

# OpenShift Virtualization Roadshow

*Paris - 05/03/2024*



# Agenda

## OpenShift Virtualization Roadshow Paris | 13h30 - 18h

13h30 - 14h00	Mot de bienvenue + agenda
14h00 - 15h00	Pourquoi OpenShift Virtualization ?
15h00 - 15h30	Pause
15h30 - 18h00	Lab dirigé
18h00 - 19h00	Networking Cocktail



# Bienvenue à tous



GROUPE  
BPCE



GROUPE  
D'ASSURANCE  
MUTUALISTE  
ENGAGÉ



Nous sommes complet !  
**45 inscrits**



3



**GEODIS**



**BNP PARIBAS**



# Vos hôtes



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Quelles sont vos attentes ?

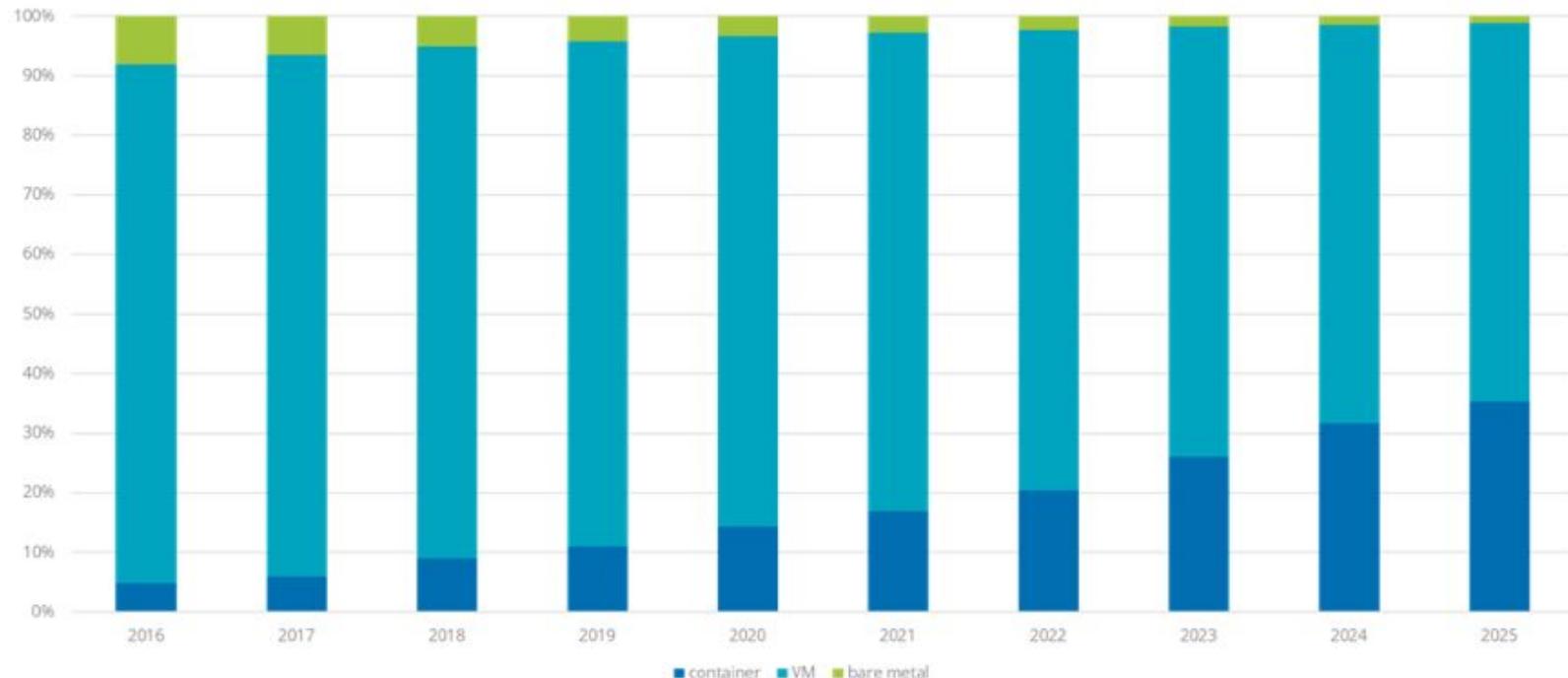


# *Les tendances du marché*

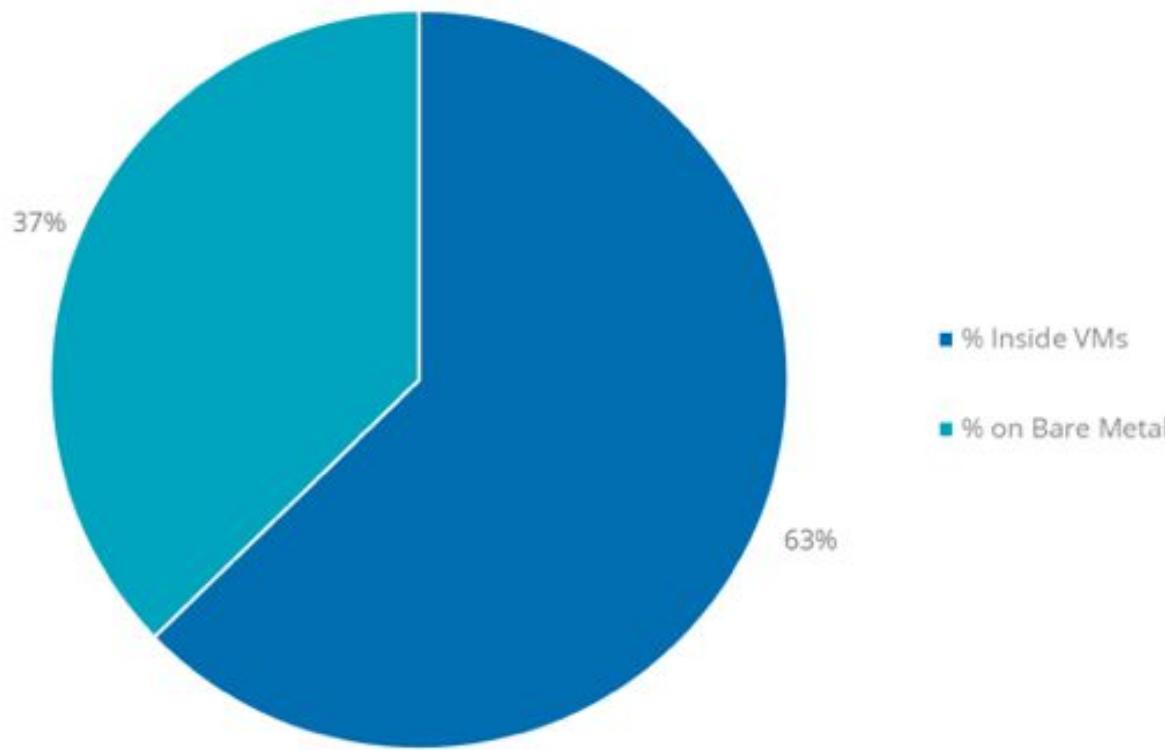


# The move from Virtual machines to Containers

Worldwide Logical Server Installed Base by Deployment Model, 2016-2025



# Kubernetes deployment model



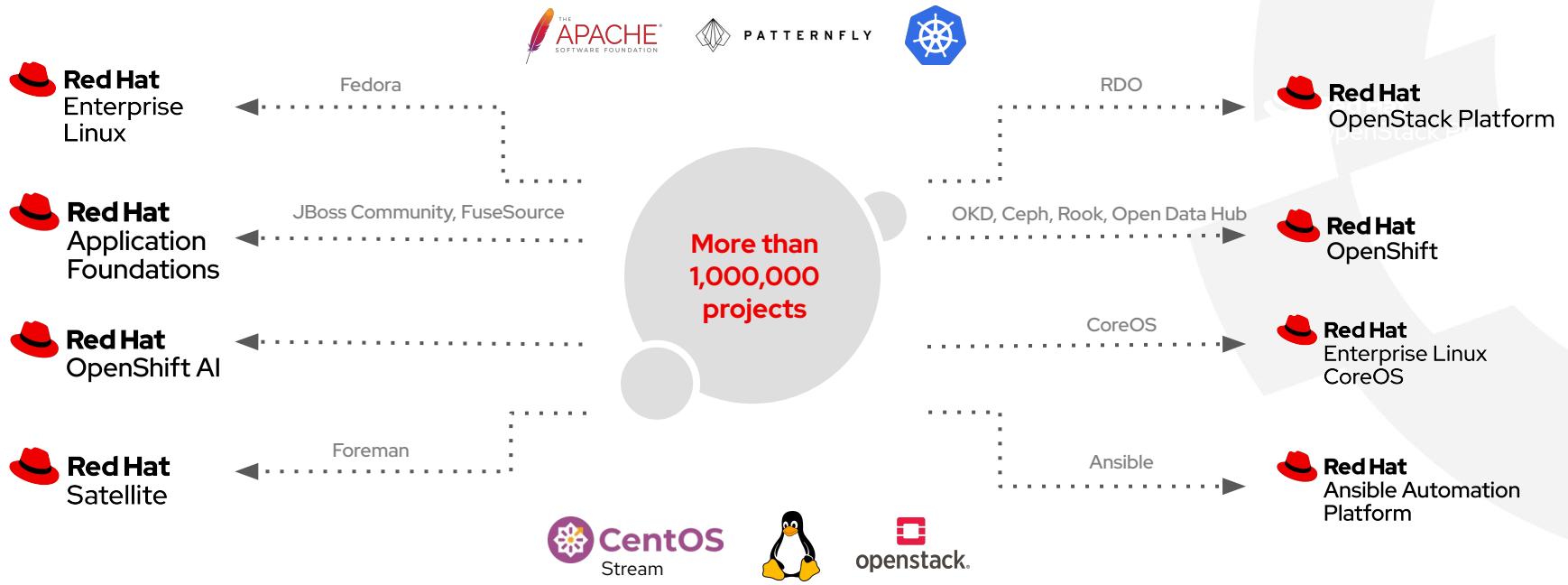
# Le marché change

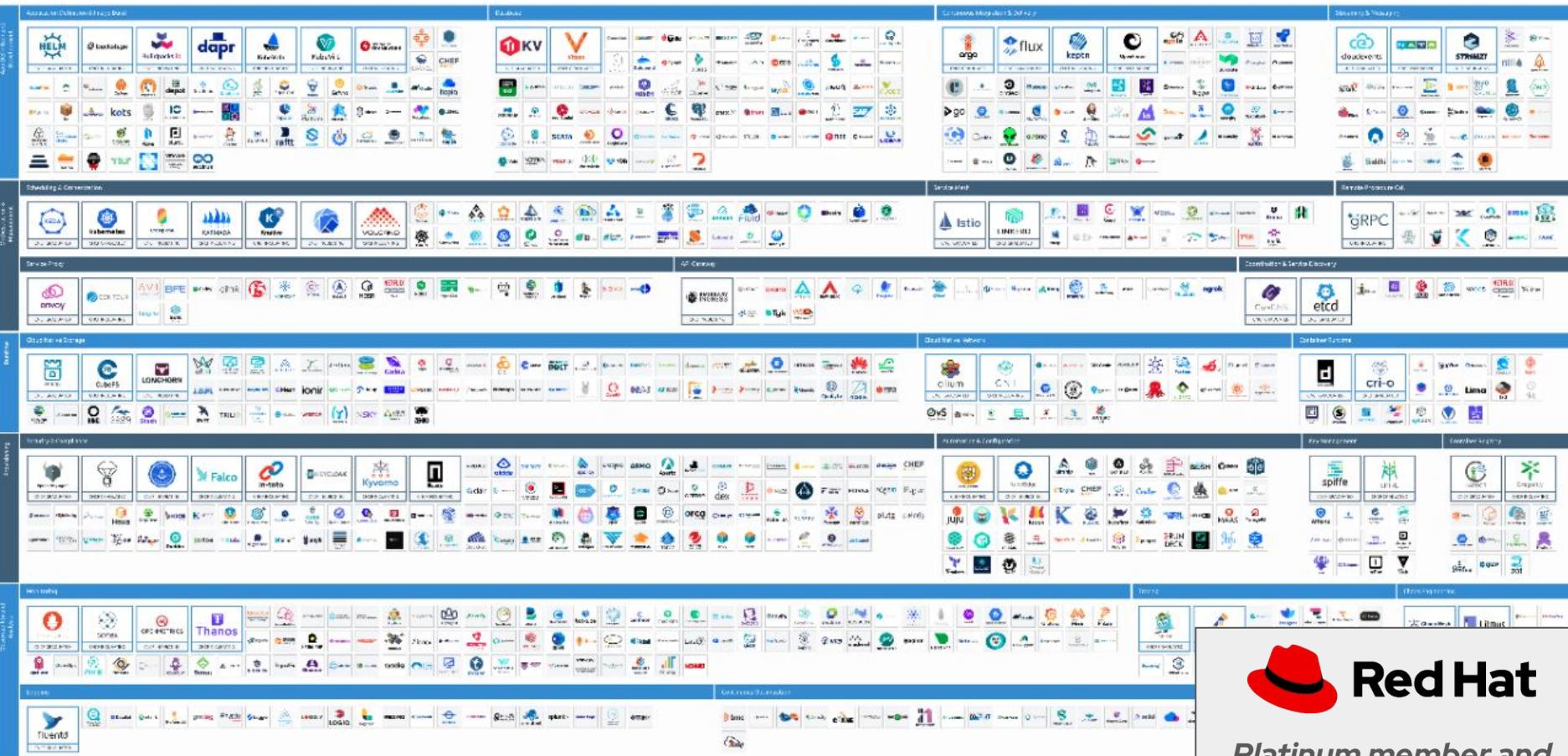


*Petit rappel sur notre  
contribution à l'open source*



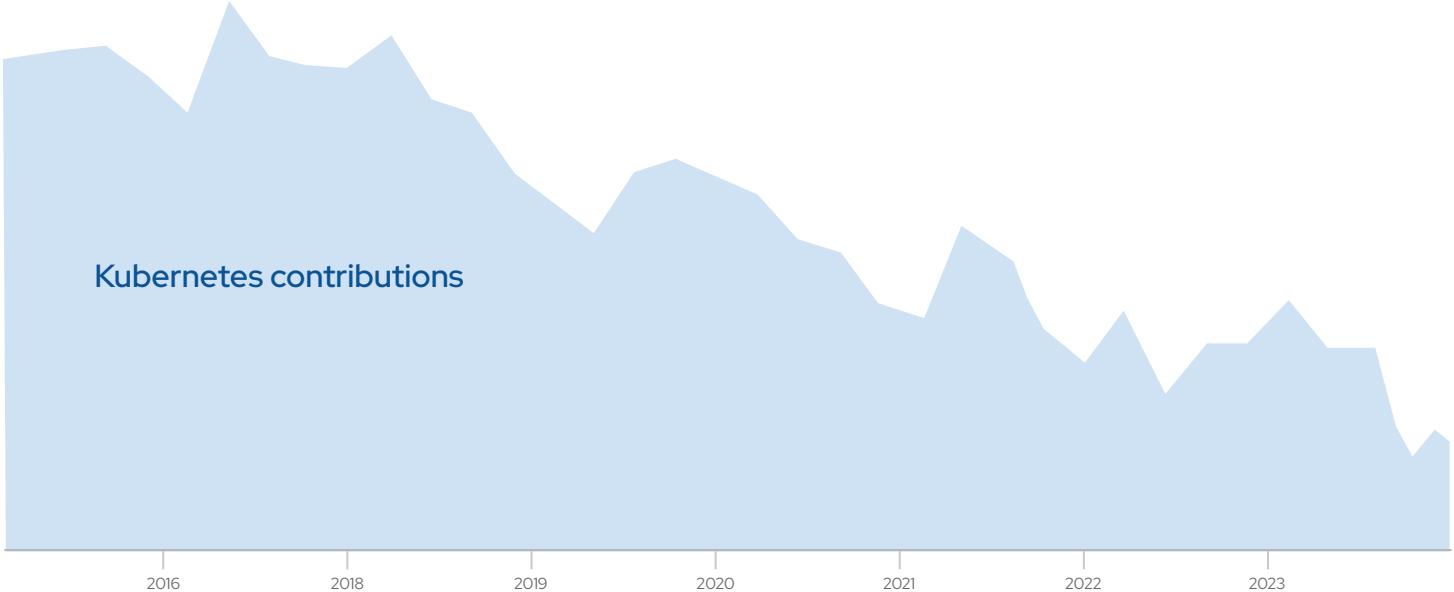
