Red Hat OpenShift Virtualization

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Red Hat

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Senior Solution Architect

Red Hat

What we'll discuss today

OpenShift

Application Platform

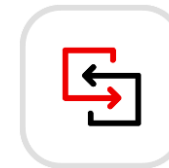Modern Platform for Application Development and Deployment across the hybrid cloud.

Virtualization

Containers and VMs

Single pane of glass.

VMs can benefit from kubernetes.

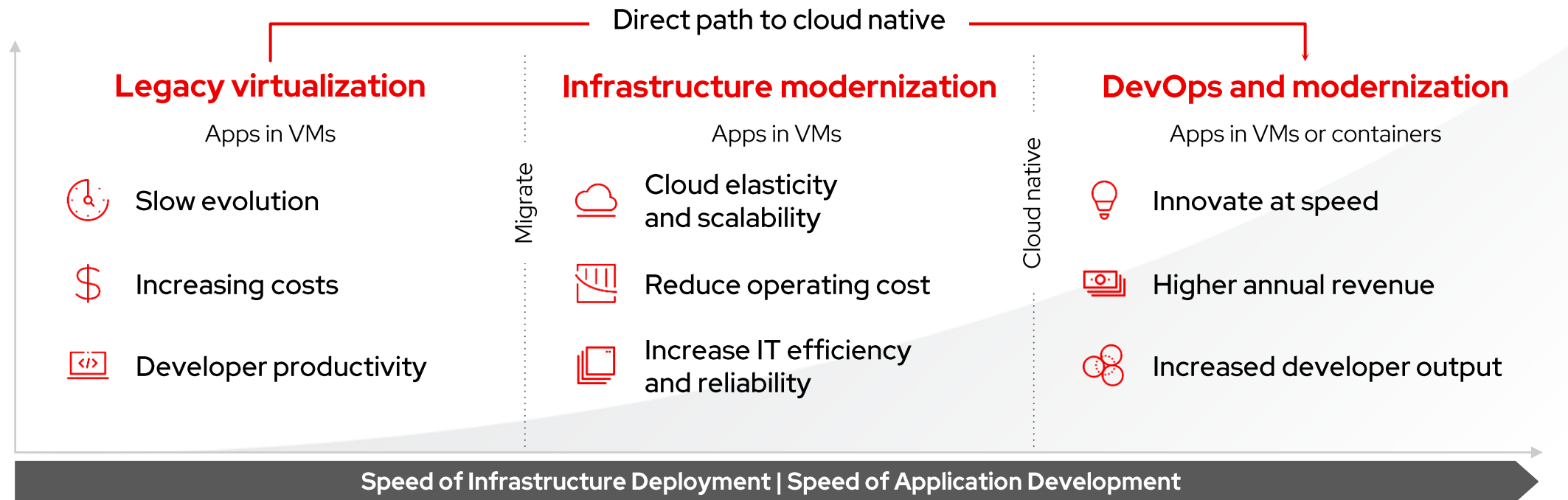Lower barriers for modernization.

MTV

Migration Toolkit

Warm migration of VMs at scale.

Network and Storage mapping.

From vSphere, RHV or OpenStack.

Modernize at your own pace

(and only as much as you want)

Direct path to cloud native

Legacy virtualization

Apps in VMs

- Slow evolution
- Increasing costs
- Developer productivity

Migrate

Infrastructure modernization

Apps in VMs

- Cloud elasticity and scalability
- Reduce operating cost
- Increase IT efficiency and reliability

Cloud native

DevOps and modernization

Apps in VMs or containers

- Innovate at speed
- Higher annual revenue
- Increased developer output

Speed of Infrastructure Deployment | Speed of Application Development

Path #4: Retire & Replace

A ground-up rebuild, keeping the legacy application up-and-running, whilst a new version of the application is developed, leveraging a Cloud Native development approach

Open Tour

Path #3+: Refactor Plus

Staged approach: individually replace/develop application's services as microservices, incorporating more advanced capabilities into applications, such as AI/ML and event driven approaches

