Technical Review

VxRail Lifecycle Management

**Date:** June 2020 **Author:** Jack Poller, Senior Analyst

Abstract

This ESG Technical Review documents ESG's evaluation of how VMware and Dell Technologies' joint engineering and integration of VxRail HCI and VMware HCI software enables organizations to extend their existing investments in infrastructure, people, and skills. We focus on the solution's efficiency, agility, and simplicity for day 0, day 1, and day 2 lifecycle management across hybrid cloud infrastructure, operations, and services.

The Challenges

Organizations modernizing their data centers to support current business initiatives, including digital transformation, cloud architectures, and agile development, are challenged by overburdened personnel. Indeed, according to ESG research 34% of organizations lack IT orchestration and automation skills, 33% suffer from a lack of cloud architecture/planning skills, and 32% have a deficiency of IT architecture/planning skills.[1]

Figure 1. Organizations Report a Problematic Shortage of Skills

| **34%** | **33%** | **32%** |
| IT Orchestration and Automation | Cloud Architecture/Planning | IT Architecture/Planning |
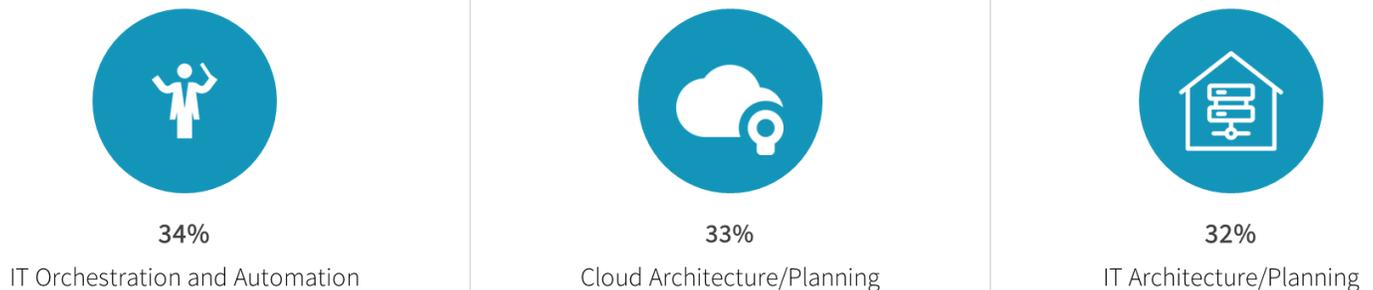
Source: Enterprise Strategy Group

Staying competitive and maximizing return on investment requires ongoing infrastructure upgrades and patches, ensuring the infrastructure provides the latest features and functionality and is secure and optimized. Thus, when asked about their data modernization investment priorities, organizations indicated they would invest in improving efficiencies to meet the needs of the business, especially increasing the use of IT infrastructure orchestration and automation tools.[2]

The Solution: VxRail

Dell Technologies and VMware jointly engineered VxRail hyperconverged infrastructure to be the easiest and fastest way to build and scale a VMware environment. Leveraging VMware HCI software, VxRail gives VMware users a consistent operating experience.

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[1] Source: ESG Master Survey Results, *2020 Technology Spending Intentions Survey*, January 2020.
[2] Ibid.

VxRail systems are designed to be a distributed HCI solution using modular nodes as building blocks. The solution can start from a small 3-node cluster and scale capacity and performance by adding single or multiple nodes, up to a maximum of 64 nodes in a cluster.

Nodes are based on PowerEdge servers with 2nd generation Intel Xeon scalable processors. Modern technology, including Intel Optane, NVMe storage, NVIDIA T4 GPUs, high-memory option CPUs, and 25 and 100 Gb/s connectivity, provides flexibility, ensuring administrators can balance performance, capacity, and cost to meet their needs.

The VxRail HCI System Software consists of multiple, integrated software elements that extend VMware-native capabilities to deliver a seamless, automated, operational experience. VxRail HCI System software delivers lifecycle management that automates non-disruptive upgrades, patches, node additions, or retirement to ensure the VxRail infrastructure is in a continuously validated state. VxRail can provide detailed health reporting and predictive analytics using cloud based multi-cluster management that leverages machine learning. VxRail comes with Dell EMC RecoverPoint for VMs, and VMware vSphere Replication for environments that require comprehensive data protection.