# From communities to enterprise



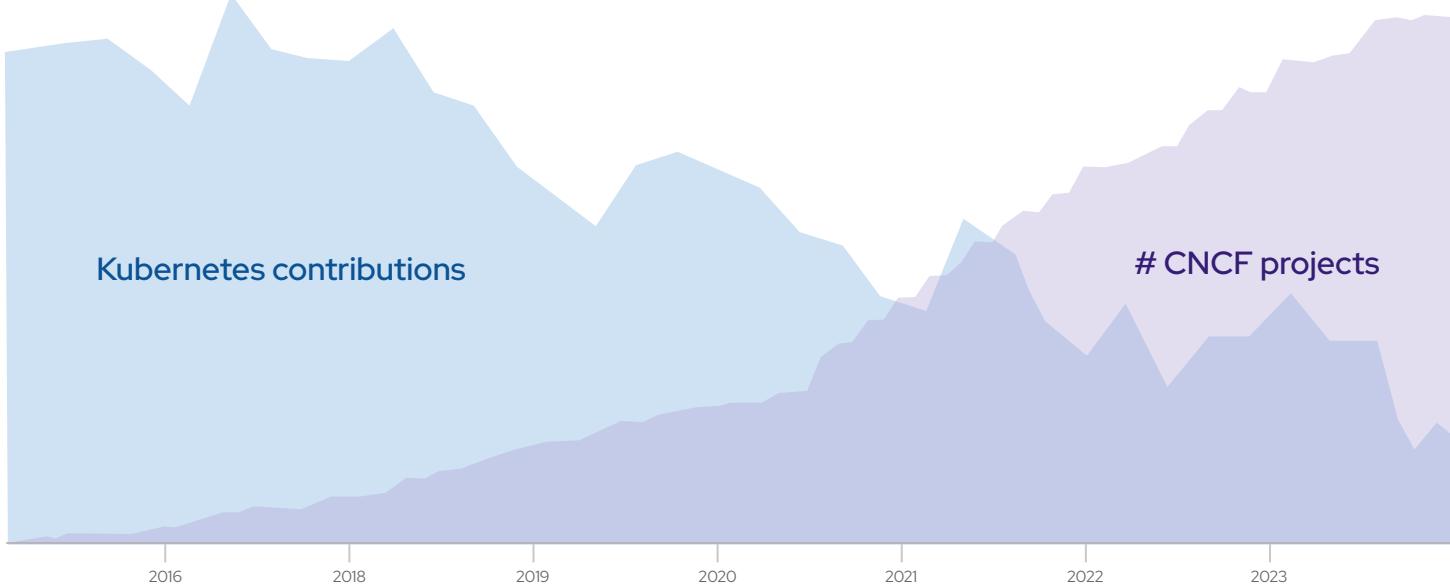


## **Platinum member and CNCF co-founder**

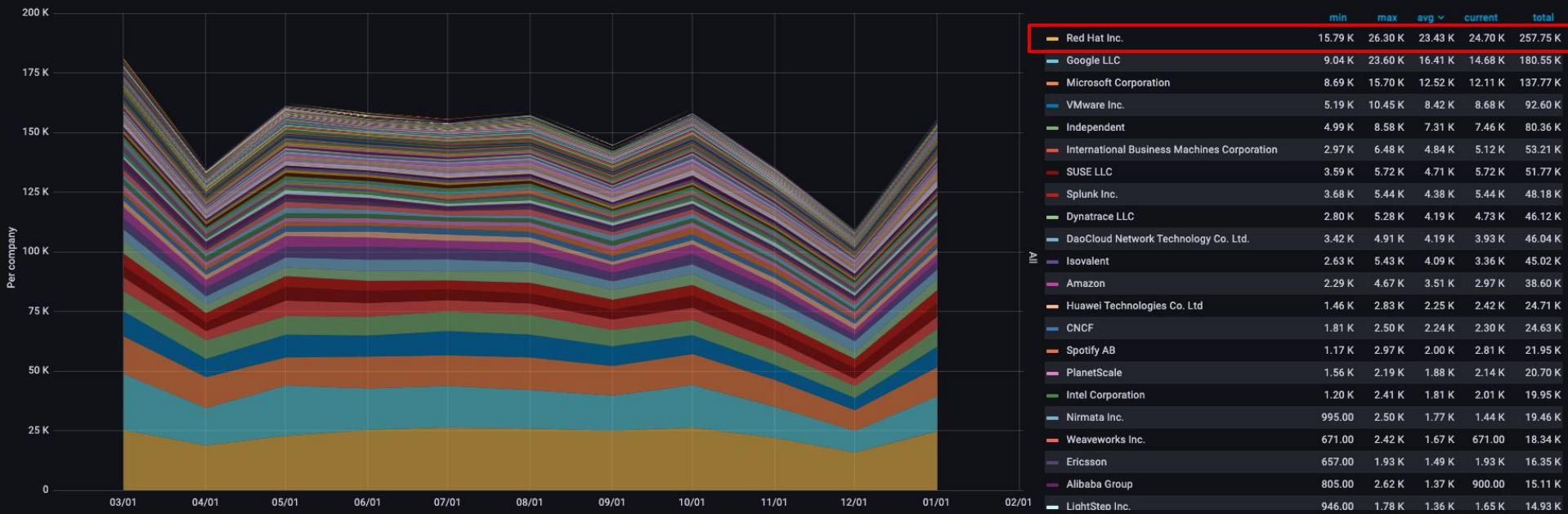
# Declining Kubernetes contributions?



# Innovation has shifted to applications and CNCF

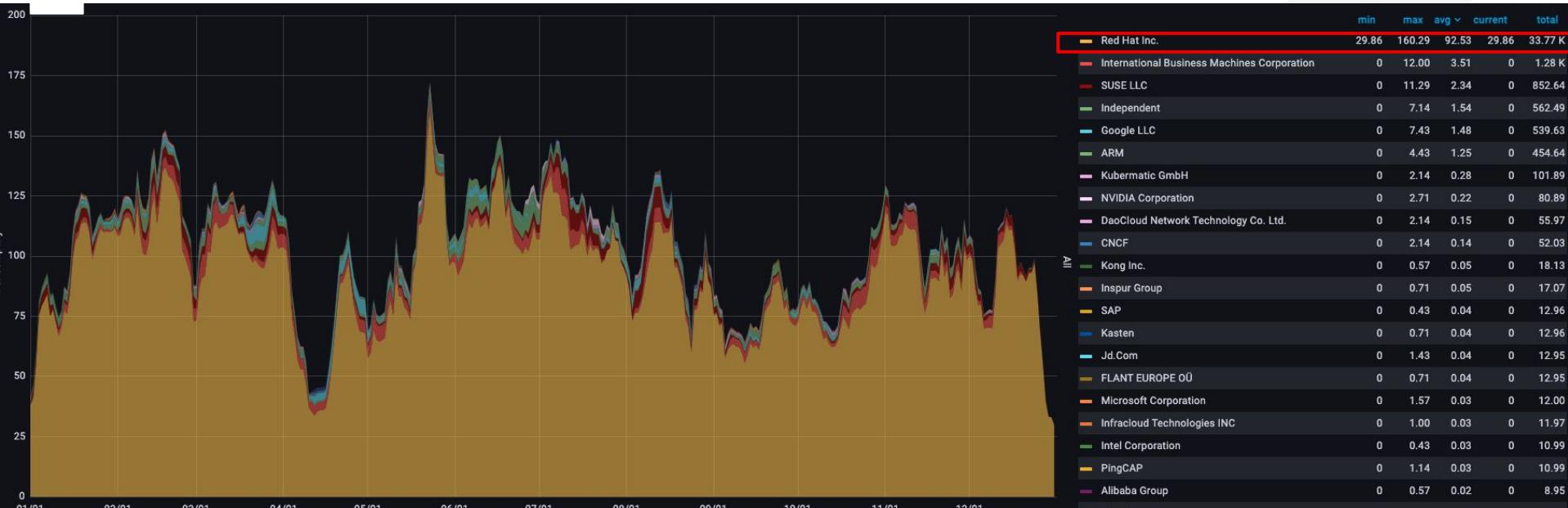


# CNCF 2023 Global contribution



*Red Hat is the #1 company for contributions to CNCF in 2023.*

# KubeVirt 2023 Global contribution



*Red Hat is the #1 company for contributions to KubeVirt project in 2023.  
x41 compared to second contributor*

