



Dell Private Cloud

Dynamic and Flexible IT Architecture for an
Ever-changing Business Landscape

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Introduction

This Omdia Technical Validation documents our evaluation of how organizations can benefit from the use of Dell Private Cloud. We validated how Dell Private Cloud, via centralized experience, helps organizations to deploy, configure, and manage the lifecycle of Dell’s disaggregated infrastructure and supported ecosystems, leading to a decrease in operational time and effort. We also reviewed how Dell Private Cloud can deliver cost savings when compared to hyperconverged infrastructure.

Background

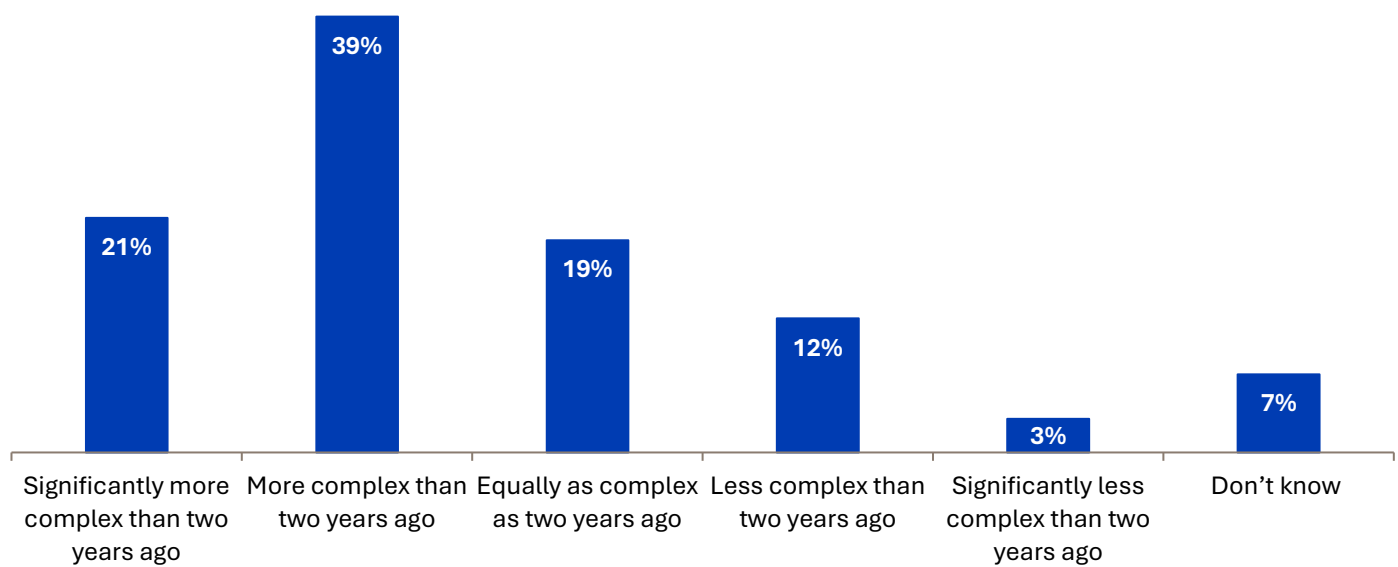
Organizations are facing constant change in their business environment. While expected to meet everyday business needs that require an architecture to support traditional workloads (VMs, database, VDI), organizations are increasingly facing pressure to evolve that architecture into one that supports modern workloads (containers, edge applications, and AI).

Unfortunately, the need to support both traditional and modern workloads presents numerous challenges, including:

- **The continuing complexity in IT environments.** Research from Enterprise Strategy Group (now Omdia) found that 79% of organizations stated their IT environments are equally, if not more, complex than they were two years ago (see Figure 1). This comes as no surprise due to trends such as an evolving cybersecurity landscape; the need to incorporate new and emerging technologies, particularly AI; and higher data volumes.¹

Figure 1. IT Environments Remain Plagued by Complexity

In general, how complex is your organization’s IT environment relative to two years ago? (Percent of respondents, N=843)



Source: Omdia

¹ Source: Enterprise Strategy Group Research Report, [2025 Technology Spending Intentions Survey](#), December 2024.

