



vSphere 6.7 Technical Customer Deck

vSphere 6.7

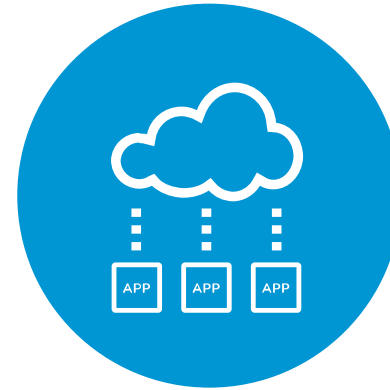
Efficient and Secure Platform for your Hybrid Cloud



Simple
management
at scale



Comprehensive
built-in security

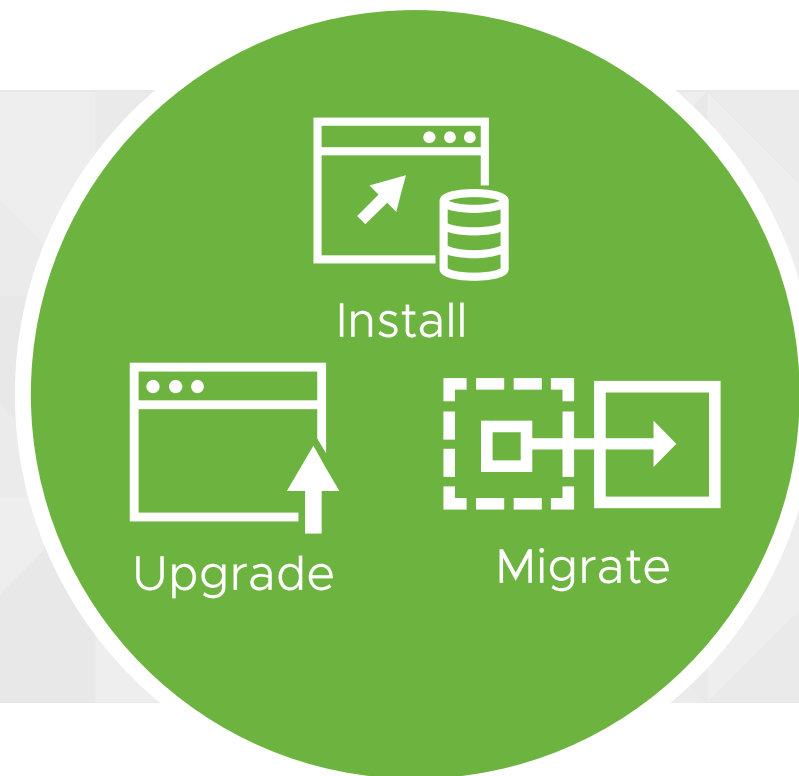


Universal
application
platform



Seamless
hybrid cloud
experience

vCenter Server Appliance Lifecycle



vCenter Server Appliance Overview

MANAGEMENT

Quick provisioning

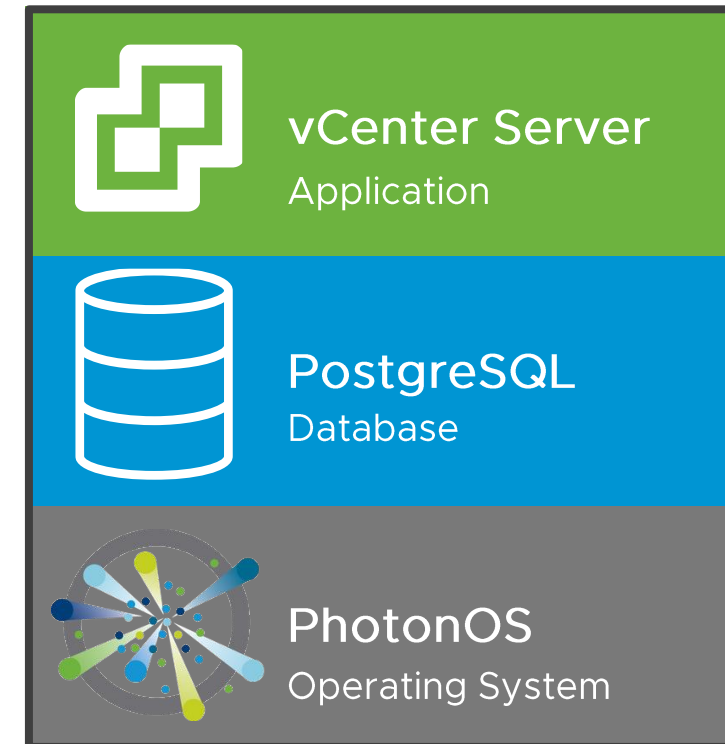
No operating system / database licenses

Unified patching / updating

Single point of support

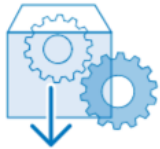
Pre-tuned database

virtual machine



vm - Stage 1: Deploy appliance

English



Install

Install a new vCenter Server Appliance or Platform Services Controller



Upgrade

Upgrade an existing vCenter Server Appliance or Platform Services Controller Appliance



Migrate

Migrate from an existing vCenter Server or Platform Services Controller or Single Sign-On server for Windows to Appliance



Restore

Restore from a previously created vCenter Server Appliance or Platform Services Controller Appliance backup

- Updated Clarity UI
- Removal of SSO "Site" for embedded deployments
- Embedded Linked Mode support
- Batch CLI available

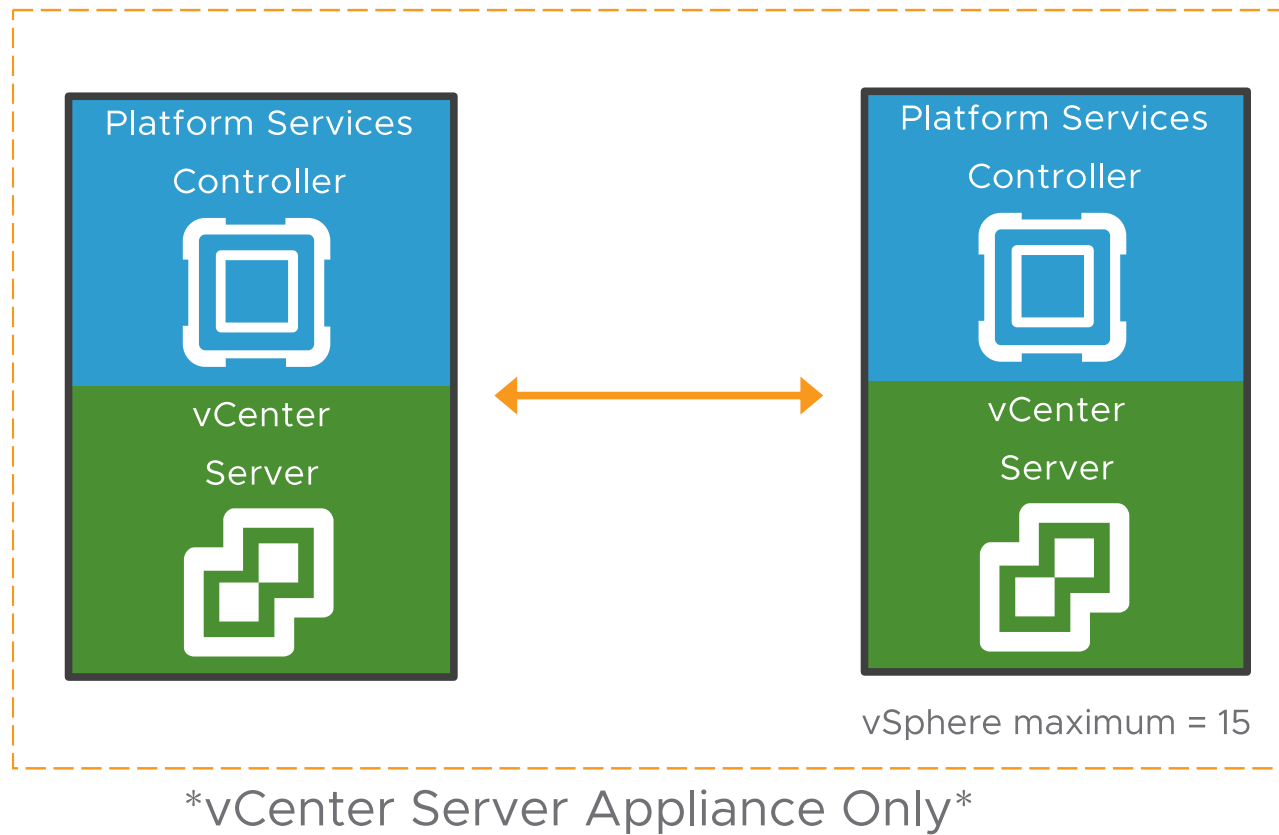


vCenter Server with Embedded PSC and ELM

Simplified Architecture

MANAGEMENT

vSphere SSO domain w/ Enhanced Linked Mode



Enhanced Linked Mode

Greenfield deployments

Supports maximums scale

No load balancer

VCHA supported

Site boundary removed

vSphere 6.7 Upgrade / Migration Paths

Source	Destination	Upgrade Path
vSphere 5.5 (any)	vSphere 6.7	Not Supported
vSphere 6.0 (any)	vSphere 6.7	Supported
vSphere 6.5 – 6.5 U1x	vSphere 6.7	Supported

vm Migrate - Stage 2: vCenter Server Appliance

1 Introduction

2 Connect to source vCenter Se...

3 Join AD Domain

4 **Select migration data**

5 Ready to complete

Select migration data

Select the data that you want to copy from the source vCenter Server for Windows.

The data sizes shown below represent only the data that will be copied to the target server. It does not correspond to the actual size of your data on the source server. The identity of the server will also be copied and the source server will remain unchanged.

- ☐ Configuration (2.67 GB) Estimated downtime: 33 minutes
- ☐ Configuration and historical data (events and tasks) (2.77 GB)
- ☒ Configuration and historical data (events, tasks and performance metrics) (2.77 GB)
- ☒ Import historical data in the background. Estimated downtime: 34 minutes
vCenter Server Appliance will start once the configuration data has been imported. The historical data will be imported in the background. During this time, the performance of vCenter Server Appliance might not be optimal.
- ☐ Import all data now. Estimated downtime: 37 minutes
vCenter Server Appliance won't start until all data has been imported from vCenter Server.

CANCEL

BACK

NEXT

Selective data import

- Deploy & import all data
- Deploy & import data in the background

Estimated downtime

Resume and pause data import from the VAMI

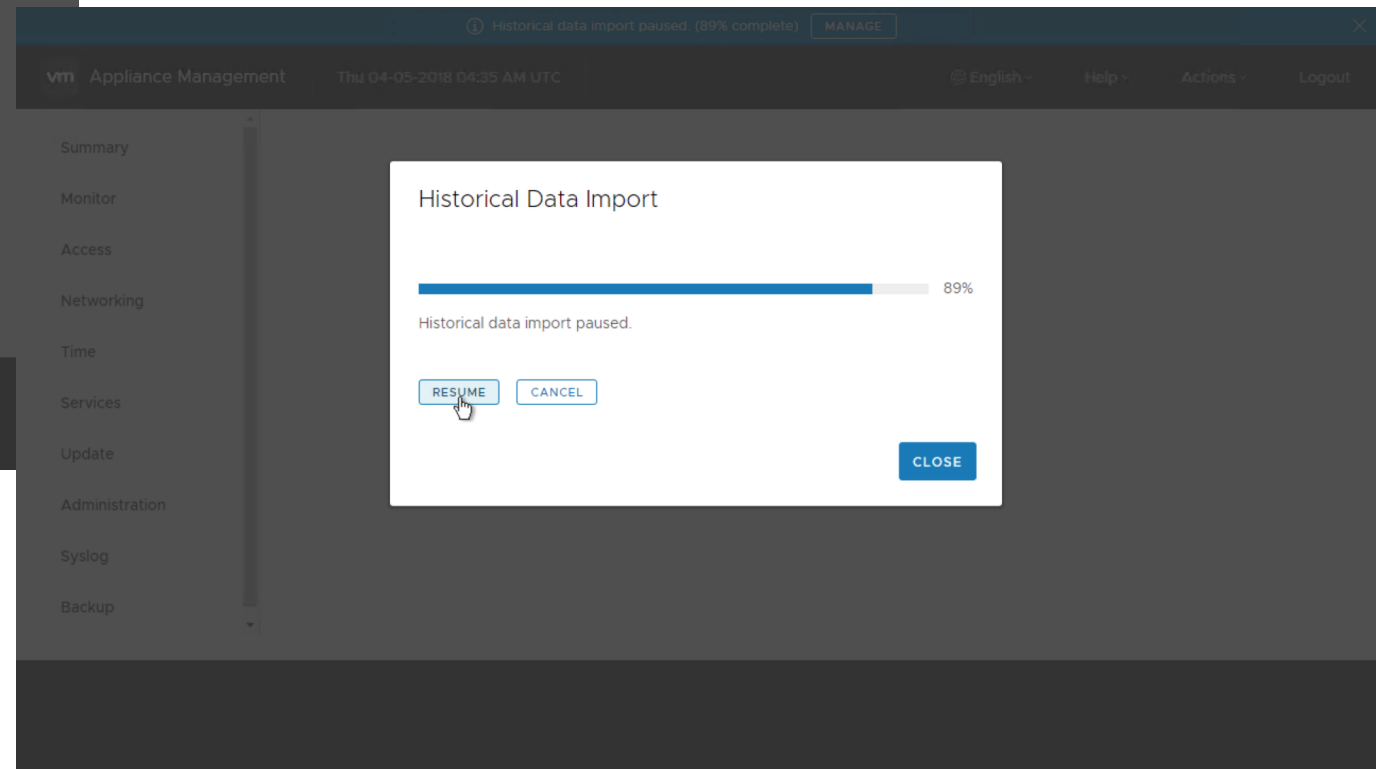
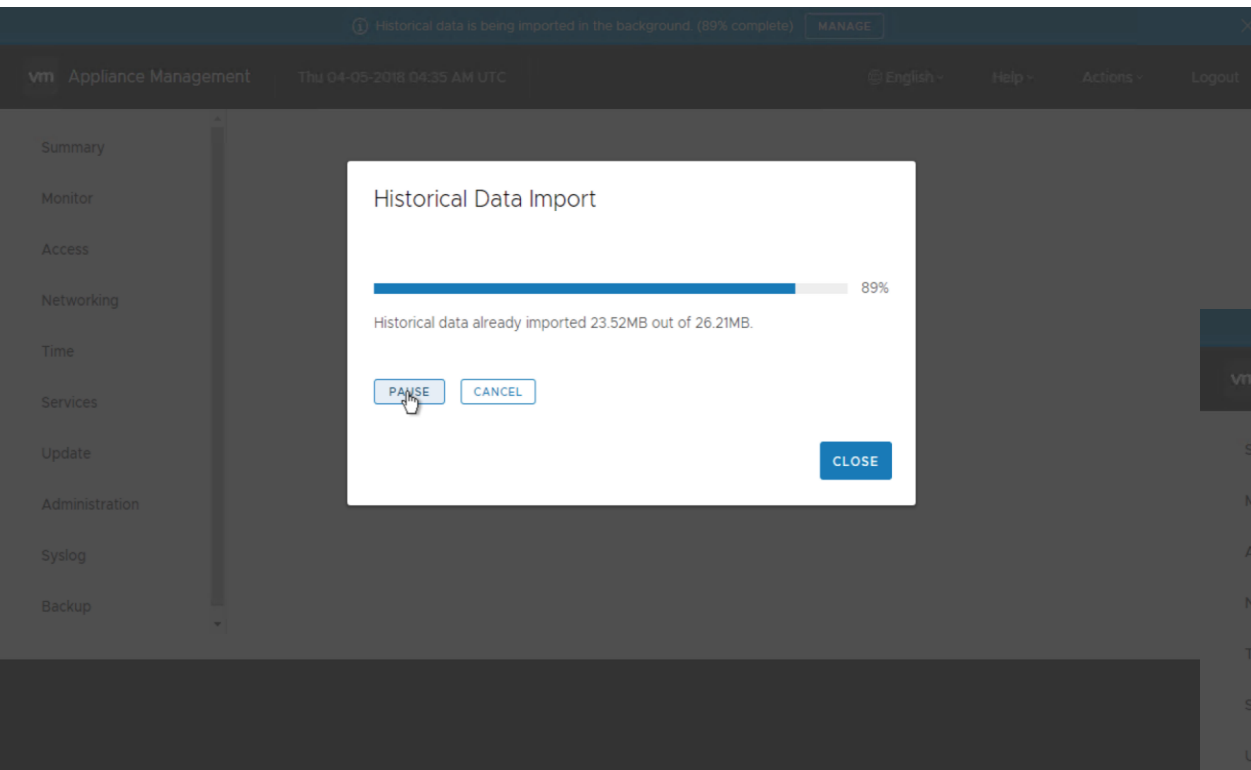
Support for custom ports

