



34x faster

Update hypervisor in **under 3 minutes vs. 1.3 hours manually***



68x faster

Complete hypervisor and firmware updates in **under 4 minutes vs. 3.5 hours manually***



7x faster

Save up to **20 minutes** per node completing hardware compatibility checks

New VMware vSphere 7.0 features reduced the time and complexity of routine update and hardware compliance tasks

On a cluster of multigenerational Dell EMC PowerEdge servers, vSphere Lifecycle Manager and Quick Boot, along with OpenManage Integration for VMware vCenter Server, automated tasks to save time and steps

In a virtualized environment, keeping the hypervisor and firmware up to date can impose a considerable burden on IT staff. Additionally, verifying that new hardware, driver, and firmware combinations are compatible with the hypervisor can be a tedious process that absorbs administrators' valuable time. This is especially true in data centers that comprise servers from multiple generations. Simplifying these tasks is one way to lighten the load.

IT administrators who rely on Dell EMC™ PowerEdge™ servers and VMware vSphere® to meet their virtualization needs can streamline updating hypervisors and ensure hardware compliance by upgrading to vSphere 7.0, which includes vSphere Lifecycle Manager (vLCM) and Quick Boot. Administrators can also gain efficiency through the OpenManage Integration for VMware vCenter (OMIVV), a virtual appliance for managing and deploying Dell servers in a virtual environment.

We set up a cluster of Dell EMC PowerEdge 13G and current-generation servers and carried out several updates and compatibility verification tasks both manually and using these tools. VMware vSphere 7.0 and OMIVV capabilities greatly reduced the hands-on time and number of steps to complete these tasks, which can free administrators to devote more time and energy to innovation.

**Hands-on time updating an eight-node cluster*

How do VMware vSphere 7.0 and OpenManage Integration for VMware vCenter streamline lifecycle management on Dell EMC PowerEdge servers?

Despite the enormous data center efficiencies that virtualization has introduced, lifecycle management in a virtualized data center environment still has the potential to consume a great deal of an IT administrator's time. The more servers an admin must keep operating optimally, and the more heterogeneous the environment, the more involved it becomes to stay on top of routine tasks, and the more admins can benefit from tools that streamline this work.

To learn how much time and hassle administrators can avoid by employing tools that help with these routine lifecycle maintenance activities, we set up a cluster of Dell EMC PowerEdge 13G and current-generation servers. We performed testing on single-node, four-node, and eight-node clusters. The body of this report includes results for single-node and eight-node testing. For the full results, see [the science behind this report](#).

As Figure 1 shows, our test cluster comprised the following servers:

- 3x Dell EMC PowerEdge R640
- 2x Dell EMC PowerEdge R730
- 1x Dell EMC PowerEdge R740
- 1x Dell EMC PowerEdge R730xd
- 1x Dell EMC PowerEdge R630

Additionally, we used a 12G Dell PowerEdge R720xd to host our VMware vCenter and OpenManage Integration appliances. We chose a mix of 13G and current-generation Dell servers to simulate a typical data center with multiple generations of servers.

We carried out a series of lifecycle management scenarios comparing two approaches using an eight-node cluster:

- Using features in vSphere Lifecycle Manager with Quick Boot and Dell EMC OpenManage Integration for VMware vCenter
- A manual approach without using these features

We measured the time and steps necessary to complete the scenarios with each approach and explored how these features streamline various processes. While this report focuses on an eight-node cluster, we did perform all tests using a single-node and a four-node cluster as well. The results for that additional testing as well as more detailed results for the eight-node tests can be found in [the science behind this report](#).

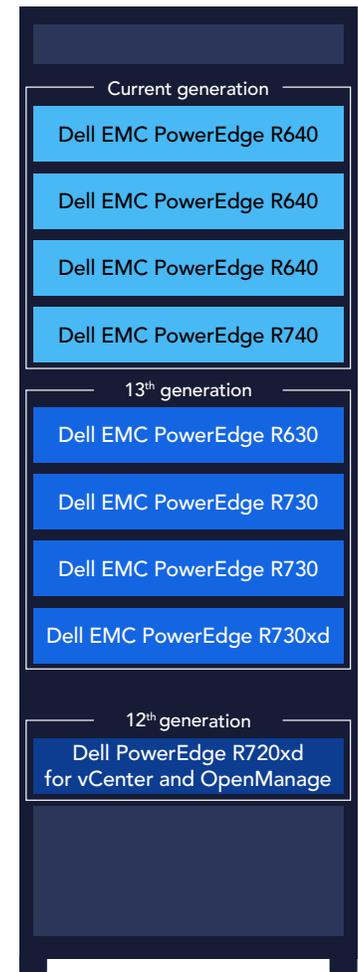


Figure 1: The test cluster in our rack. Source: Principled Technologies.

