vSphere 6.7 – What’s New

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- This overview of new technology represents no commitment from VMware to deliver these features in any generally available product.
- Features are subject to change, and must not be included in contracts, purchase orders, or sales agreements of any kind.
- Technical feasibility and market demand will affect final delivery.
- Pricing and packaging for any new features/functionality/technology discussed or presented, have not been determined.
- This information is confidential.
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

Quick provisioning

No operating system / database licenses

Unified patching / updating

Single point of support

Pre-tuned database
Installation

- 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

vSphere SSO domain w/ Enhanced Linked Mode

Enhanced Linked Mode

Greenfield deployments

Supports maximums scale

No load balancer

VCHA supported

Site boundary removed

*vCenter Server Appliance Only*
vSphere 6.7 Upgrade / Migration Paths

<table>
<thead>
<tr>
<th>Source</th>
<th>Destination</th>
<th>Upgrade Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>vSphere 5.5 (any)</td>
<td>vSphere 6.7</td>
<td>Not Supported</td>
</tr>
<tr>
<td>vSphere 6.0 (any)</td>
<td>vSphere 6.7</td>
<td>Supported</td>
</tr>
<tr>
<td>vSphere 6.5 – 6.5 U1</td>
<td>vSphere 6.7</td>
<td>Supported</td>
</tr>
<tr>
<td>vSphere 6.5 U2</td>
<td>vSphere 6.7</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>
Migration

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.

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
vCenter Server Appliance Monitoring & Management
Streamlined Monitoring

vSphere Appliance Monitoring

https://fqdn or ip of VCSA:5480

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

Built in monitoring:
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Streamlined Monitoring
vSphere Appliance Monitoring  https://fqdn or ip of VCSA:5480

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
Improved Alerting

- **CPU**
  - Warning 75%
  - Critical 85%

- **Memory**
  - Warning 85%
  - Critical 95%

- **Disk**
  - Warning 75%
  - Critical 85%

- **CPU**
  - Warning 75%
  - Critical 90%
### Syslog

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.

**Create Forwarding Configuration**

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

<table>
<thead>
<tr>
<th>Server Address</th>
<th>Protocol</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.158.137.12</td>
<td>TLS</td>
<td>6514</td>
</tr>
<tr>
<td>10.158.137.13</td>
<td>TCP</td>
<td>601</td>
</tr>
<tr>
<td>10.158.137.14</td>
<td>UDP</td>
<td>514</td>
</tr>
</tbody>
</table>

[Save]
Robust Backup
Native vCenter Server Appliance Backup

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
Simple Restore

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

Staging options
- Stage only
- Stage & Install

Selectable Updates

Monthly Patches

Updates Options
- CDROM
- CDROM + URL
vCenter Server Appliance CLI Tools
Reconfigure from an embedded to external deployment

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

External Deployments

Decommission

cmsso-util
Domain Repoint

Move vCenter Server Across Domains

Consolidate vSphere SSO Domains

Migrates Tags, Licenses, Categories, Global Permissions

Pre-check option

External Deployments

cmsso-util 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-pnld 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 Repoints 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
CLI Batch Operations