- **The evolving virtualization supplier ecosystem.** Recent changes to hypervisor licensing and packaging have prompted many organizations to reconsider their virtualization options, especially with the increasing deployments of modern workloads. In fact, Enterprise Strategy Group (now Omdia) research found that 89% of senior IT decision-makers said that the use or evaluation of multiple hypervisor options is a strategic imperative.²

Typically, organizations have opted between two architectural options to support business- and mission-critical workloads and applications. Three-tier architecture, comprised of separate servers, storage, and network resources, offers the flexibility to independently scale hardware resources so that they are tailored to meet growing and changing requirements. Yet, this architecture is not easy to deploy and manage, as the components are discrete and separate. On the other hand, hyperconverged infrastructure (HCI) emerged as an alternative. Instead of managing the compute, storage, and networking resources separately, HCI is built with software, enabling organizations to operate and manage this solution as one unit. While HCI simplifies operations and management, scaling in a cost-efficient way is an issue. Because compute and storage resources are fixed, they cannot be easily reallocated to other hypervisor clusters, leading to the possible underutilization of either resource.

Alternatively, organizations can opt for an approach to disaggregated infrastructure that combines three-tier flexibility with HCI deployment and management simplicity, giving organizations an efficient, adaptable disaggregated infrastructure that responds to evolving business requirements. More importantly, in light of shrinking IT budgets, organizations still face pressure to do more with less. Overall cost savings must be considered, especially when determining how the architecture can evolve for satisfying both current and future needs, without “ripping and replacing” hardware and software for newer versions (i.e., future-proofing IT environments).

Dell Private Cloud

Dell Private Cloud, built on disaggregated infrastructure, is designed to be fully transferable and reusable infrastructure enabling organizations to adapt their IT architecture as business needs evolve. This offering combines the flexibility of the traditional three-tier architecture with the operational and management simplicity of HCI. Unlike the alternative architectures, disaggregated infrastructure features unified full-stack composability across compute, storage, network, and security resources, which enables independent resource scaling with built-in security. It also offers software flexibility without license lock-in, as well as APIs for interoperability with hypervisor and storage management tools and AIOps capabilities.

With Dell Private Cloud, organizations can accelerate the adoption of new technologies as they become available to further improve cost and performance, lower power consumption, and bolster security capabilities. Included in this disaggregated infrastructure is Dell’s comprehensive product portfolio, specifically (as shown in Figure 2):

- **Dell PowerEdge 16th and 17th generation servers with Intel Xeon 6 processors.** Servers installed with Intel Xeon 6 processors help to extend server consolidation and increase workload optimization compared to previous Intel CPU generations. The Xeon 6 also features Intel trusted domain extensions (TDXs), which protect data while it is in use by creating hardware-isolated trust domains (TDs) within a