Automation from the CLI

Migration – Data Import Pause / Resume

vSphere Appliance Management Interface

MANAGEMENT



vCenter Server Appliance Monitoring & Management



Streamlined Monitoring

vSphere Appliance Monitoring <https://fqdn or ip of VCSA:5480>

MANAGEMENT

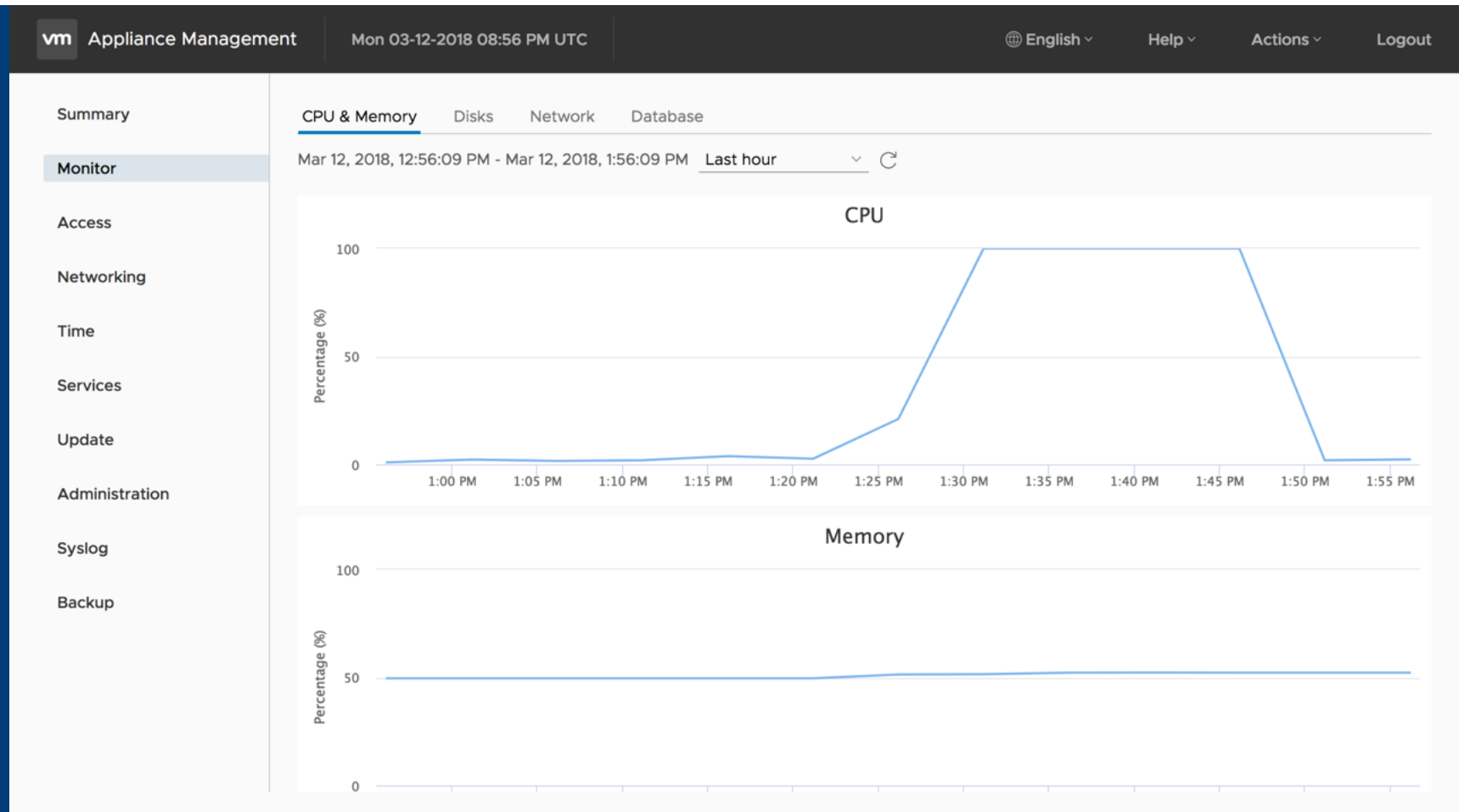
Built in monitoring:

- CPU
- Memory
- Network
- Disks

All monitoring under one tab

VCSA Services included

Syslog forwarding now supports up to 3 remote syslog servers



Streamlined Monitoring

vSphere Appliance Monitoring <https://fqdn or ip of VCSA:5480>

MANAGEMENT

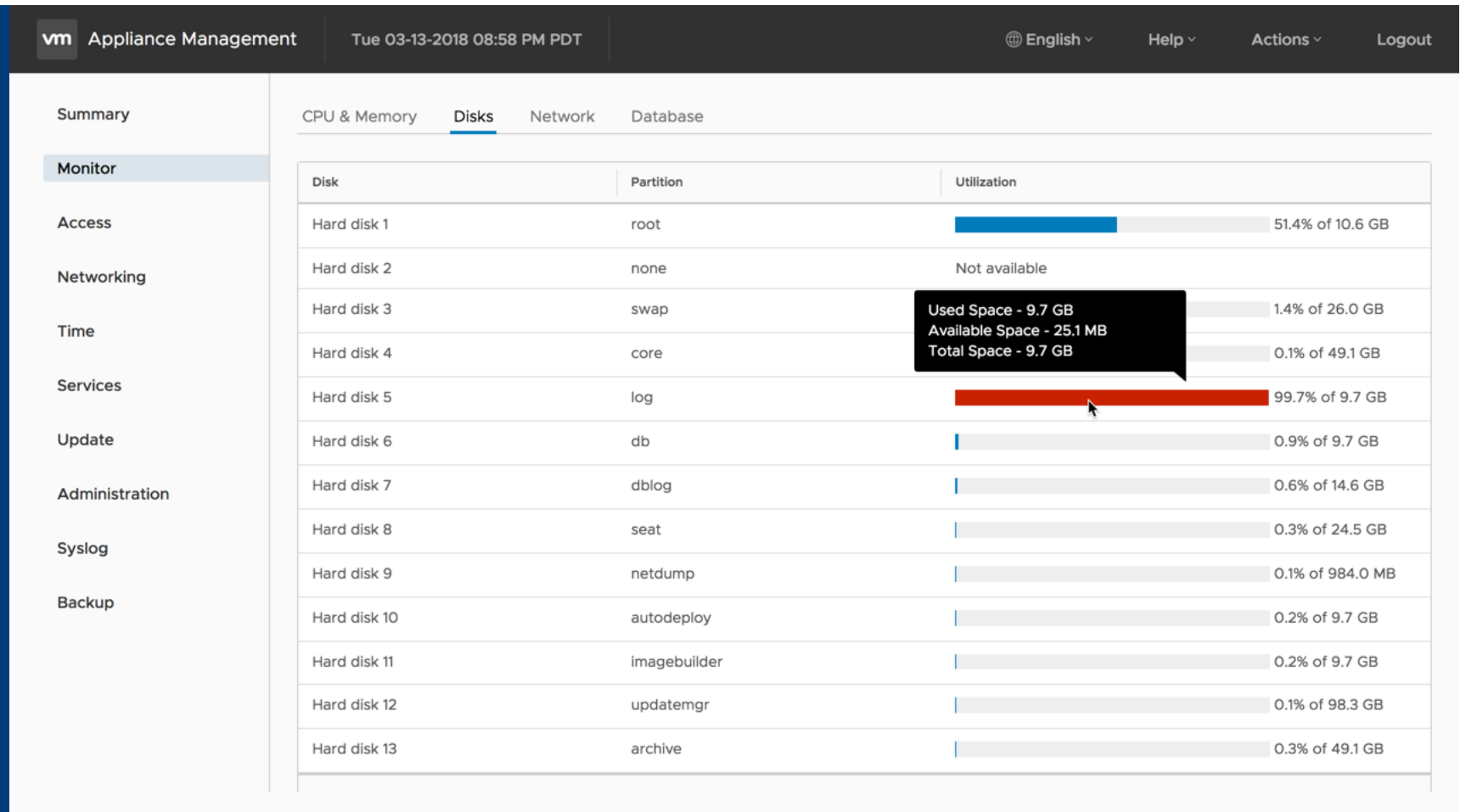
Built in monitoring:

- CPU
- Memory
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- **Disks**

All monitoring under one tab

VCSA Services included

Syslog forwarding now supports up to 3 remote syslog servers



Streamlined Monitoring

vSphere Appliance Monitoring <https://fqdn or ip of VCSA:5480>

MANAGEMENT

Built in monitoring:

- CPU
- Memory
- Network
- Disks

All monitoring under one tab

VCSA **Services** included

Syslog forwarding now supports up to 3 remote syslog servers

The screenshot displays the VMware Appliance Management web interface. The top navigation bar includes the VMware logo, 'Appliance Management', the date and time 'Mon 03-12-2018 08:46 PM UTC', and links for 'English', 'Help', 'Actions', and 'Logout'. On the left, a sidebar menu lists various management categories: Summary, Monitor, Access, Networking, Time, Services (which is currently selected and highlighted), Update, Administration, Syslog, and Backup. The main content area is titled 'Services' and features three action buttons: 'RESTART', 'START', and 'STOP'. Below these buttons is a table listing the installed services. Each row includes a radio button for control, the service name, its startup type, its health status, and its current state.

	Name	Startup Type	Health	State
<input type="radio"/>	VMware Performance Charts Service	Automatic	Healthy	Started
<input type="radio"/>	VMware PSC Health	Automatic	Healthy	Started
<input type="radio"/>	VMware Postgres	Automatic	Healthy	Started
<input type="radio"/>	Appliance Management Service	Automatic	Healthy	Started
<input type="radio"/>	VMware HTTP Reverse Proxy	Automatic	Healthy	Started
<input type="radio"/>	vSAN health Service	Automatic	Healthy	Started
<input checked="" type="radio"/>	VMware vSphere Web Client	Automatic	Healthy	Started
<input type="radio"/>	ImageBuilder Service	Manual		Stopped
<input type="radio"/>	License Service	Automatic	Healthy	Started
<input type="radio"/>	VMware vCenter-Services	Automatic	Healthy	Started
<input type="radio"/>	Content Library Service	Automatic	Healthy	Started
<input type="radio"/>	VMware vSphere Profile-Driven Storage Service	Automatic	Healthy	Started
<input type="radio"/>	VMware vSphere ESXi Dump Collector	Manual		Stopped
<input type="radio"/>	VMware Analytics Service	Automatic	Healthy	Started
<input type="radio"/>	VMware Postgres Archiver	Automatic	Healthy	Started

MANAGEMENT

vmware®

vm

Appliance Management

Mon 03-12-2018 10:51 PM UTC

English

Help

Actions

Logout

Summary

Monitor

Access

Networking

Time

Services

Update

Administration

Syslog

Backup

Prior to setting up the forwarding configuration, remote syslog server(s) must be configured and a network connection must exist between the appliance and syslog server(s) to enable log streaming.

Forwarding Configuration

Create Forwarding Configuration

Specify forwarding configuration for remote syslog servers (no more than three).

Server Address	Protocol	Port
10.158.137.12	TLS	6514
10.158.137.13	TCP	601
10.158.137.14	UDP	514

CANCEL

SAVE

Robust Backup

Native vCenter Server Appliance Backup

MANAGEMENT

Backup Management

- Scheduled Backup
- Retention option
- Backup activity

Verifies VCSA state

Supports VCSA & PSC appliances - embedded & external deployments

Supported Protocols include:

- HTTP/S
- SCP
- FTP/S

The screenshot displays the VMware Appliance Management web interface. The top navigation bar includes the VMware logo, 'Appliance Management', the current date and time 'Mon 03-12-2018 10:41 PM UTC', and links for 'English', 'Help', 'Actions', and 'Logout'. A left-hand sidebar lists various management sections: Summary, Monitor, Access, Networking, Time, Services, Update, Administration, Syslog, and Backup (which is currently selected). The main content area features a blue information banner at the top stating: 'Before taking a backup, a backup server must be set up and configured such that the appliance has access to it. The protocols supported for backup are FTPS, HTTPS, SCP, FTP and HTTP.' Below this is the 'Backup Schedule' section, which includes links for 'EDIT', 'DISABLE', and 'DELETE'. The schedule is currently 'Enabled' and shows a 'Daily' schedule at '10:40 P.M. Etc/UTC'. The 'Backup Location' is 'ftp://10.159.13.53/backup/aus', and the 'Backup data' includes 'Stats, Events, and Tasks' and 'Inventory and configuration'. The 'Number of backups to retain' is set to 'Retain all backups'. The 'Activity' section has a 'BACKUP NOW' button and a table of recent backup operations.

	Backup Location	Type	Status	Data Transferred	Duration	End Time
>	ftp://10.159.13.53/backup/a...	Scheduled	Complete	199.95 MB	00:00:14	Mar 12, 2018, 3:23:18 PM
>	ftp://10.159.13.53/backup/a...	Manual	Complete	199.94 MB	00:00:14	Mar 12, 2018, 3:19:39 PM
>	ftp://10.159.13.53/backup/a...	Scheduled	Complete	199.98 MB	00:00:18	Mar 12, 2018, 3:30:22 PM
>	ftp://10.159.13.53/backup/a...	Scheduled	Complete	200.02 MB	00:00:14	Mar 12, 2018, 3:40:18 PM
>	ftp://10.159.13.53/backup/a...	Manual	Complete	199.97 MB	00:00:16	Mar 12, 2018, 3:16:59 PM

Simple Restore

MANAGEMENT

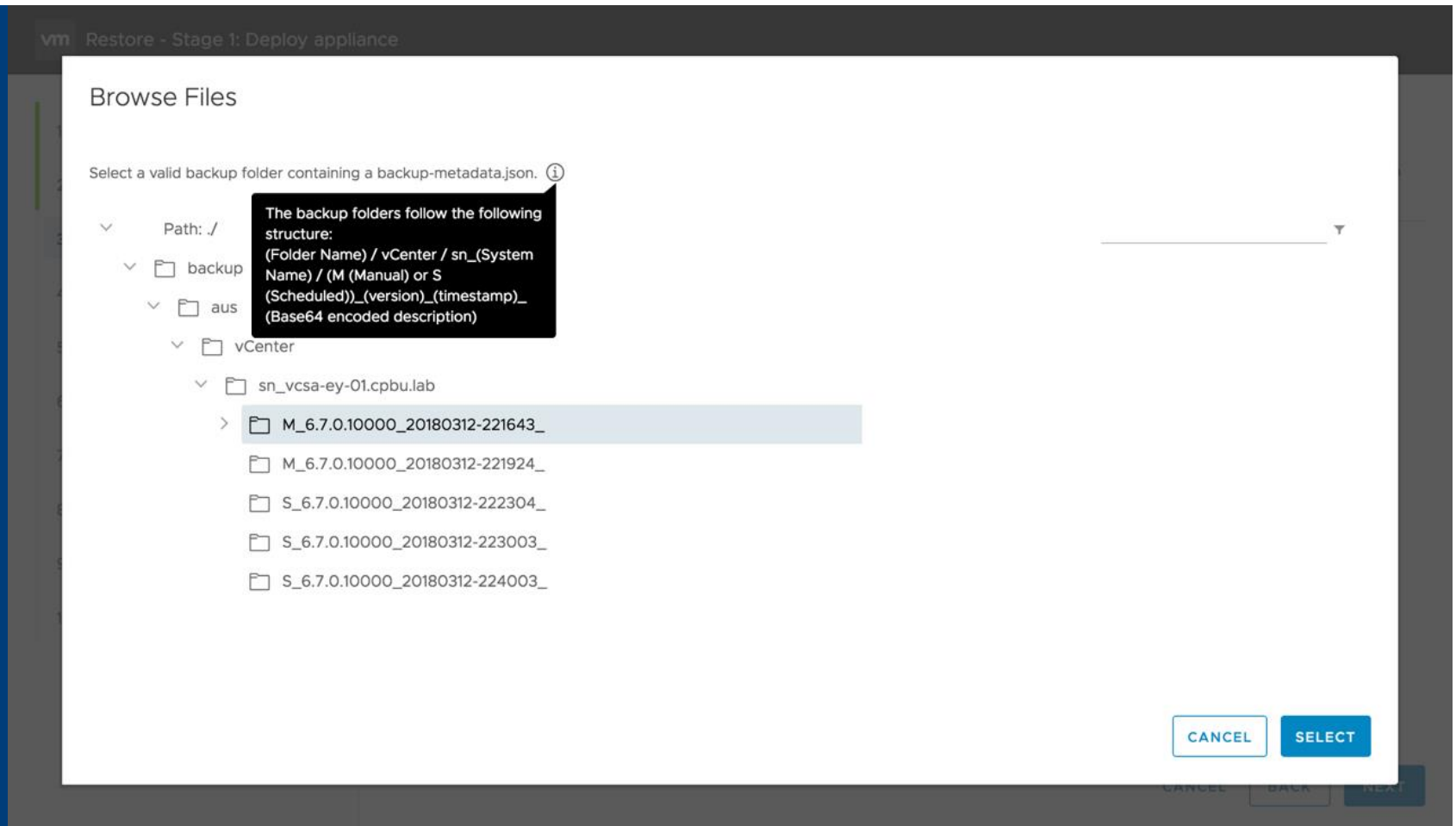
Restore directly from VCSA ISO

Browse Restore Files

External PSC restore not supported when replication partners are available

Embedded Linked Mode Supported with reconciliation

Retains VCSA identity



Flexible Patching & Update

MANAGEMENT

vm Appliance Management Thu 03-29-2018 08:35 PM UTC English Help Actions Logout

Summary Monitor Access Networking Time Services **Update** Administration Syslog Backup

Current version details [SETTINGS](#) [CHECK UPDATES](#)

Appliance Type vCenter Server with an embedded Platform Services Controller

Version 6.7.0.10000

Available updates (Last Checked Mar 29, 2018, 12:00:00 PM)

Updates and patches are cumulative. The most recent update or patch in the table below will contain all previous patches.