Path #2: Containerize – Replatform to Containers/Kubernetes

"Lift, tinker, and shift" workloads from WebSphere/EAP to OpenShift containers

Path #3: Refactor

Staged approach: individually replace/develop application's services as microservices

Path #1: Virtualize – Rehost Application Server to OpenShift

"Lift, and shift" Java application on App Server to JBoss or WebSphere on OpenShift

The paths to Application Modernization

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Platform for Application Development and Deployment

Red Hat Advanced Cluster Management for Kubernetes

Multicluster management

Observability | Discovery | Policy | Compliance | Configuration | Workloads

Red Hat Advanced Cluster Security for Kubernetes

Cluster security

Declarative security | Container vulnerability management | Network segmentation | Threat detection and response

Red Hat Quay

Global registry

Image management | Security scanning | Geo-replication Mirroring | Image builds

Red Hat OpenShift Data Foundation

Cluster data management

RWO, RWX, Object | Efficiency | Performance | Security | Backup | DR Multicloud gateway

Manage workloads

Platform services

- Service mesh | Serverless
- Builds | CI/CD pipelines
- GitOps | Distributed Tracing
- Log management
- Cost management

Build cloud-native apps

Application services*

- Languages and runtimes
- API management
- Integration
- Messaging
- Process automation

Data-driven insights

Data services*

- Databases | Cache
- Data ingest and preparation
- Data analytics
- AI/ML

Developer productivity

Developer services

- Developer CLI | IDE
- Plugins and extensions
- CodeReady workspaces
- CodeReady containers

Kubernetes cluster services
Install | Over-the-air updates | Networking | Ingress | Storage | Monitoring | Log forwarding | Registry | Authorization | Containers | VMs | Operators | Helm

Kubernetes (orchestration)

Red Hat Enterprise Linux   **Linux (container host operating system)**   **Red Hat Enterprise Linux CoreOS**

Physical   Virtual   Private cloud   Public cloud   Edge

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*   Red Hat OpenShift® includes supported runtimes for popular languages/frameworks/databases. Additional capabilities listed are from the Red Hat Application Services and Red Hat Data Services portfolios.
** Disaster recovery, volume and multicloud encryption, key management service, and support for multiple clusters and off-cluster workloads requires OpenShift Data Foundation Advanced

Data Protection, Compliance & Sovereignty with Confidential Computing

The Need for Confidential Computing
Closes a Major Gap in the Data Protection Continuum