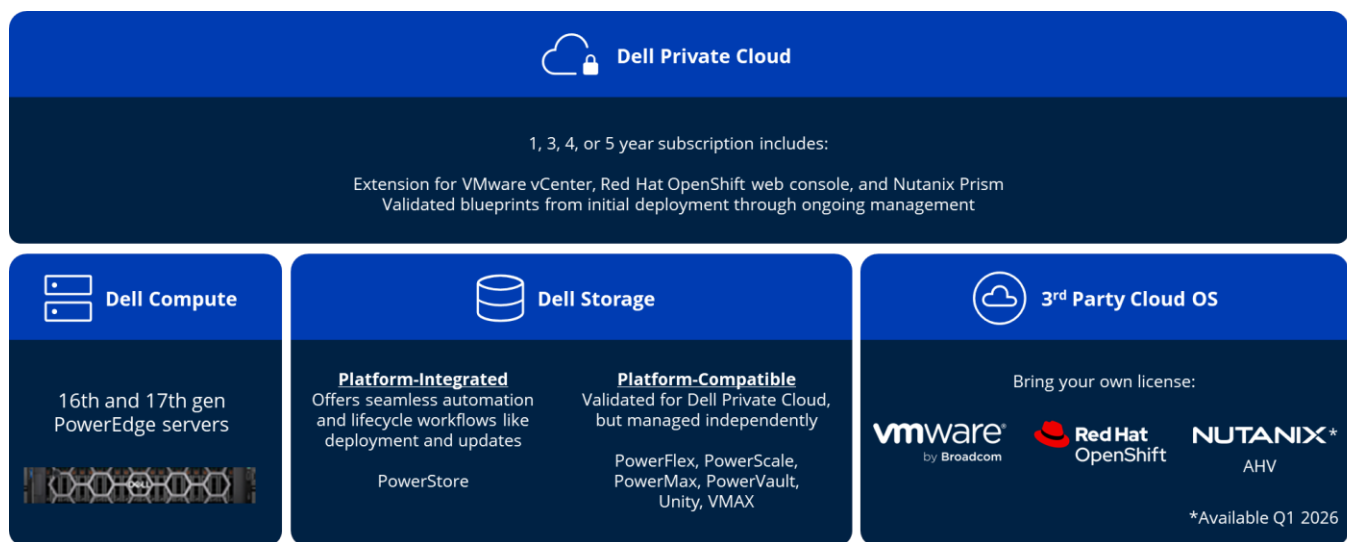
² Source: Enterprise Strategy Group Research Report, [Navigating the Cloud and AI Revolution: The State of Enterprise Storage and HCI](#), March 2024.

VM. Because the VM is isolated from the server, OS, and hypervisor, the attack surface decreases. Intel TDXs facilitates the implementation of a confidential computing strategy.

- **Platform-integrated and platform-compatible Dell Storage.** Dell Private Cloud supports various Dell storage platforms, including, PowerStore, PowerFlex, PowerScale, PowerMax, PowerVault, Unity, and VMAX.
- **Choice of OS and hypervisors,** including VMware vSphere, Red Hat OpenShift, and Nutanix AHV.

Dell Private Cloud is also designed for bring-your-own (BYOx) when it comes to compute and storage (as long as it is supported as noted in Figure 2), OS, hypervisors, and networking. With this option, Dell Private Cloud supports organizations in leveraging existing investments and licensing agreements to reduce overall costs.

Figure 2. Current Components Available for Dell Private Cloud



Source: Omdia

Transferable and reusable infrastructure enables organizations to protect their Dell hardware and software investments, as these components can be reused for supporting different workloads. Organizations no longer need to invest in newer hardware and software to meet alternative business requirements; Dell hardware can be repurposed and updated for supporting other workloads when needed. And since organizations can choose to use different software stacks (OS and hypervisor), Dell Private Cloud enables transferable Dell software licenses, removing the need to purchase additional licenses to switch software stacks.

Organizations can realize faster time to value through Dell Private Cloud’s underlying automation and orchestration capabilities, powered by Dell Automation Platform. Delivered via an appliance-like experience, the platform’s capabilities drive the automated configuration, deployment, management, and scalability of Dell Private Cloud ecosystems, as opposed to the traditional “rip and replace” of hardware and software components. The need to navigate manually driven configuration and testing workflows before deployment into production environments, which can take weeks to complete, no longer exists. Organizations can also quickly realize value throughout the lifecycle of a Dell Private Cloud deployment via storage multisystem management capabilities (such as automated OS updates), ServiceNow integration for familiar support and service workflows, and extension to Dell AIOps for proactive monitoring and observability.

With this combination of disaggregated infrastructure and advanced orchestration, Dell Private Cloud ensures validated delivery from Day 0 through Day 2. Organizations can also benefit from automated lifecycle management, as well as integration into third-party tools such as VMware vCenter and Red Hat OpenShift web console for a native experience. As software updates are made available, Dell Private Cloud ensures that deployments remain compliant and in a validated state. Should the need arise to apply a critical security patch prior to publishing a validated state, organizations can compose a desired state of their Dell Private Cloud deployment immediately and maintain overall security.