As an integrated solution, VxRail comes with a single point of contact for both hardware and software support and includes Dell EMC Secure Remote Services (SRS) for call-home and proactive two-way remote connection for remote monitoring, diagnosis, and repair to ensure maximum availability.

Organizations deploying VxRail benefit from:

- **Centralized, seamless management**—VxRail Manager, the overall management engine for all VxRail operations to deploy, manage, upgrade, patch, add, and retire nodes, is natively and seamlessly integrated into VMware vCenter, reducing complexity by eliminating multiple management systems.

- **Agility**—VxRail HCI System Software enables single-click, full-stack lifecycle management, ensuring administrators can seamlessly upgrade and update their infrastructure without workload disruption.

- **Simplicity**—Tight integration and the consolidation of compute, storage, and virtualization into a single solution help to eliminate silos and redundant tools. Built-in automation and orchestration simplify deployment, operations, and scaling, and reduce the risk of unplanned downtime due to the accidental mishandling of manual operations by an administrator.

- **Flexibility**—VxRail offers thousands of node hardware configuration options, along with multiple consumption models, service models, and deployment options providing flexibility and enabling organizations to right-size solutions to meet their performance, capacity, and budgetary requirements.

- **Scalability**—VxRail is a clustered solution and can both scale up and scale out, enabling organizations to increase compute and storage capacity and performance by adding nodes or increasing storage capacity. VxRail lifecycle management enables customers to mix node configurations and generations in a single cluster, minimizing the need for technology migration.

- **Single vendor experience**—Dell EMC VxRail labs tests all possible configurations, updates, and patches to ensure effectiveness and compatibility. Customers can work directly with Dell Technologies for purchasing, deployment, services, financing, and full-stack solution support.

- **Health checks, resource utilization, and consumption forecasting**—VxRail HCI System Software includes cloud-based multi-cluster centralized data collection and analytics management using machine learning and AI, providing actionable insights to optimize VxRail infrastructure performance and improve serviceability.

ESG Tested

ESG explored typical day 0 deployment, day 1 operations and management, and day 2 updates and expansion scenarios of VxRail. We focused on the simplicity and consistency of management and operations of the infrastructure, and how Dell Technologies and VMware co-engineering resulted in an integrated solution that provides users with a consistent HCI infrastructure operations experience.

Day 0 Deployment

ESG started the evaluation by exploring typical day 0 deployment activities in an enterprise environment. We used a freshly powered on VxRail Cluster, and, because VxRail comes pre-installed with all necessary software, we were able to bypass the manual process of installing and configuring vSphere, vSAN, and NSX. Instead, we used the native VxRail Manager wizard process to automate the installation and configuration process.

As shown in Figure 2, the deployment wizard automatically detected and identified the nodes in the cluster, and we used a prebuilt file to specify the configuration. The deployment wizard validated the configuration, which covered networking, vMotion, vSAN, support, and more. The unattended deployment process completed a workflow of more than 75 individual steps, which saved time and effort, and helped to reduce the opportunity for human errors.

