

# EXPLORE

VCFB1440LV

## All About vSphere 8 What's New in the Technology

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#vmwareexplore #VCFB1440LV

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# vSphere IaaS Control Plane



# New and Improved in the Kubernetes World

## VMware IaaS Control Plane



Cluster  
Autoscaler for  
Worker Nodes



vSAN  
Stretched  
Cluster Support



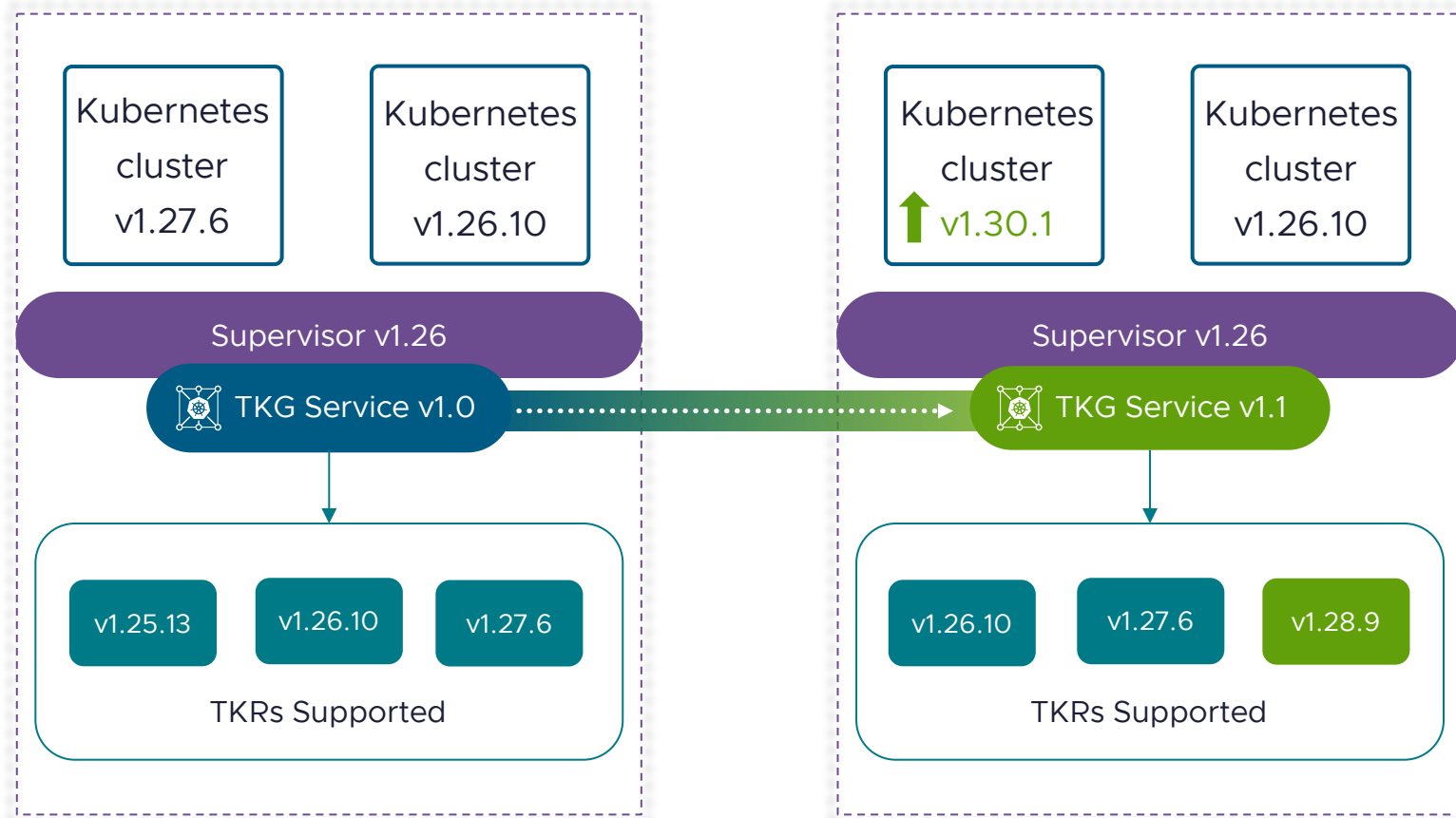
Supervisor  
Certificate  
Rotation



VM Service  
Expanded  
Configuration

# Stay Close to Upstream Kubernetes

## TKG Service Versions Decoupled From vCenter



Async releases align with upstream Kubernetes

Independent of Supervisor or vCenter versions

Quickly deliver new Kubernetes version to consumers

# Easy Admin UI for VMs and TKG Clusters

## Local Consumption Interface (LCI)

Virtual Machine  
Deploy and manage Virtual Machines using Kubernetes APIs.  
2 Virtual Machines

Tanzu Kubernetes Grid  
Deploy and manage fully upstream compliant Kubernetes clusters.  
1 TKG Cluster

Volume  
Deploy and manage your objects.  
0 Volumes

Network  
Deploy and manage your Kubernetes network services.  
2 Network Services

### New Kubernetes Cluster

A Tanzu Kubernetes cluster is an opinionated, production-ready full distribution of the open-source Kubernetes container orchestration platform that is built, signed, and supported by VMware.

Configuration Type	Cluster Type	ClusterClass API
> <span>✔</span>	Configuration Type	Custom Configuration

2. General Settings Define the storage and networking settings for this cluster

Cluster Name 📘 tkg-cluster-fibq

Cluster Class 📘 tanzukubernetescluster

Tanzu Kubernetes Release 📘 v1.27.11---vmware.1-fips.1-tkg.2

Network Settings

CNI 📘  Antrea  Calico

Pods CIDR 📘 192.168.156.0/20  
The custom CIDR block cannot overlap with the Supervisor workload network.

#### Kubernetes Resource YAML

```
1 apiVersion: cluster.x-k8s.io/v1beta1
2 kind: Cluster
3 metadata:
4   name: tkg-cluster-fibq
5   namespace: test
6   labels:
7     tkg-cluster-selector: tkg-cluster-fibq
8 spec:
9   clusterNetwork:
10    cni:
11     name: antrea
12    pods:
13     cidrBlocks:
14     - 192.168.156.0/20
15    services:
16     cidrBlocks:
17     - 10.96.0.0/12
18     serviceDomain: cluster.local
19    topology:
20     class: tanzukubernetescluster
```

New User Interface  
for Core Service  
Consumption

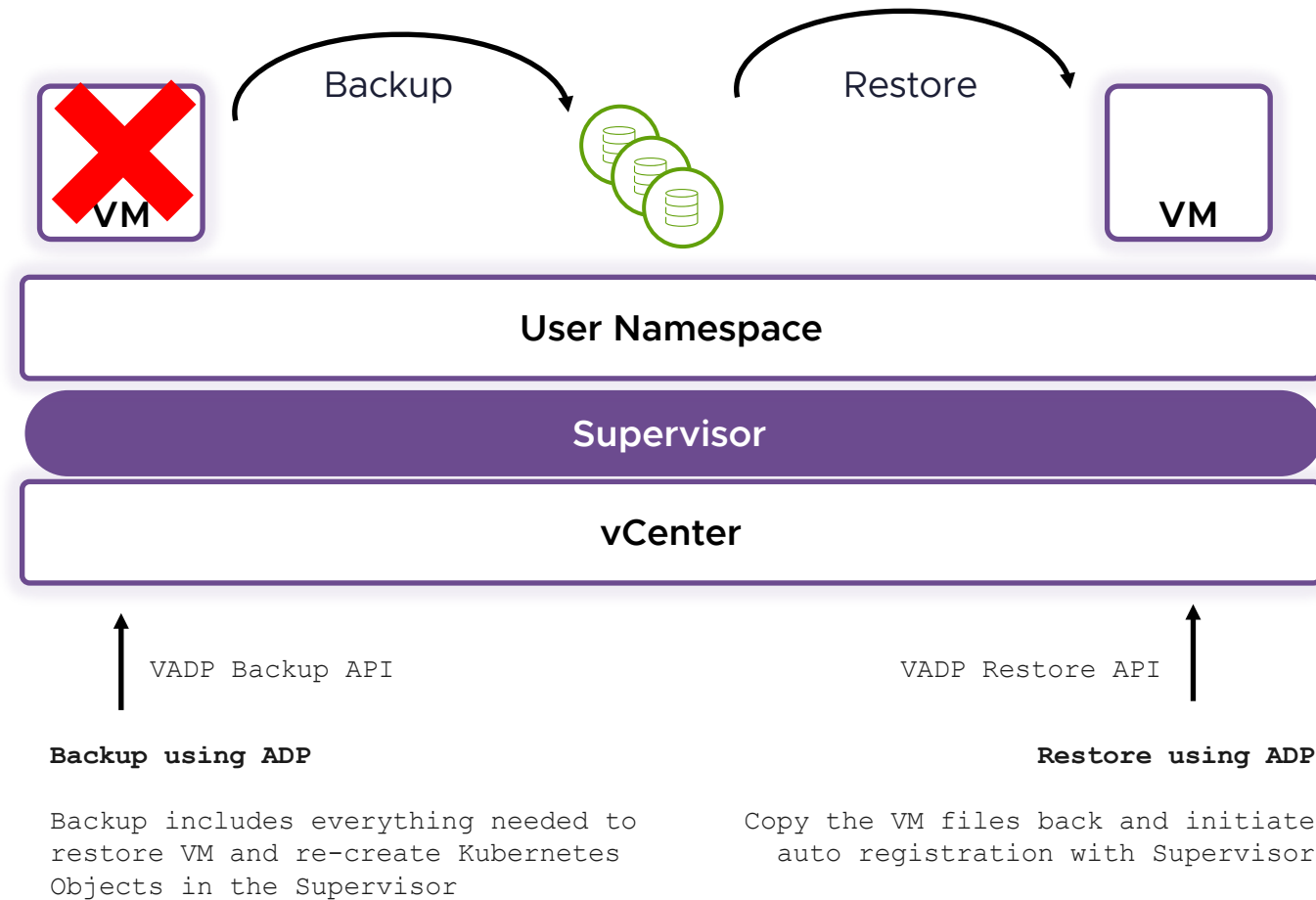
Supports Complex  
VM and TKG  
deployments