As with other Dell products and solutions, organizations using Dell Private Cloud have the support of Dell Technologies Services. With Dell's global presence and broad ecosystem, Dell Technologies Services offers extensive knowledge and experience acquired across numerous projects and resources to help organizations extract the most value out of Dell Private Cloud deployments. Organizations can experience the solution support and optimized call routing to the right team that possesses the expertise to solve issues with the entire solution, regardless of the OS used. Organizations no longer need to seek the right support for the individual components. When organizations update their cloud OS stack, support and call routing is automatically updated to reflect this change.

Omdia Technical Validation

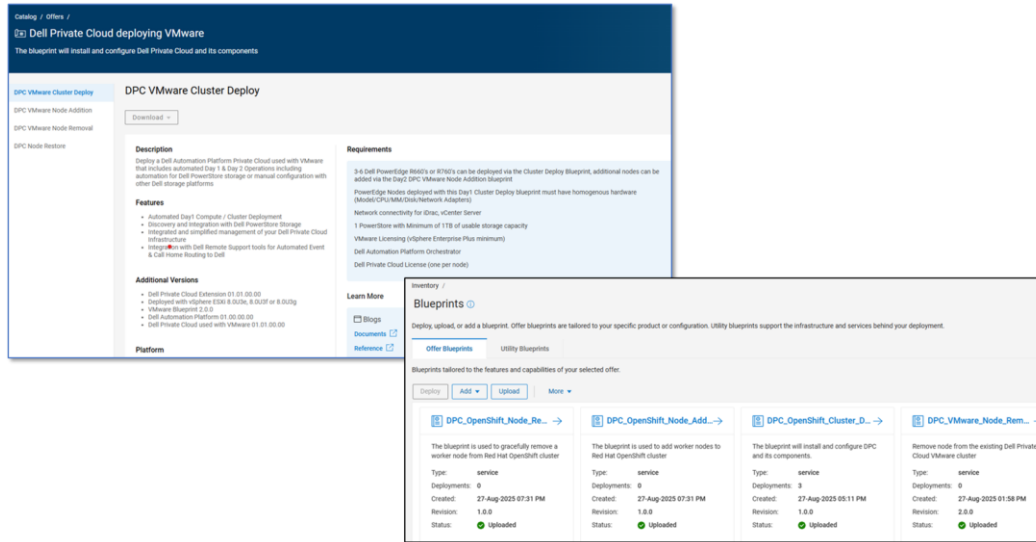
Omdia validated how Dell Private Cloud can help organizations reduce capital and operational expenses, thereby decreasing overall cost. We specifically evaluated how Dell Private Cloud can simplify hardware and software deployment and configuration, as well as reviewed results of internal Dell testing and cost estimates that highlight the time and cost savings that organizations can potentially expect.

Simplifying Configuration of Dell Private Cloud

Using an appliance-like experience, organizations can significantly simplify the configuration and deployment of Dell Private Cloud. Once organizations input their configurations, credentials, and parameters through a simple JSON file upload, Dell Private Cloud's underlying automation and orchestration, delivered by Dell Automation Platform, then dictates the specific workflows to be executed via blueprints. This removes the need for manual intervention and, subsequently, reducing the risk of human error.

To illustrate how Dell Automation Platform works, Omdia first navigated to the blueprint catalog (see Figure 3). A blueprint details the workflows that need to be executed when configuring Dell Private Cloud. (This assumed that the hardware was properly installed at the customer site and onboarded into the platform orchestrator.) These blueprints are curated and validated by Dell and include operations from Day 0 through Day 2. We selected the blueprint for configuring and deploying a VMware cluster. Once selected, the Dell Automation Platform orchestrator executes the blueprints to complete the installation and configuration of the VMware vSphere cluster, without manual intervention.