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

```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
Workflow log-dir
/var/folders/gz/47f6n_w16_1_klyc7pq8ddy80000gn/T/vcsaCliInstaller-2018-03-13-23-52-yewi6eaz/workflow_1520985166398

=================================================================
[START] Start executing Task: To validate CLI options at 23:52:46
=================================================================
Command line arguments verified.
[SUCCEEDED] Successfully executed Task 'CLIOptionsValidationTask: Executing CLI optionsValidation task' in Taskflow 'template_validation' at 23:52:46
=================================================================
[START] Start executing Task: To validate the syntax of the template. at 23:52:46
The template syntax validation for template '/Users/eyounis/Documents/BatchDeploy/ELM-01.json' succeeded.
vSphere Client (HTML5)
vSphere Client Feature Parity

Now 95% feature parity
Platform Services Controller

vSphere Client

PSC UI now included in vSphere Client

Configuration Tab
• Identity Sources
• Active Directory Domain
• Policies
• Login Banner
• Smart Card Configuration

Certificate Management
vRealize Operations Plugin

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 troubleshooting 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

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
Update Manager – Updates Tab
Check status or remediate hosts and clusters
Update Manager Workflow Micro Demo
See the new VUM interface in action during a cluster upgrade

A cluster of ESXi 6.5 hosts will be upgraded to ESXi 6.7
  • Attach baseline, check, remediate

Observations
  • Status of hosts in the cluster is clearly displayed
  • The pre-check is now a separate operation
  • The remediation wizard is simplified and requires minimal user interaction
  • Settings are visible but cannot be edited during remediation

Takeaway
  • vSphere administrators will be more efficient when updating hosts
Update Manager Workflow Micro Demo

Cluster Upgrade
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
VMware vSphere 6.7 Optimizes Host Reboots

Two different ways to reduce host downtime during updates

Single Reboot Upgrade
- Applies to ESXi 6.5 hosts
- Faster upgrades to ESXi 6.7

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

Helps customers get to vSphere 6.7 faster

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
Two 8-node clusters undergoing upgrades to VMware ESXi 6.7
• WebApps: VMware ESXi 6.0
• Development: VMware ESXi 6.5

Observations
• The 6.5 cluster finishes upgrading all 8 hosts in just over half an hour
  – The 6.0 cluster is still upgrading the third host
• The 6.0 cluster completes the 8 host upgrade after almost two hours

Takeaway
• Major version upgrades are up to 4x faster
Single Reboot Micro Demo
## Quick Boot

Restart the VMware ESXi hypervisor without rebooting the physical hardware

Quick Boot can 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

<table>
<thead>
<tr>
<th>Host Settings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow Quick Boot</td>
<td>Yes</td>
</tr>
<tr>
<td>VM Power state</td>
<td></td>
</tr>
<tr>
<td>Disable removable media devices that might prevent a host from entering maintenance mode</td>
<td>No</td>
</tr>
<tr>
<td>Retrace entering maintenance mode in case of failure</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Quick Boot Micro Demo Introduction
Faster host reboot after installation of the EMC NAS VAAI extension

Two HPE hosts running VMware ESXi 6.7
• One is using default configuration with Quick Boot enabled
• One has Quick Boot manually disabled
• VUM initiated installation of an extension that requires a reboot

Observations
• The Quick Boot host unloads drivers and restarts VMware ESXi
• The traditional server reboot includes hardware initialization
• Quick Boot host is ready for use while the other is still loading ESXi from disk

Takeaway
• When hosts need to reboot, Quick Boot reduces the maintenance window requirement
Quick Boot Demo
Host Profiles Web Client Interface (HTML5)

Initial release of Host Profiles UI offers basic capabilities

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
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: ESXi 6.7 and later

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

- **2x** Superior Performance
- **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

<table>
<thead>
<tr>
<th>Hosts in Cluster</th>
<th>6.0 algorithm</th>
<th>6.7 Algorithm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host 1</td>
<td>64 VMs</td>
<td>16</td>
</tr>
<tr>
<td>Host 2</td>
<td>0 VMs</td>
<td>16</td>
</tr>
<tr>
<td>Host 3</td>
<td>0 VMs</td>
<td>16</td>
</tr>
<tr>
<td>Host 4</td>
<td>0 VMs</td>
<td>16</td>
</tr>
</tbody>
</table>
Resource Distribution Enhancements

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

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

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

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

Easily Access:
• Alert Counts
• Alerts by Severity
• Alert Information
• Link to Manage vROps Sourced Alerts
Introducing vRealize Operations Manager 6.7
Refreshed Quick Start Guide
Fast Access to the Things You Need
New Capacity Overview Dashboard
New Look and Actionable Recommendations

Overview

- **Denver-RD-DC**: 10 weeks remaining until cluster exceeds capacity
