

Red Hat  
**Summit**

**Connect**

# Virtualization Migration Journey

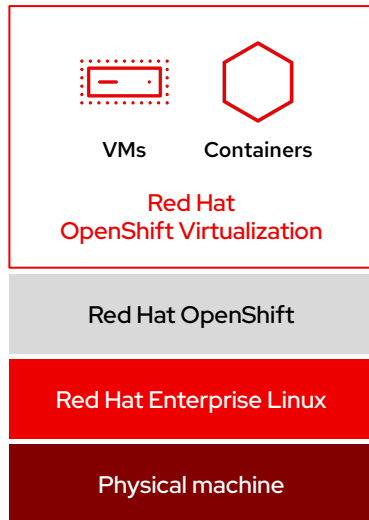
## with Red Hat Services

**Cenk Kulaçoğlu**

Senior Manager,  
Services GTM  
Red Hat

# 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
- ▶ **Diverse ecosystem**  
of Red Hat & partner operators
- ▶ **Includes Red Hat Enterprise Linux**  
guest entitlements
- ▶ **Supports Microsoft Windows**  
guests through Microsoft SVVP
- ▶ **Inbound guest migration**  
using Ansible Automation Platform + Migration Toolkit for Virtualization, Training and Consulting

# Bring traditional virtual machines into OpenShift



## Traditional VM behavior in a modern platform

- ▶ Administrator concepts and actions
- ▶ Network connectivity
- ▶ Live migration



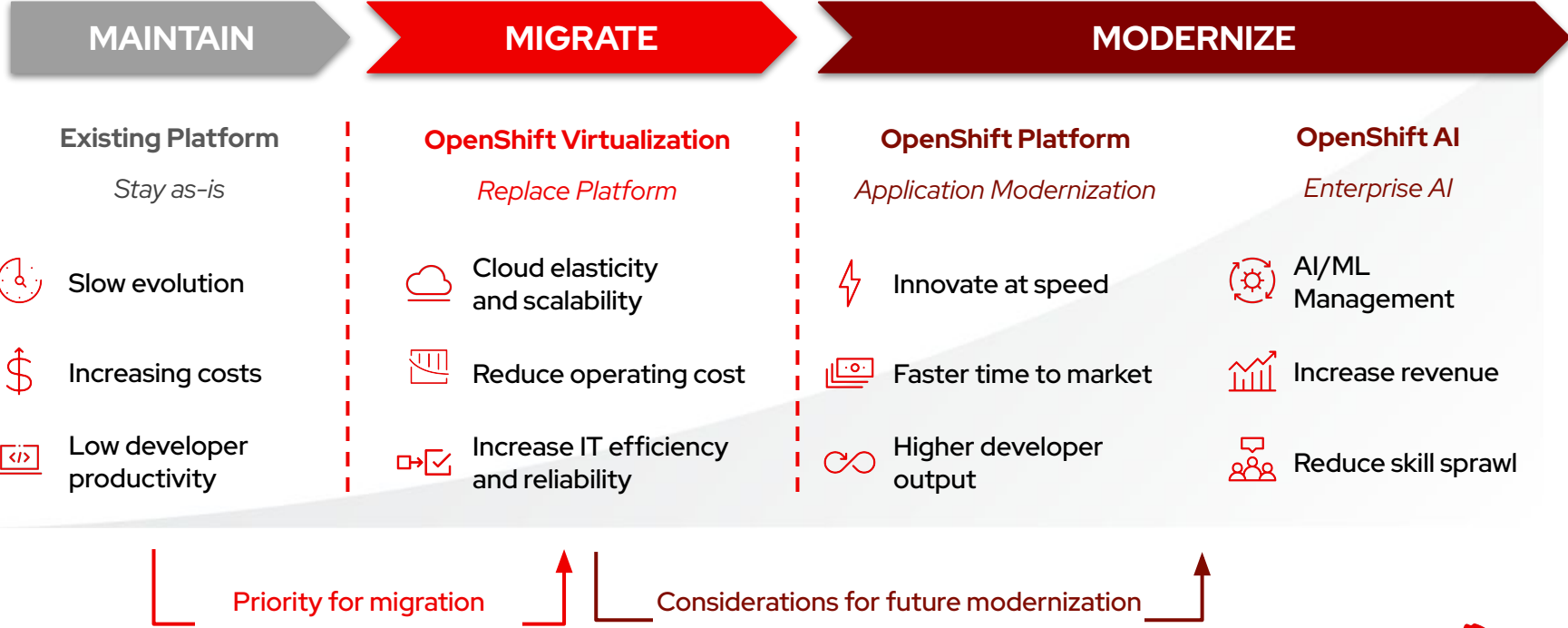
## Use existing VM roles and responsibilities