Figure 3. Dell Private Cloud – Blueprint Selection



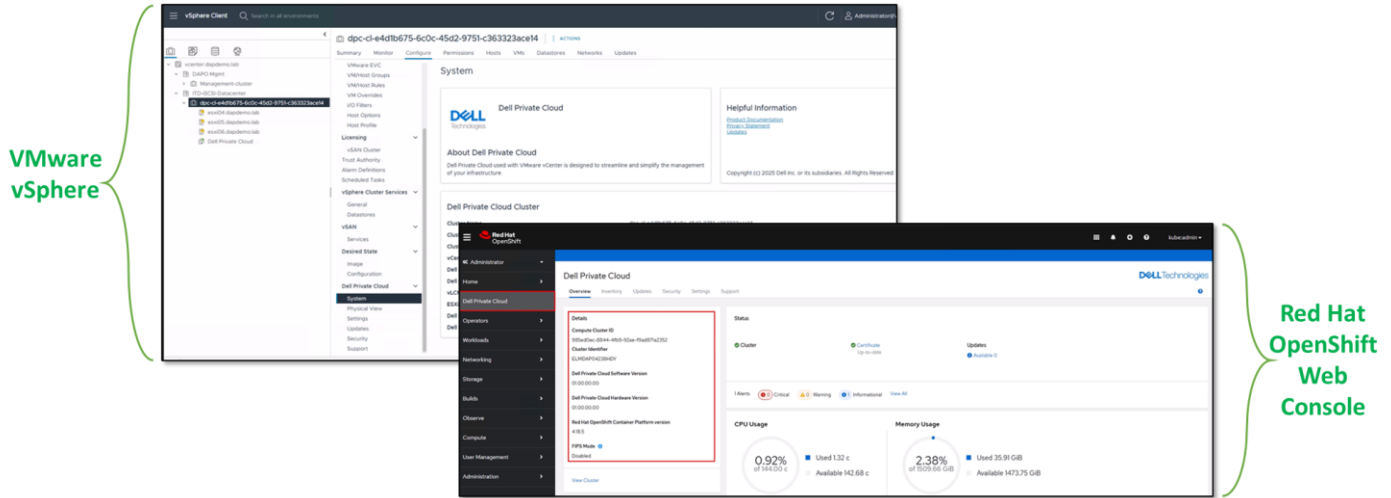
Source: Omdia

Repurposing Dell Private Cloud infrastructure for a different third-party OS is as simple as selecting another validated blueprint from the catalog. For example, should business needs dictate the use of another hypervisor or third-party software aside from VMware vSphere (e.g., Red Hat OpenShift), the applicable blueprint can be added to the orchestrator and executed, and the deployment of the new hypervisor will be completed with minimal manual intervention. With this approach, organizations can scale up and down to meet changing business needs where a multihypervisor environment is needed, such as running both VMware and Red Hat.

Once the cluster is deployed, Dell Automation Platform manages both hardware and software across its full lifecycle, with automated private cloud software capabilities that frequently tests the ecosystem to continuously ensure a validated state. If an organization desires to drift from that validated state, it can also select an option to allow controlled and documented “version drifts” for urgent express updates or security patches.

Executing this blueprint also enables integrations of the management and orchestration tools typically connected with the chosen hypervisor. Figure 4 illustrates integration with VMware vCenter and Red Hat OpenShift web console.

Figure 4. Integration of Dell Private Cloud With VMware and Red Hat Tools



Source: Omdia

Why This Matters

Deploying and integrating data center infrastructure (servers, storage, networking) to support traditional and modern workloads typically requires a wide variety of tools and workflows. Unfortunately, this significantly hinders how quickly organizations respond to business needs.

Omdia validated that Dell Private Cloud simplifies how organizations deploy the necessary infrastructure to satisfy evolving business needs. We observed how the appliance-like experience of Dell Private Cloud removes the need to complete manually driven tasks with multiple tool sets. Using blueprints tested and validated by Dell's experts, the automation and orchestration eliminate the manual steps previously needed to bring up and integrate the data center resources for supporting workloads.

Decreasing Time and Effort When Using Dell Private Cloud

To quantify the time and effort saved in using Dell Private Cloud to configure, install, and deploy both hardware and software components, Omdia evaluated the results of testing conducted using specific Dell Private Cloud blueprints. Dell's testing involved 36,000 test runs conducted across 45,000 hours over a two-month period. We examined three use cases that can occur with Dell Private Cloud. (Omdia should note that actual results may vary when encountered in real-world environments.)

Use Case 1: Onboarding Nodes to the Platform to Support VMware Cluster Deployment

Dell Private Cloud took less than 2 minutes to onboard three nodes for deployment.

