Introduction to Red Hat Device Edge

Red Hat

Expanding our capabilities for Edge computing

Adding kubernetes to small form factor, field deployed edge devices

What's the news?

We are productizing MicroShift, bundled with Red Hat Enterprise Linux for Edge

What will be available?

A new product **Red Hat Device Edge**, that simplifies edge / DCS pricing and contains support for MicroShift, a low footprint k8s distribution derived from OpenShift

Why are we doing this?

To address the market demand for a consistent platform even on the smallest devices

Edge computing with Red Hat

Edge is the next frontier

Critical component of our company strategy and Hybrid Cloud story

Expanding across industries

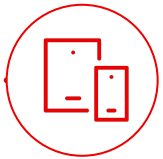
Developing capabilities & platforms that apply to many industries

Use case focused

The edge is not one thing or place, requirements can vary

Devices in the farthest edge locations

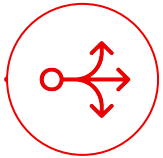
Not your traditional data center challenges



Limited HW and SW resources

Small, devices located anywhere, on any thing

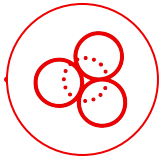
IoT Gateways, industrial controllers, Point of Sale terminals, etc...



Life-cycle management

In locations/devices with limited IT resources

Hard to reach locations with intermittent connectivity back to a central site



Scale

Manage potentially tens of thousands of devices

How to scale existing teams and processes to ensure operational consistency & security

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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

Right-sized to meet the needs of small, resource constrained devices

Optimized with light-weight Kubernetes based on MicroShift, derived from OpenShift

Intelligent operating system ready for edge deployments

Red Hat Device Edge

Benefits

Deploy what you need

- Meet the needs of different use cases
- Choice of workload types

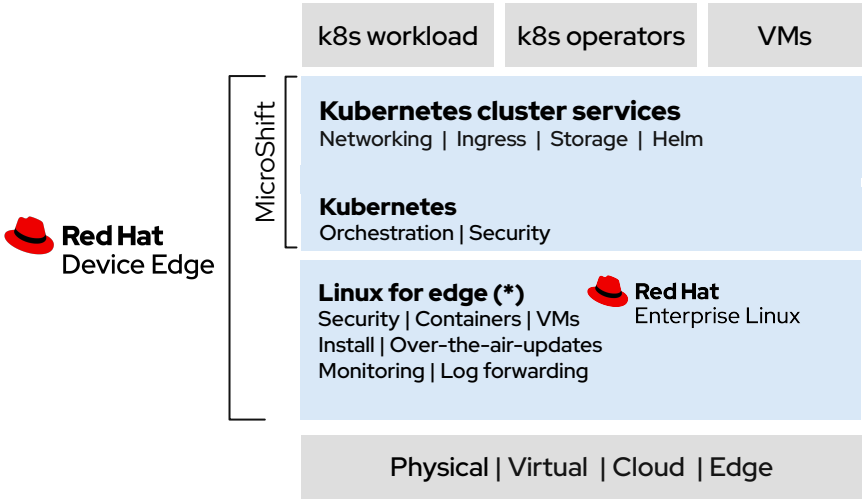
One platform for your workload journey

- Start with Red Hat Enterprise Linux
- Add Kubernetes when needed
- Start with the entire product
- Run k8s workload on a small form factor edge device

