

# Open Hybrid Cloud

Introduction & technology overview

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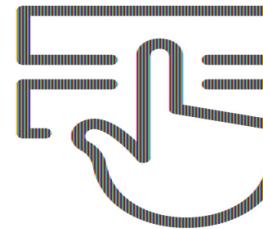
# Why OpenShift

CONFIDENTIAL Red Hat associates only



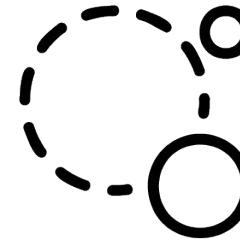
## 100% Kubernetes

OpenShift is certified as 100% Kubernetes by the CNCF.



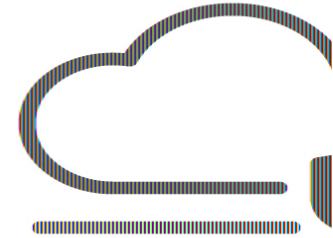
## Ecosystem of choice

Red Hat partners offer customers a choice of technologies: Networking, Storage etc without lock-in



## Open source

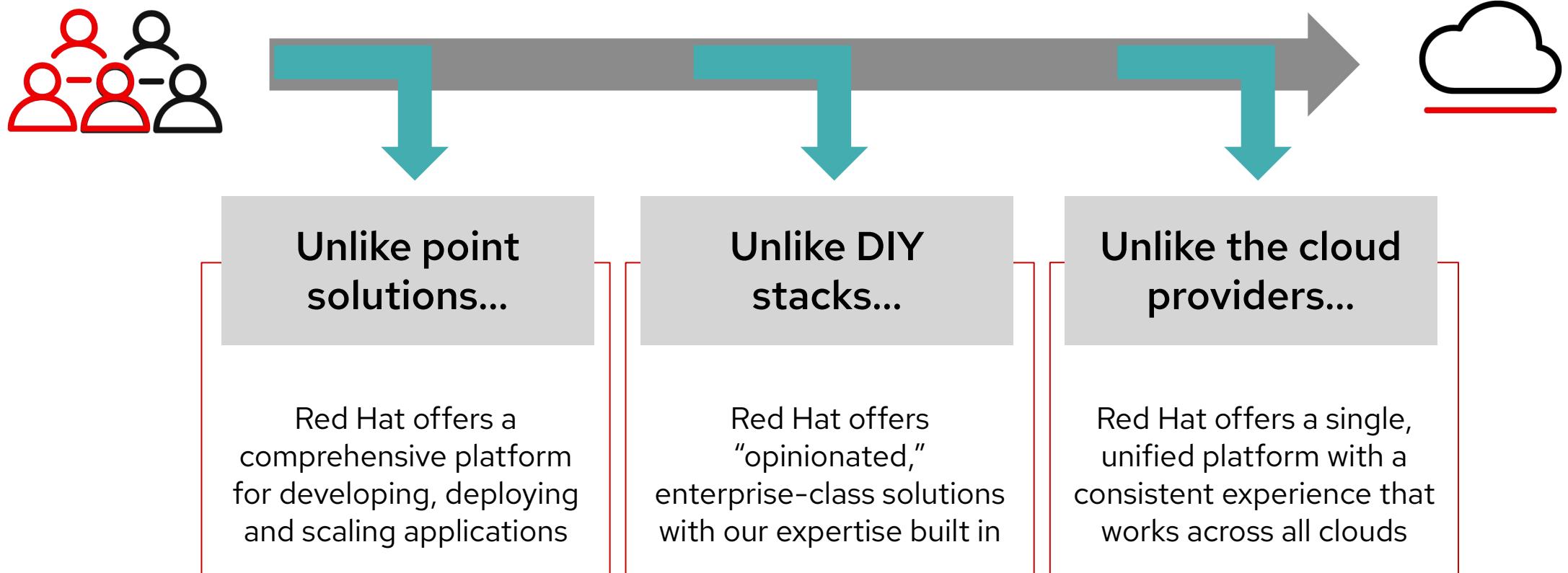
OpenShift platform code is 100% open source, developed and collaborated in the upstream community.



## Open Hybrid Cloud

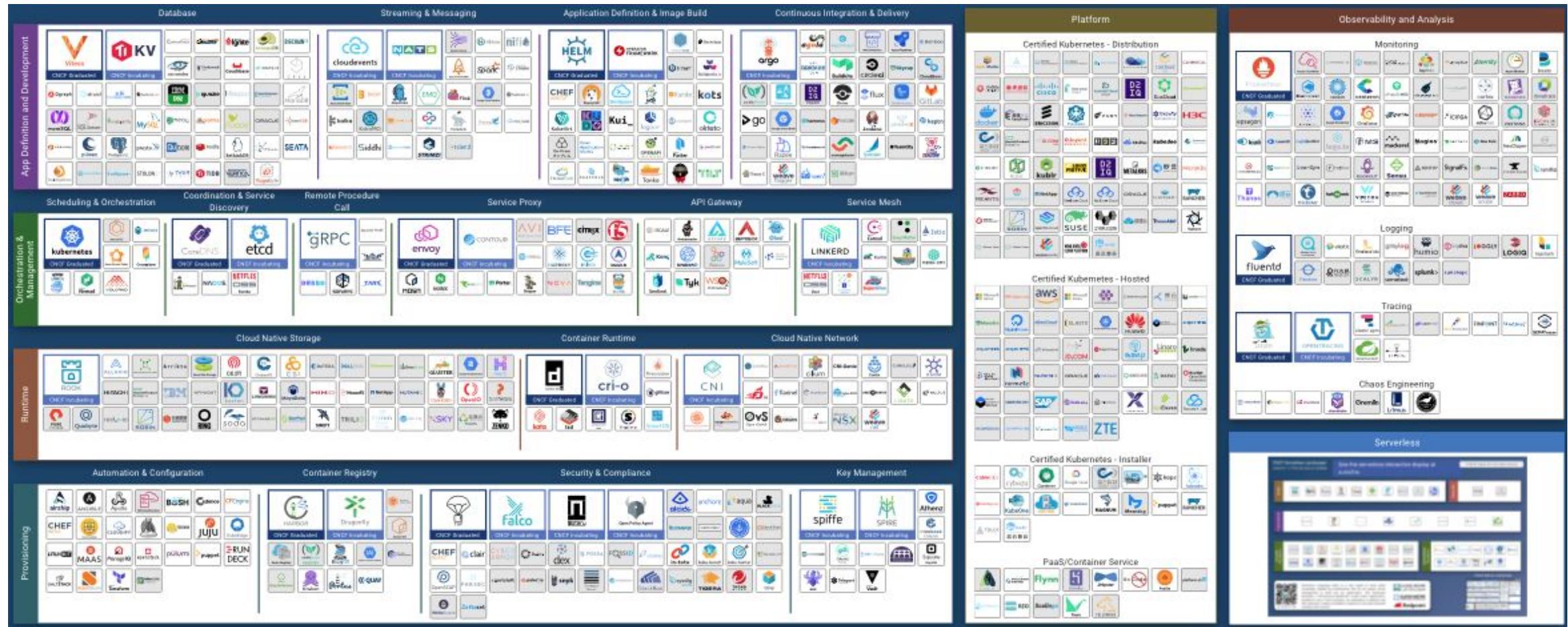
OpenShift provides a consistent operator and developer experience on-prem and in public cloud