- ▶ Migrate traditional VMs easily with a set of comprehensive tools
- ▶ Maintain application components that are business critical
- ▶ Modernize application workloads and skill sets over time



# Solve Near-Term Challenges, Invest in Long-Term Value

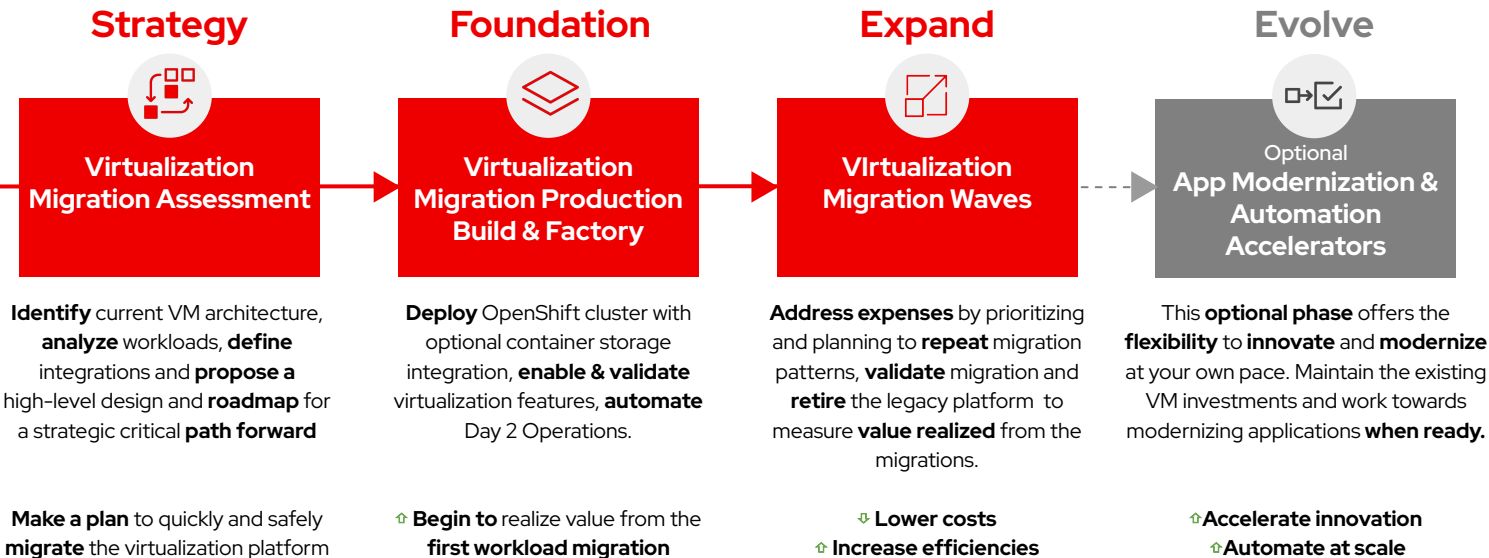
Efficiently migrate VMs now to reduce operating costs and unlock additional value in the future