Test runs included the steps required to onboard Dell servers (installed in a customer environment) to the platform inventory for Dell Private Cloud deployment and management. Results reflected the time to onboard three nodes, then scale up to 64 nodes. The manual approach assumed the use of existing Dell tools, with each “click” or command entered considered a “step.” Steps completed during this process were automated through zero-touch onboarding.

Based on the test results, Omdia saw that the time to onboard three nodes for a Dell Private Cloud deployment was less than two minutes. Results also revealed that onboarding nodes can scale without taking additional time; scaling up to around 64 nodes still finished in under two minutes.

Omdia attributed this short time to the automated sequence of steps executed by the platform, which run simultaneously for each node being onboarded to the inventory. Parallel execution also plays a key factor in how the operation can be scaled without adding time. If completing this task manually, onboarding nodes would need to be done serially.

Use Case 2: Creating a VMware Three-node Cluster on an Existing Dell Private Cloud Installation

Test runs included steps required to bring up the hardware resources (performing validation and hardware checks, installing necessary software packages), setting up VMware ESXi hosts, and creating a three-node cluster. Of the total test runs conducted, 40% contained these steps, while the remainder considered other variables that could affect results, such as using the on-premises version vs. SaaS version of Dell Private Cloud or setting up Fibre Channel or iSCSI interfaces on Dell PowerStore.

Compared to the manual approach, Dell Private Cloud reduced the number of steps by 91%.

Results were quantified in terms of the number of steps executed. The manual approach assumed the use of existing tools supplied by Dell and VMware, with each “click” or command entered considered a “step.” In comparison, each line in a Dell blueprint counted as a “step.”

Table 1 shows the number of steps counted for each approach. Based on the test results, Omdia calculated that this number significantly reduced manual steps by 91%.

Table 1. Reduction in Number of Steps Executed for Deploying VMware vSphere

Method	Number of Steps Executed
Manual	425
Dell Private Cloud	35

Source: Omdia

Contributing to this significant reduction is Dell Private Cloud's automatic execution of repeated manual steps, specifically steps related to the configuration and deployment of the hardware of three Dell servers, the server firmware upgrade, and the creation of the VMware ESXi hosts. While these steps are typically performed serially (as each server is dealt with individually, the blueprint automated the completion of these steps in parallel.

Use Case 3: Prepare Dell Private Cloud Cluster to Be 'Workload-ready'

Ensuring that Dell Private Cloud was workload-ready took~ 2.5 hours.

Test runs included steps such as creating a new VM or migrating an existing one, configuring storage and networks for the new workload, and testing the application or workload before deploying into the production network. We assumed that Dell Private Cloud hardware was deployed, and nodes were onboarded to the platform inventory. Results were quantified in terms of total completion time. The manual approach assumed the use of existing Dell tools, with each "click" or command entered considered a "step." Steps

completed using Dell Private Cloud and Dell Automation Platform were automated via a blueprint.

Based on the test results, Omdia saw that the time to make a Dell Private Cloud deployment workload-ready was approximately 2.5 hours. We attributed the result to Dell Private Cloud's blueprint simplicity and the fact that deployment does not require manual interaction. This is particularly relevant when Dell Private Cloud executes some tasks automatically in parallel during deployment, such as the BIOS updates, firmware updates, and vSphere installation. Accomplishing each individual task manually, from start to finish, could potentially take several hours to individually complete.

Why This Matters

A high amount of time and effort is typically necessary to deploy and configure a workload-ready infrastructure, significantly driven by the use of multiple tools across manually driven processes. With Dell Private Cloud, powered by Dell Automation Platform, orchestration is leveraged to significantly remove this manual intervention.

After reviewing the results of tests designed to illustrate the decrease, Omdia validated that Dell Private Cloud decreased the number of steps to deploy a three-node cluster by as much as 91%, onboarded new nodes for that cluster in less than two minutes, and prepared the cluster to be workload-ready in less than 2.5 hours.