Figure 2. Deploying VxRail
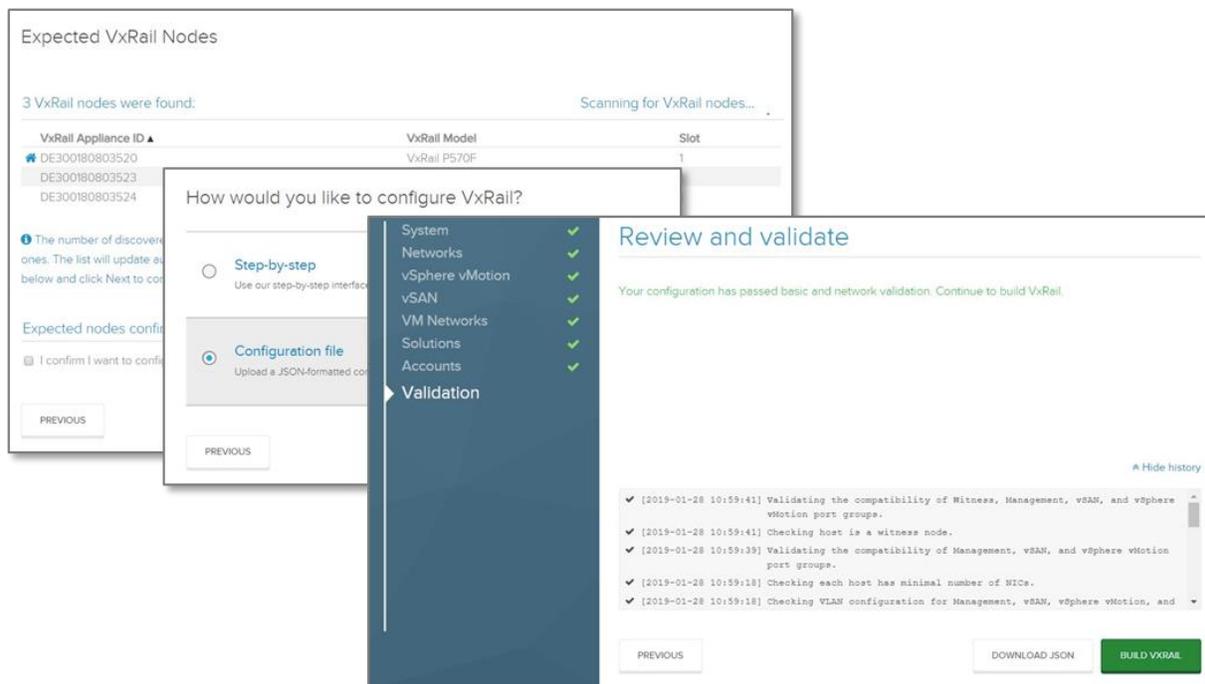
Source: Enterprise Strategy Group

Day 1 Operation

ESG explored how the VxRail would be managed in a typical cluster infrastructure using vCenter for day-to-day operations. VxRail Manager is natively integrated into vCenter to provide a single management interface. As shown in Figure 3, the

VxRail cluster appears in the vCenter inventory. Selecting the cluster brings up the VxRail management interface, providing administrators with a summary of the cluster.

Figure 3. VxRail Management via vCenter
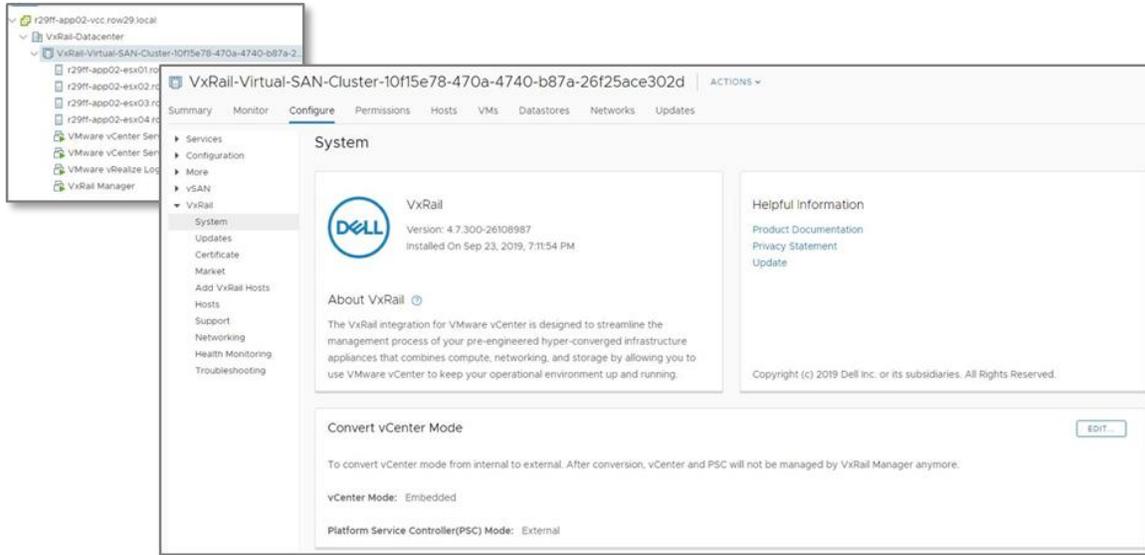
Administrators can monitor the state of the hardware using vCenter, which displays a graphical representation of the front and back of the appliance. Clicking on an object highlights that object and provides additional information, such as the network status and driver version or power supply information, as shown in Figure 4.

