

# A P E X Cloud Platform for Red Hat OpenShift



**Theo Crithary**

Principal Systems Engineer  
Customer Centric Cloud & Containers  
Dell Technologies Asia Pacific & Japan



# Dell & Red Hat Partnership

## 25 Year Partnership

Dell started shipping Red Hat Enterprise Linux on Dell hardware in 1999



## Red Hat Reinvestment in Dell



Red Hat continues to reinvest in Dell with resources, including Sales and Sales engineering headcount

## 90+ Resources

Global engineers and specialists who work on Red Hat documentation, certification, validation, and testing of Red Hat solutions at Dell Technologies

## Co-Engineered Solutions

Enterprise Ready Solutions, Ready Stacks, White Papers

- *OpenStack*
- *Edge*
- *OpenShift*
- *Ceph*
- *AI/ML*
- *SQL, SAP*
- *Storage*



## Red Hat Premier Global Partner





Dell Technologies holds the highest level of partnership with Red Hat






# Red Hat OpenShift Portfolio

A consistent platform no matter how or where you run

Start quickly, provider manages it for you

Red Hat OpenShift cloud services			
 Red Hat OpenShift Service on AWS <sup>1</sup> (ROSA)	 Azure Red Hat OpenShift (ARO)	 Red Hat OpenShift on IBM Cloud <sup>1</sup>	 Red Hat OpenShift Dedicated <sup>2</sup>

You manage it, for control and flexibility

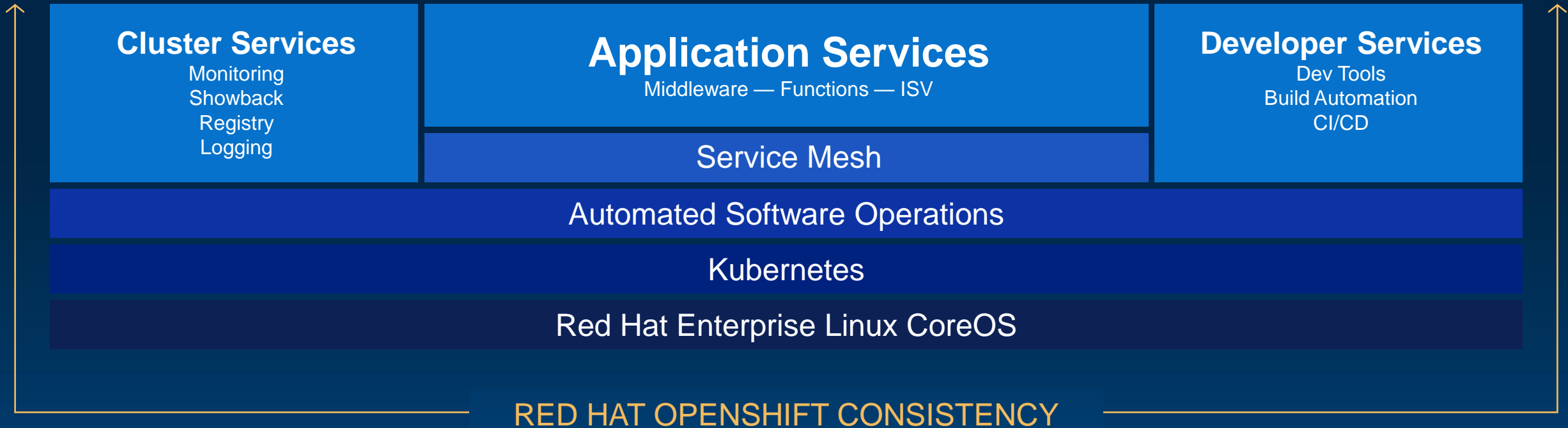
Self-managed Red Hat OpenShift			
 <b>Red Hat OpenShift Platform Plus</b>	 <b>Red Hat OpenShift Container Platform</b>	 <b>Red Hat OpenShift Kubernetes Engine</b>	

<sup>1</sup> Also available as Red Hat OpenShift Dedicated managed service running on user-supplied AWS infrastructure.

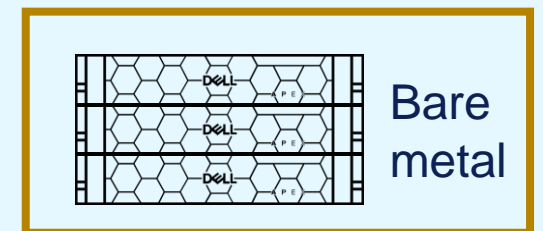
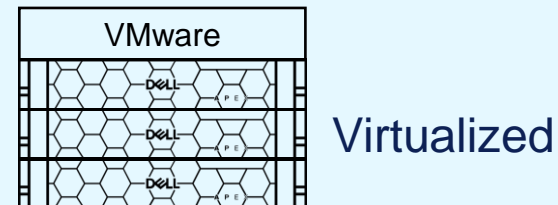
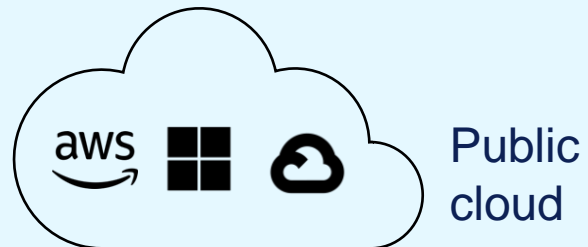
<sup>2</sup> Red Hat managed service running on user-supplied GCP infrastructure