# Red Hat Services for Virtualization Migration

# A bird's eye view into Virtualization journey

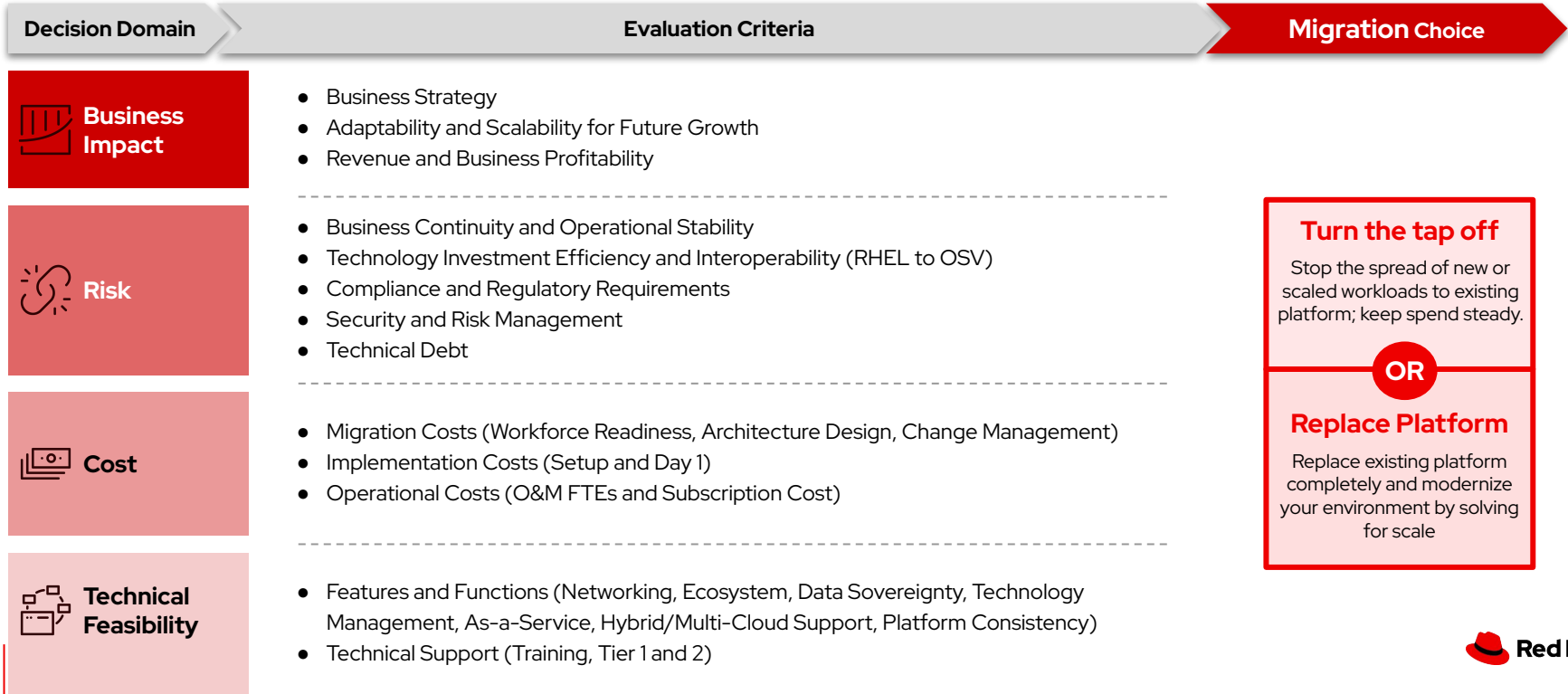
A customizable approach based on customer business needs and current readiness state



..... Training and Technical Account Management .....

# Start your migration journey by prioritizing business impacts

Customers must carefully evaluate several criteria to make the right strategic decision



# Virtualization Migration Assessment



# Virtualization Migration Assessment

Strategize and plan migration workloads

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, configure 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

# Virtualization Migration Assessment

## Our Approach



## What We Cover

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

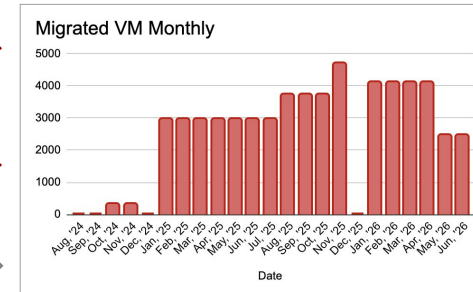
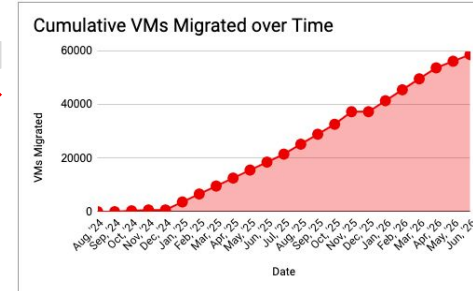
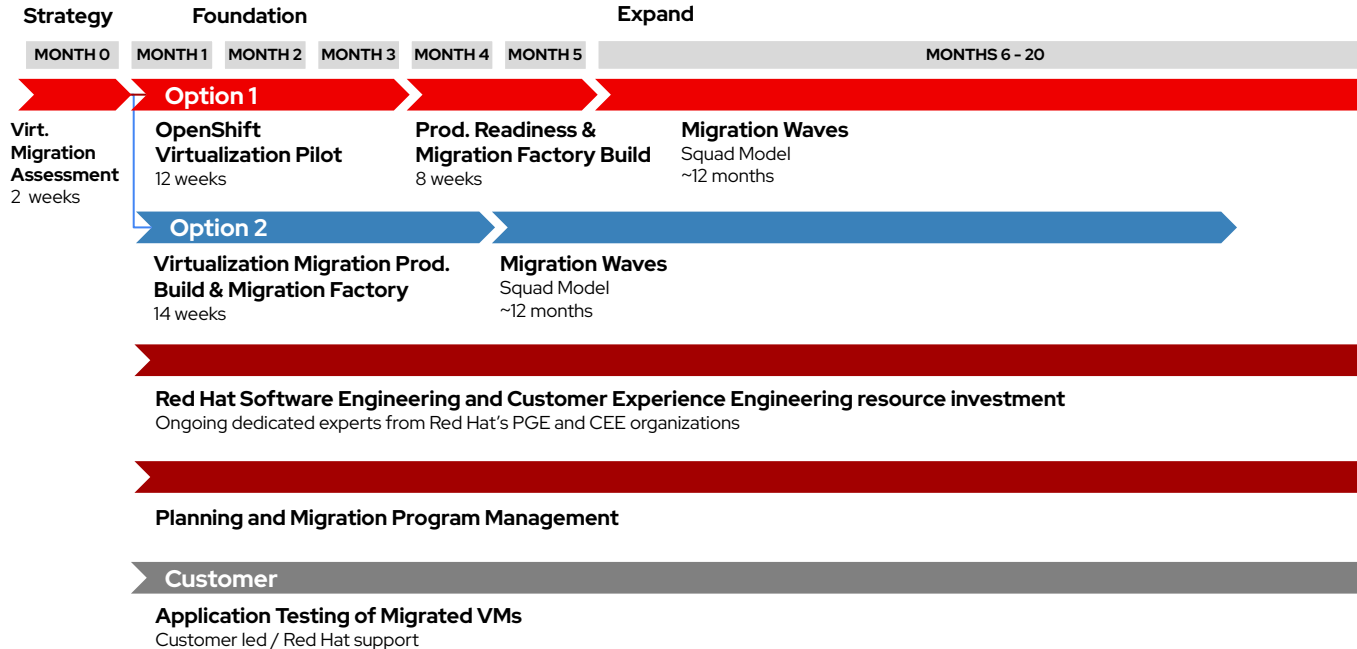
## Outcomes