Reducing Overall Costs

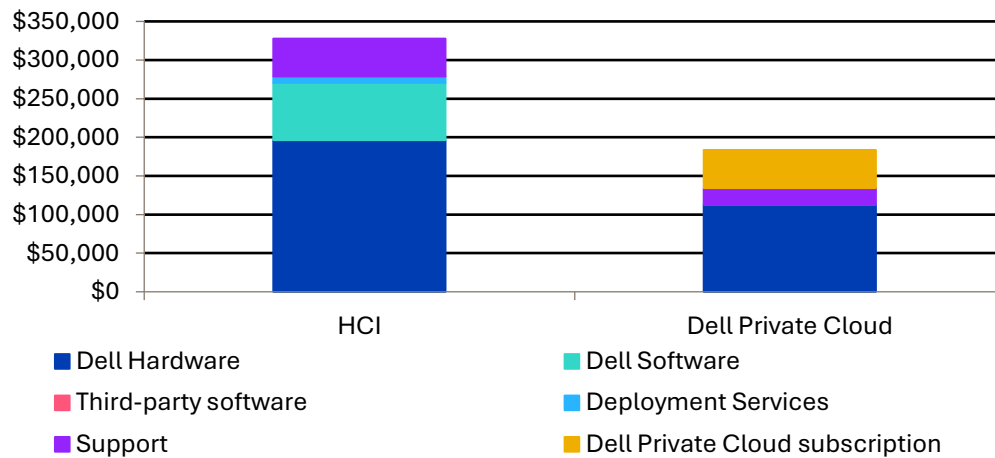
When designing Dell Private Cloud, Dell took great care to ensure that customers can reduce their overall costs compared with previous alternatives, specifically HCI. Omdia compared the costs of Dell Private Cloud with those of an existing HCI architecture. Cost components in this analysis included list pricing at the time of initial availability for hardware (including servers, storage, network cards and switches, and memory), software (such as OS license), deployment services, and post-sales support.

Omdia also considered the case in which a customer uses a VMware license with the hardware and software. We looked at two options: bring your own software (BYOS) and purchasing a VMware Cloud Foundation (VCF) license. VMware license prices used in these cost estimates reflect recent packaging and licensing changes.

Omdia first compared the three-year cost of purchasing a five-node cluster using HCI against that of using Dell Private Cloud with a BYOS option. Total storage for the five nodes was 92 TB, and total cluster capacity was 163 TB. Storage capacities were achieved using appropriate data compression and DDR ratios, along with VMware erasure coding of RAID 5 and a 1.5x compression ratio. As shown in Figure 5, **Dell Private Cloud with BYOS achieved a 44% savings over HCI.**

Figure 5. 44% Cost Savings Over Three Years – Dell Private Cloud vs. HCI (BYOS)

Three-Year Costs - Dell Private Cloud vs. HCI (BYOS)
(\$, shorter is better)

