Streamline operations with new and updated VMware vSphere 8.0 features on 16th Generation Dell PowerEdge servers

Managing infrastructure at scale requires significant monitoring and maintenance from data center administrators. By updating your environment with clusters of latest 16th Generation Dell™ PowerEdge™ servers and the latest versions of software, you can arm administrators with cutting-edge tools to help simplify routine tasks. The latest release of VMware® vSphere®, version 8.0, offers new and updated features to make monitoring and managing Dell PowerEdge servers easier.

Connecting to a cluster of two remote 16th Generation Dell PowerEdge R6625 servers from our data center, we explored how vSphere 8.0 can simplify some PowerEdge server, host, and VM configuration tasks as well as some ongoing monitoring tasks. We found that the new and upgraded vSphere 8.0 features we evaluated provide the functionality they aim to deliver. For your organization, that could translate to better hardware and software performance and less downtime. In addition, your data center admins could focus less on routine management and monitoring tasks and spend more time on remediation or other work to help the organization.

Image provided by Dell

Configure and manage multiple hosts in a cluster simultaneously

Lifecycle Manager and Configuration Profiles enable cluster-wide host remediation and configuration

Boost security for cloned VMs

TPM Provision Policy enables admins to replace vTPMs when scaling out VMs

Testing advances in server, host, and VM configuration and lifecycle and resource management for vSphere clusters of latest 16th Generation Dell PowerEdge servers

Centralized management capabilities for VMware vSphere continue to improve with each release to further ease management burdens for administrators. Equipping your admins with the latest 16th Generation Dell PowerEdge servers and vSphere technology gives them the tools to maintain a healthy virtual environment running in clusters, regardless of scale.

Our engineers connected to a remote Dell data center equipped with new 16th Generation PowerEdge R6625 servers and had full control over deployment of VMware ESXi™ hosts, configuration, updates, and more for testing. Using hands-on testing, documentation, and our own experience with previous VMware vSphere versions, we sought to enumerate some of the improvements available in vSphere 8.0.

Note: In this project, we did not directly test vSphere 7 or compare the vSphere 8 features to those in vSphere 7; however, in performing testing and writing this report, our team did draw on our extensive past experience with vSphere 7. For step-by-step details of how we tested and configuration details for the 16th Generation Dell PowerEdge servers we used, read the Science behind the report. Table 1 summarizes the changes we found in vSphere 8.0 and how they can help streamline data center operations.

Table 1: Summary of the lifecycle management features we investigated in vSphere 8.0 compared to the previous version. Source: Principled Technologies.

Admin task	vSphere 7.0 approach	vSphere 8.0 approach	Benefits of vSphere 8.0
Configuring at scale	Uses host/baseline profiles and Update Manager	vSphere Configuration Profiles replace host/baseline profiles	Consistent cluster-wide configuration across all hosts in a cluster Built-in configuration drift detection
Virtual TPM provisioning	Supports TPM 2.0	TPM Provision Policy allows administrators to clone VMs and regenerate unique vTPM keys	Quickly secures VMs when using encryption technologies Enables scale out of secured Windows 11 VMs
Staging updates	Hosts must be in maintenance mode for updates	Hosts do not need to be in maintenance mode Payload staging without requiring maintenance mode	Quickly update hosts without migrating VMs Seamless payload staging in production environments
Remediating issues in the cluster	Sequential host remediation	Option to remediate multiple hosts in parallel	Fast remediation across the cluster Minimize time in maintenance mode

About VMware vSphere 8.0

vSphere is an enterprise compute virtualization program that aims to bring "the benefits of cloud to on-premises workloads" by combining "industry-leading cloud infrastructure technology with data processing unit (DPU)- and GPU-based acceleration to boost workload performance."[1]

This latest version introduces the vSphere Distributed Services Engine, which enables organizations to distribute infrastructure services across compute resources available to the VMware ESXi host and, for systems with DPUs, offload networking functions to the DPU.[2]

Assessing monitoring and remediation tools

After deployment, your clusters of latest 16th Generation Dell PowerEdge servers will need frequent monitoring and management to prevent configuration drift and ensure optimal performance levels. In our cluster, we used vSphere Lifecycle Manager (vLCM) to look for any issues on the hosts or VMs, update software for the hosts and VMs, and remediate issues simultaneously.