<sup>3</sup> See [docs.openshift.com](https://docs.openshift.com) for supported infrastructure options and configurations OR [here](#) for Dell Technologies solutions

# How do customers deploy OpenShift today?



## DEPLOYMENT OPTIONS



INTRODUCING

# DELL Technologies | A P E X Cloud Platforms

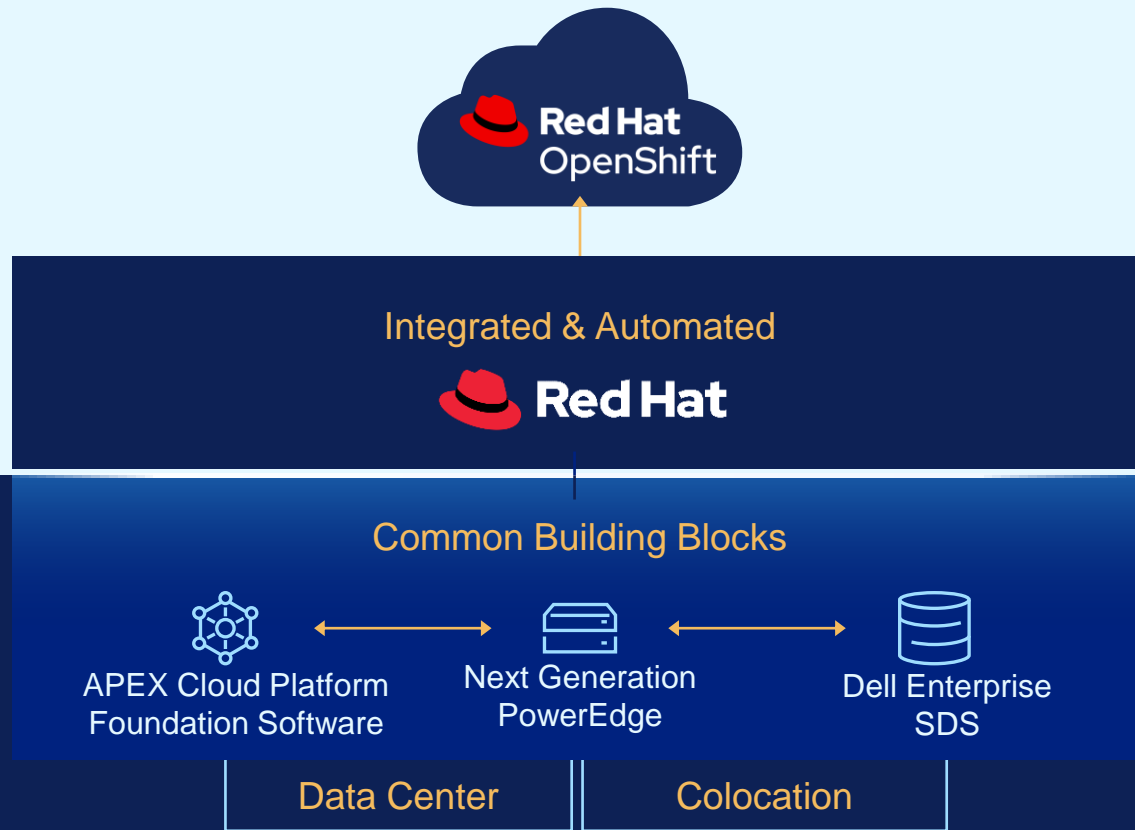
Empower unrestrained innovation across  
Multicloud environments.