Automatic YAML  
generation

Deploy Load  
Balancers and  
Persistent Volumes

# Backup & Restore VMs with your Kubernetes Tools

## VM Service Advanced Data Protection Integration



Backup and restore VMs using Preferred VADP solution

Automatic re-creation of custom Supervisor resources upon restore

New API for manual troubleshooting

Backup of VM or entire Namespace

**Requires no changes from VADP vendor**



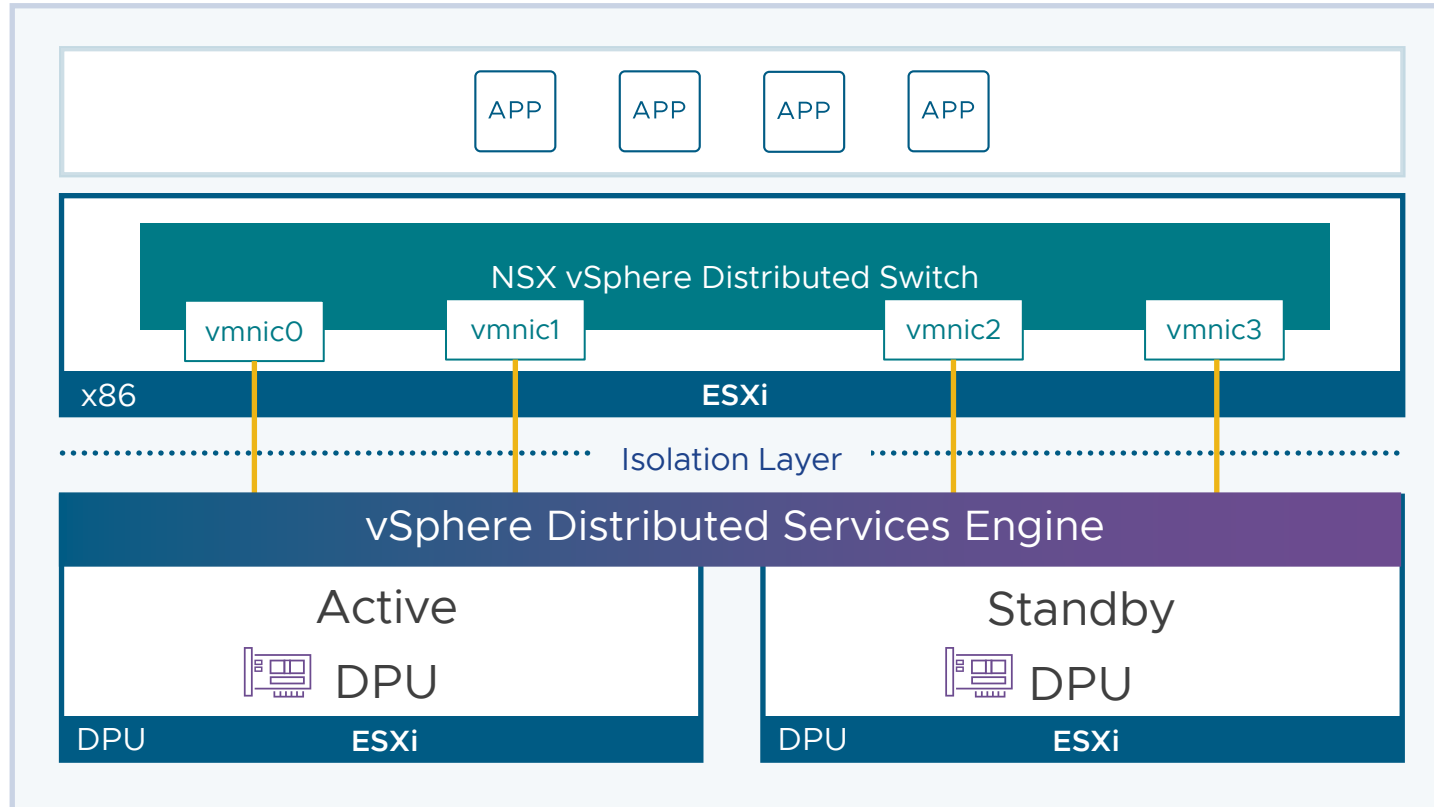
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Hardware  
Support



# High Availability DPU Configuration Keeps You Online...

## Dual DPU Support with vSphere Distributed Services Engine



High Availability  
with Active &  
Standby states

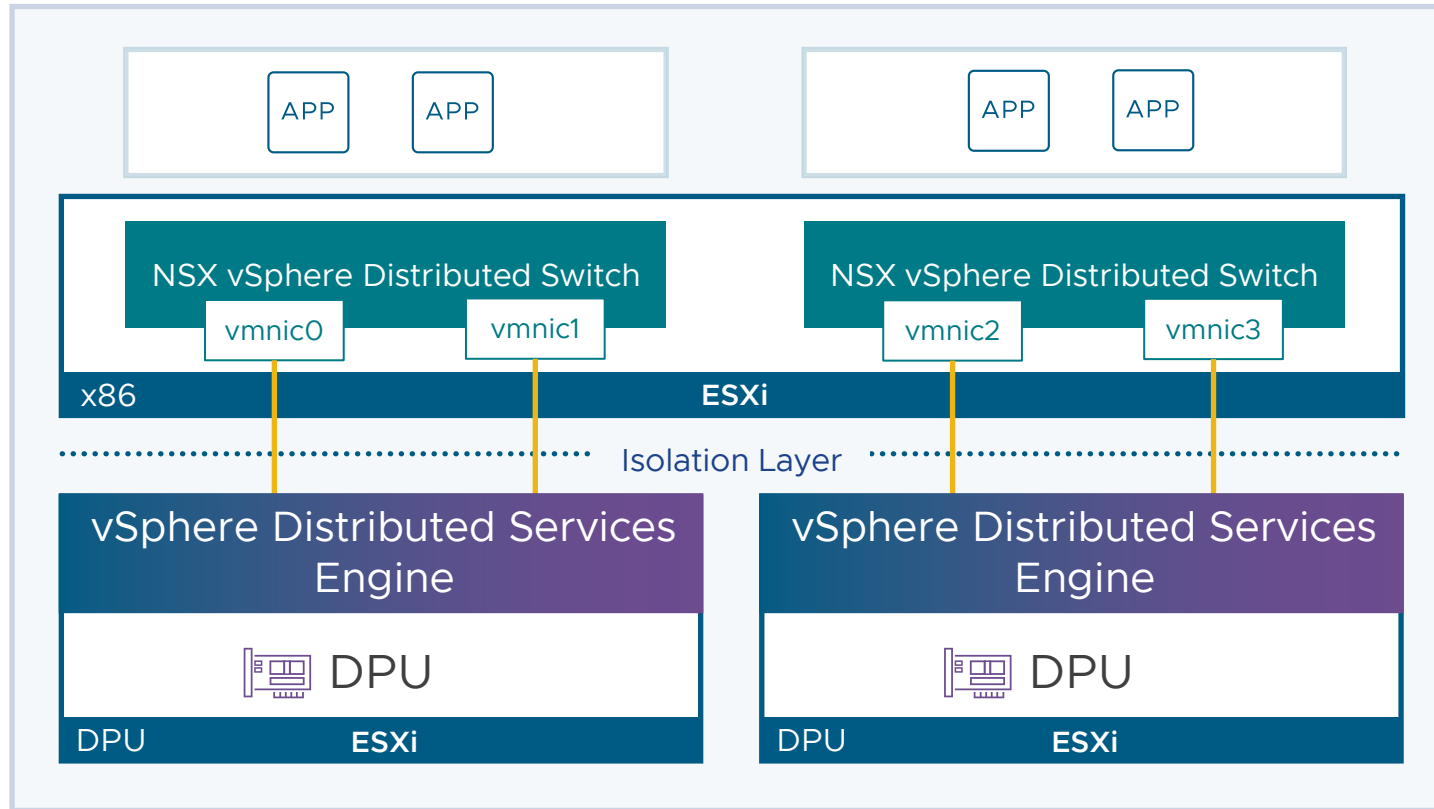
Brief interruption  
during failover

Does not fail back,  
other DPU just  
becomes standby

**Protect against  
DPU failure or  
loss of uplink**

# ...or Increases Network Offload Capacity

## Dual DPU Support with vSphere Distributed Services Engine



Second DPU can be used for an additional distributed switch

No failover between DPUs

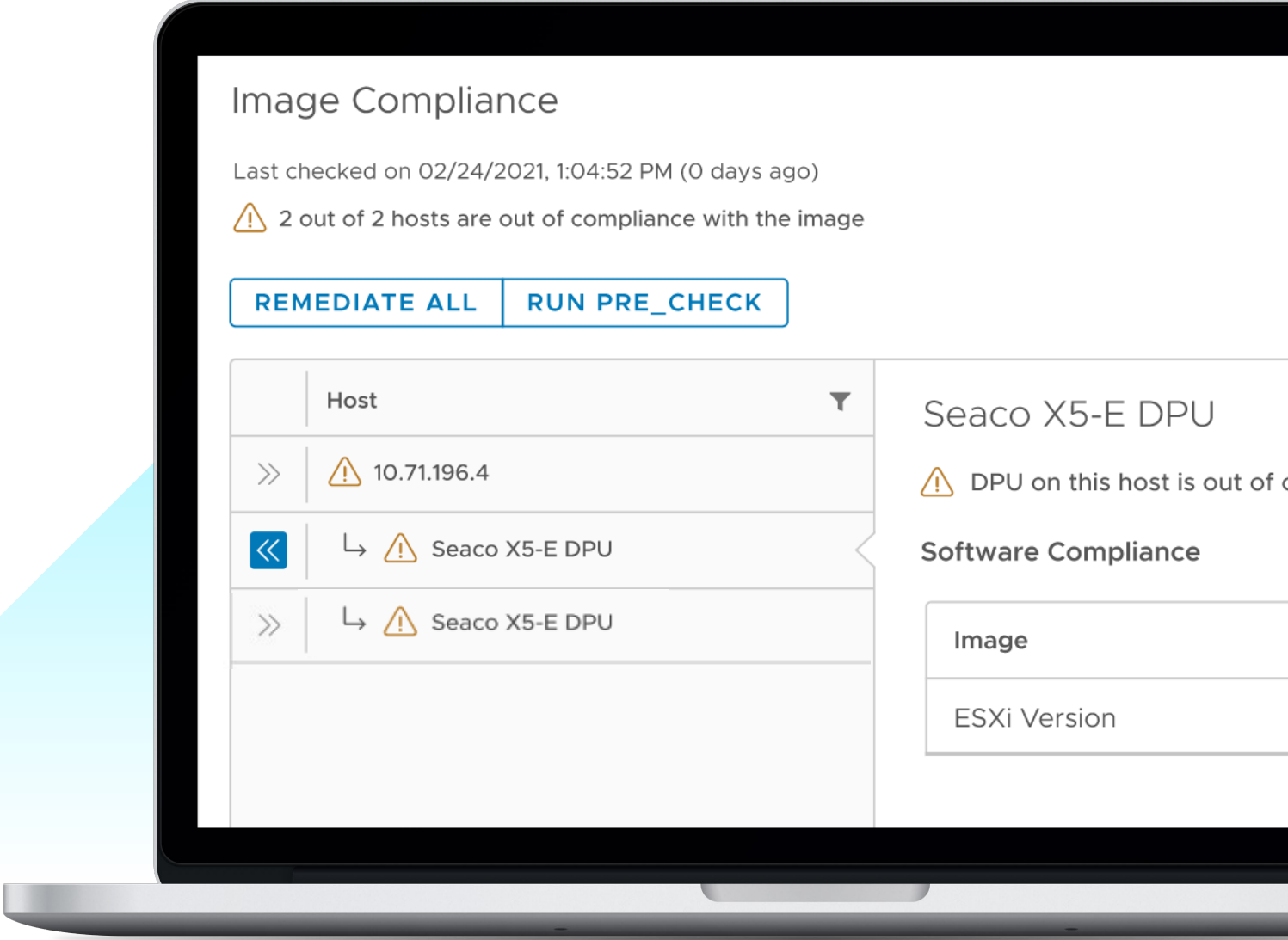
Full isolation between switches and DPUs