- Understand: Where you're going, how you'll get there, how long it will take, how much it will cost
- Expertly-leveraged product capabilities supported with high-level recommendations and design considerations
- Faster time-to-value by embarking on a customer journey with Red Hat Services
- **VMA Report with proposed migration approach and high level design**



# Virtualization Migration Assessment

## Example Migration Schedule: 50,000 VMs



# Virtualization Migration Production Build & Migration Factory

# Virtualization Migration Production Build

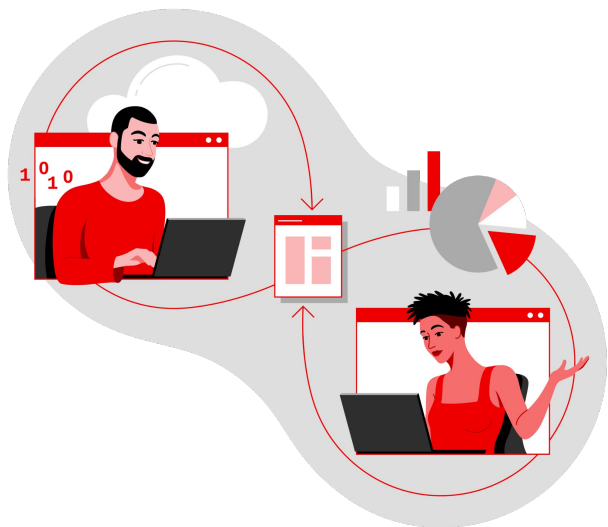
Establish your virtualization platform foundation