# Red Hat's unique approach to cloud services



# Components of OpenShift

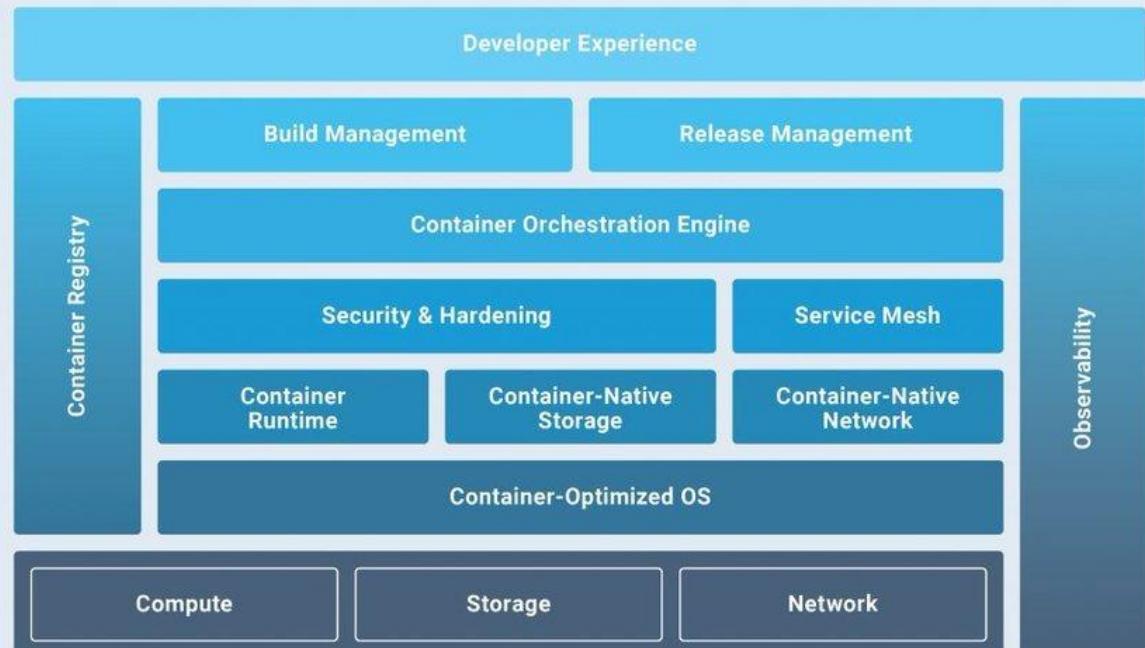
## Have your dev teams select and integrate what they need?



# Or use OpenShift, a modern cloud native stack

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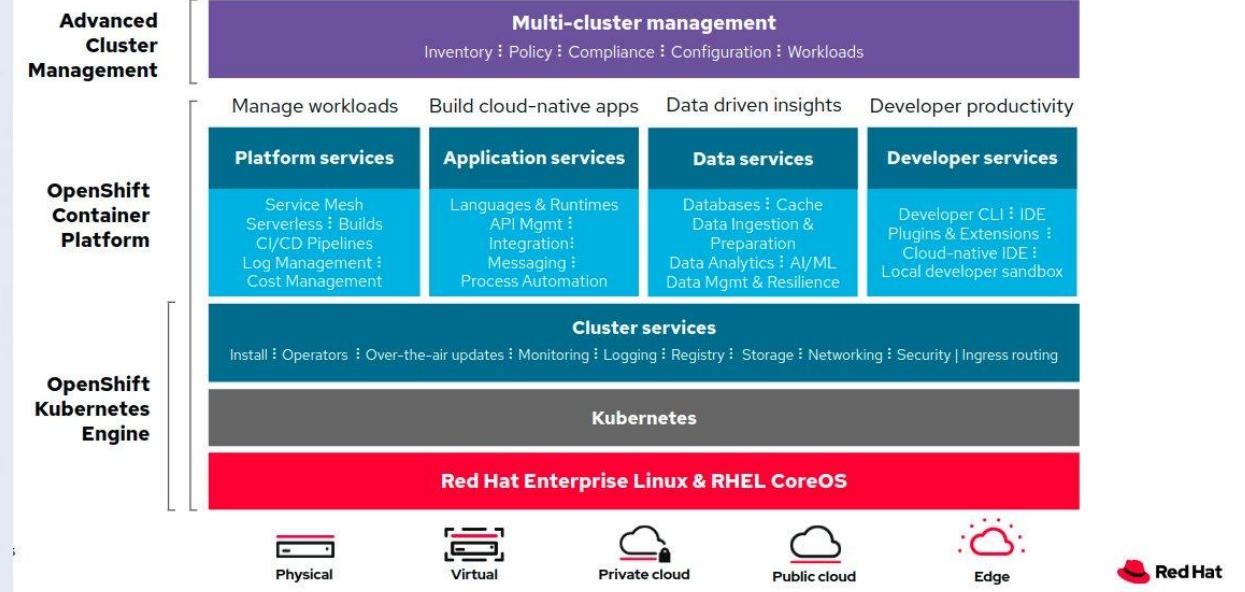
## The Cloud Native Stack