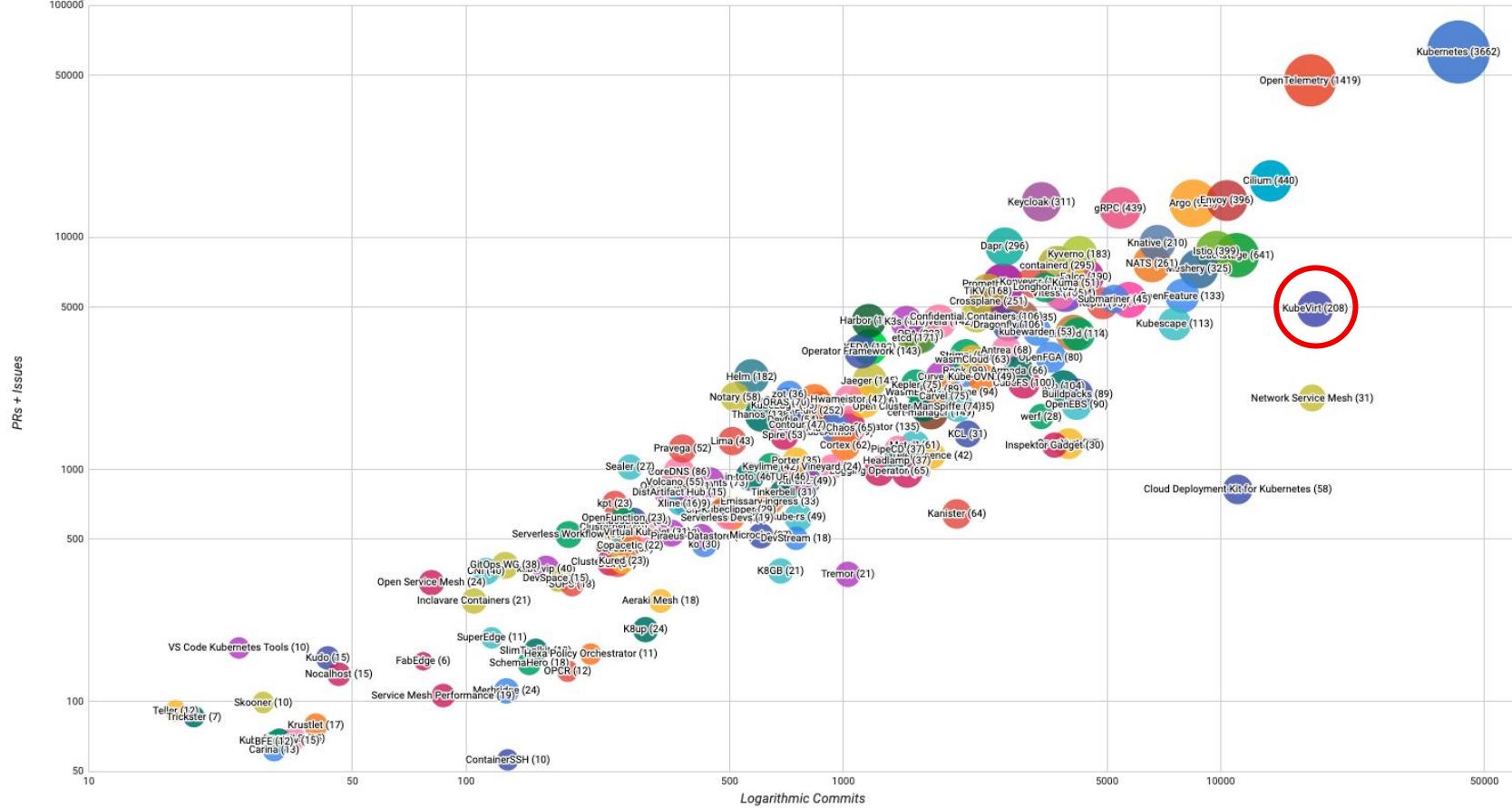


**NVIDIA** uses KubeVirt for its **Geforce Now** service



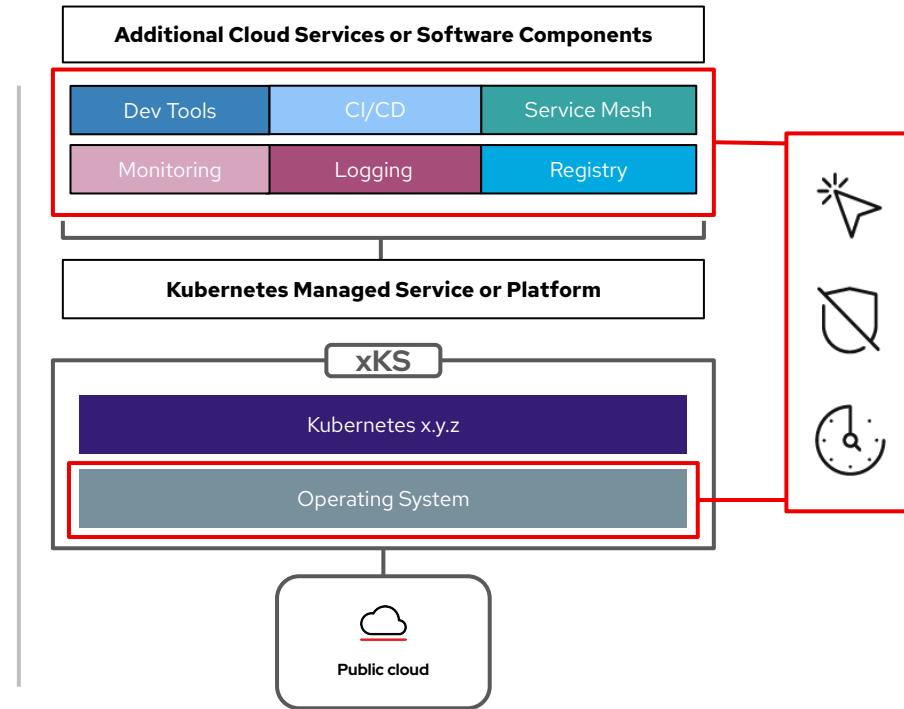
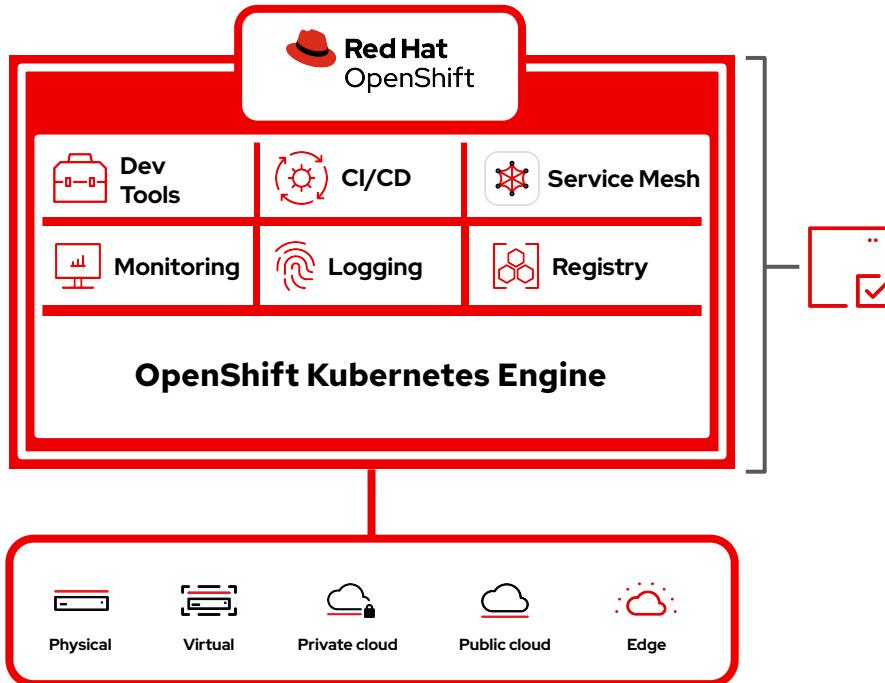
# KubVirt project