In this section, we also discuss how applying updates and remediation differ from previous vSphere versions and what those differences could mean for users.

Stage cluster image updates

To help reduce the likelihood of failure or issues, vLCM can stage host updates in a cluster in vSphere 8. Admins do not need to put hosts into maintenance mode when staging updates, which can lessen the time that hosts must spend in maintenance mode and thus reduce potential downtime due to host updating. In addition, VMs do not need to shut down or migrate to a host not in maintenance mode. In vSphere 7, admins would need to place hosts in maintenance mode before updating or patching and power down VMs or move them to another host.

Remediate hosts in a 16th Generation Dell PowerEdge server cluster in parallel

vSphere 7 supported sequential remediation of hosts. If an admin had to apply a patch to multiple hosts, for example, they would have to do so host by host. Admins would need to place hosts in maintenance mode to remediate them, and as previously noted about maintenance mode, that would extend the duration that hosts are in the mode and could require significant and complex migration of VMs.

Now in vSphere 8.0, admins can remediate multiple hosts in parallel. That can mean less time in maintenance mode and less hands-on time for admins applying patches and updates or fixing an issue. Perhaps most importantly, parallel remediation of hosts could reduce the overall time to remediate a cluster of latest 16th Generation Dell PowerEdge servers. VMware notes that admins "can choose to remediate all hosts in maintenance mode or define the number of parallel remediations to perform at a given time."[3] In our testing, we remediated all hosts in parallel, and the feature functioned as intended.

About vSphere Lifecycle Manager

First released in vSphere 7, vSphere Lifecycle Manager (vLCM) replaces baseline lifecycle management tool vSphere Update Manager in vSphere 8. vLCM is a tool that "enables centralized and simplified lifecycle management for VMware ESXi hosts through the use of images and baselines."[4] In addition to installing ESXi and firmware updates on hosts, maintenance operations of vLCM include compliance checks, remediation, remediation checks, and staging to ensure that your vSphere VMs are up to date and match the images your organization has approved.[5]

To learn more about vSphere Lifecycle Manager, visit https://docs.vmware.com/en/VMware-vSphere/8.0/vsphere-lifecycle-manager/GUID-74295A37-E8BB-4EB9-BFBA-47B78F0C570D.html.

Exploring tasks to simplify 16th Generation Dell PowerEdge server setup

Adding vSphere hosts to a cluster of latest 16th Generation Dell PowerEdge servers requires standard configuration tasks to keep new hosts in line with current organization patching baselines. We used the new vSphere 8.0 feature Configuration Profiles to configure a cluster at scale. We then created a VM and cloned it using the virtual TPM provisioning feature. We then found the closest possible feature or process match based on vSphere 7 documentation and considered how the vSphere 8.0 processes changed or improved.

Configure hosts in a cluster at scale

Configuration Profiles, a new feature in vSphere 8.0, allows admins to configure all hosts in a PowerEdge cluster at once with the same configuration. Ensuring hosts in a cluster have the same configuration can help minimize errors at the host level so VMs can function properly regardless of placement within the cluster. For example, if you're clustering PowerEdge R6625 servers for high-performance computing (HPC) or virtual desktop infrastructure (VDI) workloads in a vSphere environment, Configuration Profiles would enable all hosts to share the same settings. This would mean guest VMs running those workloads use the same licensing and have the same network and storage access and security settings.

Configuration Profiles defines host configuration at the cluster object level. According to VMware, "Rather than define separate entities in the form of host profiles and have them attached to clusters or hosts, the cluster configuration is defined and contained within the cluster object itself, so you don't have to worry about attaching anything to anything else."[6] To further replicate the host configuration, admins can export it as a JSON document and import the file into other clusters or vCenters.