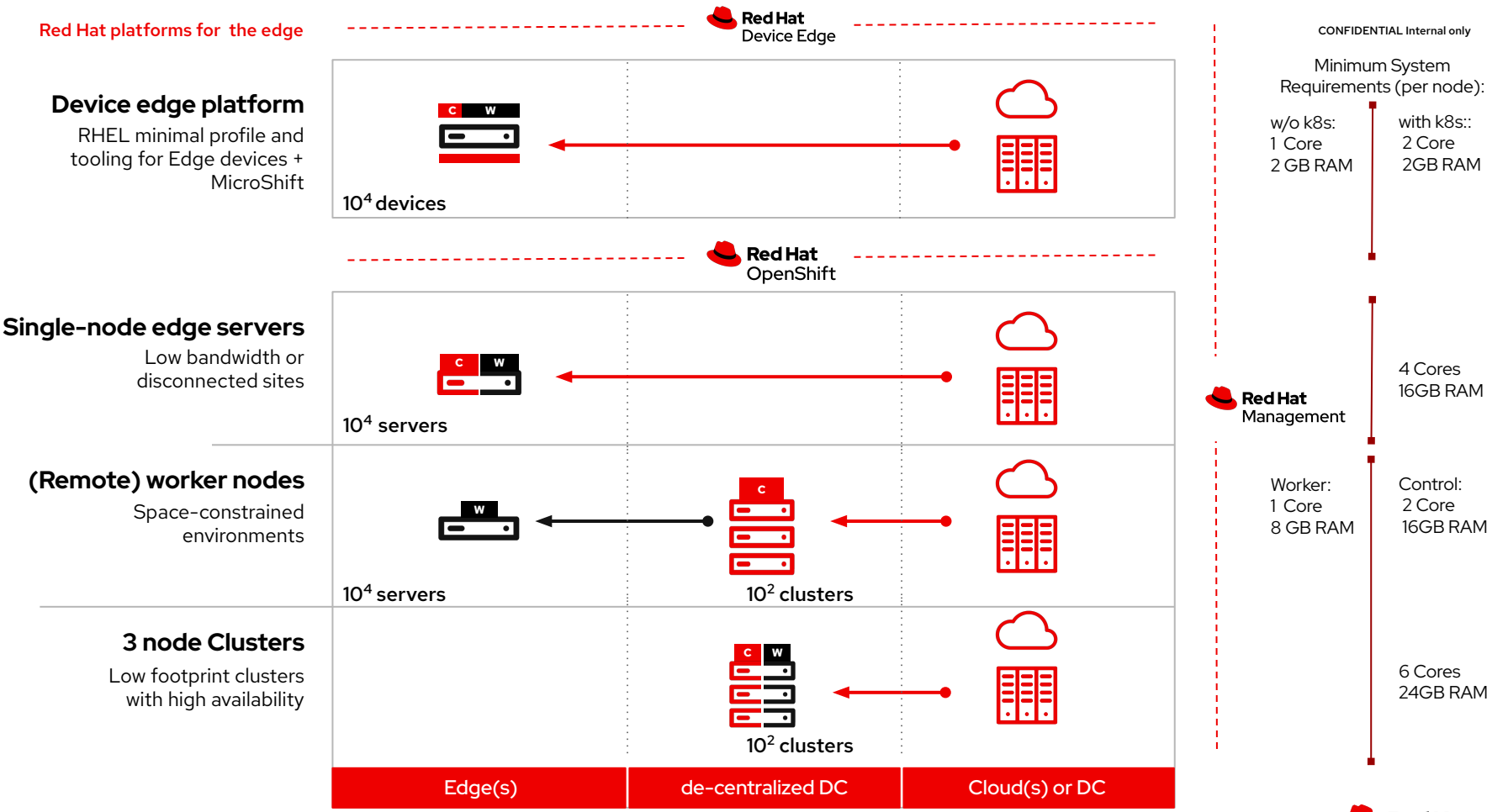
Operational Consistency

- Use same tools and processes
- Scale your IT teams
- Consistency from the far edge via decentralized DC into the cloud

Red Hat Device Edge Technical Overview



* recommended for edge deployments: Red Hat Enterprise Linux for Edge Images, rpm-ostree, immutable, atomic upgrade, over the air flavour of Red Hat Enterprise Linux.



