Enterprise Strategy Group by TechTarget

ECONOMIC VALIDATION

Economic Benefits of HPE GreenLake for Private Cloud Business Edition with HPE SimpliVity for Edge

Lower cost of edge deployments by 39% to 58% compared to alternative HCI, traditional three-tier infrastructure, and public cloud with improved simplicity, scalability, and flexibility

By Brian Garrett, Vice President, Validation Services, and Aviv Kaufmann, Practice Director and Principal Validation Analyst

Enterprise Strategy Group

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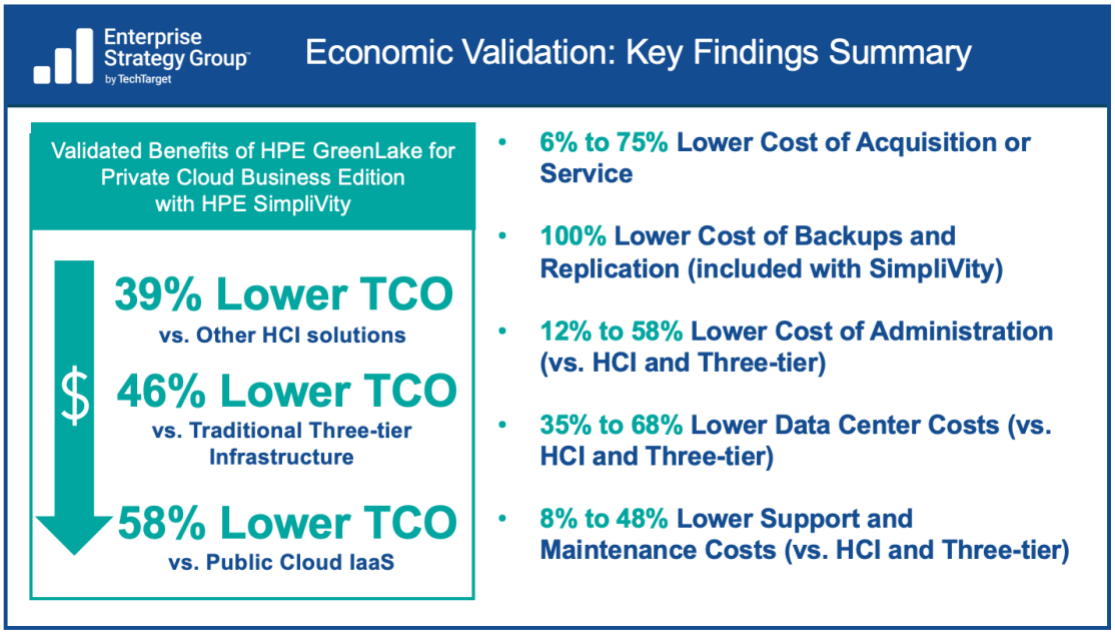
Introduction

This Economic Validation by TechTarget's Enterprise Strategy Group focused on the quantitative and qualitative benefits organizations can expect from a two-node deployment of an all-flash HPE SimpliVity 325 within HPE GreenLake for Private Cloud Business Edition compared with a traditional infrastructure, a blend of other hyperconverged offerings, and the public cloud. 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. We then applied the model to a distributed edge use case with up to 50 different locations.



Challenges

Hyperconverged infrastructure (HCI) continues to gain momentum as organizations are turning to the technology to cost-effectively consolidate and simplify their IT infrastructure. With budget restraints continuing to plague IT decision-makers, the cost-savings advantage of hyperconverged solutions continues to be appealing. In a previous Enterprise Strategy Group survey of organizations that already deployed hyperconverged technology, Enterprise Strategy Group asked what the most significant realized benefits have been since deploying the technology, and the top responses were improvements in scalability, IT automation and integration, IT staff productivity, hybrid cloud management, and total cost of ownership.[1] Enterprise Strategy Group research also shows that organizations plan to run significantly more production workloads on HCI in the next 24 months. The majority reported that they currently run 10% to 30% of their production workloads on HCI today and plan to increase this to 21% to 40% in the next 24 months.[2]