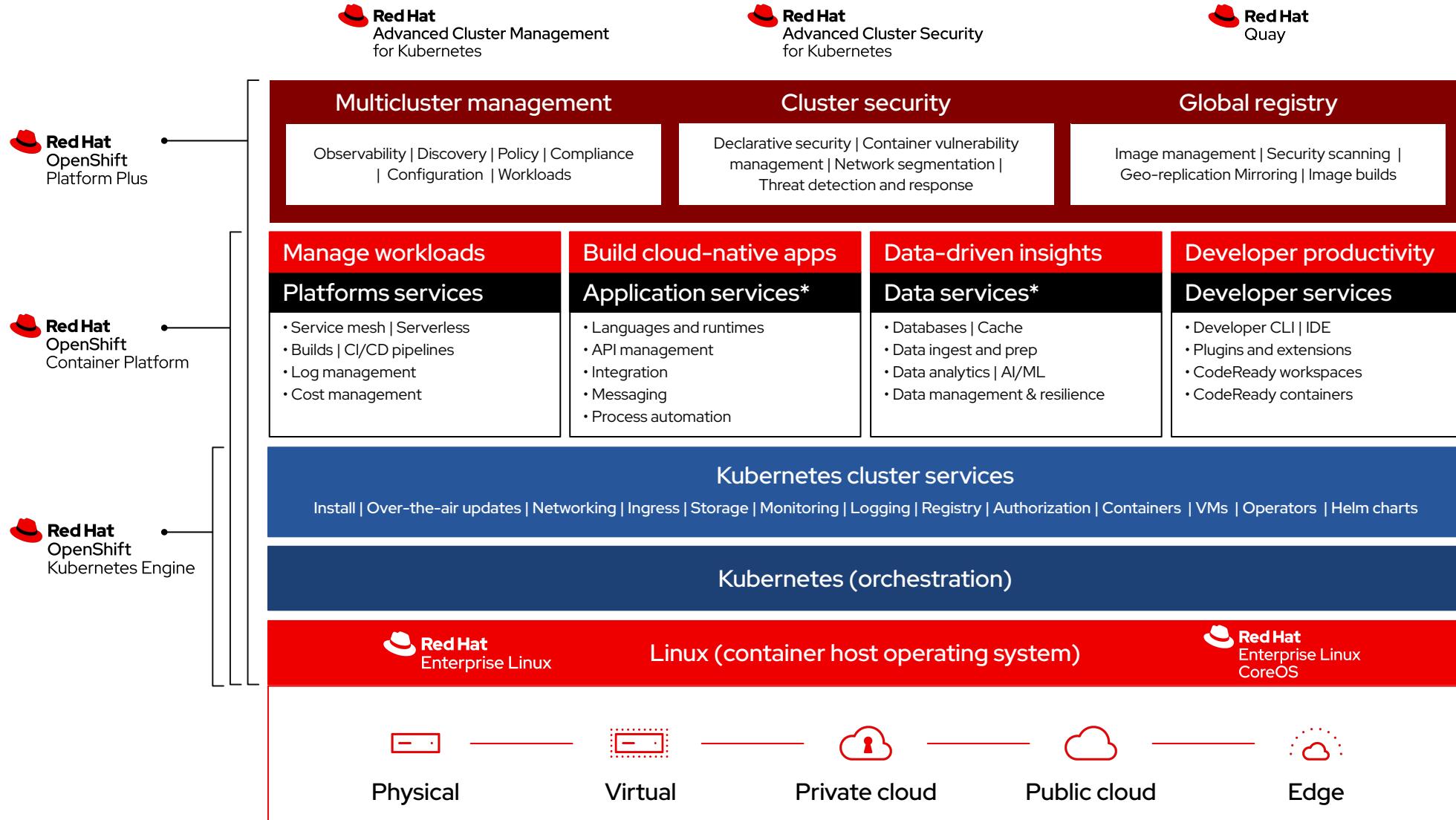
Source: Janakiram MSV

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## OpenShift Container Platform

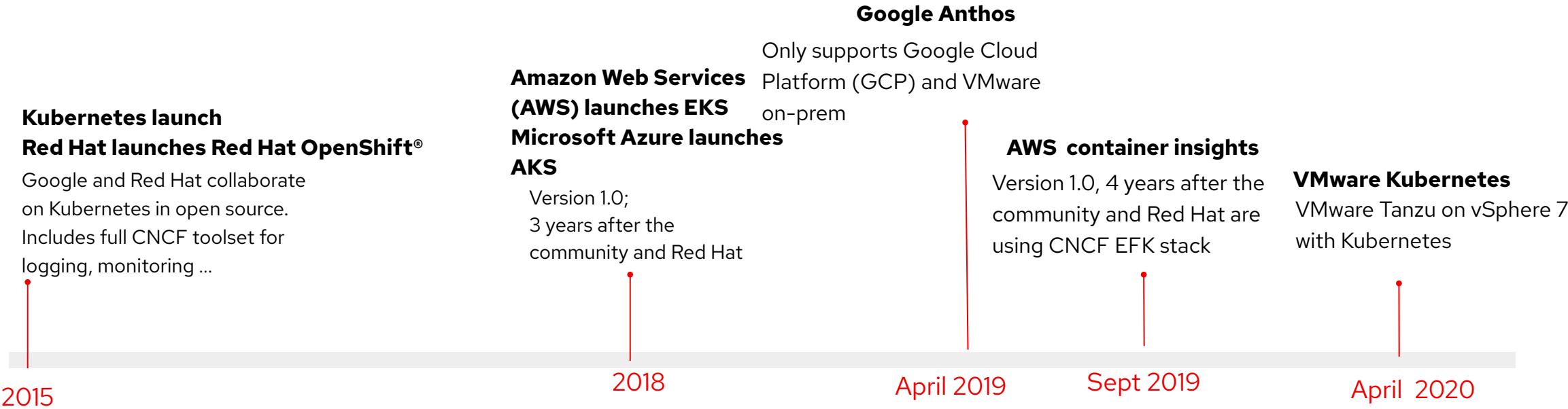


From a newstack article defining a cloud native stack, OpenShift container platform neatly fits the definition. [What Is the Modern Cloud Native Stack? – The New Stack](#)



# Red Hat leads Kubernetes development from the start

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5+ years of enterprise  
Kubernetes leadership

## Red Hat OpenShift

Kubernetes, developer services, operators, serverless, service mesh, container-optimized Linux operating system



Edge



Physical



Virtual



Private cloud



Public cloud



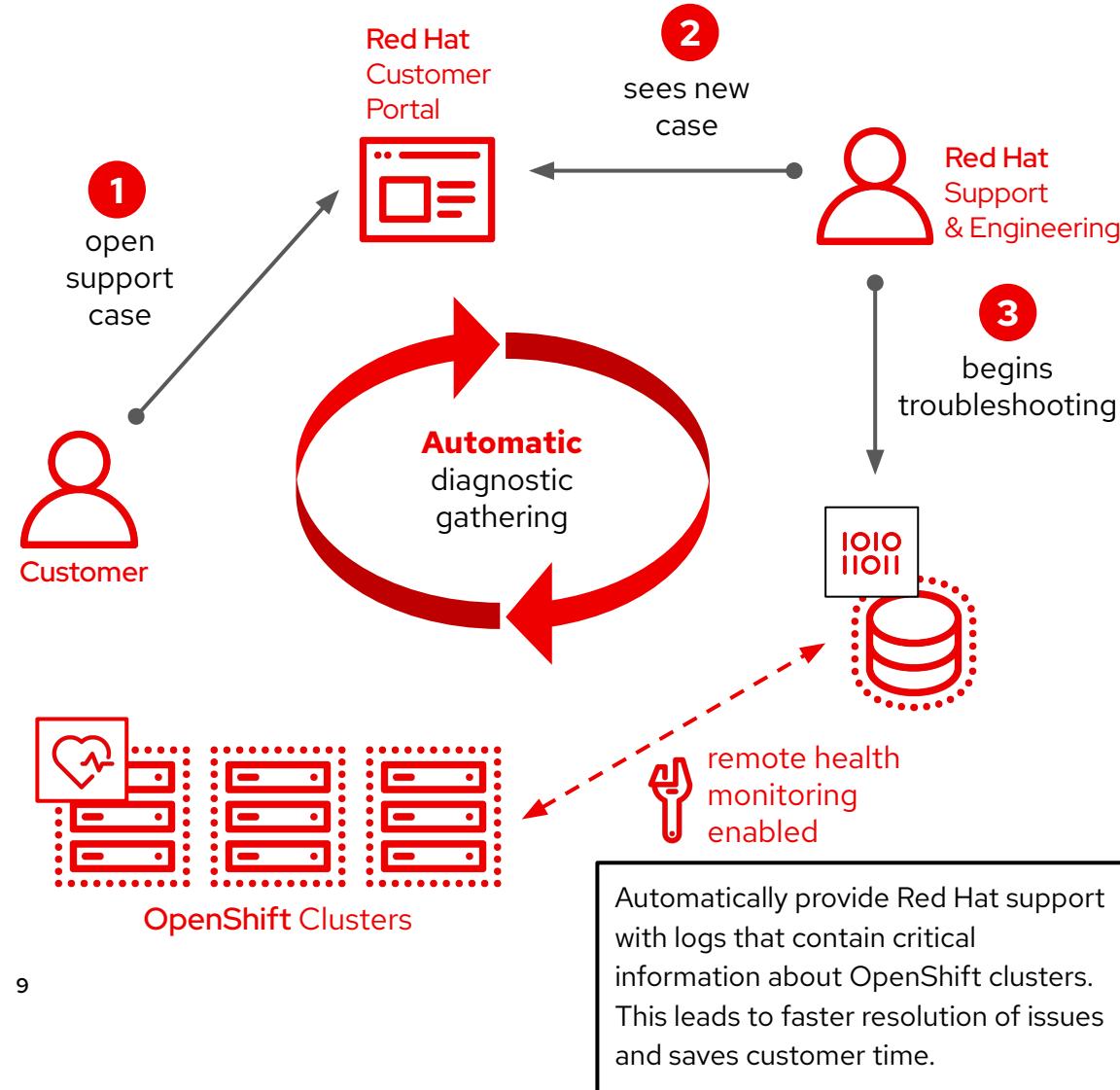
Managed cloud  
(Azure, AWS, IBM, Red Hat)