**Twice the offload capacity per host**

# Manage Multiple DPU Instances with a Single Image

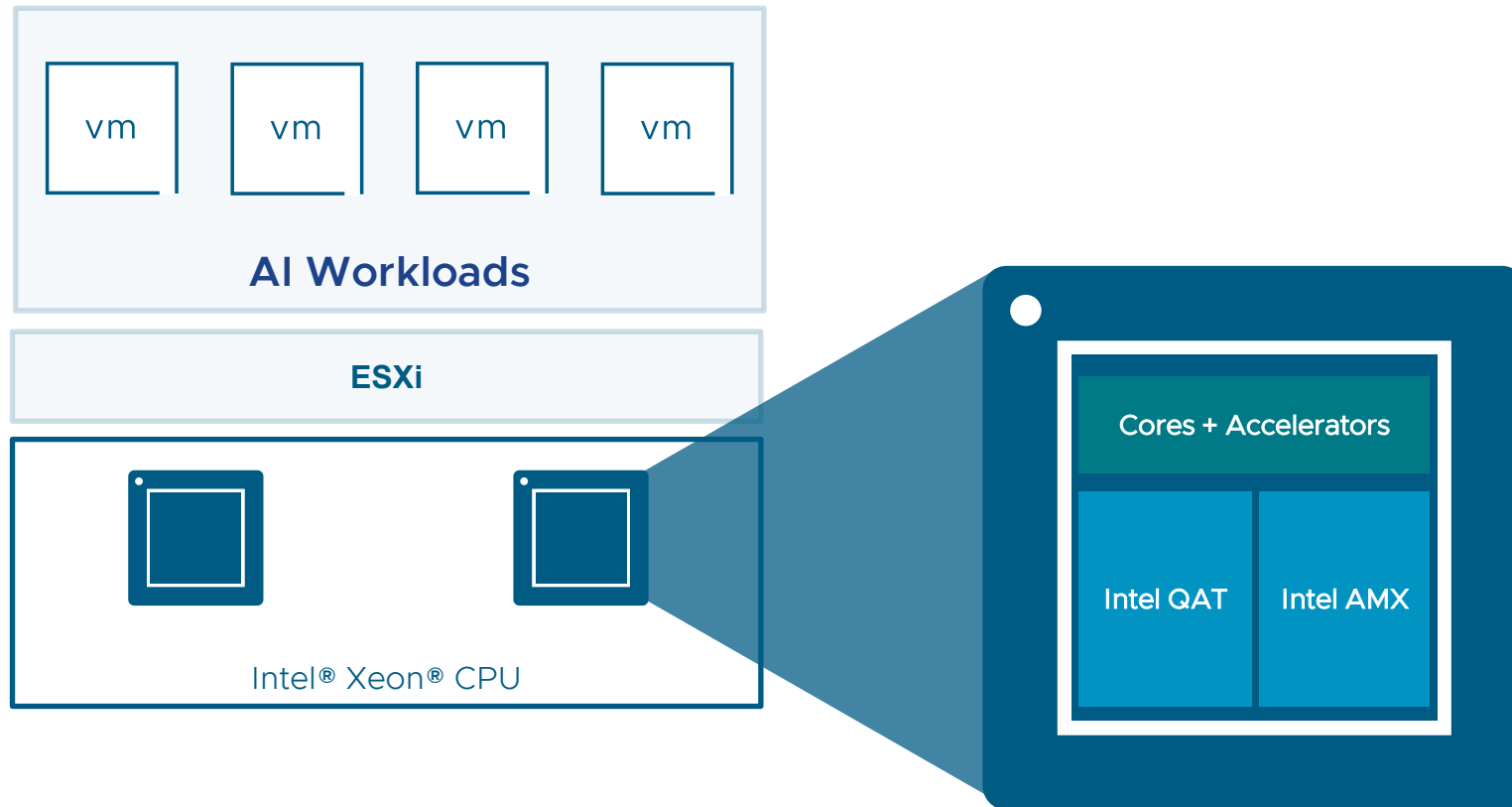
vSphere Lifecycle Manager Dual DPU Support

**Remediate Dual DPU Configurations**



# Accelerate AI/ML Workloads & Address Workload Demands

Intel® Xeon® CPU



Built-in accelerators for:

- Intel Quick Assist Technology (QAT)
- Intel Advanced Matrix Extensions (Intel AMX)
- Intel Advanced Vector Extensions ISA (Intel AVX-512)

Take advantage of high-bandwidth memory (HBM)

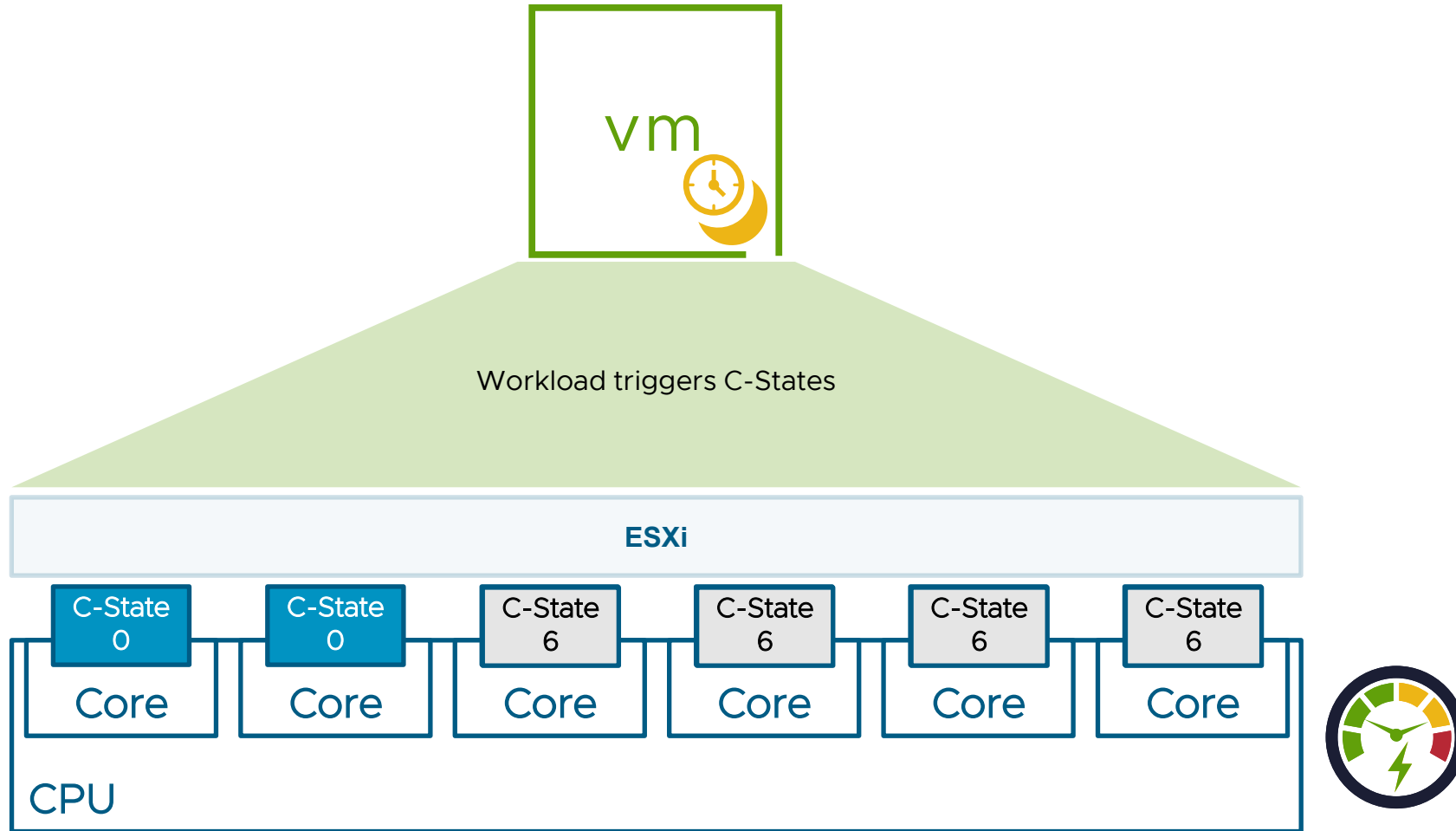
**Accelerate AI/ML workloads and other high-performance computing (HPC) application demands.**

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# Drive Energy Efficiency From the Workloads Themselves