Cluster management and application deployment

Kubernetes node control

C Control node

W Worker node

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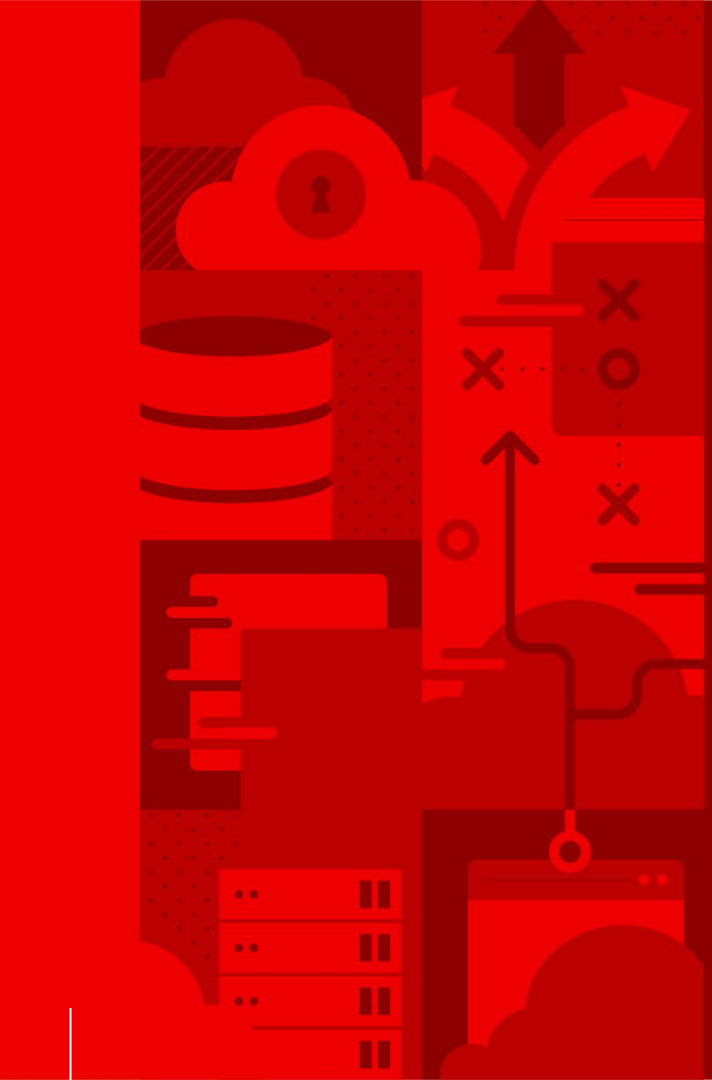
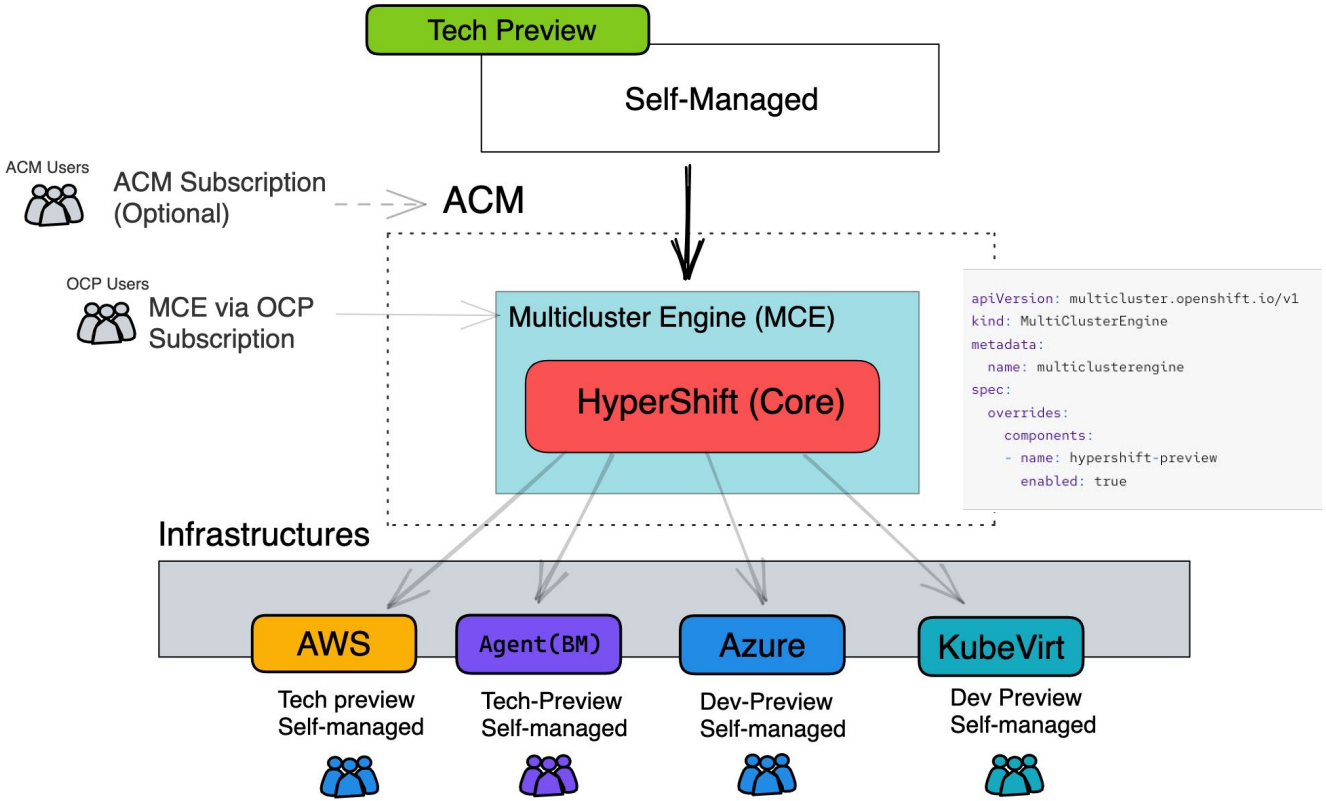


