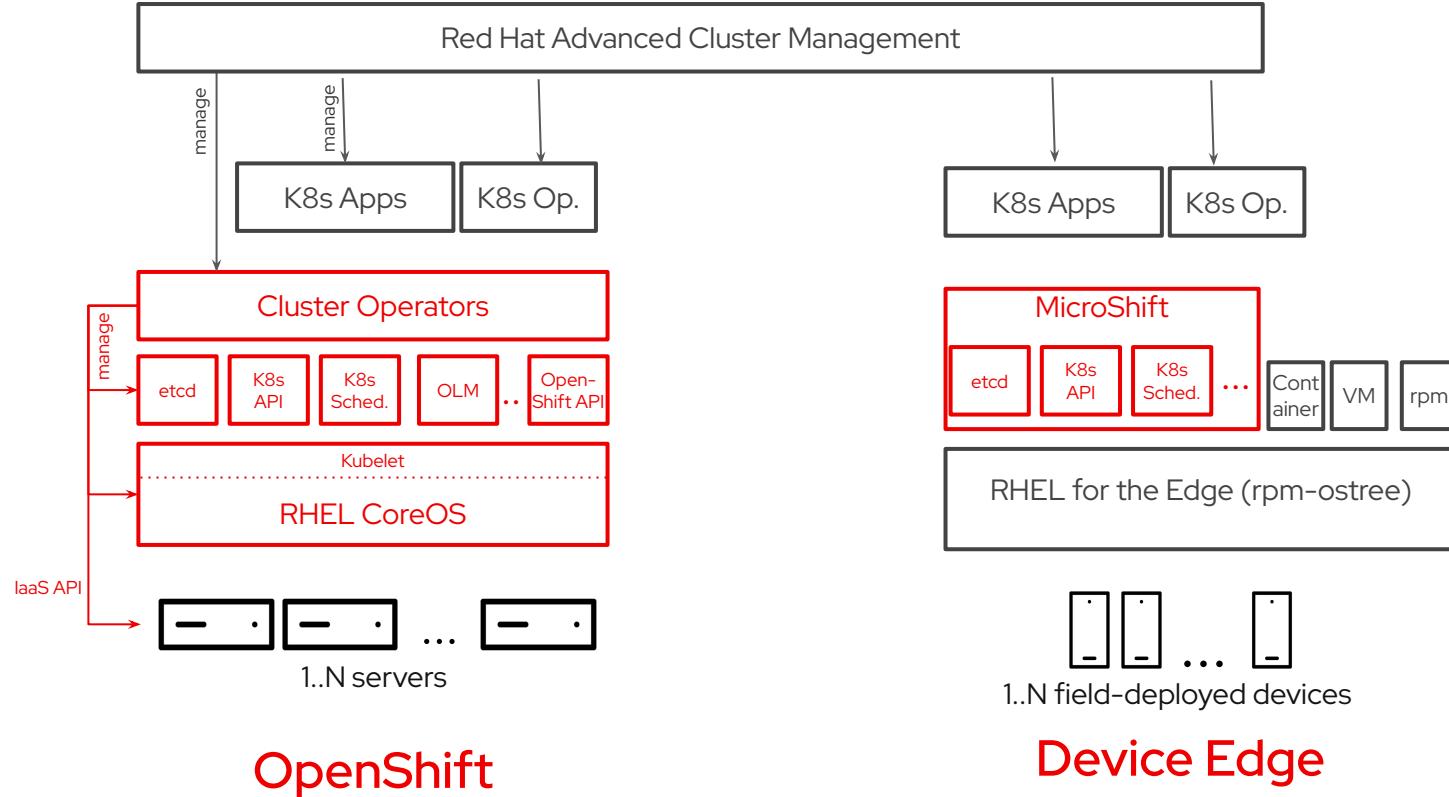
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