
Improved Resiliency, Operational Efficiency, Performance, and Scalability, With a 2.5x Lower TCO Than vSAN-based HCI

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Executive Summary

Today’s IT and VM administrators are challenged to meet the growing needs of businesses while reducing technology cost and complexity. Hyperconverged infrastructure (HCI) has addressed the complexity challenges for general-purpose workloads but does not cost-efficiently deliver the highest levels of performance and resiliency required for business-critical workloads. TechTarget’s Enterprise Strategy Group validated that HPE GreenLake for Private Cloud Business Edition with Alletra dHCI delivers the HCI-like experience of unified management and automated, VM-centric operations with greater resiliency, faster performance, and flexibility at scale—with AI-assisted support and deep VM analytics.

Enterprise Strategy Group validated the economic benefits that customers have realized since deploying the solution based on HPE Alletra dHCI and used this as the basis to compare the solution with several alternative vSAN-based HCI configurations from a leading vendor. The standard VMware vSAN sizing tool was used to generate configurations to meet the needs of a typical business-critical workload consisting of a mix of general purpose VMs and transactional databases. Our five-year total cost of ownership (TCO) model found that the HPE solution was able to meet the needs of the workload at a cost that was up to 2.5x lower, while providing lower latency and higher levels of resiliency. The HPE solution provided up to a 56% reduction in virtualization licenses, 55% lower cost of acquisition, and 53% reduction in operational overhead to deploy, administer, maintain, and support the system.

Introduction

This Enterprise Strategy Group Economic Validation is focused on the quantitative and qualitative savings and benefits organizations can expect from deployment of an HPE disaggregated HCI solution (dHCI) with HPE Alletra Storage, as compared with a vSAN-based HCI solution from a leading vendor, to handle the same set of business-critical workloads while delivering as close to equivalent levels of performance and availability as possible.

Enterprise Strategy Group created a model that factored in common cost analysis categories, including cost of hardware, data protection services, support, floor space, power, cooling, and administration.

Challenges

Hyperconverged infrastructure continues to gain momentum as organizations turn to the technology to cost-effectively consolidate and simplify their IT infrastructure. Enterprise Strategy Group research finds that 54% of organizations use hyperconverged technology in their data centers for at least 21% of their production applications/workloads today, and 83% of organizations are expecting to do so over the next two years.¹ HCI delivers an experience that dramatically simplifies how infrastructure is managed, deployed, and scaled. It is ideal for general-purpose workloads with predictable growth as compute and storage are scaled together with every node. However, this also makes it costly to meet the workload requirements of business-critical applications that demand higher resiliency and lower latency. HCI becomes cost-prohibitive for business-critical workloads due to heavy performance overheads, increased risk of downtime, and inefficiency of overprovisioned compute and storage resources at scale. While 90% of organizations feel that HCI is now suitable for mission-critical workloads, this has not always been the case, and some organizations have held back from deploying business-critical applications like database workloads in their HCI environments. Some of the top considerations holding them back include that they feel that the HCI architecture lacks the necessary security, flexibility, performance, reliability, and scalability and is too costly for those applications.²

¹ Source: Enterprise Strategy Group Complete Survey Results, *Navigating the Cloud and AI Revolution: The State of Enterprise Storage and HCI*, February 2024. All Enterprise Strategy Group research references and charts in this report have been taken from this survey results set, unless otherwise noted.


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Because of how they scale, HCI nodes can make inefficient use of compute and storage resources. 85% of Enterprise Strategy Group research respondents reported that HCI’s support for scaling compute and storage resources independently is a “must have” capability. Combining this capability with a consumption-based financial model can deliver cloud-like compute and storage agility and economics. Some of the top benefits that organizations have achieved by leveraging a consumption-based model for data center storage or HCI are shown in Figure 1.

Figure 1. Benefits of Leveraging a Consumption-based Model for Data Center Storage or HCI

Which of the following benefits, if any, has your organization achieved, or does it expect to achieve, by leveraging a consumption-based model for data center storage or HCI? (Percent of respondents, N=293, multiple responses accepted)

- Accelerated IT initiatives by freeing up personnel from infrastructure and systems to address other tasks: 52%
- Improved IT personnel experience and/or retention: 46%
- Accelerated IT initiatives by moving cost into future quarters, increasing the amount of infrastructure that:
  - Reduced overall IT risk by paying only for the hardware our organization uses: 46%
  - Reduced operational costs: 38%
- Accelerated deployment of new infrastructure capabilities: 37%
- Adopted an Opex-based accounting model for IT infrastructure: 36%
- Accelerated infrastructure scalability: 34%
- We have achieved no benefits: 1%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Organizations running business-critical workloads would benefit from a solution that provided the proven simplicity and automation of HCI with a flexible choice of enterprise-grade components that deliver lower latency, resiliency, and efficient investment through independent scalability of compute and storage resources.