## CPU C-State Virtualization



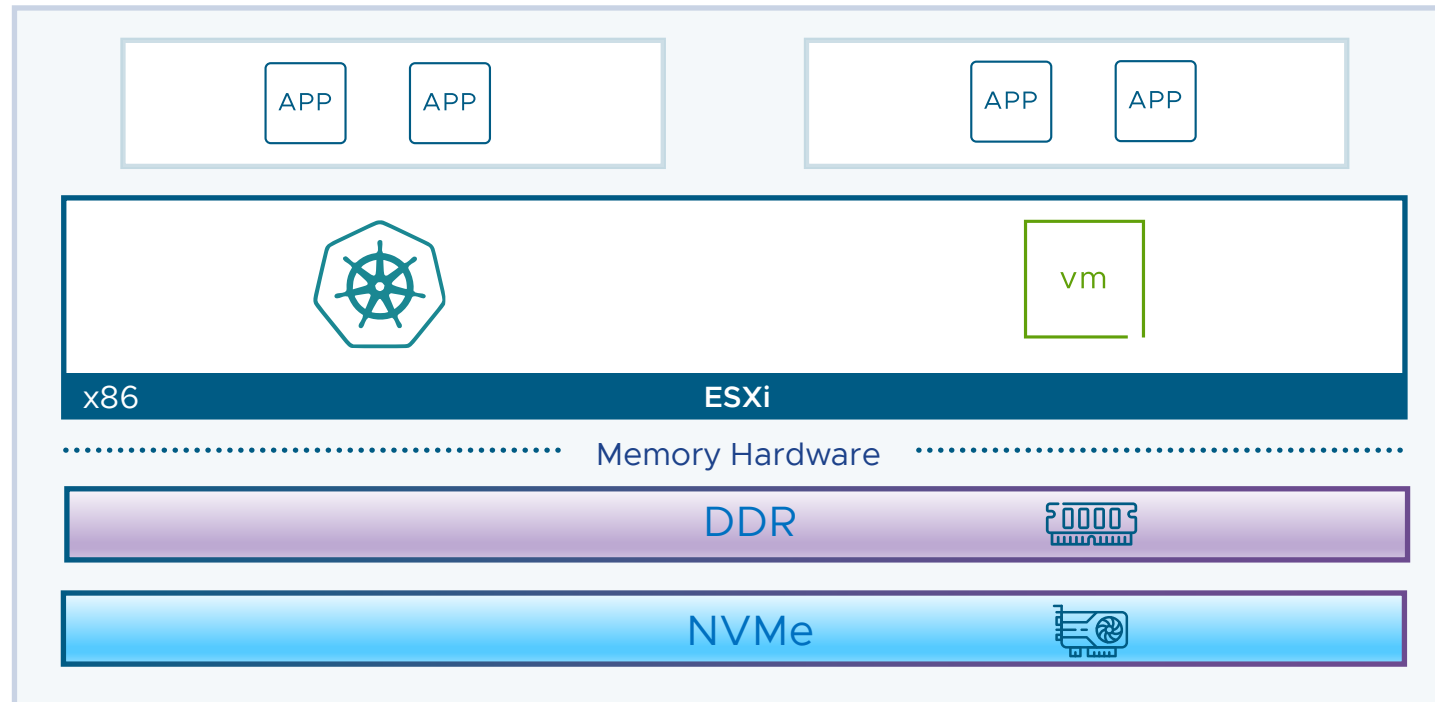
C-States allow workloads to invoke deep power saving modes in CPU

**Significant power savings, especially for edge & telco-type workloads**

# Scale Memory Capacity with Lower TCO

## Memory Optimization with NVMe

TECH PREVIEW



NVMe devices help optimize server resource usage

Addresses core-to-memory imbalance

More in-memory computing

**Run more workloads with better CPU utilization!**

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# Guest OS & Virtual Hardware





# Virtual Hardware 21

## Guest Operating Systems

### Virtual Hardware Innovations

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Latest Intel & AMD CPU support

Device Virtualization Extensions

Up to 128 PCI Passthrough I/O devices

Virtual HyperThreading

### Guest Services for Applications

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vSphere Datasets

Application-Aware Migrations

WSFC support using NVMe

Oracle Linux 9

Rocky Linux 8 & 9

Microsoft Windows 11

Microsoft Windows Server 2025

VMware ESXi 8

### Performance and Scale

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Up to 16 vGPU devices

Device Groups (DRS & HA)

High Latency Sensitivity with Hyperthreading

Up to 16 WSFC clusters per host

Virtual NUMA Controls in UI

Up to 256 NVMe 1.3 disks

OpenGL 4.3

UEFI 2.7A

# Reduce Application Admin Resistance to vMotion

## vSphere vMotion Notifications



Scripts hooked  
into VMware Tools

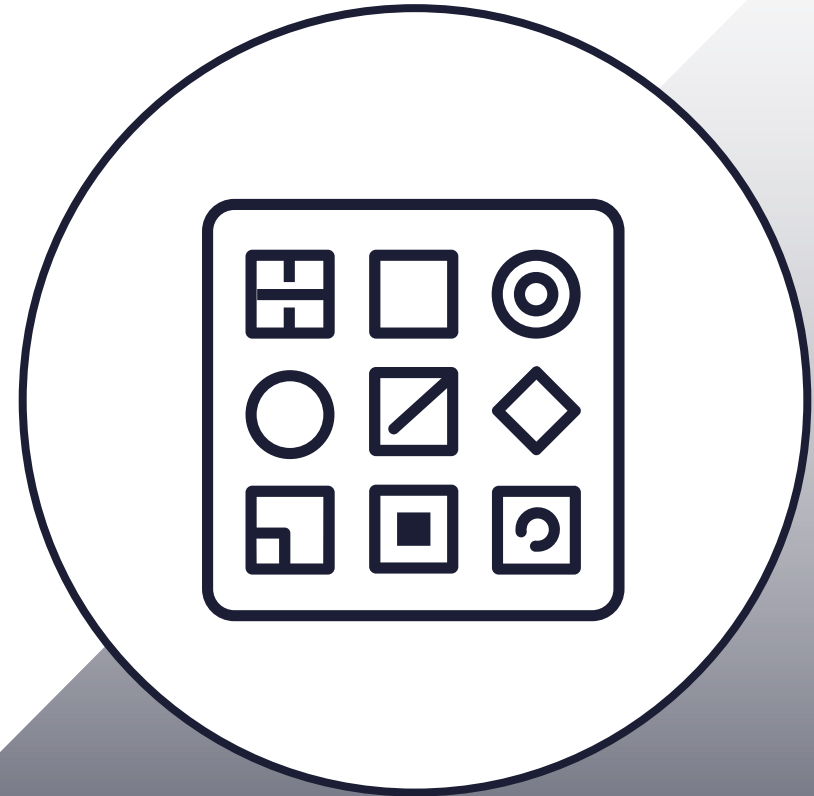


Notified of  
pending migration



vMotion waits for  
script success

LSI SAS to pvscsi;  
Drivers are in Windows




# More Flexible vTPM Provisioning

## vTPM on VMware vSphere


### TPM Provision Policy

Copy  Replace

 The virtual machine clone will be created with exact copy of the TPM device and will continue to have access to the source virtual machine's secrets. This may result in unintentional secret exposure if the cloned virtual machine is compromised.

### TPM Provision Policy

Copy  Replace

 The virtual machine clone will be created with a brand new TPM device, which will not have access to the source virtual machine's secrets. This may cause some applications to fail in unexpected ways.

vSphere 6.7 and 7 will simply clone the VM, as-is, **an exact copy**

vSphere 8 offers **the choice to replace the TPM** with a new, blank version

ovftool vTPM placeholder support, too

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# Lifecycle Management



ESXi Minimum Memory = 8 GB  
vCenter Server Sizing Choices = +2 GB

# Parting is Such Sweet Sorrow... Or Maybe Not!

## Deprecations & Removals in vSphere 8

### Deprecations

---

Fully supported until  
EOGS, won't be in  
vSphere.next

vSphere Update Manager baselines & APIs

Integrated Windows Authentication, direct RSA  
SecureID, and direct Smart Card Support

SD & USB-based Boot Devices for full install\*

Legacy BIOS (move to UEFI & Secure Boot)

NPIV on Fibre Channel

CIM & SLP support

Support for newly end-of-life Guest OSes\*

LSI SAS Guest OS SCSI Adapters

SDRS & SIOC for I/O Latency

### Removals

---

No longer present in  
vSphere 8

TPM 1.2 Support

Direct support for end-of-life CPUs\* (KB 82794)

Direct support for end-of-life I/O devices\*  
(KB 88172)

Support for older end-of-life Guest OSes\*  
(Notable entries include MacOS, though,  
KB 88698)

