

VMA Partner Pre Sales Workshop

Alfred Bach



Red Hat
Learning

Agenda Day 1

09:00 - 10:45

- Welcome and Introductions
- Sales Motion and Getting the Technical Win (GTM Strategy)
- Ecosystem Overview

10:45 - 12:00

- Customer Virtualisation Journey

12:00 - 13:00 Lunch

13:00 - 14:45

- Establishing Credibility and Positioning a Workshop
- Proving our credibility through getting hands on

14:45 - 15:00 BREAK

15:00 - 16:15

- Positioning the Virtual Migration Assessment (VMA)
- Customer Example

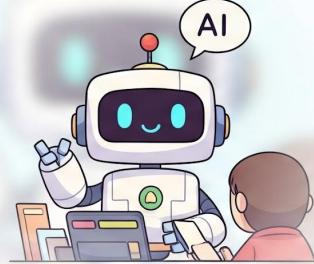
<https://github.com/RHEPDS/VMA-Partner-PSWS>

In our days

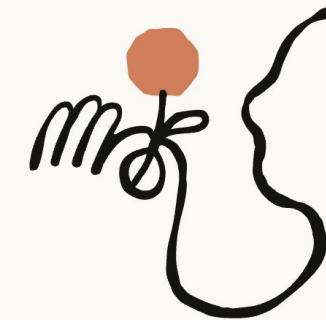
Let's use AI

<https://claude.ai/>

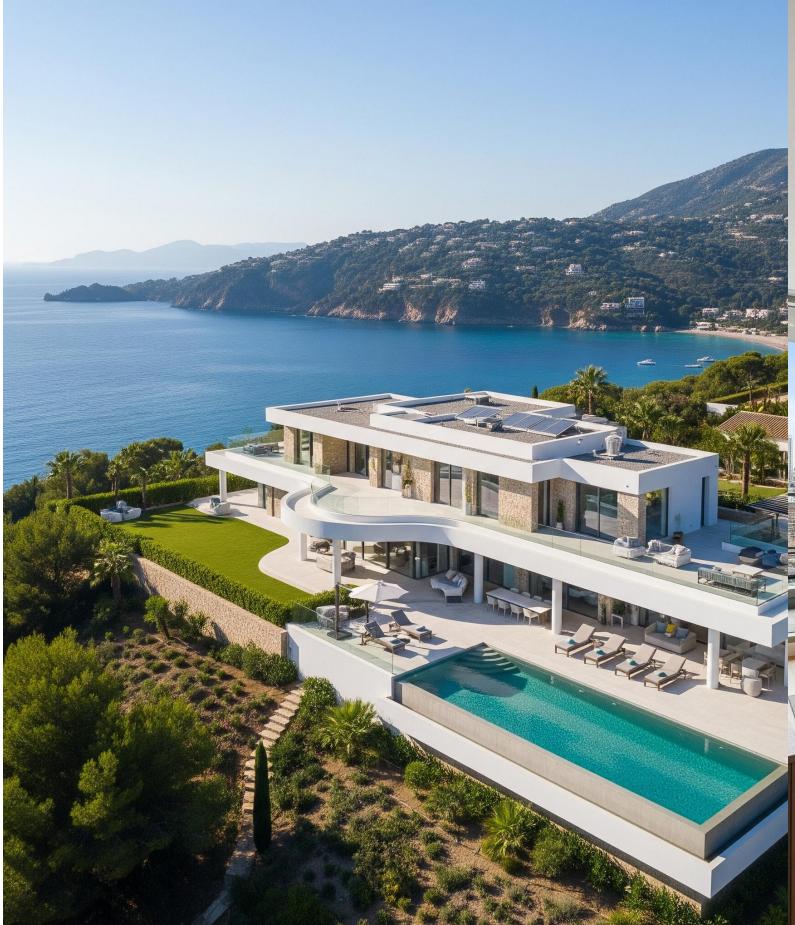
NotebookLM



⟳ NotebookLM



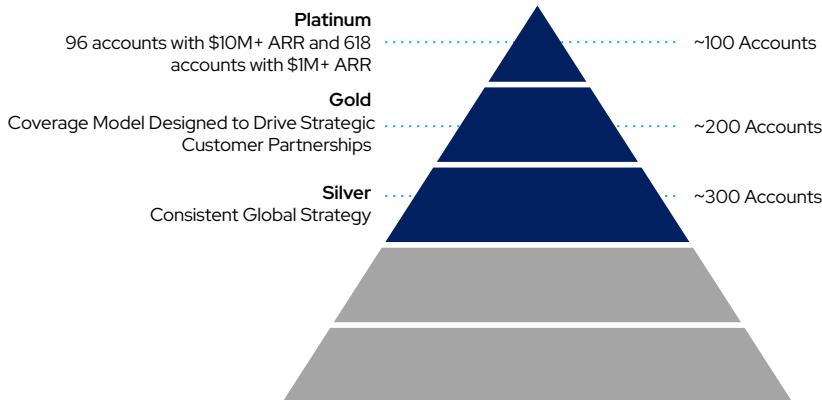
Imagine you live here but the landlord



The announcement of Broadcom to Acquire VMware has sparked concerns in the industry.

Technology Risk

With the announcement of the new Go-to-Market Model by Broadcom to focus on the **top 600 accounts** globally leaves many enterprises in open.



Increase of cost of virtualization software and subscription[#]



Reduction of enterprise support for non-focus accounts

De-Risking Your Virtualisation Technology Investment

Future-Proof Your Virtualization Strategy

New and modern applications will be built on containers. They provide new levels of agility and empowers organisations to accelerate their digital capabilities.

However, **not all applications** can or are **ready** to be containerized and operate in microservices.

In most organizations, the **journey** will be a **multi-phased approach**, requiring IT operations to maintain and **coexist** workloads with both virtual machines and containers in their IT landscape.

1

Rehosting by “shifting” virtual machine workloads into the OpenShift platform

2

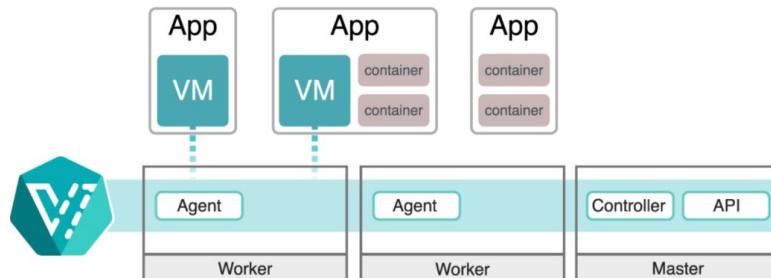
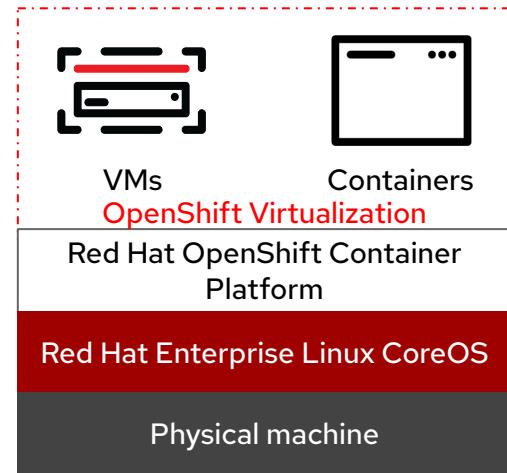
Replatform by “upgrading” the application into a container-based architecture

3

Refactor applications from monolithic to microservices

What is OpenShift Virtualization?

- Unified platform for running VMs and Containers
- Include features of the OpenShift application platform
- Run VMs in OpenShift
- Performance, stability, scalability, and reliability of KVM, the Linux kernel-based hypervisor
- Manageability and ecosystem of OpenShift
- Supports Microsoft Windows guests – Microsoft Server Virtualization Validation Program (SVVP)



Hybrid cloud application platform



**Red Hat
OpenShift**

Advanced Management & Security

Multicluster Management | Cluster Security | Global Registry | Cluster Data Management | Compliance & Policy Automation

Integrated DevOps Services

Service Mesh | Serverless | Builds | Pipelines | GitOps | Tracing | Log Management | Cost Management

Containers

Image Registry | Container Runtime | Pod Autoscaling | Resource Quotas & Limits | Namespace Isolation | Container Networking

VMs

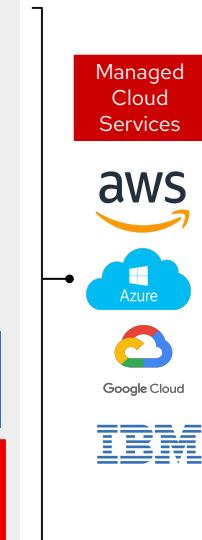
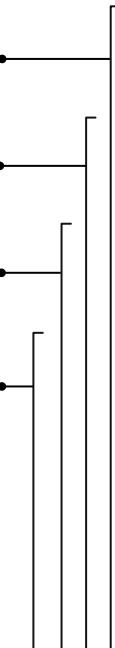
Live migration | Auto-scaling | Windows & Linux | Migration toolkit

Kubernetes & Cluster Services

Install | Over-the-air updates | Networking | Ingress | Storage | Monitoring | Log forwarding | Registry | Authorization | Operators | Helm



Linux (host operating system)



Physical



Virtual



Private cloud



Public cloud



Edge

Red Hat

Migration Toolkit for Virtualization (MTV)



Main Features:

- Easy to use UI
- Mass migration of VMs from VMware, Red Hat Virtualization, OpenStack to OpenShift and between OpenShift Clusters
- VM data pre-copied before shutdown (Warm Migration) for VMware and Red Hat Virtualization migrations
- VM validation service:
 - Runs checks on VM configuration to avoid migration issues
- Parallelized VM Conversion
 - Maximize Throughput
- Migration Network Selection
 - Avoid impact on other running workloads

The screenshot displays two main sections of the Red Hat OpenShift MTV web interface. The top section, titled 'Providers', shows a list of available providers for virtualization, including 'vSphere' (VMware source), 'rhv' (oVirt source), and 'k8s' (KubeVirt). The bottom section, titled 'NetworkMaps', shows a list of network maps, including 'vSphere-map' (Source: vSphere, Target: k8s, Status: Ready) and 'k8s-map' (Source: k8s, Target: k8s, Status: Ready). Both sections include a sidebar with navigation links for Home, Operators, Workloads, Migration (selected), and Virtualization.

Modernize at your own pace

Legacy Virtualization

Apps in VMs

Slow evolution
⌚

Increasing costs
💲



Developer toil

Infrastructure Modernization

Apps in VMs



Cloud elasticity + scalability



Reduced cost



Increase IT efficiency +
reliability

Migration
Toolkit for
VMs

DevOps & Infrastructure Modernization

Apps in VMs or Containers



Innovate at speed



Higher annual revenue



Increased developer output

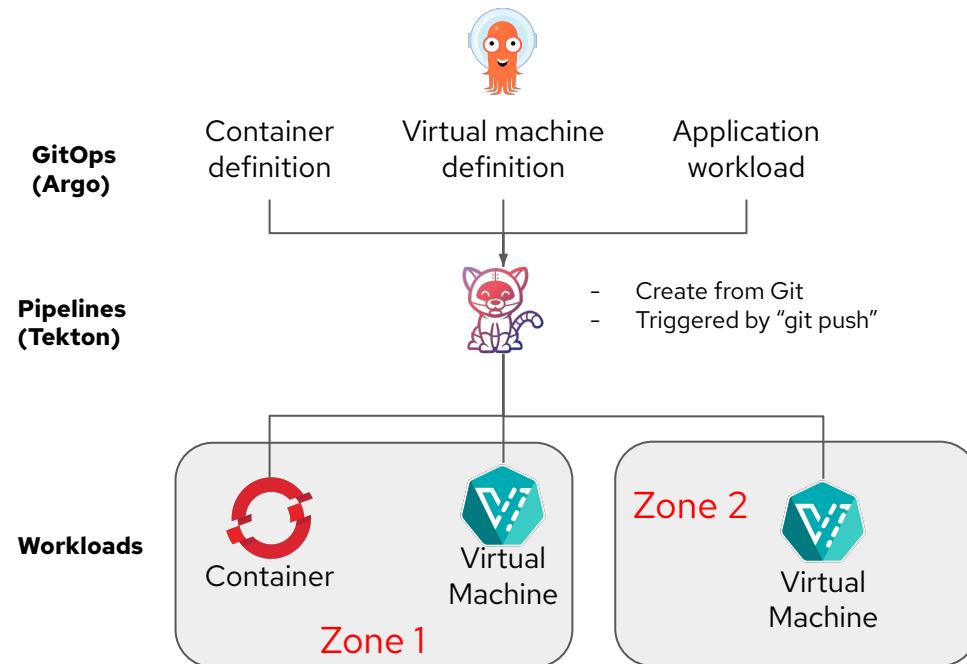
Cloud
Native

Direct path to cloud native

Speed of Infrastructure Deployment
Speed of Application Development

OpenShift Virtualization: Build Cloud-native VMs

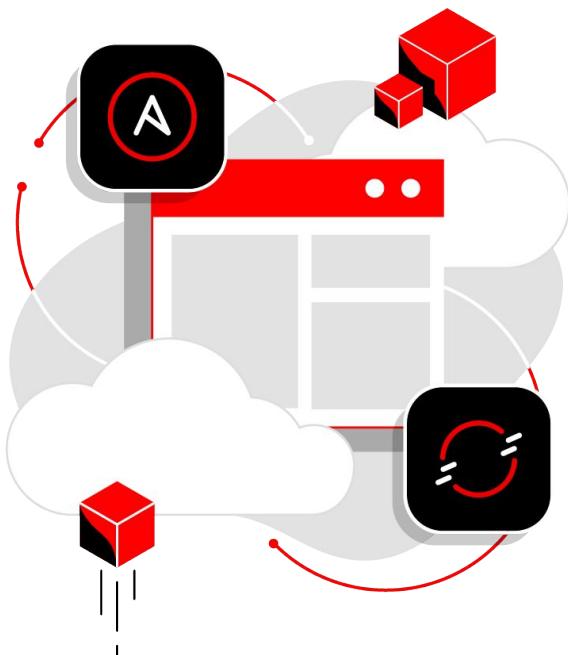
Deploy VMs as Code with CI/CD



Integrate legacy VMs with a modern GitOps framework

- ▶ Deploy different security zones to run both composite applications of pods/VMs as well as traditional VM workloads
- ▶ Deploy and automate Virtual Machines as Code with GitOps

Creating Mission Critical Virtualization with AAP



Virtualization Operations

Automate daily activities (remediation)

- ▶ Application deployments and CI/CD pipelines
- ▶ Life cycle management and enforcement
- ▶ OS patching (Windows and Linux) and maintenance
- ▶ Event Driven Remediation



Deployment and retirement

Provision, configure and teardown virtual instances

- ▶ Create turn key deployments for infrastructure teams
- ▶ Govern instance creation and enforce retirements
- ▶ Create service catalog items for ordering environments

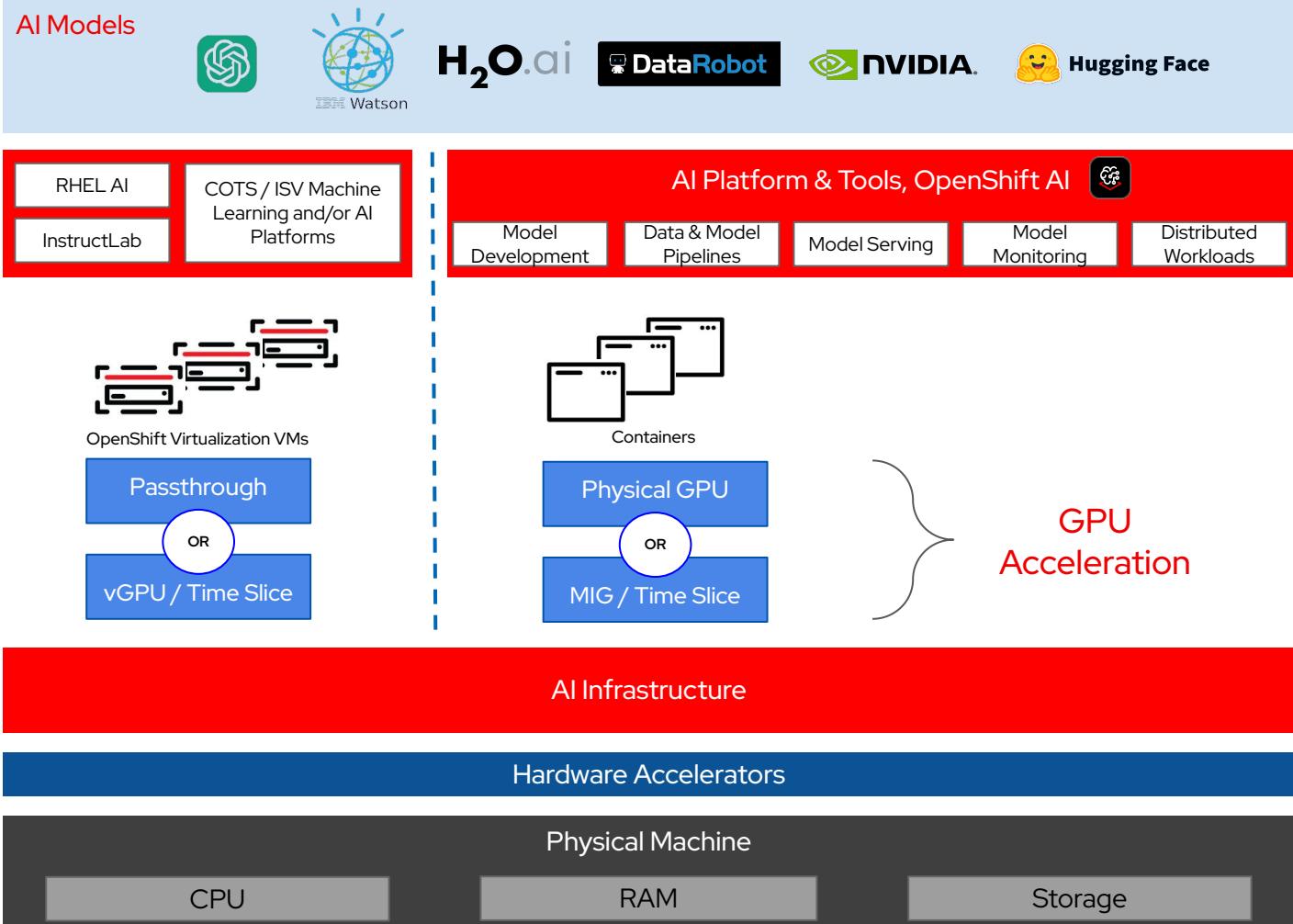


Virtual Machine migration

Move workloads to OpenShift safely

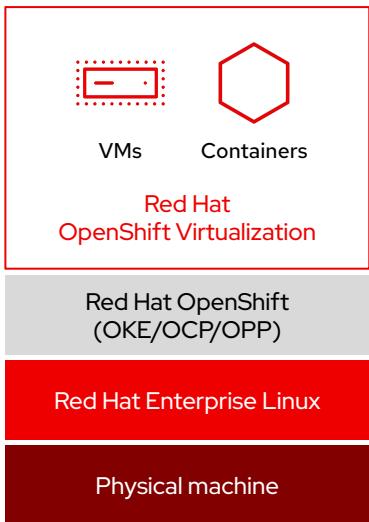
- ▶ Pre and Post processing for VM Migration from vSphere
- ▶ Last mile configuration checks