Data at Rest

Storage Encryption
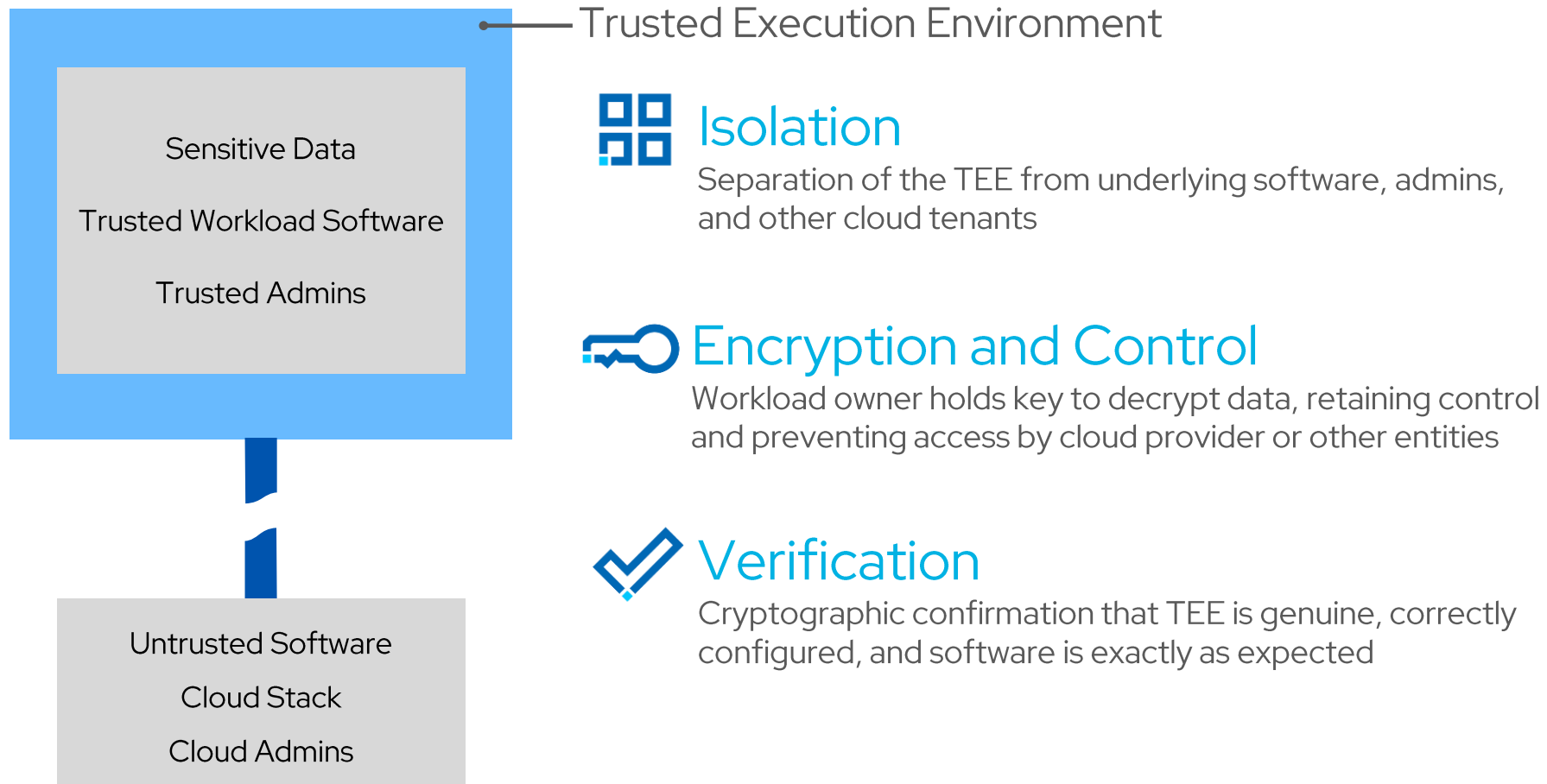
Data in Transit

Network Encryption

Data in Use

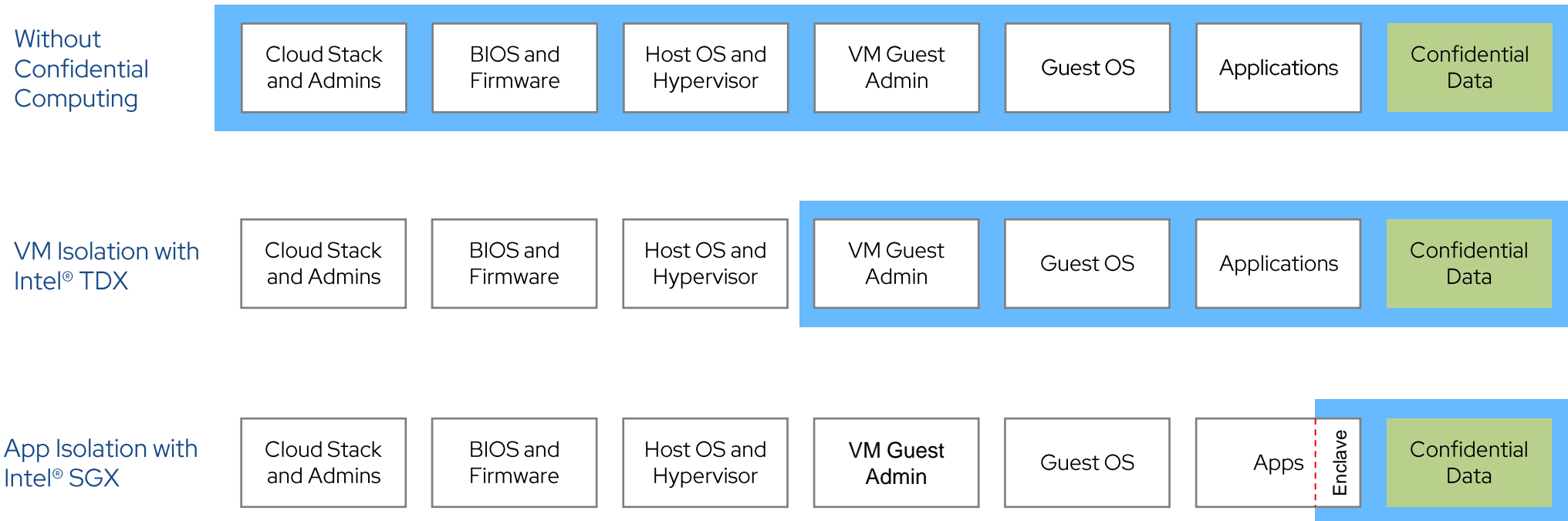Confidential Computing

Confidential Computing
Essential Functions

Trusted Execution Environment

Sensitive Data

Trusted Workload Software

Trusted Admins

Untrusted Software

Cloud Stack

Cloud Admins

Isolation
Separation of the TEE from underlying software, admins, and other cloud tenants

Encryption and Control
Workload owner holds key to decrypt data, retaining control and preventing access by cloud provider or other entities

Verification
Cryptographic confirmation that TEE is genuine, correctly configured, and software is exactly as expected

Intel Trusted Execution Environments
Trust Boundaries Compared

■ Trust Boundary: Elements with potential to access confidential data

Without Confidential Computing

