IT智能化最佳夥伴

METAAGE 邁達特

RedHat Openshift on Azure Briefing
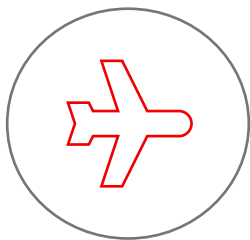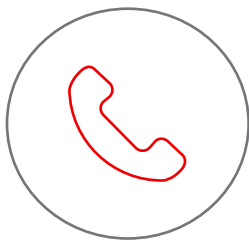
Presented by MetaAge

Agenda

- What is RedHat OpenShift

- RedHat OpenShift on Azure

  – Architecture

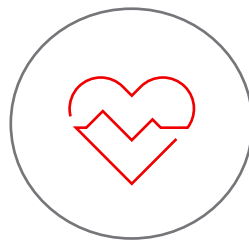 – Features

  – Benefits

100%

of the **Fortune Global 500** companies
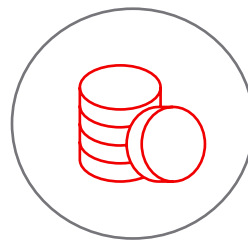in these industries rely on Red Hat

Airlines

Telecommunications

Healthcare

Commercial Banking

Creating value by delivering applications faster
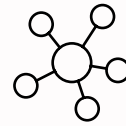
Cloud-native applications
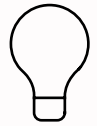
AI and machine learning
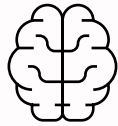
Analytics

Internet of Things

Culture of innovation

Containers, Kubernetes, and hybrid cloud are key ingredients

Kubernetes done right is hard

75%

of enterprise users say the complexity of implementation and operations are the top blockers to adoption

Source: The New Stack, The State of the Kubernetes Ecosystem, August 2017

Kubernetes done right is hard

Install

- Templating
- Validation
- OS Setup

Deploy

- Identity & Security Access
- App Monitoring & Alerts
- Storage & Persistence
- Egress, Ingress & Integration
- Host Container Images
- Build/Deploy Methodology

Harden

- Platform Monitoring & Alerts
- Metering & Chargeback
- Platform Security Hardening
- Image Hardening
- Security Certifications
- Network Policy
- Disaster Recovery
- Resource Segmentation

Operate

- OS Upgrade & Patch
- Platform Upgrade & Patch
- Image Upgrade & Patch
- App Upgrade & Patch
- Security Patches
- Continuous Security Scanning
- Multi-environment Rollout
- Enterprise Container Registry
- Cluster & App Elasticity
- Monitor, Alert, Remediate
- Log Aggregation

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Containers come with their own challenges

Red Hat OpenShift

Container security
Image scanning, patching, and compliance

▶ **Trusted enterprise Kubernetes**
Continuous security, world-class support and services and deep expertise to confidently run any application

Day 2 management
Install, upgrade, and maintain
Integrate existing enterprise technology

▶ **A cloud-like experience, everywhere**
Full-stack and automated operations on a consistent foundation for on-premises or hybrid cloud infrastructures

Application delivery
Monitoring, metering, and management
Integrate existing developer tools

▶ **Empowering developers to innovate**
Get applications to production sooner with a wide range of technologies and streamlined workflows

There are two ways to run OpenShift on Azure

OpenShift Container Platform on Virtual Machines

Deploy through cloud.redhat.com/openshift

Self-managed on infrastructure as a service (IaaS)