OpenShift Virtualization for AI



Red Hat OpenShift Virtualization

The modern option for general purpose virtualization



- ▶ **Unified platform**
for virtual machines and containers
- ▶ **Consistent management**
tools, interfaces, and APIs incl. ACM and AAP integrations
- ▶ **Performance and stability**
of Linux, KVM, and qemu
- ▶ **Healthy open source community**
the KubeVirt project is a top 10 CNCF active project, with 200+ contributing companies

Supports Microsoft Windows guests through Microsoft SVVP

Inbound guest migration
using Ansible Automation Platform + Migration Toolkit for Virtualization, Training and Consulting

Diverse ecosystem
of Red Hat & partner operators

Choosing the right tactic is becoming more nuanced

We are hearing from two types of customers

"I want to modernize"

- Wants to **modernize** to containers, but also run VMs in a more modern way
- Stand up a secondary virtualization platform, select LOBs will deploy new workloads to or migrate to OpenShift Virt
- VMWare and OpenShift Virt will co-exist, with potential to exit VMWare long term

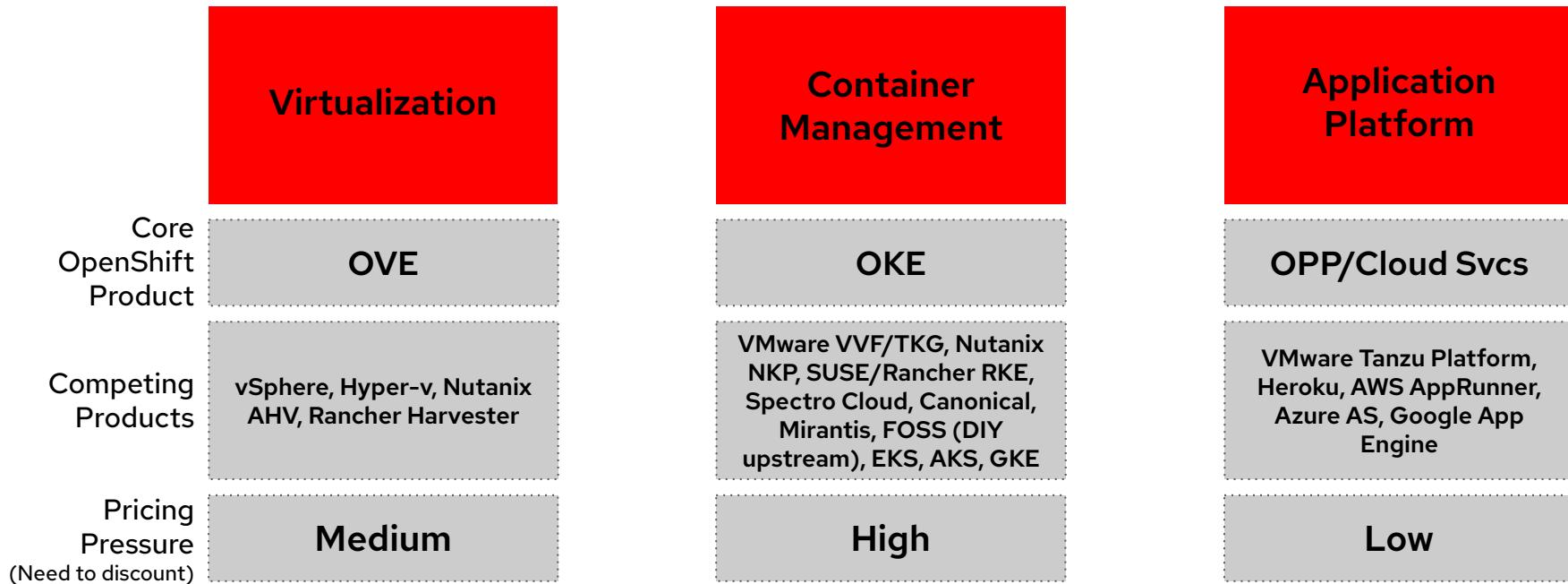
"I need to migrate ASAP"

- Turn off the tap or Migrate off VMWare completely
- Modernization is subordinate to migration; containers, Kubernetes, and even OpenShift are implementation details
- Willing to take some calculated risk with their production workloads

Both are turning into Container Management and Application Platforming
Modernization Discussions



Know what OpenShift to Position



2025 strategic roadmap

- **Simplify the user experience for VM admins**
 - Dedicated views
 - Integrate with OpenShift Lightspeed
- **Multi-cluster VM management for large scale implementations**
 - Observability
 - Lifecycle operations
- **Workload mobility across infrastructure**
 - Enhanced metrics for VM resource balancing across nodes
 - VMs and storage moved across clusters without disruption to workload availability

- **Broaden Platform and Cloud support**
 - Support for additional public clouds with bare metal installation
 - Support for ARM and s390 platforms
- **Multi-tenant networks for VMs**
 - Overlay tenant networks, with overlapping subnets, LB ingress, microsegmentation, IPAM, and static IPs and additional improvements, e.g localnet and self-service overlay networks
- **Migration Tooling**
 - Expand 3rd party guest OS migration list





Ecosystem Overview





The platform for all your workloads

Trusted

to reduce risk

Comprehensive

to improve productivity

Consistent

to increase flexibility

Virtualization Platform



Container Platform



Application Platform



AI Platform



Physical



Virtual



Private cloud



Public cloud



Edge



The 2025 Ecosystem Focus

Principles that simplify customer transition to Red Hat



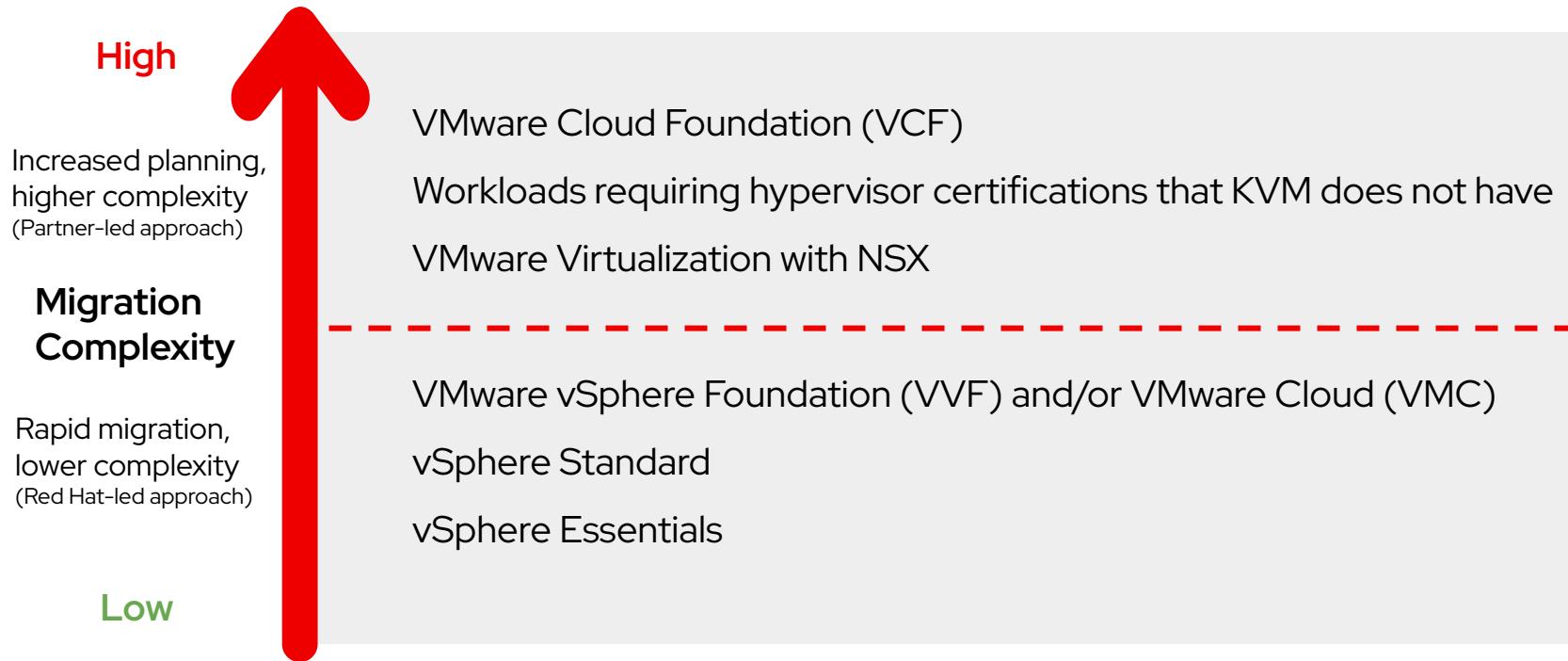
Minimize the disruption to existing customer investments in Hardware, Software and Professional Services that surround VMware data centers, cloud and edge and use of vmware.

Offer a flexible set of upgrade options HW, SW, and Pro Services provided by 3rd parties

Leverage the massive number of 3rd party ISV applications that are certified to run on RHEL

Unlock Future potential with Red Hat AI

Customers have varying levels of investment in VMware

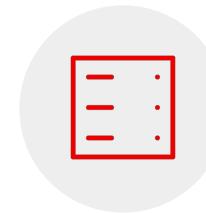


Partners of all types are critical to migration success

Technology



Independent software
vendors (ISVs)

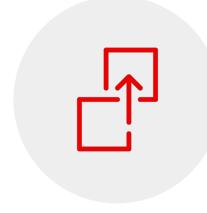


Hardware



Cloud
providers

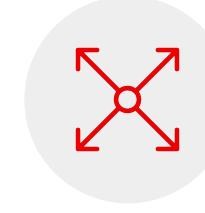
People process



Advisory/SI



Managed service
providers



Channel

Complete the platform with your existing technology partners

Storage

Products for OpenShift Virt using CSI (container storage interface)



Backup / DR

Products for OpenShift



Networking

Products for OpenShift Virt using CNI (container networking interface)



Cloud Services

Current public cloud providers offering OpenShift virtualization



Compute

Products for OpenShift



* This is not an exhaustive list of [ISV partners](#), with [new partners being added all the time](#).

Recent Virtualization Partnership Expansion

Deeper collaborations with storage, data protection, network, and security partners



Security Cloud now GA with OpenShift Virtualization and published to [RH Catalog](#). For more information see Rubrik's Landing Page - [Secure your OpenShift journey](#)

COHESITY

[Blog](#) on how Data Cloud now protects OpenShift Virtualization workloads coming in Q1

Agent-based solution available today



HPE Container Storage Interface (CSI) Operator for Kubernetes added to [catalog](#) with support for OpenShift Virtualization

INFINIDAT

Infinidat released a [Solution Brief](#) with White Paper in progress reporting on results of Storage Benchmarking



Dell updated their [Container Storage Module \(CSM\)](#) with OpenShift Virtualization [support](#). Dell also released a [demo](#) of PowerStore support of VMs in OpenShift Virtualization

Workload Validations

Outreach initiative to drive vendor validation on OpenShift Virtualization in support of customer demand.

Storage Validation

Deepening our partnership and engineering collaboration with storage partners

Technical Validation Lab for Partners

[OpenShift Partner Lab](#)



Interested in learning more...

Red Hat Content Center: <https://www.redhat.com/en/resources/openshift-virtualization-partner-ecosystem-ebook>



NetApp

TRILIO VAULT

**portworx®
by Pure Storage**

f5

veeam

TIGERA

COHESITY

VERITAS

rubrik

IBM Spectrum Fusion



NetApp

- Joint assessments

citrix™

- VDI, June GTA

Red Hat OpenShift Virtualization vs VMware TCO Estimator

This [TCO estimator](#) is an easy-to-use tool to give account teams high-level guidance about positioning OpenShift Virt. with their customers.

- Available to all Red Hatters and [select partners](#) at launch
 - Contact Ben Cohen and Josh Monks to request additional partners to be added
- Partner view does not include ability to see/change discounts
- Outputs are delivered via email
 - Red Hatters receive PDF, editable slides, spreadsheet
 - Partners receive PDF

https://redhatdg.co1.qualtrics.com/jfe/form/SV_82F75bRBCaVyakS

The screenshot shows a comparison between OpenShift Virtualization and VMware across three years. The chart highlights significant cost savings for OpenShift, particularly in consulting/migration costs. The interface includes sections for ISV Partners, VM Host Management at Scale, Migration and Network Automation, Day 2 Operations, and Virtualization Platform. It also features a diagram illustrating the integration of OpenShift with various partners and its role in virtualization requirements.

Category	VMware	OpenShift Virtualization
Consulting/Migration Costs	\$10,649,119	\$1,940,982
ISV Costs	\$0	\$0
Red Hat Subscriptions	\$0	\$0
VMware Subscriptions	\$0	\$0
RHEL Subscriptions	\$0	\$0

OpenShift Virtualization
OpenShift, Advanced Cluster Management, and Ansible Automation Platform continue to work with ISV solutions to meet your virtualization requirements

ISV Partners
(storage, backup/DR, networking, etc.)

VM Host Management at Scale
Advanced Cluster Management for Virtualization, Advanced Cluster Management for Kubernetes

Migration and Network Automation, Day 2 Operations
Ansible Automation Platform

Virtualization Platform
OpenShift (OVS, OKE, OCP, OPP)

OpenShift Virtualization
OpenShift Virtualization, Advanced Cluster Management, and Ansible Automation Platform work in concert to meet existing virtualization requirements.

Virtualizing on OpenShift can yield substantial cost savings
Customer X can lower its virtualization costs and benefit from a modern application platform

In addition to virtualization cost savings, customers who use OpenShift as an application platform realize powerful operational benefits, which deliver financial returns to the business:

- Less unplanned downtime, protecting revenue and reputation
- Faster application development, accelerating time-to-market
- Increased IT productivity, boosting cost efficiency

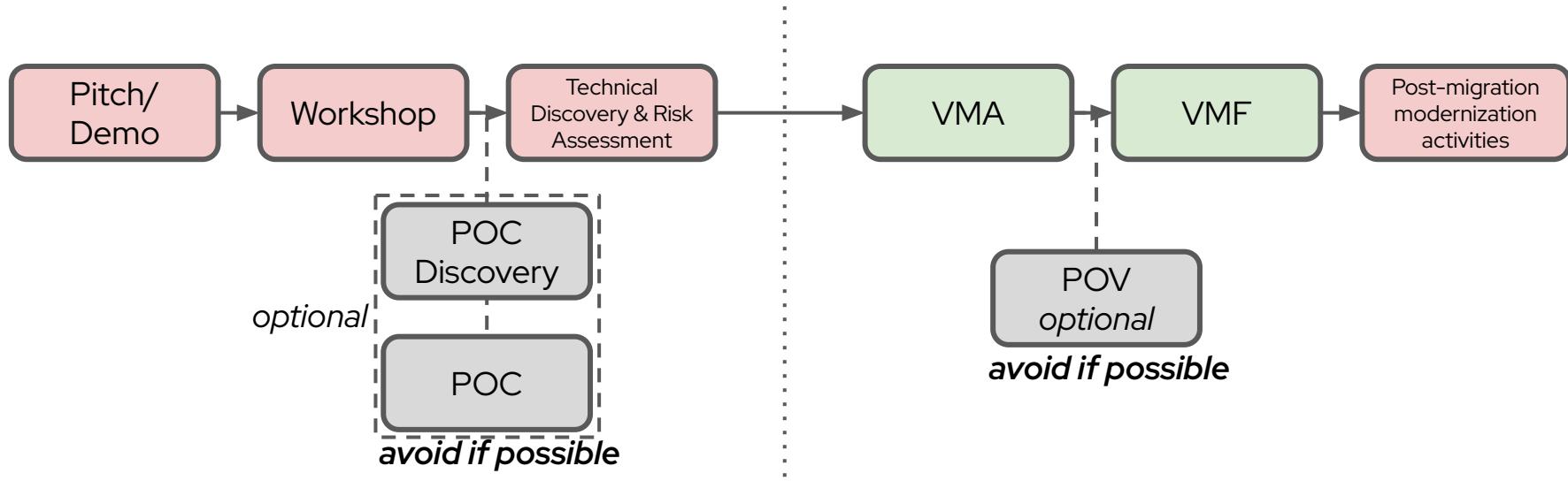
NOTE: Prices are estimated based on preliminary analysis. Red Hat account team must be consulted for actual customer pricing and a more detailed analysis.



Virtualization Customer Journey

Virtualization Migration Assessment,
Virtualization Migration Factory, and beyond

Optimal Virt sales and delivery path



Sales

Delivery

Technical Close



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Migration Services Journey

Virtualization Migration Assessment (VMA)

Plan to quickly and safely migrate from legacy virtualization platform

- Capture current VM architecture, analyze workload complexity, propose a high-level design and roadmap

Virtualization Migration Factory (VMF)

Deploy virtualization migration technology. Prepare to operate at scale

- Deploy OpenShift cluster, enable virtualization features, validate integrations, migrate first workloads and prepare for production

Achieve steady state migration – Reduce legacy footprint

- Migrate workloads, validate and automate migration pattern, scale and complete migration



Virtualization Migration Assessment

Strategize and plan for migration

Strategy

Foundation

Expand

Evolve



Analyze current VM architecture, existing investments and gather requirements for your future state



Identify VM workloads and define integrations such as storage, networking and clustering requirements



Understand day-2 operations including automation, configuration management, monitoring, backups, etc



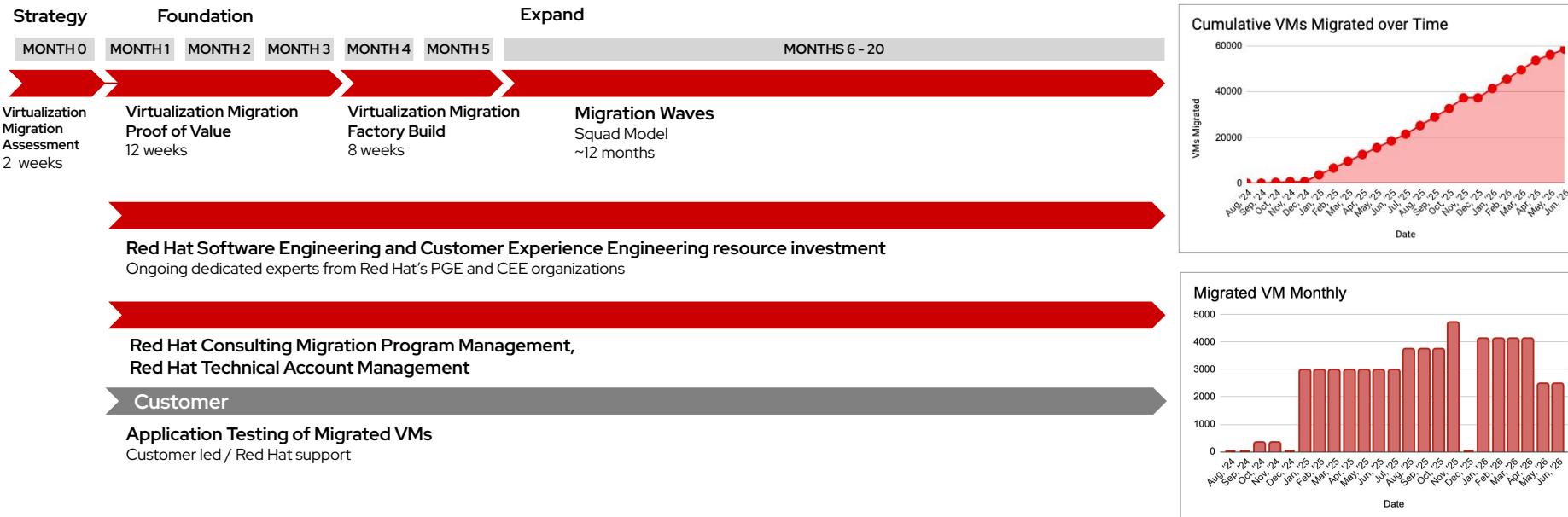
Propose a high-level solution design for your custom OpenShift Virtualization based on your business needs