The Solution: HPE GreenLake for Private Cloud Business Edition With Alletra dHCl

The GreenLake edge-to-cloud platform is designed to provide a seamless experience for organizations looking to deploy and manage their applications and workloads across edge, on-premises, and cloud environments. This platform enables businesses to leverage a combination of edge computing, data center resources, and cloud services to optimize their IT operations.
Within the HPE GreenLake ecosystem, the Data Services Cloud Console (DSCC) serves as a centralized management hub that enables users to easily monitor, manage, and optimize their data services across hybrid IT environments. This console provides a single pane of glass view for administrators to oversee data storage, backup, private cloud, and recovery services, as well as data analytics and governance tools. It offers insights into usage, performance, and other metrics, helping organizations make informed decisions about their data management strategies.

Overall, HPE GreenLake’s edge-to-cloud platform, combined with the DSCC, empowers businesses to modernize their IT infrastructure and accelerate digital transformation initiatives by providing a flexible and efficient solution for managing workloads and data across diverse environments.

**Figure 2. HPE GreenLake for Private Cloud Business Edition with Alletra dHCI**

HPE GreenLake for Private Cloud Business Edition within DSCC enables organizations to provision, manage, and protect their virtual machines across hybrid cloud environments. Representing the latest evolution of HPE hyperconverged technology, this solution enables users to easily manage and scale their global fleet of VMs from a single console. It enables simplified VM and infrastructure management across hybrid cloud workloads and provides self-service agility from a single, global dashboard with a cloud operational experience. Users can orchestrate the provisioning of VMs built on a choice of HPE hyperconverged infrastructure via HPE Alletra dHCI, HPE SimpliVity, or public cloud infrastructure (see Figure 2).

HPE GreenLake for Private Cloud Business Edition is a self-managed private cloud solution enabling organizations to build their self-service cloud on demand, where they need it.

Workload-optimized platforms manage all VMs, including edge, general-purpose, business-critical, and cloud. As shown below, HPE provides choices of workload-optimized HCI and disaggregated HCI. For edge or general-
purpose VMs, HPE SimpliVity delivers an efficient, all-in-one solution with built-in backup and recovery, and it collapses silos in a simple scale-out architecture. For business-critical and mixed workloads at scale, HPE Alletra dHCI provides a disaggregated HCI architecture made up of HPE Alletra Storage and HPE ProLiant compute for independent scaling. Each serves HCI use cases and delivers a foundation for hybrid cloud environments.

HPE delivers the HCI experience to workloads with unpredictable growth by combining the simplified and unified management architecture of HCI with the capabilities of enterprise-class disaggregated storage. Built on a secure foundation of HPE ProLiant servers with silicon root of trust and self-managing flash storage of HPE Alletra Storage, the platform gives enterprises the operational simplicity of HCI, along with the flexibility to independently scale compute and storage resources. The HPE solution has built-in automation software that simplifies cluster deployment and scaling, and all data services can be managed with a single-pane from HPE GreenLake. The system is architected to provide AI-driven intelligence and automated administration, to predict and prevent disruptions, and to self-optimize the entire virtualization stack. It is designed with no single point of failure, can withstand three simultaneous drive failures, and is resilient, with a minimum of 99.9999% guaranteed availability.

**Enterprise Strategy Group Economic Validation**

Enterprise Strategy Group completed a quantitative economic analysis of HPE GreenLake for Private Cloud Business Edition with HPE Alletra dHCI for users who want to leverage disaggregated HCI for running VM workloads in a private/hybrid cloud. Focus was placed on the economic benefits organizations can expect when leveraging a disaggregated HCI solution.