CNCF Projects 10/12/2022 - 10/12/2023

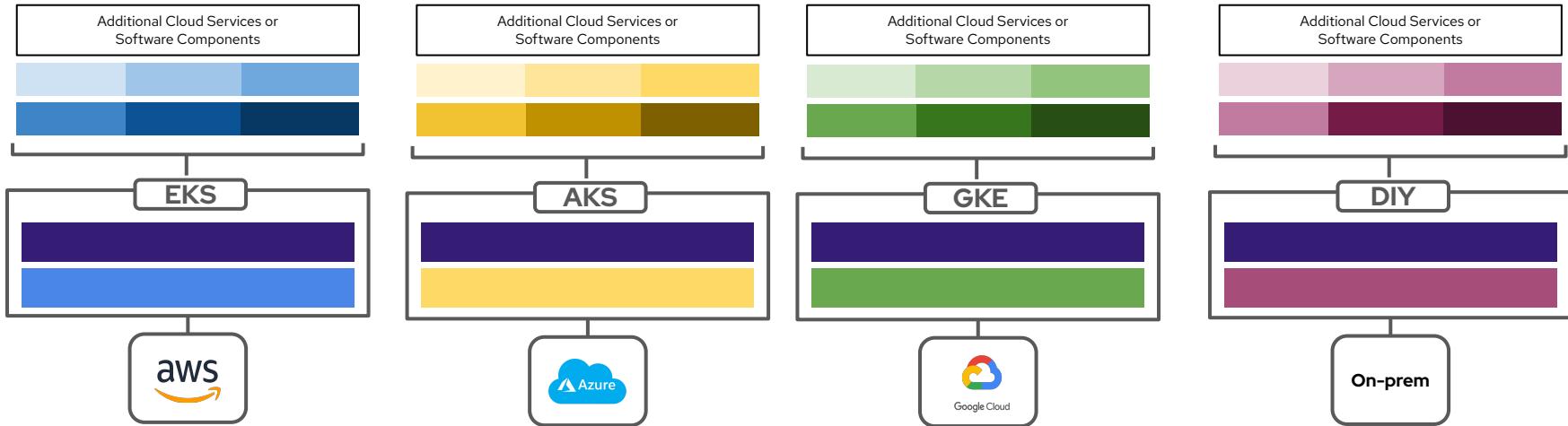


# OpenShift Trust & Consistency Across the Hybrid Cloud

Versus managing different stacks across each environment



# And that's just for one Public cloud...

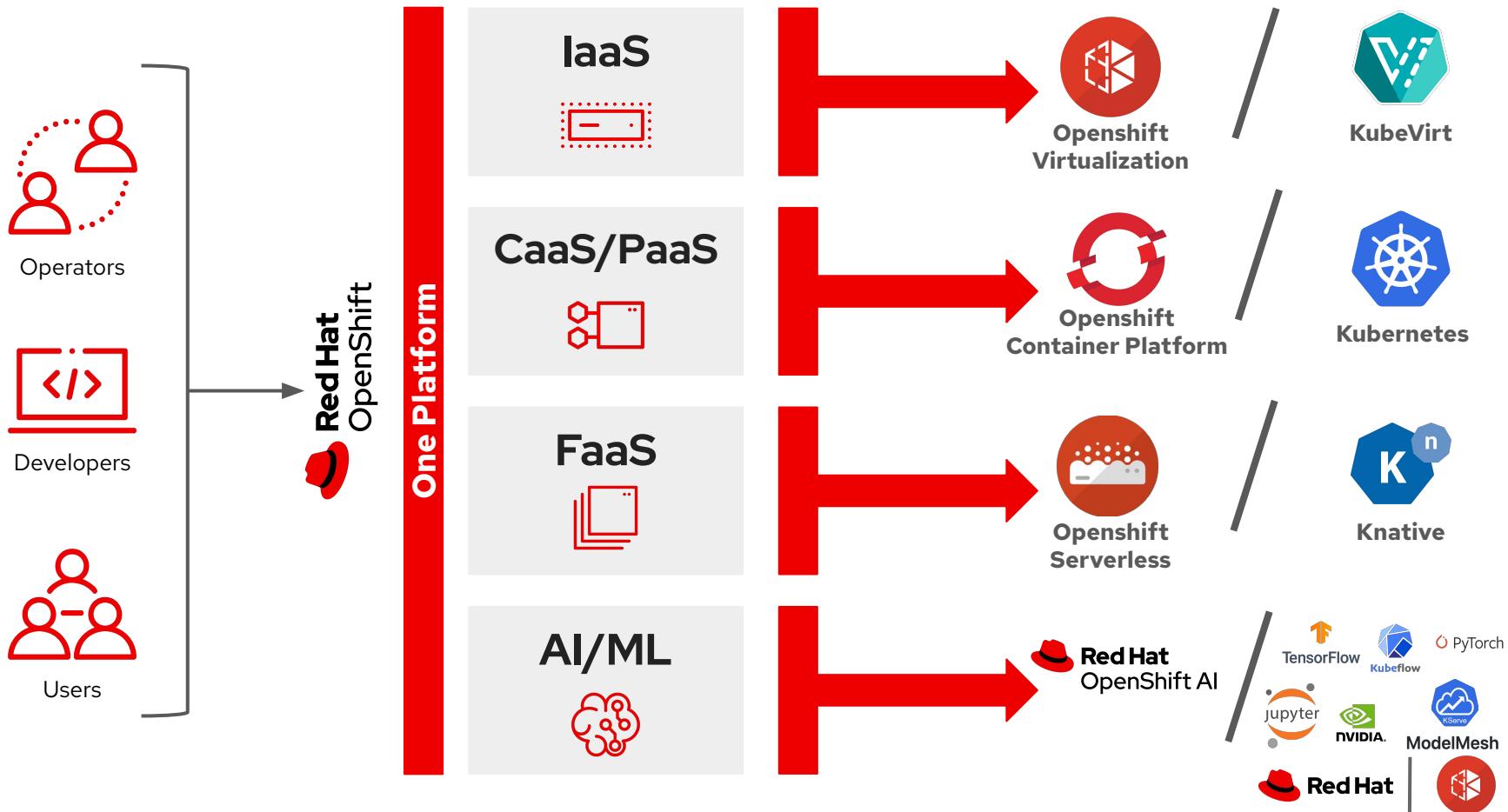




# *OpenShift ? OpenShift Virt?*



# One platform for all usages





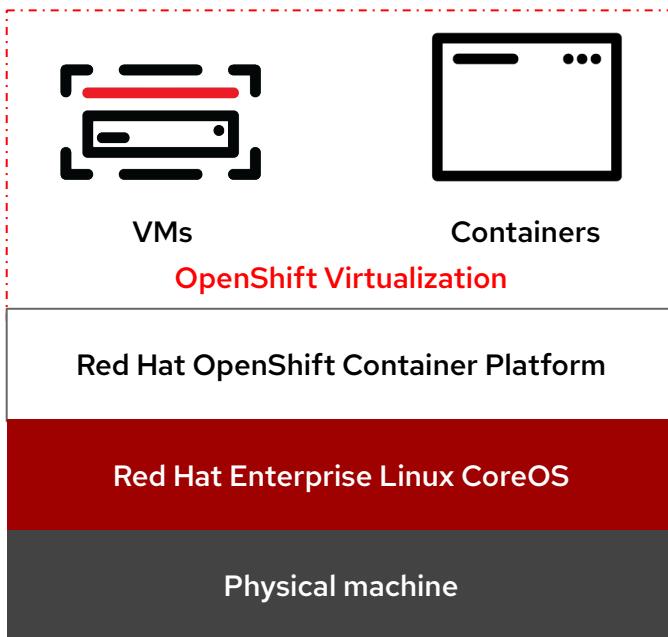
133 Contributing  
Companies

“The **KubeVirt** project was founded in **January 2017** by **Red Hat**. Since joining **CNCF** as a Sandbox project in September 2019, the project has added contributors from **Amadeus**, **Apple**, **CloudFlare**, Containership, Giant Swarm, Gitpod, IBM, Kubermatic, Lacoda, NEC, NVIDIA, SAP, Solidfire, SUSE, and independent developers.

KubeVirt-based solutions have gone into **production at multiple companies**, including Arm, CIVO, CoreWeave, H3C, and Kubermatic. The project is now the leading open source tool for running VMs in Kubernetes.”

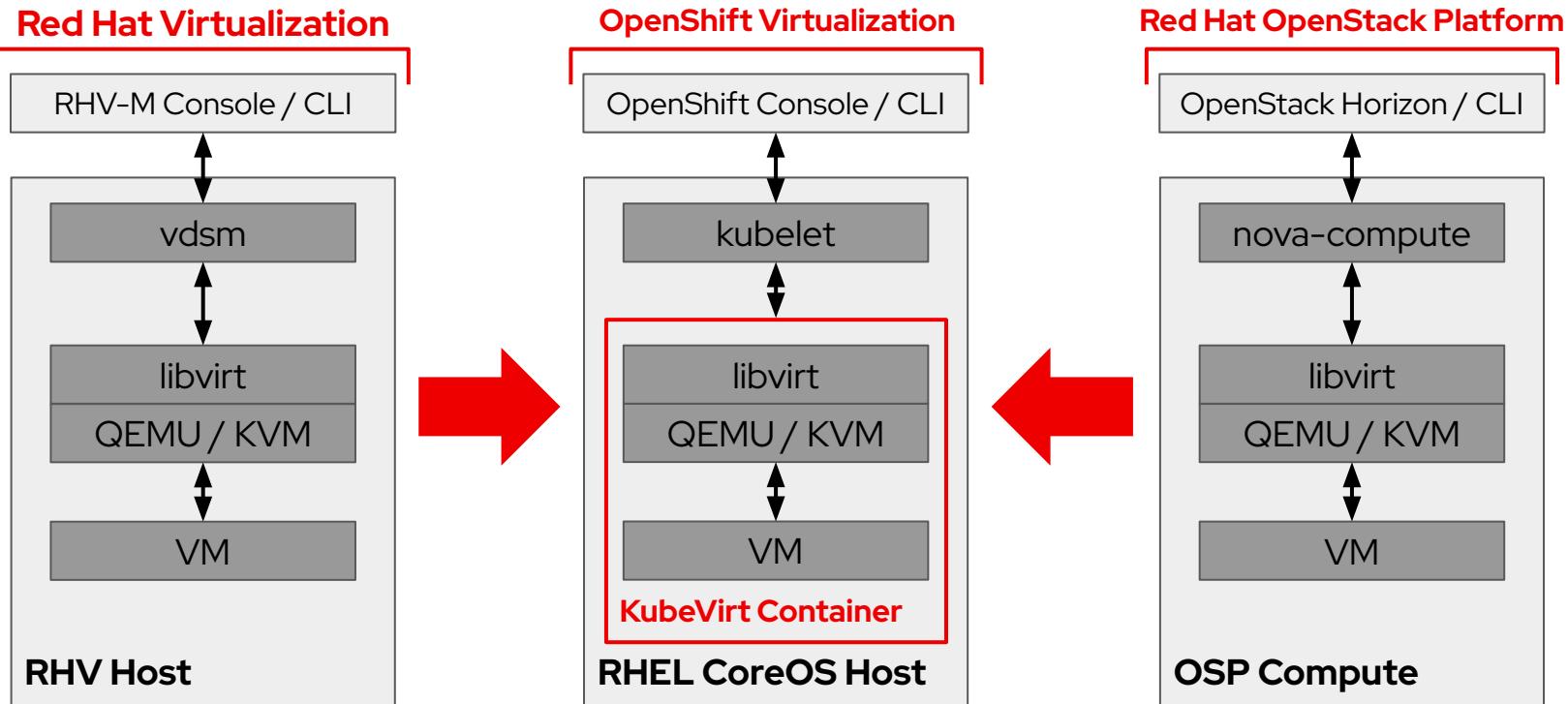
# Pourquoi se limiter aux containers ?