Generate a roadmap for adoption of OpenShift Virtualization and determine next steps

Sample Migration Schedule

Size: 50,000 VMs



Virtualization Migration Assessment



What We Cover

- OpenShift Virtualization features
- Virtual environment deep dive: networking, storage, security, backup, and disaster recovery
- High level solution design
- Workload migration analysis and recommended migration approach
- Cost and duration estimates for full migration with Red Hat Services

Customer Outcomes

- Understand the **solution, the path to adoption, the timeline, and the cost**
- Understand **workload and migration complexity**
- Leverage **OpenShift, Ansible, and ACM product capabilities** to meet requirements
- Achieve faster time-to-value with **Red Hat Consulting, Training, and TAM**



VMA Report with
proposed solution
design and approach



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Virtualization Migration Proof of Value

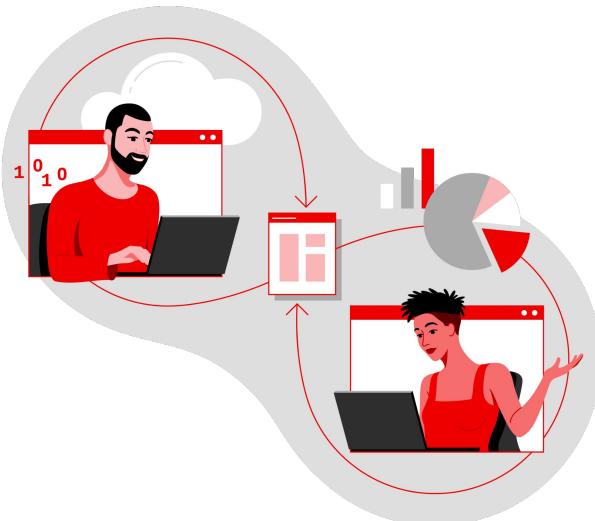
Establish your virtualization platform foundation

Strategy

Foundation

Expand

Evolve



Proof of Value



Deploy your OpenShift cluster within your **non-production** environment



Operationalize platform virtualization features



Validate real virtualized workloads on OpenShift in your environment

Production Readiness



Operationalize platform storage and networking integrations



Complete production readiness, performance testing / tuning, and migrate your first VMs



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PoC vs PoV

Proof of Concept (PoC)	Proof of Value (PoV)
 Free, Pre-Sales activity performed by tiger teams, at no cost to the customer	 Billable Services running the project with a scope, objectives, and production-level PS support
 Disposable lab environment that's likely destroyed after the PoC	 Persistent environment that expands and evolves with the customer's needs
 Shorter duration, typically 2 Weeks	 Longer duration, typically 6 - 12 Weeks
 Hands on experience during demos and workshops	 Hands on experience during platform deployment and production readiness
 Standard, pre-canned environment with few integrations	 Customized environment to meet customer needs
 Use case validation demonstrates OpenShift Virtualization is a feasible customer solution that meets scoped requirements	 Infrastructure and software validation proves that OpenShift Virtualization can meet the requirements and provides the business value



Virtualization Migration Factory

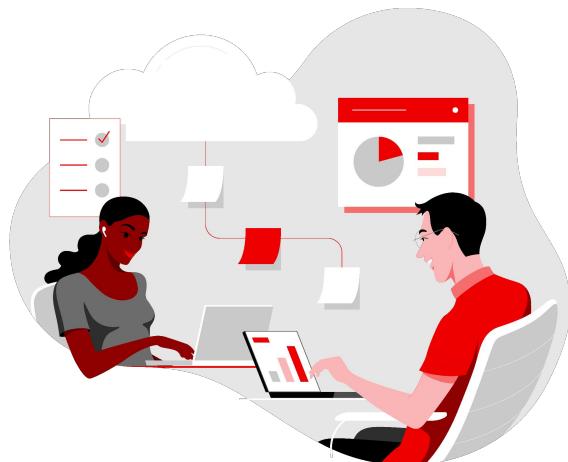
Migrate virtual machines at scale

Strategy

Foundation

Expand

Evolve



Evaluate your workload portfolio, **plan and prioritize** to **migrate and modernize at scale**



Create iterative migration of batches of workloads



Reduce IT management effort to increase productivity



Prepare teams for scaled app operations and production readiness



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Accelerating Migrations at Scale with AAP

A Migration factory from Day-0 to Day-2 with Ansible automation

0 Evaluate and scope

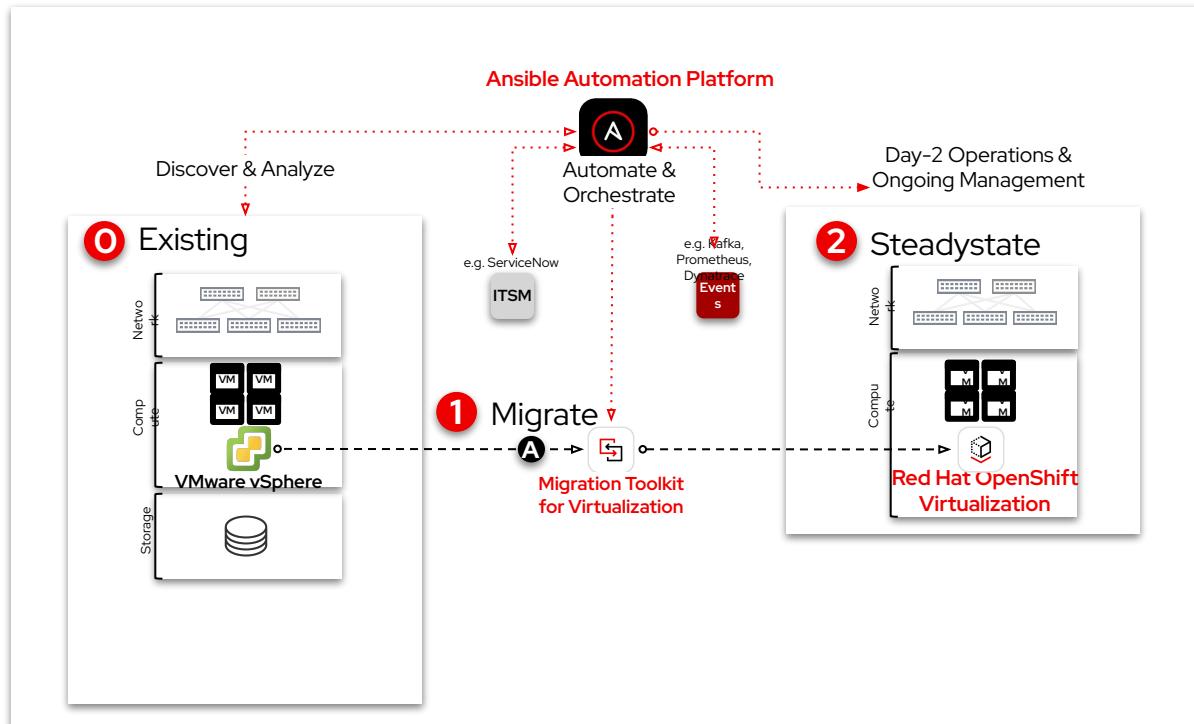
Evaluate the existing data center setup

1 Migrate

Use MTV to migrate virtual machines to OpenShift Virtualization. Ansible helps automate orchestrate as needed.

Red Hat Steadystate

2 VMs are now hosted on OpenShift Virtualization alongside container workloads. Ansible Automation Platform handle day two operations.



Squad Model

Red Hat Consulting, Training, and TAM

Advise on patterns, architecture,
and enablement

Design reference
architectures



Enable teams with OpenShift
Virtualization



Deploy automation

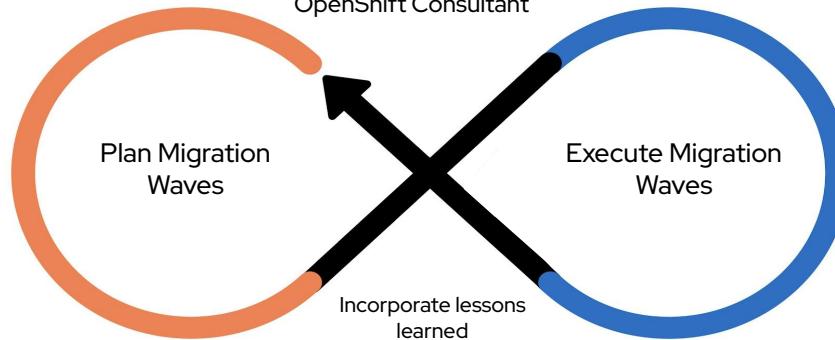


Evolve process



Migration Squad

VM Batch Customer Stakeholders +
OpenShift Consultant



Build the knowledge base
Minimize downtime and failover



Evolve a repeatable approach
to migration waves



Accelerate migration rate
Complete migration

Core Migration Team
Customer Infrastructure Lead +
TAM, Architect, and Automation Consultant



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Customer Infrastructure teams and VM owners

Advise on requirements,
processes, and challenges



Define requirements



Support migration wave



Navigate internal
processes



Validate migration



Establishing Credibility and Positioning a Workshop

The negative things we hear

No one is doing virt with Red Hat; I don't want to be first

Red Hat is not a virtualization company

OpenShift is too expensive

Containers and Kubernetes is too complex

Red Hat Virtualization cannot replace VMware

Only RHEL VMs are supported Red Hat has no experience doing VMs

VMware admins cannot learn Red Hat's platform

Red Hat's Virtualization is proprietary



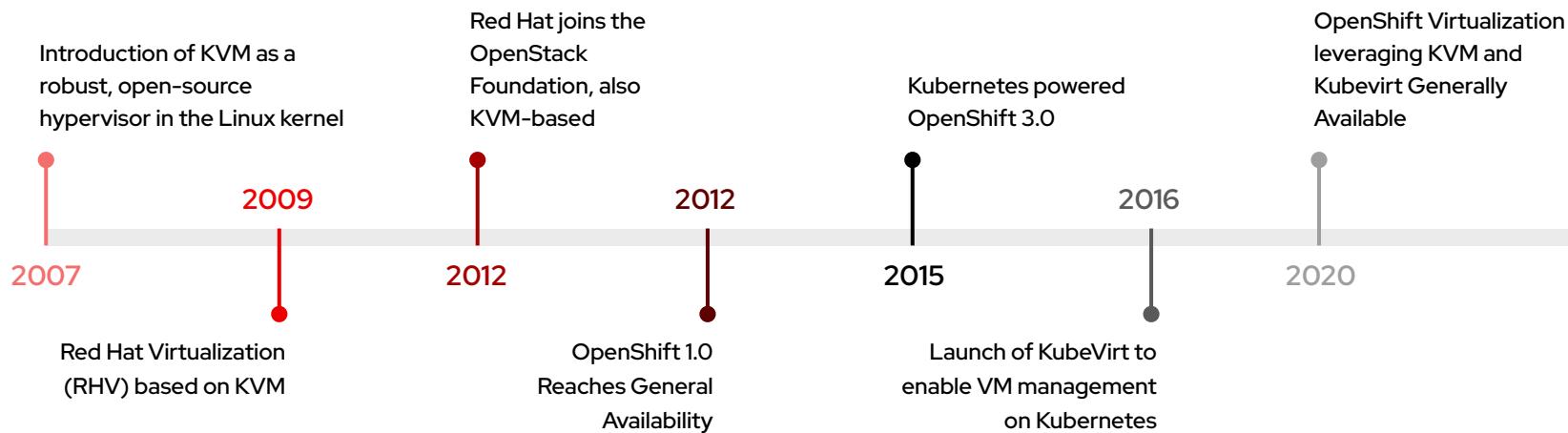
Summing up what we've got to fix

1 Fear, Uncertainty, and Doubt (FUD)

2 Lack of Customer References



Red Hat has a long history with Virtualization



We've come a long way since RHV

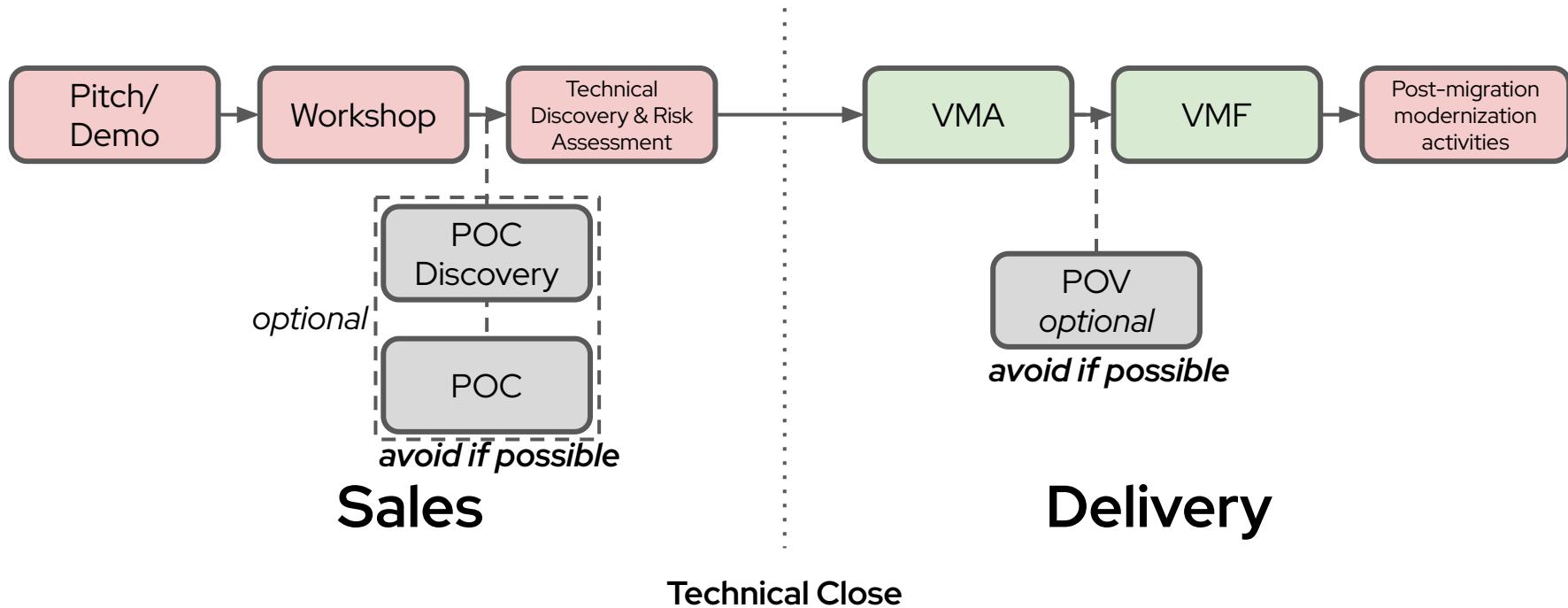
Category/Feature (versus best-in-class)	RHV	OpenShift Virtualization	
		EOY 2024	Target 2025
vAdmin friendly user interface	90	50	70-80**
VM density	90	90	90
Single cluster virtualization infrastructure management	80	95	95
Mixed VM and container environment	60	100	100
Infrastructure HA	50	95	95
Hotplug (storage, memory, compute)	10	90	90
ISV backup integrations	20	70	80
Disaster recovery integrations	90	55	80
Storage integrations / acceleration	90	85	90
Software defined networking	50	80	90

*Feature comparison [summary sheet](#) **For single cluster management this will be higher



Proving our credibility
through getting hands on

Optimal Virt sales and delivery path



Options for proving our solution

Demo	Workshop	Proof of Concept (POC)	Proof of Value (POV)
<ul style="list-style-type: none">• Demonstrates features• Takes place on Red Hat hardware, including <u>Red Hat Interactive Experiences (RHIE)</u>• Pre-canned workflow determined by what the customer wants to see• Duration is less than an hour• Executed by SSAs pre-VMA	<ul style="list-style-type: none">• Gets customer hands on with features• Takes place on Red Hat hardware• Pre-canned workflow determined by workshop modules• Duration is hours in length• Executed by SSAs pre-VMA	<ul style="list-style-type: none">• Proves the feasibility of our solution• Takes place on customer hardware in lab environment• Scope set by well-defined entrance, success, and evaluation criteria• Duration is days in length• Executed by SSAs pre-VMA	<ul style="list-style-type: none">• Proves the value of our solution through a production-ready migration• Takes place on customer hardware• Scope set by number of production-ready VMs to be migrated• Duration is weeks in length• Executed by RH Consulting or partners post-VMA

LOW

Time & Cost

HIGH

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OpenShift Virtualization Roadshow

aka *THE workshop*

- ▶ The premier hands-on experience for VMW admins and Infrastructure architects to learn about OpenShift Virtualization.
- ▶ Start the day with an overview of OpenShift Virtualization and then dive into a 4-hour lab with modules that cover: environment review, VM creation and use, customization, management, live migration, networking, storage, migration tool kit, external load balancer, and backup and restore.
- ▶ End the day with a closing presentation that includes OpenShift capabilities and our partner ecosystem.



OpenShift Virtualization Roadshow Topics

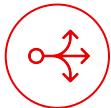
Topic	Description
Virtual Machine Management	Basics of creating and managing VMs in OpenShift Virtualization. Basic customizations and live migration
Migrating Existing Virtual Machines	Migration Toolkit for Virtualization (MTV) to import virtual machines from VMware vSphere to OpenShift
Storage Management	Persistent Volume Claims (PVCs), which are used to request storage from the provider and store a VM disk
Backup and Recovery for Virtual Machines	Data protection for backup and recovery for VMs. OADP Operator, backup and restore
Template and Instance Type Management	Review preconfigured templates for creating VMs, VM cloning and customization
Working with Virtual Machines and Applications	Common day 2 operations, exposing applications



Success from the Customer Perspective



Understanding that **THERE IS** a viable alternative to VMW



Become familiar with Red Hat OpenShift Virtualization



Understand that your journey to infrastructure modernization starts here



How Red Hat OpenShift provides an effective destination for VMs today, but also provides an application platform for the future

"I didn't realize how mature the OpenShift Virtualization product was."
- Customer

"I really liked the UI and how easy it was to use." - Customer

"It was invaluable for them to hear your perspective/roadmap on this technology, as well as getting hands-on with the product." - Account team

"These sorts of high-touch, product management/development engagements are essential to building trust and comfort with our products and between our companies." - Account team



Success from Red Hat Perspective



Show the capabilities of OpenShift Virt are a viable alternative to VMware



Create and help close sales opportunities,
getting them to the VMA!