[STAGE ONLY](#) [STAGE AND INSTALL](#)

	Version	Type	Release Date	Reboot Required	Severity
<input checked="" type="radio"/>	> 6.7.0.10000	Upgrade	2018-03-29	No	Critical
<input type="radio"/>	> 6.7.0.10000	Fix	2018-03-29	No	Moderate
<input type="radio"/>	> 6.7.0.10000	Fix	2018-03-29	Yes	Important
<input type="radio"/>	> 6.7.0.10000	Fix	2018-03-29	Yes	Critical

4 Items

Staging options

- Stage only
- Stage & Install

Selectable Updates

Monthly Patches

Updates Options

- CDROM
- CDROM + URL

vCenter Server Appliance CLI Tools



PSC Repoint

vSphere SSO Domain

MANAGEMENT

Reconfigure from an embedded to external deployment

Repoint vCenter Server to a PSC inter-site and **across sites**

External Deployments

Decommission

cmsso-util

```
Terminal — ssh root@vcsa-hou-01
Command> cmsso-util --help
usage: cmsso-util [-h] {unregister,reconfigure,repoint} ...

Tool for orchestrating unregister of a node from LS, reconfiguring a vCenter
Server with embedded PSC and repointing a vCenter Server to an external PSC in
same as well as different domain.

positional arguments:
  {unregister,reconfigure,repoint}
    unregister          Unregister node. Passing --node-pnid will unregister
                        solution users, computer account and service
                        endpoints. Passing --hostId will unregister only
                        service endpoints and solution users.
    reconfigure          Reconfigure a vCenter with an embedded Platform
                        Services Controller(PSC) to a vCenter Server. Then it
                        repoints to the provided external PSC node.
    repoint              Repoints a vCenter with an external Platform Services
                        Controller(PSC) to the provided external PSC node.

optional arguments:
  -h, --help            show this help message and exit
```


Domain Repoint

Move vCenter Server Across Domains

MANAGEMENT

Consolidate vSphere SSO
Domains

Migrates Tags, Licenses,
Categories, Global Permissions

Pre-check option

External Deployments

cmsso-util domain-repoint

```
Terminal — ssh root@vcsa-sfo-01.cpbu.lab
root@vcsa-sfo-01 [ ~ ]# cmsso-util
usage: cmsso-util [-h] {unregister,reconfigure,repoint,domain-repoint} ...

Tool for orchestrating unregister of a node from LS, reconfiguring a vCenter
Server with embedded PSC and repointing a vCenter Server to an external PSC in
same as well as different domain.

positional arguments:
  {unregister,reconfigure,repoint,domain-repoint}
    unregister          Unregister node. Passing --node-pnid will unregister
                        solution users, computer account and service
                        endpoints. Passing --hostId will unregister only
                        service endpoints and solution users.
    reconfigure          Reconfigure a vCenter with an embedded Platform
                        Services Controller(PSC) to a vCenter Server. Then it
                        repoints to the provided external PSC node.
    repoint             Repoints a vCenter with an external Platform Services
                        Controller(PSC) to the provided external PSC node.
    domain-repoint      Repoint vCenter Server from one Platform Services
                        Controller to another Platform Services Controller in
                        a different domain. The repointing operation will
                        migrate Tags, Authorization, License data to another
                        Platform Services Controller.

optional arguments:
  -h, --help            show this help message and exit
```

Domain Repoint Pre-Check

Pre-check JSON

Resolve conflicts prior to domain repoint

Conflict*.json

All_Privileges.json

All_Roles.json

All_TagCategories.json

All_Tags.json

MANAGEMENT

```
Terminal — ssh root@vcsa-sfo-01.cpbu.lab

The repoint service migrates License, Tags, Authorization data from one
Platform Services Controller to another.

WARNING: Global Permissions for the source vCenter Server system will be lost. The
administrator for the target domain must add global permissions manually.
Source domain users and groups will be lost after the Repoint operation.
User 'administrator@vsphere.local' will be assigned administrator role on the
source vCenter Server system.

The default resolution mode for Tags and Authorization conflicts is Copy,
unless overridden in the conflict files generated during pre-check.

Solutions and plugins registered with vCenter Server must be re-registered.

vCenter Server details in target Platform Services Controller are not provided.
Tags/Authorization conflicts will not be checked.

Before running the Repoint operation, you should back up or take snapshots
of all nodes including external databases. You can use backups and
snapshots to revert the changes in case of failure. By using the Repoint tool
you agree to take the responsibility for creating backups or taking
snapshots, otherwise you should cancel this operation.

Repoint Node Information
Source Platform Services Controller: psc-sfo-01.cpbu.lab
Target Platform Services Controller: psc-nyc-01.cpbu.lab

Starting License pre-check ... Done
Starting Tagging Data export ... Done
Starting Authz Data export ... Done
Conflict data, if any, can be found under /storage/domain-data/Conflict*.json
Pre-checks successful.
```

CLI Batch Operations

MANAGEMENT

Supports vCenter
Server lifecycle

- Install
- Upgrade
- Migrate

Deploy multiple single
instances or in
sequence

Point to a single
directory containing
json files

Example json scripts
included in VCSA ISO

```
Terminal -- -bash
eyounis-mac-01:mac eyounis$ ./vcsa-deploy install --accept-eula --no-ssl-certificate-verification
/Users/eyounis/Documents/BatchDeploy
Run the installer with "-v" or "--verbose" to log detailed information
Updating log file location, copying '/var/folders/gz/47f6n_w16_1_klyc7pq8ddy80000gn/T/vcsaCliInst
aller-2018-03-13-23-52-yewi6eaz/vcsa-cli-installer.log' to desired location as a backup: '/var/fo
lders/gz/47f6n_w16_1_klyc7pq8ddy80000gn/T/vcsaCliInstaller-2018-03-13-23-52-yewi6eaz/workflow_152
0985166398/vcsa-cli-installer.log.bak'
Workflow log-dir
/var/folders/gz/47f6n_w16_1_klyc7pq8ddy80000gn/T/vcsaCliInstaller-2018-03-13-23-52-yewi6eaz/workf
low_1520985166398
===== [START] Start executing Task: To validate CLI options at 23:52:46 =====
=====
Command line arguments verified.
[SUCCEEDED] Successfully executed Task 'CLIOptionsValidationTask: Executing CLI optionsValidatio
n task' in
TaskFlow 'template_validation' at 23:52:46
===== [START] Start executing Task: To validate the syntax of the template. at 23:52:4
6 =====
Template syntax validation for template '/Users/eyounis/Documents/BatchDeploy/ELM-01.json' succee
ded.
```

vSphere Client (HTML5)



vSphere Client Feature Parity

Now 95% feature parity

MANAGEMENT

vSphere Update Manager

Content Library

vSAN

vRealize Operations

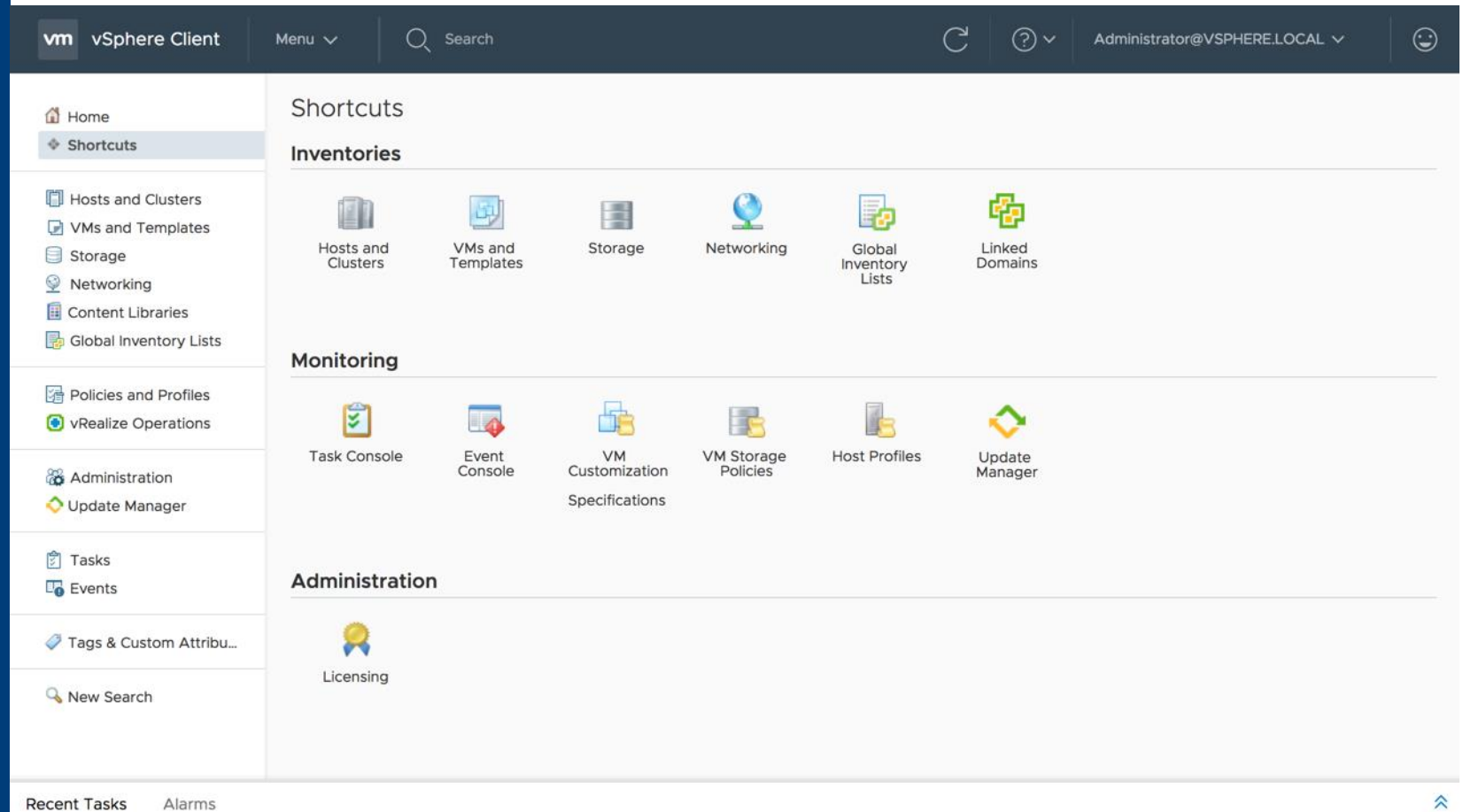
Storage Policies

Host Profiles

vDS Topology Diagram

Licensing

More....



Platform Services Controller

vSphere Client

MANAGEMENT

PSC UI now included in
vSphere Client

Configuration Tab

- Identity Sources
- Active Directory Domain
- Policies
- Login Banner
- Smart Card Configuration

Certificate Management

vm vSphere Client Menu Search Administrator@VSPHERE.LOCAL

Administration

- Access Control
 - Roles
 - Global Permissions
- Licensing
 - Licenses
- Solutions
 - Client Plug-Ins
- Deployment
 - Customer Experience Im...
- Single Sign On
 - Users and Groups
- Configuration**
- Certificates
 - Certificate Management

Policies Identity Sources Active Directory Domain Login Message Smart Card Authentication

PASSWORD POLICY LOCKOUT POLICY TOKEN POLICY

A set of rules and restrictions on the format and expiration of Single Sign-On user passwords

Password Policy [EDIT...](#)

Description	
Maximum lifetime	Password must be changed every 90 days
Restrict reuse	Users cannot reuse any previous 5 passwords
Maximum length	20
Minimum length	8
Character requirements	At least 1 special characters At least 2 alphabetic characters At least 1 uppercase characters At least 1 lowercase characters At least 1 numeric character Identical adjacent characters: 3

Recent Tasks Alarms

The screenshot shows the vSphere Client interface. The top navigation bar includes the VMware logo, 'vSphere Client', a menu, a search bar, and user information 'Administrator@VSPHERE.LOCAL'. The left sidebar contains a navigation tree with categories: Home, Shortcuts, Hosts and Clusters, VMs and Templates, Storage, Networking, Content Libraries, Global Inventory Lists, Policies and Profiles, vRealize Operations (highlighted), Administration, Update Manager, Tasks, Events, Tags & Custom Attributes, and New Search. The main content area displays a message: 'vRealize Operations is not present! It looks like vRealize Operations is not configured to work with this vCenter.' Below this, a large box titled 'Why do I need vRealize Operations?' lists three key benefits: 1. 'Application-aware monitoring across SDDC and multiple clouds' (Centralize IT operations management of SDDC and multi-cloud environment, accelerate time to value and troubleshoot smarter with native integrations, unified visibility from applications to infrastructure health and actionable insights combining metrics and logs). 2. 'Cloud Planning, capacity optimization and compliance' (Correlate operational and cost insights to accelerate cloud planning decisions, control costs and reduce risk. Optimize cost and resource usage through capacity management, reclamation and right sizing, improve planning and forecasting and enforce IT and configuration standards). 3. 'Automated and proactive workloads management' (Simplify and streamline IT operations with fully automated management of infrastructure and applications performance, while retaining full control. Automatically balance workloads, avoid contention and enable proactive detection and automatic remediation of issues and anomalies before end users are impacted). To the right of these benefits, the text 'and many more!' is displayed above a blue link 'VIEW ALL USE CASES'. At the bottom of the main content area are two buttons: 'INSTALL' and 'CONFIGURE EXISTING INSTANCE'. The footer of the interface shows 'Recent Tasks' and 'Alarms' tabs.

vm vSphere Client Menu Search Administrator@VSPHERE.LOCAL

Home Shortcuts

Hosts and Clusters VMs and Templates Storage Networking Content Libraries Global Inventory Lists

Policies and Profiles

vRealize Operations

Administration Update Manager

Tasks Events

Tags & Custom Attributes

New Search

vRealize Operations is not present!
It looks like vRealize Operations is not configured to work with this vCenter.

Why do I need vRealize Operations?

Application-aware monitoring across SDDC and multiple clouds

Centralize IT operations management of SDDC and multi-cloud environment, accelerate time to value and troubleshoot smarter with native integrations, unified visibility from applications to infrastructure health and actionable insights combining metrics and logs

Cloud Planning, capacity optimization and compliance

Correlate operational and cost insights to accelerate cloud planning decisions, control costs and reduce risk. Optimize cost and resource usage through capacity management, reclamation and right sizing, improve planning and forecasting and enforce IT and configuration standards.

Automated and proactive workloads management

Simplify and streamline IT operations with fully automated management of infrastructure and applications performance, while retaining full control. Automatically balance workloads, avoid contention and enable proactive detection and automatic remediation of issues and anomalies before end users are impacted.

and many more!

[VIEW ALL USE CASES](#)

INSTALL **CONFIGURE EXISTING INSTANCE**

Recent Tasks Alarms

vSphere Lifecycle



Update Manager Web Client Interface (HTML5)

Critical milestone achieved for vSphere Client

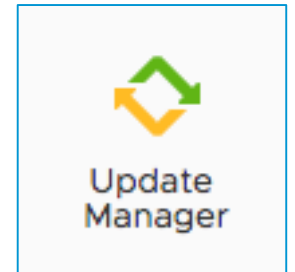
MANAGEMENT

vSphere 6.7 marks the first release of the Update Manager HTML5 interface

The new interface exhibits a clean design and an optimized workflows

vSphere Web Client is still available and required for the following:

- Update Manager configuration changes
- VMware Tools & VM Hardware updates
- Viewing Events and Notifications from the Update Manager interface
- Indicating which hosts are Quick Boot capable or disabling Quick Boot
 - Quick Boot will still be used when updating compatible hosts



Update Manager – Main Interface

Create baselines, upload patches, extensions, and ESXi images

MANAGEMENT

vm vSphere Client Menu Search Administrator@VCRITICAL.COM

Home Shortcuts

Hosts and Clusters
VMs and Templates
Storage
Networking
Content Libraries
Global Inventory Lists

Policies and Profiles
vRealize Operations

Administration
Update Manager

Tasks
Events

Tags & Custom Attributes

New Search

Update Manager

Home **Baselines** Updates ESXi images

NEW EDIT DELETE DUPLICATE

	Baselines and Baseline Groups	Content	Type	Last Modified
<input type="radio"/>	Upgrade to 6.7 7797198	Upgrade	Custom	3 weeks ago
<input type="radio"/>	Install EMC NAS	Extension	Custom	3 weeks ago
<input type="radio"/>	Non-Critical Host Patches (Predefined)	Patch	Predefined	3 weeks ago
<input type="radio"/>	Critical Host Patches (Predefined)	Patch	Predefined	3 weeks ago
<input type="radio"/>	Cisco UCS Group	Group	Custom	3 weeks ago

5 Baselines and Baseline Groups

Update Manager – Updates Tab

Check status or remediate hosts and clusters

MANAGEMENT

The screenshot displays the vSphere Client interface with the Update Manager 'Updates' tab selected for a cluster named 'Development'. The left sidebar shows a tree view with the cluster selected. The main content area features three summary cards: '8 Hosts' (with 6.7.0), 'All Hosts Compliant' (with a 'CHECK COMPLIANCE' button), and 'All Hosts Can Remediate' (with a 'PRE-CHECK REMEDIATION' button). Below these is a table of attached baselines.

	Attached Baselines	Compliance	Content	Type	Last Modified
<input type="radio"/>	Install EMC NAS	Compliant	Extension	Custom	3 weeks ago
<input type="radio"/>	Upgrade to 6.7 7797198	Compliant	Upgrade	Custom	3 weeks ago

Update Manager Workflow Micro Demo

Cluster Upgrade

vm vSphere Client

Menu

Search

Administrator@VCRITICAL.COM

AppServices

Summary Monitor Configure Permissions Hosts VMs Datastores Networks Updates

AppServices

r0911.vcritical.com

r0912.vcritical.com

r0913.vcritical.com

r0914.vcritical.com

control01

process101

process102

process103

process104

process105

process106

process107

process108

process109

process110

process111

process112

process113

process114

process115

process116

process117

process118

process119

Total Processors: 112

Total vMotion Migrations: 261

CPU

Free: 207.83 GHz

Used: 37.92 GHz

Capacity: 245.76 GHz

Memory

Free: 471.25 GB

Used: 291.4 GB

Capacity: 762.65 GB

Storage

Free: 2.67 TB

Used: 143.84 GB

Capacity: 2.81 TB

vSphere DRS

Balanced

Migration automation level: Fully Automated

Migration threshold: Apply priority 1, priority 2, priority 3, priority 4, and priority 5 recommendations.

Power management automation level: Off

DRS recommendations: 0

DRS faults: 0

Related Objects

Cluster Consumers

Update Manager

Compliance

Precheck Remediation

Some Hosts May Not Remediate (last check just now)

CHECK COMPLIANCE

PRE-CHECK REMEDIATION

Tags

Assigned Tag	Category	Description
--------------	----------	-------------

Rebooting VMware ESXi Hosts

What's the big deal?

Modern datacenter servers take significant time to reboot

- Self tests, device initialization, physical memory testing, etc.

Host updates typically require at least one reboot


- Major version upgrades have required pre- and post-upgrade reboots

Update Manager is used to patch or upgrade clusters

- Zero downtime for applications, when DRS is enabled
- Start-to-finish cluster update time still lengthy

Customers may choose to restrict host updates to defined maintenance windows

- Change control, policy compliance, or other non-technical requirements

Task Name	Target	Status
Initiate host reboot	 r0911.vcritical.com	✓ Completed

VMware vSphere 6.7 Optimizes Host Reboots

MANAGEMENT

Two different ways to reduce host downtime during updates

Single Reboot Upgrade

- Applies to ESXi 6.5 hosts
- Faster upgrades to ESXi 6.7

Helps customers get to
vSphere 6.7 faster

Quick Boot

- Applies to ESXi 6.7 hosts
- Faster patching of ESXi 6.7 hosts

Minimize maintenance
time when patching
vSphere 6.7

Single Reboot for Major Version Upgrades

Eliminate multiple reboots when upgrading hosts from ESXi 6.5 to 6.7

Update Manager upgrades hosts to the latest major version of ESXi

- The destination version must be the current vSphere version, not an older release

Major version upgrade workflow

- Upload an ISO image and create an upgrade baseline
- Attach the baseline to a vSphere cluster, scan, and remediate

In VMware vSphere 6.5 and earlier, hosts are rebooted before and after the upgrade

- Two reboots per host

VMware vSphere 6.7 is optimized for faster upgrades, and eliminates the first reboot

- Applicable to 6.5 → 6.7 upgrades only
- 6.0 hosts still reboot twice

Nothing to configure, single reboot is used automatically

Single Reboot Micro Demo

The screenshot shows the VMware vSphere Client interface. The left sidebar displays a tree view of the environment, including the 'Development' cluster. The main panel shows the 'Updates' tab for the 'Development' cluster. It displays 8 hosts, all compliant, and a remediation plan for upgrading to 6.7.7797198.