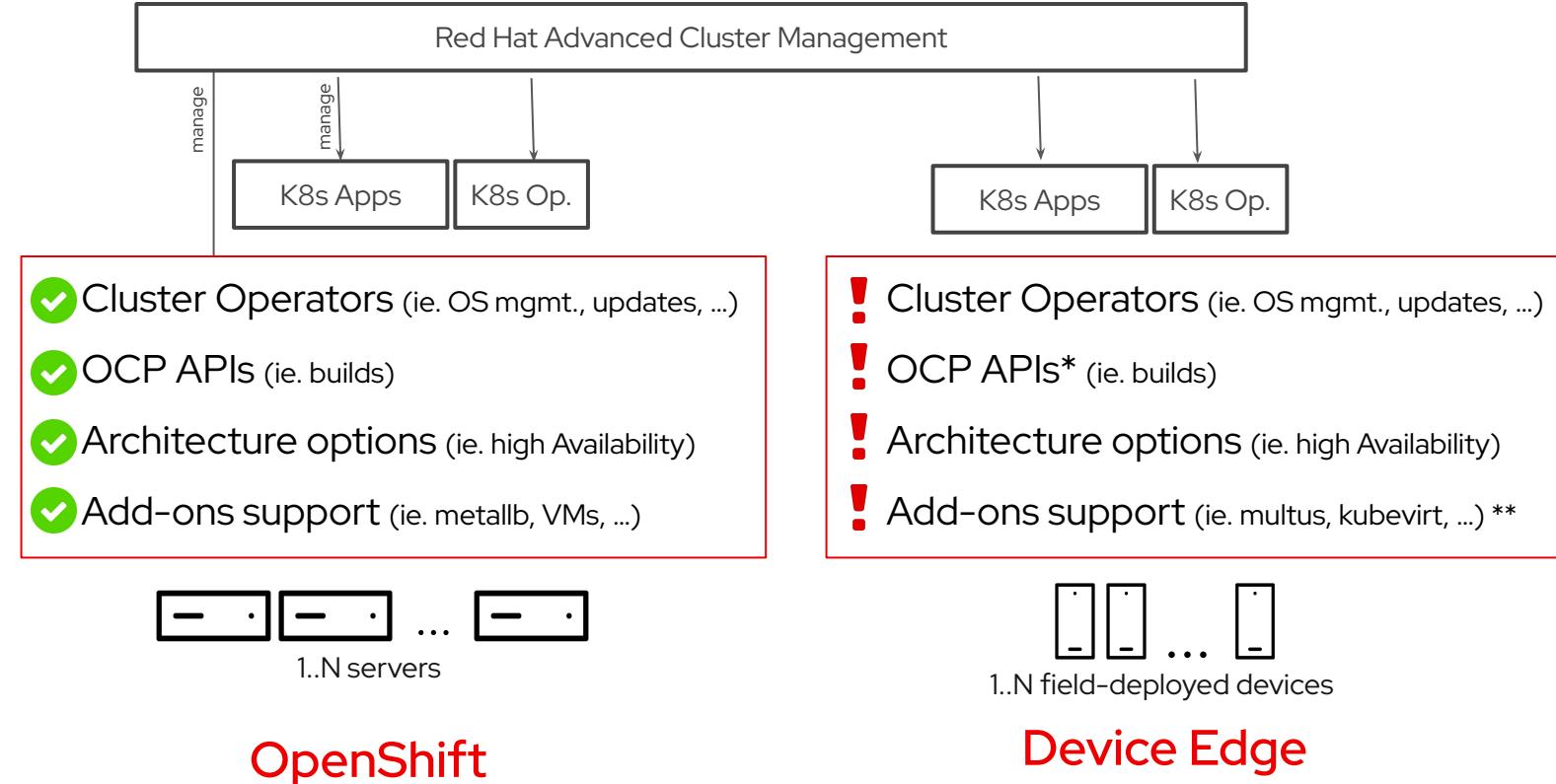
kubernetes
With a little bit of
OpenShift