| Cloud Stack and Admins | BIOS and Firmware | Host OS and Hypervisor | VM Guest Admin | Guest OS | Applications | Confidential Data |

VM Isolation with Intel® TDX

| Cloud Stack and Admins | BIOS and Firmware | Host OS and Hypervisor | VM Guest Admin | Guest OS | Applications | Confidential Data |

App Isolation with Intel® SGX

| Cloud Stack and Admins | BIOS and Firmware | Host OS and Hypervisor | VM Guest Admin | Guest OS | Apps | Enclave | Confidential Data |

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Intel TDX Availability with 5th Gen Intel Xeon Scalable

Intel TDX will be available on select 4th Gen Intel Xeon Scalable instances through four leading cloud providers

Previews underway now; Check with your provider for details

Intel TDX will generally be available in all **5th Gen Intel Xeon Scalable Processors** (code-named Emerald Rapids)

Evolving AI Landscape Fuels Need for Confidentiality & Security
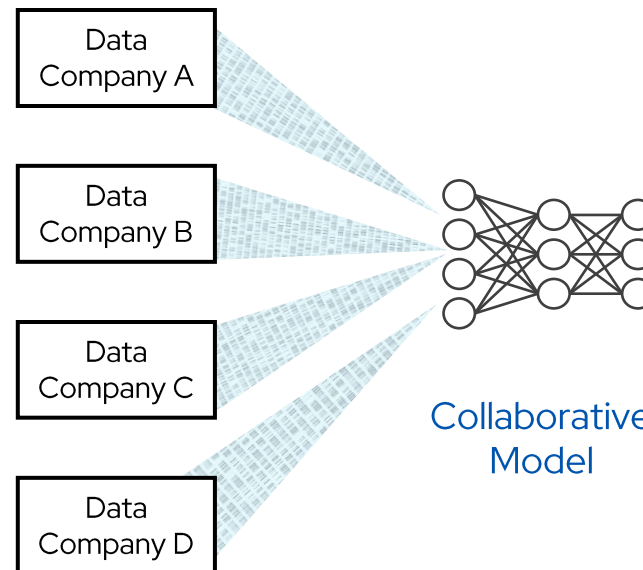
Growing AI Ubiquity