[1] Source: Enterprise Strategy Group Complete Survey Results, Navigating the Cloud and AI Revolution: The State of Enterprise Storage and HCI, February 2024.
[2] Ibid,

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Figure 1. Organizations plan to run more production applications and workloads on HCI

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

Organizations are realizing the benefits of HCI in a variety of new scenarios. One way an organization can leverage its benefits is by deploying the systems in distributed edge environments. In fact, 84% of respondents agreed that HCI is a core part of their edge modernization plans.[3] Edge computing moves processing power away from the data center and closer to the end-users and their devices. As more data is produced and analyzed, HCI edge environments enable servers, storage, networking, and hypervisor software to remain close to the data source, which reduces latency. HCI at the edge has additional benefits that include scalability, ease of deployment, and preconfigured integration of software and hardware. The main reasons that HCI scales so efficiently at the edge is that the system starts small and scales in small, modular increments and can be administered from a single, central location. These attributes make HCI a good fit for other use cases as well, including server virtualization with built-in data protection for midmarket customers.

The Solution: HPE GreenLake for Private Cloud Business Edition with HPE SimpliVity

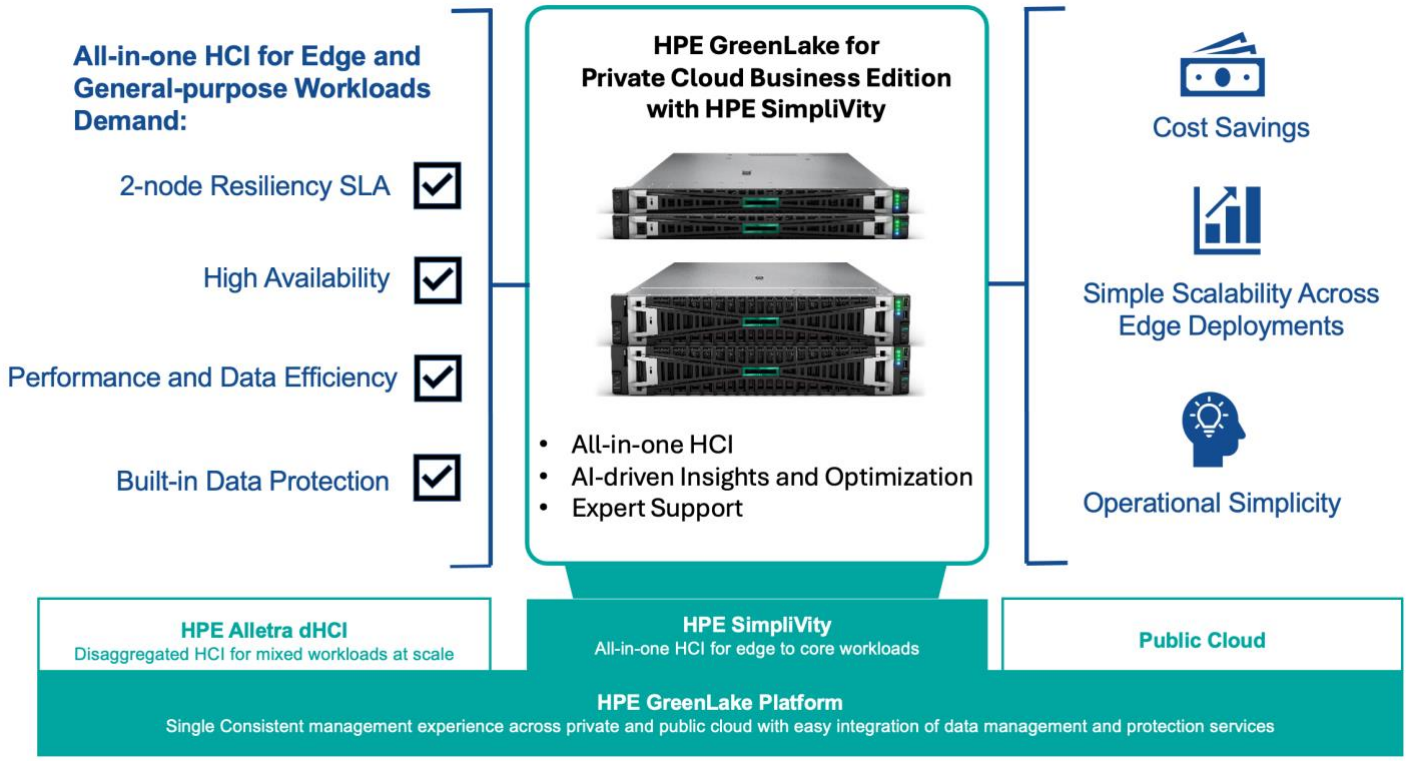
The HPE GreenLake edge-to-cloud platform is designed to provide a seamless experience for organizations looking to deploy and manage their applications and workloads across edge, on premises, and in cloud environments. This platform allows businesses to leverage a combination of edge computing, data center resources, and cloud services to optimize their IT operations.