# APEX Cloud Platforms



# APEX Cloud Platform for Red Hat OpenShift



Reduce cost and complexity



Optimize workload outcomes



Enhance security and governance

*So you can...*



Enable rapid development and deployment of revenue-generating apps



90% faster upgrades<sup>1</sup>



90% faster deployment<sup>2</sup>



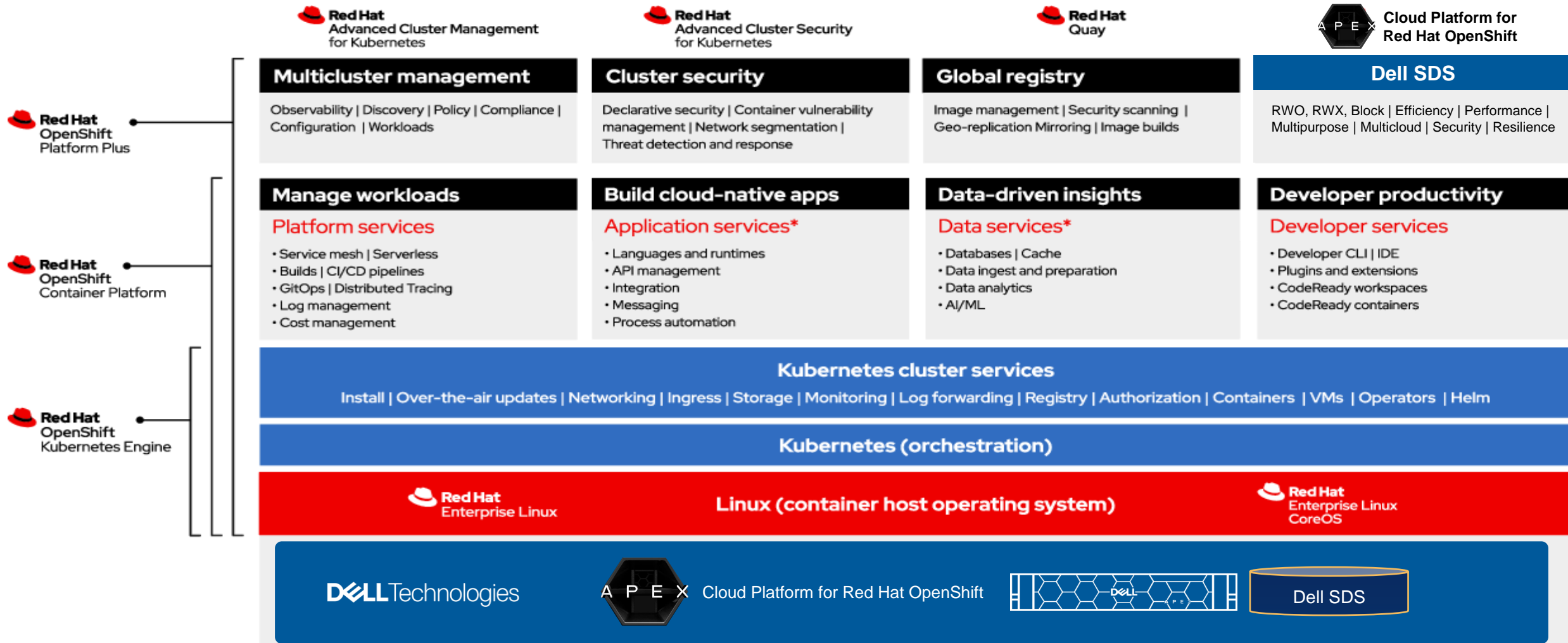
First fully integrated purpose built OpenShift solution<sup>3</sup>

<sup>1</sup> Based on internal testing, August 2023

<sup>2</sup> Based on internal testing, September 2023

<sup>3</sup> Dell APEX Cloud Platform accelerates your modernization strategy for containers and virtual machines with the first fully integrated application delivery platform purpose-built for Red Hat OpenShift