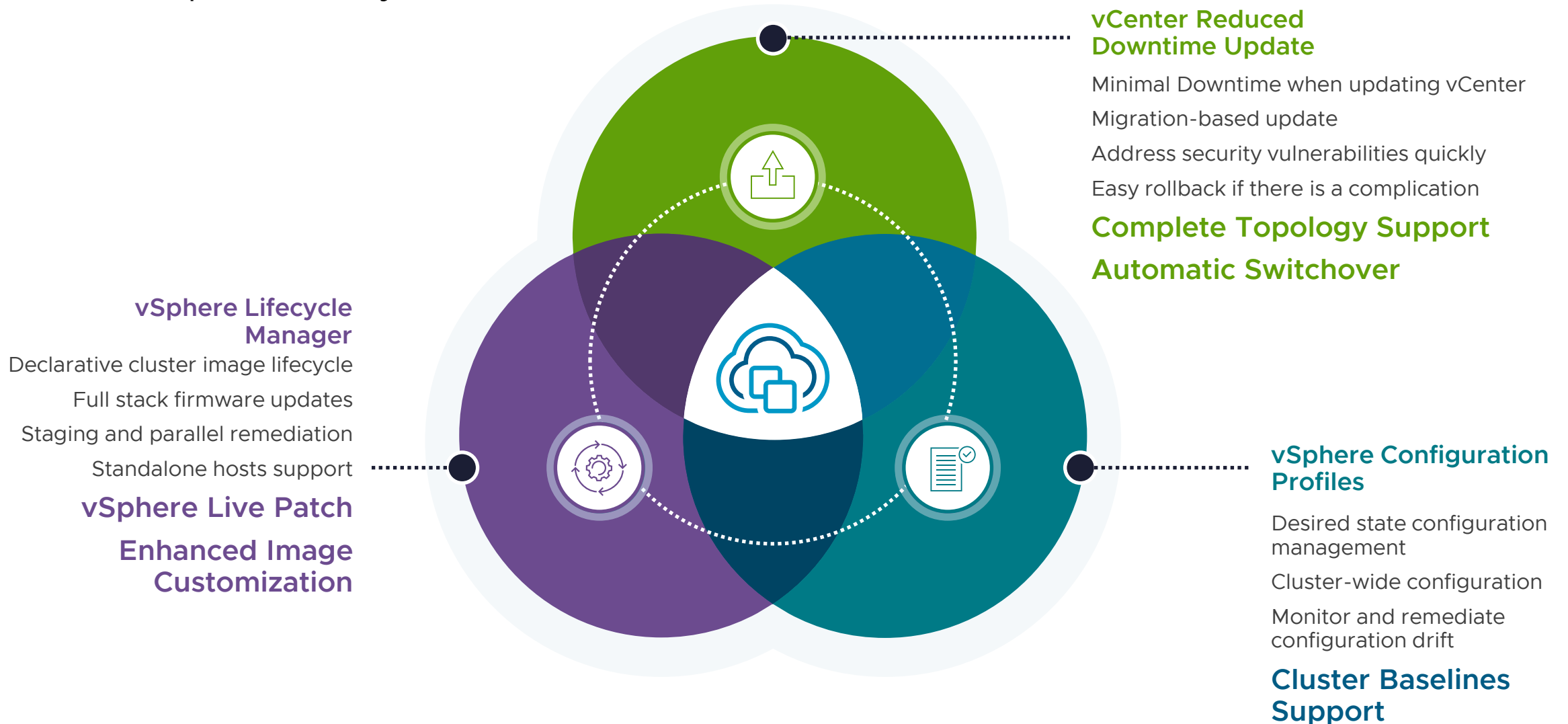
Local vSphere Client Plugins

Software FCOE Adapters, RoCE v1

Removal of 32-bit userworld/binary support

# Keeping vSphere Updated

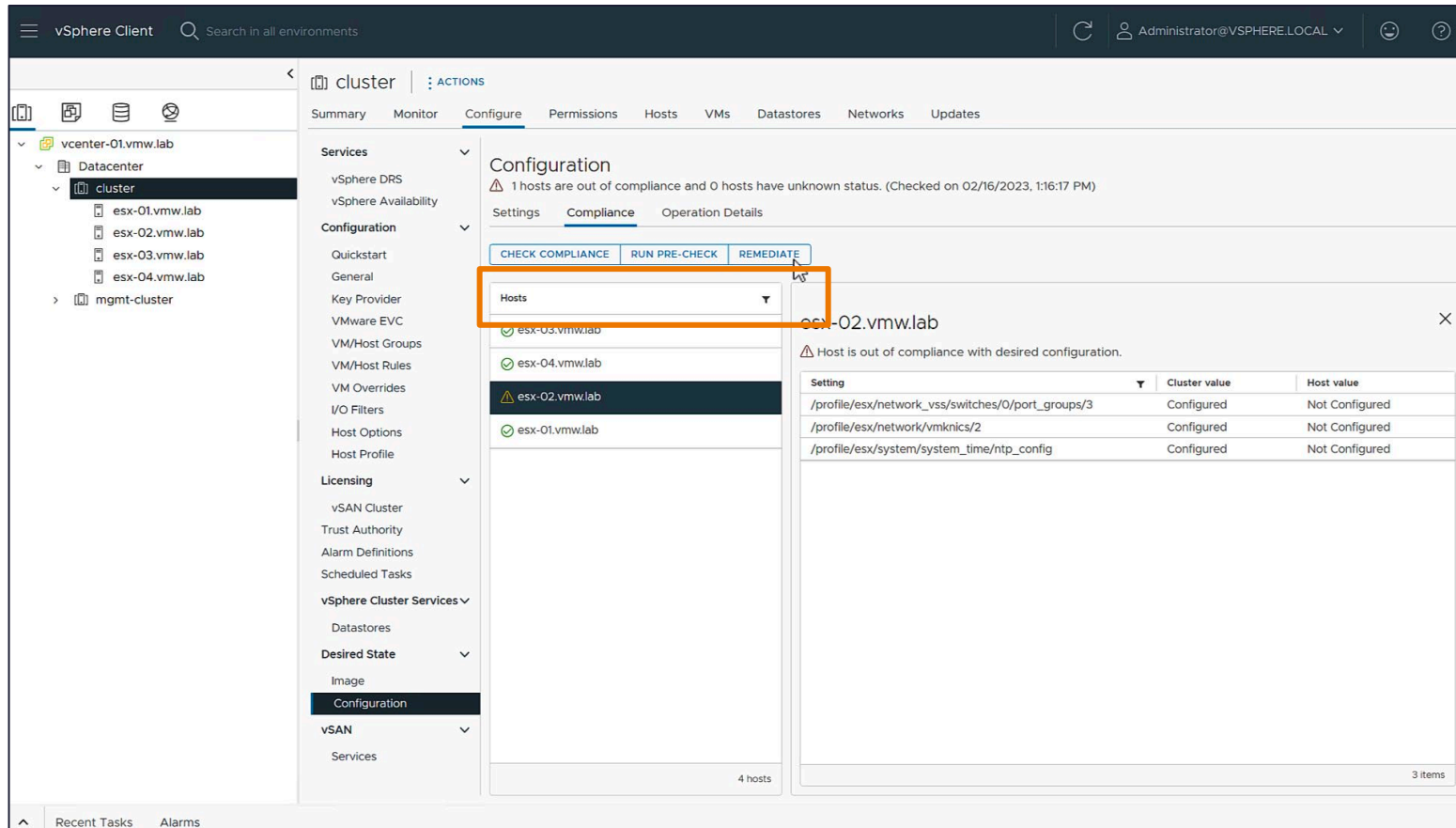
## VMware vSphere Lifecycle





# Define & Enforce Configurations for ESXi Hosts

## vSphere Configuration Profiles



Uses **desired-state model** for all configuration operations

Operates on clusters; supports vSphere Distributed Switch and vSAN

Requires Lifecycle Manager Image

**Monitors & remediates configuration drift**

# Distributed Resource Scheduler Is Smarter

## vSphere Distributed Resource Scheduler (DRS)



vMotion & DRS updated to improve placement and performance

vSphere 8 now uses memory performance statistics to better map workloads to available hardware

**Lifecycle Manager & DRS work together to avoid unnecessary vMotions**

# Making Patching Easier

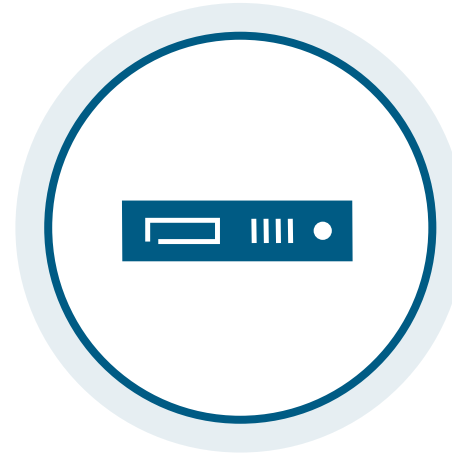
## vSphere Lifecycle Manager



Stage Cluster  
Image Updates



Parallel  
Remediation



Standalone  
Hosts



Configurable  
Depots

# ESXi Live Patch



## Faster & Less Disruptive

Virtual machine monitor changed underneath the running VM, a fast suspend and resume into the new code.



## Partial Maintenance Mode

Workloads continue to run, but migrations and VM changes are disallowed while the operation is proceeding.

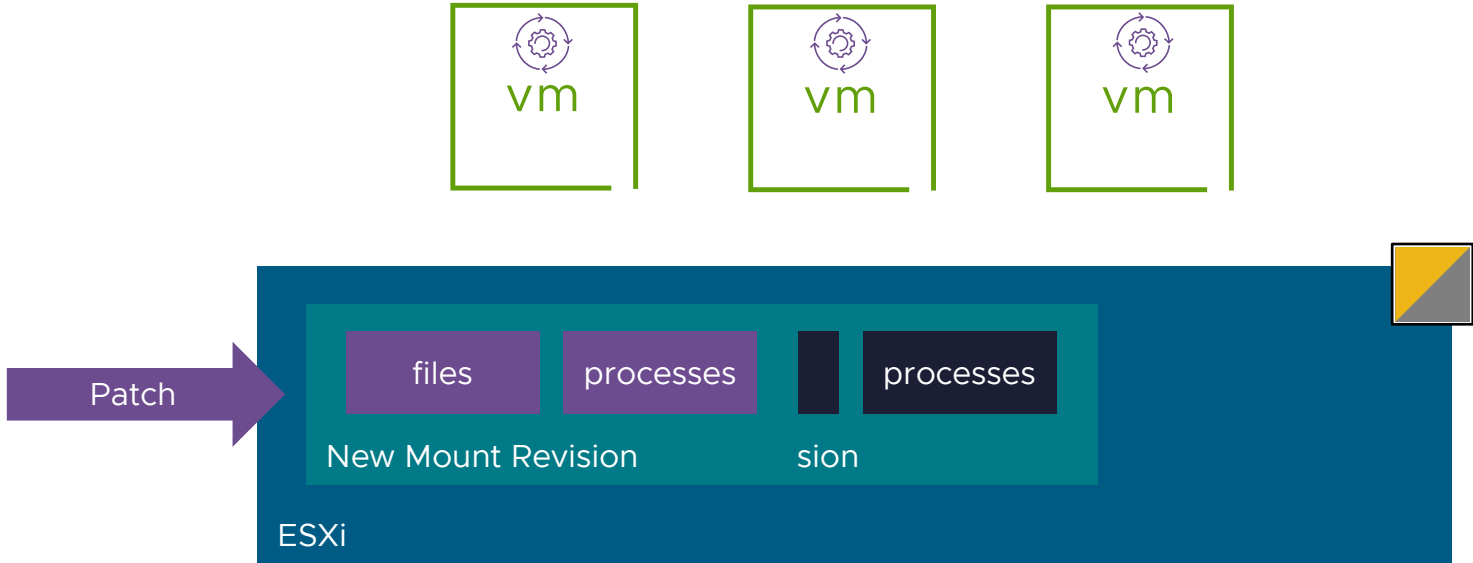


## All On-Premises

While updates still can be retrieved automatically over the Internet, Live Patch operates completely within your private cloud.

# Patch vSphere Faster and Less Disruptive

## vSphere Live Patch



Host enters partial maintenance mode

New mount revision loaded

New mount revision patched

VMs fast-suspend-resume to consume patched mount revision

# Live Patch Eligibility & Compatibility

## ESXi Live Patch

The screenshot shows the VMware Lifecycle Manager interface. At the top, there is a navigation bar with 'Lifecycle Manager' and 'ACTIONS' (with a dropdown arrow). Below this is a secondary navigation bar with 'Image Depot', 'Updates', 'Imported ISOs', 'Baselines', and 'Settings'. The main content area has three tabs: 'ESXI VERSIONS', 'VENDOR ADDONS', and 'COMPONENTS'. On the right side of the main content area, it says 'Last Sync: n/a. Next Sync: n/a'. In the 'ESXI VERSIONS' tab, there is a dark blue header for 'ESXi 8.0 U3a - 23658840' with a 'Live Patch' button. Below this, there is a notification box with a lightning bolt icon and the text 'Live Patch eligible from 8.0 Update 3 - 23653650' followed by an information icon. The notification also includes a category 'Category: Enhancement' and a link to the release notes: 'https://docs.vmware.com/en/VMware-vSphere/8.0/rn/vsphere-esxi-80u3a-release-notes/index.html' with an external link icon.