The HPE GreenLake platform 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.

[3] Ibid.

HPE GreenLake for Private Cloud Business Edition enables you to provision, manage, and protect your virtual machines (VMs) across hybrid cloud environments. Representing the latest evolution of HPE hyperconverged technology, this solution enables you to easily manage and scale your 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 HCI, via HPE SimpliVity and HPE Alletra dHCI or public cloud infrastructure.

Figure 2. HPE GreenLake for Private Cloud Business Edition with HPE SimpliVity



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

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

Workload-optimized platforms manage all VMs, including edge, general-purpose, business-critical, and cloud. As shown above, HPE provides choices of workload-optimized HCI and disaggregated HCI. For edge and 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.

Building on HPE SimpliVity's early success in the hyperconverged market, HPE is providing cloud-like flexibility and cost benefits on premises with HPE SimpliVity. By combining HPE SimpliVity's unique software architecture and feature set with powerful HPE ProLiant Gen11 servers, HPE offers a robust solution to meet the dynamic demands of modern data centers and distributed edge deployments. This pre-integrated solution uses a building block approach to simplify the deployment and management of a highly virtualized environment. Customers gain an optimized solution with the power and flexibility to meet the needs of multisite deployments in a small footprint and

large production workloads in the data center. VM-centric management enables improved operational efficiency, and all-flash storage delivers high levels of sustainable performance. With built-in resiliency and data protection at the edge, HPE SimpliVity enables customers to avoid the time and cost of moving data to the cloud, and it enables high availability and business continuity in the event of a disaster.

Recent improvements are available with the new 1U 1P HPE SimpliVity 325 Gen11 designed for edge deployments, which includes larger capacity, larger memory, and new NVIDIA GPU support. The SimpliVity 380 Gen11 has been enhanced with newer CPU, memory, capacity, and expanded NVIDIA GPU support. All models include high availability in all layers with just two nodes and storage features that will boost efficiency without negatively affecting performance, such as inline compression and deduplication. Dual-drive resiliency is an option for added node-level availability. In addition, native integration with HPE StoreOnce is supported for efficient, off-site backups to a central site or to the cloud. These optimization capabilities enable customers to reduce costs, improve resiliency, and ultimately realize significant data-efficiency benefits.

Stretch-cluster topologies for added cross-site resiliency are also supported. This is a popular topology for edge deployment use cases. The HPE Simplivity Stretched Cluster solution works in cooperation with hypervisor HA to ensure that when one or more HPE SimpliVity 325 Gen11 system failures occur in a physical location, guest VMs can be restarted automatically in a second location without human intervention.

With these features, organizations gain a complete IT infrastructure for private cloud built with proven technology that delivers the simplicity, resiliency, and speed they demand.

Enterprise Strategy Group Economic Validation

Enterprise Strategy Group completed a quantitative economic analysis of the HPE SimpliVity 325. Focus was placed on the economic benefits organizations can expect when leveraging a hyperconverged solution compared with a typical three-tiered solution, a leading public cloud infrastructure provider, and other HCI solutions.