V0000000



# Red Hat OpenShift Customer Support Experience

## Red Hat's Remote Health Monitoring



# Public cloud and OpenShift

Natively and jointly managed  
with public cloud providers

# Managed OpenShift in the public cloud

The screenshot shows the AWS Services navigation bar with 'Containers' selected. Under 'Containers', 'Red Hat OpenShift Service on AWS' is listed. To the right, the main content area features the Red Hat logo and the heading 'Red Hat OpenShift Service on AWS'. Below it is a sub-headline 'Fully managed Red Hat® OpenShift® service on AWS'. A descriptive paragraph explains that the service allows users to deploy fully operational and managed Red Hat OpenShift clusters while leveraging the full breadth and depth of AWS. On the far right, there's a call-to-action button labeled 'Enable OpenShift'.

The screenshot shows the Microsoft Azure navigation bar with 'Products' selected. Below the navigation, the breadcrumb path is 'Home / Products / Azure Red Hat OpenShift'. The main content area features the Red Hat logo and the heading 'Azure Red Hat OpenShift'. A sub-headline states 'Fully managed OpenShift service, jointly operated with Red Hat'. At the bottom is a blue 'Get started' button.

The screenshot shows the IBM Cloud navigation bar with 'Red Hat OpenShift on IBM Cloud' selected. Below the navigation, the breadcrumb path is 'Red Hat OpenShift on IBM Cloud / Products / Red Hat OpenShift Dedicated'. The main content area features the Red Hat logo and the heading 'Red Hat OpenShift Dedicated'. A sub-headline states 'Build and scale applications with confidence. We manage the rest.' A call-to-action button says 'Try it at no charge →'. To the right, a dark background image shows industrial scaffolding, and text reads 'Deploy highly available, fully managed clusters with a click'. At the bottom are buttons for 'Get pricing options →' and 'See product documentation →'.

Customer and partner NDA required



# Many ways to get started

 Microsoft Azure

Overview Solutions **Products** Documentation Pricing Training

Home / Services / Azure Red Hat OpenShift

## Azure Red Hat OpenShift

Fully managed OpenShift service, jointly operated with Red Hat

[Get started](#)

<https://azure.microsoft.com/en-us/services/openshift/>

 Services ▾

Containers

## Red Hat OpenShift Service on AWS

Fully managed Red Hat® OpenShift® service on AWS

Red Hat OpenShift Service on AWS allows you to deploy fully operational and managed Red Hat OpenShift clusters while leveraging the full breadth and depth of AWS.

<https://us-west-2.console.aws.amazon.com/rosa/home?region=us-west-2#/>

## Red Hat OpenShift on IBM Cloud

Deploy highly available, fully managed clusters with a click

[Try it at no charge →](#) [Get pricing options →](#)

<https://www.ibm.com/cloud/openshift>



The Community Distribution of Kubernetes that powers [Red Hat OpenShift](#).

**openshift-install create cluster**

<https://www.okd.io/>

<b>Developer sandbox</b> Get instant access to a Red Hat OpenShift environment for development and testing.	<b>Managed service</b> ⓘ Enjoy a fully managed Red Hat OpenShift Dedicated trial cluster with self-service sign-up and cluster provisioning in your cloud account.	<b>Self-managed</b> ⓘ Deploy and manage Red Hat OpenShift Container Platform in the cloud, on your computer, or in your data center.			
<a href="#">Start this trial</a>	<a href="#">Start this trial</a>	<a href="#">Start this trial</a>			
<b>Cost</b> Free	<b>Features &amp; highlights</b> Made for developers; Eclipse Che-based IDE, Helm charts, Red Hat builder images, git access, s2i build tool, and enrollment in the <a href="#">Red Hat Developer program</a>	<b>Cost</b> Free*	<b>Features &amp; highlights</b> Backed by Red Hat's award winning site reliability engineering (SRE) team, offering self-service sign-up and activation	<b>Cost</b> Free*	<b>Features &amp; highlights</b> Most flexible and customizable deployment to any environment, with full cluster administrator access
<b>Trial length</b> 30 days	<b>Requirements</b> Web browser. No infrastructure needed.	<b>Trial length</b> 60 days	<b>Requirements</b> Amazon Web Services (AWS) or Google Cloud account <small>*You might incur your own infrastructure costs.</small>	<b>Trial length</b> 60 days	<b>Requirements</b> Existing infrastructure or cloud account <small>*You might incur your own infrastructure costs.</small>

<https://www.openshift.com/try>



**Create new bare metal cluster**

There are no clusters yet. This wizard is going to guide you through the OpenShift bare metal cluster deployment.