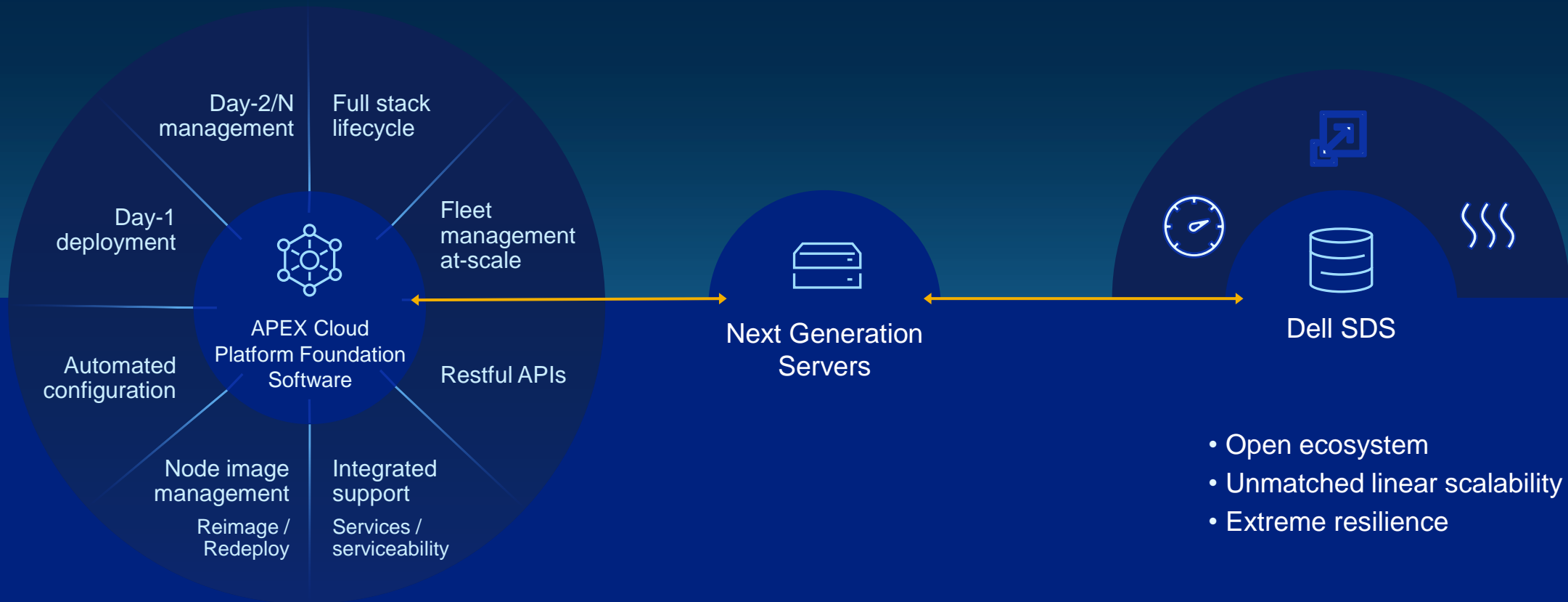
# Red Hat OpenShift + Dell Technologies





# What is an APEX Cloud Platform

Leveraging the best of Dell Innovation to deliver new platforms for Multicloud



- Open ecosystem
- Unmatched linear scalability
- Extreme resilience

# Flexible, factory-ready configurations for datacenter, edge and ROBO



CPU-dense nodes  
in a small 1U footprint

## MC-660



Balanced CPU/Storage for  
demanding workloads

## MC-760



Flexible, ruggedized  
multi-node edge solution

## MC-4000x/45x0x\*

Form factor:

1U rackmount

2U rackmount

2U rack or flex mount,  
ruggedized multi-node chassis

Use cases:

Compute-dense edge, ROBO and core  
use cases with moderate storage capacity

High performance app consolidation  
with balance of performance and capacity

Compute optimized for space-constrained,  
challenging edge and ROBO locations

CPU:

Intel 4<sup>th</sup> Gen Xeon Scalable Processors

Intel 4<sup>th</sup> Gen Xeon Scalable Processors

Intel 3<sup>rd</sup> Gen Xeon Scalable Processors

Memory:

Up to 4TB

Up to 4TB

Up to 512GB

Storage  
options:

NVMe | SSD

NVMe\* | SSD | Hybrid

NVMe

Nvidia GPU:

2 x A2

4 x A2  
2 x A16 | A30 | A40

2 x A2  
1 x A16 | A30 | A40

\*MC-4000x/45x0x available post-RTS

\*MC-760 All-NVMe configuration available post-RTS

# Unique Value Proposition

Why is it differentiated in the market?





# Turn Key Appliance

# Purpose built to transform OpenShift on-prem

Complete Application Delivery Platform for the entire lifecycle of your applications



Jointly  
Engineered



Fully  
Integrated



Automated



Supported



Consistent



## Reduce Cost & Complexity

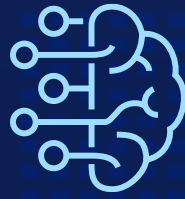
On bare metal infrastructure with extensive deployment and lifecycle management automation

## Optimize Workload Outcomes

On infrastructure for mission-critical applications and a consistent application environment across clouds

## Enhance Security & Governance

With intrinsic security throughout the stack and OpenShift governance built-in



# Integration



# Consistent Hybrid Management Experience

Red Hat OpenShift

Administrator

Home

Dell APEX Cloud Platform

Operators

Workloads

Networking

Storage

Builds

Observe

Compute

User Management

Administration

You are logged in as a temporary administrative user. Update the [cluster OAuth configuration](#) to allow others to log in.

Dell APEX Cloud Platform

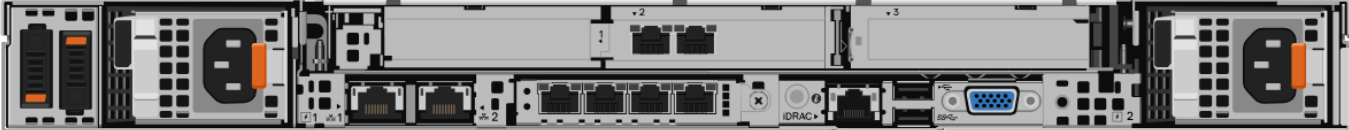
OverviewInventoryUpdatesSecuritySettingsSupport

nn22-app2-raven.powerx.delllabs.net > J2FW5X3

Physical View

Actions

Front viewBack view



Power supply information

OverviewAlerts

Health	Manufacturer	Missing	Name
HEALTHY	DELL	false	Power Supply 2
Part number	Revision number	Slot	Serial number
07DWXYA01	00.ID.9C	2	CNDED0032N0UIZ

Overview

Boot devices

Alerts

Node health

System LED

Power state

Service tag

Role node

Manufacturer

Node slot

Model

Management IP address

iDRAC IP address

CPU number

Location

OK

Healthy

Powered on

J2FW5X3

Worker

Dell Inc.

1

APEX MC-660

172.19.17.51

172.19.17.39

2

nn22



# Deployment

# Automated infrastructure deployment

	OpenShift Procedures	ACP Installation
Prerequisites	1 day	N/A
Local Registry and mirror the OCP image	1 – 3 days	1 hour
Generate agent.iso image file <i>(Requires familiarization with files and modifying the content)</i>	1 – 3 days	N/A
Prepare Nodes and provision OCP	1 – 2 days	4 hours
Monitor provisioning process Post installation config	1 – 2 hours	1 hour
TOTAL ~ 80 hours →		<b>6 hours</b>

**Reduce deployment time by over 90%**

Faster time to value

Predictable deployment

Reduces errors

Easily repeatable

Minimizes IT cycles

Addresses skills gaps



# Continuous Validated State

# Full stack lifecycle management

Ensuring a continuously validated state on APEX Cloud Platform for Red Hat OpenShift

The APEX Cloud Platform follows a Security Development Lifecycle, which defines the products and services that are continuously serviced and supported.