Strategy

Foundation

Expand

Evolve



**Deploy your OpenShift cluster** with optional container storage integration



**Enable and validate** virtualization features and **install** your container platform within your network requirements



**Operationalize** multiple consistent clusters integrated into your existing environment



**Migrate** your initial virtualized workloads



**Validate** your strategy and prepare to scale

# Virtualization Migration Waves

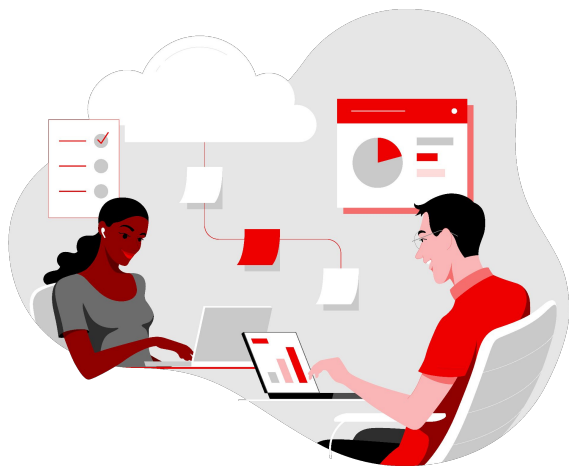
Migrate virtual machines at scale

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







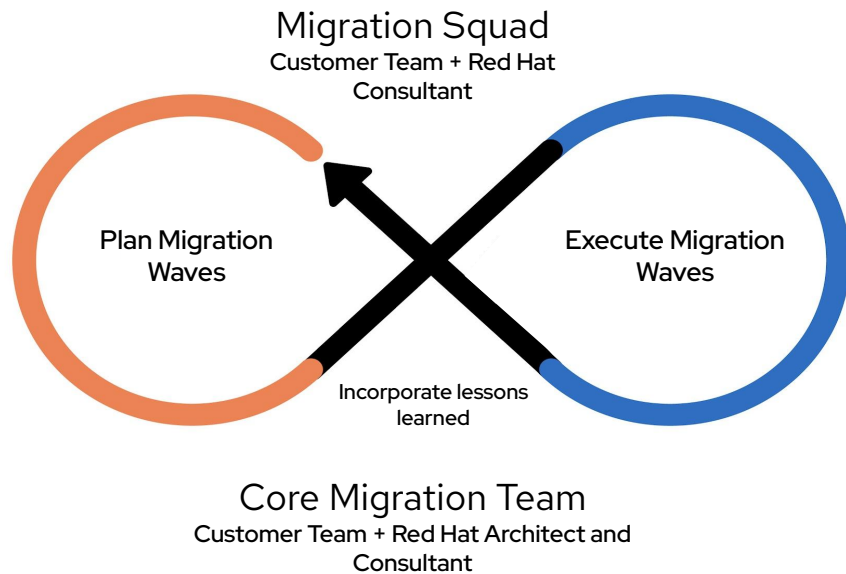
**Prepare teams** for scaled app operations and production readiness

# Migration Squad Model





for Continuous Delivery

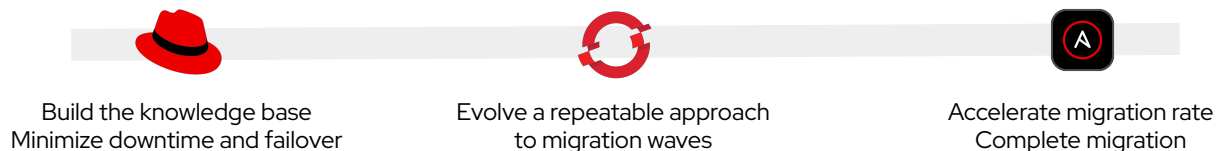
**Red Hat team**  
Advises on patterns, architecture, and enablement

- Design Reference Architectures 
- Enable Teams with OpenShift Virtualization 
- Deploy Automation 
- Evolve Process 



**Customer teams**  
Advises on requirements, processes, and challenges

-  Define Requirements
-  Support Migration Wave
-  Navigate internal processes
-  Validate Migration