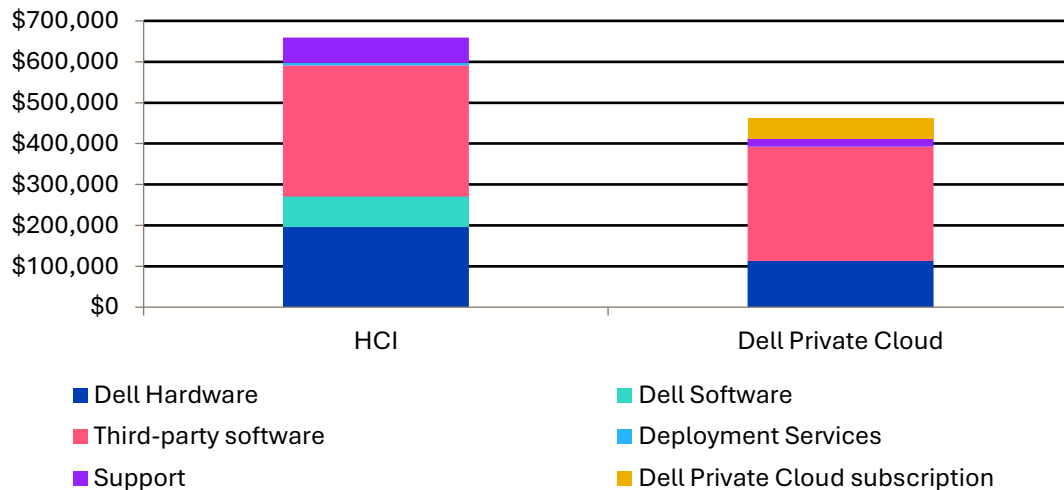


Source: Omdia

Omdia then compared the three-year cost of purchasing a five-node cluster using HCI against that of using Dell Private Cloud with the option to purchase a VMware VCF license. The same conditions from the previous comparison apply. As shown in Figure 6, **Dell Private Cloud with VCF achieved a 29% savings over HCI.**

Figure 6. 29% Cost Savings Over Three Years – Dell Private Cloud vs. HCI (VCF)

Three-Year Costs - Dell Private Cloud vs. HCI (VCF)
(\$, shorter is better)



Source: Omdia

Omdia noted other cost savings that could be achieved not explicitly stated in the charts, specifically from:

- Less hardware, translating into lower costs for power, cooling, rack space, and cables, as well as reduced operational and support costs.
- Day 2 automation from Dell Private Cloud's single point of management removes the manual and serial workflows for software updates, translating into lower support costs.
- The disaggregated infrastructure, which protects hardware investments via re-use or re-provisioning of hardware to other workloads once placed back in the platform inventory. Workload migration costs can also decrease.³

Why This Matters

While HCI has helped organizations reduce the amount of hardware and software used for supporting workloads and reduce overall management, working with this architecture still requires numerous manually driven tasks to configure, deploy, and manage the lifecycle. Also, the fixed ratio of compute and storage resources makes re-use and redeployment to other workloads difficult.

Omdia validated that Dell Private Cloud can achieve lower purchasing costs than HCI. By auditing estimates of costs incurred during a three-year period for two scenarios (BYOS and purchase of a VMware VCF license), we found that the cost for Dell Private Cloud was 44% and 29%, respectively.

³ Workload migration costs are not considered in the cost calculations.

Conclusion

Deploying and modifying IT architecture needs to be done more quickly and efficiently as business needs frequently change. If not, organizations cannot remain competitive. While two architectural options have been traditionally used (three-tier architectures and HCI) the fact remains that both require manual processes and multiple tools and interfaces to deploy, configure, and manage over its lifecycle. Migrating workloads to other hardware and software (OSes, hypervisors) also become difficult and time-consuming, as organizations that look to upgrade their technology find that re-using previously deployed server, storage, and networking resources can be difficult. All of these facts lead to concerns about incurring unnecessary costs as IT budgets steadily shrink over time.

Dell Private Cloud, enabled by Dell Automation Platform, has been designed to alleviate organizations of these challenges by providing an appliance-like experience to deploy infrastructure for supporting and scaling traditional and modern workloads. With a single interface, organizations can leverage automated processes to configure and test servers, storage, and networking, with a choice of hypervisors and OSes, then deploy into production. Dell Private Cloud can also automate lifecycle management activities, such as software updates, to ensure that infrastructure remains compliant according to Dell's best practices. With Dell Private Cloud, organizations can achieve shorter time to value, architectural flexibility, and lower overall costs.

Throughout our evaluation, Omdia validated that Dell Private Cloud can help organizations:

- Remove the large amount of manual effort typically encountered when configuring and deploying workload infrastructure using three-tier architectures or HCI by leveraging a disaggregated approach.
- Significantly reduce the time and effort spent on onboarding nodes, configuring infrastructure with a given hypervisor, and preparing that infrastructure to support workloads, primarily due to Dell Automation Platform's ability to complete multiple repetitive tasks in parallel.
- Reduce overall three-year costs by an estimated 44% and 29%, respectively, compared to HCI when considering the options of BYOS and purchasing a VMware license.

Omdia's validation shows that Dell Private Cloud can indeed provide the freedom of choice, architectural flexibility, simplicity, and cost savings that organizations seek when building out their infrastructure. Our evaluation reinforces our recommendation to look more closely at the value Dell Private Cloud can deliver to your business.

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