About VMware vSphere 7.0 with vSphere Lifecycle Manager and Quick Boot

According to VMware, one of the primary ways that vSphere 7 offers simplified lifecycle management is through vSphere Lifecycle Manager.¹ vLCM enforces the consistency across ESXi hosts that platforms require for reliability and optimal performance. It does so by using an ESXi base image and extending this image to suit your needs for firmware and driver versions.² The vSphere Quick Boot feature restarts ESXi without rebooting the physical host. VMware states that by eliminating the lengthy hardware initialization process, Quick Boot can shave minutes off the system time required when performing certain tasks.³

Learn more about the features of vSphere 7.0 at <https://blogs.vmware.com/vsphere/2020/04/vsphere-7-patching-lifecycle-management.html>.

Updating the hypervisor across your cluster

For both performance and security reasons, it is best practice to always run current versions of the hypervisor. Employing tools that streamline this process reduces the chance of error and keeps the environment as secure and stable as possible.

As Figures 2 and 3 show, manually updating the hypervisor on the eight servers in our cluster took 96 steps and nearly 3 hours, including 1 hour and 23 minutes of hands-on admin time. We used two different approaches to automating the task: vLCM with and without Quick Boot enabled. Both approaches required only two steps and less than 3 minutes of hands-on time. The automation also reduced the time required for the system to complete the task. (On the next page, we explore how enabling Quick Boot offered additional time savings.) When we consider only the hands-on admin time to complete the task, using vLCM was 34 times faster than the manual approach.

Number of steps to update the hypervisor across a cluster (eight-node cluster)

vLCM with Quick Boot enabled

■ 2

vLCM without Quick Boot enabled

■ 2

Manually

■ 96

97%
fewer steps
with vLCM

Figure 2: Number of steps to update the hypervisor across the cluster. Fewer steps are better.
Source: Principled Technologies.

Time to update the hypervisor across the cluster (eight-node cluster, time in h:mm:ss)

vLCM with Quick Boot enabled

■ 0:31:37 (admin time: 0:02:21, system time: 0:29:16)

vLCM without Quick Boot enabled

■ 0:47:50 (admin time: 0:02:56, system time: 0:44:54)

Manually

■ 2:53:36 (admin time: 1:23:33, system time: 1:30:03)

■ Admin time ■ System time

Up to
97%
less hands-on
time

Up to
81%
less total
time

Figure 3: Time (h:mm:ss) to update the hypervisor across the cluster. Less time is better.
Source: Principled Technologies.

Spotlight on VMware vSphere Quick Boot

When admins enable the vSphere Quick Boot feature in vLCM, the vSphere ESXi hypervisor reboots without rebooting the physical hardware. This reduces the downtime of a host during the application of hypervisor updates and drivers.

Figure 4 highlights the time requirements for vLCM with and without Quick Boot enabled. In both scenarios, updating the hypervisor required only two steps and less than 3 minutes of hands-on admin time. However, enabling Quick Boot eliminated time-consuming hardware initialization steps, which cut the total time by one-third.

Time to update cluster hypervisor across a cluster (eight-node cluster, time in mm:ss)

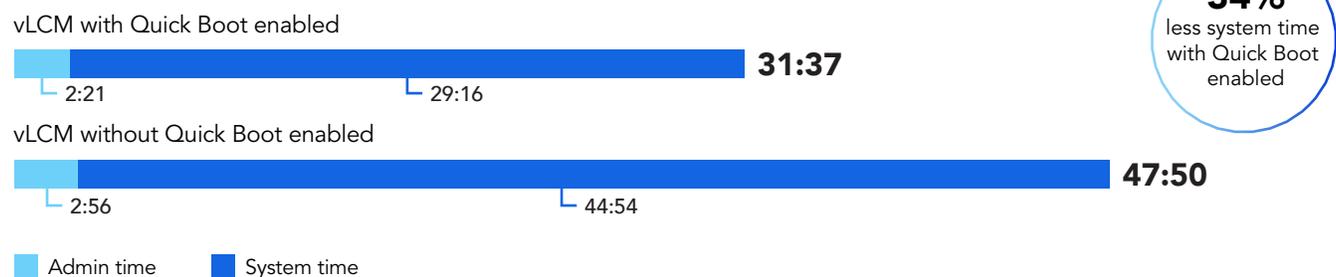


Figure 4: Time (mm:ss) to update the cluster hypervisor. Less time is better. Source: Principled Technologies.