Accompagner la transition avec une seule plateforme supportant VMs et Containers

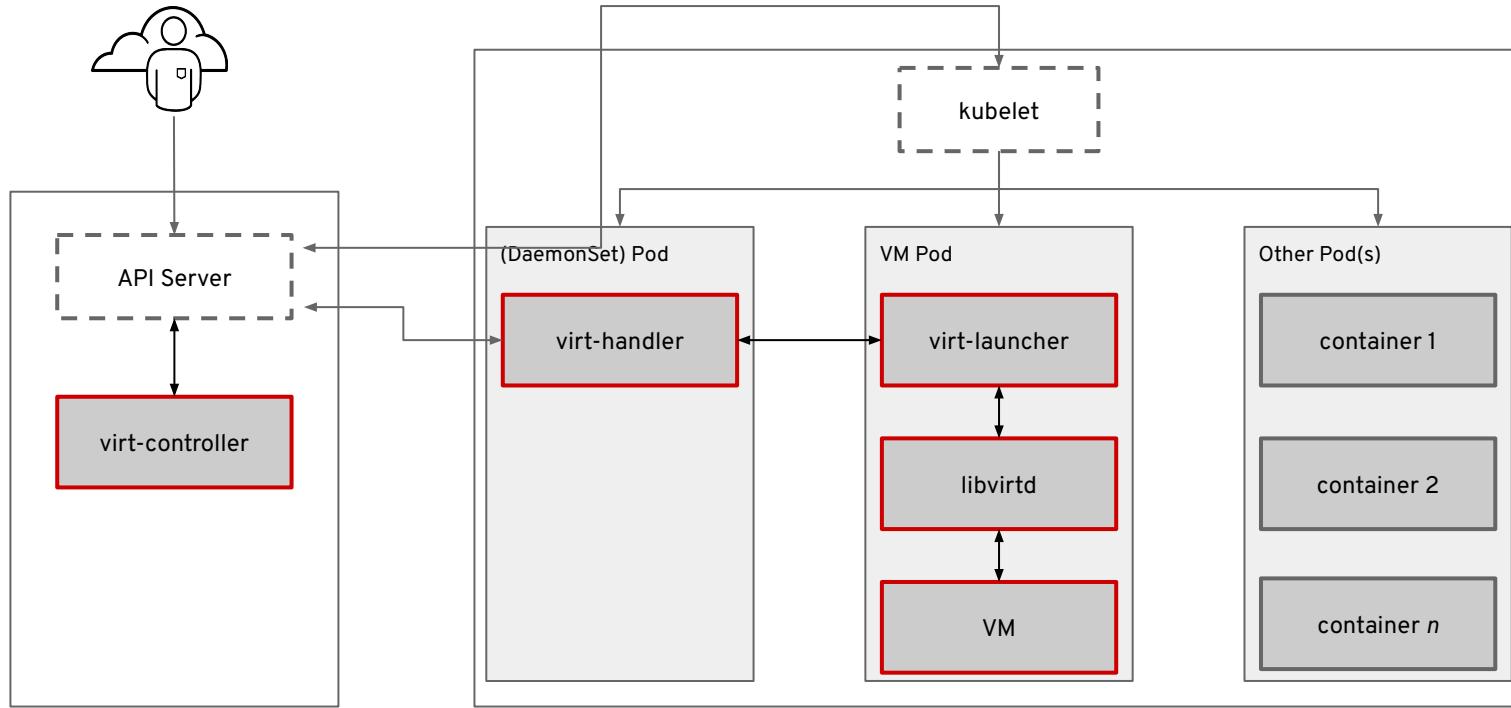


- OpenShift Virtualization uses KVM, the Linux kernel hypervisor
- KVM is a core component of the Red Hat Enterprise Linux kernel
  - KVM has 10+ years of production use: Red Hat Virtualization, Red Hat OpenStack Platform, and RHEL all leverage KVM, QEMU, and libvirt
- QEMU uses KVM to execute virtual machines
- libvirt provides a management abstraction layer
- Generally Available (GA) with OCP 4.5 - July 2020!

# Containerizing KVM



# OCP Virt components



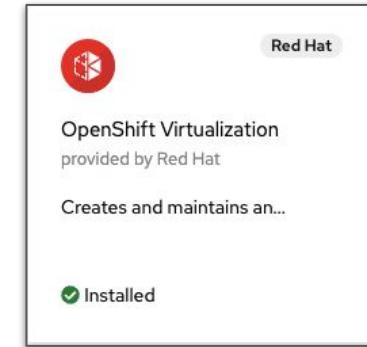
OpenShift Cluster Services

OpenShift worker nodes

# Deploy and configure

- OpenShift Virtualization is deployed as an Operator utilizing multiple CRDs, ConfigMaps, etc. for primary configuration
- Many aspects are controlled by native Kubernetes functionality
  - Scheduling
  - Overcommitment
  - High availability
- Utilize standard Kubernetes / OpenShift practices for applying and managing configuration

**OpenShift Virtualization operator deploy and maintain virtualization functions**



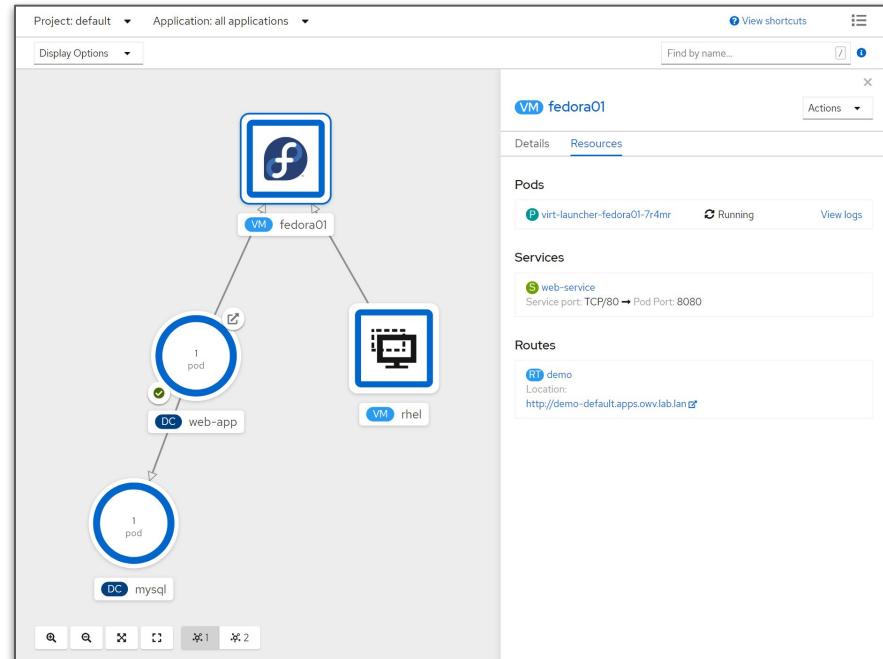
# Redesigned user experience for VM admins

- Simple user experience embedded in OpenShift console
- Based on the modern principles of cloud providers
- Use Ansible Automation Platform, OpenShift GitOps and more to automatise and scale