Update Type	Typical Cadence	Description
Patch Updates	Monthly	Patch updates primarily contain quality and reliability improvements. To fix critical or security issues, hotfixes might be released sooner than monthly.
Baseline Updates	Quarterly	Baseline updates include new features and improvements. They typically require host system reboots and might take longer.
Hotfixes	As Needed	Hotfixes address blocking issues that could prevent regular patch or baseline updates.

APEX Cloud Platform Foundation Software Baseline v3.00				APEX Cloud Platform Foundation Software Baseline v3.01			
Initial Baseline				Next Baseline			
Software				Software			
Red Hat OpenShift		4.13.12		Red Hat OpenShift		4.14.10	
Cloud Platform Manager		3.00.00		Cloud Platform Manager		3.01.00	
OpenShift Integration		3.0.0		OpenShift Integration		3.1.0	
Platform				Platform			
BIOS		2.45		BIOS		2.45	
iDRAC		5.10.05.00		iDRAC		5.50.00.00	
HBA Firmware		3.00.13.20		HBA Firmware		3.00.13.20	
HBA Drivers		3.00.13.20		HBA Drivers		3.00.13.20	

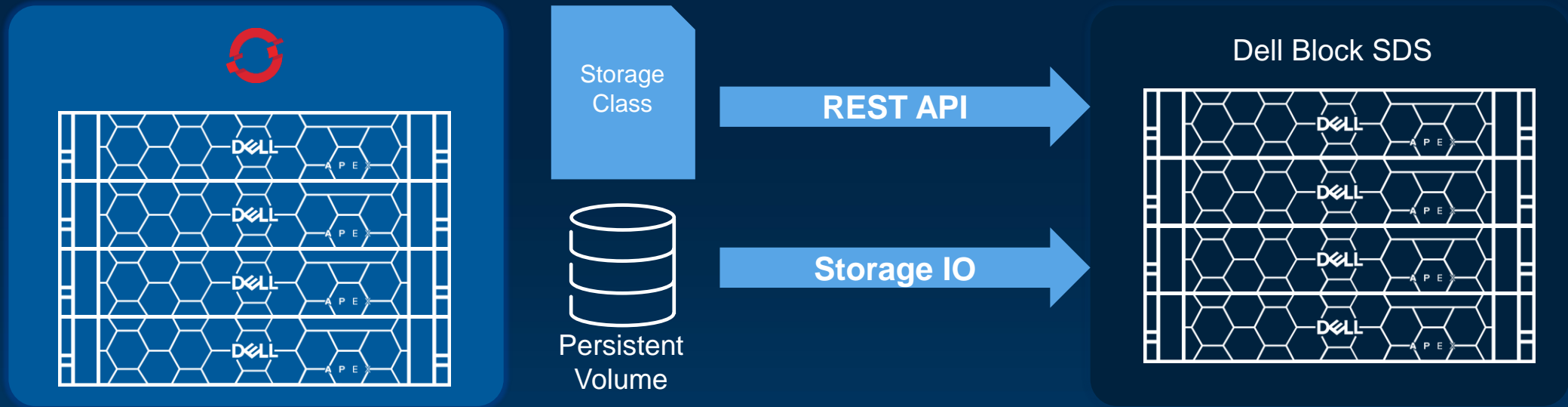
- ✓ Single consolidated workflow for all updates
- ✓ Keeps platform in a validated known good state
- ✓ No interruption to workloads running on the platform
- ✓ Avoids potential update failures with comprehensive health checks before and during an update