About OpenManage Integration for VMware vSphere

According to Dell EMC, OpenManage Integration for VMware vCenter (OMIVV) lets admins streamline the management tasks by letting them use VMware vCenter Server to manage both physical and virtual server infrastructure. Admins can:

- Monitor Dell EMC PowerEdge hardware inventory in Host and Cluster views and the OMIVV dashboard within VMware vCenter
- View hardware system alerts in VMware vCenter
- Manage firmware with vSphere Lifecycle Manager in vSphere 7.0
- Create server configuration and firmware baselines for cluster updates
- Streamline deployment of ESXi to PowerEdge servers⁴

Learn more about OMIVV at <https://www.dell.com/support/article/en-us/sln311238/openmanage-integration-for-vmware-vcenter>.

Simultaneously updating hypervisor and firmware

Along with hypervisor updates, firmware updates help maintain the security and performance of server hardware. When vendors release new firmware updates, administrators must implement the updates quickly or risk exposing their environment to the hardware bugs and security vulnerabilities that these firmware updates typically fix. In many organizations, administrators must take the extra step of running new firmware updates in a test environment before applying them in a production environment. Tools that help manage and deploy these updates more quickly, such as OMIVV, have great value for administrators.

As Figures 5 and 6 show, manually updating the hypervisor and firmware on the servers in our eight-node cluster took 152 steps and more than 8.5 hours, including more than 3.5 hours of hands-on time. Using vSphere Lifecycle Manager with OMIVV to streamline the task cut the requirements to two steps and less than 3 hours total, with hands-on time of less than 4 minutes. When we consider only the hands-on admin time to complete the task, using vLCM with OMIVV was 68 times faster than the manual approach. That's a lot of time savings for a busy administrator.

Number of steps to update cluster hypervisor and firmware across a cluster (eight-node cluster)

vLCM with OMIVV

2

Manually

152

98%
fewer steps

Figure 5: Number of steps to update both the hypervisor and firmware across a cluster. Fewer steps are better. Source: Principled Technologies.

Time to update cluster hypervisor and firmware across a cluster (eight-node cluster, time in h:mm:ss)

vLCM with OMIVV

2:42:02

0:03:16 2:38:46

Manually

8:33:01

3:48:09

4:44:52

Admin time System time

98%
less hands-on time

68%
less total time

Figure 6: Time (h:mm:ss) to update both the hypervisor and firmware across a cluster. Less time is better. Source: Principled Technologies.

Checking hardware compatibility

The compatibility status of hardware, software, and firmware in a VMware vSphere cluster sometimes changes over time. For this reason, admins need to perform compatibility checks at various points across the lifecycle. While admins can carry out such checks manually, vLCM streamlines the process.

vLCM lets users perform hardware compatibility checks across their host infrastructure. For our environment, we performed a hardware compatibility check on a single node. With a single node, vLCM compares the hardware of the host to the VMware Compatibility Guide (VCG) and provides information on the support of individual hardware components as well as supported hardware driver and firmware levels. As Figures 7 and 8 show, manually checking the compatibility of a single node took 21 steps and 23 minutes. vLCM streamlined the process, requiring only three steps and less than 3 minutes. That means that using vLCM was 7 times faster than the manual approach.

Number of steps to check hardware compatibility (single-node)

vLCM

■ 3

Manually

■ 21

85%

fewer steps

Figure 7: Number of steps to check hardware compatibility on a Dell EMC PowerEdge R640. Fewer steps are better. Source: Principled Technologies.