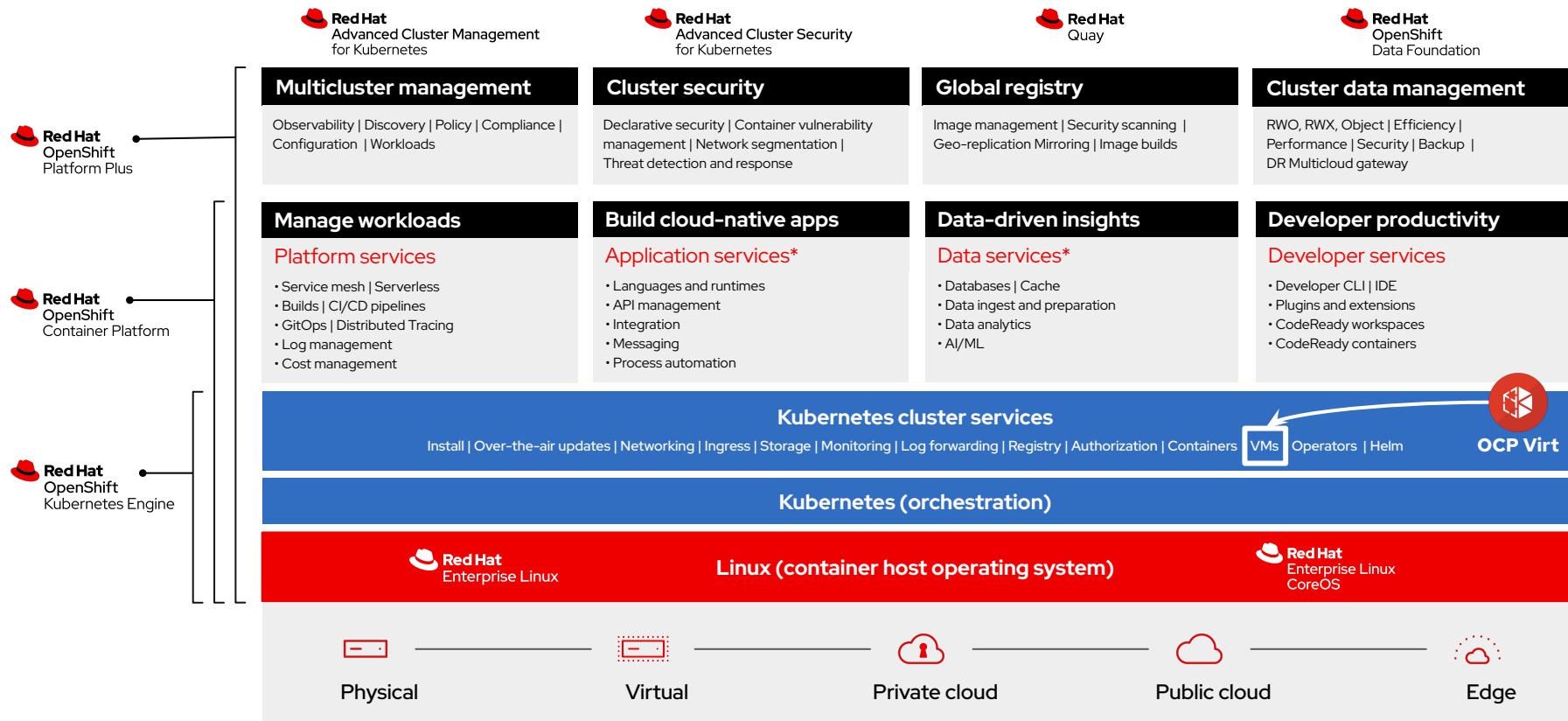
The screenshot shows the Red Hat OpenShift Virtualization interface. The left sidebar menu includes options like Home, Operators, Workloads, Virtualization (selected), Overview, Catalog, VirtualMachines, Templates, InstanceTypes, Preferences, Bootable volumes, MigrationPolicies, Migration, Networking, Storage, and Builds. The main content area is titled 'Virtualization' and displays four key metrics: Memory (421.2 MB), Storage (0 B), vCPU usage (5 vCPU), and VirtualMachines (3 VMs). Each metric includes a trend graph from Jan 9 to Today. Below these metrics is an 'Alerts' section with one warning. At the bottom, there are sections for 'VirtualMachine statuses' (Error 0, Running 3, Paused 0, Migrating 0) and 'VirtualMachines per resource'.

# Using VMs and containers together

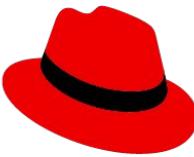
- Virtual machines connected to pod networks are accessible using standard Kubernetes methods:
  - Service
  - Route
  - Ingress
- Network policies apply to VM pods the same as application pods
- VM-to-pod, and vice-versa, communication happens over SDN or ingress depending on network connectivity



# Open hybrid cloud platform







**Red Hat**



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*"Red Hat OpenShift Service on AWS (ROSA), now supports OpenShift Virtualization enabling the ability to rapidly migrate full virtual machine images to Kubernetes pods within the cloud and automate them like containers. With ROSA/OpenShift 4.14 we support the mix of Linux or Windows virtual machines in OpenShift Virtualization"*

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# Supported Guest

# Supported Guest on OCP Virt

Operation System	Architecture	Support Tier
<b>Red Hat Enterprise Linux 6</b>	64 bits (x86)	Tier 1
<b>Red Hat Enterprise Linux 7</b>	64 bits (x86)	Tier 1
<b>Red Hat Enterprise Linux 8</b>	64 bits (x86)	Tier 1
<b>Red Hat Enterprise Linux 9</b>	64 bits (x86)	Tier 1
<b>Microsoft Windows 10</b>	64 bits (x86)	Tier 1
<b>Microsoft Windows 11</b>	64 bits (x86)	Tier 1
<b>Microsoft Windows Server 2012r2</b>	64 bits (x86)	Tier 1
<b>Microsoft Windows Server 2016</b>	64 bits (x86)	Tier 1
<b>Microsoft Windows Server 2019</b>	64 bits (x86)	Tier 1
<b>Microsoft Windows Server 2022</b>	64 bits (x86)	Tier 1
<b>Others</b>	64 bits (x86)	<a href="#">Third-Party Software Support Policy</a>



# RHEL on OCP Virt

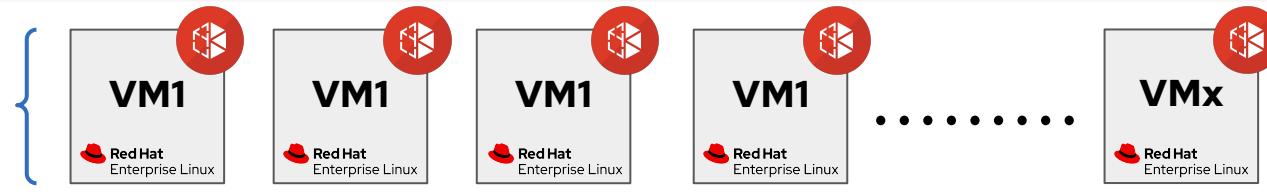
# RHEL on OCP Virt

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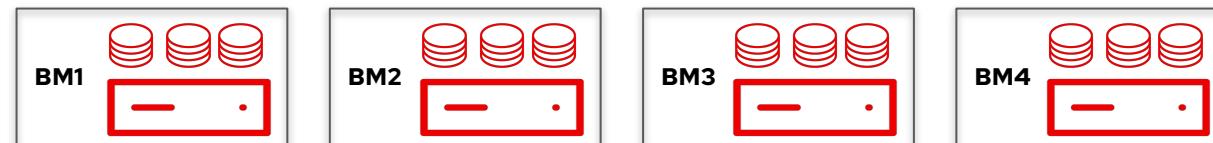
**Red Hat OpenShift Virtualization:** Accelerate application delivery with a single platform that can manage **virtual machines (VMs)** and **containers** with the same tools and teams. If you are an **OpenShift bare-metal customer**, your OpenShift entitlement **includes** RHEL entitlements for any hosted RHEL virtual machines. This means you may subscribe as many RHEL VMs as you can fit in your cluster.