Hosts: 8 Hosts (8 with 6.7.0)

Compliance: All Hosts Compliant

Remediation: All Hosts Can Remediate

Check Compliance: (last check 58 minutes ago)

Pre-check Remediation: (last check 38 minutes ago)

Remediation Plan:

Attached Baselines	Compliance	Content	Type	Last Modified
Upgrade to 6.7 7797198	Compliant	Upgrade	Custom	2 weeks ago

Quick Boot

Restart the VMware ESXi hypervisor without rebooting the physical hardware

Quick Boot can make a big impact on datacenter operations!

- When a reboot is necessary, devices are shut down and the hypervisor restarts
- Hardware initialization and memory tests are not performed
- Improves host availability and shortens maintenance windows

Requirements

- Supported server hardware (current: short list of Dell and HPE systems)
- Native device drivers only – no vmklinux driver support
- Secure boot not supported

Host Settings

Allow Quick Boot	Yes
VM Power state	-
Disable removable media devices that might prevent a host from entering maintenance mode	No
Retry entering maintenance mode in case of failure	Yes

iLO Integrated Remote Console - Server: localhost | iLO: ILOMXQ709022X.eng.vmware.com

Power Switch Virtual Drives Keyboard Help

```
VMware ESXi 6.7.0 (VMKernel Release Build 7535516)
HP ProLiant DL360 Gen9
2 x Intel(R) Xeon(R) CPU E5-2668 v4 @ 2.00GHz
255.9 GiB Memory
```

Shutting down device drivers ...

1024 x 768

RC4

CRITICAL.COM | Help | Search

Taskstores Networks Update Manager

Stage Patches... Remediate... Go to Admin View

er: localhost | iLO: ILOMXQ7090221.eng.vmware.com

```
0 (02/17/2017)
t Packard Enterprise Development LP
ase wait...
iLO 4 IPv4: 10.175.48.46
iLO 4 IPv6: FE80::9618:82FF:FE7E:65AE
```

Task Name Target Status

Initiate host reboot	prod-arch-e045	✓ Completed
Enter maintenance mode	prod-arch-e045	✓ Completed
Initiate host reboot	prod-arch-e046	✓ Completed

720 x 400 POST Code: 00A2 RC4

Host Profiles Web Client Interface (HTML5)

Initial release of Host Profiles UI offers basic capabilities

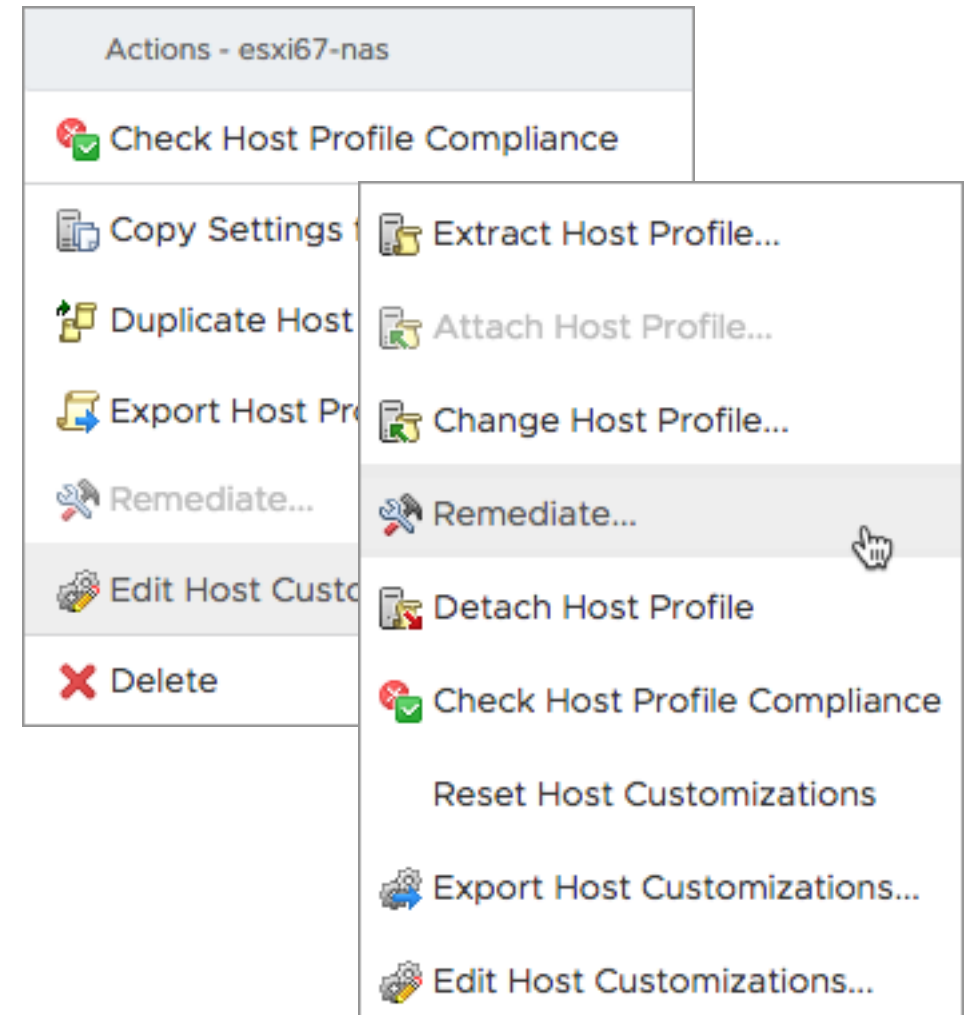
MANAGEMENT

Minimum Viable Product (MVP) for Host Profiles

- Focused around base operational tasks

Primary capabilities in this release

- Create/update profiles from a host
- Edit host customizations
- Check compliance
- Remediate



Virtual Hardware Compatibility Level

VM Hardware

vSphere 6.7 brings forth VM hardware version 14

Primarily HW 14 adds support for security and application technologies:

- VBS, vTPM, vIOMMU
- vPMEM, updates to vRDMA and vNVMe,
- per-VM EVC

Most resource maximums, such as vRAM and vCPUs stay the same

- Maximum virtual disks increased
 - 60 → 256
- New CPU enablement

Select a default virtual machine compatibility:

Compatible with: ⓘ

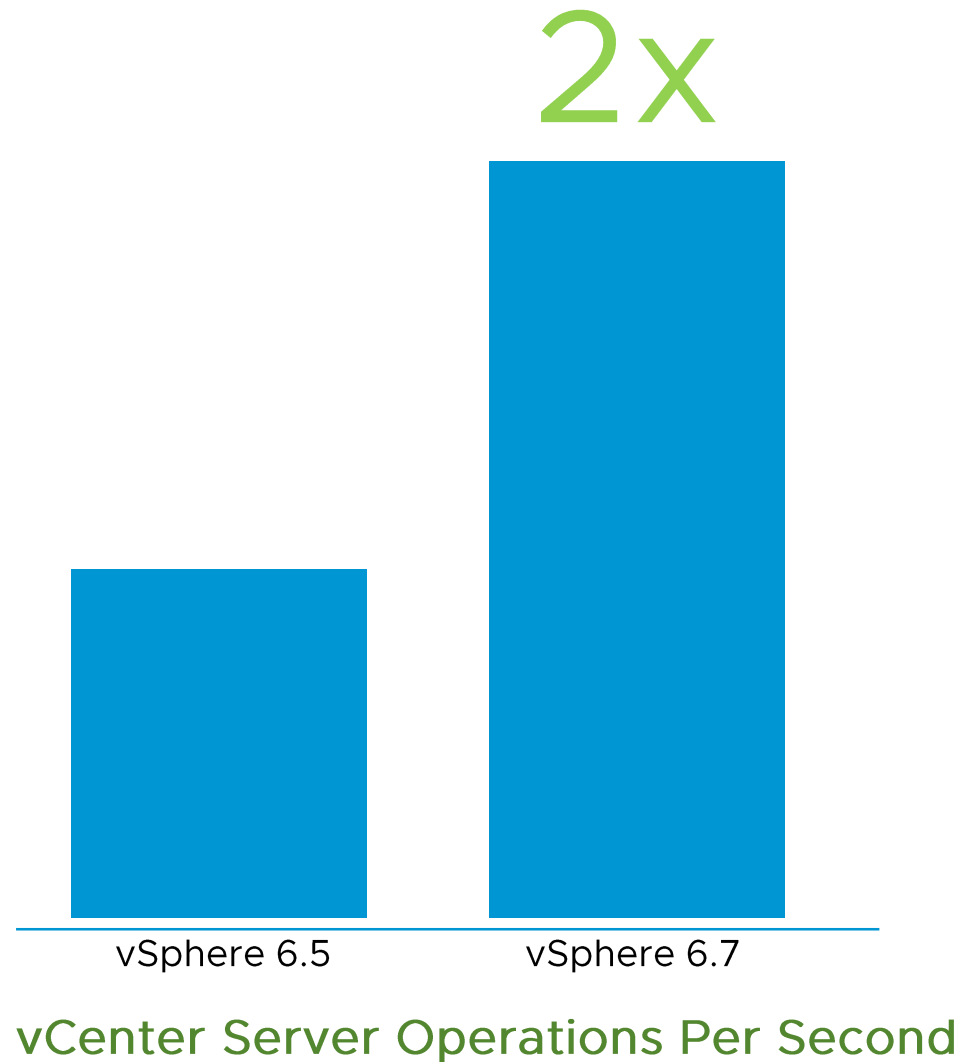
Virtual machines using hardware version 14 provide the best performance and latest features available in ESXi 6.7.

Distributed Resource Scheduler



Superior Performance: vSphere 6.7 versus 6.5

MANAGEMENT



3x Reduction in memory usage

3x Faster DRS-related operations (e.g. Power-On VM latency)

(All metrics compared at cluster scale limits)

Initial Placement Engine revamped

DRS in vSphere 6.7 introduces new initial placement engine

VMs are placed faster and more evenly distributed across hosts in cluster

Hosts in Cluster	6.0 algorithm	6.7 Algorithm
Host 1	64 VMs	16
Host 2	0 VMs	16
Host 3	0 VMs	16
Host 4	0 VMs	16

More frequent resource settings updates which allows DRS to react to resource changes faster.

Resource targets calculations are separated from load-balancing operations and run every minute

Resource pools aggressively distributes reserved memory amongst child-objects to act as buffer for resource demand spikes

Resource pool resource demand calculation includes consumed memory in 6.7. memory entitlement in previous versions is based on active memory. This aligns better vSphere DRS additional load-balancing options “Memory Metric for load-balancing” that includes consumed memory for load-balancing operations.

vSphere with Operations Management 6.7



vRealize Operations Manager Plugin for vSphere Client

MANAGEMENT

Available Out of the Box!

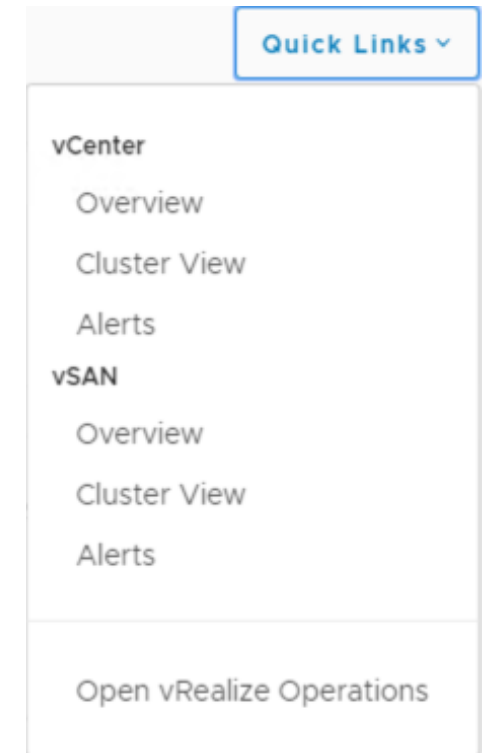
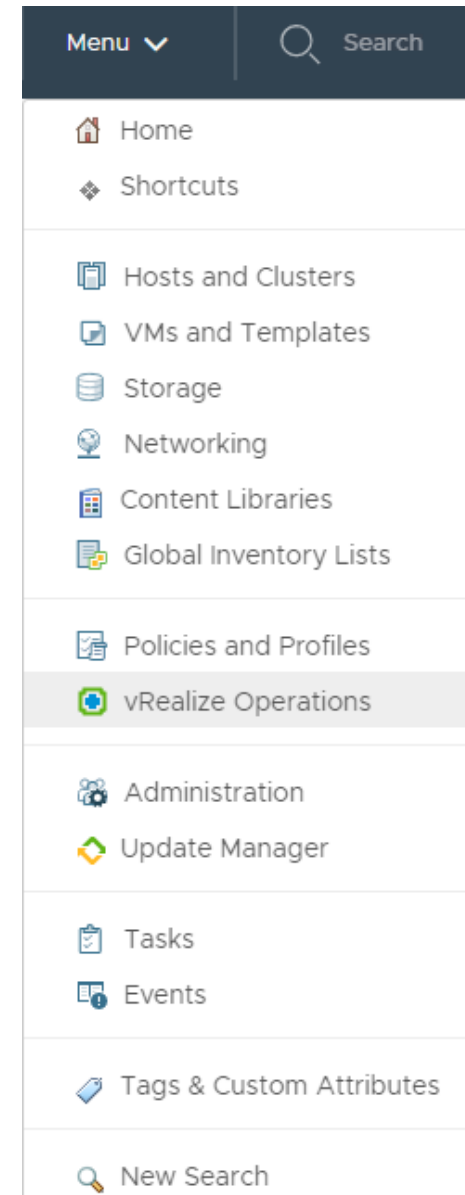
Integrates with vROps 6.7 Instances Automatically

Allows Users to Trial vROps Directly from vSphere Client

Six Dashboards Available

- vCenter Overview
- vCenter Cluster View
- vCenter Alerts
- vSAN Overview
- vSAN Cluster View
- vSAN Alerts

Offers a Direct Link to the vROps Instance



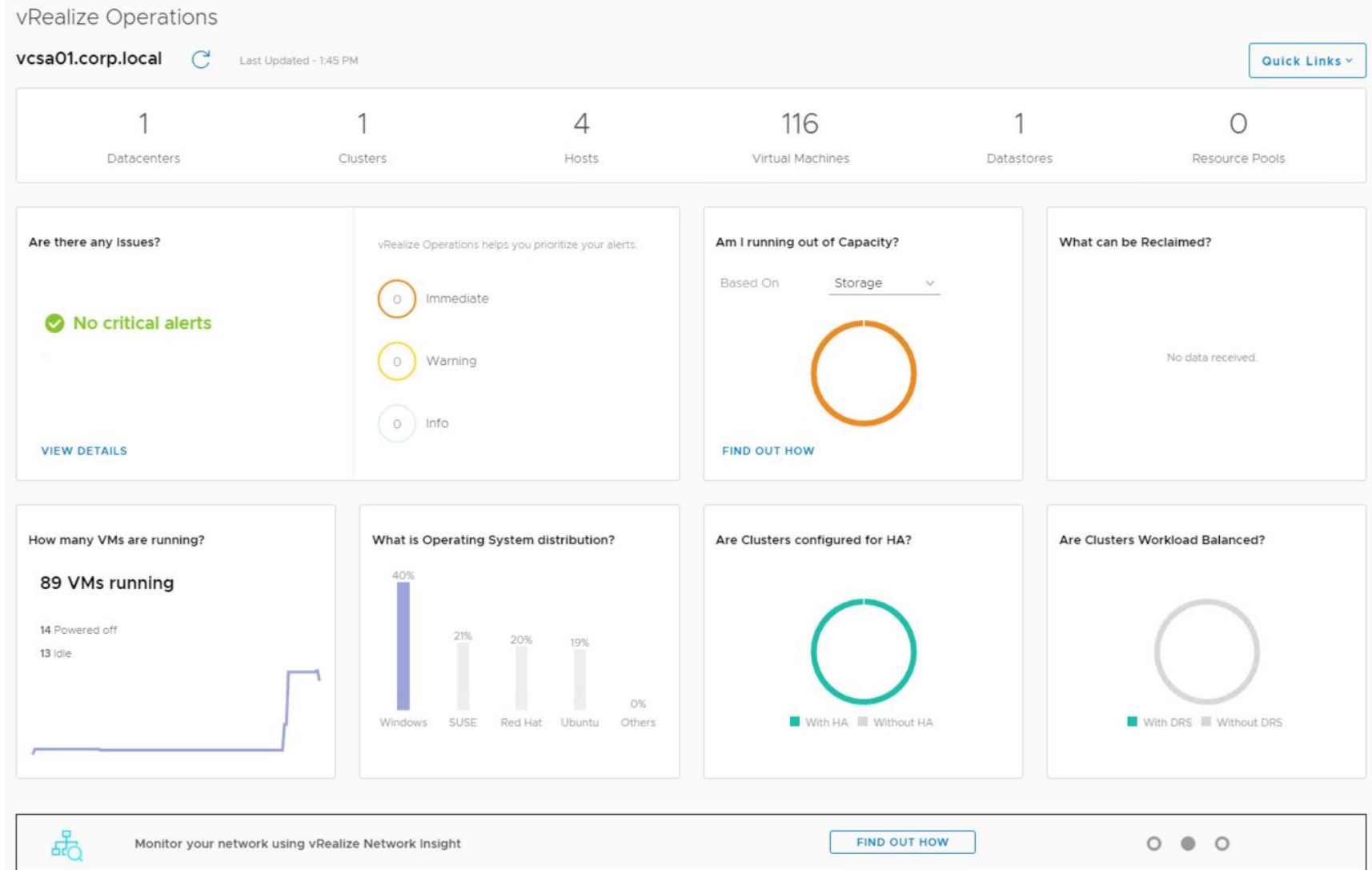
vCenter Server Overview Dashboard

An overview dashboard available within the vSphere Client

MANAGEMENT

Easily Access:

- vCenter Overview
- Issues
- Alerts
- Capacity Constraints
- Reclaimable Resources
- VMs Running
- OS Distribution
- Cluster Configuration
 - HA
 - DRS