Figure 4. Monitoring the VxRail Appliance
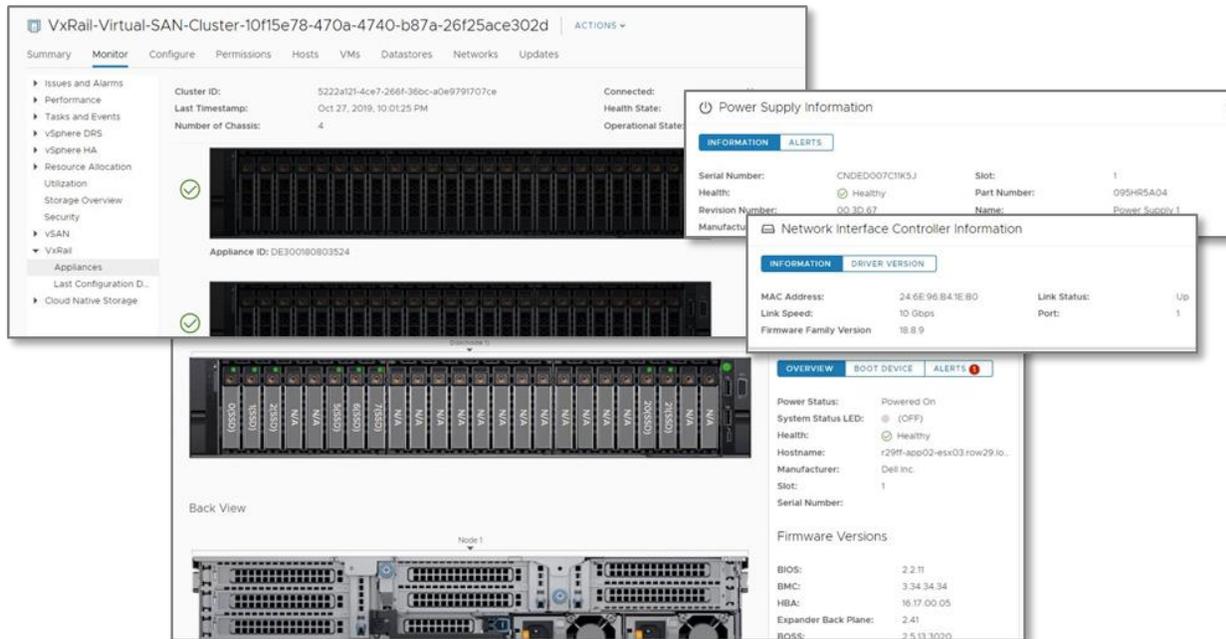
A common HCI management task is adding and replacing disks. vCenter displays the status and physical location of each storage device on the appliance graphic, and clicking on a disk provides additional details and the option to replace the disk. The disk replacement wizard provides step-by-step guidance, as shown in Figure 5.