# OpenShift Virtualization Migration Factory Ansible Collection



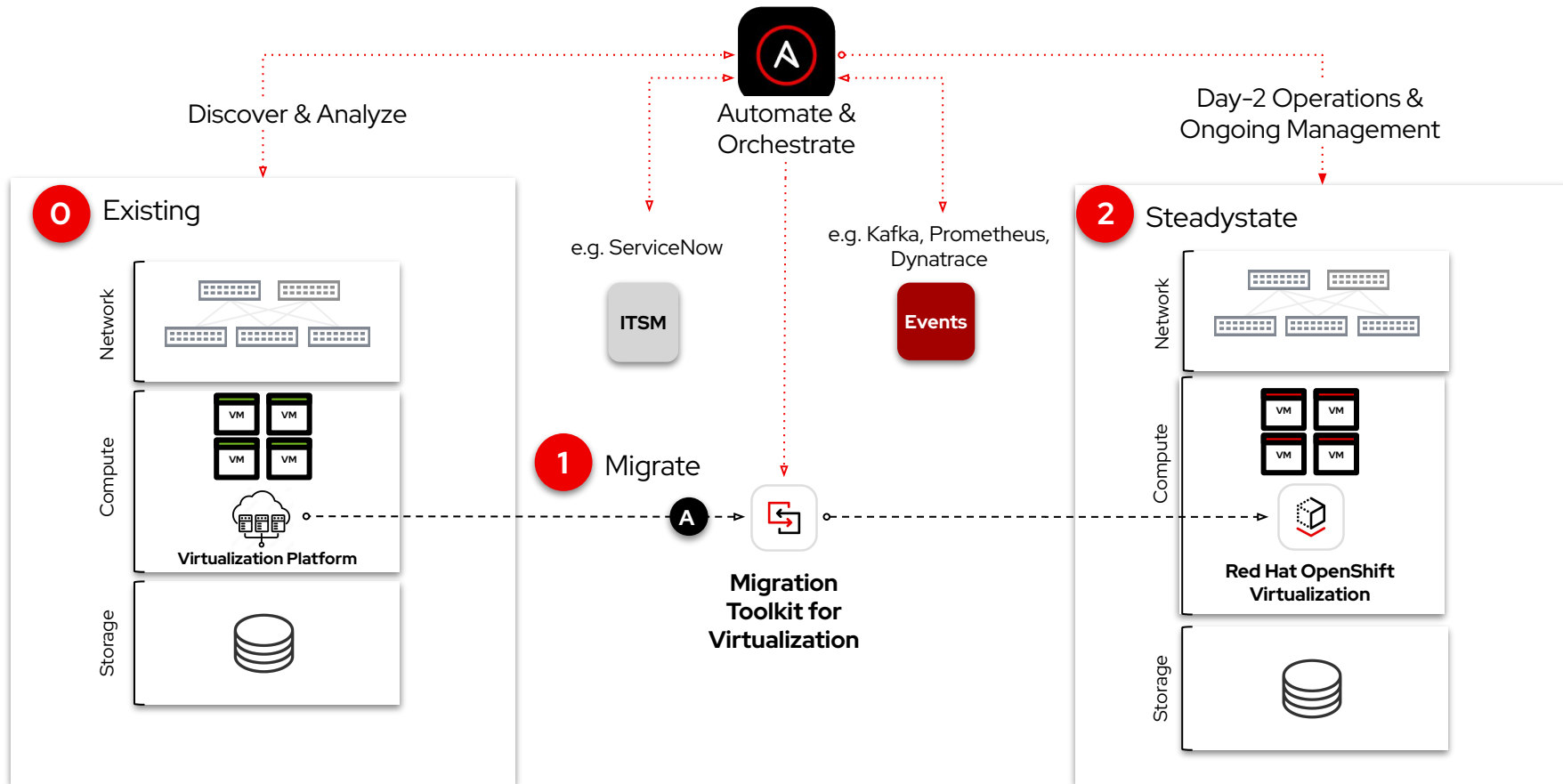


# What is the purpose of this Collection?

- ▶ Drive platform adoption for customers migrating off of existing virtualization platform to OpenShift Virtualization
- ▶ Enable Virtualization Admins to move to OpenShift Virtualization
- ▶ Provide Prescriptive methodology to deploy EVERYTHING needed
- ▶ Migrate configurations from ENTIRE virtualization stack and components needed for it over to OpenShift Virtualization



# Ansible Automation Platform

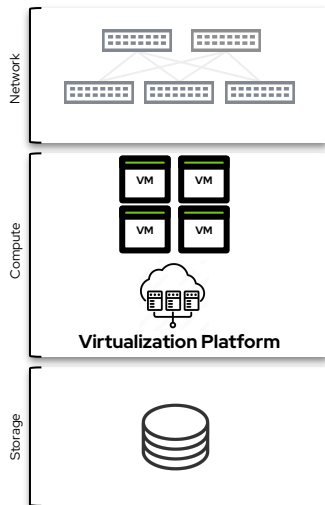




Discover & Analyze



## 0 Existing



## Pre Configuration for Migration

- Inventory/Discovery of existing and/or replacement hardware and configurations and creation of reusable facts
- Pulls configuration information from:
  - Existing Virtualization management appliance
  - Dell iDrac and or any Redfish compatible BIOS
- Pre-configuration for MTV
  - Validates all of the pre-requisites are configured on the existing virtualization platform for MTV