Can be applied to compatible builds

Some host configurations not yet compatible

Some updates will still require host reboots due to changes in other ESXi packages

# Take Full Control of Cluster Image Definitions

## Lifecycle Manager Enhanced Image Customization

### Edit Image

Select the version of ESXi and other components that you want for the hosts in this cluster. The same image will be applied consistently to all these hosts.

ESXi Version: 8.0 U2 - 22380479 (released 09/21/2023)

Vendor Addon: Dell addon for PowerEdge Servers 802-A06

Firmware and Drivers Addon: SELECT (optional)

Components: No additional components [Hide details](#)

[ADD COMPONENTS](#) Show All components

Component Name	Version	Notes
Dell Configuration bundle	8.0.0-A04	Vendor addon component
Dell ESXi FIST Installer for VMware ESXi	5.2.3-2023.03.20	Vendor addon component
Dell factory daemon for setting custom DCUI screen on factory shipped PowerEdge servers with VMware ESXi pre-installed	8.0.0	Vendor addon component
VMware Host Client	2.14.0-21993070	ESXi component
ESXi VM Tools	12.3.0	ESXi component

Components per page: 10 / 5 components

[SAVE](#) [VALIDATE](#) [CANCEL](#)

Override addon to remove or replace existing drivers and components

Able to remove:

**Vendor Addons**

**VMware Tools**

**ESXi Host Client**

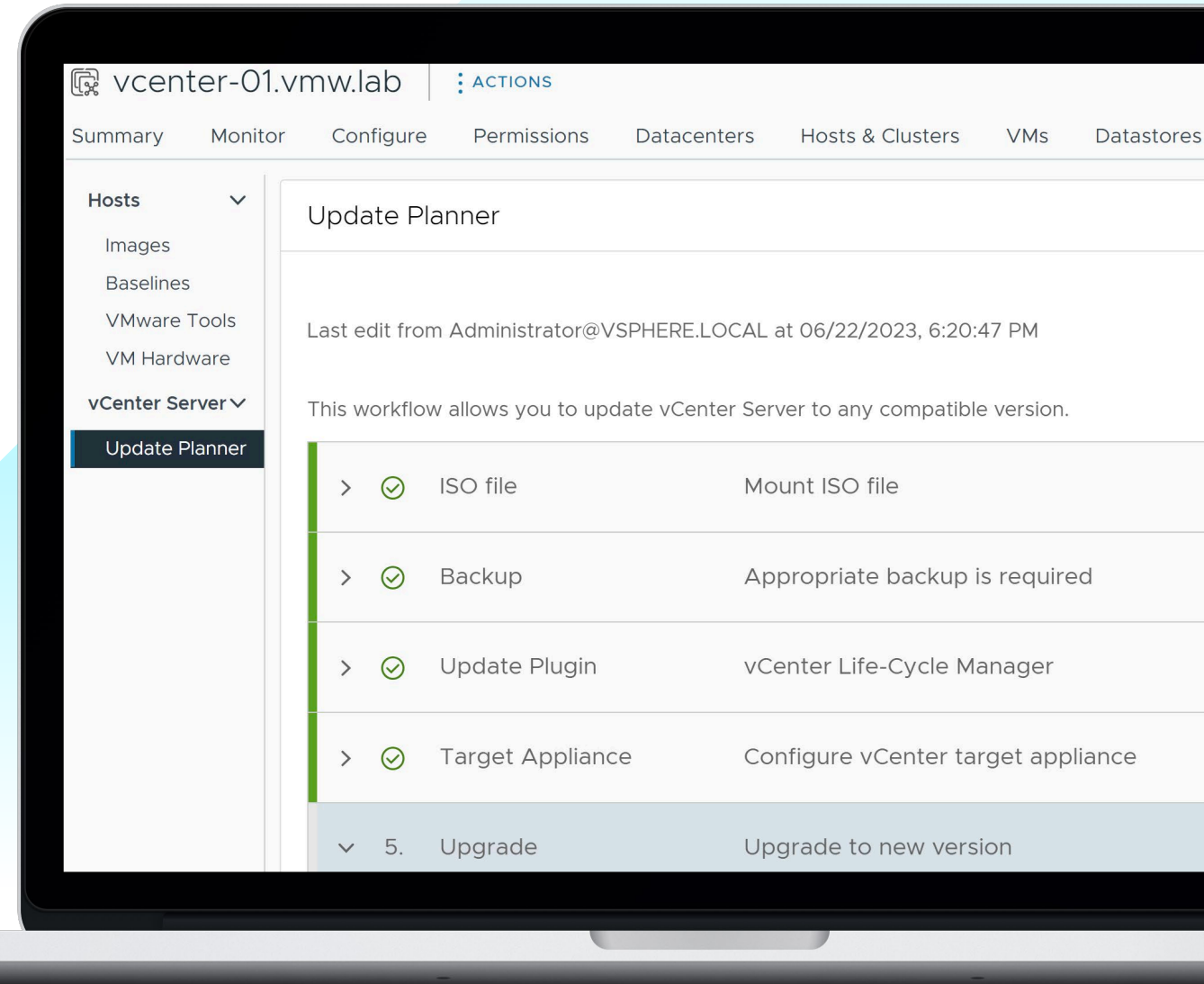
# Workflow Managed Through Update Planner

## VMware vCenter Reduced Downtime Update

Patching can use the same mechanism as upgrades and migrations

Needs temporary resources

**Optional! Can still patch the traditional way**





# Patches Performed Like vCenter Upgrades

## VMware vCenter Reduced Downtime Update

### STEP 1

Stage a new VM

### STEP 2

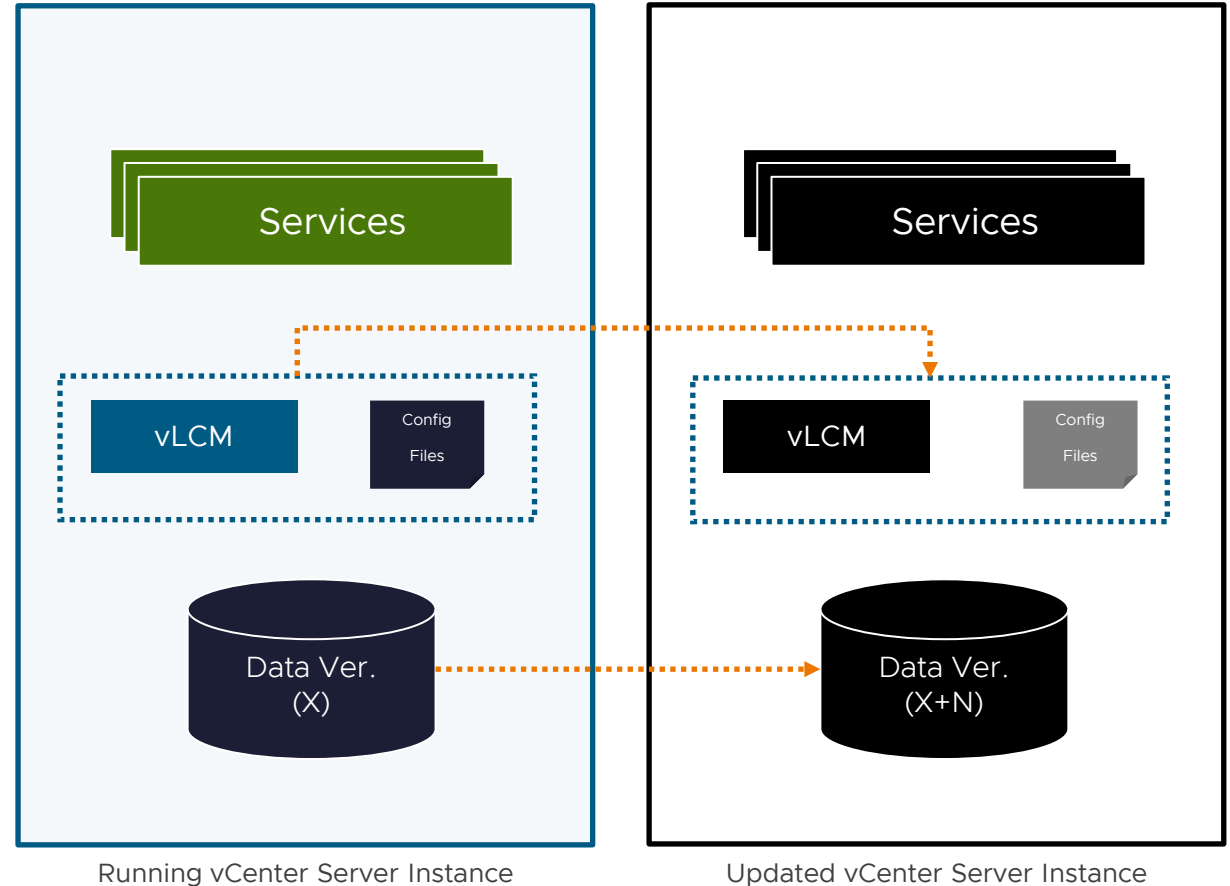
Copy database and configuration data to new VM (everything still operational)

### STEP 3

Cut over to new VM, new VM assumes old identity (short downtime)