Enterprise Strategy Group’s Economic Validation process is a proven method for understanding, validating, quantifying, and modeling the economic value propositions of a product or solution. The process leverages Enterprise Strategy Group’s core competencies in market and industry analysis, forward-looking research, and technical/economic validation. Enterprise Strategy Group conducted in-depth interviews with end users to better understand and quantify how the HPE solution has affected their organizations, particularly in comparison with previously deployed and/or experienced HCI solutions. The qualitative and quantitative findings were used as the basis for a simple economic model comparing an HPE disaggregated HCI solution with a vSAN-based HCI solution from a leading vendor to handle the same set of business-critical and mixed-workload requirements, while delivering as close to equivalent levels of performance and availability as possible.

**HPE Validated Savings and Benefits**

Enterprise Strategy Group’s economic analysis revealed that an effective deployment of an HPE solution can provide significant savings and benefits over a three-year period when compared with three-tier architectures and vSAN-based HCI solutions. Enterprise Strategy Group found that the HPE solution provided its customers with significant savings and benefits in the following categories:

- **Improved resiliency.** HPE solutions offer dramatically improved resiliency compared to HCI, without the need to overprovision resources, while predictive analytics ensure data availability and enhanced data protection result in greater uptime and reduced risk to the organization.

- **Cost-effective performance and scalability.** Improved data efficiency, flexibility to scale storage and/or compute independently, and more effective use of resources relative to HCI lower the footprint and help reduce costs.

- **Improved operational efficiency.** Built-in automation and integration lead to faster deployments with reduced administrative complexity, increased visibility, AI-assisted single-tier support, and deep virtualization intelligence, resulting in lower cost of administration and faster time to value.
Improved Resiliency

HPE ensures that business-critical workloads continue to run at scale without interruption through the use of proven enterprise-grade components, advanced RAID and cascade checksum protection, and flexible data protection options. HPE customers found that their HPE solution provided:

- **Resiliency and durability.** Customers were reassured knowing that HPE’s solution was built on the most reliable and secure enterprise servers, storage, and networking instead of the commodity components used to build many HCI nodes. HPE Alletra Storage is designed with no single point of failure, redundant hardware, and hardened RAID protection with triple parity and checksums, and it can tolerate three simultaneous drive failures. Enterprise Strategy Group validated calculations that show that HPE is up to 35x more resilient than most HCI and 4x more resilient than the most robust HCI protection configurations that can require significant overprovisioning of nodes and storage capacity for redundancy. One customer told us, “We lost so much capacity on our HCI because we had to have many copies across the nodes, and our resiliency was limited for smaller configurations based on only having a few nodes.”

- **Enhanced data protection.** HPE Alletra’s built-in data protection, application-consistent snapshots, and advanced replication result in greater backup granularity and faster restores from any HPE or non-HPE device. Simple integration with StoreOnce RMC and ISV-validated backup solutions from Veeam and Commvault provide advanced capabilities. Additional flexibility and functionality can be added by using HPE Backup and Recovery service to back up and recover VMware VMs (using snapshots, local backups, or cloud backups) or by using Zerto to provide continuous data protection and disaster recovery for any vendor or cloud solution.

- **Reduced risk of downtime and degraded operations.** Customers enjoyed peace of mind knowing that the business-critical applications running on their HPE solution with HPE InfoSight predictive analytics deliver 99.9999% data availability and help detect and avoid potential issues before they happen. Customers said that the HPE solution helped them to avoid the potential application impact they experienced with HCI solutions when performing data-in-place upgrades, updates, and resource scaling. Rebooting and rebalancing their HCI nodes had resulted in potential downtime, performance impact, and reduced availability. Because the HPE solution is designed with 100% headroom built in, there is zero performance impact for operating in a degraded state when a controller or server is rebooted, updated, or upgraded. In addition, maintenance operations in the HPE solution never result in losing access to drives—a major factor in maintaining storage efficiency and resiliency even under duress.