"The workshop solidified our decision to remove VMware and replace with OpenShift Virt." - Attendee at Customer Event





Positioning the Virtual Migration Assessment (VMA)

Migration Services Journey

Virtualization Migration Assessment (VMA)

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- Deploy OpenShift cluster, enable virtualization features, validate integrations, migrate first workloads and prepare for production

Achieve steady state migration – Reduce legacy footprint

- Migrate workloads, validate and automate migration pattern, scale and complete migration



Explaining what the VMA is (and isn't)

The VMA is:

- A paid in depth assessment of the customer's current VM estate
- Answers 1) where the customer is going 2) how they're going to get there 3) how long it will take and 4) how much it will cost
- Requires about a week of customer pre-work followed by a week of onsite time with the customer

The VMA unlocks:

- The Virtualization Migration Promotion (VMP) and firm fixed-price (FFP) consulting from Red Hat

The VMA is not:

- A discovery session and must never be positioned as so; discovery takes place prior to the VMA



Virtualization Migration Assessment

Our Approach



Planning Activities

- Identify stakeholders
- Send pre-work including RVTools export needed

Onsite Activities

- Whiteboarding
- Requirements gathering
- Decision making
- Removing blockers

Post Work Activities

- Crunch the RVTools data to build migration estimate
- Complete HLD
- Present Exec Summary and Next Steps

Walkthrough of Sample VMA

Virtualization Migration Assessment Report for CUSTOMER

Proposed Migration Approach and High Level Design

Version 1.0 - Jun 26, 2024

Assessment Sessions Delivered

Session Name	Description Summary
Stakeholder Mapping and Goals	Understand motivation, migration requirements
CUSTOMER Infrastructure Deep Dive	Review of current VM environments
Virtualization Solution Overview	Review OpenShift Virtualization cases and understand Virtualization.
Architecture Review	Review the initial solution architecture and objectives
Security Requirements	Define security requirements and inclusion in RHEL
Recommended Approach	Present migration and additional recommendations
Pilot Proposal and Document Delivery	Review the document and establish a code Red Hat Account

Current Environment

Overview

CUSTOMER's global infrastructure consists of [REDACTED] VMs. These VMs can be categorized into four main types:

- Production
- Non-Production
- Management
- Virtual Desktop Infrastructure (VDI)

Workload Migration Complexity Analysis

Approach

Categorizing workload complexity will help us prioritize the migration plans and give us an estimate of the effort. We base our evaluation on the following:

- Workload Environment
- Operating System and Version
- Workload Type
- Resource Capacity and Requirement
- Disk Size

Workload Environment

Provisioning lab and nonproduction workloads for migration will help ensure that we perform production migration as efficiently and smoothly as possible.

RHEL and other Linux Distributions

Out of the [REDACTED] eligible workloads from VMware, we first categorize the VMs into supported operating systems and version or net.

<https://www.redhat.com/rhel/rhel723x>

RHEL and RHEL-derivatives such as CentOS, Rocky and Oracle Linux that are newer than RHEL 5 will be placed into the easy bucket. These versions are heavily tested and officially supported by Red Hat. The older versions will require upgrades before migration so they will be placed in the medium bucket.

SUSE is also a supported distribution starting with version 12+. SUSE 12 is the hard bucket. SUSE 12 is also supported starting with version 12+. Various Linux VMs with unlabelled distribution will need to be determined by other means. The effort level will be determined on a case-by-case basis.

Operating Systems	Easy	Medium	Hard
RHEL 5	[REDACTED]	[REDACTED]	[REDACTED]
RHEL 6, 7, 8, 9			
CentOS 4, 5			
CentOS 6, 7, 8			

Sample Masked VMA Output

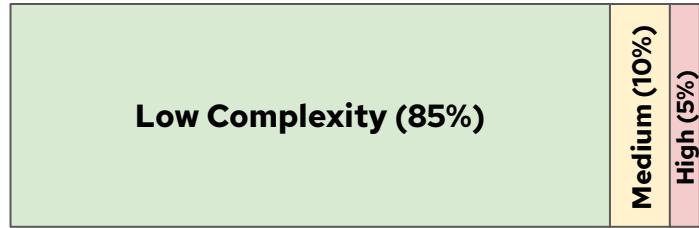


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Learning

VM Workload Breakdown and Planning

Complexity Analysis

- ▶ The workload analysis shows a 85/10/5 easy/medium/hard distribution of workloads
 - 97% of VMs are sized as easy to migrate
 - A small number of VMs (1%) are very large and may need to be V2P migrations
 - 2% of VMs are running Ubuntu and non-RHEL distros and will need to be further evaluated during Phase 1
 - During Phase 1, we will build patterns for the appliances and COTS migrations, determining what can be moved to a native container.



Factor	Easy	Medium	Hard
Storage Size	64087	2167	153
Workload Type	53128	11497	0
Operating System	51336	6736	1237

[Redacted] VM Migration Velocity Projection

1. [Redacted] global infrastructure consists of more than 71,000 virtual machines (VMs) distributed across data centers in six countries.
2. These VMs can be categorized into four main types:
 - Production: 26,000 VMs
 - Non-production: 33,000 VMs
 - Management: 7,000 VMs
 - Virtual Desktop Infrastructure (VDI): 5,000 VMs
3. The VDI VMs are based on Citrix/Hyper-V technology, while the other three categories (production, non-production, and management) are VMware-based. This means that out of 71,000 VMs, 66,000 are potentially migratable to a new platform.
4. Approximately 17,000 VMs are under the responsibility of the Operations and Infrastructure (O&I) team while the remaining VMs are owned by various product teams within the Visa organization.

* Velocity is based on optimal rate, without resource or process constraints.

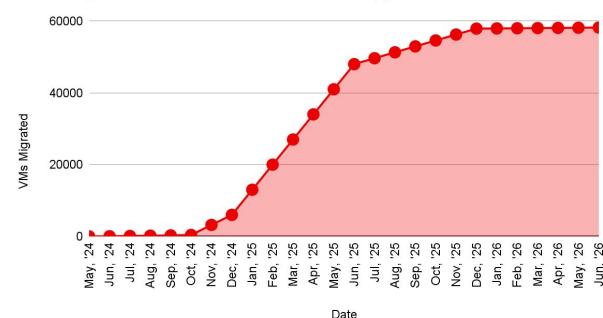
** Assumes production workloads can be migrated on weekdays

*** Assumes migration windows of 4 hours per day, 5 days per week

**** Full assumptions in [Appendix](#)

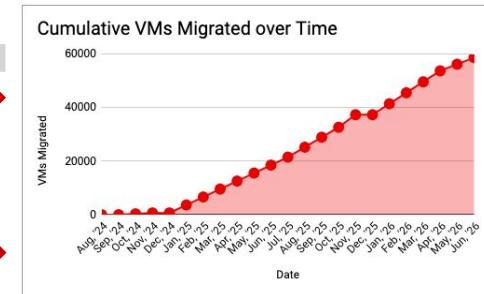
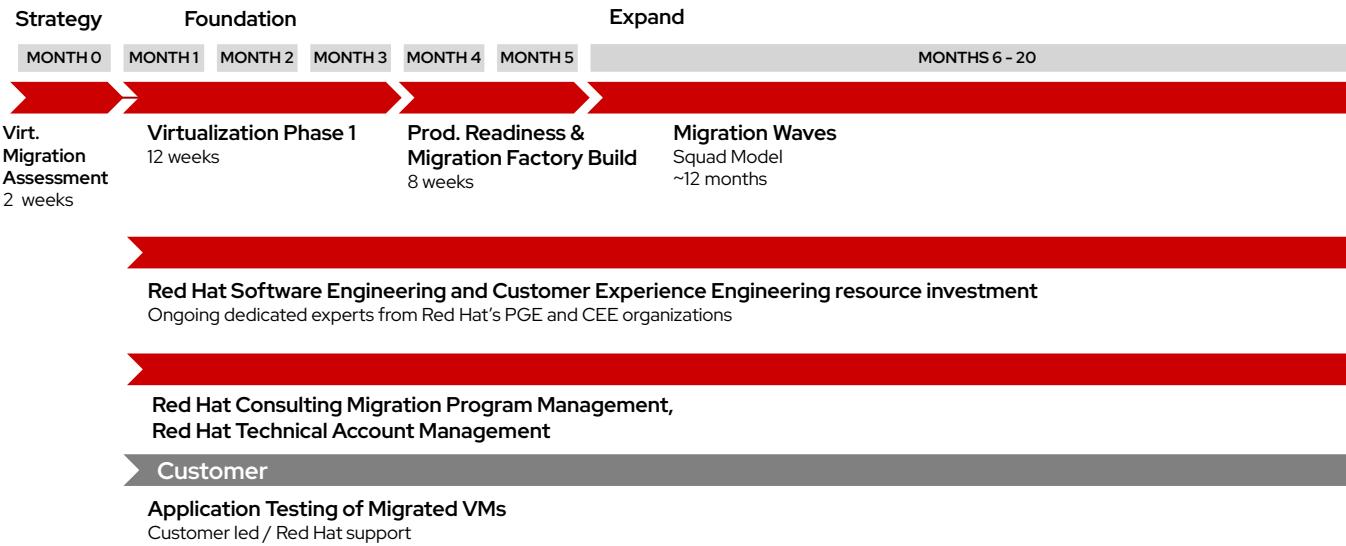
Date	VMs Migrated (V2V)	VMs Retired (V2C, V2P, Decomm)	vSphere VMs Remaining
PHASE 1 BEGINS			
June 2024	0	0	66,000
October 2024	400	100	65,500
PHASE 1 ENDS / MIGRATION FACTORY BEGINS			
December 2024	6,000	500	59,500
June 2025	48,000	2,500	18,500
December 2025	57,900	6,600	1,500
MIGRATION FACTORY ENDS / ONGOING SUPPORT BEGINS			
June 2026	58,200	7,800	0

VMs Migrated vs. Date - Lift and Shift Approach



Virtualization Migration Assessment

Example Migration Schedule: 50,000 VMs



Positioning the Virtualization Migration Factory (VMF)

Migration Services Journey

Virtualization Migration Assessment (VMA)

Plan to quickly and safely migrate from legacy virtualization platform

- Capture current VM architecture, analyze workload complexity, propose a high-level design and roadmap

Virtualization Migration Factory (VMF)

Deploy virtualization migration technology. Prepare to operate at scale

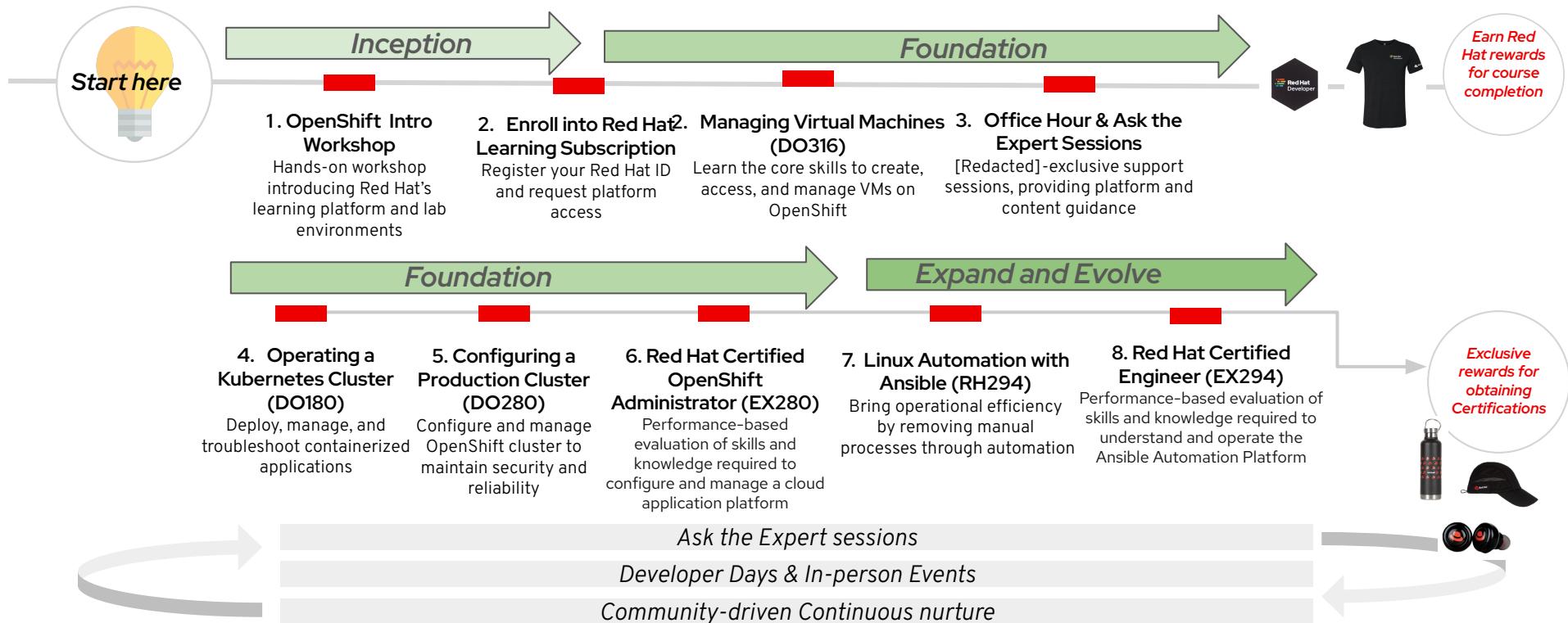
- Deploy OpenShift cluster, enable virtualization features, validate integrations, migrate first workloads and prepare for production

Achieve steady state migration – Reduce legacy footprint

- Migrate workloads, validate and automate migration pattern, scale and complete migration



Training Journey: Virtualization Ops/Engineer



Technical Account Management Solutions

Recommendations for successful migrations

- **Dedicated OpenShift TAM ~\$463K/yr (Recommended for migrations >500 VMs)**
Dedicated to one account only. Covers OpenShift only. Delivered remotely.
- **Enterprise TAM ~\$512K/yr (Recommended for migrations of >5000 VMs)**
Dedicated to one account only. Covers multiple products (e.g. RHEL, OpenShift and Ansible). Delivered remotely.
- **Shared Openshift TAM ~\$129K/yr (Recommended for migrations <500 VMs)**
Covers 4 accounts or more and only OpenShift. Delivered remotely.
- **Technical Relationship Manager ~\$60K/yr (not recommended for migrations)**



Customer Example

Certification Environment for Phase 1

Phase 1 Outcome:

Prove the functionality, performance and reliability of the proposed cluster architecture as it would be implemented inside of [Redacted] Company's network and data center constraints.

Objectives:

Evaluate the functionality, performance, and reliability of the proposed cluster architecture within [Redacted] Company's network and data center constraints.

Lays the foundation for migration by preparing OpenShift infrastructure and related automation, defining and validating a strategy for migration, and developing procedures and providing training.

Work Streams	Purpose
EDC Virtualization	Focus on the use-cases identified for the EDC deployment and VMs
Plant / Distributed Virtualization	Focus on the use cases and unique scenarios specific to the plant/distributed scenarios
Platform Automation	Enable the OpenShift Virtualization infrastructure deployment and the related automation (including reuse of existing assets at [Redacted])

EDC and Plant /Distributed Virtualization

 **GOAL:** Focus on the use-cases identified for the EDC deployment and VMs

 OVERVIEW:	 OUTCOMES:
<ul style="list-style-type: none">• Deploy and validate Openshift virtualization environments• Migrate representative test VM workloads to the Openshift virtualization certification environments• Complete a suite of functional, performance and resilience tests to certify the environments• Initial VM Migrations (with MTV)• Platform Operationalization (observability)• Testing and Validation• Develop a process for migrations of upper environments	<ul style="list-style-type: none">• Validation of the proposed OpenShift Virtualization architectures' functionality, performance, and reliability within [Redacted]'s network and data center constraints• Successful testing of initial VM migrations and use-cases with initial workloads• Have a tested process for migrations for upper environments
DEFINITION OF SUCCESS:	Validated the agreed upon use cases for the four architectural migration models

Platform Automation

 **GOAL:** Enable the OpenShift Virtualization infrastructure deployment and the related automation

 **OVERVIEW:**

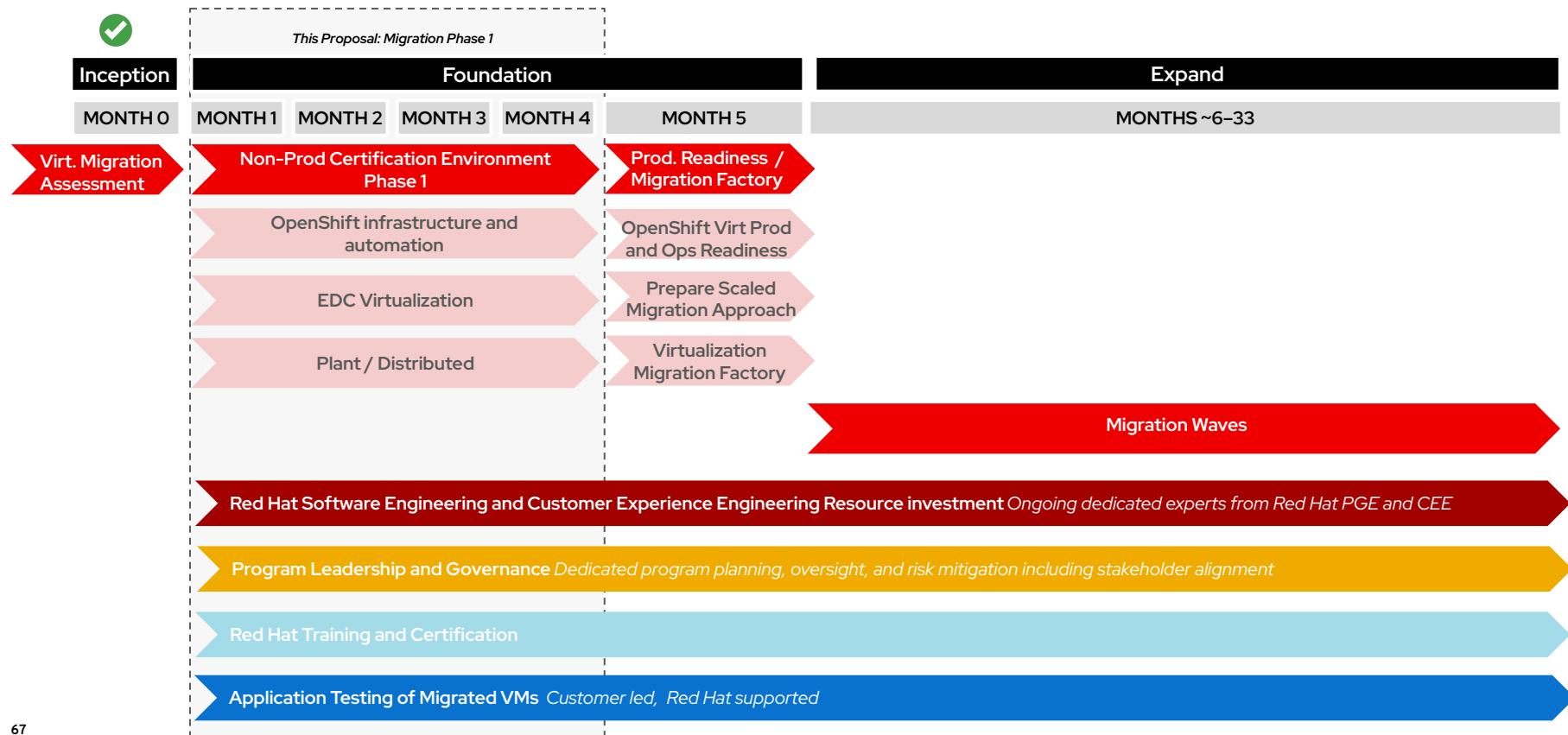
- Identify capabilities to assist with [Redacted]'s goal of establishing consistent Deployment and Day-2 operational automation practices for EDCs and plants
- Reuse existing automation and other platform artifacts (e.g., the GitOps based IaC) developed for the current OpenShift CaaS implementation
- Infrastructure low-level design
- IaC / GitOps and AAP automation for infrastructure
- OpenShift deployments
- Process and automation for host recommissioning