Time to check hardware compatibility (single-node, time in mm:ss)

vLCM

■ 02:49

Manually

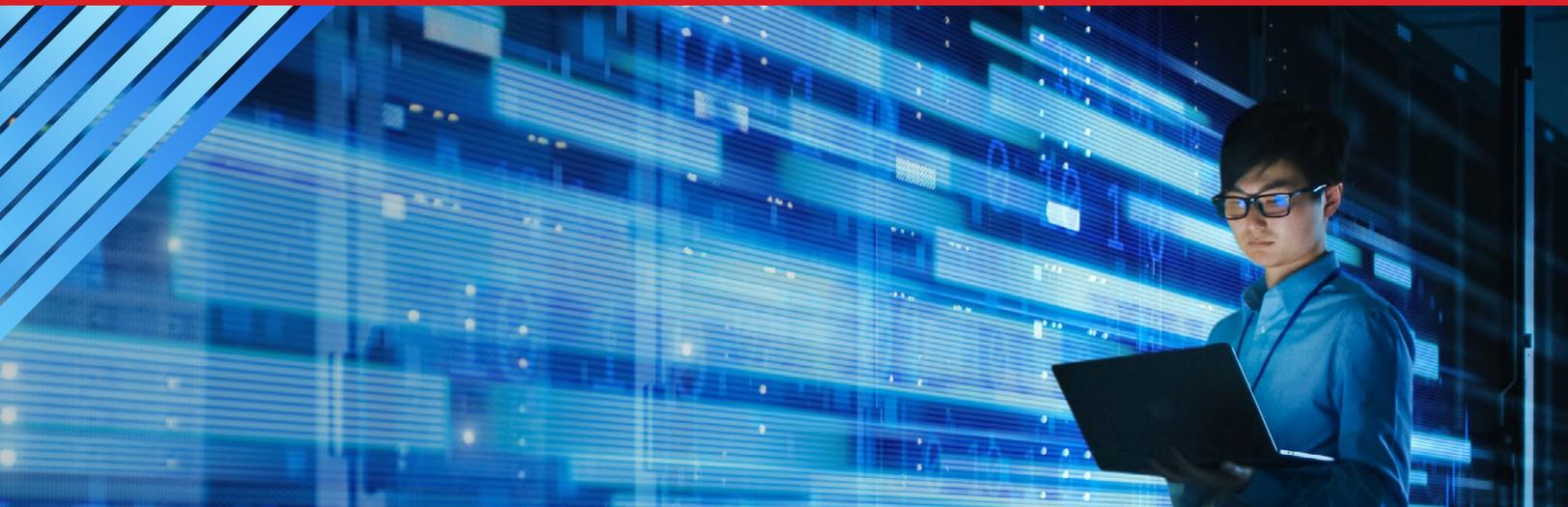
■ 23:00

87%

less hands-on time

■ Admin time

Figure 8: Time (mm:ss) to check hardware compatibility on a Dell EMC PowerEdge R640. Less time is better. Source: Principled Technologies.



Conclusion

To get the most from your virtual infrastructure, your admins must keep the hypervisor, drivers, and firmware up to date and stay on top of compatibility issues. Performing these routine tasks manually can consume a great deal of an administrator's time, especially when they must maintain hardware from a variety of different server generations.

By selecting Dell EMC PowerEdge servers and VMware vSphere 7.0, companies can streamline updating and compatibility-checking activities with vSphere Lifecycle Manager, Quick Boot, and OpenManage Integration for VMware vCenter. In our testing, these tools allowed us to update servers in an eight-node cluster in less than 4 minutes of hands-on time, an enormous savings over the manual approach, which required more than an hour of hands-on admin time for hypervisor updates and more than 3 hours of admin time for hypervisor and firmware updates. We were also able to check the hardware compatibility of a single node in three steps and less than 3 minutes using vLCM, while performing this task manually took 21 steps and 23 minutes. In the real world, these findings translate to more time for administrators to pursue more innovative activities.

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- 1 "vSphere 7 – Lifecycle Management," accessed July 23, 2020, <https://blogs.vmware.com/vsphere/2020/04/vsphere-7-patching-lifecycle-management.html>.
 - 2 "vSphere 7 – Lifecycle Management," accessed July 23, 2020.
 - 3 "vSphere Quick Boot," accessed July 24, 2020, <https://docs.vmware.com/en/vSphere/6.7/solutions/vSphere-6.7.2cd-6d2a77980cc623caa6062f3c89362/GUID-C24E75DCBEE72CA989811E0ED3F0DB27.html>.
 - 4 "OpenManage Integration for VMware vCenter," accessed July 23, 2020, <https://www.dell.com/support/article/en-us/sln311238/openmanage-integration-for-vmware-vcenter>.

Read the science behind this report at <http://facts.pt/eon978k> ►



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