# Dell SDS



# Dell SDS

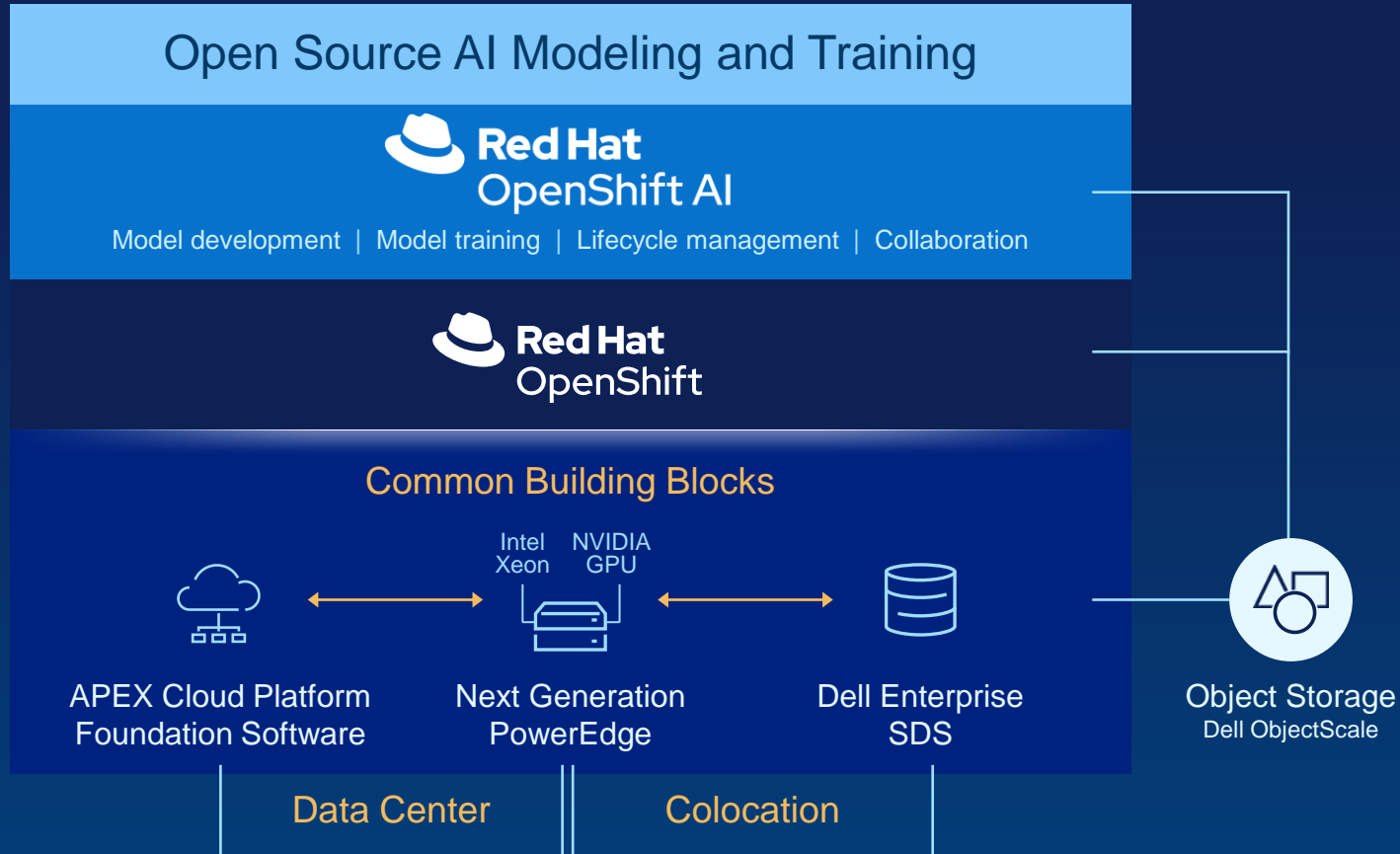


- Dell SDS is a scalable, high-performance, resilient storage platform
- Persistent Volume Claims are defined based on a Storage Class
- The Persistent Volume is automatically created based on the Storage Class Binding
- The underlying Volume is created automatically by the CSI driver

# Use Cases

What are some examples of apps that run on this platform?

# Dell Validated Design for Red Hat OpenShift AI



**Simplify AI deployment and operations** to train, serve, monitor, and manage the life cycle of AI/ML models and applications, from experiments to production.

**Red Hat OpenShift AI** provides a fully-supported MLOps environment.

## Accelerate AI Value

Dell Services can accelerate the value of your customer's data with [AI and Data Science services](#).

**Solution Brief:** <https://www.delltechnologies.com/asset/en-us/solutions/apex/briefs-summaries/apex-cloud-platform-for-red-hat-openshift-workload-solution-brief.pdf>

**Dell Validated Design:** <https://infohub.delltechnologies.com/t/design-guide-implementing-a-digital-assistant-with-red-hat-openshift-ai-on-dell-apex-cloud-platform-1/>