 **OUTCOMES:**

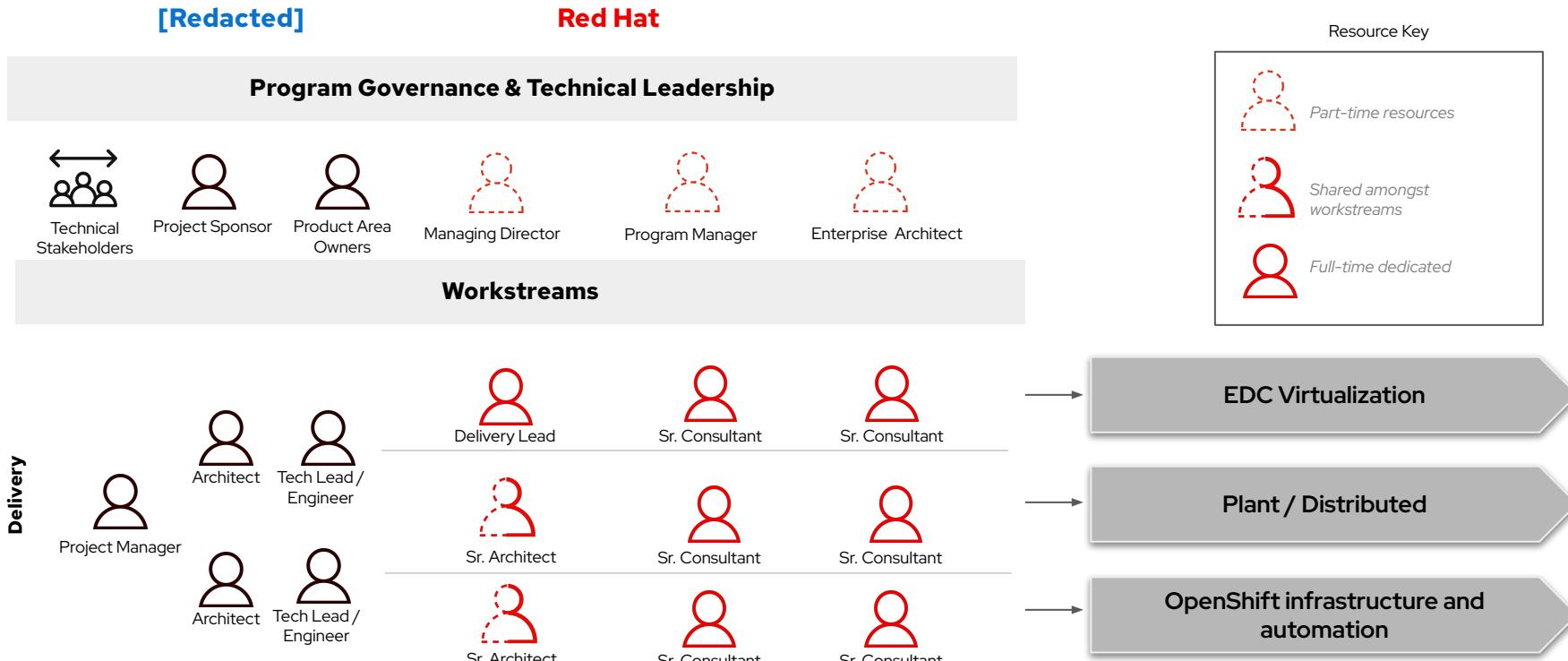
- Automation-first approach with consistency of implementation
- Successful implementation of platform best practices and automation ensuring adherence to best practices and "doing it right the first time"

 **DEFINITION OF SUCCESS:** Validate scaled migration and the critical Day-2 operations (3-5 use cases) using AAP automation; Review existing automation at [Redacted] for reuse assessment and integration

[Redacted] Migration Program Timeline



Phase 1 Teaming Model



Phase 2: Migration

Deploy production infrastructure and migrate at scale

Migration Outcome:

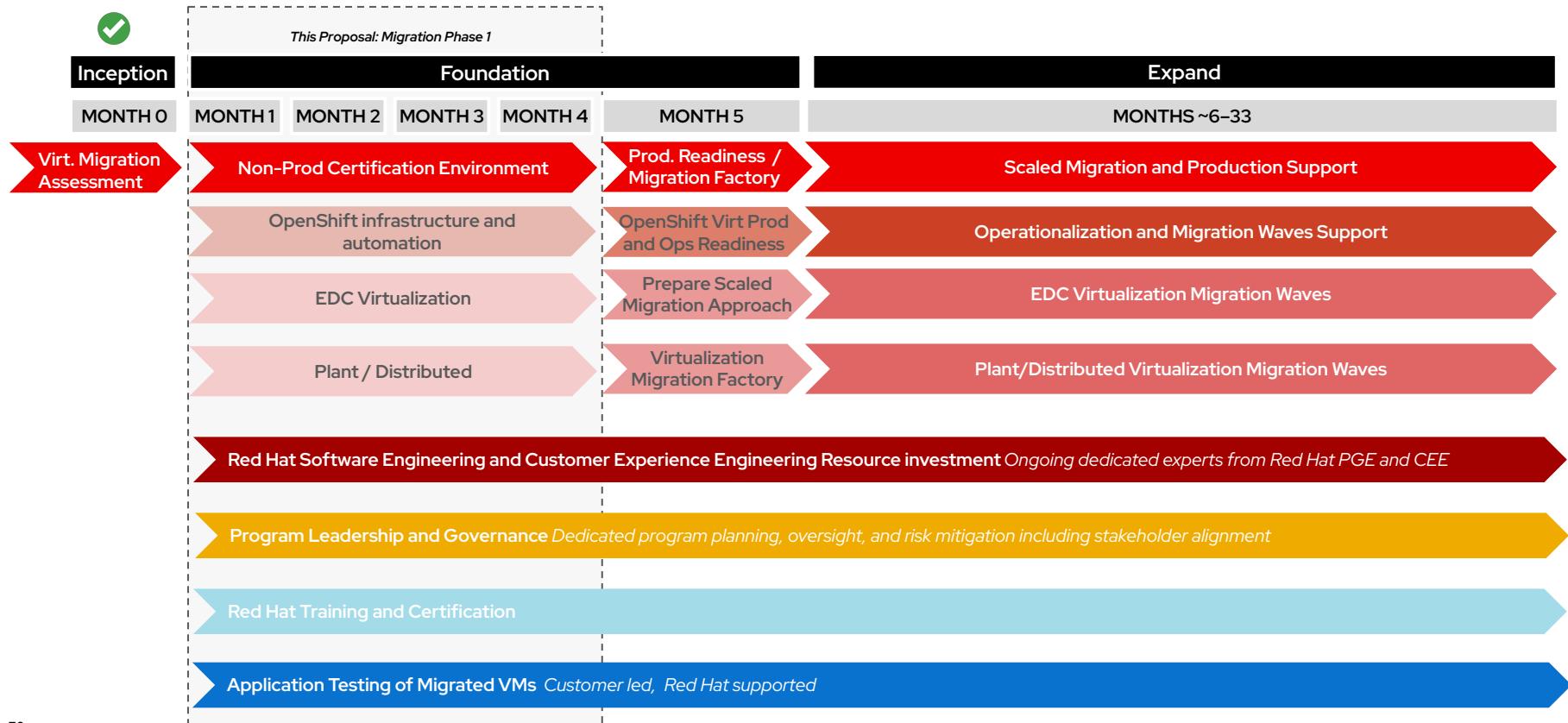
Successfully transitioning thousands of virtual machines to OpenShift Virtualization clusters while ensuring the new platform meets [Redacted]'s production system requirements. The goal is to achieve an efficient, automated, and scalable virtualization platform that integrates seamlessly with the company's existing infrastructure and operational practices.

Objectives:

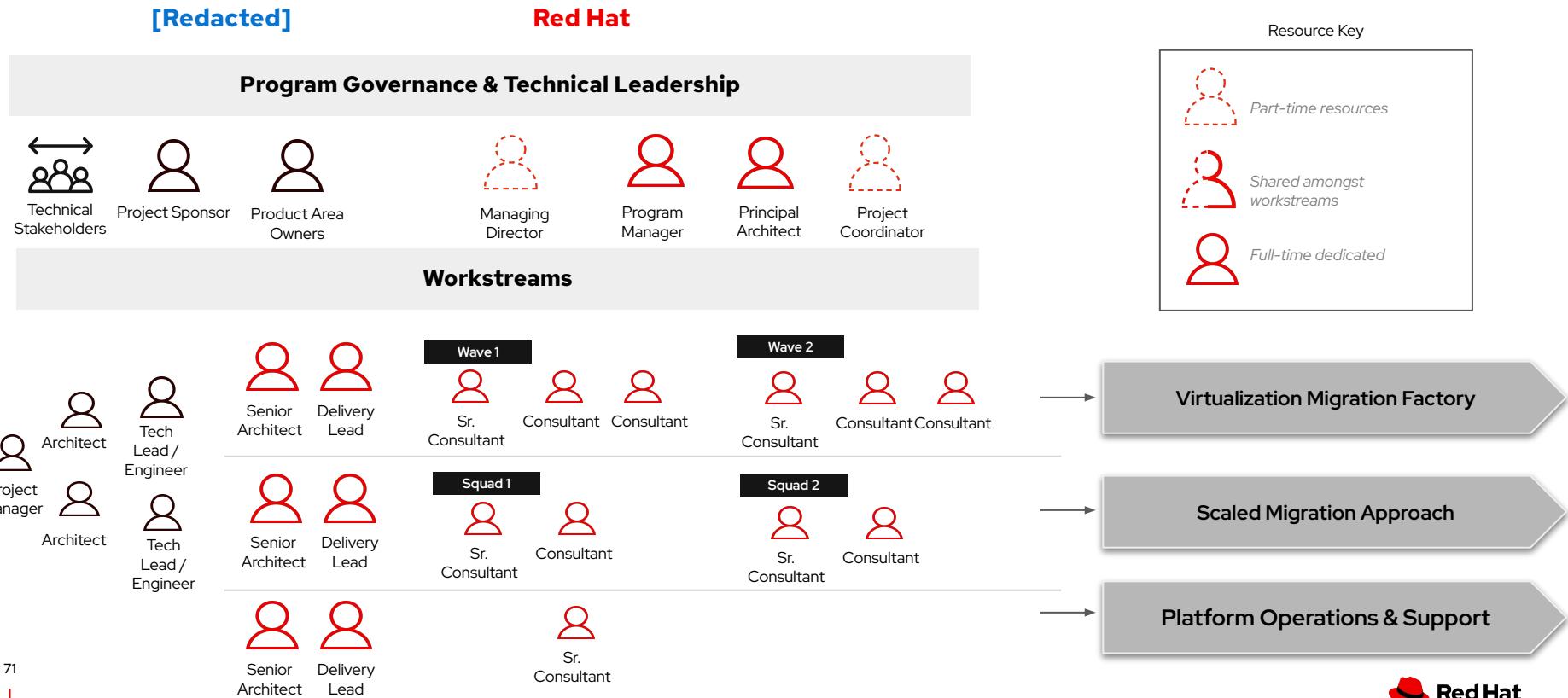
- Deploy, manage, and monitor OpenShift Virtualization clusters
- Develop automation solutions for VM migration
- Leverage existing automation and GitOps practices
- Prepare a scaled migration approach
- Ensure operational readiness

Work Streams	Purpose
Virtualization Migration Factory	Design and deploy Ansible Automation Platform and validate Ansible playbooks for batch VM migration, configurations, rollback and recovery, and VM validation
Scaled Migration Approach	Develop a seamless VM migration process with infrastructure-led and self-service options, workload planning, outage windows, preflight checks and exception handling
Platform Operations & Support	Ensure seamless deployment, management, and integration of OpenShift Virtualization clusters with company systems and support day-2 operations through ACM

[Redacted] Migration Program Timeline



Migration Factory Teaming Model



Proposal for the Complete Migration

Bill of Materials

Recommended Red Hat Environment

Red Hat Portfolio

Product	Quantity
OpenShift Kubernetes Engine (Bare Metal Node) (1-2 sockets) For VM Migration	1,700 Nodes
Advanced Cluster Management (1-2 sockets)	TBD
Ansible Automation Platform (100 Managed Nodes)	5,000 Nodes
OpenShift Platform Plus (Bare Metal Node) (1-2 sockets) For App Platform	TBD

Host Count per Category

Product	Quantity
# of hosts for Virtualization use case	
# of hosts for Container Management use case	
# of hosts for Application Platform use case	

3rd Party ISV Portfolio

Component	Red Hat Recommended Vendor	Recommended Subscription
Backup & Recovery	Cohesity	TBD
DR	Cohesity	TBD
Monitoring	Current Solution: WhatsUP Gold,Cisco Workload monitoring, Dynatrace Add: ACM Observability, Alertmanager for Virt clusters	As-is + TBD
Logging	Current Solution: Splunk/Google Bucket/shell script/vRealize Log Insight Future: Logging 6.0 for OTEL	As-is + TBD
Metrics Collection & Alerts	Current Solution: WhatsUP Gold,Cisco Workload monitoring, Add: ACM Observability, Alertmanager for Virt clusters	As-is + TBD
Secrets Management	Current Solution: HashiCorp Vault	As-is
Certificate Management	Current Solution: Globalsign	As-is
Security in VM/Container	Current Solution: AV - ACS (Container Scanning),Cisco Traffic Watch and ACLs, vTPM, data encrypted at rest (SAN/NAS), compliance operator	As-is
Day 1 Operations	Habitat,chef,custom scripts	Ansible Automation Platform (AAP)
Automation and Configuration Management	Habitat,chef,custom scripts	Ansible Automation Platform (AAP)

Customer Example Pricing #1

Red Hat and [Redacted] have successfully completed the assessment of [Redacted] VMware environment and have built a proposal to migrate the entirety of [Redacted] [Redacted]k VMs running on VMware, using a scaled migration factory over a period of two years. This deck highlights the key findings, recommendations, and migration approach.

Phase	Deliverables / Outcomes	Duration	Estimated Pricing
Lift and Shift Migration			
Foundation	OpenShift Virtualization and Migration Factory Build and Operationalization	7 Months	[\$Redacted]M
Accelerated Migration	Successful Migration of the existing 66k VMware Virtual Machines	18 Months	\$[\$Redacted]M
Red Hat Subscriptions after migration	Subscription growth for: OpenShift Virtualization Engine (OVE) Advanced Cluster Management (ACM)	Annual Contract Value	\$[\$Redacted]M
Recommended Modernization			
Containerization and Testing Squads	Teams focused on containerizing, testing and skills transfer to product teams <small>*Best effort, replatform viable applications</small>	24 Months	\$[\$Redacted]M Testing \$[\$Redacted]M Containerization

Customer Example Pricing #2

Phase	Deliverables / Outcomes	Duration	MSRP	[Redacted]Price
Platform Operationalization	<ul style="list-style-type: none"> • GitOps Cluster Configuration • Day 2 Ops Automation • Hardware Commissioning • Automated wave cluster builds • Capacity Management • Observability 	~3 Months		
Migration Factory	<ul style="list-style-type: none"> • VM Migration Wave Planning • Automation Platform Deployment • VM Testing and Validation Automation • Migration Plan Automation 	~3 Months		
Migration Wave Support	<ul style="list-style-type: none"> • Execute Migration Waves • Iterative Workload Automation • Workload Validation and Testing • Workload Optimization 	~9 Months	\$[Redacted]	\$[Redacted]
Software Licensing (assumes 10,000 VM's running on 330 physical servers)	<ul style="list-style-type: none"> • OpenShift Virtualization Licensing • Ansible Automation Platform Licensing <ul style="list-style-type: none"> ◦ For migration purposes 		\$[Redacted] \$[Redacted]	\$[Redacted] \$[Redacted]
		Total Project Cost:	\$[Redacted]	[Redacted]

*final pricing will be delivered by reseller of choice



Wrap up: Day 1

15 Minutes



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Agenda Day 1

09:00 - 10:45

- Welcome and Introductions
- Sales Motion and Getting the Technical Win (GTM Strategy)
- Ecosystem Overview

10:45 - 12:00

- Customer Virtualisation Journey

12:00 - 13:00 Lunch

13:00 - 14:45

- Establishing Credibility and Positioning a Workshop
- Proving our credibility through getting hands on

14:45 - 15:00 BREAK

15:00 - 16:15

- Positioning the Virtual Migration Assessment (VMA)
- Customer Example

ETX-Virtualization Presales

Welcome back to Day 2

Agenda Day 1

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- Positioning the Virtual Migration Assessment (VMA)
- Customer Example

Agenda Day 2

09:00 - 10:30

- Recap Day one
- Positioning the correct OpenShift edition
- Conducting Technical Risk

13:00 - 14:30

- Competitive Landscape / Objections Discussion
- Next Steps
- Wrap Up

10:30 - 10:45 BREAK

10:45 - 12:00

- Customer Classification / Risk assessment

12:00 - 13:00 Lunch

Positioning the correct OpenShift edition



The platform for all your workloads

Trusted

to reduce risk

Comprehensive

to improve productivity

Consistent

to increase flexibility

Virtualization Platform



Container Platform



Application Platform



AI Platform



Physical



Virtual



Private cloud



Public cloud

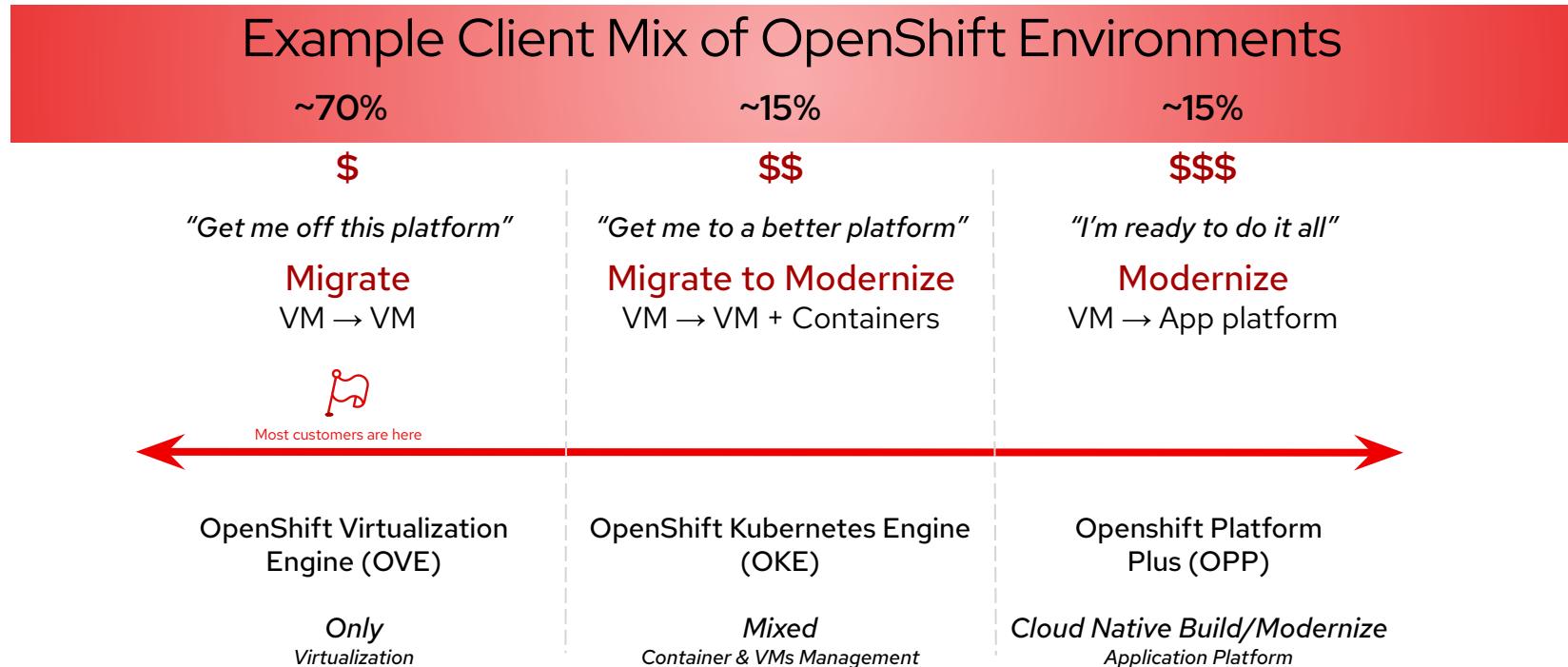


Edge



Red Hat Provides Customers with Options

Paths to Virtualization, Containerization & Application Modernization



Hybrid cloud application platform



Red Hat
OpenShift

Red Hat
OpenShift
Platform Plus

Red Hat
OpenShift
Container Platform

Red Hat
OpenShift
Kubernetes Engine

Red Hat
OpenShift
Virtualization Engine

Advanced Management & Security

Multicluster Management | Cluster Security | Global Registry | Cluster Data Management | Compliance & Policy Automation