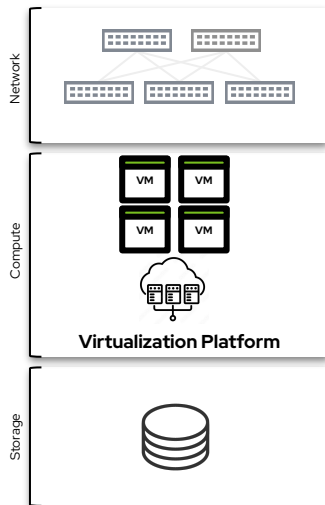
## Ansible Automation Platform



Discover & Analyze



### 0 Existing



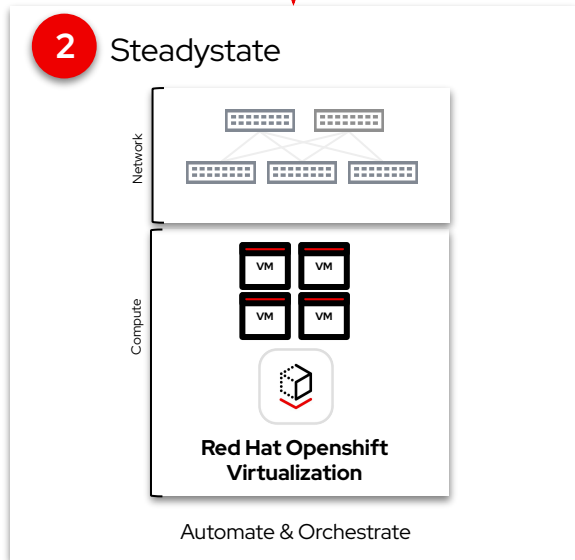
## Bootstrap of Environment

- Configures Bastion VM with bootstrap role to install AAP (customers with no AAP or OpenShift)
- Populate Existing AAP (if customers have AAP)
- Populate existing OpenShift Cluster (if customer already has OpenShift)
- AAP Population creates:
  - MTV Organization in AAP
  - Execution Environments
  - Projects
  - Templates
  - Surveys

## Ansible Automation Platform



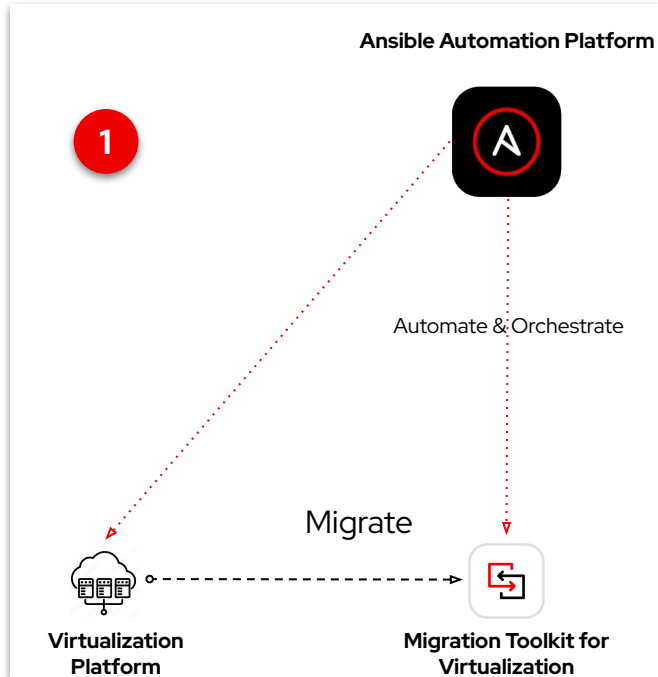
Day 0 Automation & Management



## Bootstrap Cluster Deployment

- Configuration of Operators
  - OpenShift Virtualization Operator
    - AAP Operator
    - MTV Operator
    - ACM Operator
    - NMstate Operator (Network Manager)
    - OADP Operator (OpenShift APIs for Data Protection)
    - FAR Operator (Fencing Agent)
- Pre Seeding of Content into Ansible Automation Platform
  - Populates all of the playbooks needed into AAP
  - Provides AAP surveys (graphical dropdowns) for all actions to give a more familiar experience to users

# Migration and Inventory



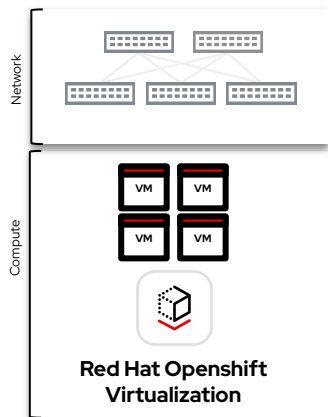
- Migration Toolkit for Virtualization (aka MTV) automation
  - Batch migrations of virtual machines via collection/MTV Plans
- Create inventories to be used for bulk migrations via MTV Plans
  - Existing Virtualization VMs
  - OpenShift Virt VMs + supporting resources
  - Vlans
  - Storage