### STEP 4

Shutdown the old VM



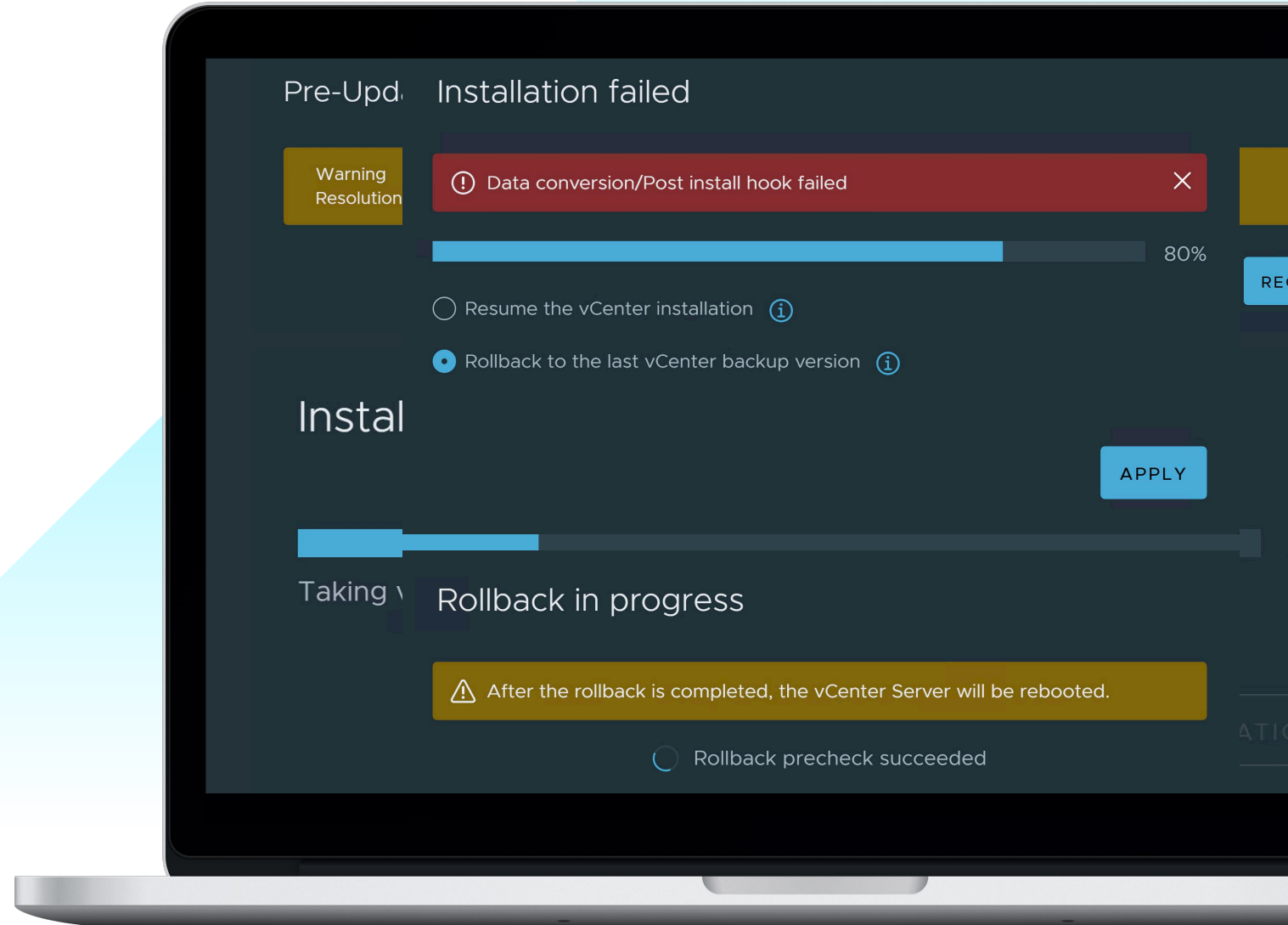
# Recover Quickly From vCenter Patch Failure

## Patching Resilience

Prompt to take a file-based backup before patching

Automatic Linux LVM snapshot taken on the VCSA prior to starting

Patching can be resumed or rolled back



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# vSphere with GPUs



# Great Flexibility in Running Different Workloads on a Single GPU

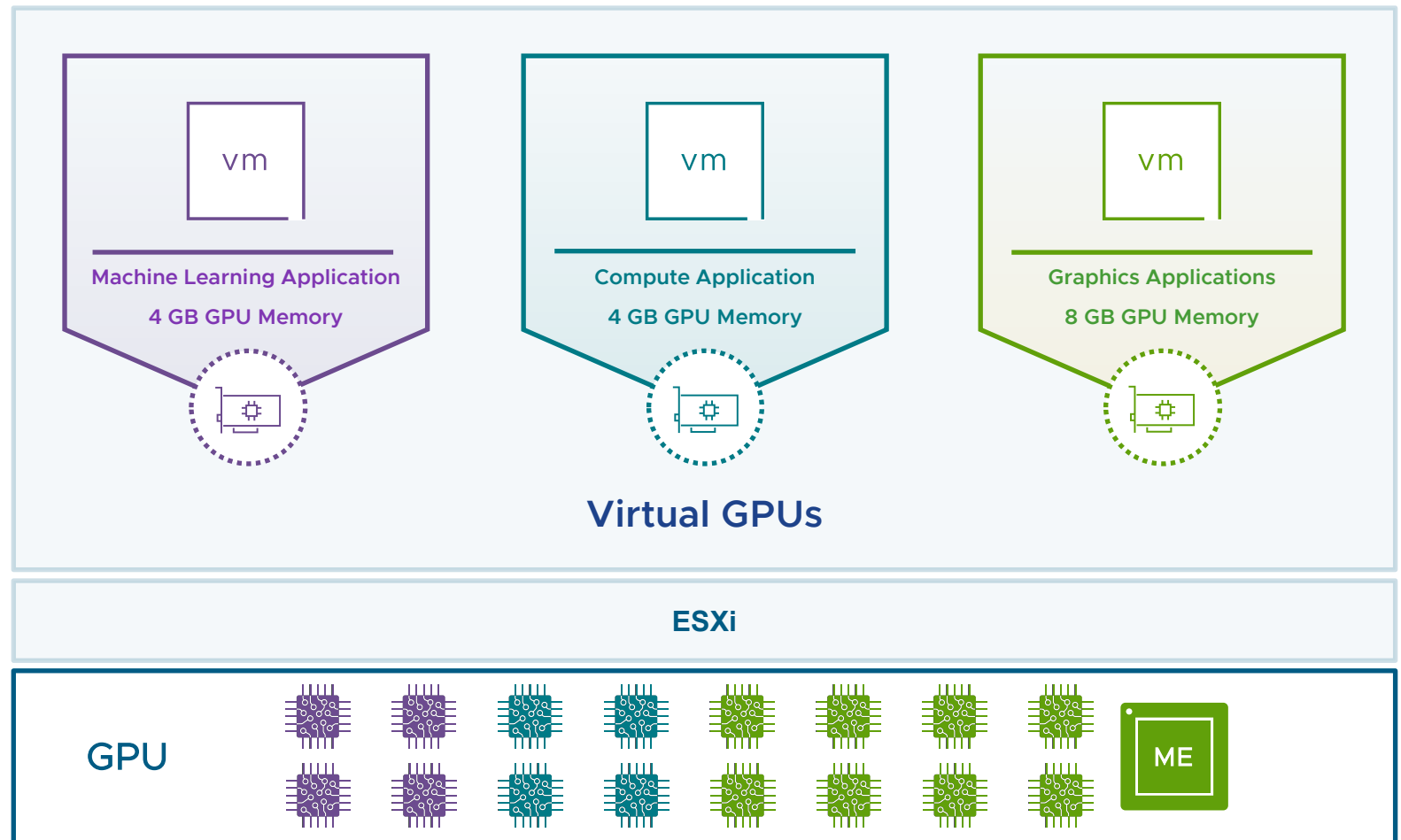
## GPU Profiles in vSphere 8

Use different NVIDIA vGPU profile types and memory sizes

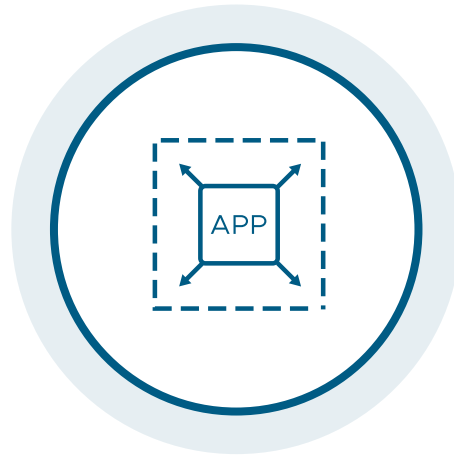
Switch automatically between time-sliced and Multi-Instance

Media Engine can be consumed by vGPU profiles

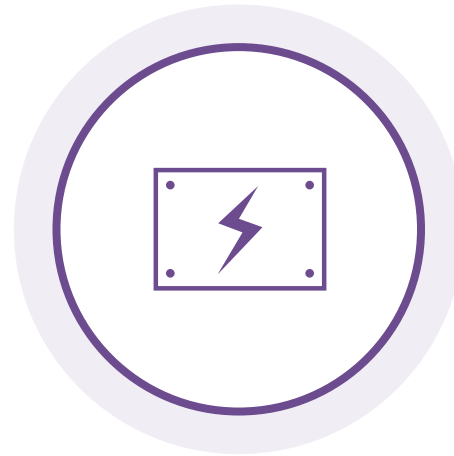
Share GPU resources among graphics and compute workloads