Integrated DevOps Services

Service Mesh | Serverless | Builds | Pipelines | GitOps | Tracing | Log Management | Cost Management

Containers

Image Registry | Container Runtime | Pod Autoscaling | Resource Quotas & Limits | Namespace Isolation | Container Networking

VMs

Live migration | Auto-scaling | Windows & Linux | Migration toolkit

Kubernetes & Cluster Services

Install | Over-the-air updates | Networking | Ingress | Storage | Monitoring | Log forwarding | Registry | Authorization | Operators | Helm

Red Hat
Enterprise Linux

Linux (host operating system)

Managed
Cloud
Services



Physical



Virtual



Private cloud



Public cloud



Edge
v0000000

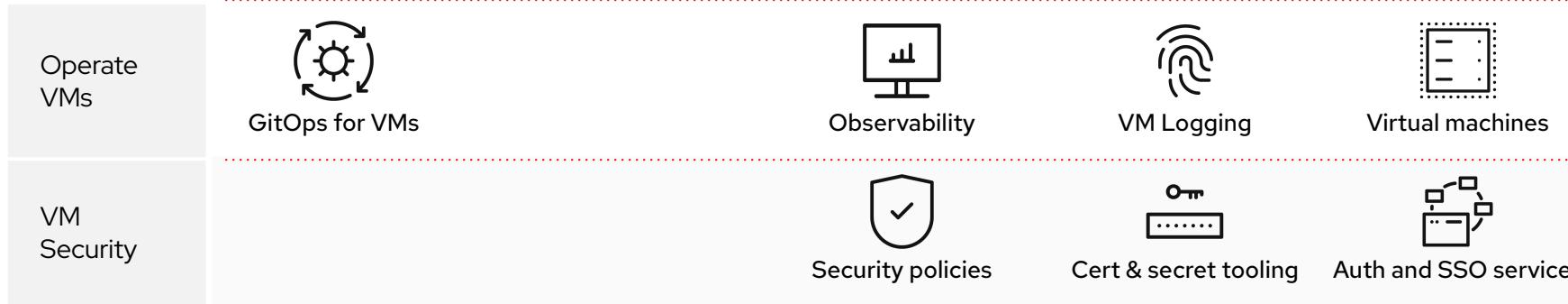
Red Hat

	 Red Hat OpenShift Virtualization Engine	 Red Hat OpenShift Kubernetes Engine	 Red Hat OpenShift Container Platform	 Red Hat OpenShift Platform Plus
Enterprise Secured Kubernetes	✓	✓	✓	✓
Hosted control planes	✓	✓	✓	✓
Operator Lifecycle Manager	✓	✓	✓	✓
Compliance & File Integrity Operators	✓	✓	✓	✓
Virtual machine-based workload hosting	✓	✓	✓	✓
Container-based infra workload hosting	✓	✓	✓	✓
User Workload Monitoring	✓	✓*	✓	✓
Platform Logging	✓	✓*	✓	✓
OpenShift GitOps	✓	✓*	✓	✓
Metering and Cost Management SaaS Service	✓	✓	✓	✓
Container-based user application hosting		✓	✓	✓
RHEL guest and hosted virtual OpenShift subscriptions included		✓	✓	✓
CI/CD Pipelines			✓	✓
Service Mesh			✓	✓
Serverless			✓	✓
Tracing			✓	✓
Runtimes & Webtools			✓	✓
Multi-cluster complete management with Red Hat Advanced Cluster Management				✓
Kubernetes-native security with Red Hat Advanced Cluster Security				✓
Scalable, central registry with Red Hat Quay				✓
Persistent software-defined storage & essential data services with OpenShift Data Foundation Essentials				✓

*VMs only. [Learn more.](#)

Virtualization Platform (OVE)

Trusted and consistent across hybrid cloud



Container Management Platform (OKE)

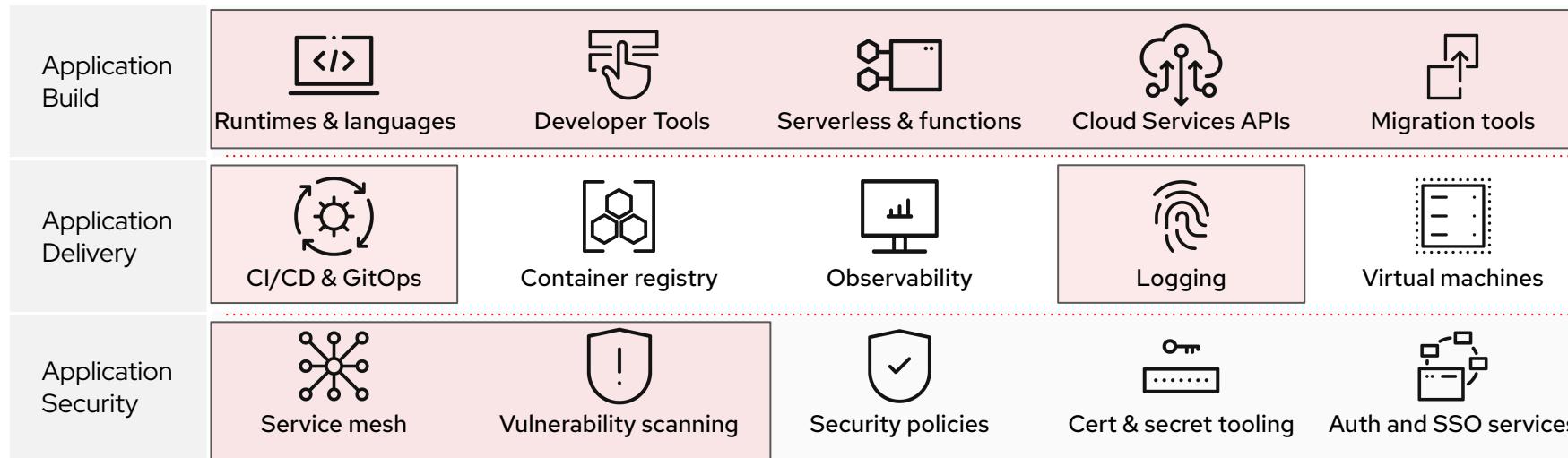
Trusted and consistent across hybrid cloud

Operate VMs and Containers	 GitOps for VMs	 Container registry	 Observability	 VM Logging	 Virtual machines
VM and Container Security			 Security policies	 Cert & secret tooling	 Auth and SSO services

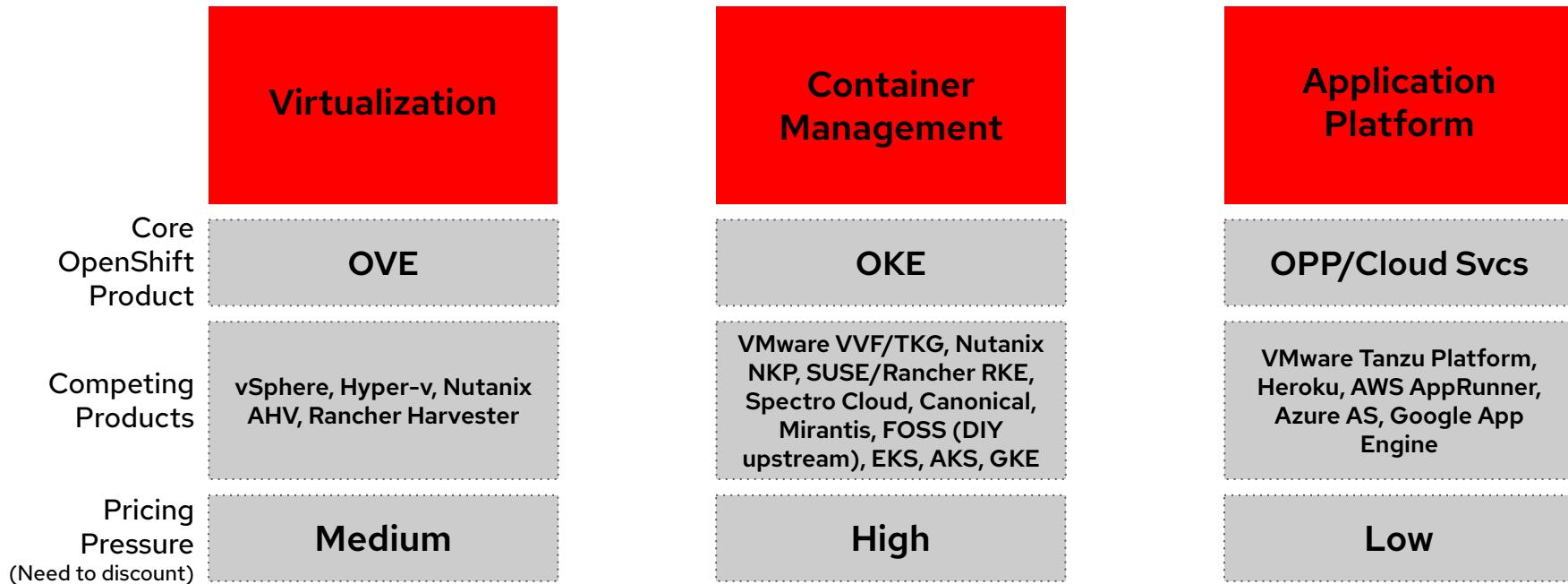


Application Platform (OPP/Cloud Services)

Trusted, comprehensive, and consistent across hybrid cloud



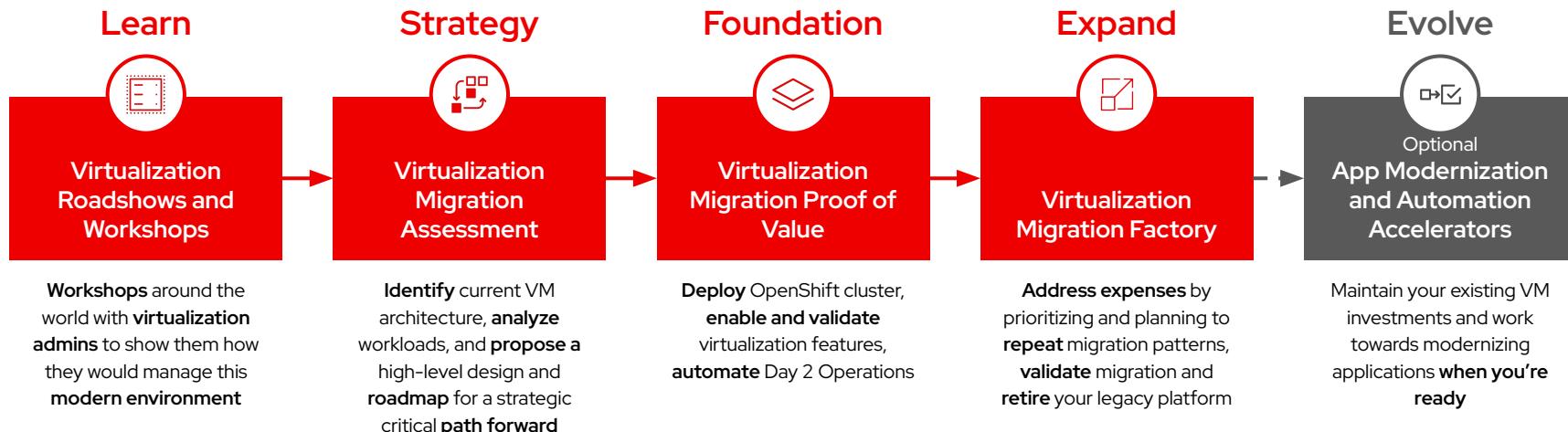
Know what OpenShift to Position



Virtualization with Red Hat

Supporting your Virtualization journey

A customizable approach based on your business needs and your current readiness state



Services + Training + Technical Account Management



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Red Hat Services for OpenShift

Services Solutions from Virtualization Migration to App Modernization



Virtualization Migration

- Virtualization Migration Assessment (VMA)
- Virtualization Proof of Value
- Virtualization Migration Factory

Key Customer Outcomes

- Plan to quickly & safely migrate from legacy virtualization platform
- Prove virtualization technology. Prepare and operate at scale
- Production ready platform for VMs
- Achieve steady state migration and reduce legacy footprint



Application Modernization

- App Modernization Accelerator
- App Portfolio Assessment
- Scaled App Modernization

Key Customer Outcomes

- Accelerated app onboarding
- App portfolio assessment & modernization
- Scaled app modernization patterns to reduce tech debt

Training and Certifications for Admins & Devs | Technical Account Management

Engage your Services Sellers for a Discovery Session today!

Get in the head of the decision maker



Decision Maker / Economic Buyer: CIO, CTO, CRO

Focus: Corporate goals, overall health of the organization
Strategic goals • Revenue growth • Innovation • Calculated risks

Pref. Language: \$, ROI, EPS, Strategic Goals

Technical Proficiency: Low to Medium

Challenges

Personas

Messaging

Approach



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Get in the head of the line of business owner



Line of Business - AKA: Application Owner, Department Head

Focus: Meet targets for their department or team
Speed to market • Cost (hard and soft) • Risks Minimization

Pref. Language: Business Impact, Scalability, Compliance

Technical Proficiency: Medium

Challenges

Personas

Messaging

Approach



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Get in the head of the VMware admin



VMware Admin: Administrators, Infrastructure Architects

Focus: Simplify Migration & Reduce Operational Risk
Speed to Migration • Minimize Disruption • Flexibility & Scalability

Pref. Language: Consistency, Scalability, Efficiency, Security, VMware

Technical Proficiency: High

Challenges

Personas

Messaging

Approach



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Present a compelling solution to the business buyer



- Group business objectives into value categories relevant to your customer.
- Identify product-solution enablers that match the customer's key objectives.
- Identify the expected impact of the business capabilities that the solution enables.

Challenges

Personas

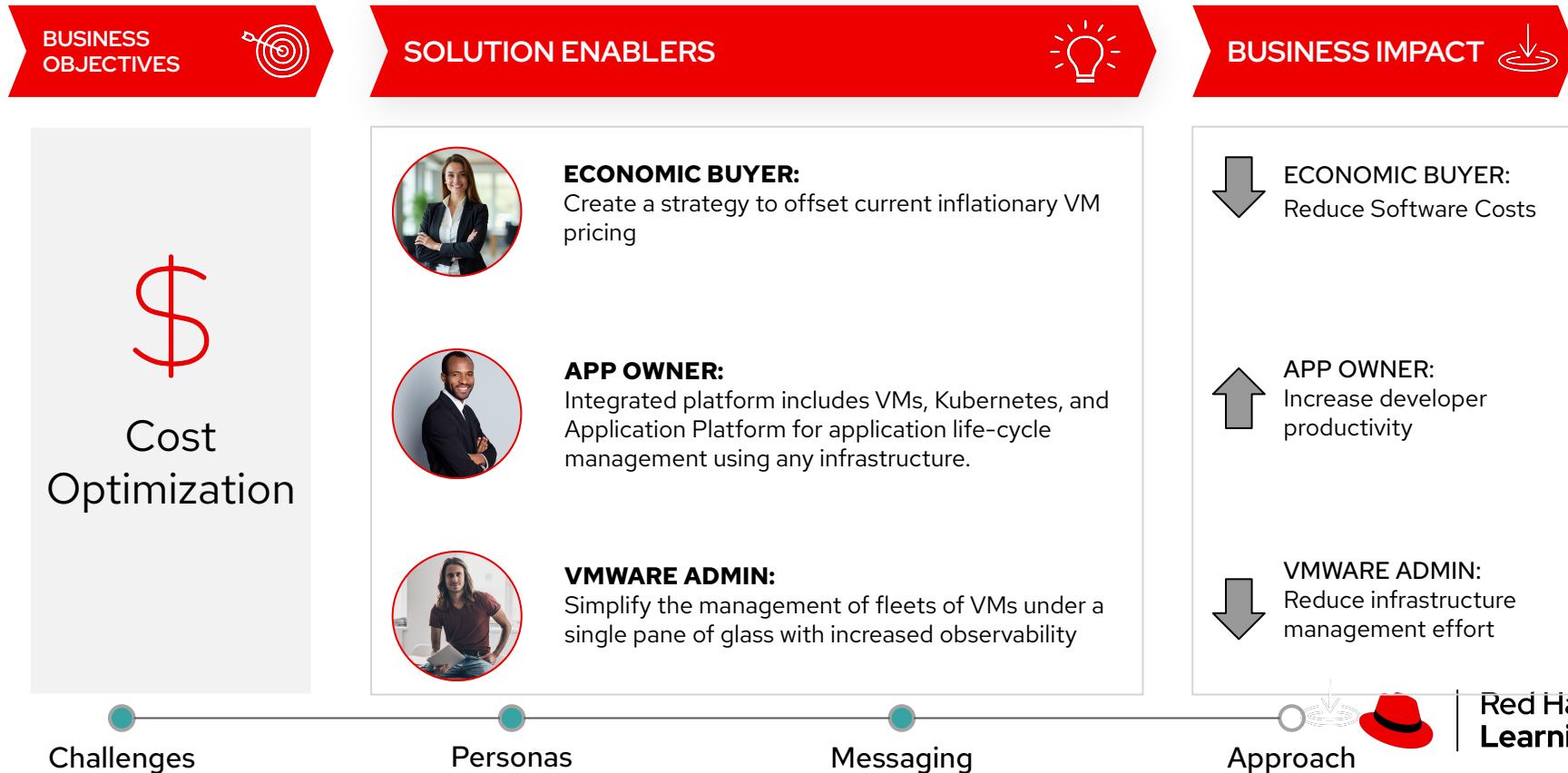
Messaging

Approach



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Red Hat Virtualization enables business objective achievement