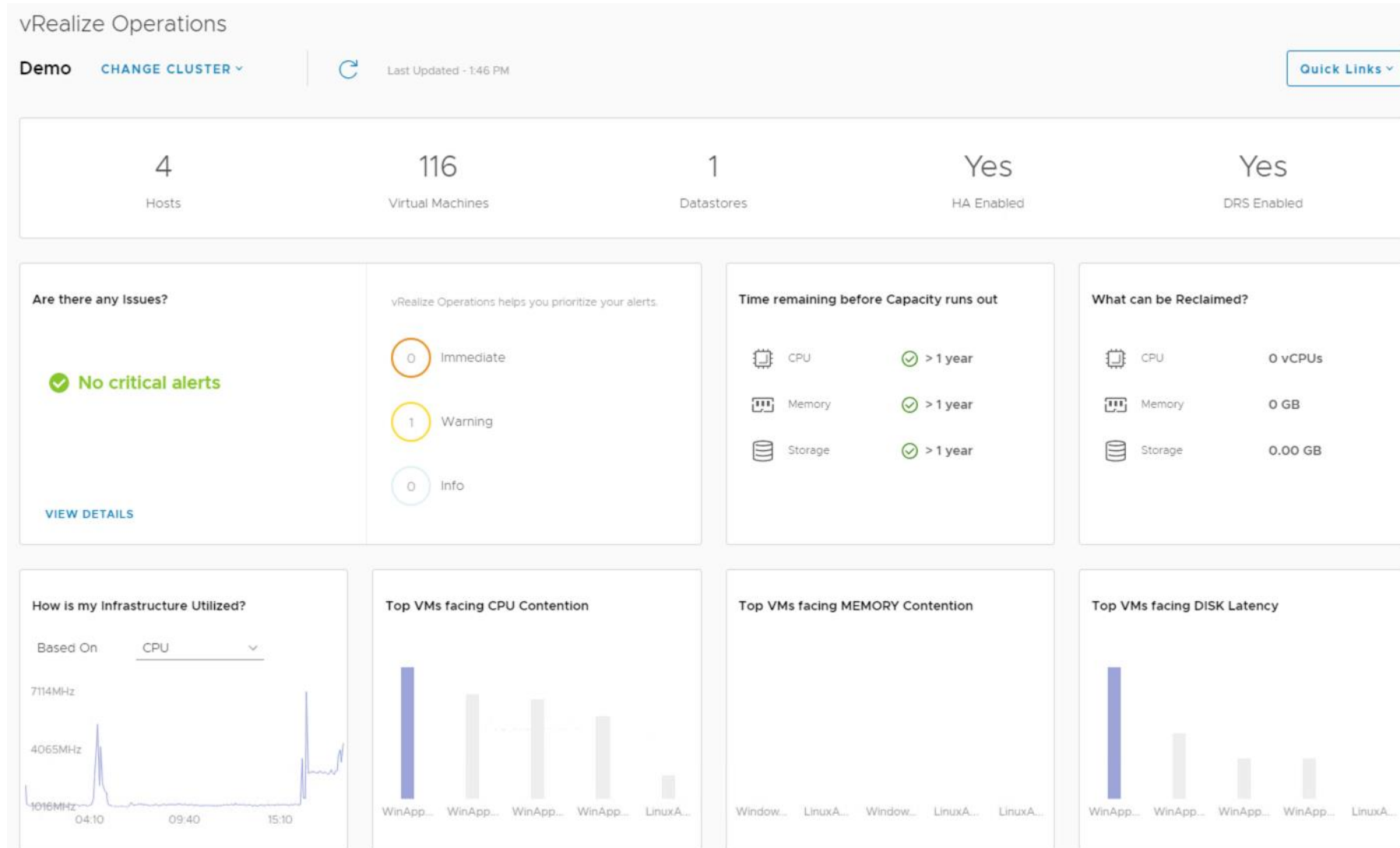
vCenter Server Cluster View Dashboard

An overview dashboard available within the vSphere Client

MANAGEMENT

Easily Access:

- High Level Cluster Information
- Alerts
- Issues
- Capacity Remaining
- Reclaimable Resources
- Utilization Graph
- Top N VMs for:
 - CPU Contention
 - Memory Contention
 - Disk Latency



vCenter Server Alerts Dashboard


An overview dashboard available within the vSphere Client

MANAGEMENT

Easily Access:


- Alert Counts
- Alerts by Severity
- Alert Information
- Link to Manage vROps Sourced Alerts


vRealize Operations


Alert Lists  Last Updated - 1:47 PM [Quick Links](#)


Following are vRealize Operations Alerts. Click [HERE](#) to manage alerts inside vRealize Operations.



Are there any issues?

 0 CRITICAL
Highest level

 0 IMMEDIATE
Medium level

 0 WARNING
Lowest level

 0 INFO
Informational purposes only

Criticality	Alert Description	Triggered On	Created On	Alert Type	Alert Sub Type	
	Cluster has unbalanced workload	Demo	Mar 8, 2018	Virtualization/Hypervisor Alerts	Performance	
1 - 1 of 1 alerts						

Introducing vRealize Operations Manager 6.7



Refreshed Quick Start Guide

Fast Access to the Things You Need

MANAGEMENT

The screenshot displays the VMware vRealize Operations Manager interface. At the top is a dark navigation bar with the 'vm vRealize Operations Manager' logo and tabs for 'Home', 'Dashboards', 'Alerts', 'Environment', and 'Administration'. On the right of this bar are icons for search, refresh, notifications, and user profile. Below the navigation bar is a 'Quick Start' section. On the left, a sidebar contains a 'BACK' button and a list of navigation items: 'Quick Start' (selected), 'Operations Overview', 'Optimize Performance' (with sub-items: Overview, Recommended Actions), 'Optimize Capacity' (with sub-items: Overview, Reclaim, Workload Optimization, What-If Analysis), 'Troubleshoot' (with sub-items: Virtual Machine, vSAN, Using Logs, vSphere Compliance), and 'Application Monitoring (Wavefront)'. The main content area is divided into four columns: 1. 'Optimize Performance' showing '0 DATACENTERS REQUIRING OPTIMIZATION' and links to 'Workload Optimization', 'Recommendations', and 'Optimization History'. 2. 'Optimize Capacity' showing '0 TOTAL SAVINGS OPPORTUNITY' and links to 'Assess Capacity', 'Reclaim', 'Plan', and 'Assess Cost'. 3. 'Troubleshoot' showing 'ISSUES USING ALERTS, LOGS AND DASHBOARDS' and links to 'Alerts', 'Logs', and a 'Troubleshoot' section with sub-links for Virtual Machine, Host, Cluster, and Datastore. 4. 'Manage Configuration' showing 'vSphere Compliance' and a 'Configuration' section with sub-links for Virtual Machine, Host, Cluster, and Distributed Switch. A 'VIEW MORE +' button is located at the bottom right of the main content area.

vm vRealize Operations Manager

Home Dashboards Alerts Environment Administration

BACK

Quick Start

Quick Start

Operations Overview

Optimize Performance

Overview

Recommended Actions

Optimize Capacity

Overview

Reclaim

Workload Optimization

What-If Analysis

Troubleshoot

Virtual Machine

vSAN

Using Logs

vSphere Compliance

Application Monitoring (Wavefront)

Optimize Performance

0

DATACENTERS REQUIRING OPTIMIZATION

Workload Optimization

Run workload optimization to ensure consistent performance in your datacenters.

Recommendations

View and take recommendations to improve overall system performance.

Optimization History

See completed optimization actions.

Optimize Capacity

0

TOTAL SAVINGS OPPORTUNITY

Assess Capacity

Determine if there is sufficient capacity in your environment.

Reclaim

Reduce waste by reclaiming unused resources.

Plan

Run scenarios to plan for future projects and changes.

Assess Cost

Analyze the costs of running your environment.

Troubleshoot

ISSUES USING ALERTS, LOGS AND DASHBOARDS

Alerts

Troubleshoot by reviewing active alerts in the system.

Logs

Troubleshoot by examining and analyzing logs.

Troubleshoot

Troubleshoot by object type, using metrics to detect anomalies:

Virtual Machine

Host

Cluster

Datastore

vSAN

Manage Configuration ⓘ

vSphere Compliance

Assess and Manage Compliance.

Configuration

Manage and assess configuration by object type:

Virtual Machine

Host

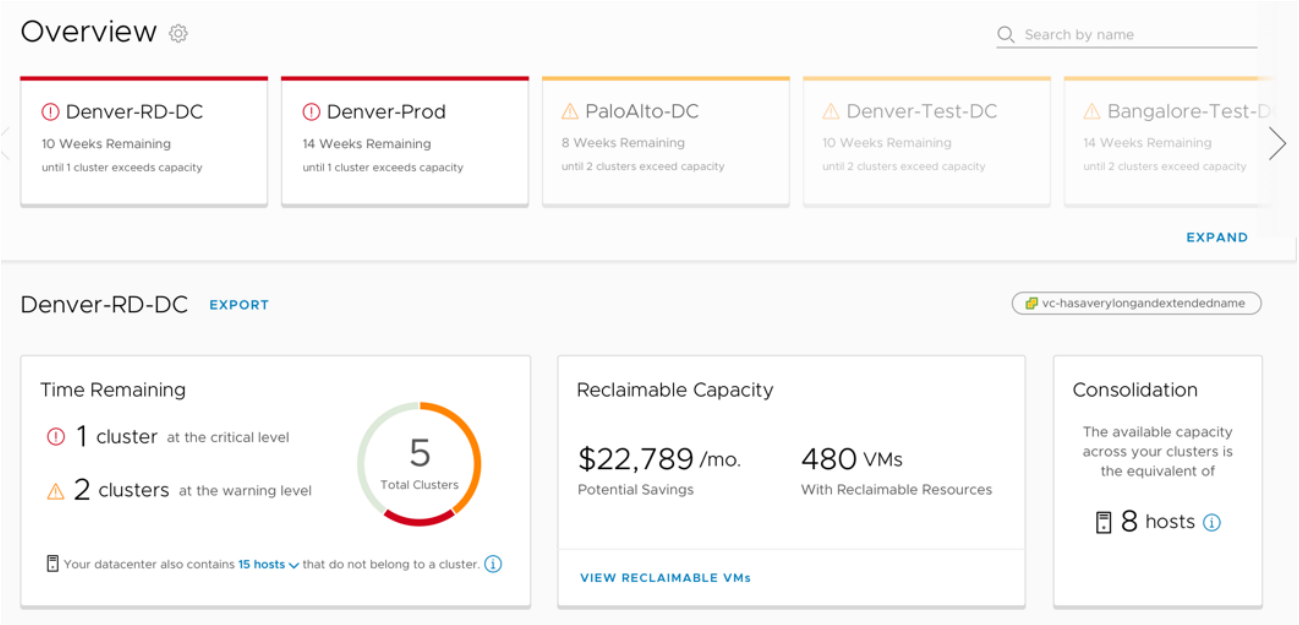
Cluster

Distributed Switch

VIEW MORE +

New Capacity Overview Dashboard

New Look and Actionable Recommendations



Recommendations

Option 1

Reclaim Resources

You can increase your time remaining to **14 weeks** by reclaiming resources:

CPU: 400 GHz
Memory: 56 GB
Storage: 78 GB

RECLAIM RESOURCES

OR

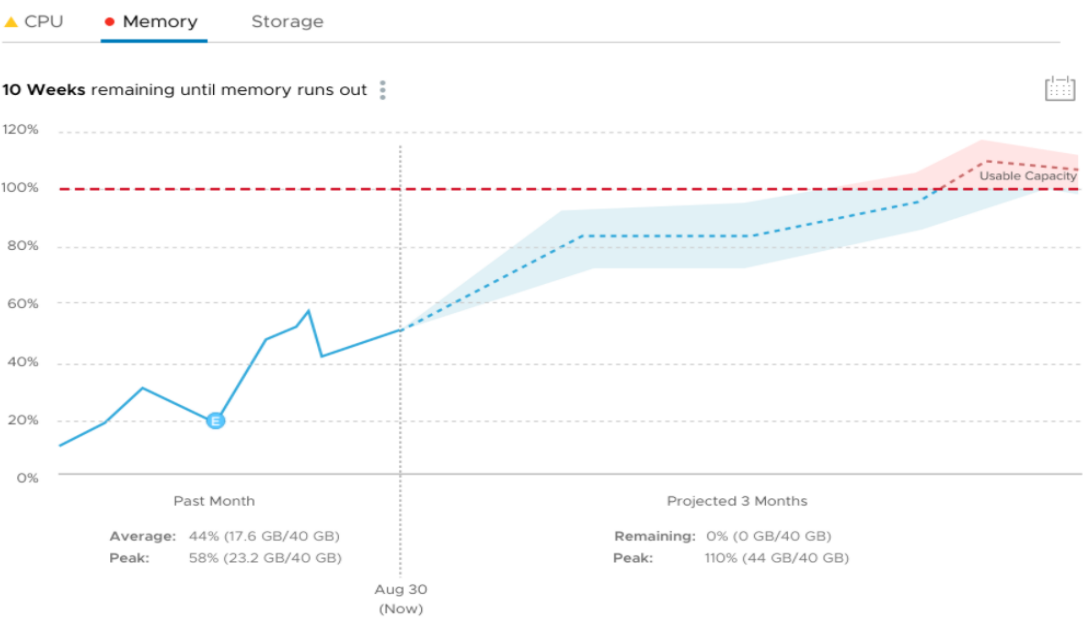
Option 2

Add Capacity

You can increase your time remaining to **14 weeks** by purchasing hardware:

Server: Dell PowerEdge T330
Quantity: 2
Cost/month: \$1750

RUN SCENARIO



New Reclaimable Capacity Dashboard

Quickly Realize Reclaimable Resources

Reclaim

Filter

✓ DemoDC

> 1 Year Remaining

0 Cost Savings

Optimized

ALL DATACENTERS

DemoDC

vcsa01

How much you can potentially save.

0/mo.
Cost Savings

68 VMs
With Reclaimable Resources

Total Reclaimable Capacity

Resource	Reclaimable Capacity	% Reclaimable
CPU	0 vCPUs	<div></div>
Memory	134 GB	<div></div>
Disk Space	45.54 KB	<div></div>

Duration older than:

x

Filter

Powered Off VMs 0/mo.

Idle VMs 0/mo.

Snapshots 0/mo.

Oversized VMs

DELETE SNAPSHOT(S)

EXCLUDE VM(S)

▼ Demo

0/mo.

45.54 KB

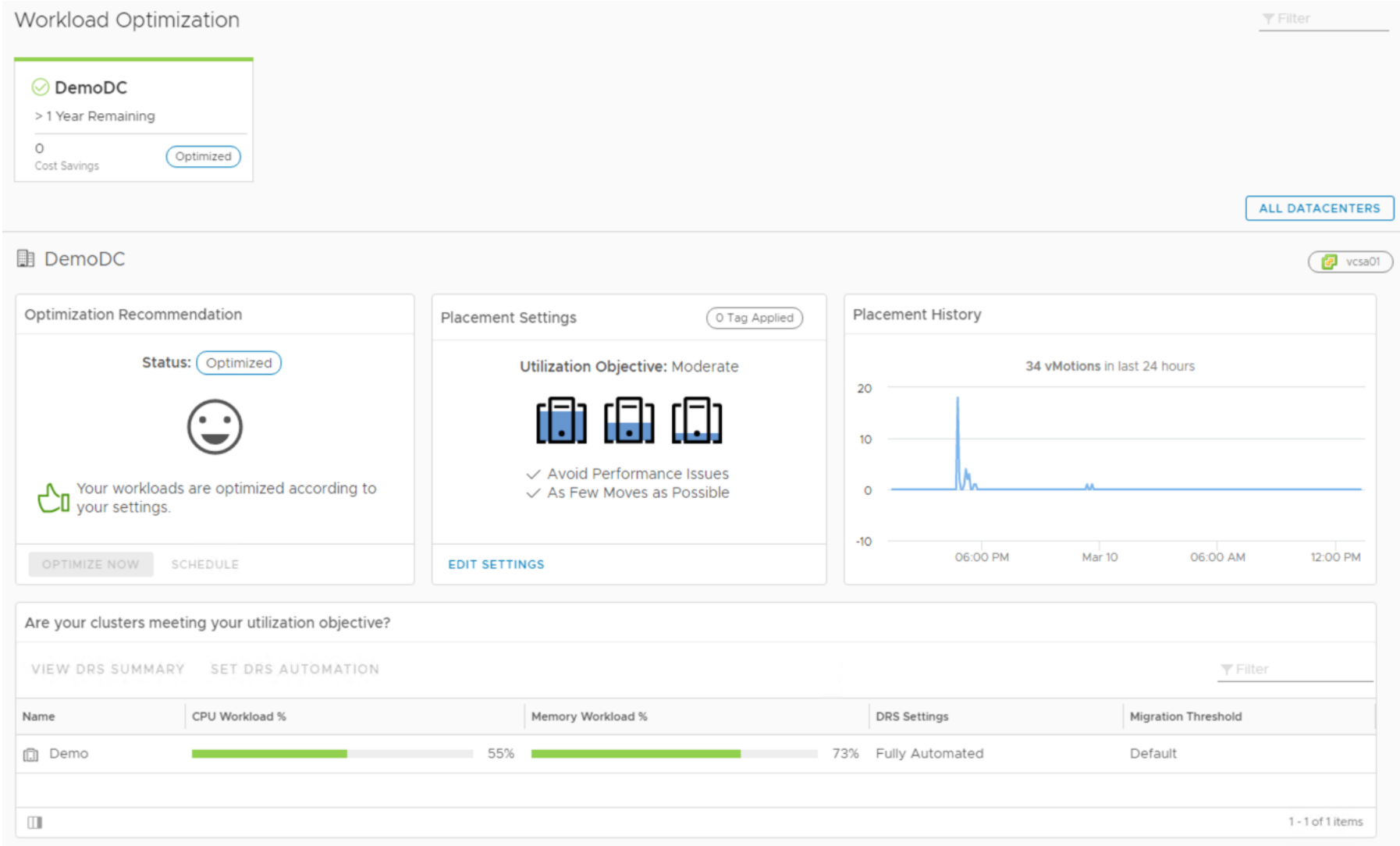
✓ VM Name	Cost Savings / mo ↓	Reclaimable Storage	Age
✓ 6960d0b5-5de0-4b1f-a31a-d595a7a90cb9	?/mo.	45.54 KB	119 Days

1 - 1 of 1 items

SHOW EXCLUDED VMS

Updated Workload Optimization Dashboard

Clean Interface to Make Sure Workloads are Happy



Workload Optimization Now Supports Tags

Control How Workload is Spread With vCenter Tags

Workload Automation Policy Settings

Affected Policy: vSphere Solution's Default Policy (May 26, 2017 1:58:09 PM)

Workload Optimization

Balance Consolidate

Balance will spread workloads evenly over the available resources, but may move workloads more often. This is good for more stable populations.