Administrators can add performance or capacity using vCenter's add disk wizard, which will make suggestions for optimal disk location to balance traffic across all internal interfaces based on the disk type.
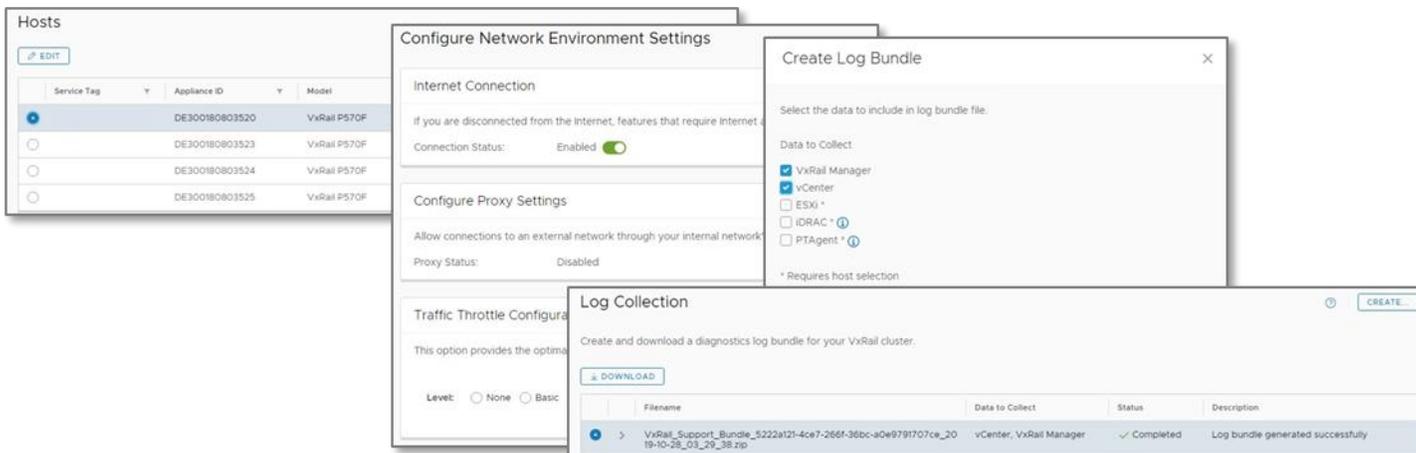
Figure 5. Adding and Replacing Disks
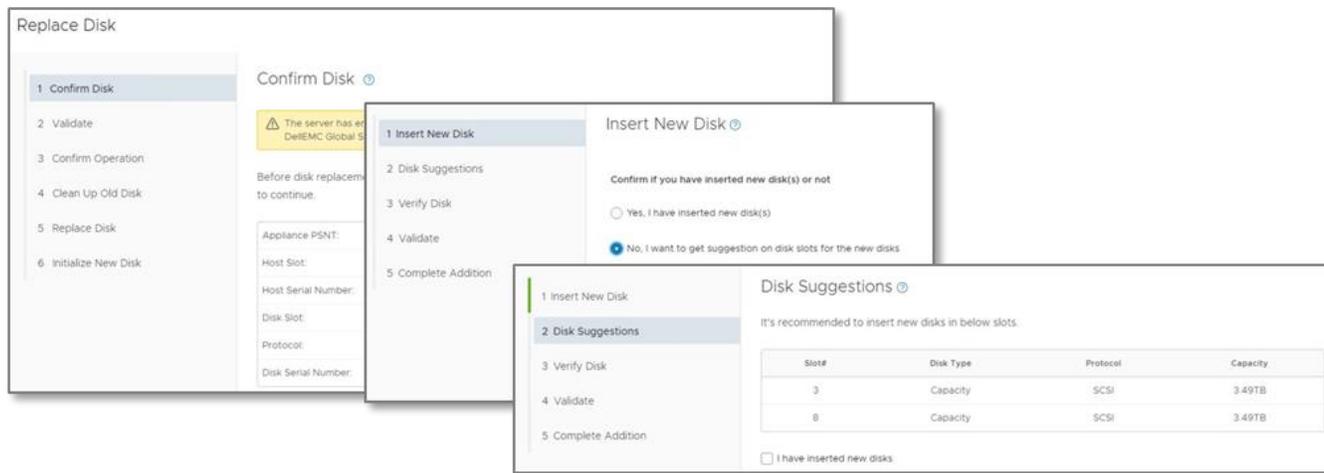
Source: Enterprise Strategy Group

vCenter enables administrators to perform other common VxRail management tasks, including updating host names and certificates, configuring network settings, and collecting logs and support bundles, as shown in Figure 6.