[Create New Cluster](#)

**OpenShift bare metal installer**

# Open Hybrid Cloud

# Red Hat Cloud

Red Hat Marketplace

Open Ecosystem

## Red Hat Cloud Experience

### Applications

 Red Hat  
Advanced Cluster Management  
for Kubernetes

 Red Hat  
OpenShift

- Cluster Management
- Policy Management
- Governance
- Cost Management
- Telemetry
- Platform Lifecycle
- Application Lifecycle



 Red Hat  
Enterprise Linux



 Red Hat  
Virtualization



 Red Hat  
OpenStack Platform



vmware®



aws



Google Cloud



 IBM Cloud



 Microsoft Azure



 Alibaba Cloud



Edge  
Computing

Open Standards || Enterprise-Class || Secure || Scalable || Customer Choice

 Red Hat

# The Hybrid and Multi-Cloud Landscape



Open Source	<b>YES</b>	NO	NO	NO	NO
Hybrid Cloud	<b>YES</b> with disconnected	YES no disconnected	YES	YES no disconnected	YES no disconnected
Multi Cloud	<b>YES</b> with disconnected	NO no disconnected	NO	YES no disconnected	NO no disconnected
Multi-Cloud Management	<b>YES</b>	NO	NO	YES	Limited
Containers and VMs	<b>YES</b>	YES	YES	NO	YES
Integrated AppDev	<b>YES</b>	DIY	YES	NO	YES
Application Services	<b>YES</b>	YES	YES	Limited	Limited
Customer Managed	<b>YES</b>	NO	YES	NO	YES
Managed Service	<b>YES</b>	YES	YES	YES	NO

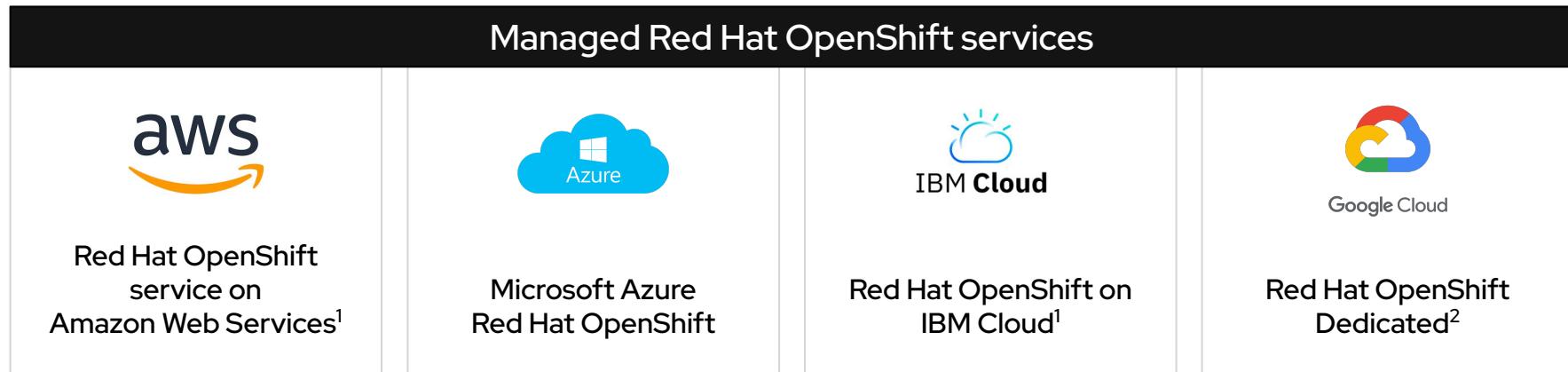
# Red Hat OpenShift

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Available as self-managed platform or fully managed cloud service

Start quickly, we  
manage it for you

Cloud managed



You manage it, for  
control and flexibility

Customer managed



## Kubernetes and portability

No, Kubernetes doesn't make applications portable, say GARTNER analysts. "Implementing portability with Kubernetes also requires avoiding any dependency that ties the application to the infrastructure provider, such as the use of cloud provider's native services."

"For example, using EKS on [AWS] Fargate is not CNCF-certified and arguably not even standard Kubernetes. The same is true for virtual nodes on Azure as implemented by ACIs."

# Open Hybrid Cloud Demo



# Manage OpenShift Anywhere

## Overview



- OCP Cluster Lifecycle Management:
  - Provision new OCP 4.5.x and above
  - Manage existing OCP 3.11, 4.5.x and above
- Import ARO, OSD, OSP and IBM Z
  - Deploy and manage applications across any of these clusters
  - Define security policy, compliance and violations
- Multi-cluster networking with Submariner
  - Support for the Submariner Operator
  - Provides inter-cluster networking for apps that span multiple clusters

Name	Status	Provider	Distribution	Labels	Nodes
cluster1	Ready	aws	OpenShift 4.6.12	cloud=Amazon;clusterID=4593ffd4-c18c-4b51-84b0-33ead77c0ee1;name=cluster1;region=us-east-2;vendor=OpenShift	6
local-cluster	Ready	aws	OpenShift 4.6.4 Upgrade available	cloud=Amazon;cluster.open-cluster-management.io/clusterset=submariner;cluster.open-cluster-management.io/submariner-agent=true;clusterID=e5275847-4c69-432c-a096-52685029a378;installer.name=multicloudhub;installer.namespace=open-cluster-management;local-cluster=true;name=local-cluster;vendor=OpenShift	7

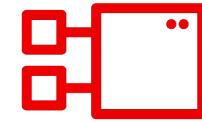
# Open hybrid cloud: The platform for big ideas



The same developer experience



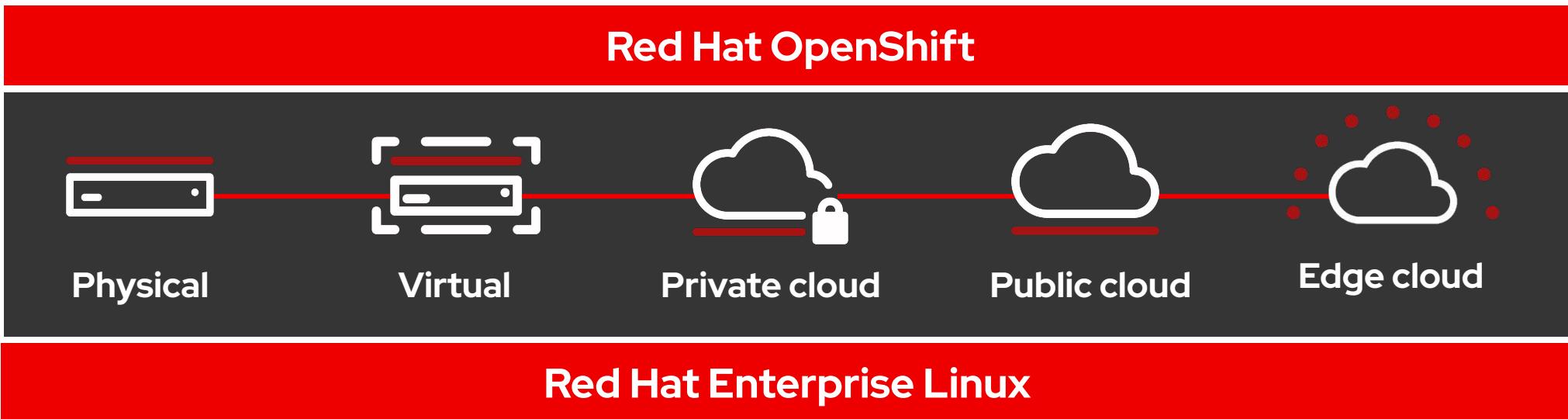
Modernize apps



App migration



Secure



# Manage OpenShift Anywhere

- OCP Cluster Lifecycle Management:
  - Provision new OCP 4.4.x - 4.6.x
  - Manage existing OCP 3.11, 4.4.x - 4.6.x
- Public cloud managed kubernetes: EKS, AKS, GKE, IKS, ROKS
  - Search, find and modify kubernetes resources.
  - Deploy applications, across clusters
  - Define security policy, compliance and violations
- Provision OCP to **Bare Metal** and **vSphere**
  - More opportunity to mix clouds (public / private)