Conducting Technical Risk Assessments (the risk line)

Presales Tech Discovery

Section	Questions
Current State Environment	<ul style="list-style-type: none">• VMware products and features used?<ul style="list-style-type: none">◦ HA, DRS, VSAN, NSX, Distributed Switching, Snapshots, Aria/vRealize, SRM...• Incumbent storage vendor?<ul style="list-style-type: none">◦ Brand, product type, version, protocol, known storage array limitations – like number of LUNs• Incumbent backup and disaster recovery vendor?<ul style="list-style-type: none">◦ Brand, product type, version, do they support backup and DR of VMs specifically?• Incumbent network vendor?<ul style="list-style-type: none">◦ Routers, switches, load balancers, firewalls, DNS etc◦ Configuration, security, monitoring, external connectivity requirements• Target hardware for installation?<ul style="list-style-type: none">◦ Make, model• Current workloads<ul style="list-style-type: none">◦ Some VM workloads dictate certain requirements, like SAP or Oracle• Compliance and governance

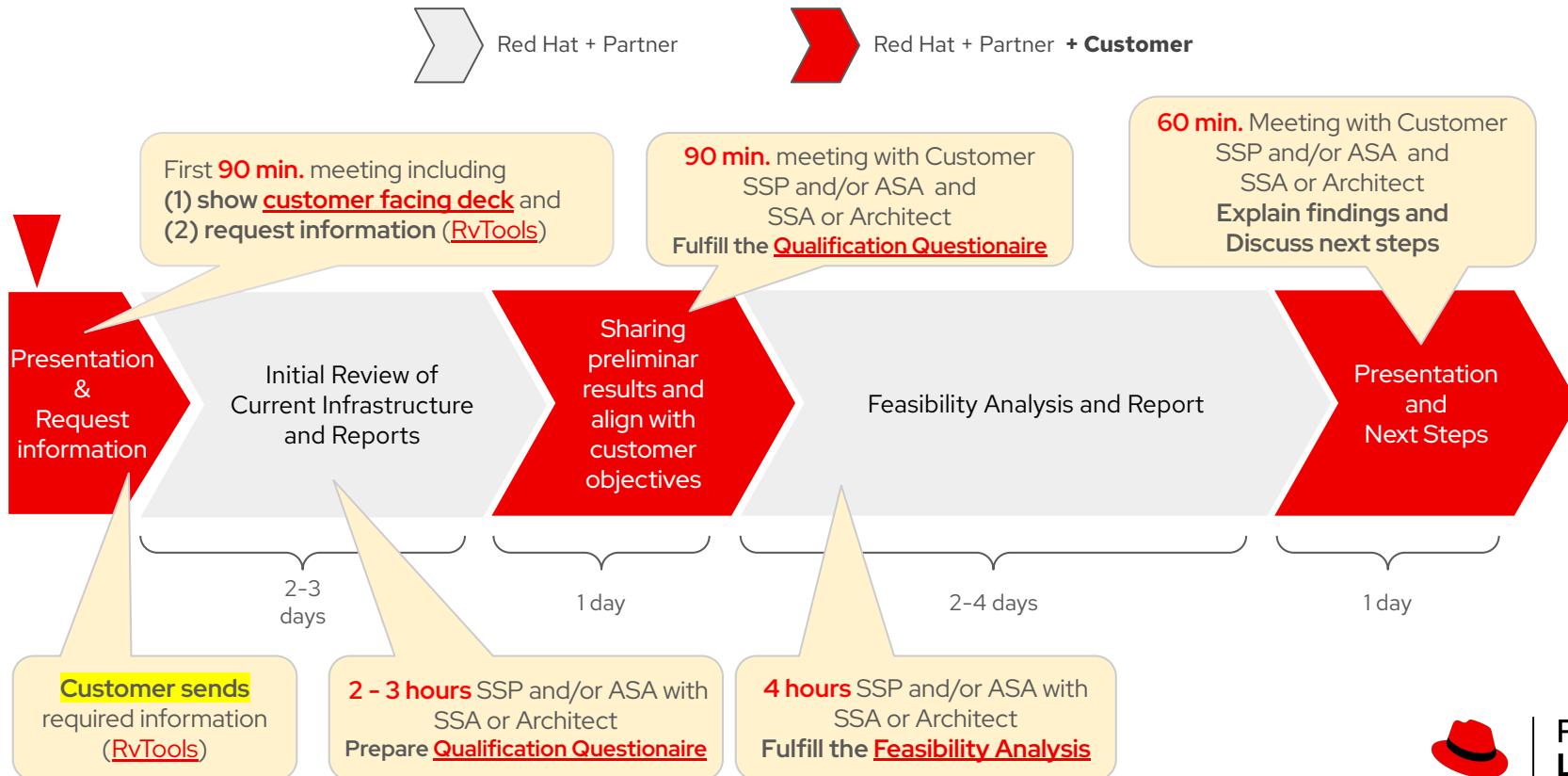


Presales Tech Discovery

Section	Questions
Customer's commitment level to migrate	<ul style="list-style-type: none">• Timeline to deploy VMware alternative into production?<ul style="list-style-type: none">◦ Timeline, including number of VMs to be migrated.◦ Assumption: Customer will run VMware alternative and VMware side by side for at least 12-months to de-risk• Financial budget? For things like:<ul style="list-style-type: none">◦ VMware alternative analysis◦ Investing in a VMA◦ Investing in a Proof of Value• Willingness to allocate people resources to work with Red Hat to advise on evaluation and implementation?<ul style="list-style-type: none">◦ Are those resources cross functional – networking, platform, etc• Openness to a solution that requires the addition of a 3rd party Storage vendor?• Is the customer using OpenShift today?• Is the customer using Ansible today for datacenter automation?<ul style="list-style-type: none">◦ Windows/Linux configuration mgmt, network automation, capacity planning, SNOW integrations etc• Is the customer seeking to modernize (refactor) applications using customer internal resources?



Feasibility Analysis Process



Ecosystem enhancing Red Hat OpenShift Virtualization

A growing infrastructure ecosystem

Overview Workloads Infrastructure Services Next steps

Software Infrastructure

Storage Networking Backup & disaster recovery

Run your business-critical applications with increased scalability and resilience. ISV storage partners provide container-native solutions to migrate and scale critical data in OpenShift Virtualization, minimizing downtime while supporting business growth.

1 of 2



Dell Container Storage Modules
by DELL

Easily install and manage Dell's CSI Drivers and CSM

Containerized application



NetApp Trident
by NetApp

Data connectivity to persistent data stores for Kubernetes applications

Solution



IBM Fusion
by IBM Japan, Ltd.

The easiest way to deploy OpenShift applications and Watsonx.

Containerized application



INFINIDAT InfiniBox® Container Storage Interface (CSI) Driver
by Infinidat Ltd

CNCF-compliant Kubernetes integration for InfiniBox storage systems, offering...

Containerized application



HPE

HP

Co

→

Ov

Pt

...

...

[Browse all storage products →](#)

red.ht/workswithvirt



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Storage automation for virtual machines and containers

- **Flexibility and Mobility**
 - VM Live Migration, VM High Availability
 - Cold migration between clusters
 - Storage policy-like experience via StorageClass
- **Day 2 Benefits**
 - Automated capacity management via Autopilot (Filesystem extension handled externally)
- **DR and Data Protection**
 - Async DR with only two OpenShift clusters required
 - Sync DR with less complexity and more flexible failover options
 - VM auto-detection and simple backup and restore





Kubernetes Data Protection and Mobility

K10 5.5 launched in October 2022 with VM capabilities

- Discover VMs: snapshot VM configuration and VM storage
- Freeze a VM before snapshot (optional annotation) w/ timeouts and unfreeze
- Restore VM snapshots with resource transforms and automatic orchestration

K10 enterprise features apply to VM workloads for automated data protection

- Apply K10 policies to virtual machines
- Export and import virtual machines for disaster recovery and virtual machine mobility between clusters





Disaster and recovery

“Significantly accelerate time to market, while ensuring reliability and quality of the overall solution.”

Rolled out a greenfield large scale application at the core where some components had to be in virtual machines. Architect, develop, test, and scale production-like deployments many months before a containerized version of applications being available.

- 100s of sites consolidated to run on minimum amount of hardware
- Accelerate solution by several years using non-containerized workloads





Storage Automation for virtual machines and containers

Discover enterprise-grade data protection for the Red Hat ecosystem- now with Red Hat OpenShift Virtualization support

- Automated and scheduled backups
- Policy-Driven backup and recovery
- Incremental backups and deduplication
- Backup catalog and metadata management
- Granular recovery options
- Recovery verification
- Encryption and data integrity
- Role-based access control
- Wide range of backup destination options including file system/object storage, tape pools and legacy backup systems (IBM/Dell/Micro Focus and others)





Pair IBM data services with Red Hat OpenShift Virtualization

Manage virtual machines with operators and CRDs

- Windows and Linux virtual machines
- Common GitOps management tools
- Common fusion container-native storage layer

Define application-aware backups with “recipes”

- A fusion recipe defines workflow to backup and restore application state
- Enforce consistency to ensure recoverability (e.g., database dump and restore)
- Orchestrate fusion backup policies from a central hub

Flexible deployment options

- Deploy fusion data services in any OpenShift cluster
- IBM Storage Fusion HCI System – an integrated system purpose built for Red Hat OpenShift applications
- Single point of contact for support





Orchestrating NVIDIA GPU accelerated virtual machines with Red Hat OpenShift

- GPU-accelerated applications running in virtual machines can be orchestrated by Red Hat OpenShift, just like ordinary enterprise applications, enabling unified management.
- In addition to AI, enabling Red Hat OpenShift graphics GPU use cases.
- The NVIDIA vGPU manager allows multiple virtual machines to share access to a single physical GPU, enabling simultaneous utilization with time-sliced vGPUs (no MIG support for now).
- The NVIDIA GPU Operator automates deployment, configuration, and lifecycle management of GPU-accelerated workloads.





Industry leading storage and data management functionality for modern workload deployments

- **Support** both virtualized and containerized apps in a single infrastructure
- **Virtual machines live migration**, CSI topology awareness and storage offload
- **Fast and efficient**, best-in-class snapshots and clones
- **NetApp Astra provides functionality** to protect, move, and store apps

Data protection for virtual machines is coming in Q4 2023



New exciting partnership with Dell



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Dell APEX Cloud Platform

Overview Inventory Updates Security Settings Support

DELL Technologies

Physical View

Actions Front View Back View

GPU

BOSS information

Overview Alerts

Boss Controller

Device model	Status	Firmware version
BOSS-NI Monolithic	HEALTHY	2.113.2021

Active Boot Device

Slot	Device model	Protocol	Capacity
0	Dell NVMe PE8010 RI M.2 960GB	PCIe	894.25GB

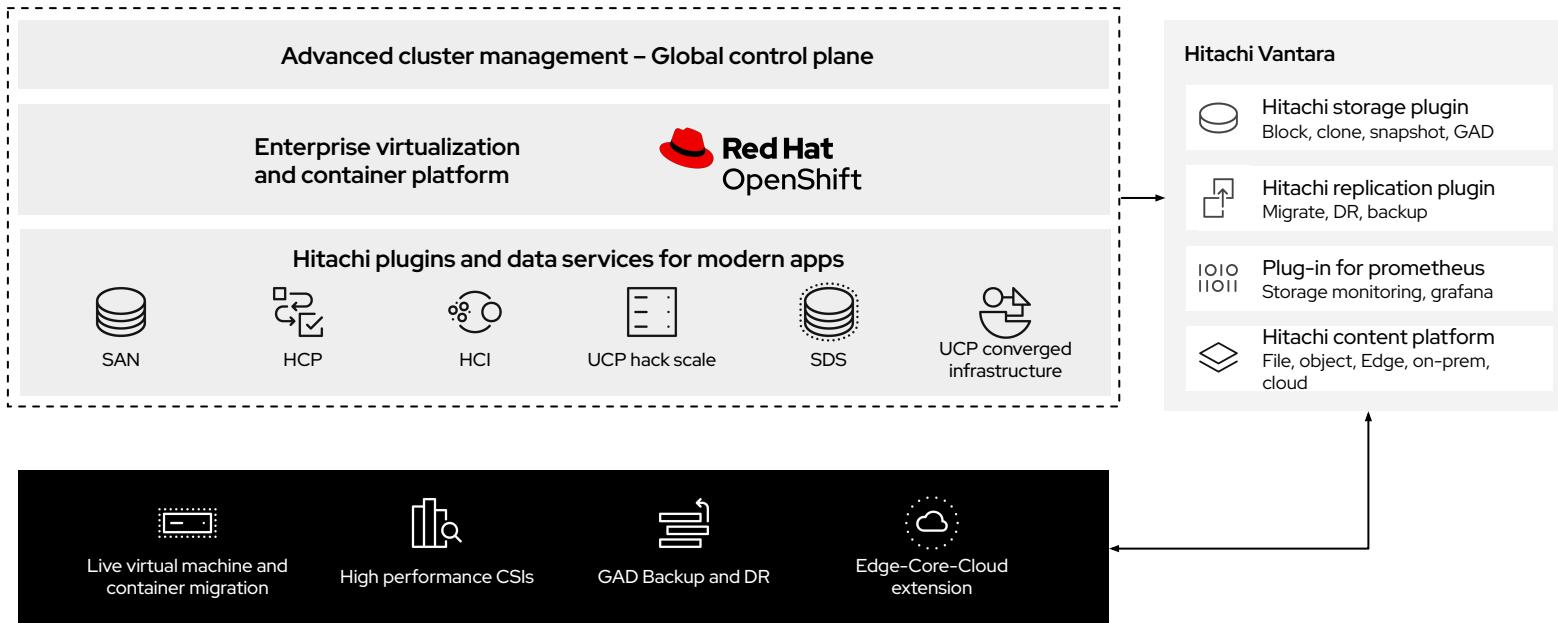
Overview Boot Devices Alerts

Server health	⚠ Warning
System LED	Healthy
Power state	On
Service tag	35RLCX3
Role node	Control plane, Master, Worker
Manufacturer	Dell Inc.
Server slot	1
Server model	APEX MC-760
Management IP address	172.18.30.52
IDRAC IP address	192.168.101.19
Location	
Rack name	U23
Activate Windows	
Rack position	2
Go to settings to activate Windows.	
Firmware versions	



Red Hat OpenShift Virtualization

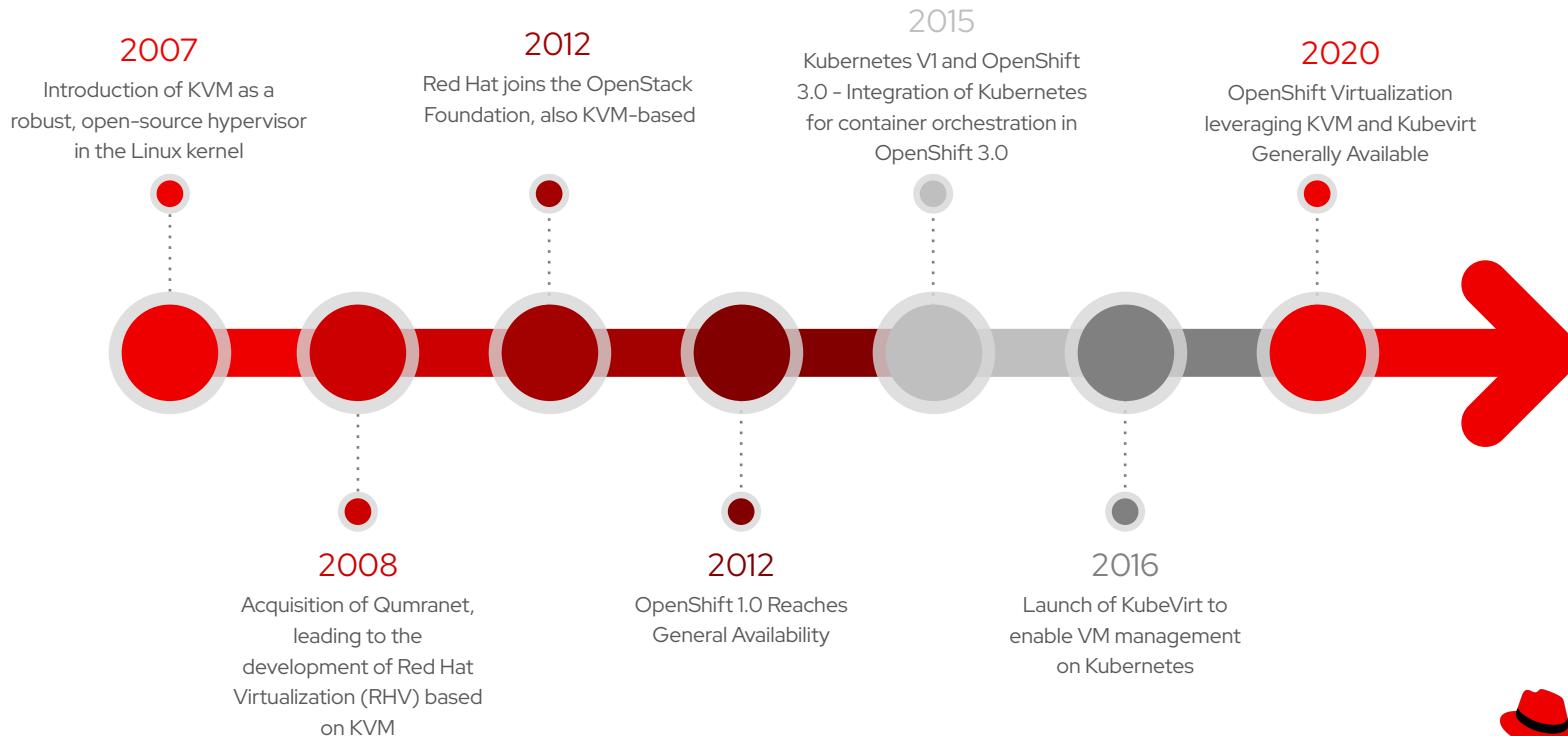
Hitachi Plugins and data services for modern apps, and containers



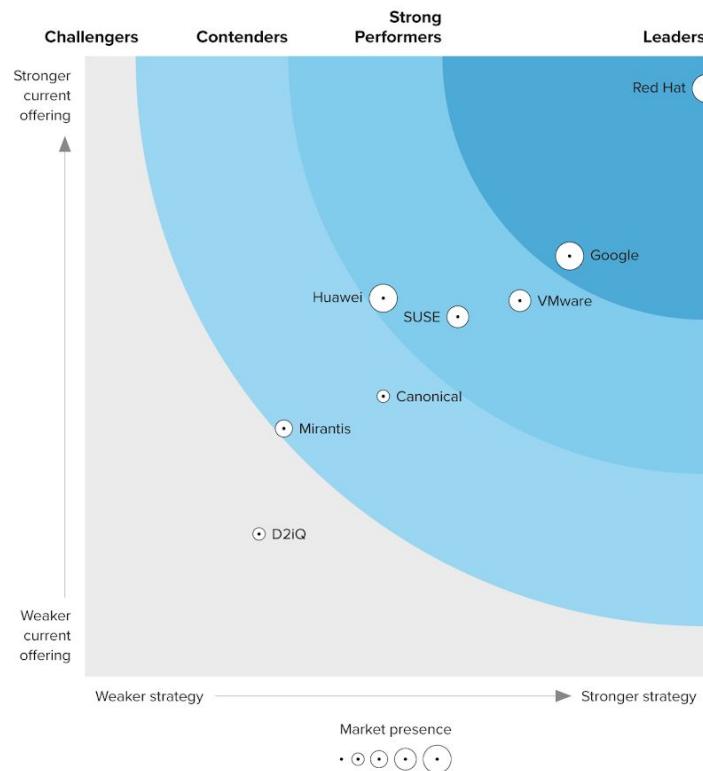
Competitive Landscape / Objections Discussion



Red Hat has a long history with Virtualization



The Forrester Wave™: Multicloud Container Platforms, Q4 2023



"Red Hat sets the pace with enterprise IT capabilities and massive market presence. With OpenShift's systematic innovation and development on multiple fronts, Red Hat has helped transform the MCP market segment."