In addition to applying a consistent configuration to all hosts in a PowerEdge cluster, Configuration Profiles also monitors for configuration drift. Ad hoc changes to hardware and software in an environment can result in changes to the host configuration, affecting the VMs and environment in potentially adverse ways. With consistent profiles, admins can run compliancy checks on the hosts to determine if any host has drifted from the baseline configuration. If the admin notices any drift, they can then remediate it.

Configuration Profiles is still in technical preview, and VMware notes that vSphere 8.0 still supports Host Profiles but will supplant the previous tool eventually with Configuration Profiles.[7]

Reduce potential issues when securing VMs

Trusted Platform Modules (TPMs) and virtual TPMs (vTPMs) can boost security for your Dell PowerEdge servers by securely creating and storing cryptographic keys. In a cluster with multiple VMs, however, vTPM can complicate scaling out VMs via cloning. Cloning a VM with a vTPM means cloning TPM secret Endorsement Keys (EKs), which could introduce security risks.

vSphere 8 offers a new feature, called TPM Provision Policy, to tackle this issue. The feature enables users to either clone or replace a vTPM when cloning a VM. The clone option clones the vTPM secret EKs, and the replace option resets the vTPM as if the VM was new and not a clone. Simply put, TPM Provision Policy ensures each cloned VM can have a unique vTPM.

This is especially important for scaling Windows 11 VMs. Windows 11 requires TPM or vTPM in physical devices and VMs, so using TPM Provision Policy would enable users to scale out Windows 11 VMs quickly and with less hassle. For example, a cluster of PowerEdge R6625 servers running VDI could scale Windows 11 VMs quickly while ensuring the VMs have the correct TPM security protocols in place.

About latest 16th Generation Dell PowerEdge servers

The latest line of servers from Dell, PowerEdge servers come in multiple form factors for workload acceleration. Also new in 16th Generation Dell PowerEdge servers is the Dell PowerEdge RAID controller 12 (PERC 12 Series), which offers expanded support and capabilities compared to previous versions, including support for SAS4, SATA, and NVMe drive types.

According to the StorageReview blog, "[The 16G portfolio] includes PCI Gen5 slots, DDR5, and servers with Gen5 SSD support in the E3.S form factor. Beyond the massive performance gains in going from Gen4 to Gen5 SSDs, there's a capacity gain as well, as these are 7mm z-height compared to 15mm in the U.2/U.3 SSD. This means Dell can squeeze 60% more density in the 1U chassis of the R660 and 33% more in the R760."[8]

To learn more about the latest 16th Generation Dell PowerEdge servers, visit https://www.dell.com/en-us/shop/dell-poweredge-servers/sc/servers.

Image provided by Dell

Conclusion

By using the latest software and 16th Generation Dell PowerEdge servers in your VMware vSphere environment, you can provide your data center administrators with new or updated tools that simplify routine tasks in both initial host setup and ongoing monitoring. In our exploration of the latest features in vSphere 8.0 Lifecycle Manager, we found that vSphere 8.0 on latest 16th Generation Dell PowerEdge servers offers advantages compared to the previous generation, which may make an infrastructure update worth your while. By introducing vSphere Configuration Profiles and providing simpler image updates to vSphere clusters, VMware vSphere 8.0 on latest 16th Generation Dell PowerEdge servers can help streamline operations for your administrative staff.

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3. VMware, "What's New in vSphere 8?," accessed March 8, 2023, https://core.vmware.com/resource/whats-new-vsphere-8#sec21112-sub2.
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6. VMware, "vSphere 8 What's New? Technical Overview," accessed March 6, 2023, https://youtu.be/aAQE5RWKWQM?t=1210.
7. VMware, "What's New in vSphere 8?"
8. Lyle Smith for StorageReview, "Dell PowerEdge 16G Intel Servers Announced," accessed January 19, 2023, https://www.storagereview.com/news/dell-poweredge-16g-intel-servers-announced.

Read the science behind this report at https://facts.pt/02d0YDQ ▶

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