 **Red Hat**
Enterprise Linux
“for Edge”

Architecture of Device Edge compared to OpenShift

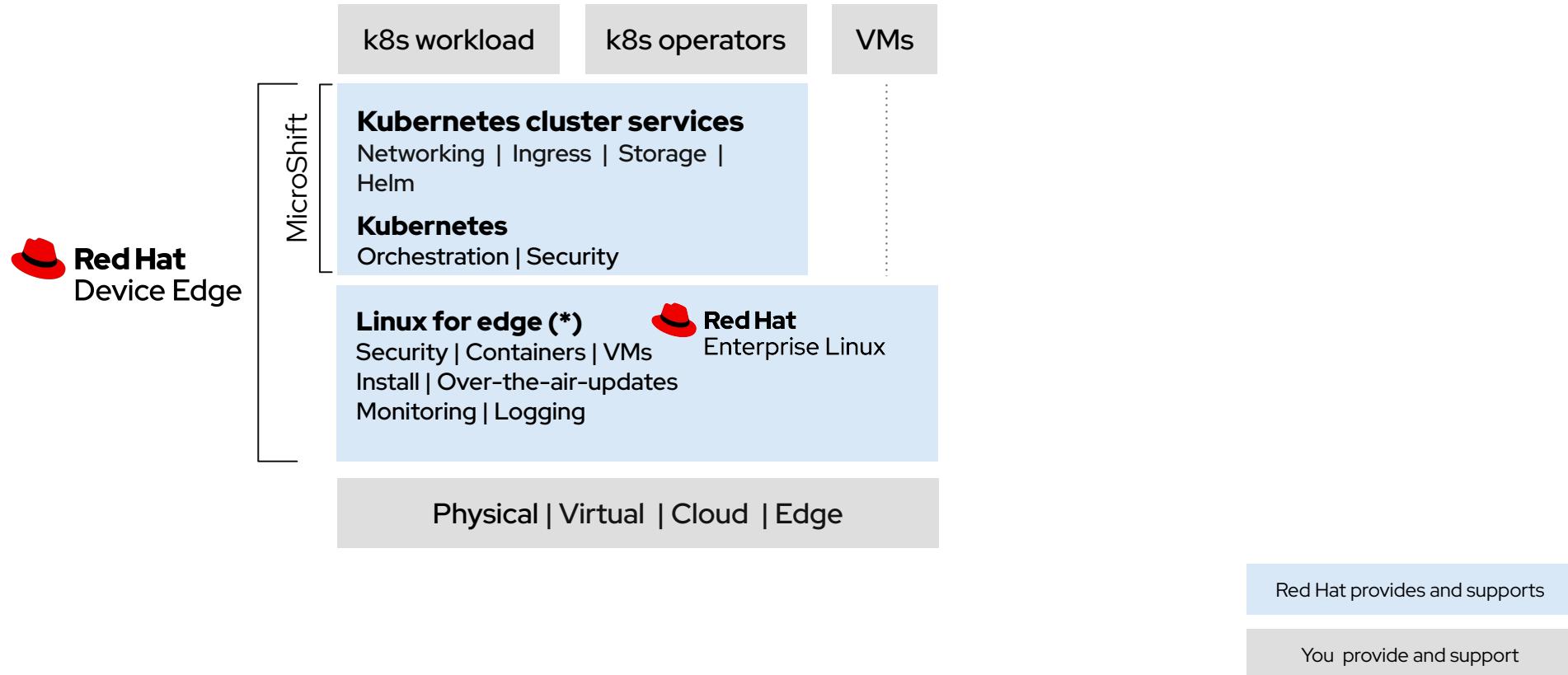


Architecture of Device Edge compared to OpenShift



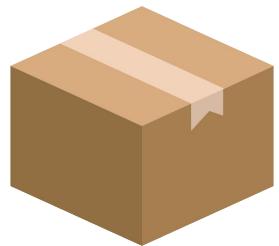
What is Red Hat Device Edge?