"The demand for OpenShift prompted AWS and Microsoft Azure to sell OpenShift as a managed service, despite having their own Kubernetes-based container services. Red Hat's differentiated strategic vision is to up the ante on enterprise-grade open source computing."

The Forrester Wave™: Multicloud Container Platforms,
Q4 2023: The Eight Providers That Matter Most and
How They Stack Up
Oct 2023

Red Hat is a recognized industry leader

2024 Gartner® Magic Quadrant™: Container Management



Source: Gartner, "Magic Quadrant for Container Management,"
Dennis Smith, Tony Iams, Wataru Katsurashima, Michael Warrilow,
Richard Watson, 10 September 2024

2024 Gartner® Magic Quadrant™: Cloud Application Platforms



Source: Gartner, "Magic Quadrant for Cloud Application Platforms," By Tigran Egiazarov, Mukul Saha, Anne Thomas, Steve Schwent, 4 November 2024

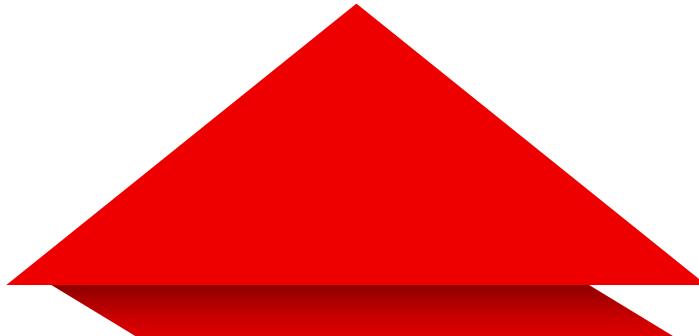
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	 Red Hat OpenShift Virtualization Engine	 Red Hat OpenShift Kubernetes Engine	 Red Hat OpenShift Container Platform	 Red Hat OpenShift Platform Plus
Enterprise Secured Kubernetes	✓	✓	✓	✓
Hosted control planes	✓	✓	✓	✓
Operator Lifecycle Manager	✓	✓	✓	✓
Compliance & File Integrity Operators	✓	✓	✓	✓
Virtual machine-based workload hosting	✓	✓	✓	✓
Container-based infra workload hosting	✓	✓	✓	✓
User Workload Monitoring	✓	✓*	✓	✓
Platform Logging	✓	✓*	✓	✓
OpenShift GitOps	✓	✓*	✓	✓
Metering and Cost Management SaaS Service	✓	✓	✓	✓
Container-based user application hosting		✓	✓	✓
RHEL guest and hosted virtual OpenShift subscriptions included		✓	✓	✓
CI/CD Pipelines			✓	✓
Service Mesh			✓	✓
Serverless			✓	✓
Tracing			✓	✓
Runtimes & Webtools			✓	✓
Multi-cluster complete management with Red Hat Advanced Cluster Management				✓
Kubernetes-native security with Red Hat Advanced Cluster Security				✓
Scalable, central registry with Red Hat Quay				✓
Persistent software-defined storage & essential data services with OpenShift Data Foundation Essentials				✓

*VMs only. [Learn more.](#)

Competing in VMware Migration Conversations



STEP 1:
Get Me Off VMware

STEP 2:
Compete against enterprise
virtualization alternatives



STEP 1: Get Me Off Of VMware

vSphere - "we can provide a comparable experience/feature set."

VVF - "Here's why you don't want to modernize with Tanzu and if you are going to upgrade, why not use one platform for everything?"



STEP 2: Enterprise virtualization alternatives

Defend against;

Microsoft

- Hyper-V
- Azure Stack

Nutanix

- AHV
- NKP

SUSE/Rancher

- SUSE Virtualization (formerly Harvester - HCI)
- Rancher Virt (Prime)

Hyperscalers

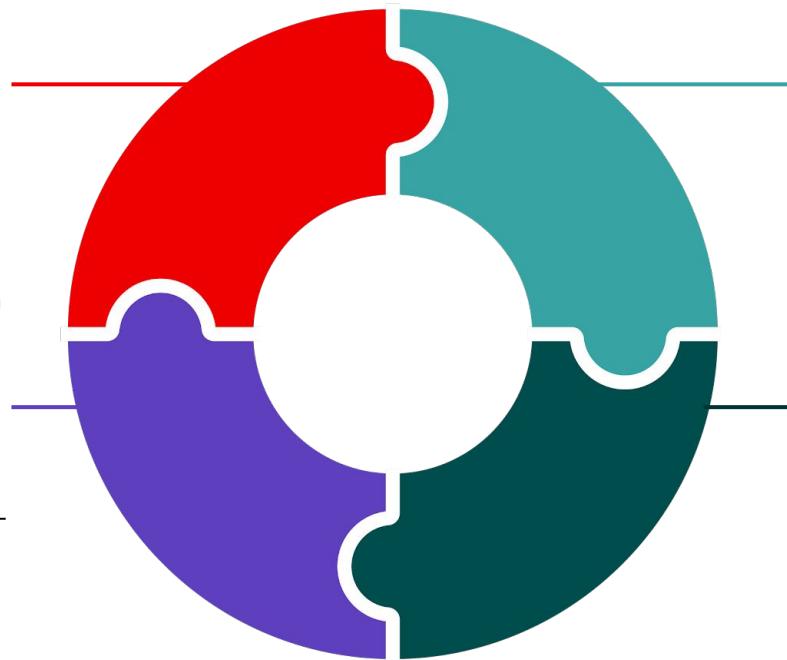
Virtualization Competitive Landscape

Others

SUSE/Rancher, Oracle, Proxmox, HPE, SpectroCloud - Assorted Lock-in, Maturity, enterprise readiness, modernization and ecosystem concerns.

Hypervisors

Nutanix/MSFT Hyper-V: Trade one lock-in for another - what happens in a few years if you want to modernize?



Status Quo: VMware

Stick with **VMW**: Comfortable but expensive and risky. Do you want to use Tanzu to modernize? Will Broadcom invest to keep up with tech innovations?

Hyperscalers

How about on-prem options?
Lock-in concerns.





Features, features, features!

- Virtualization admins don't know OpenShift, they're going to ask about features
- They'll hit you with a long list of vSphere features and capabilities for OpenShift to match, including ones they *never* use.
- Don't fall into the trap!
- An opportunity to focus on customer workloads and operational workflows



Common Question: Is it fast enough?

- Many business critical application require serious performance, like databases and application servers.
- For similar configure workload on similar hardware, you can expect **performance parity, proven during customer PoCs**
- We have several proof points on RHCC
 - [Scale to 6,000 VMs learning path](#)
 - [OpenShift Virtualization - Tuning & Scaling Guide](#)
 - Storage partner CSI benchmarking

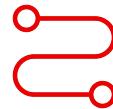




Common Question: Is my workload, O/S, appliance supported?

- VMware certification matrix has thousands of apps
- We've extended supported Operating Systems to other Linux
- Red Hat Catalog Infra feature = "OpenShift Virtualization"
- red.ht/workswithvirt
- Getting your workload certified
 - Validate your Red Hat OpenShift Virtualization workload
 - The OpenShift Partner Lab





Common Question: Kubernetes is new / hard / scary !

- New web console UI and ACM dashboard make VMs more accessible.
- Inclusion of OpenShift Lightspeed assists in traditional vAdmin onboarding
- OpenShift Virtualization is OpenShift, we (Red Hat) have a massive catalog of learning courses to flatten the learning curve
 - So do our partners
- Dedicated/specific courses for OpenShift Virtualization
 - **D0316** - Managing VMs with OpenShift
- [Virtualization Migration Assessment](#) has prescriptive “Enablement and Training”

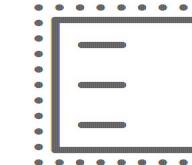
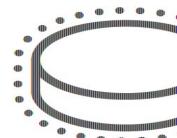
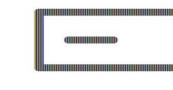
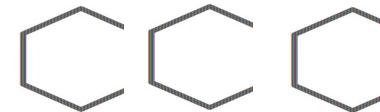
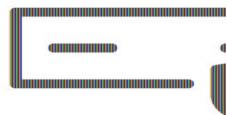


VMware

Red Hat vs VMware for containerized applications on-prem or multi-cloud



Containerized
applications



Red Hat enables containerized applications
anywhere where Linux runs: Cloud, DataCenter, Edge

VMware VCF/VVF requires organizations to pay for vSAN,
NSX (VVF only) before containers can be enabled.



Red Hat
Learning

Red Hat vs VMware

Market Leader vs. Market Follower

2011 to 2023
More than 3000 customers



Years of Cloud Native Leadership

OpenShift

Kubernetes, Developer Services, Operators, Serverless, ServiceMesh,
Virtualization, Container optimized Linux Operating System

vmware®

Disjointed Kubernetes offerings without migration path.
Multiple unintegrated products.

Tanzu Kubernetes Grid	Tanzu Kubernetes Basic	Tanzu Kubernetes Standard	Tanzu Kubernetes Advanced	Tanzu Kubernetes Enterprise	Tanzu Labs	Tanzu Kubernetes Operations
Tanzu Mission Control	Tanzu Service Mesh	Tanzu Application Service (was Pivotal)	Tanzu Observability (was WaveFront)	Tanzu Build Service (was Pivotal)	Tanzu Data Service (was Pivotal)	Tanzu Application Platform



Please join us tomorrow for what may be one of our last community meetings until further notice 🤍 😊 The only topic of discussion will be yesterday's Broadcom layoffs and the impact it has had on the project.

hackmd.io/G8dN30WvQI-8Si...

<https://blogs.vmware.com/partnernews/2022/10/tanzu-basic-advanced-end-availability.html>
<https://github.com/cncf/toc/issues/1314>

Objection Handling - VMware

"I've got 90K+ VMs across multiple continents, you certainly can't handle every workload"

Respond to customer's concern about handling a large-scale, geographically distributed VM infrastructure by emphasizing the scalability, flexibility and adaptability of Red Hat's Open Virtualization Infrastructure:

- Scalable Architecture: OpenShift is built on a scalable and cloud-native architecture, designed to manage large numbers of containers and VMs efficiently. We have helped many other customers do so. It is designed to handle extensive workloads and can be scaled to meet the demands of even the most diverse VM environments.
- Single platform consistency: OpenShift gives teams a single, consistent user experience and the freedom to quickly build and deploy apps anywhere using a comprehensive suite of tools and services.
- Multi-Cloud Compatibility: With inherent support for hybrid/multi-cloud environments, OpenShift can manage VMs across different regions and cloud providers. This ensures flexibility in deploying and managing workloads globally catering to your distribution of VMs

"How do I do day 2 operations? For OpenShift? For VMs?"

Addressing the concern about Day 2 operations for both OpenShift and VMs within OpenShift Virtualization environment can be approached by highlighting the rich UI experience with CLI and APIs for common VM operations

- OpenShift also has built-in capabilities for networking, storage, observability, and other IT operations.
- RHEL and Windows guests are compatible with customer's in-guest automation
- OpenShift also includes monitoring tools that provide real-time insights into both container and VM performance. This will aid in proactive management, ensuring issues are addressed quickly with minimal downtime.
- Ansible Automation Platform to automate ongoing day 2 ops including related network storage and other infrastructure for accuracy and consistency of management- from provisioning to patching and compliance to sunsetting of unused VMs
- Additionally Red Hat's extensive support structure offers guidance and assistance for Day 2 operations, ensuring you have the expertise needed at every step.

"Is the performance of VMs on OpenShift as good as what I'm using today? Is the platform capable of meeting my needs?"

Addressing the customer's concerns about VM performance on OpenShift involves focusing on the platforms capabilities and benefits that it offers in maintaining or enhancing the customer's current performance levels:

- By using KVM to run in OpenShift, workload performance is equivalent across all Red Hat infrastructure platforms including RHEL, Red Hat Virtualization, Red Hat OpenStack and now OpenShift Virt.
- Admins can import their business critical workloads into OpenShift, confident that they'll be able to serve users at the same SLAs as their existing virtualization implementation.



Nutanix

At a glance, Red Hat & Nutanix

	Red Hat OpenShift	Nutanix AHV
What is it?	Flexible open platform: cloud, on-prem Edge	Turnkey appliance: compute and storage tightly integrated
Offering	Application platform available as a managed service in the cloud, on-prem or at the Edge. AI offering and Automation with Ansible.	Hyperconverged appliance storage and compute with a Kubernetes add-on. Not a fully fledged application platform.
Scaling	Highly scalable across cloud or bare metal	Limited to capacity of each additional appliance.
Initial experience	More complex .	Quicker turnkey.
Market penetration	SMB, Commercial, Enterprise, Public Sector	Mostly SMB & commercial

For customers that strongly prefer an appliance:
OpenShift is available in appliance form factor from DELL APEX, IBM Fusion and HPE Greenlake

Objection Handling - Hypervisors

"We are a big MSFT shop - it just makes sense to jump to Hyper-V."

Red Hat offers flexible architectures based on modern open processes to solve customer problems. Hyper-V architectures are Microsoft centric with less flexibility and more lock-in.

- Hyper-V is older technology compared to the newer cloud native KubeVirt that is included with Red Hat OpenShift.
- Hyper-V requires Microsoft System Center which may be a larger add-on cost.
- OpenShift offers customers choice of hardware, storage, networking and more from a partner ecosystem.

Why wouldn't I just move to Microsoft's Hyper-V or Nutanix?

- Microsoft's Hyper-V is a virtualization only platform on Windows Server on premise or as Azure VMs. OpenShift is a complete cloud-native application platform available on-prem, on ROSA (AWS) and at the Edge.
- Nutanix does have a hypervisor and architecturally similar approach to VMware. Having said that, do you really want to exchange one proprietary, legacy technology for another? Red Hat's Open Virtualization infrastructure migrates you to a "future proof" platform with comparable virtualization functionality today AND the ability to modernize at your own pace going forward.

"Nutanix looks and feels like what I use now PLUS they have kubernetes as well!"

- Red Hat secures and makes Kubernetes Enterprise ready, whereas Nutanix offers 'pure' upstream Kubernetes with no backports, lifecycle or support.
- OpenShift is built on Red Hat Enterprise Linux which has a 25+ year history as the most widely deployed commercial Linux offering, while Nutanix offers unsupported Rocky Linux or bring your own.
- Let's compare solutions by looking at analyst report ratings and customer references.



SUSE/Rancher

Objection Handling - Others

"Oracle offered me a sweet deal."

Oracle Virtualization lacks the modernization options available with the OpenShift Platform. Moving to Oracle for virt would amount to a lift and shift with no other benefits.

- Oracle Virt is KVM virtualization only
- Low contributions to KubeVirt project – innovation?
- Kubernetes/containers available as a separate add-on.

"SUSE told me that along with Rancher they basically offer the same thing as you do?"

The SUSE Rancher solution provides more basic kubernetes functionality, in contrast with the complete application platform that is OpenShift. The SUSE Rancher solution has:

- A limited ecosystem compared with OpenShift
- No managed service options for virt in the cloud
- Limited support options and documentation

"Red Hat is becoming just like IBM - I am thinking about a small company solution like Proxmox."

Proxmox lacks the modernization options that OpenShift Virtualization offers. Customers adopting Proxmox would be doing a lift and shift with little gain other than a different Virtualization platform.

- Proxmox is a tiny company, per LinkedIn about 30 employees
- Product offering is KVM virtualization only, missing: AI, cloud service, developer platform, Linux, security, management
- No ratings by analyst firms (Gartner, Forrester, IDC etc)
- Small partner ecosystem, low if any CNCF contributions.
- Support limited to 8 hours a day EMEA timezone



OpenShift Virtualization Differentiators

Differentiator	Description
Simplifies the migration of VMs	Customers are able to easily migrate their existing virtual machine workloads with migration tooling that is already included with Red Hat OpenShift. For large-scale migrations, the Red Hat Ansible Automation Platform (AAP) adds further efficiency, ensuring a smooth and automated transition.
Offers a path to infrastructure and application modernization	Red Hat OpenShift Virtualization is part of a unified hybrid cloud platform that allows customers to build, modernize, and deploy applications at scale. Red Hat OpenShift Virtualization brings modern application development processes and tools to VMs that help expedite the modernization of VM-based applications including the integration of AI capabilities.
Provides a single modern cloud-native virtualization infrastructure for existing VMs	Red Hat OpenShift supports VMs, containers, and serverless, allowing customers to standardize infrastructure deployment and maintenance on a single platform. Teams can also use the same development pipelines for applications in VMs or containers, regardless of where they run – on-premises, or in hybrid, public, or private clouds, providing consistency and flexibility.
Supported by a healthy open source community and diverse partner ecosystem	Red Hat has been involved in the virtualization space since the inclusion of the Kernel-based Virtual Machine (KVM) hypervisor to the Linux Kernel in 2007. Paired with KubeVirt for VM management, a project that Red Hat engineers have been involved with since its inception, both KVM and KubeVirt are at the heart of OpenShift Virtualization, and leverage the strength of open source development and an extensive community of corporate and individual contributors. In addition, Red Hat works with our partner ecosystem to integrate storage and networking, backup and disaster recovery, and hardware infrastructure.



Next Steps

Wrap up and closing



A tailored learning path for your VM migration

Build the skills, processes and culture needed to optimize and modernize your IT infrastructure with Red Hat Training and Certification.

Essentials

 [Red Hat OpenShift Virtualization Technical Overview | DO016](#)

 [Containers, Kubernetes and Red Hat OpenShift Technical Overview | DO080](#)

 [Ansible Basics: Automation Technical Overview | DO080](#)

Prerequisites for Day 1

 [Red Hat OpenShift Administration I: Operating a Production Cluster | DO180](#)

 [Red Hat OpenShift Administration II: Configuring a Production Cluster | DO280](#)

 [Red Hat Certified OpenShift Administrator exam | EX280](#)

Day 1

 [Migrating Virtual Machines to Red Hat OpenShift Virtualization with Ansible Automation Platform | DO346](#)

 [Managing Virtual Machines with Red Hat OpenShift Virtualization | DO316](#)

 [Red Hat Certified Specialist in OpenShift Virtualization | EX316](#)

Day 2

 [Automate and Manage Red Hat OpenShift Virtualization with Ansible | DO336 \(coming Q2 2025\)](#)

 [Red Hat Certified Specialist in Automating OpenShift Virtual Machine Migration Exam | EX336 \(coming Q2 2025\)](#)

 [Red Hat Advanced Cluster Management for Kubernetes | DO432 \(coming Q3 2025\)](#)

 [Red Hat Certified Specialist in OpenShift Advanced Cluster Management Exam | EX432 \(coming Q3 2025\)](#)



Thank you



[linkedin.com/company/red-hat](https://www.linkedin.com/company/red-hat)



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