Relieve stress will minimize workload contention, but will not attempt to move workloads to achieve better balance or consolidation.

Consolidate will place workloads into as few clusters as possible, but allows for less responsive capacity. This is good for populations with steady demand, and may reduce licensing and power costs.

Cluster Headroom

0% 50%

Headroom provides a buffer of space for the cluster, which may cause a rebalance to occur earlier than it would otherwise.

Tag Based VM Placement

Select the criteria you would like to use for tag based placement of VMs. This policy will only move VMs to cluster with matching tags.

Move Status Move Me Enable Prioritization ☒

Non-Prioritized Tags

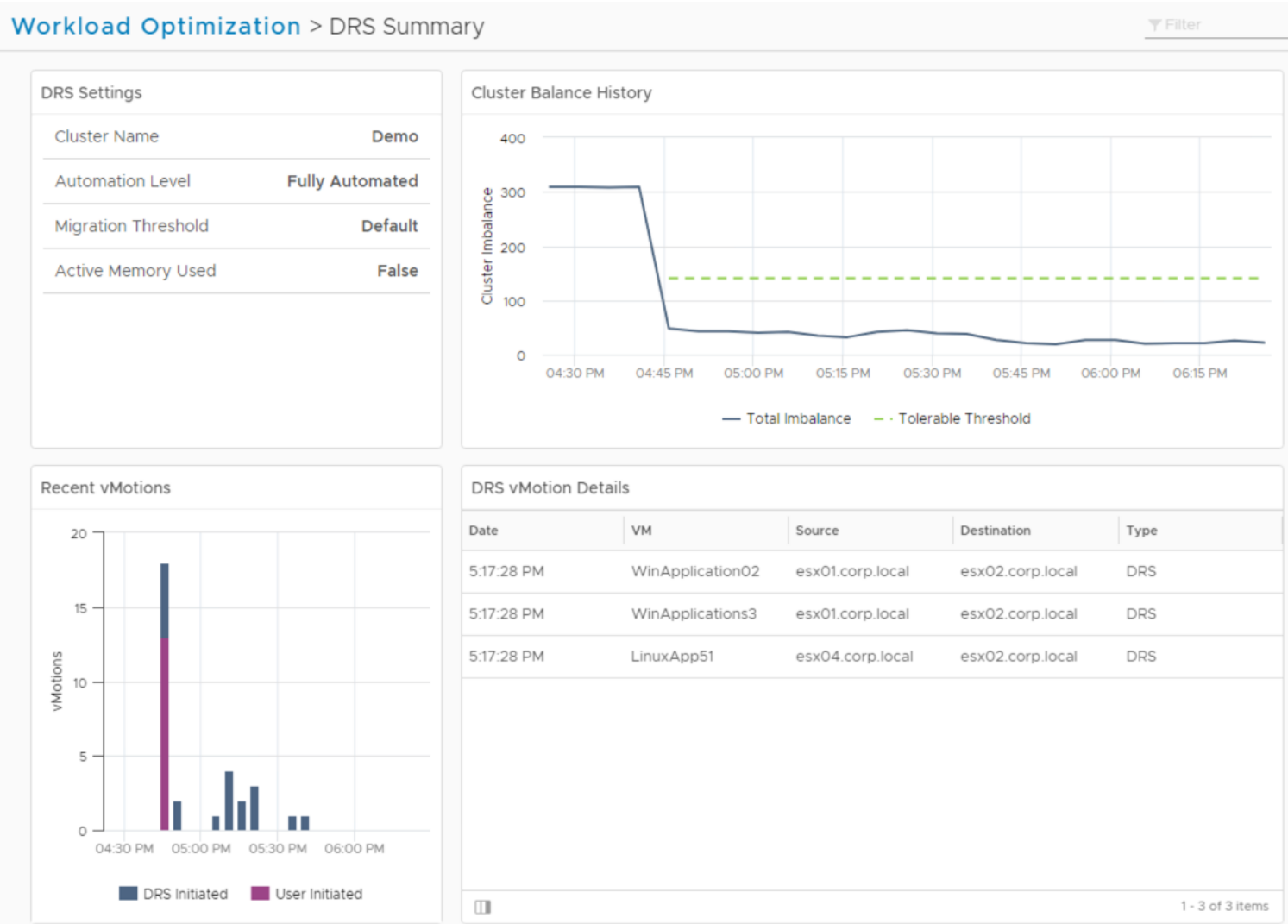
Prioritized Tags

-
-

Warning: Changes to this policy will affect other containers.

New DRS Summary View

High Level DRS Overview and Detailed vMotion History



New Workload Analysis and Projection Workflow


Accurately Analyze Potential Future Workloads

vmvRealize Operations ManagerHomeDashboardsAlertsEnvironmentAdministration

What-If Analysis

New Scenario

Add Workload



Use this scenario for expanding or adding an application. Determine if the new VMs will fit into your environment.

SELECT

Saved Scenarios

RUN SCENARIOEDITDELETE

Filter

<input type="checkbox"/>	Scenario Name	Date Created	Scenario Start & End Date
<input type="checkbox"/>	Adding Q4 Workload	Mar 08, 2018	Aug 31, 2018 - Mar 01, 2019

1 - 1 of 1 items

Walking Through Adding New Workloads – Part 1

Workloads Modeled After Existing VMs or Specific CPU/RAM/Disk Usage

MANAGEMENT

vm vRealize Operations Manager

Home

Dashboards

Alerts

Environment

Administration

» Add Workload

SCENARIO NAME

Adding Q4 Workload

LOCATION

WHERE WOULD YOU LIKE TO ADD YOUR WORKLOAD?

DemoDC (vcsa01)

Demo

APPLICATION PROFILE

☐ Configure

☒ Import from existing VM

FIND EXISTING VMS AND USE THEIR UTILIZATION BEHAVIOR TO MAKE SCENARIO PROJECTIONS

SELECT VMS

SELECTED VMS

VM Name	Peak CPU	Peak Memory	Peak Storage	Quantity	
WinApplication01	242.67 MHz	923.86 MB	13.69 GB	20	

DATE

START DATE

8/31/18

END DATE*

3/01/19

*Our engine is able to make projections up to a maximum of one year from the current date.

RUN SCENARIO

SAVE

CANCEL

Walking Through Adding New Workloads – Part 2

Analyze Current On-Premises Resources and Cloud Based Costs

Add Workload

Adding Q4 Workload

EDIT

SAVE

X

Scenario	Add VMs	Total to be Added	20 VMs		
Date	Aug 31, 2018 to Mar 01, 2019	CPU	4.54 GHz	Memory	6.11 GB
				Storage	273.79 GB

Add VMs to


DemoDC (vcsa01)

▶


Demo

RUN SCENARIO


Private Cloud



The workload does not fit in Demo within your selected timeframe and would decrease your time remaining from > 1 Year to 174 days.

	Demo	Peak CPU	Memory Deficit	Storage Deficit
		17.22 GHz	12.52 GB	199.16 GB

Public Cloud




HYBRID CLOUD

VMware Cloud

COST

\$93/month

LEARN MORE



PUBLIC CLOUD

AWS

COST

\$2,235/month

LEARN MORE

vSphere 6.7 RESTful APIs



vSphere RESTful APIs

Newly Added APIs

MANAGEMENT

- Appliance API
 - Backup Job Scheduling
 - Restore Job Creation
 - Granular Service Control
 - New Update Workflows
 - Policy Handling
 - Staging
 - Installation
 - Service Management
 - Local Account Configuration
- vCenter
 - New Deployment Methods
 - Compute Policies and Capabilities
 - Storage Policies
 - VM Cloning Tasks
 - vMotion Support
 - List Guest Customization Specifications
 - VM Tools Management
 - Improved Tag Handling
- CIS
 - Batch Activity Support
 - Task Management
- Content Library
 - Configuration Tasks
 - Item Lifecycle Management

vSphere 6.7 Command Line Interfaces



VMware PowerCLI 10

The PowerCLI You Know and Love, Now Available Everywhere

MANAGEMENT

Installable from the PowerShell Gallery

Now Supports PowerShell Core 6.0.1

- MacOS
- Linux

Deprecated Cmdlets

- Get/Set-VMGuestNetworkInterface
- Get/New/Remove-VMGuestRoute

Community Sourced Corrections

Default certificate behavior is to DENY

- Install Trusted Certificates
- Set-PowerCLIConfiguration – InvalidCertificateAction Ignore

```
kruddy-m01:~ kruddy$ pwsh
PowerShell v6.0.1
Copyright (c) Microsoft Corporation. All rights reserved.

https://aka.ms/pscore6-docs
Type 'help' to get help.

PS /Users/kruddy> Install-Module -Name VMware.PowerCLI -Scope CurrentUser
PS /Users/kruddy> Get-Module VMware.* -ListAvailable

        Directory: /Users/kruddy/.local/share/powershell/Modules

ModuleType Version      Name                               ExportedCommands
-----
Script      6.5.2.7...  VMware.DeployAutomation           {Add-DeployRule, Add-
Script      6.5.2.7...  VMware.ImageBuilder               {Add-EsxSoftwareDepot
Manifest    10.0.0....  VMware.PowerCLI                   {
Script      10.0.0....  VMware.VimAutomation.Cis.Core     {Connect-CisServer, D
Script      10.0.0....  VMware.VimAutomation.Cloud        {Add-CIDatastore, Con
Script      10.0.0....  VMware.VimAutomation.Common       {
Script      10.0.0....  VMware.VimAutomation.Core         {Add-PassthroughDevice
Script      6.5.4.7...  VMware.VimAutomation.HA           Get-DrmInfo
```

VMware Datacenter CLI (DCLI)

Automation of vSphere and VMware Cloud on AWS

MANAGEMENT

Accessible via:

- Windows, Linux, Mac OS
- VCSA shell
- Windows vCenter Server Cmd Prompt

Interactive Shell Mode

- Supports Tab Completion
- Saves History Across Sessions

Supported Output Formats

- Simple
- Table
- JSON
- XML
- HTML

```
root@photon-FgMoCqkY2 [ ~/vmware-dcli ]# ./dcli.sh
Welcome to VMware Datacenter CLI (DCLI)

usage: <namespaces> <command>

To auto-complete and browse DCLI namespaces:    <TAB>
If you need more help for a command:             vcenter vm get --help
If you need more help for a namespace:           vcenter vm --help
For detailed information on DCLI usage visit:     http://vmware.com/go/dcli

dcli> vm list
|-----|-----|-----|-----|-----|
|Vm      |Name                               |PowerState |CpuCount|MemorySizeMiB|
|-----|-----|-----|-----|-----|
|vm-117|photon01                          |POWERED_OFF|1       |12048         |
|vm-119|AppVM                              |POWERED_OFF|1       |11024         |
|vm-120|DBVM                               |POWERED_OFF|1       |16            |
|vm-123|f3680d62-b912-4909-b80e-c0e9b71545c6|POWERED_OFF|1       |11024         |
|-----|-----|-----|-----|-----|

dcli> system time get
version
storage
uptime
time
update
lastcheck
get
```

vSphere 6.7 Software Development Kits



vSphere Automation SDKs

Open-Sourced SDKs Available on GitHub

MANAGEMENT

VMware maintained

Get up & running in less than 5 minutes!

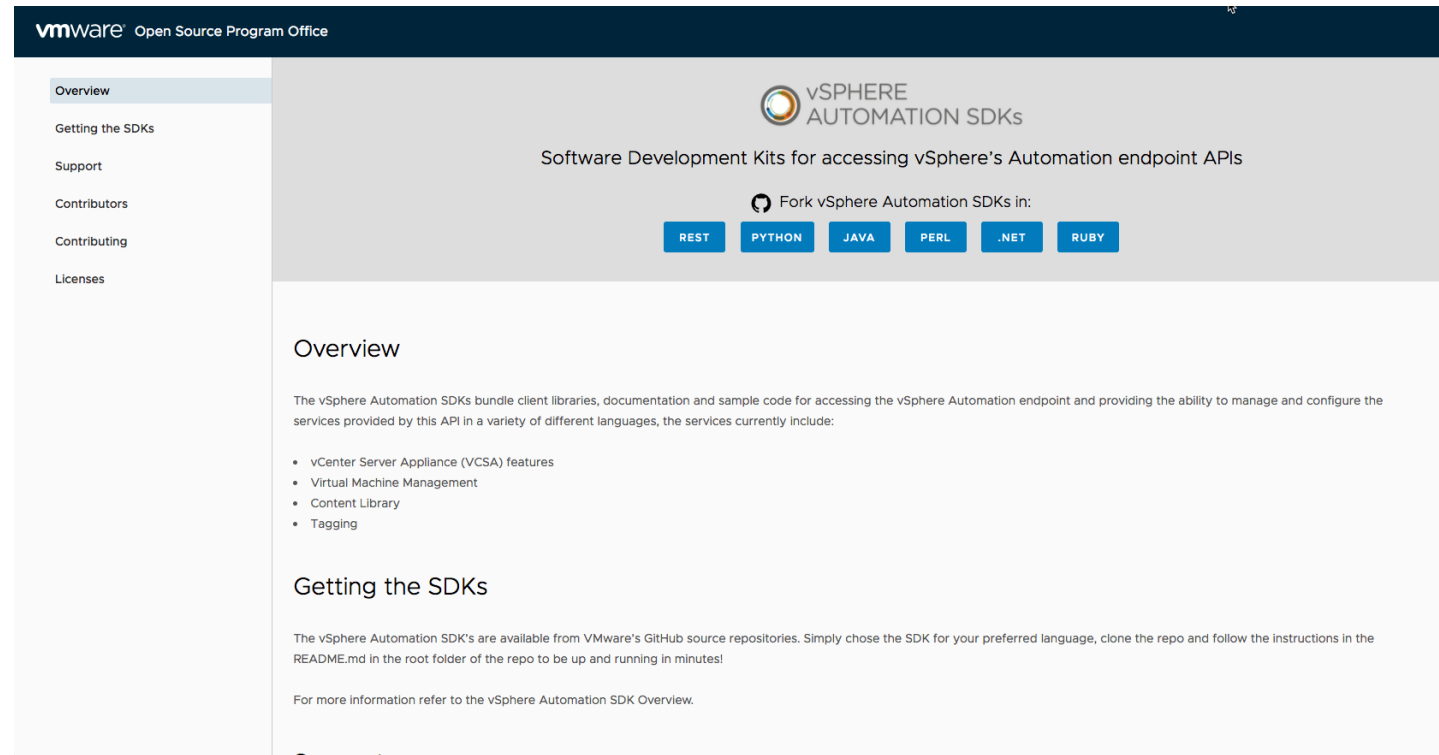
SDKs for managing vSphere REST API
and VMware Cloud on AWS

Available in languages such as:

- REST
- Python
- Java
- Perl
- .NET
- Ruby

Full of Samples

Community Contributions Welcome



Comprehensive Built-in Security



Support for Trusted Platform Module (TPM) 2.0 for use by ESXi

Support for Windows 10 and Windows Server 2016 Security Features

- Virtualization Based Security (VBS)
- Credential Guard

Support for Virtual TPM 2.0

- Secured with VM Encryption

New VM Encryption UI enhancements in the HTML5 Web Client

FIPS 140-2 enablement

TLS 1.2 by default

New alarms

- Secure ESX/ESXi VMkernel
- Various security features
- vCenter against threats and malware
- Secure ESX/ESXi all remaining VMs

ue-vc-client.eng.vmware.com

ACTIONS

SummaryMonitorConfigurePermissionsDatacentersHosts & ClustersVMsDatastoresNetworks

Issues and Alarms

All Issues

Triggered Alarms

Alarm Definitions

Performance

Advanced

Security

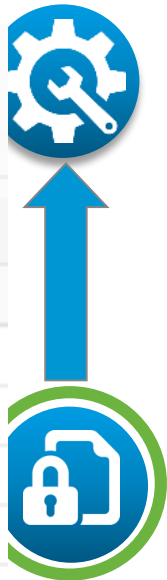
Tasks and Events

Tasks

Events

PreviousNext

Name	Attestation	Last verified	TPM version	Message
10.19.89.75	Passed	2/4/2017, 4:23 AM	2.0	
10.20.132.151	Passed	1/31/2016, 9:14 PM	2.0	
10.20.232.212	N/A	N/A	1.2	
10.20.233.175	N/A	N/A	1.2	
10.20.235.198	Failed	3/28/2017, 3:46 AM	2.0	Attestation failed
10.20.235.199	Passed	12/23/2016, 6:56 PM	2.0	
10.20.235.200	N/A	N/A	N/A	
10.21.235.200	N/A	N/A	N/A	