Day 2 Automation & Management

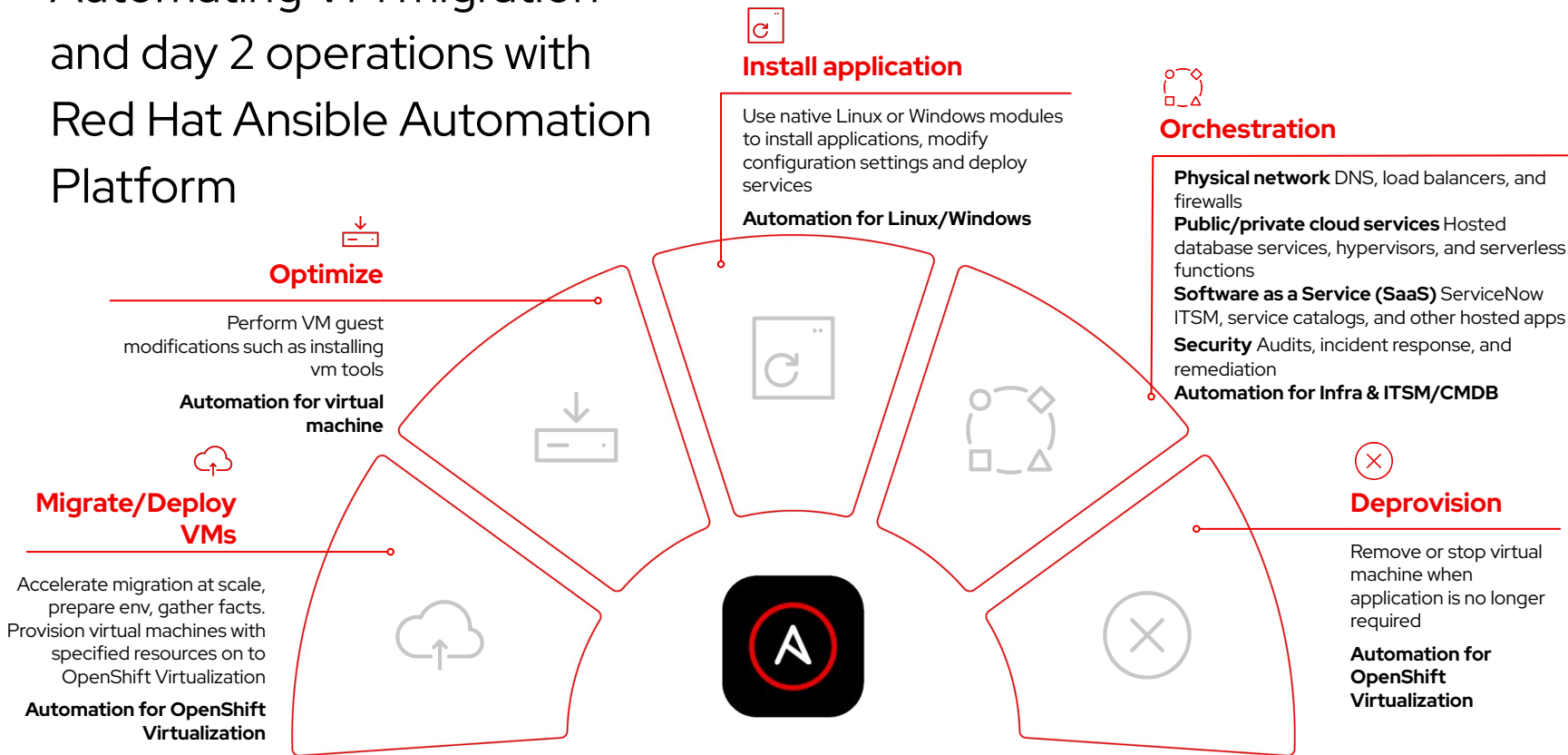
## Day 2 Operations

### 2 Steadystate



- Dynamic inventory of running VMs
  - VM snapshots or backup of VM for rollback
  - Migrate to another host
- Virtual Machine activities / life cycle
  - Gather Facts
  - Power off, reboot, power on
  - Memory, storage, vCPUs allocation
- Network adapter settings
  - Verify Operator is installed
  - Create Resources
  - Configure NIC
  - Create Bond
  - NAD Definitions (project scoped)
    - Add Secondary NIC to VM

# Automating VM migration and day 2 operations with Red Hat Ansible Automation Platform





# Partner Ecosystem

# Technology Partners to Complete the Solution\*

## Storage

Products for OpenShift  
Virt using CSI (container  
storage interface)



Hewlett Packard  
Enterprise



## Backup/DR

Products for OpenShift



## Networking

Products for OpenShift Virt  
using CNI (container  
networking interface)



ISOVALENT



TIGERA



CISCO



## Cloud Services

Current public cloud  
providers offering OpenShift  
virtualization



## Compute

Current public cloud  
providers offering OpenShift  
virtualization



Hewlett Packard  
Enterprise



# Next Steps

# Virtualization Migration Assessment

**Two-week onsite  
interactive workshop and  
follow-on report**

Want to migrate VMs quickly and safely to a mature platform? Kick off with a Virtualization Migration Assessment for your quickest path to migration

**Next Steps** →



## Inputs

Experienced Red Hat Architects run a short series of onsite workshops to develop your migration journey

Extensive review of your virtual environment, integrations including networking, storage, security, backup, and disaster recovery

## Outcomes

VMA Report with a tailored proposal for your complete migration including high-level recommendations and design considerations

Understanding of where you're going, how you'll get there, how long it will take and how much it will cost

Faster time-to-value by embarking on a customer journey with Red Hat Services



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# Thank you



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