Cost-effective Performance and Scalability

The disaggregated design of the HPE solution provided improved performance, scalability, and cost savings by avoiding many inefficient functions of a scale-out architecture, making more efficient use of resources and deploying less hardware to meet workload requirements. Enterprise Strategy Group found that the HPE solution provided customers with:

- **Improved data efficiency.** Enterprise Strategy Group validated the results of testing that demonstrated that the HPE solution improves storage efficiency by up to 5x as compared with vSAN-based HCI, while delivering high levels of performance. It does this without placing any burden on compute resources, as is the case for HCI. Many vSAN-based HCI deployments do not recommend turning on deduplication for business-critical workloads for this reason.
• **Flexibility and scalability.** Customers told Enterprise Strategy Group that the disaggregated HPE solution enabled the simple, independent addition of compute and/or storage and eliminated the need to over provision, rebalance data across nodes, or tune and optimize any layer. When using HCI, these customers often had to purchase more compute than necessary to meet storage requirements or more storage than was required due to the need for additional compute cores. HPE Alletra storage controllers handled all storage functions, in contrast to HCI, which requires compute and memory resources from every node to handle storage and data services. In addition, the HPE solution gave customers flexibility to leverage hardware they already had, and it improved agility by cost-effectively delivering VMs as a service with HPE GreenLake.

• **Improved performance.** HCI architecture is reliant on heavy inter-node network traffic that adds latency and results in resource contention. This is compounded by the fact that HCI data services and maintenance operations require resources from every node. Enterprise Strategy Group validated that the HPE solution provided noticeable performance improvements for customers migrating from HCI, getting the most out of the compute, network, and storage resources and providing up to 10x lower latency, especially for write operations that are critical for transactional workloads.

• **Reduced footprint.** Enterprise Strategy Group interviewed customers who confirmed that the HPE solution provides more usable compute power, storage capacity, and resiliency in a smaller footprint, helping to reduce infrastructure costs. Their HCI deployments had to be over provisioned to achieve similar levels of performance and availability, resulting in higher costs to operate and wasted resources. We also found that scaling storage separately from compute helped to avoid unnecessarily paying higher license and networking costs for expensive core or socket-based virtualization and database licenses. One customer stated, “I was worried about having to add more nodes because now I have to also buy more Windows Datacenter, backup licenses, and VMware licenses, too.”

**Operational Efficiency**

The HPE solution was simpler to deploy, manage, scale, maintain, and support when compared with alternative vSAN-based HCI systems that customers had deployed. Enterprise Strategy Group found that the HPE solution provided customers with:

• **Simplified deployment.** HPE’s automated deployment of servers and storage, configuration, provisioning, and cluster setup eliminated hundreds of manual steps, enabling customers to self-install the system at scale in under 15 minutes, in contrast to some vSAN-based HCI solutions that can take hours.

• **Simplified management.** Customers told Enterprise Strategy Group that their HPE solution was simple to manage. Admins were already familiar with VM-centric management vCenter console environments, and they didn’t need server or storage expertise, additional appliances, element managers, or training. If needed, advanced storage functions and insight were made simple through the single-pane-of-glass management software portal on the HPE Alletra Storage platform. They also reported that the solution saved additional time and reduced complexity because it’s automatically optimized with built-in best practices and data services. One customer stated, “Data store provisioning went from five days to five seconds.”
customer reported that his team was easily able to grow from managing under 100 VMs to over 4,500 VMs without the need to add resources.

- **Simplified growth and upgrades.** Many customers noted that the HPE solution was as easy to scale and upgrade with a single click as their HCI systems, but with less disruption to applications. All resources were software-defined and easily auto-discovered. Customers experienced the added benefit of being able to grow without the need to rebalance data (helping to keep latency low and predictable) or run in a temporary degraded state when updating or restarting components (which would have reduced availability and introduced unacceptable risk). One customer said, “When we lifecycled our [alternative HCI] solution, it took several hours for our smallest cluster and a whole weekend for our largest clusters. With our HPE solution, it’s just a few minutes per server, and we are never worried that we are running in a degraded state.”

- **Simplified support.** Customers reported that HPE InfoSight predictive analytics system and support automation simplified infrastructure support by enabling full-stack monitoring and recommendations with global intelligence. HP InfoSight leveraged AI to proactively resolve, warn, and protect from many issues, resulting in fewer glitches, improved visibility, and faster troubleshooting and resolution. Customers were thrilled with how easy it was to directly access Level 3 support. This saved much frustration for customers who felt that they resolved issues hours to days faster than with alternative vendor support services: “If we have an issue, in like 15 minutes we will have a high-level engineer already engaged with us on a Zoom, compared to past support experiences where we pay a huge amount of money for top-tier support, and you are lucky if they call you back in a few hours.”