- **Denver-Prod**: 14 weeks remaining until cluster exceeds capacity
- **Palo Alto-DC**: 3 weeks remaining until 2 clusters exceed capacity
- **Denver-Test-DC**: 10 weeks remaining until 2 clusters exceed capacity
- **Bangalore-Test-DC**: 14 weeks remaining until 2 clusters exceed capacity

**Reclaimable Capacity**

- $22,789/mo.
- 480 VMs
- Potential Savings: With Reclaimable Resources

**Consolidation**

- The available capacity across your clusters is the equivalent of 8 hosts

**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

**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
New Reclaimable Capacity Dashboard

Quickly Realize Reclaimable Resources
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
New DRS Summary View
High Level DRS Overview and Detailed vMotion History
New Workload Analysis and Projection Workflow

Accurately Analyze Potential Future Workloads
Walking Through Adding New Workloads – Part 1

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

![vRealize Operations Manager interface for adding a new workload](image)

- **Scenario Name**: Adding Q4 Workload
- **Location**: DemoDC (vca01) ➔ Demo
- **Application Profile**: Import from existing VM
- **Find Existing VMs and Use Their Utilization Behavior to Make Scenario Projections**
- **Selected VMs**
  - **VM Name**: WinApplication01
    - **Peak CPU**: 242.67 MHz
    - **Peak Memory**: 923.86 MB
    - **Peak Storage**: 13.69 GB
    - **Quantity**: 20

**Date**
- **Start Date**: 8/31/18
- **End Date**: 3/03/19

*Our engine is able to make projections up to a maximum of one year from the current date.*
Walking Through Adding New Workloads – Part 2

Analyze Current On-Premises Resources and Cloud Based Costs

Add Workload

Adding Q4 Workload

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Add VMs</th>
<th>Total to be Added</th>
<th>20 VMs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Aug 31, 2018 to Mar 01, 2019</td>
<td>CPU</td>
<td>4.54 GHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Memory</td>
<td>6.11 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Storage</td>
<td>273.79 GB</td>
</tr>
</tbody>
</table>

Add VMs to DemoDC (vcsa01) → Demo

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 17.22 GHz
Memory Deficit 12.52 GB
Storage Deficit 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

- **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

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
VMware Datacenter CLI (DCLI)
Automation of vSphere and VMware Cloud on AWS

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
vSphere 6.7 Software Development Kits
vSphere Automation SDKs
Open-Sourced SDKs Available on GitHub

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
Feature List

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 Infrastructure

- Secure Boot
- Various measurements are written to the TPM
- vCenter validates these measurements against the host event log and VIB metadata and marks the host as attested or not
- Secure Boot Verifier continues and validates all remaining VIBs

Comprehensive security dashboard
Windows 10 & 2016 Security Features Support
VBS Explained

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

VBS Not Enabled

- Standard Windows VM
- Boot via MBR or EFI
- No Credential Guard support
Securing Virtual TPM Data

TPM data is uniquely provided by the virtual Trusted Platform Module 2.0 (vTPM) certificate and the file containing TPM unique identity is encrypted using Virtual Machine Encryption Module 2.0 (vMEM). The encrypted vTPM data is securely stored in the virtual machine's nvram file.

Windows 2016

VM Encryption Module

ESXi

Hardware
vTPM Summary
vTPM Storage Root & Endorsement Key Certificates
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

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

The information in this presentation is intended to outline our general product direction and should not be relied on in making a purchasing decision. It is for informational purposes only and may not be incorporated into any contract.
Additional vSphere 6.7 Features
FIPS 140-2 for vSphere

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
New Alarms

Virtual Machine Locked Alarm

Host Requires Encryption Mode Enabled Alarm

KMS Client and server Certificate Status Alarm
Universal Application Platform
Universal Application Platform
The platform for mission critical workloads

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

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
RDMA Overview

Traditional Data Path vs RDMA

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

Rebootless

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

Performance

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

Flings

- Single API call
- Clone independent of the source VM
- vMotion/HA/DRS support
Seamless Hybrid Cloud Experience
Hybrid Linked Mode
Single Management View

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

Requirements
• 150 ms RTT
• 250 Mbps
• VM Compatibility v9

Transit vMotion data is encrypted

1. Across long distances
   • 150 ms RTT

2. Across different vCenter versions
   • Bi-directional

3. Across L3 / vSwitches

4. Across Clouds

On-premises Datacenter

VMware Cloud on AWS
Per-VM Enhanced vMotion Compatibility

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
Thank You!