Use expanding from experts to general population, exposing new risks
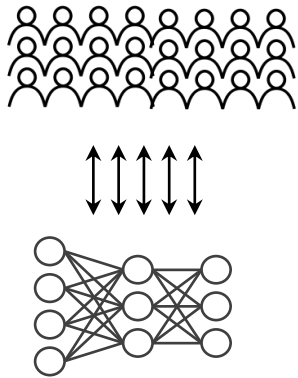
Large Language Models & Generative AI

Collaborative AI

Multiple entities contribute to achieve large, more diverse data set

Data Company A

Data Company B

Data Company C

Data Company D

Collaborative Model

AI Regulations

Deployment mandate expected to be widely-applicable across industries

EUROPEAN UNION ARTIFICIAL INTELLIGENCE ACT*

"High-risk AI systems shall be resilient as regards attempts by unauthorized third parties to alter their use or performance by exploiting the system vulnerabilities."

Additive to GDPR privacy protections

Red Hat OpenShift Virtualization

The modern option for virtualization

VMs   Containers

Red Hat
OpenShift Virtualization

Red Hat OpenShift
Container Platform

Red Hat Enterprise Linux

Physical machine
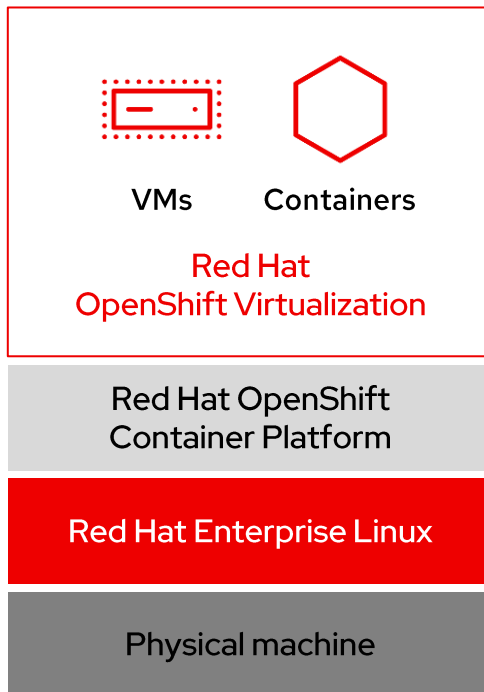
▸ **Unified platform**
for running virtual machines and containers

▸ **Consistent management**
toolings, interface, and ecosystem

▸ **Performance and stability**
of Kernel–based Virtual Machine (KVM),
the Linux kernel–based hypervisor

▸ **Built on KubeVirt**
Rapid innovation through Open Source
community. Top 10 CNCF active project with
190+ contributing companies

▸ **Included feature**
of the Red Hat OpenShift Container platform

▸ **Diverse Ecosystem**
of the Red Hat OpenShift
Container platform

▸ **Includes Red Hat Enterprise Linux**
guest entitlements

▸ **Supports Microsoft Windows**
guests through Microsoft Server Virtualization
Validation Program (SVVP)

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Modernize Applications Iteratively

Legacy virtualization

Weblogic | Apache | Database
System / OpenShift Project
SHIFT

OpenShift
Virtual Machine | Containers

Weblogic | Apache | Database
System / OpenShift Project

OpenShift
Virtual Machine | Containers
MODERNIZE

JBoss | Apache | Database
System / OpenShift Project

OpenShift
Virtual Machine | Containers
MODERNIZE

JBoss | Apache | Database
System / OpenShift Project

OpenShift
Virtual Machine | Containers
MODERNIZE

VM | CONTAINER

Konveyor Projects and Migration Toolkits by Red Hat

CLOUD NATIVE COMPUTING FOUNDATION

Konveyor is a CNCF Sandbox project

A community of **people** passionate about **helping others modernize** and migrate their **applications** to Kubernetes by **building tools and discovering patterns** of how to **break down monoliths, adopt containers, and embrace Kubernetes**.