**Enterprise Strategy Group Analysis**

Enterprise Strategy Group leveraged the information collected through vendor-provided material, public and industry knowledge of economics and technologies, and the results of customer interviews to create a five-year TCO/ROI model that compares the expected costs and benefits of deploying, managing, and maintaining an HPE disaggregated solution with Alletra Storage against those of a leading vSAN-based HCI solution. Enterprise Strategy Group’s interviews with customers who have recently made the transition, our experience and expertise in economic modeling and technical validation of HCI products, and the use of the publicly available vSAN ReadyNode Sizer tool\(^3\) helped to form the basis for our modeled scenario.

Our model assumed that an organization was looking to deploy an easy-to-manage converged infrastructure solution to support its business-critical, virtualized, general-purpose, and transactional database workloads. Based on the characteristics highlighted in Figure 3, the 121 virtual machines required a total of 162 physical cores, 1,016 GB of memory, and 70 TB of usable SSD storage. The mixed workloads included large 10 TB and medium 4 TB transactional databases, as well as smaller general-purpose workloads.

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Taking these workload characteristics into consideration, HPE provided us with a bill of materials for an HPE solution configuration using HPE ProLiant compute and HPE Alletra 6000 series storage that could meet the given requirements while delivering the low, sub-millisecond latency and high levels of resiliency required by business-critical workloads. Enterprise Strategy Group required that the solution be able to survive a triple drive failure with no data loss and provide continuous operations, even when performing major updates on components. Next, Enterprise Strategy Group used the vSAN ReadyNode Sizer tool to generate three possible configurations for a vSAN-based HCI solution. Each of these configurations was sized using the compute and disk technology option that resulted in minimal overprovisioning of node quantity, disk count, and core count. The first solution met the resiliency requirements defined above but required a total of 9 HCI nodes and quadruple mirroring, which would come at a high cost and result in far more compute cores and storage than necessary. For this configuration, we assumed that extra nodes would be deployed in an N+2 configuration to handle additional failures during a node update operation and a combination of host failure tolerance (FTT) of 3 with RAID 1 protection to be able to survive any three drive failures. It should be mentioned that Enterprise Strategy Group reviewed detailed calculations that showed that even the high-resiliency configuration would not provide the same level of resiliency as the HPE solution.

Because not all organizations would deploy such a highly resilient configuration, we also sized out a typical configuration (N+1, FTT = 2, RAID 1) and an economical solution (N+1, FTT = 2, RAID 6). Each of these configurations required a total of 7 HCI nodes. To provide adequate resiliency, the vSAN-based HCI configurations required far more drives and capacity than the HPE solution (2.3x to 3.0x the number of drives and 75% to 90% more total raw capacity). This includes both the drives used for capacity and caching on the vSAN configurations. It was expected that the resulting configurations would be over provisioned and would provide more IOPS (when operating in a non-degraded state) than required of the workloads, but that they still could not provide latency as low as the HPE NVMe solution, based on the dependency on inter-node network operations that would add latency to every operation. The resulting configurations are compared in Figure 4.

**Figure 4.** Comparison of Configuration Details in Enterprise Strategy Group’s Modeled Scenario

<table>
<thead>
<tr>
<th>Highest Resiliency</th>
<th>Typical Deployment</th>
<th>Most Economical</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N+2, RAID 1, FTT=3)</td>
<td>(N+1, RAID 1, FTT=2)</td>
<td>(N+1, RAID 6, FTT=2)</td>
</tr>
<tr>
<td>72 Total SAS SSDs</td>
<td>56 Total SAS SSDs</td>
<td>56 Total SAS SSDs</td>
</tr>
<tr>
<td>443.5TB of Raw Capacity</td>
<td>345TB of Raw Capacity</td>
<td>183.7TB of Raw Capacity</td>
</tr>
<tr>
<td>432 Compute Cores</td>
<td>336 Compute Cores</td>
<td>336 Compute Cores</td>
</tr>
<tr>
<td>2 x Network Switches</td>
<td>2 x Network Switches</td>
<td>2 x Network Switches</td>
</tr>
<tr>
<td>9 x HCI Nodes - each with:</td>
<td>7 x HCI Nodes - each with:</td>
<td>7 x HCI Nodes - each with:</td>
</tr>
<tr>
<td>48 Cores, 256GB MEM</td>
<td>48 Cores, 256GB MEM</td>
<td>48 Cores, 256GB MEM</td>
</tr>
<tr>
<td>6 x 7.68TB Drives (Capacity)</td>
<td>6 x 7.68TB Drives (Capacity)</td>
<td>6 x 3.84TB Drives (Capacity)</td>
</tr>
<tr>
<td>2 x 1.6TB Drives (Cache Drives)</td>
<td>2 x 1.6TB Drives (Cache Drives)</td>
<td>2 x 1.6TB Drives (Cache Drives)</td>
</tr>
</tbody>
</table>