Figure 6. Managing VxRail
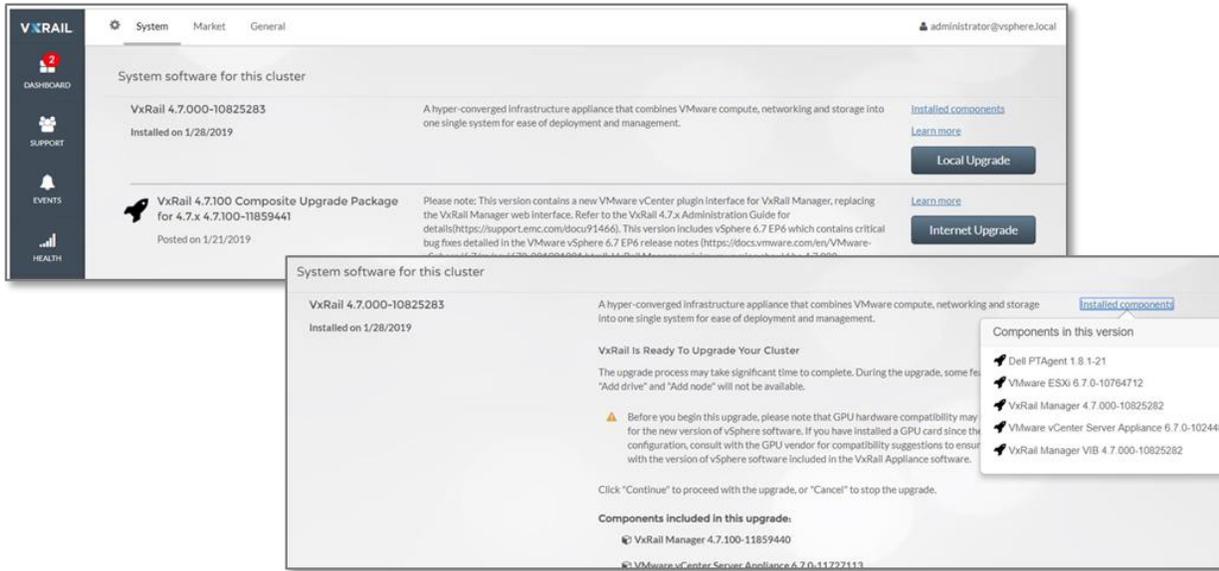

Source: Enterprise Strategy Group

Day 2 Update and Expansion

ESG explored typical day 2 update and expansion activities in an enterprise environment. We started by updating the environment, and then expanded the environment by adding a host to scale a VxRail cluster. The seamless integration of VxRail and vCenter along with the automation and orchestration simplifies updates and expansions, and helps to eliminate the many manual checks and processes, reducing operator workload and preventing interruptions in operations due to human error.

VxRail hardware and software support bundles are pre-validated and pre-tested, ensuring compatibility with one another and with the running version on VxRail. Automatic validity and compatibility checks ensure that administrators can perform updates without having to manually validate version compliance and compatibility. This saves time and minimizes the risk of a misconfiguration resulting in unplanned downtime when performing lifecycle operations.

The VxRail Manager dashboard, shown in Figure 7, displayed a list of two available updates and patches. We used the automated precheck feature to ensure that the environment was in a healthy state and there were no issues that would cause the update to fail, eliminating the need for us to manually identify and verify the update compatibility for the possibly thousands of components in the environment. After the automated precheck passed, we updated the environment.

Figure 7. Updating VxRail

Source: Enterprise Strategy Group

We expanded the VxRail cluster by adding a host. Leveraging the integration with VxRail, the vCenter add host wizard automatically detected the new host and, after our confirmation, configured all pre-installed software, added the host to the VxRail cluster, and added the host as an additional resource to the virtual infrastructure.

Figure 8. Adding a Host to a VxRail Cluster
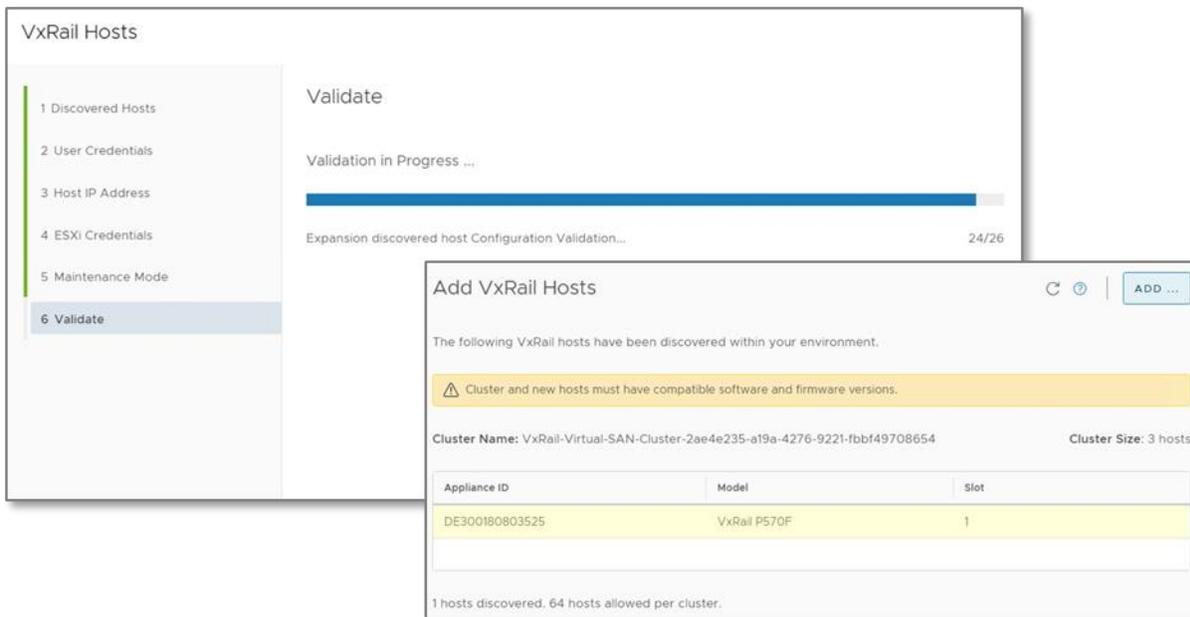
Source: Enterprise Strategy Group