Legacy Applications

ASSESS & PRIORITIZE

REPLATFORM I REFACTOR

KONVEYOR

Modernized Applications

SCALE
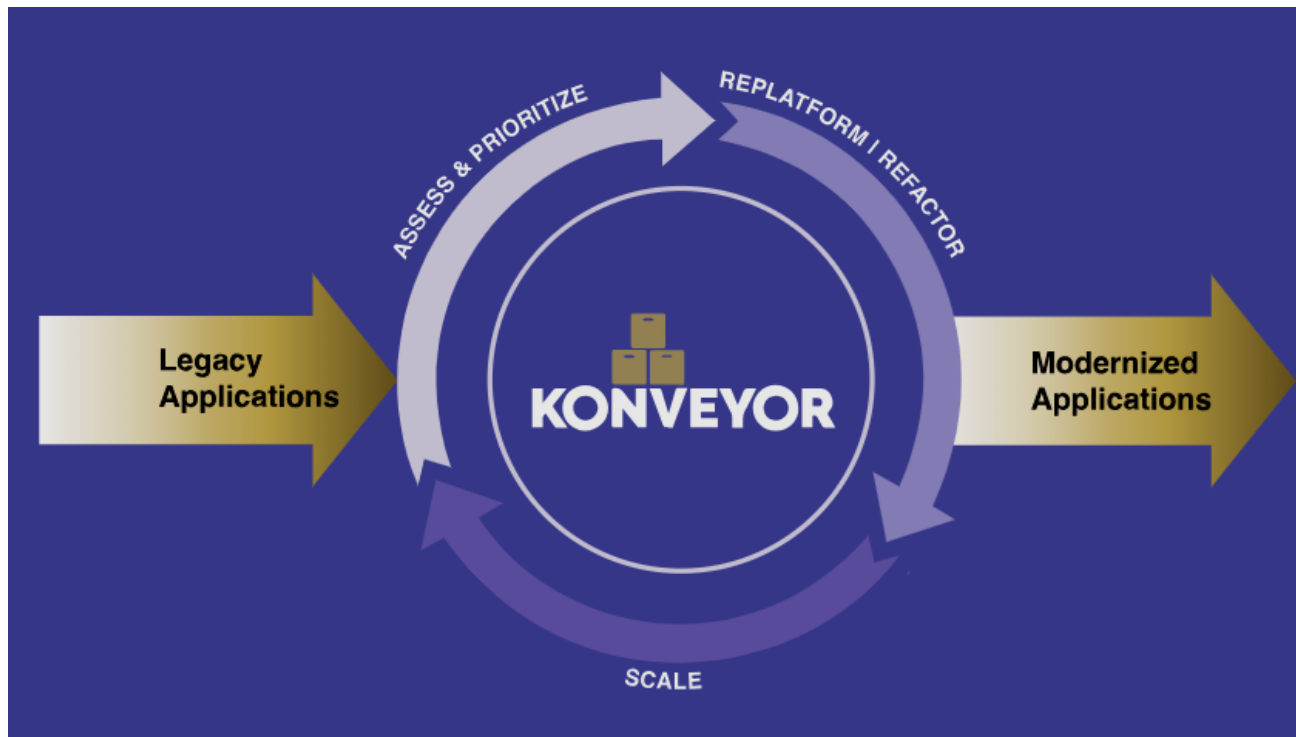
Red Hat Supported Operators

Migration Toolkit for Applications

Migration Toolkit for Containers

Migration Toolkit for Virtualization

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Migration Toolkit for Virtualization

Bringing traditional virtual machines into OpenShift

Migration tooling

▸ **Migration Toolkit for Virtualization** (MTV)