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Enterprise Strategy Group then modeled the expected costs of acquisition, support/maintenance, power/cooling/floor space, virtualization licenses, and administration for each of the four configurations. Acquisition, support, and maintenance costs were based on HPE-provided quotes as well as publicly available price lists and bills of materials for a leading HCI vendor, using equivalent discount levels. The results of Enterprise Strategy Group’s five-year modeled scenario are shown in Figure 5.

**Figure 5.** Enterprise Strategy Group’s Modeled Five-Year TCO Comparison

![TCO Comparison Graph](source)

Source: Enterprise Strategy Group, a division of TechTarget, Inc.
Our models predicted that the HPE solution could provide up to a 2.5x lower TCO over a five-year period than an alternative vSAN-based HCI solution from a leading vendor. The modeled analysis predicted that the HPE solution would provide substantial TCO savings for the organization when compared with the high resiliency configuration (59% TCO savings), the typical configuration (50% TCO savings), and even the most economical configuration (40% TCO savings). It should be noted that none of these vSAN-based HCI configurations provide as resilient a solution as the HPE configuration, nor would they be expected to deliver the same low latency—especially for writes.

What the Numbers Mean

- **21% to 55% lower cost of acquisition.** The HPE solution required the deployment of far less hardware than the HCI solutions. The HCI solution required that every node be configured with identical compute, capacity, and cache storage drives and relied on multiple copies of data and additional nodes to provide resiliency against failures or impact during operations. This overprovisioning of hardware resources is reflected in the higher upfront cost of acquisition for the HCI configuration.

- **78% to 87% lower cost of support and maintenance contracts.** Support and maintenance contracts generally scale with the cost of acquisition. In this pricing exercise, Enterprise Strategy Group found that HPE not only provided a simplified and improved support experience, but also did so at significant cost savings compared with the other vendor we priced. It should be noted that additional alternative vendor discounts could bring these costs more in line with acquisition cost savings.

- **35% to 49% lower cost of power, cooling, and floor space.** The 8 rack unit (8U) HPE solution configuration required 43% to 56% less rack space than the 14U and 18U alternative HCI configurations and consumed 17% to 35% fewer total watts. Enterprise Strategy Group leveraged vendor power calculators and assumed conservative assumptions of 70% CPU utilization, $0.12/kWh, and a $75/RU/month floor space cost.

- **43% to 56% lower cost of virtualization licenses.** Enterprise Strategy Group assumed each 48-core server would require two vSphere Enterprise Plus licenses. The HPE solution configuration required only 4 compute servers, while the economical and typical HCI configurations each required 7 nodes, and the high-resiliency configuration required 9 nodes. Even though the cores of these nodes are being used for compute, storage, and system operations, all cores must be licensed, leading to much higher virtualization costs (which would also be true for any other license priced per physical core).

- **53% lower cost of administration.** Enterprise Strategy Group modeled the expected hours required for daily administration, deployment, maintenance, updates, and support events. While both HCI and the HPE solution are simple to manage and maintain, Enterprise Strategy Group found that the HPE solution could be deployed in minutes rather than hours, could take only 5 minutes per host to update instead of 30 minutes per HCI node, could proactively avoid 50% of the expected simple support events, and could provide resolution of complex support events requiring Level 3 support up to 75% faster.

Issues to Consider

While no modeled scenario could ever accurately represent the economics behind every deployment, Enterprise Strategy Group encourages organizations to perform their own analysis to see how much they can save.

Enterprise Strategy Group’s analysis was based on vSAN-based HCI architectures. There are proprietary HCI offerings that offer improved deployment times, automation, and hardware flexibility. Enterprise Strategy Group expects that, while some of the administrative benefits may not be as large, many of the HPE solution advantages (such as the ability to scale compute and storage resources independently, reduce footprint, provide lower latency and higher resiliency operations, etc.) would still remain when compared against these proprietary products.