16 vGPUs per  
Virtual Machine



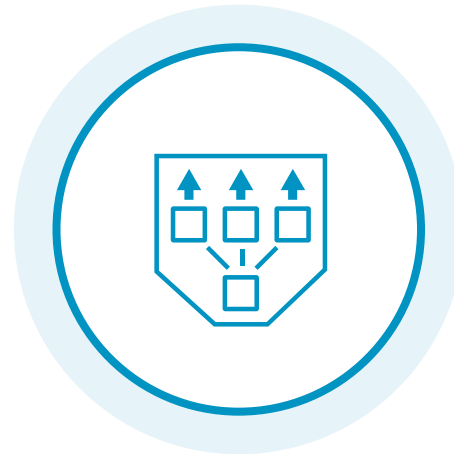
128 Passthrough  
Devices



Configurable GPU Stun  
Limits for vMotion



GPU-Aware  
Workload Placement  
and Balancing



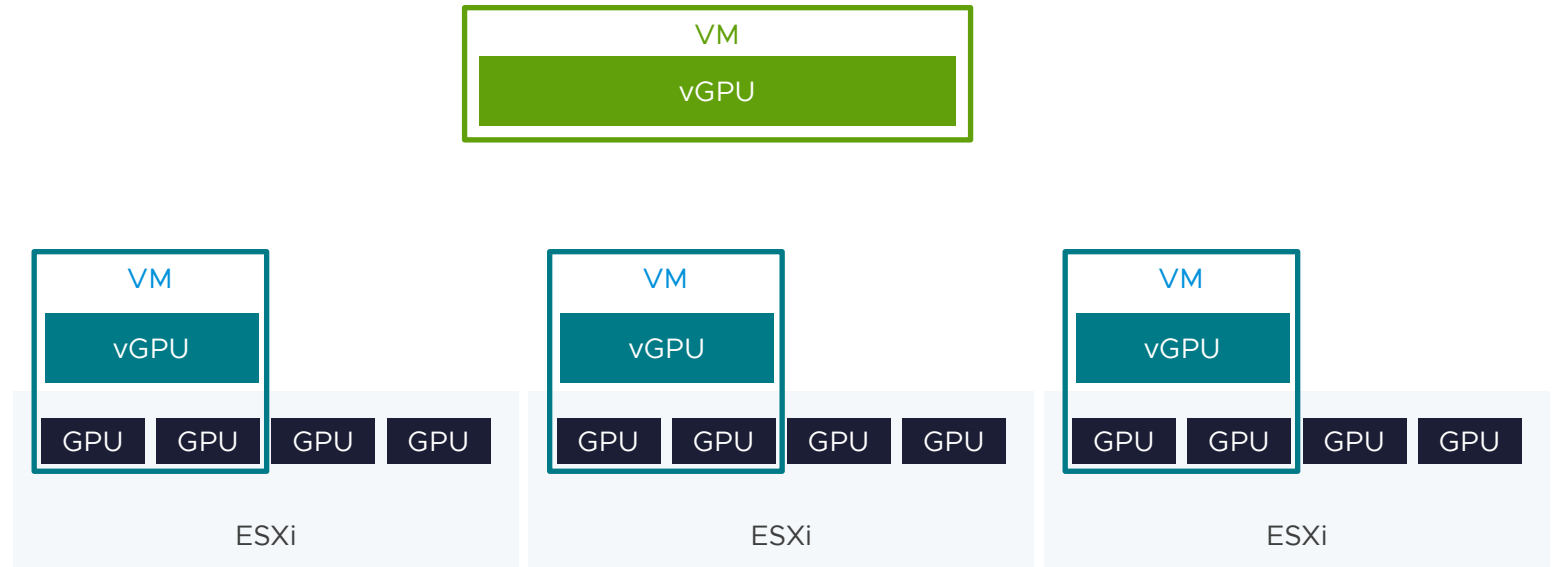
# Improve the ROI of Your AI Infrastructure

## GPU-Aware Distributed Resource Scheduling

DRS will place workloads with similar profile requirements on the same hosts

Avoids fragmentation of GPU capacity

**Get more from the resources you have**



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# Security and Compliance

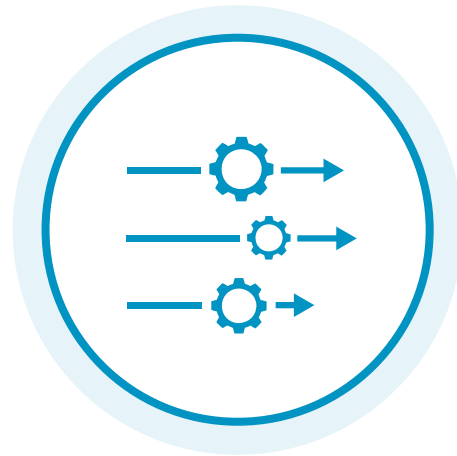


# Certificate & Cipher Suite Improvements

## vSphere Security & Compliance



3072-bit  
Default Keys



Fast Certificate  
Replacement



TLS 1.3



Compliance-  
Friendly Ciphers



# Isolate, Manage, and Secure NFS Storage Network Traffic

## vSphere NFS Datastore VMkernel Binding

Bind NFS datastores to a specific VMkernel adapter

Isolate storage traffic for performance management and security

New Datastore

- 1 Type
- 2 NFS version
- 3 Name and configuration**
- 4 Ready to complete

Name and configuration

Specify datastore name and configuration.

NFS Share Details

Name

Folder

Server   
  
E.g: nas.nas.it.com or 192.168.0.1

Vmknics binding  Bind to vmknics

NFS-Datastore | ACTIONS

Summary Monitor **Configure** Permissions Files Hosts VMs

Alarm Definitions  
Scheduled Tasks  
General  
Device Backing  
**Connectivity with Hosts**  
Hardware Acceleration  
Capability sets

### Connectivity with Hosts

Host	Datastore Connectivity	Access Mode	Vmknics Binding	Mount Point
esx-01.vmw.lab	Connected	Read-write	vmk1	/vmfs/volumes/8ee5aa54-4d265d...

# Many Choices for Identity Federation

## VMware Identity Broker (VIDB)

The screenshot shows the VMware Identity Broker (VIDB) interface. At the top right, there is a button labeled 'CHANGE PROVIDER'. Below it, a dropdown menu is open, listing several external providers: Microsoft ADFS, Okta, Microsoft Entra ID, PingFederate (which is highlighted with a mouse cursor), and VMware SSO. At the bottom of the dropdown, there is an option for 'Other Providers' with a right-pointing arrow. In the background, a table is visible with columns for 'Type' and 'Domain'. The table contains two rows: 'System Domain' with domain 'vsphere.local' and 'Local OS (Default)' with domain 'localos'.

Type	Domain
System Domain	vsphere.local
Local OS (Default)	localos

Identity Federation allows connections to enterprise identity providers (IdPs)

Supports multiple on-premises and cloud IdPs

**Enables SSO, MFA, and modern authentication mechanisms**

ptrace

execInstalledOnly

shell access

memEagerZero

RFC 3164/5234 logging

vmkaccess



# “An Ounce of Prevention is Worth a Pound of Cure”

## Security Configuration Guides & Baselines

SCG ID	Implementation Priority	Description/Title
esxi-8.account-auto-unlock-time	P2	The ESXi host must unlock accounts after a specified timeout period.
esxi-8.account-dcui	P0	The ESXi host must deny shell access for the dcui account.
esxi-8.account-lockout	P2	The ESXi host must lock an account after a specified number of failed login attempts.
esxi-8.account-password-history	P2	Configure the password history setting to restrict the reuse of passwords on the ESXi host.
esxi-8.account-password-max-days	P2	The ESXi host must be configured with an appropriate maximum password age.
esxi-8.account-password-policies	P0	The ESXi host must enforce password complexity.

Easy-to-understand hardening guidance

Now includes vSAN services

Maps differences to STIG and PCI

**New scripts to audit and remediate!**

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Wrapping Up

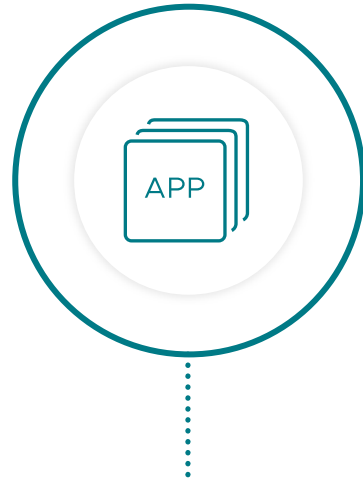


# vSAN 8: Easy, Secure, Efficient, and Very Fast

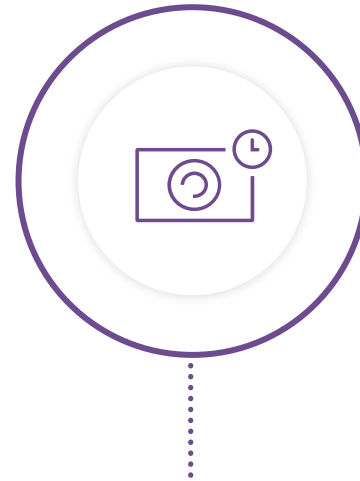
## Next-Generation Storage Built Right Into vSphere & Cloud Foundation



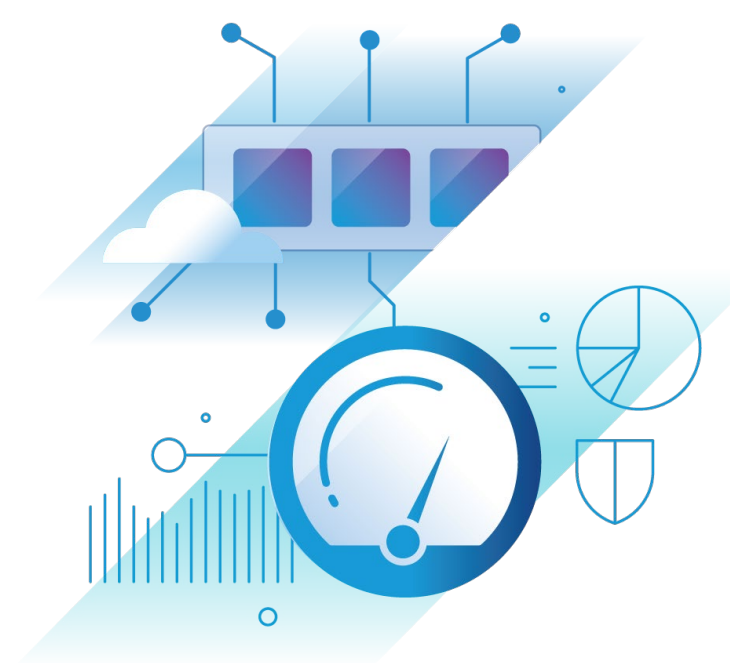
**Up to 4x performance boost** with tremendous space efficiency



Increased write buffer supports more **intensive workloads**



**Native snapshots** with minimal performance impact



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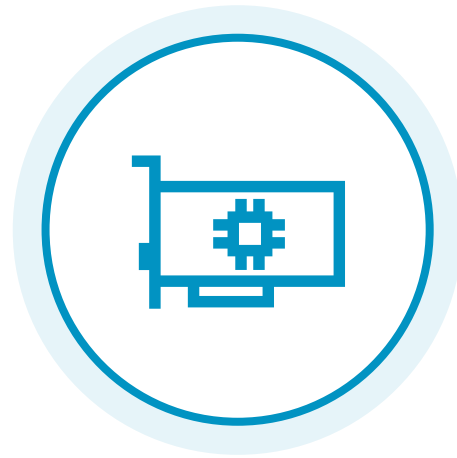
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# In Summary...

## VMware vSphere 8



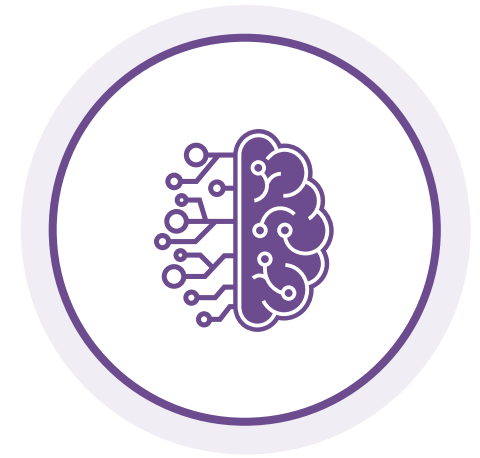
Supercharges  
Lifecycle  
Management



Accelerates  
Workloads



Protects  
Workloads &  
Data



Incredible  
Platform for  
AI/ML

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Please take  
your survey.





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# Thank you