▸ Warm and parallel migration of VMs at scale

▸ VM Validation

▸ Network and Storage mapping

▸ Comes free with OpenShift Virtualization

Summary

OpenShift

Application Platform

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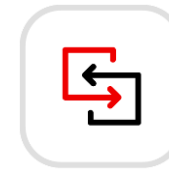
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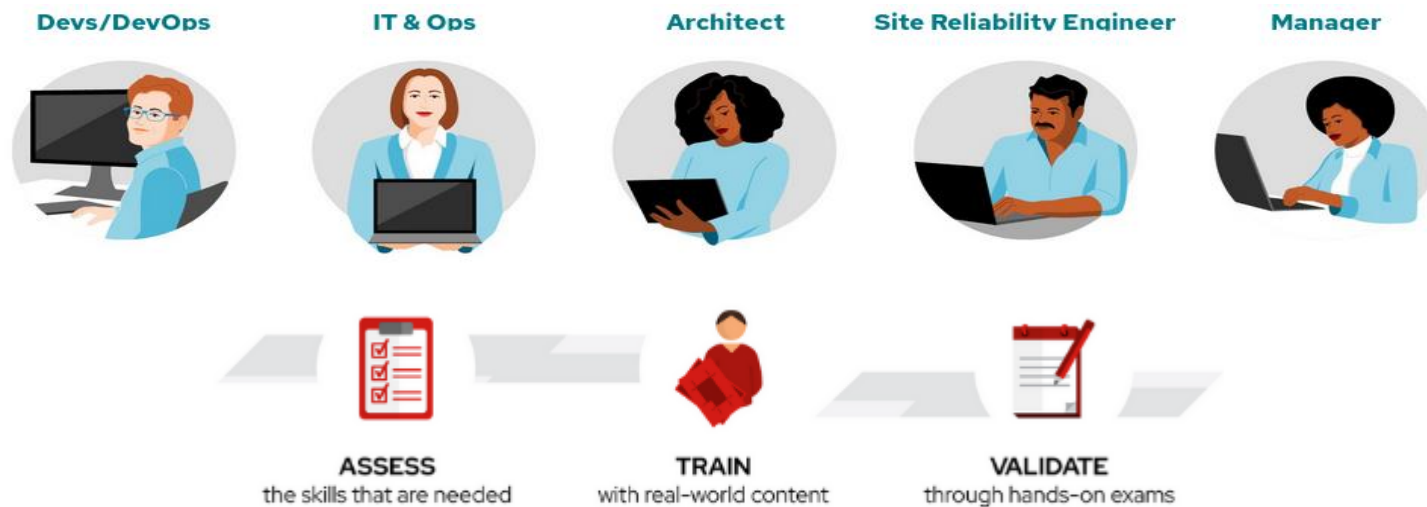# Red Hat Training & Certification

Transformation Journey

We act as an enabler to accelerate the adoption of our Red Hat technology and the adoption of our Devops Culture

Contact to

training-sales-es@redhat.com

Virtualization and Infrastructure Migration Technical Overview | RH018 (Free Online Technical overview)

Managing Virtual Machines with Red Hat OpenShift Virtualization | DO316 (4 Training Days)

| Devs/DevOps | IT & Ops | Architect | Site Reliability Engineer | Manager |

ASSESS
the skills that are needed

TRAIN
with real-world content

VALIDATE
through hands-on exams

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Red Hat Training & Certification

Red Hat Certified OpenShift Virtualization Skills Path

Transformation Journey

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Red Hat OpenShift Administration I: Operating a Production Cluster | DO180

Preliminary Exam in Red Hat OpenShift Administration | PE180K

Red Hat OpenShift Administration II: Configuring a Production Cluster | DO280
(Recommended)