Hosted Control Planes (Hypershift)

Hosted Control Planes



PM: Adel Zaalouk

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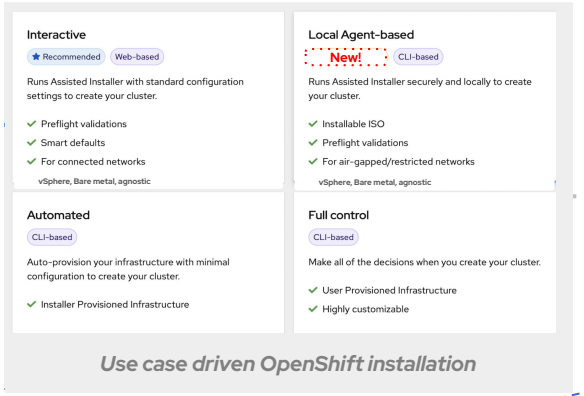
The Big Picture



- Create an OpenShift cluster using ***Interactive | Automated | Full-control | local-agent (new)***
- **Turn into a hub cluster** with Multicluster engine for Kubernetes (MCE)
- **Create a spoke cluster** – OpenShift spoke clusters are either **standalone or hosted clusters (HyperShift)**
- Optionally, manage the fleet of clusters and **enforce policies at scale** with Red Hat Advanced Cluster Management

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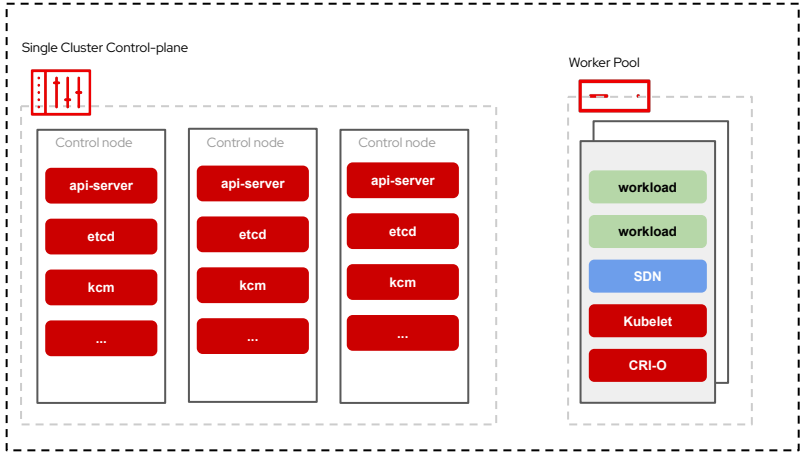
Product Manager(s): Marcos Entenza (AWS*, Azure*, Ramon Acedo (BM, VMware), Peter Lauterbach (OpenShift Virtualization), Adel Zaalouk (Hosted Control Planes)

Hypershift Brings Externally Managed Control-Planes

Standalone OpenShift

Control-Plane (CP) + Workers

Standalone OpenShift **Cluster** (dedicated CP nodes)



Low CAPEX and OPEX costs (bundling of CPs + CP as pods)