Enterprise Strategy Group’s conservative analysis was based on the optimal vSAN Sizer-produced configuration. We performed sensitivity analysis of alternative compute and storage choices to determine the ideal configuration from a size and cost perspective. It should be noted that whatever processor and storage choice is made at the time of acquisition carries forward for that cluster and determines the granularity of future node expansions.
To demonstrate how the HPE solution makes better use of equivalent hardware, Enterprise Strategy Group also performed an analysis normalizing the processor type and disk capacity (1.92 TB drives) between the vSAN and HPE solution. For this case, the vSAN solution required far more nodes, drives, and compute cores, and the HPE solution provided up to 2.8x savings.

The average time to problem resolution for the HPE solution and HPE Alletra Storage is, on average, around 40 minutes from the time a customer calls human support (HPE explained that the number would be far lower if they counted the issues solved/prevented by AI support). This time savings was modeled conservatively in our administration analysis but may be an even more important business risk mitigation consideration for many businesses.

Even though they are not included in our model, Enterprise Strategy Group noted a few additional areas in which organizations could potentially save with HPE solution, including the ability to consolidate vendors, the business benefits that come as a result of faster time to value and improved business agility, the financial flexibility provided by HPE GreenLake, the ability to lower cost by repurposing existing HPE hardware, and the ability to greatly reduce costs for other per-physical-core licenses (such as Oracle and Microsoft).

For reading simplicity, Enterprise Strategy Group has replaced the names of the referenced system in our customer quotes following a brand change from the original HPE dHCI solution with Nimble storage to “the HPE solution” (or similar, depending on the context). The name replacement does not affect the context or relevance of the provided quotes.

**Conclusion**

As organizations modernize their IT operations at the core to better support the needs of an increasingly dynamic business, it is critical that their systems provide services with cloud-like provisioning agility and operational simplicity. While hyperconverged infrastructure provides exactly this for general-purpose, virtualized workloads that run at the edge and other locations, HCI is not a simple or cost-effective solution for many virtualized, business-critical workloads that run at the core. Business-critical workloads demand low-latency performance at scale and the highest levels of resiliency and availability. While HCI provides simplified scaling and operational simplicity, the demands of business-critical workloads begin to expose the inefficiencies of the scale-out architecture, such as the heavy performance overhead, increased risk of downtime, and inefficiency of wasted/unnecessary resources at scale.

Enterprise Strategy Group validated that HPE GreenLake for Private Cloud Business Edition with Alletra dHCI delivers the operational simplicity that HCI brings to general-purpose workloads, including VM-centric management, software-defined architecture, policy-based automation, simple upgrades and scalability, and built-in data services, while also meeting the demands of business-critical workloads (e.g., low-latency performance, the highest levels of resiliency and availability, and flexible and efficient scalability of resources). After migrating business-critical workloads from three-tier architectures and HCI nodes to HPE Alletra Storage, customers immediately noticed a reduction in latency, improved uptime, and a reduction in the time to manage, update, and support the deployment.

Our models predicted that HPE GreenLake for Private Cloud Business Edition with Alletra dHCI could provide up to a 2.5x lower TCO over a five-year period than an alternative vSAN-based HCI solution from a leading vendor. This includes up to a 55% lower cost of acquisition, 87% lower cost of support/maintenance, 49% lower cost of power/cooling/floor space, 56% lower cost of virtualization licenses, and 53% lower cost of administration. The conservative models showed significant savings versus several possible configurations of HCI (high-resiliency, typical, and economical) while providing an expected reduction in latency and improvement in resiliency over all three configurations. The majority of the savings come from the expected complexity and inefficient overprovisioning of storage and compute resources required by the HCI configuration to meet the demands of the business-critical workloads.

By combining the operational simplicity that HCI brings to general-purpose workloads with the highest levels of resiliency, availability, performance, and the ability to flexibly scale compute and storage resources independently, HPE Greenlake solutions can enable cloud-like agility for virtualized, business-critical applications and mixed workloads in an organization’s core data center. Bringing this level of agility to business workloads that have been historically slow to scale due to the cost and complexity of required resources can have a significant impact on many businesses, potentially enabling revenue growth and improved business optimization, as well as reducing risk. Enterprise Strategy Group recommends that organizations looking to modernize and transform IT operations for their virtualized, business-critical workloads, while lowering costs and improving time to value, consider HPE GreenLake for Private Cloud Business Edition with Alletra dHCI.