ℹ️ Why This Matters

IT organizations quickly discover that delivering the simplicity, speed, accessibility, scalability, flexibility, self-service, and other benefits of HCI can be a complex and painful exercise, requiring the coordination and integration of many components.

ESG validated that the integration of VxRail and VMware HCI software simplifies and accelerates day 0 deployment, day 1 operations, and day 2 updates and expansions of hybrid cloud infrastructures. We used VxRail Manager to perform unattended deployment of VxRail HCI. Using vCenter, we performed typical day-to-day maintenance of the cluster, including replacing and adding disks. We also used vCenter to scale the HCI cluster by adding a host, and we updated the software using the built-in VxRail Manager.

Dell Technologies and VMware co-engineering resulted in an integrated full-stack lifecycle management solution, automating and orchestrating the lifecycle management process, simplifying and reducing administrative workload, and freeing resources for other critical IT tasks. Integrating VxRail into vCenter ensured administrators have a consistent user interface for HCI lifecycle management.

The Bigger Truth

As organizations turn to hyperconverged infrastructures to meet the needs of the business, architecting, deploying, and configuring the necessary resources continues to present challenges. IT can consume valuable time and effort cobbling together DIY infrastructures, relying on manual processes and the specialized knowledge of highly skilled staff. A critical lack of IT skills impacts the capabilities of internally developed solutions, which are often suboptimal and may struggle to support virtual and containerized workloads.

ESG validated that Dell Technologies and VMware co-engineering and integration of VxRail and vSphere helps automate, simplify, and accelerate day 0, day 1, and day 2 lifecycle management, reducing IT architect and administrator workloads. ESG's evaluation revealed:

- VxRail provides automated and orchestrated buildout of hyperconverged infrastructures, leveraging Dell Technologies and VMware best practices that are designed to obtain the best performance and security.
- The automated, orchestrated, and unattended deployment capabilities of the solution reduced dependencies on virtualization, storage, and networking expertise, and eliminated manual installation and configuration of multiple disparate components, enabling us to build and maintain hyperconverged infrastructures quickly and easily.
- The platform leverages Dell Technologies and VMware co-engineering that provides full-stack integration and simplified and automated day-to-day operations.
- Pre-validation of all VxRail hardware and software support bundles by Dell Technologies ensures compatibility with one another and with the running version on VxRail. The platform's built-in precheck validates that the environment is in a healthy state and there are no issues that may cause an update to fail.

ESG evaluated VxRail in a controlled environment. Due to the many variables in each production data center, it is important to perform planning and testing in your own environment to validate the viability, efficiency, and efficacy of any solution.

VxRail is an integrated solution designed to help organizations build and operate hyperconverged infrastructures. Dell and VMware co-engineered the solution, resulting in tight integration, simplification, automation, and orchestration of lifecycle management. If your organization is looking to increase business agility and operational efficiency by streamlining IT infrastructure and optimizing operations, then ESG believes that you should consider the consistency, simplification, and acceleration of HCI lifecycle management provided by VxRail.

The goal of ESG Validation reports is to educate IT professionals about information technology solutions for companies of all types and sizes. ESG Validation reports are not meant to replace the evaluation process that should be conducted before making purchasing decisions, but rather to provide insight into these emerging technologies. Our objectives are to explore some of the more valuable features and functions of IT solutions, show how they can be used to solve real customer problems, and identify any areas needing improvement. The ESG Validation Team's expert third-party perspective is based on our own hands-on testing as well as on interviews with customers who use these products in production environments.