A small form-factor Kubernetes, derived from OpenShift, for field-deployed devices



https://www.youtube.com/watch?v=ricjUdNPU_E

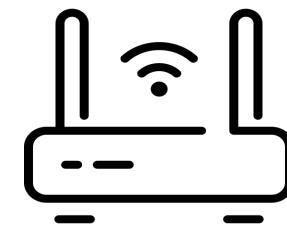
FIDO Device Onboarding



Drop device to
install location

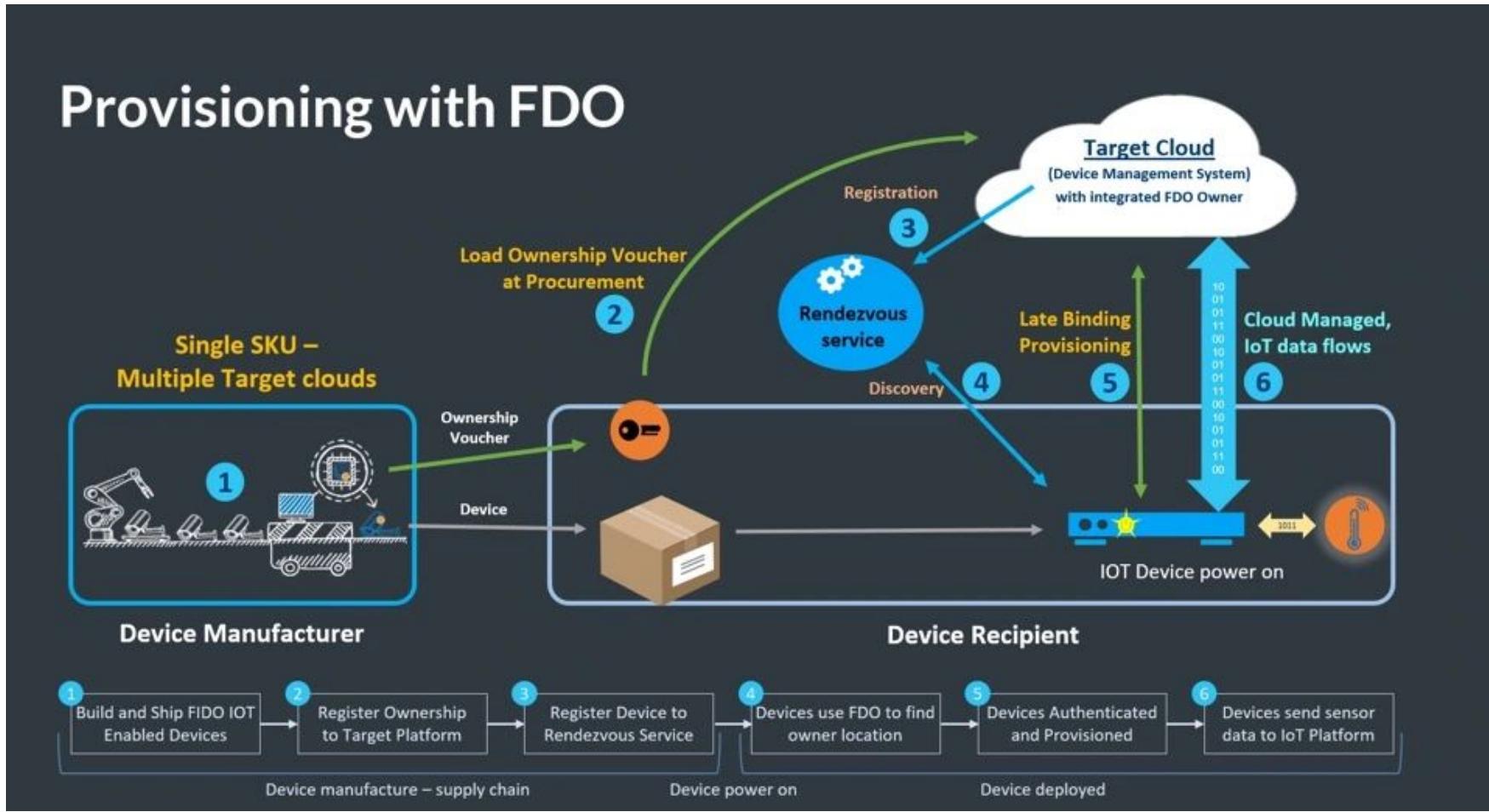


Power-on & Connect
to network



Auto-provision Onboard
device mgmt service

FDO Device Onboarding



Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.



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