Bring your own license

Azure Red Hat OpenShift

Deployed through the Azure Portal or the Azure CLI
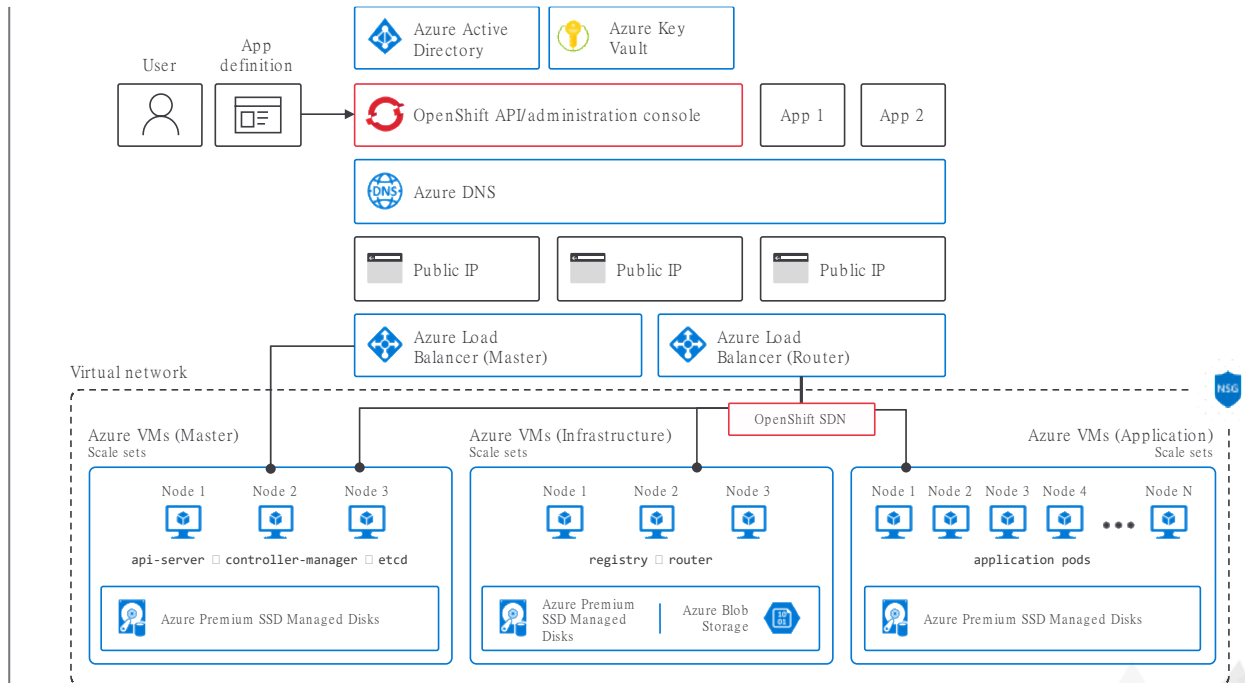
Fully-managed and supported Red Hat OpenShift platform

Billing integrated in your Azure subscription

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OpenShift Container Platform on Virtual Machines

Responsibilities

User management	■
Project and quota management	■
Application lifecycle	■
Cluster creation	■
Cluster management	■
Monitoring and logging	■
Network configuration	■
Software and security updates	■
Platform support	◪

■ Customer   ◪ Microsoft and Red Hat

User

App definition

Azure Active Directory

Azure Key Vault

OpenShift API/administration console

App 1   App 2

Azure DNS

Public IP   Public IP   Public IP

Azure Load Balancer (Master)   Azure Load Balancer (Router)

Virtual network

OpenShift SDN   NSG

Azure VMs (Master)
Scale sets
Node 1   Node 2   Node 3
api-server □ controller-manager □ etcd
Azure Premium SSD Managed Disks

Azure VMs (Infrastructure)
Scale sets
Node 1   Node 2   Node 3
registry □ router
Azure Premium SSD Managed Disks   Azure Blob Storage

Azure VMs (Application)
Scale sets
Node 1   Node 2   Node 3   Node 4   ···   Node N
application pods
Azure Premium SSD Managed Disks

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Fully-managed clusters with Azure Red Hat OpenShift

Responsibilities

User management	Customer
Project and quota management	Customer
Application lifecycle	Customer
Cluster creation	Microsoft and Red Hat
Cluster management	Microsoft and Red Hat
Monitoring and logging	Microsoft and Red Hat
Network configuration	Microsoft and Red Hat
Software and security updates	Microsoft and Red Hat
Platform support	Microsoft and Red Hat

Customer

Microsoft and Red Hat

User

App definition

OpenShift API/administration console

App 1

App 2

Let **Microsoft** and **Red Hat**...

Manage all your clusters

Secure your nodes

Monitor and operate your VMs

Manage environment patches

Azure Red Hat OpenShift

Jointly engineered, operated, and supported by both
Microsoft and **Red Hat** with an integrated support experience

Build, deploy and scale apps with confidence

In just minutes, deploy enterprise-grade Red Hat OpenShift clusters on Azure

Enterprise-grade operations, security and compliance
Deploy your business-critical apps with confidence with an industry-leading SLA of 99.9% availability, with PCI DSS, HITRUST and FedRAMP certifications.

Empowering developers to innovate
Promote developer productivity with built-in CI/CD pipelines, then easily connect your applications to hundreds of Azure services such as MySQL, PostgreSQL, Redis, Cosmos DB, and more.