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Included RHEL virtual machine entitlement with OCP Virt

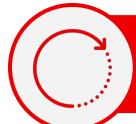


OpenShift subscriptions needed (OCP, OCP Plus)

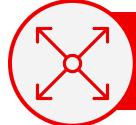


# Why migrate

# Pourquoi migrer vos VMs vers OpenShift Virtualization ?



Basé sur KVM/libvirt où Red Hat a +10 ans d'expérience et de contributions



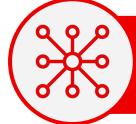
Une unique plateforme et interface pour gérer différents cas d'usage



Une plateforme pour le présent et le futur



Réduction des coûts d'acquisition. Pas de licences supplémentaires pour la couche de virtu



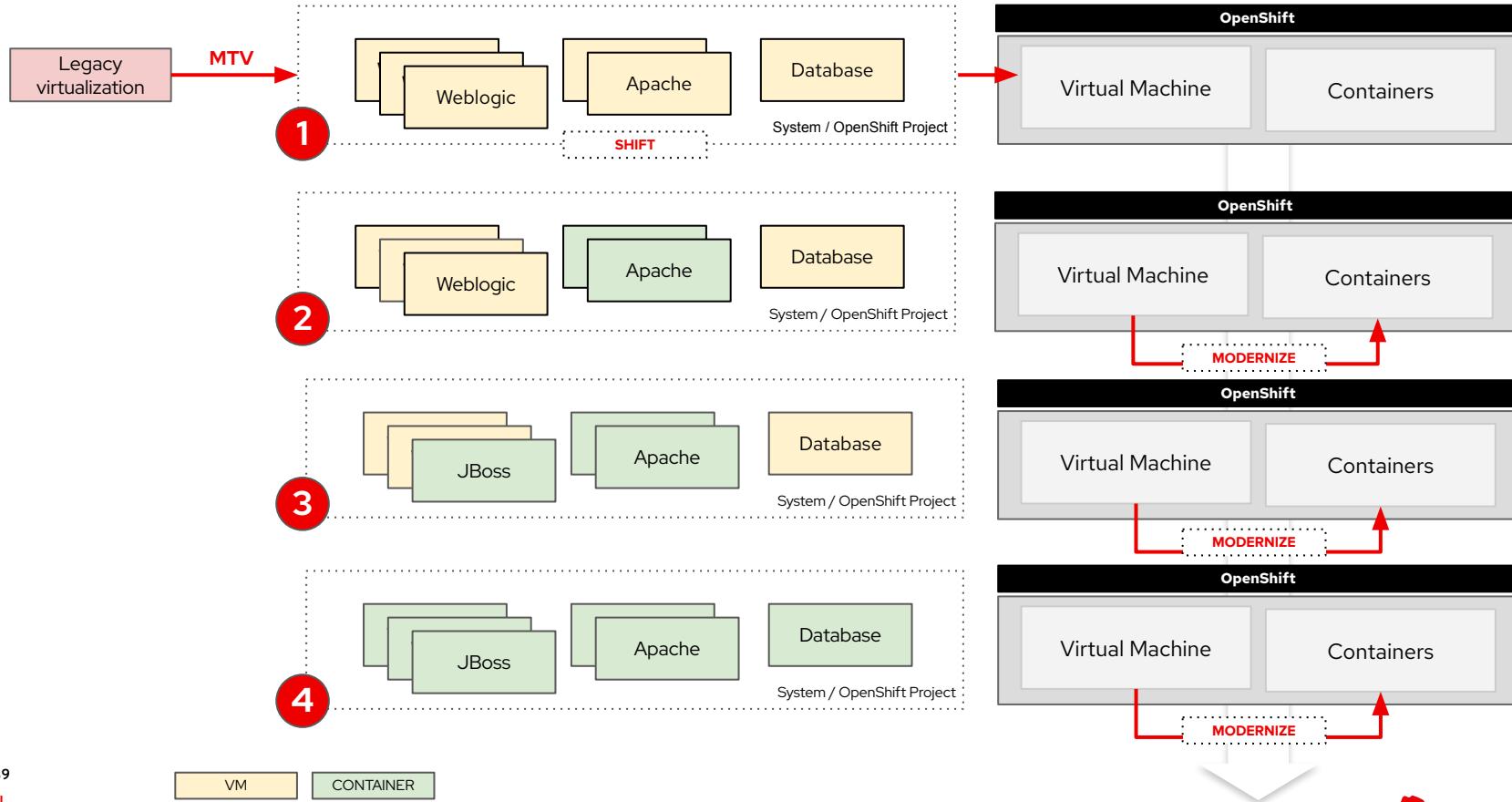
Large écosystème de partenaires



RHEL inclus dans la subscription OpenShift Bare Metal

# How to migrate

# Modernize Applications Iteratively



# MTV - Description

- Integrated web console to create VM migration workflows
- Detect potential compatibility issues before migration to ensure a successful migration
- Cold or Warm migration
- Help to migrate VMs from VMWare, Red Hat Virtualization, OpenShift Virtualization and Red Hat OpenStack environments
- Create network and storage mapping
- Mass migration plan

**MTV operator deploy and maintain toolkit  
to facilitates VMs migration**



# MTV - Web portal

☰ Migration Toolkit for Virtualization



Providers

Migration Plans

Mappings

Network

Storage

## Migration plans

Name  Filter by name...

1-1 of 1   1 of 1

Name	Source provider	Target provider	VMs	Plan status	Actions
mtv-plan MTV	vcenter	host	1	Running <div style="width: 100%; background-color: #6f9; height: 10px; margin-top: 5px;"></div>	0 of 1 VMs migrated <input type="button" value="⋮"/>

## Add provider

Type \*

Select a provider type...

VMware

Red Hat Virtualization

OpenShift Virtualization

## Create network mapping

Name \*

mapping-network

Source provider \*

Select a provider...

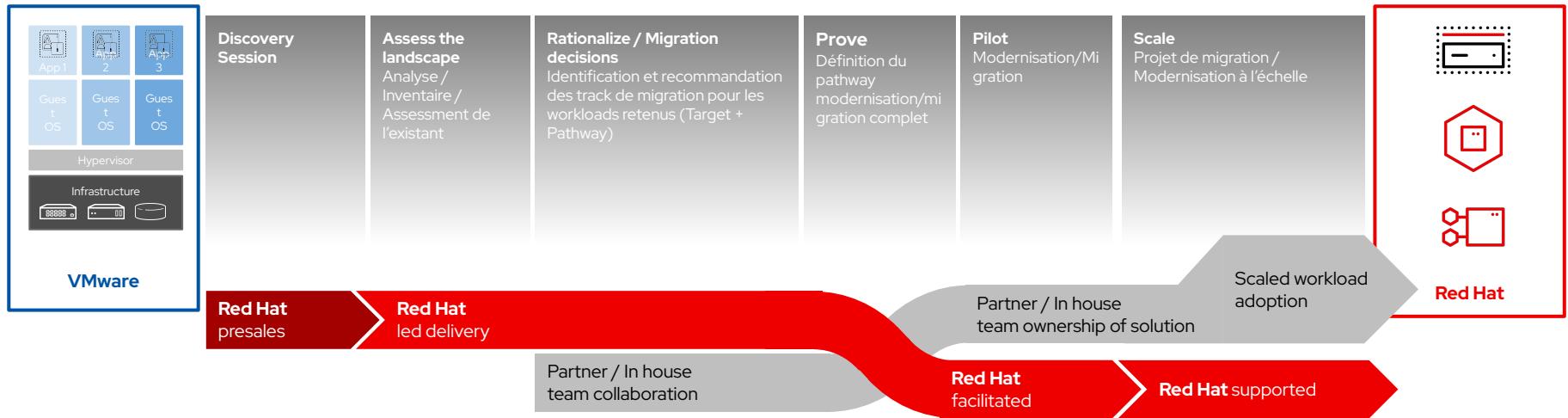
vcenter

Target provider \*

Select a provider...



# Jumpstart the modernization of VM workloads with Red Hat Consulting



# KubeCon Paris !



When is music at its best? When you are in concert. Goldman Sachs - a Cloud Native End User - was envisioning this for their applications:

Eliminating intermediate layers, reducing complexity, and putting their applications closer to where the harmonies blend - close to the platform. Kubernetes - paired with KubeVirt, as well as other CNCF ecosystem projects such as Prometheus, Argo CD, and Rook - is now serving as a unified, open-source, and forward looking platform, running thousands of their existing VMs at scale. And setting the stage for a frictionless adoption of cloud-native applications and development models.

We'll look at:

- How Goldman Sachs is shifting their existing VM real estate to Kubernetes and KubeVirt, and how it's run at scale
- Why Kubernetes and the cloud-native ecosystem unlocks and accompanies their technical transformation by collaborating with the community and giving them access excellence and innovation
- Why starting with existing real estate was not a mishap, but the beginning of a journey

## Speakers



**Michael Hanulec**

Vice President & Technology Fellow, Goldman Sachs & Co. LLC



**Fabien Deutsch**

KubeVirt Maintainer + Engineering Manager, Red Hat

Fabien Deutsch has been working in open source for quite a while, Initially gaining experience in the Linux plumbing layer, and image building, he later focused on the virtualization stack, and recently joined the container track.

# *Environnement de lab*



<https://ocp-virt-labs.apps.ocp.drkspace.fr/>

Vos retours sur cette journée



# 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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