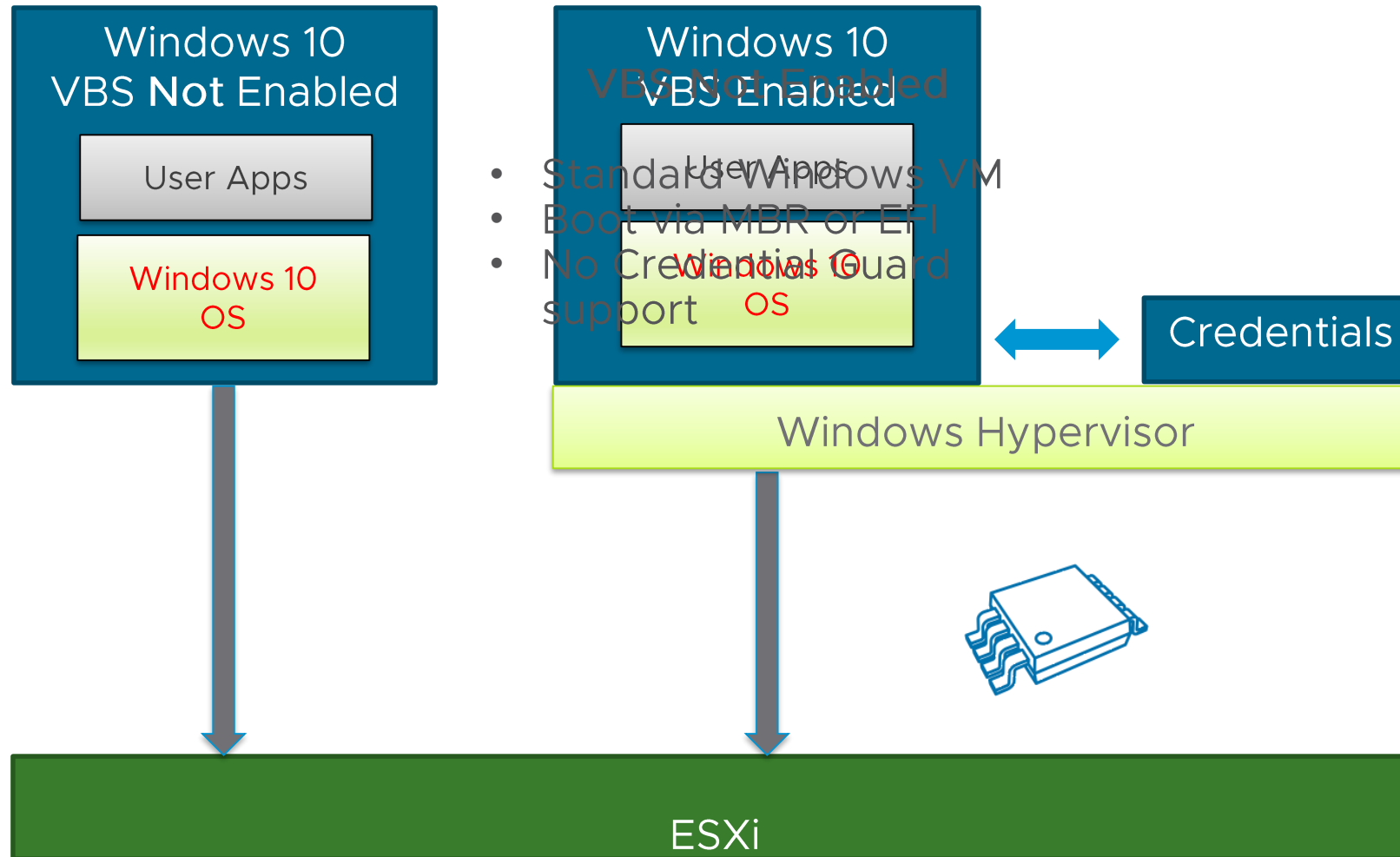
ESXi Host

Comprehensive security dashboard

Windows 10 & 2016 Security Features Support



VBS Explained



SECURITY

VBS Enabled

- Automatically enabled:
 - Hardware Virtualization
 - IOMMU
 - EFI firmware
 - Secure Boot
- Credential Guard Ready
 - Enable via Windows

New Hardware available

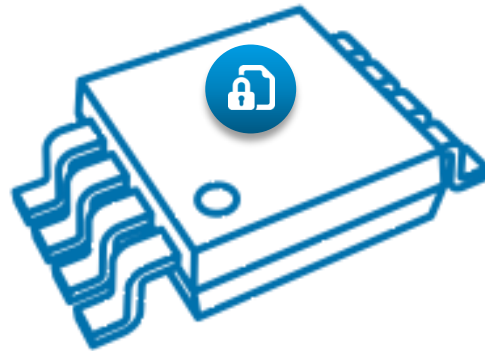
- Virtual Trusted Platform Module (vTPM 2.0)
- TPM data secured with VM Encryption

Securing Virtual TPM Data

vTPM data is securely stored in
virtual machine certificate,
encrypted using VM
Trusted Encryption
Module 2.0



Windows 2016



Hardware

Name ↑
vmware-0.log
vmware-1.log
vmware.log
vmx-Windows2016-bf697ed89a2ec2
Windows2016-0288a296.hlog
Windows2016-07aab2d8.vswp
Windows2016.nvram
Windows2016.vmdk
Windows2016.vmsd
Windows2016.vmx
Windows2016.vmx.lck
Windows2016.vmx.f

vTPM Summary

Windows2016

ACTIONS

Summary

Monitor

Configure

Permissions

Datastores

Networks

Powered Off

Guest OS: Microsoft Windows Server 2016 (64-bit) - VBS true

Compatibility: ESXi 2016p6 and later (VM version 14)

VMware Tools: Not running, version:10287 (Current)

[More info](#)

DNS Name:

IP Addresses:

Host: esxi-vsan-40.lab1.local

Launch Web Console

Launch Remote Console

VM Hardware

Encryption	VM configuration files are encrypted. No hard disks are encrypted.
> CPU	2 CPU(s)
> Memory	4 GB, 0 GB memory active
> Hard disk 1	40 GB
> Network adapter 1	VM Network (disconnected)
CD/DVD drive 1	Disconnected
Floppy drive 1	Disconnected
> Video card	8 MB
<div>Virtual Trusted Platform Module</div>	Present
SHA256withRSA-RSA	2.23.133.2.3=#0c0b69643a3030303230303635,2.23.133.2.2=#0c0b564d776172652054504d32,2.23.133.2.1=#0c0b69643a3536344435373030
SHA256withECDSA-EC	2.23.133.2.3=#0c0b69643a3030303230303635,2.23.133.2.2=#0c0b564d776172652054504d32,2.23.133.2.1=#0c0b69643a3536344435373030
	Manage Certificates

vTPM Storage Root & Endorsement Key Certificates

SECURITY

Windows2016

ACTIONS

Summary

Monitor

Configure

Permissions

Datastores

Networks

TPM

Certificates

Signing Requests

More

Alarm Definitions

Scheduled Tasks

VMware EVC

VM Hardware

Policies

Export

Type	Algorithm	Signing Authority
SHA256withRSA	RSA	CA
SHA256withRSA	EC	CA

Certificate Info

Issuer	OU=VMware Engineering,O=mgt-vc-e-01.lab1.local,ST=California,C=US,DC=local,DC=vsphere,CN=CA
Version	3
Kind	X.509
Valid From	01/09/2018, 12:07:17 PM
Valid To	12/31/2027, 2:14:06 PM
Algorithm	SHA256withRSA
Public Key algorithm	EC

Virtual TPM takeaways

Does not require or map to a hardware TPM

Virtual machines are provided with trusted VIRTUAL hardware

Trusted virtual hardware is presented to VM's by a host

The ESXi host has a root of trust to PHYSICAL hardware

vTPM “uniqueness” is established by certificates from either VMCA or another certificate authority

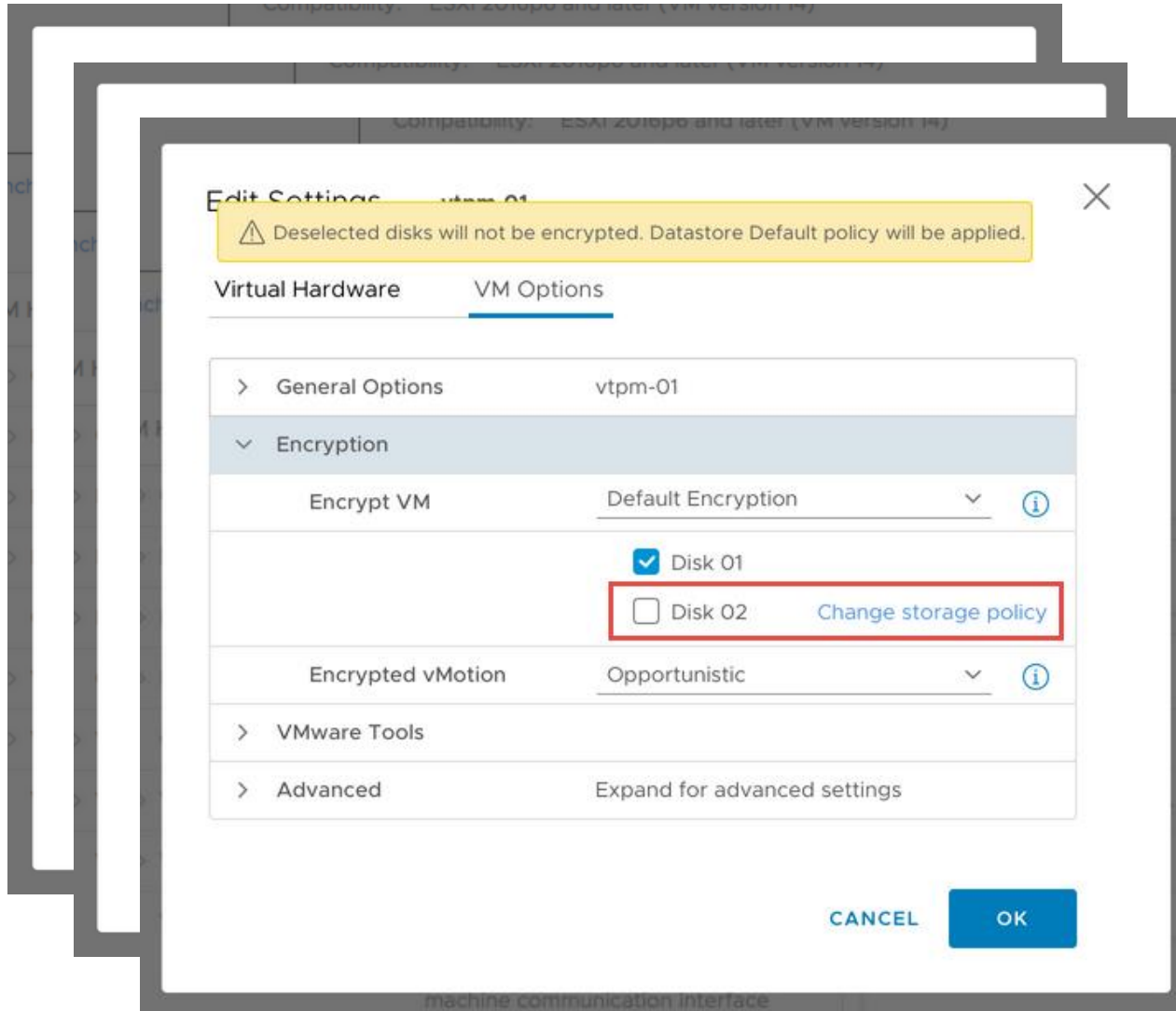
VM Encryption in HTML5 UI



VM Encryption

Easy to Manage Security

SECURITY



- Easy button to enable encryption with a single click
- Granular reporting of the “Encryption State” of the VM
- Allows to do further customizations easily

Additional vSphere 6.7 Features



Current status:

- Kernel crypto module and OpenSSL module have got through FIPS evaluation today
 - VMkernel
 - OpenSSL

V.Next status:

- FIPS
 - VMkernel
 - OpenSSL
 - Java (VMCA only)
 - SSH
- Enabled by default!



Secure By Default: TLS 1.2 only for v.Next

TLS 1.2 by default

- You can “downgrade”.
- Only Key Managers that support TLS 1.2 will be supported

TLS 1.2



New Alarms

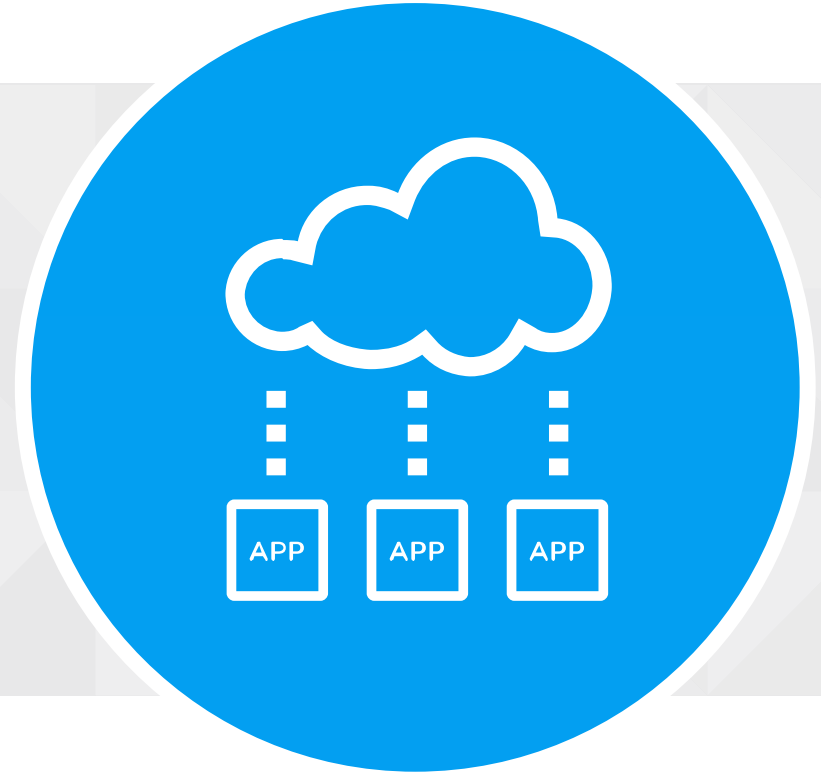
Virtual Machine Locked Alarm

Host Requires Encryption Mode Enabled Alarm

KMS Client and server Certificate Status Alarm

ADD ENABLE/DISABLE DELETE					
	Alarm Name	Object type	Defined In	Enabled	Last modified
<input type="radio"/>	<input checked="" type="checkbox"/> KMS Server Certificate Status	vCenter Server	This Object	Enabled	03/15/2018, 11:29:30 AM
	Name	KMS Server Certificate Status			
	Description	This alarm indicates that the KMS server certificate is getting close to its expiration date.			
	Targets	vCenter Server			
	Alarm Rules	IF KMS Server Certificate will expire soon. THEN trigger the alarm as critical			
	Last modified	03/15/2018, 11:29:30 AM			
<input type="radio"/>	<input checked="" type="checkbox"/> Virtual Machine Locked Alarm	Virtual Machine	This Object	Enabled	03/15/2018, 11:29:30 AM
	Name	Virtual Machine Locked Alarm			
	Description	Alarm to indicate that the virtual machine is locked.			
	Targets	All virtual machines in vCenter server mgt-vc-e-01.lab1.local			
	Alarm Rules	IF Virtual machine is locked because keys are missing on host. OR Virtual machine is locked because keys are missing on KMS cluster. OR Virtual machine is locked because of a KMS cluster error. THEN trigger the alarm as critical OR IF Virtual machine is unlocked. THEN trigger the alarm as normal			
	Last modified	03/15/2018, 11:29:30 AM			
<input type="radio"/>	<input checked="" type="checkbox"/> Host Requires Encryption Mode Enable...	Host	This Object	Enabled	03/15/2018, 11:29:30 AM
	Name	Host Requires Encryption Mode Enabled Alarm			
	Description	Alarm to indicate that the host requires encryption mode enabled.			
	Targets	All hosts in vCenter server mgt-vc-e-01.lab1.local			
	Alarm Rules	IF Host requires encryption mode enabled and the key is not available on the KMS cluster. OR Host requires encryption mode enabled and the KMS cluster is not available. THEN trigger the alarm as critical OR IF com.vmware.vc.crypto.HostKeyUpdatedEvent OR Host is on encryption mode.			

Universal Application Platform



Universal Application Platform

The platform for mission critical workloads

ENTERPRISE APPS

Support for more business critical applications through:

- Broader hardware ecosystem
 - Native 4K drives
 - Intel VMD for NVMe
- Software enhancements
 - RoCE v2
 - 256 disks per VM
 - Automatic UNMAP for SE sparse disks
- Performance optimizations
 - NBD/SSL throughput for backups
 - Configurable UNMAP rate
 - 1 GB pages

Universal Application Platform

Expanding the envelope for new workloads

ENTERPRISE APPS

New vSphere 6.7 Features

Enhancements for NVIDIA GRID vGPUs

- Improves host lifecycle management

vSphere Persistent Memory

- Significantly enhances performance

RDMA

- Connectivity to low-latency storage fabrics

Instant Clone

- Reduces provisioning times

Target Workloads

3D graphics

Big Data

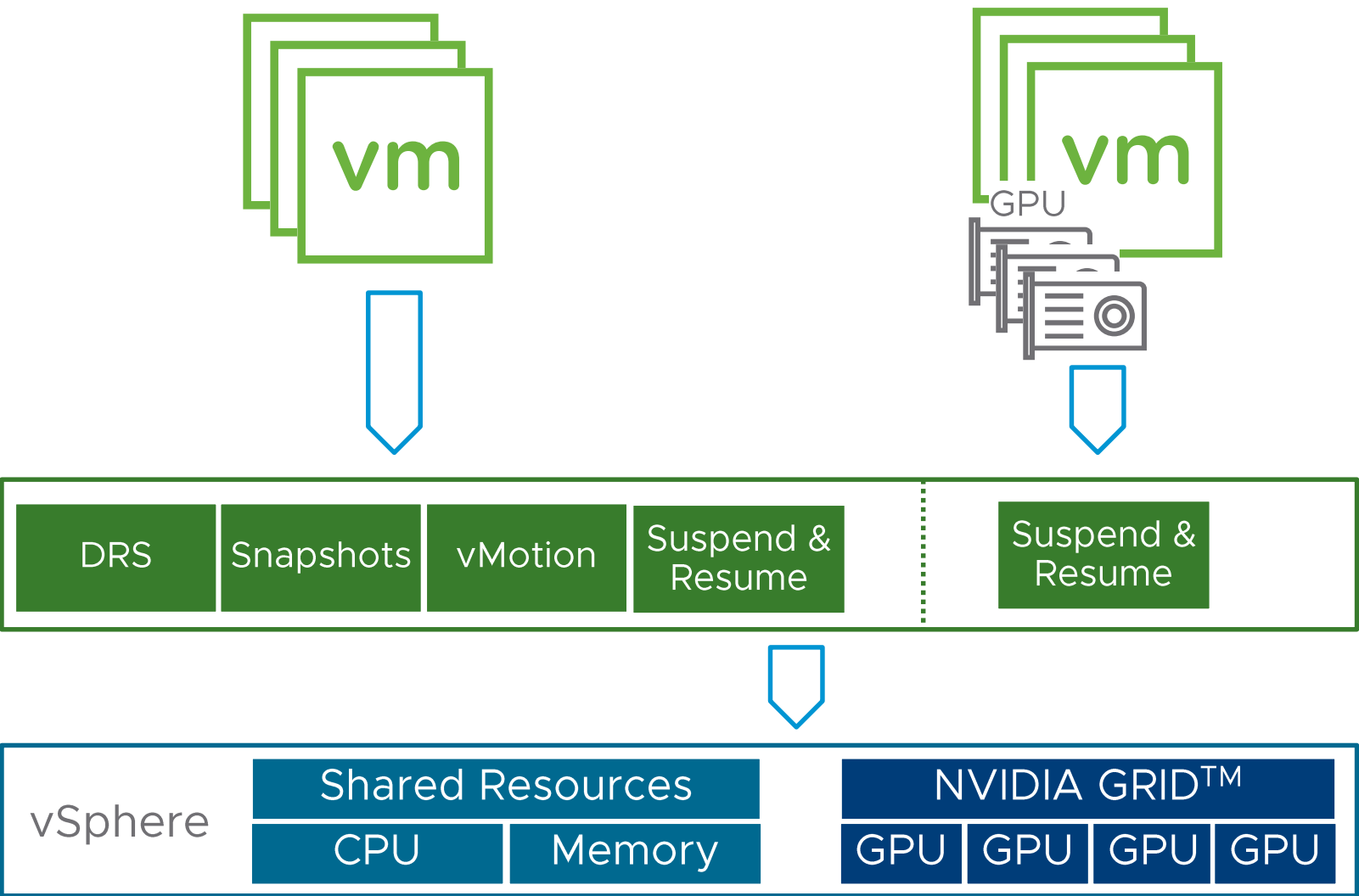
HPC

Machine Learning

In-Memory

Enhancing Operations for NVIDIA GRID™ vGPU

Using Suspend & Resume to add vGPU mobility



Persistent Memory (PMEM)