Scale on your terms
Start a highly available cluster in a few minutes, then scale as your application demand changes; plus, get your choice of standard, high-memory, or high-CPU application nodes. Pay through your Azure subscription.
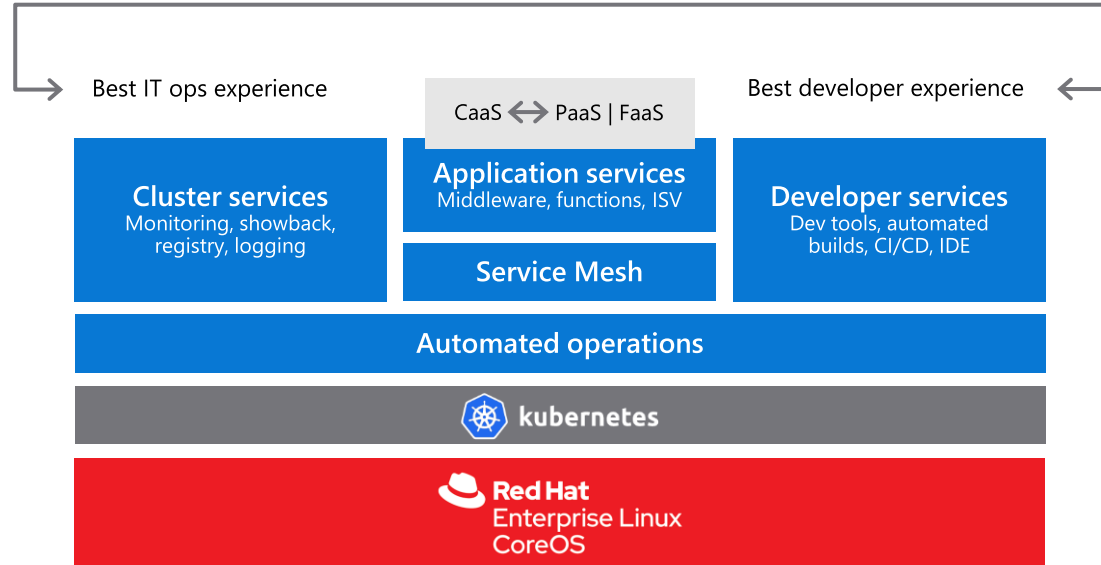
Azure Red Hat OpenShift running on OpenShift 4

OpenShift 4 – a smarter Kubernetes platform

Up and running in minutes from the container host to application services.

Scales with your needs from 10 containers to thousands.

One-click updates for platform, services, and applications

Best IT ops experience

CaaS ⟷ PaaS | FaaS

Best developer experience

Cluster services
Monitoring, showback, registry, logging

Application services
Middleware, functions, ISV

Developer services
Dev tools, automated builds, CI/CD, IDE

Service Mesh

Automated operations

kubernetes

Red Hat
Enterprise Linux
CoreOS

What's new when running on OpenShift 4.5

Kubernetes 1.18 on Red Hat Enterprise Linux CoreOS
An immutable, container optimized, Linux OS host that is delivered and installed as a component of OpenShift.

Private cluster management and ingress endpoints
Choose between public and private endpoints.

Cluster-admin role
Full cluster administrator capabilities enabling running privileged containers and installing Custom Resource Definitions (CRDs).

Bring your own Virtual Network
Create clusters into your own Virtual Network and connect to on-premises environments using Azure Express Route.

Multi-Availability Zones clusters
To ensure the highest resiliency, cluster components are deployed across 3 Azure Availability Zones in supported Azure regions.

Bring your own identity provider
In addition to Azure Active Directory, configure supported OpenShift identity providers, for example using OpenID Connect.

Industry compliance certifications
Certified for PCI DSS, HITRUST and FedRAMP.

FIPS 140-2 Level 1 compliant encryption
Strong encryption controls to protect sensitive data including platform secrets and application configuration data.

Operator Framework
Support for community and certified operators with developer self-service as well as Custom Resource Definitions (CRDs).

OpenShift Service Mesh
Integrated Service Mesh for enhanced security and network segmentation of microservices applications, based on Istio, Jaeger and Kiali.

OpenShift Serverless (Tech Preview)
Build functions based applications that can scale to zero, based on the Knative framework.

OpenShift Do (odo)
A fast, iterative, and straightforward CLI tool for developers who write, build, and deploy applications on OpenShift.

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