# APEX Cloud Platform for Red Hat OpenShift

## Key Customer Use Cases

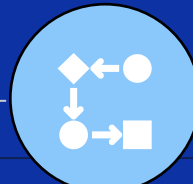
### Emerging Use Cases



Multi-cloud  
Development  
Platform with Red  
Hat OpenShift



Cloud Native  
Applications  
Stateful and  
Stateless



Serverless Event  
Driven  
Applications  
Knative



AI / ML Platform  
RHODS  
NV AIE  
OpenVino



Stateful Database  
MSSQL Postgres  
MariaDB MySQL  
databases



DevOps Platform  
CI / CD  
Pipelines



Infrastructure As A  
Service  
ACM  
Argo  
ZTP



Virtualization Platform  
OpenShift  
Virtualization

### Core Use Cases



# Demo's and Hands On



Experience the platform



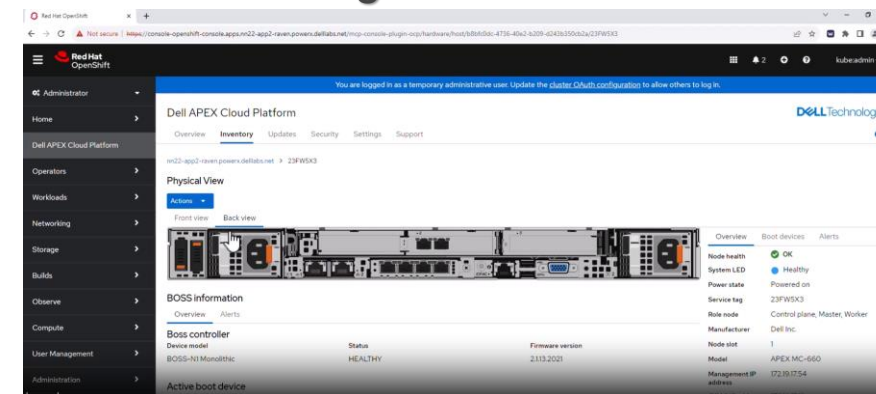
# Product Demo's

## Deployment Demo



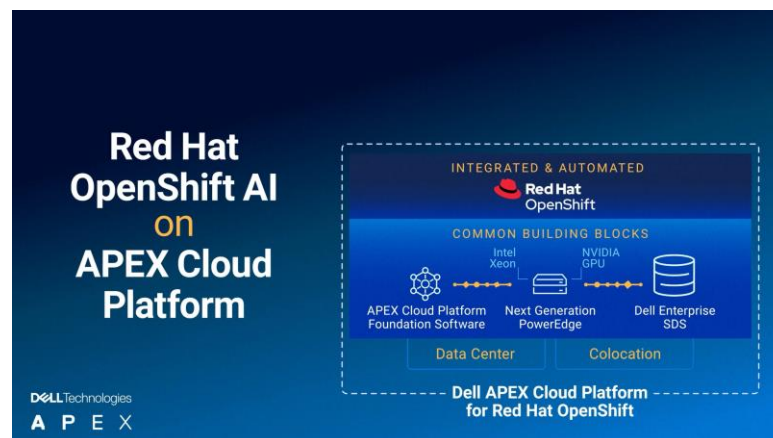
<https://www.delltechnologies.com/asset/en-us/solutions/apex/briefs-summaries/apex-cloud-platform-for-openshift-deployment-automation-video.mp4>

## Integration Demo



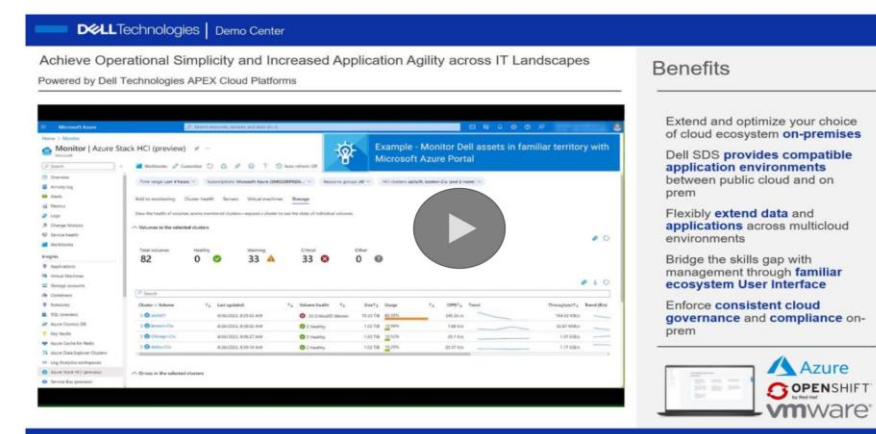
<https://www.delltechnologies.com/asset/en-us/solutions/apex/educational-training/acp-for-openshift-web-console-integration-video.mp4>

## AI on ACP Demo



<https://www.delltechnologies.com/asset/en-us/solutions/infrastructure-solutions/educational-training/red-hat-openshift-ai-demo.mp4>

## Demo Center



<https://democenter.dell.com/video/VmtsRUxUQXdOakZmVm1sa1pXOWZNVFkz>



# CSC Demo's

## Custom CSC Demo's

### APEX Cloud Platforms at the CSC

Use this page to learn about APEX Cloud Platforms capabilities at the CSC. Topics on this page:

[Overview](#) | [CSC use cases for APEX Cloud Platforms](#) | [CSC configurations for Microsoft Azure](#) | [CSC configurations for Red Hat OpenShift](#)

Customer Solution Centers (CSC) enable customers to experience first-hand how Dell APEX Cloud Platforms deliver a streamlined, automated experience and meet organizations where they are on their multicloud journey.

Our globally available APEX Cloud Platform capabilities include real-world use cases that empower account teams and partners to engage in deeper technical discussions around the solution's key benefits and outcomes.

The CSC currently offers Microsoft Azure and Red Hat OpenShift platform configurations.

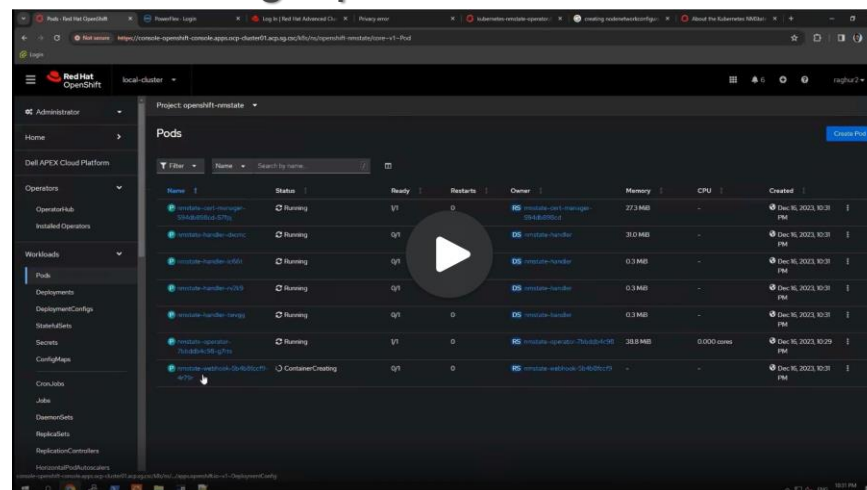
If you would like to know more about our APEX Cloud Platform capabilities, contact a [CSC location](#) directly or [schedule an engagement](#).