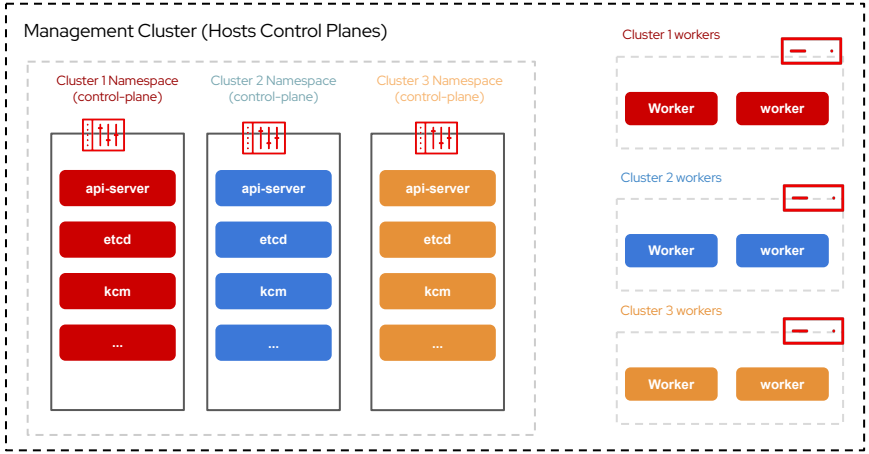
Central Management of CPs (easy operation & maintenance)

Multi-arch support (e.g. CP x86, workers ARM)

HyperShift

Control-Plane (CP) + Workers

HyperShift **Clusters** (decoupled CP and workers)



Network & Trust segmentation

Mixed Iaas For CP and Workers

Fast cluster bootstrapping (CP as Pods)

Product Manager: Adel Zaalouk

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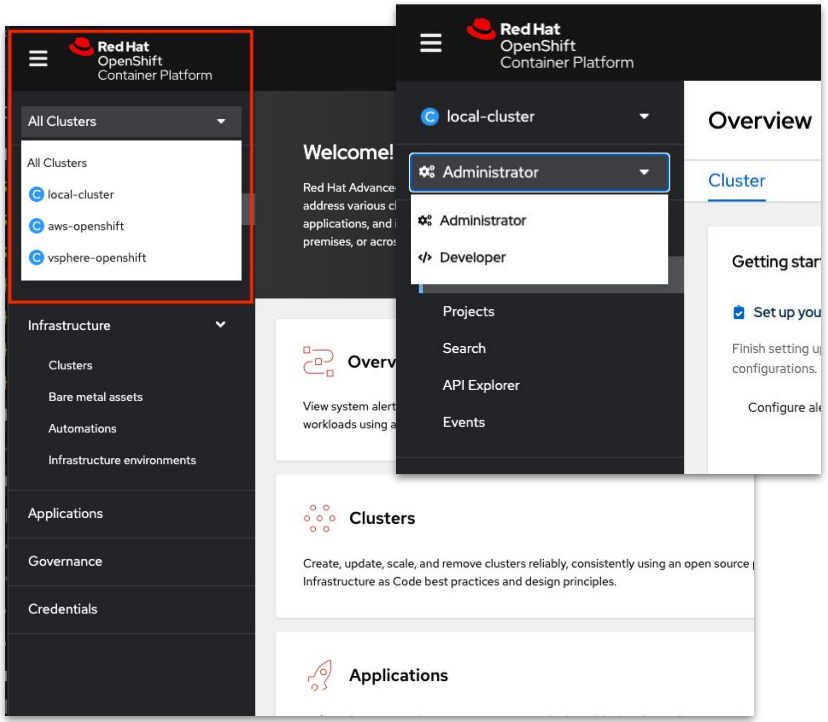
Multi-Cluster Focused

Selectable Cluster Inventory

Tech Preview



What is this console integration?

Experience allows users to select clusters across their company as they enter the hub cluster's OCP console! Bringing together 3 tools into one UX:

- OpenShift Console (OCP) - main user experience for all individual clusters
- Multicluster Engine (MCE) - offers basic cluster inventory/create/update/destroy
- Advanced Cluster Management (ACM) - full multi-cluster management

Moving from single cluster to a fleet of OpenShift:

1. Start deploying apps on a single OpenShift cluster
2. Use the Multicluster Engine to create more clusters and enable RBAC controlled multi-cluster views
3. Upgrade with Advanced Cluster Management to simplify multi-cluster configuration, application deployment, observability, networking, and more.

All OCP customers get MCE included in their subscription

PM: Ali Mobrem, Sho Weiner

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