Convergence of Memory and Storage

New tier of storage aimed at **Enterprise Applications**

Lower cost than DRAM / Higher performance than SSD

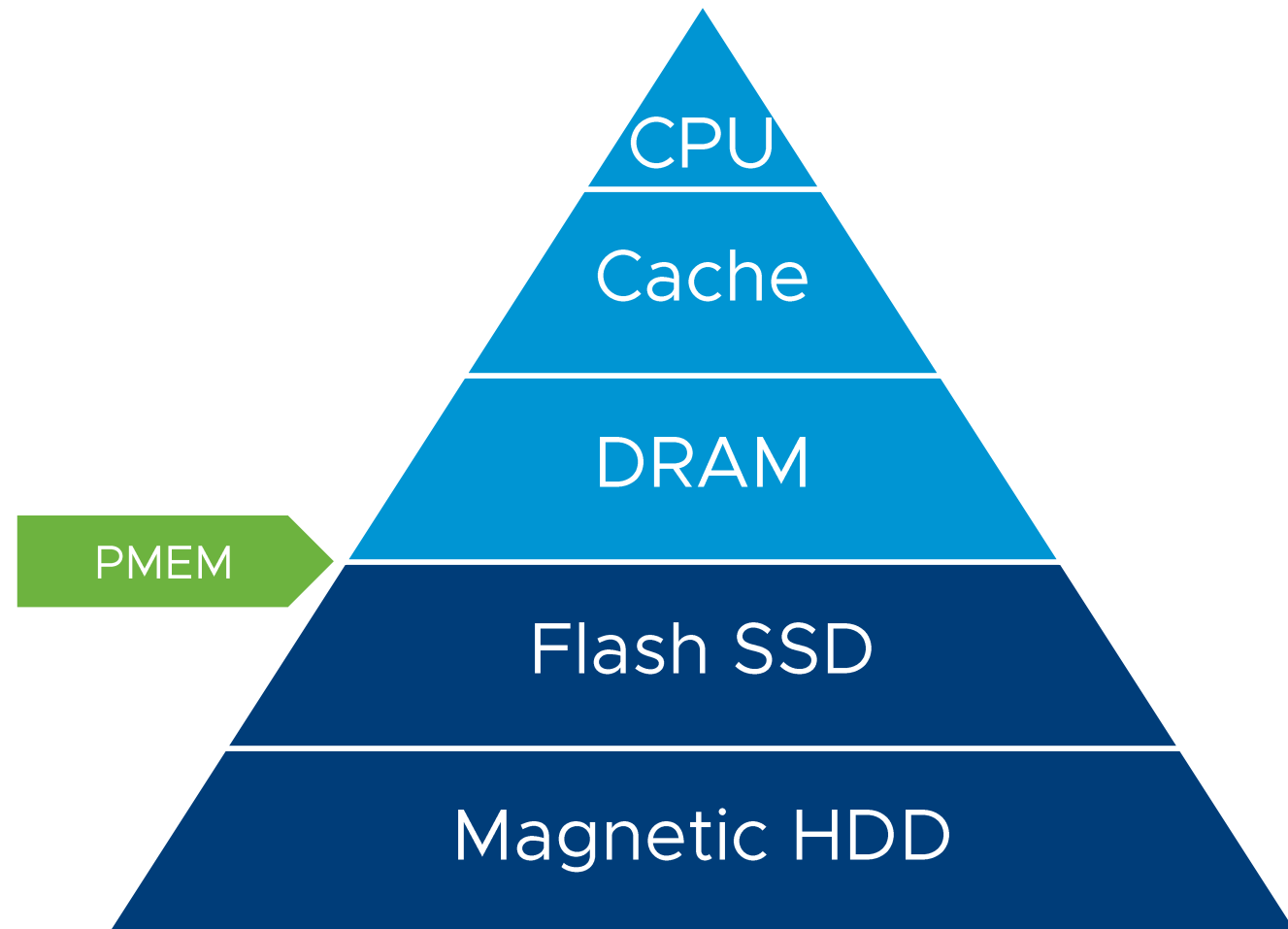
Byte Addressable

Average latency of less than 0.5 microseconds

High durability

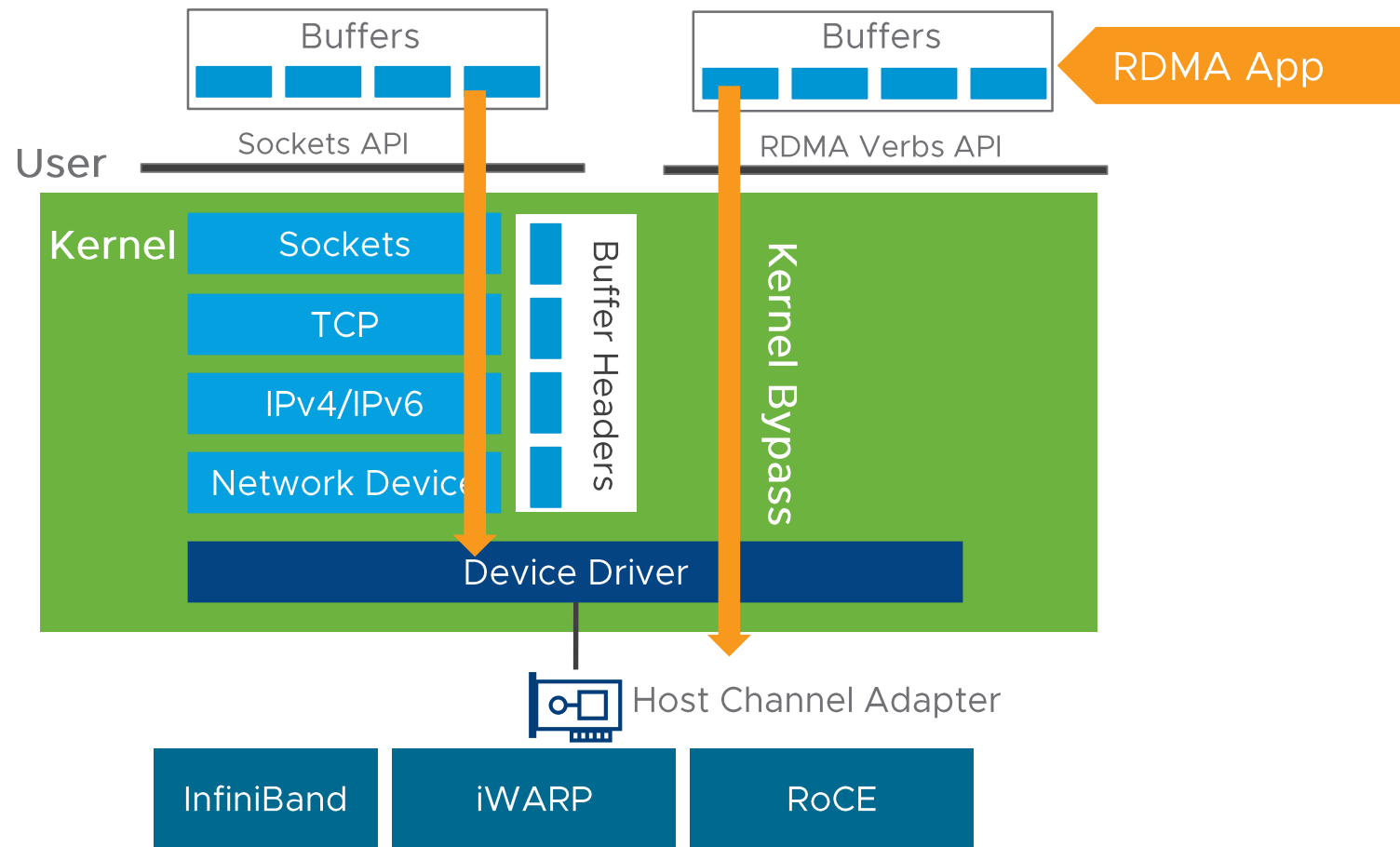
Lower power consumption than DRAM

ENTERPRISE APPS



RDMA Overview

Traditional Data Path vs RDMA



ENTERPRISE APPS

Remote Direct
Memory Access

OS bypass

Zero-copy

Low latency, high
bandwidth

Used in distributed
databases,
financial, file
systems, Big Data

RDMA Overview

Motivation

RDMA in VMs with pass-thru

- Tied to a physical host – no vMotion!
- Need an HCA

Customers want vMotion

- For a small performance penalty
- IBM: okay with 5us latency

PVRDMA aims to solve this

- Virtualize just enough
- HCA for performance, but work without it
- Meet latency requirement

RDMA Overview

Architecture

Paravirtual RDMA (PVRDMA) is a new virtual NIC in hardware version 13

Provides verbs-level emulation

- Guest kernel driver
- User level library

Plugs into the industry standard OFED stack in the VM

Device emulated in ESXi hypervisor

- Translates verbs from guest to ESXi RDMA Stack

Instant Clone

- Single API call
- Clone independent of the source VM
- vMotion/HA/DRS support



Rebootless

Instant Clone helps deploy hundreds of VMs instantly without needing to reboot while preserving the VM state

30x

Instant
Clone

Performance

Helps move to a new paradigm of “Just-in-time” provisioning with 30x improvement for time taken to fork a clone



Flings

Customers are already using Instant Clone fling today to deploy 700+ VMs daily in their production CI-CD environment to achieve their DevOps goals

Seamless Hybrid Cloud Experience



Hybrid Linked Mode

Single Management View

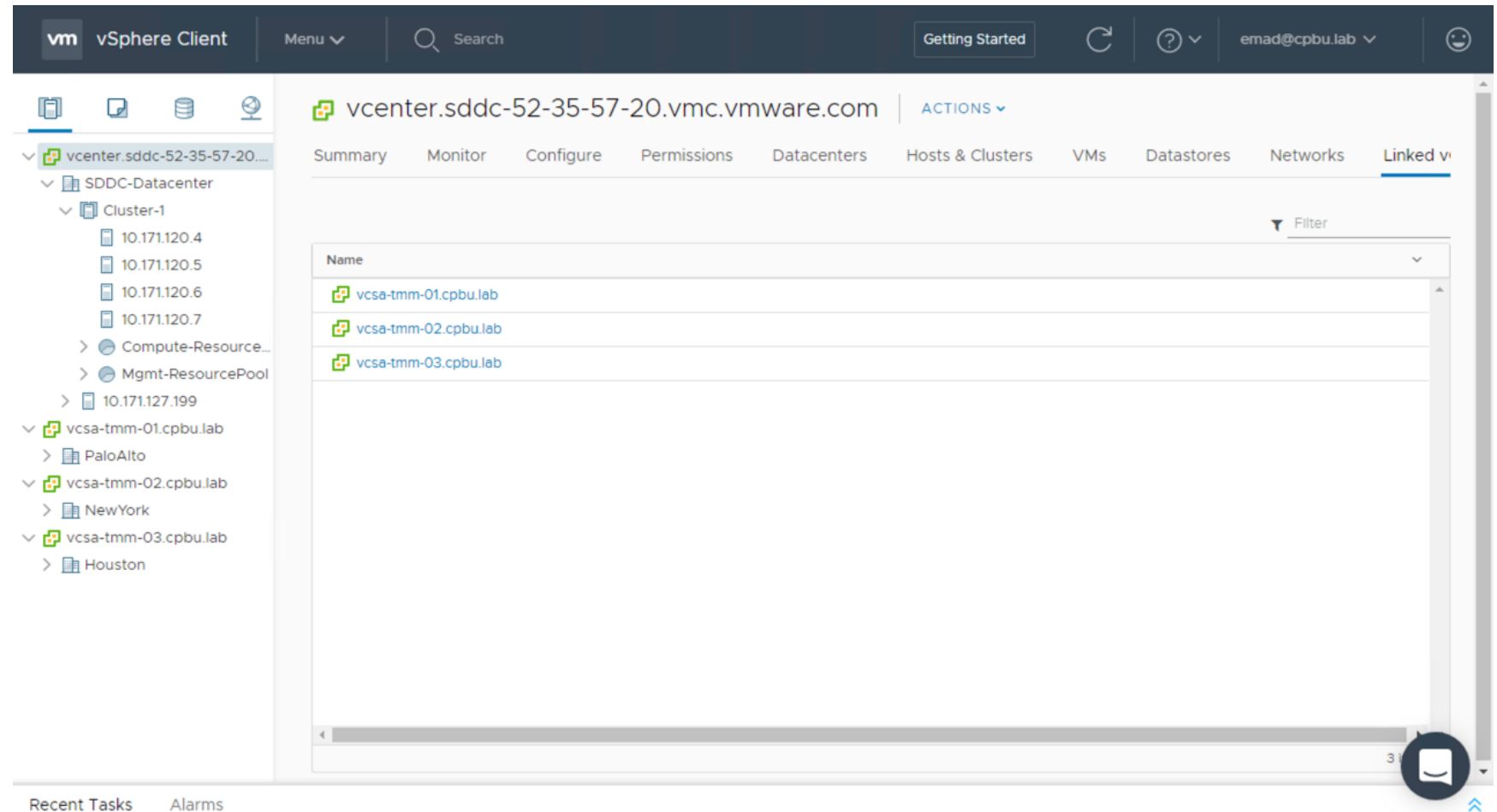
HYBRID CLOUD

Single management view across VMware Cloud on AWS and on-premises datacenter

Supports both embedded or external deployments on-premises

Maintains separate permissions between Cloud SDDC and on-premises datacenter

Enable and disable linking



Workload Mobility

Cross-vCenter Mixed Version Provisioning

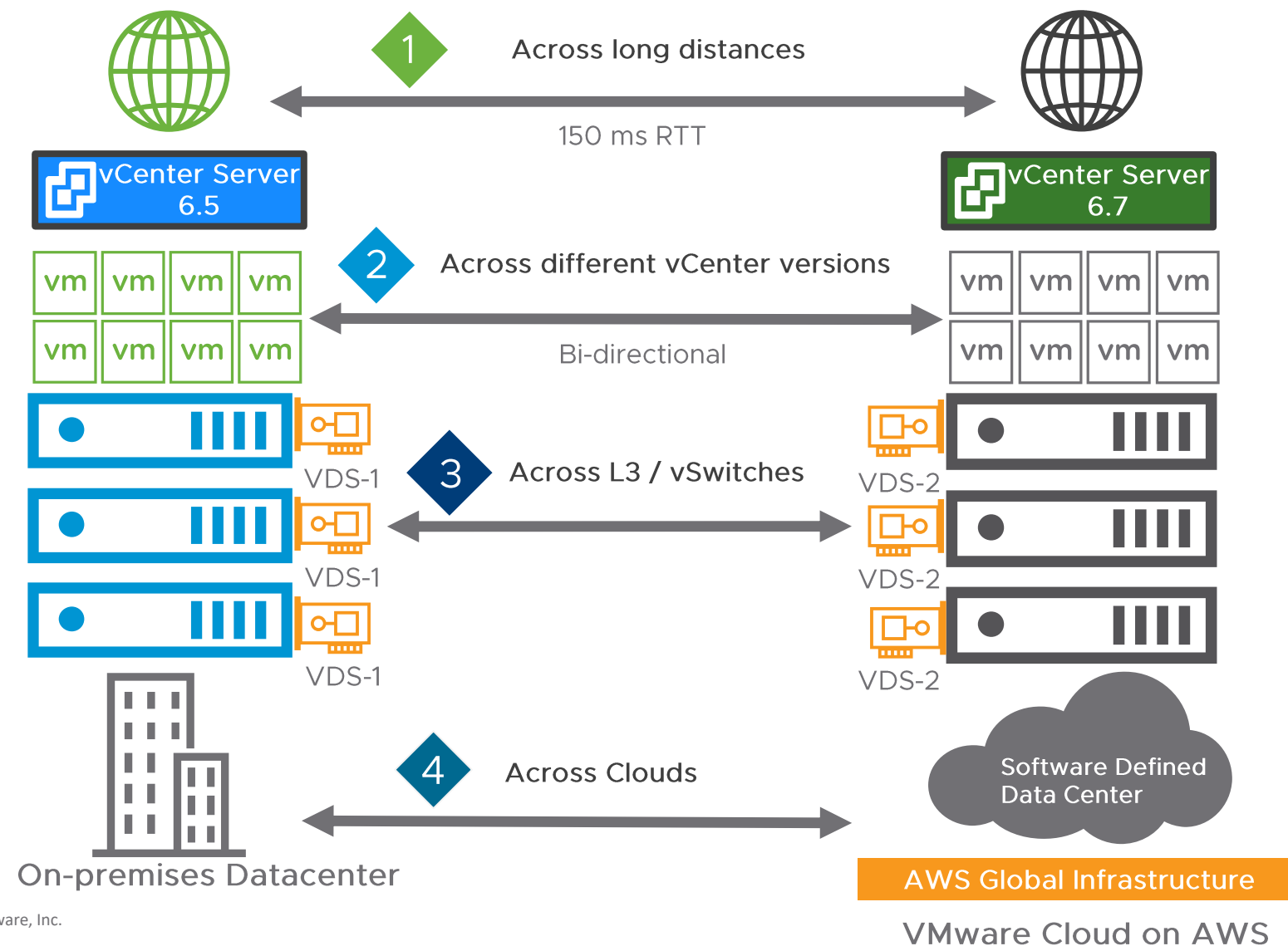
HYBRID CLOUD

Requirements

- 150 ms RTT
- 250 Mbps
- VM Compatibility v9



Transit vMotion data is encrypted



Per-VM Enhanced vMotion Compatibility

HYBRID CLOUD

Allows granularity of enabling EVC for particular VMs rather than a cluster of hosts

Improving the mobility of a VM beyond a cluster including to VMware Cloud on AWS.

Persisting EVC mode across:

- Cluster
- Data Center
- vCenter Server

Persists through a power cycle