Red Hat Certified OpenShift Administrator Exam | EX280

Managing Virtual Machines with Red Hat OpenShift Virtualization DO316

Red Hat Certified Specialist in OpenShift Virtualization EX316

Prerequisite | Course | Exam

Red Hat | **intel.**

Tech Talks

Webinar – 26 de Junio de 10:00 a 11:00

Always On

Moderniza tu estrategia de virtualización con Red Hat OpenShift Virtualization
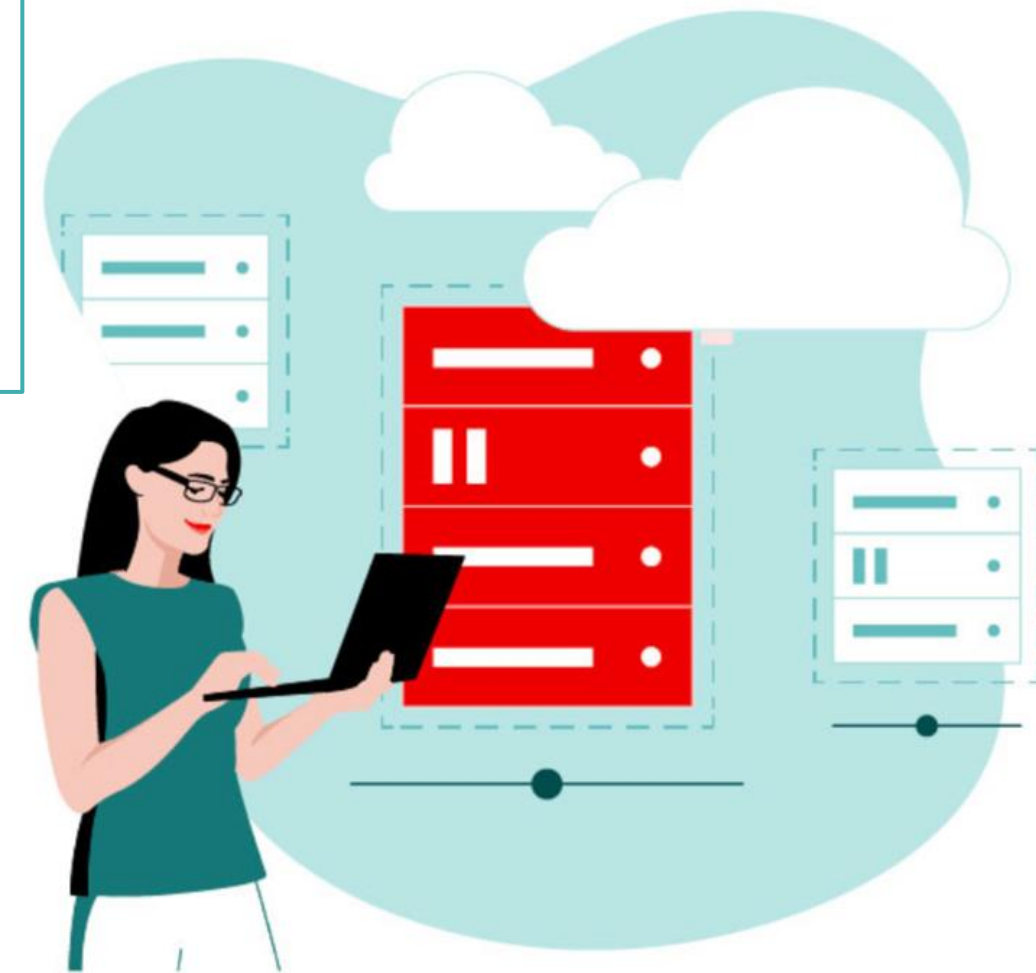
Muchas gracias

Red Hat es el principal proveedor mundial de soluciones empresariales de código abierto con un enfoque impulsado por la comunidad que permite ofrecer tecnologías de alto rendimiento de Linux, nube, contenedor y Kubernetes. Le ayudamos a estandarizar en todos los entornos, a desarrollar aplicaciones nativas de la nube, a integrar, automatizar, asegurar y gestionar entornos complejos gracias al soporte, training y servicios de consultoría galardonados.

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