The screenshot shows the 'Create a cluster' screen in the Red Hat Advanced Cluster Management for Kubernetes web interface. The top navigation bar includes the Red Hat logo, the title 'Advanced Cluster Management for Kubernetes', and a user dropdown for 'kube:admin'. Below the title, there's a 'Clusters /' breadcrumb and a 'Create a cluster' button with a 'YAML: On' toggle. The main form has two sections: 'Configuration' (Cluster name\*) and 'Distribution'. In 'Configuration', there's a field to 'Enter cluster name'. In 'Distribution', there's a list of infrastructure providers: Red Hat OpenShift (selected), AWS Amazon Web Services, Google Cloud, Microsoft Azure, VMware vSphere, and Bare Metal. To the right of the form is a large code editor window titled 'Cluster YAML' containing the YAML configuration for the cluster deployment. The code includes details like API version, kind, metadata, and spec for the cluster deployment and managed cluster.

```
apiVersion: hive.openshift.io/v1
kind: ClusterDeployment
metadata:
  name: 
  namespace: 
  labels:
    cloud: ''
    vendor: 'OpenShift'
spec:
  baseDomain:
  clusterName:
  controlPlaneConfig:
    servingCertificates: {}
  installed: false
  platform:
    provisioning:
      installConfigSecretRef:
        name: -install-config
      sshPrivateKeySecretRef:
        name: -ssh-private-key
      pullSecretRef:
        name: -pull-secret
  ...
  apiVersion: cluster.open-cluster-management.io/v1
  kind: ManagedCluster
  metadata:
    labels:
      name: 
      vendor: OpenShift
  spec:
    hubAcceptsClient: true
  ...
  apiVersion: v1
  kind: Secret
  metadata:
    name: -install-config
    namespace: 
  type:Opaque
```

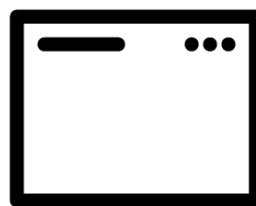
# Red Hat OpenShift and OpenShift virtualization

Modernize workloads and support mixed applications consisting of VMs, containers, and serverless

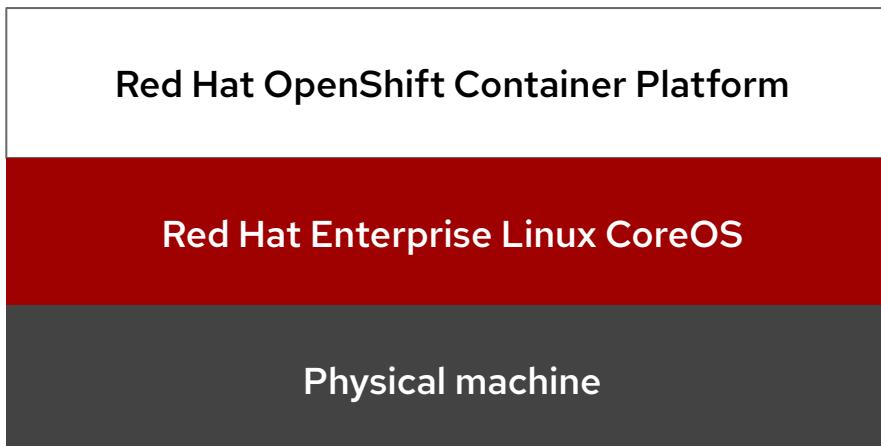
- Accelerate application delivery with a single platform that can manage “mixed applications” with the same tools and teams
- Add VMs to new and existing applications
- Modernize legacy VM applications over time, or maintain them as VMs



VMs



Containers



## watertechnology

Technology Data Management Trading Tools Regulation Operations Management & Strategy Inno

OPERATIONS

### Goldman Sachs Revamps Virtualization Infrastructure

The investment bank is leveraging Red Hat's OpenShift technology to better manage its global footprint of virtual machines.



Josephine Gallagher  
@josiebgallagher

29 Apr 2020

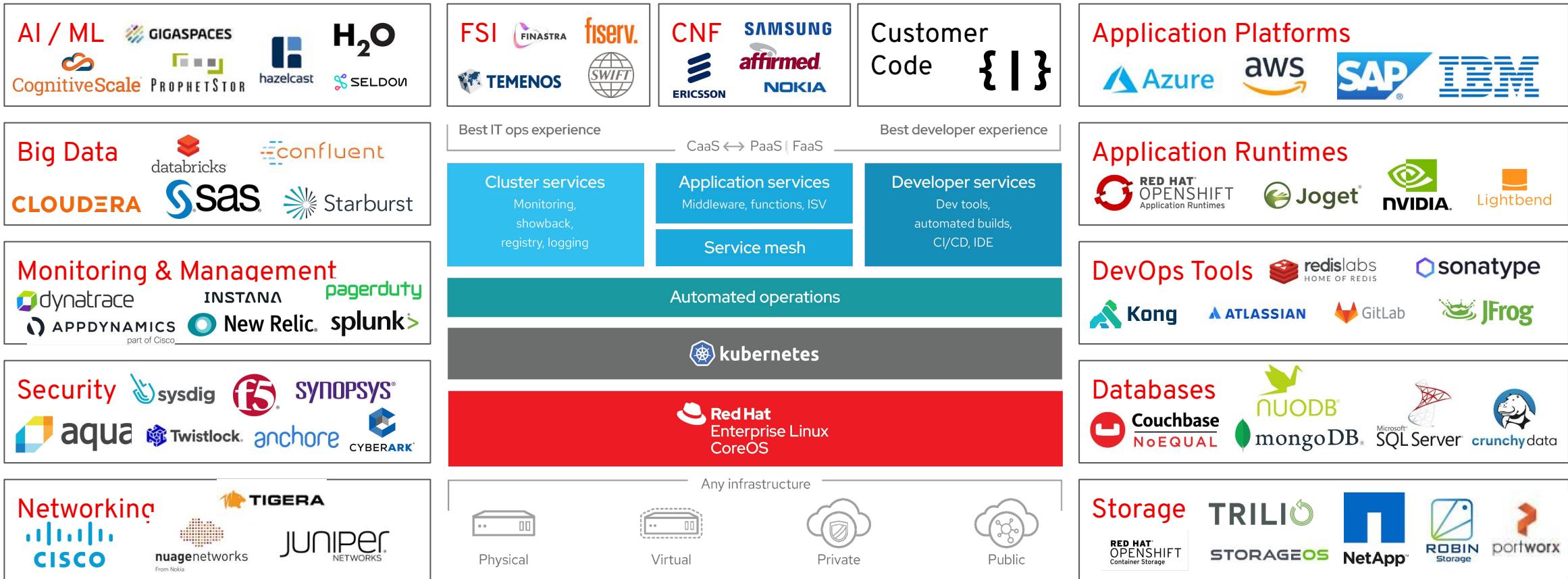


<https://www.watertechnology.com/operations/753556/goldman-sachs-revamps-virtualization-infrastructure>