For self-service resources such as Interactive Demos, Hands-on Labs and Video Shorts, see the available APEX Cloud Platforms offerings on [Demo Center](#).



<https://dell.sharepoint.com/sites/CSC/SitePages/APEX-Cloud-Platform-at-the-CSC.aspx>

## Installing OpenShift Virtualization



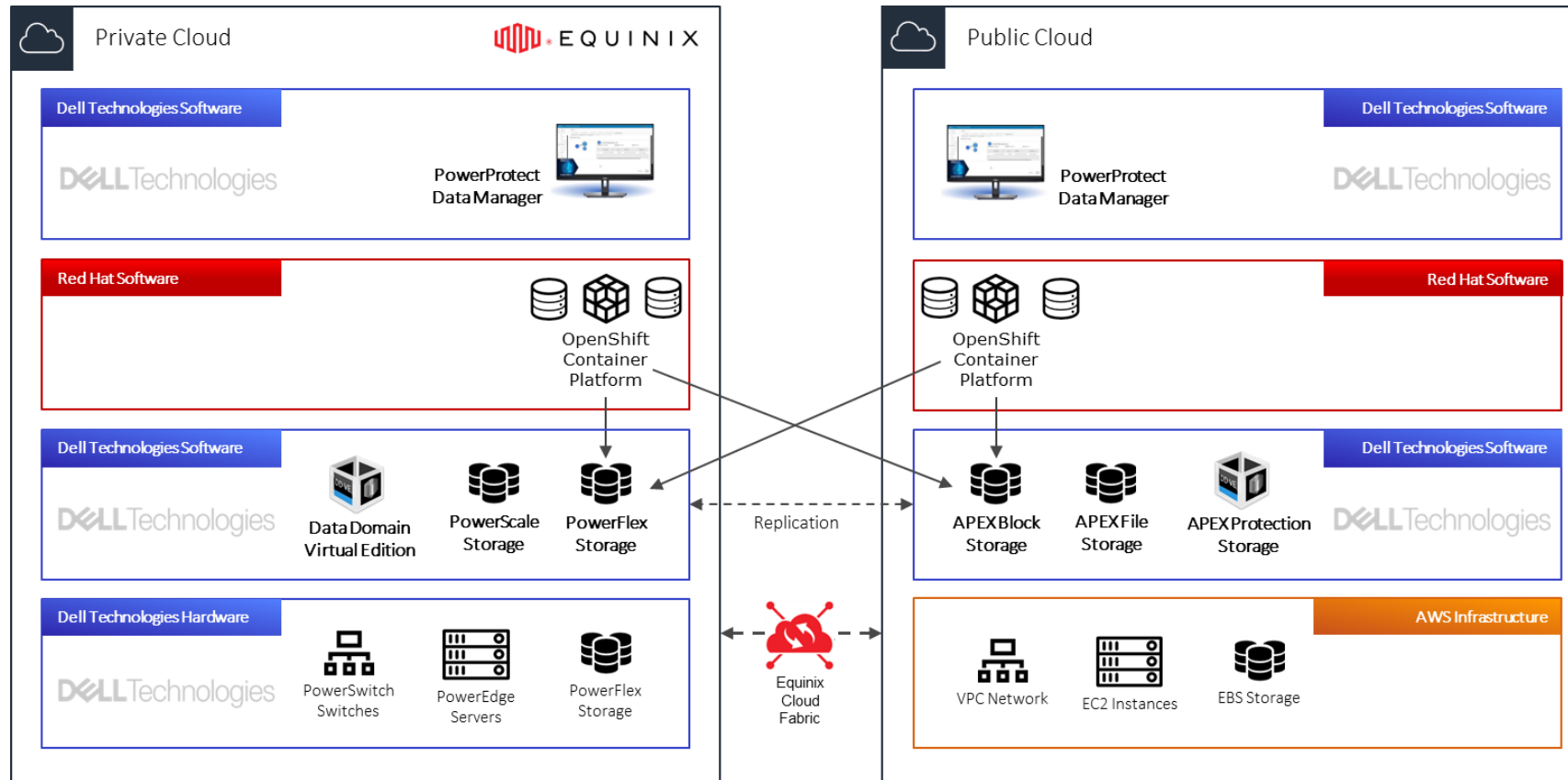
## VMware Migrations

**Apex Cloud Platform for  
RedHat OpenShift**

**Migrating VMs from VMWare to OpenShift**

Ramanan Raghuraman  
Solutions Architect, Dell CSC

# Multi-cloud Containers



**Cloud Native Storage for on-premise and public cloud**

**Supports Container Bursting, Mobility, Copy Data Management and other use cases**

**Business Continuity / DR**

**Consistent Operations**

Consistent Container Management

Consistent Storage Management

Consistent Data Protection