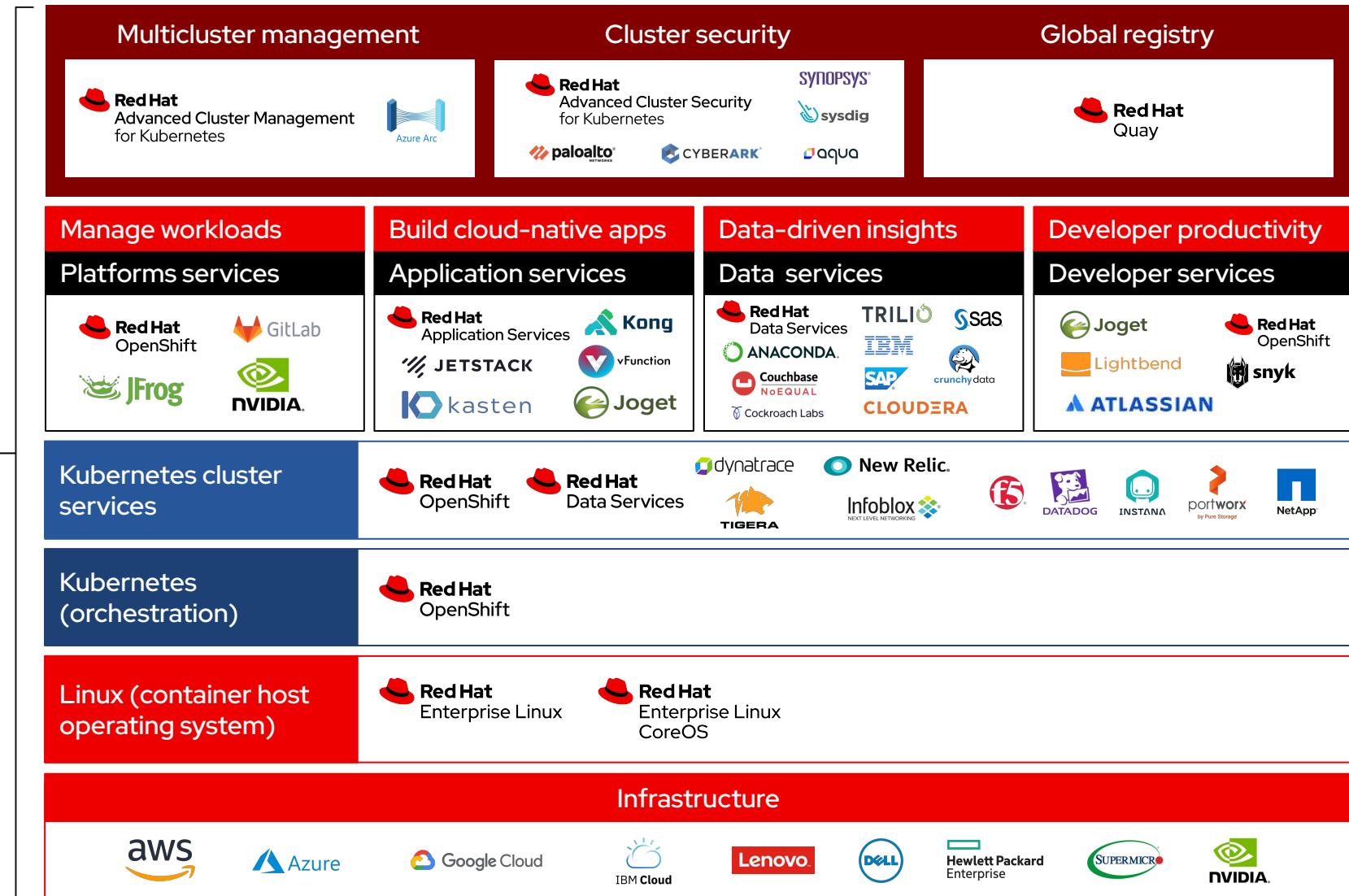


# Open choice and certified partner ecosystem

# Red Hat offers choice



 Simplify the trial, procurement, and deployment of ISV software on Red Hat OpenShift, anywhere with Red Hat Marketplace



# Strategic partnerships within AI/ML ecosystem

## AI/ML Lifecycle



## Data Governance & Security



## Data Processing



## Data Analytics



## Databases



## Infrastructure Partners

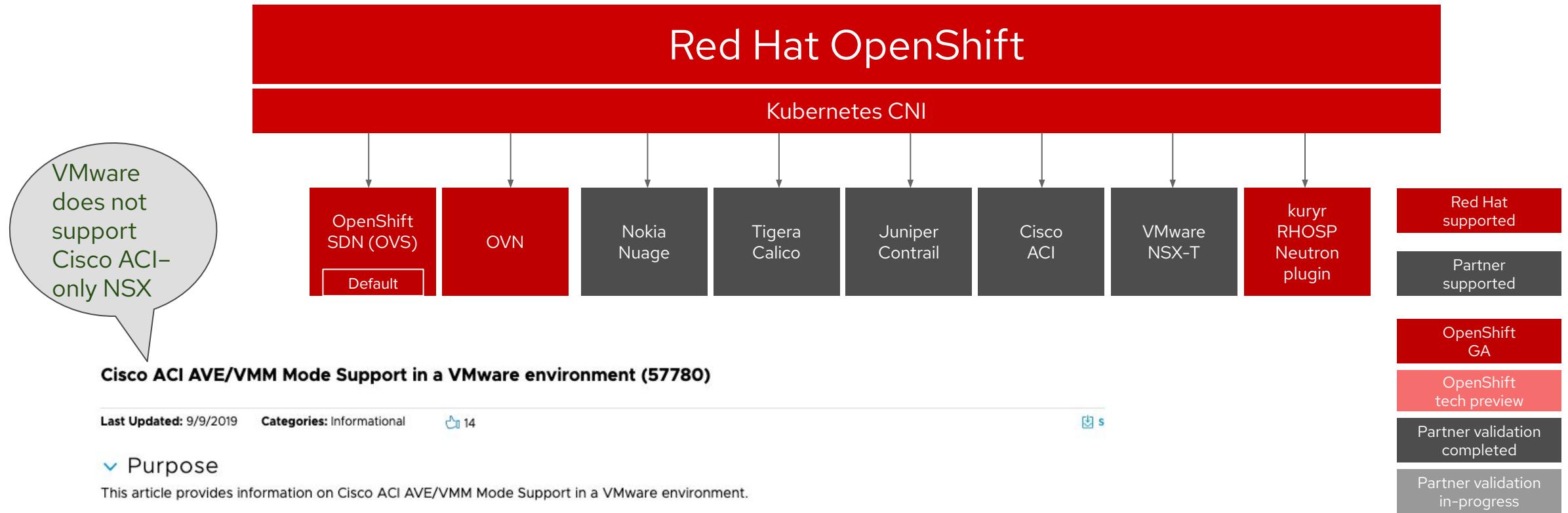


## Hardware Acceleration



# Red Hat OpenShift networking plugins

Open solution allows for diversity of choice



## Purpose

This article provides information on Cisco ACI AVE/VMM Mode Support in a VMware environment.

## Resolution

VMware supports vSphere and all features available through the public API.

# Red Hat OpenShift storage plugins

Open solution allows for diversity of choice

NFS	OpenStack Cinder	vSphere disk	Azure disk	AWS EBS	GCE block
iSCSI	OpenShift Data Foundation	vSphere file	Azure file	AWS EFS	GCE file
Fiber Channel	Local storage	Container Storage Interface (CSI)	Azure object	AWS S3	GCE object

# Why customers choose Red Hat OpenShift

The diagram consists of four rectangular boxes arranged in two rows. The top row contains three boxes, and the bottom row contains one large box.

- Trusted enterprise Kubernetes**: Contains an icon of a server rack with nodes connected to a central point. Below it is a dark teal box containing the text "Trusted enterprise Kubernetes".
- Cloud-like experience everywhere**: Contains the Red Hat OpenShift logo (a red hat icon and the text "Red Hat OpenShift") above two clouds, with a dashed line between them. Below it is a dark teal box containing the text "Cloud-like experience everywhere".
- Empowering developers to innovate**: Contains several developer-related icons: Spring (leaf), Node.js (hexagon), Angular (teal hexagon), Kafka (kafka icon), and Kubernetes (K with an 'n'). Below it is a dark teal box containing the text "Empowering developers to innovate".
- Open source innovation**: Contains icons for various open-source projects: Docker (blue hexagon with a ship wheel), Helm (blue sailboat), Prometheus (red flame), etcd (red lightning bolt), Ceph (red gear), CoreOS (blue circle with a white triangle), and Kubernetes (blue hexagon with a white snowflake). Below it is a dark teal box containing the text "Open source innovation".

# Red Hat is a strategic partner for AI/ML solutions across industries

## Healthcare and public sector



Data driven diagnosis



Data driven diagnosis

## Ministry of Defence (Israel)

Jupyter notebooks as a service

## Automotive



Connected Drive & Autonomous Driving

## Financial



Containerized Apache Spark

## Discover Financial Services

## Oil and gas



Democratize data science for oil and gas exploration

# Red Hat OpenShift: Delivering innovation without limitation

Bringing results to customers across industries and use cases



*Telefónica*



AIRBUS

ally



Follett

MACQUARIE

atpco

helvetia

CATHAY PACIFIC

disipolis®



HCA  
Healthcare™

Deutsche Bank

omnitracs

Miles & More



DE LTA

ExxonMobil

Public Health  
England

posco  
ICT

SLOVENSKÁ  
sporitelňa



Lufthansa Technik

DNM

NetApp™

unicef  
INNOVATION

elo

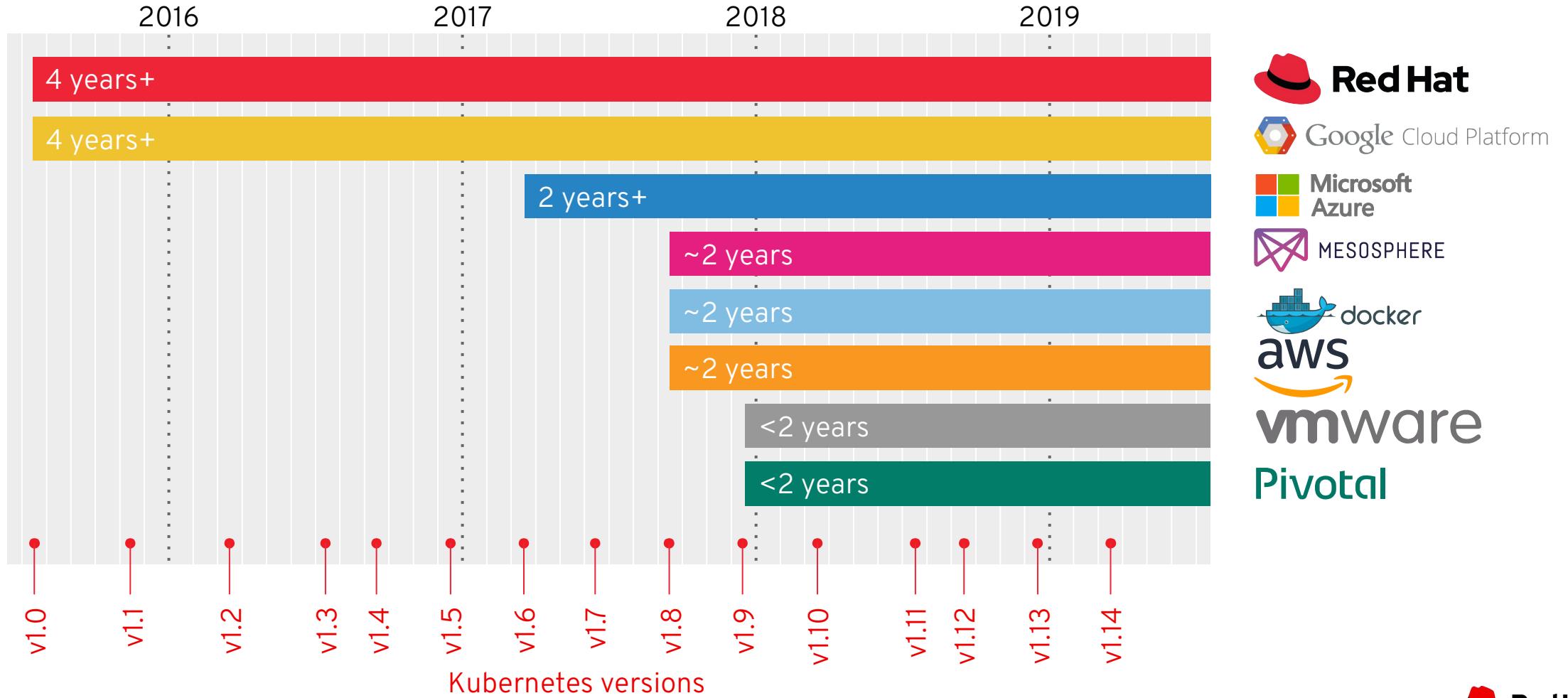
GENERALI

ascend money

Bilyoner

Fast time to business value

# Red Hat has a strong history with Kubernetes





# 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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 [facebook.com/redhatinc](https://www.facebook.com/redhatinc)

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