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 and economic validation. Enterprise Strategy Group conducted in-depth interviews with end users to better understand and quantify how the HPE SimpliVity 325 platform has affected their distributed organizations, particularly in comparison with previously deployed and/or experienced solutions. In addition to having experience with the on-premises HPE SimpliVity edge sites, many of the customers interviewed had leveraged edge-optimized admin-free sites to manage larger numbers of edge environments and were able to give detailed feedback on ongoing administration capabilities. The qualitative and quantitative findings were used as the basis for a simple economic model comparing the expected costs for an organization with up to 50 distributed edge sites.

HPE SimpliVity 325 Economic Value Overview

Enterprise Strategy Group's economic analysis revealed that an effective deployment of an HPE SimpliVity all-flash solution can provide significant cost savings over a five-year period when compared with a traditional approach that leverages a traditional three-tier architecture, other hyperconverged offerings, and public cloud services.

The overall configuration that Enterprise Strategy Group modeled was a distributed edge deployment that required 16 VMs, each with four vCPU, 4 GB of RAM, and 700 GB of flash storage capacity. Each distributed edge site was configured with a pair of HPE SimpliVity 325 Gen11 nodes in a fully HA configuration capable of handling a node failure and continuing to operate. Each node was configured with a 24-core 4th Generation AMD EPYC processor, 128 GB of memory, and four 1.92TB SSD drives (4.6 TB usable). A conservative data deduplication rate of 2.5 to 1 was used to determine the effective storage capacity for each HPE SimpliVity distributed edge deployment.

With this configuration in mind, Enterprise Strategy Group analyzed the following areas as they pertain to cost of ownership over three years:

- **Cost of acquisition** – With traditional infrastructures separating compute and storage resources, servers and storage were priced separately, while the average street price of two industry-leading HCI vendors was used for a comparison to other HCI solutions. The other HCI solutions were based on a blend of two alternatives, priced on a per-node basis, with each node containing the necessary CPUs, memory, and storage to meet the modeled requirements. The cost of the public cloud solution was based on the costs associated with renting machine instances with an equivalent amount of compute, memory, and block storage capacity from a leading public cloud infrastructure vendor over five years (leveraging significant commitment discounts requiring up-front payment).
- **Data protection** – The traditional approach leveraged a small backup appliance, while the other HCI vendors paid licensing fees for core data protection backup and recovery features. The cost of data protection for the public cloud solution was based on the dollar per gigabyte of provisioned storage capacity per one-month cost of block storage snapshot services.
- **Administration** – An average IT administrator's salary was leveraged and divided based on hours spent completing common administrative tasks, such as additional installations, deployments, and ongoing management and maintenance.
- **Data center** – Floor space, power (calculated by taking the average electricity cost per kilowatt hour), and cooling were included in the data center costs.
- **Support** – The same tier of 24/7 support was applied across all three scenarios. Professional fees associated with initial installation and deployment were also included in this cost.

Cost of Acquisition

In the traditional method, organizations must purchase resources in a siloed approach: servers, storage, and licensing as separate line items. For storage specifically, the cost of a small SAN is quite sizeable, never mind an all-flash array that contains enough capacity to handle data growth over five years. Often organizations are forced to overprovision resources to proactively handle data growth due to the higher cost of scaling capacity, which leads directly to higher costs.

The HPE SimpliVity 325 requires just two nodes yielding a five-year total cost of ownership savings of at least 39% and up to 58%.

For HCI vendors, the building block approach enables an easier way to scale, but some vendors and implementations require a minimum deployment of three nodes to ensure high availability in the case of a failure. Further, due to architecture implementations associated with capacity savings such as compression and deduplication, for some solutions more capacity or resources must be deployed to handle capacity optimization techniques whether they are compute-intensive inline or post-process techniques that require more initial capacity.

The minimum deployment requirement for the HPE SimpliVity 325 is just two nodes, enabling an immediate savings compared with both a traditional approach and the blend of other HCI offerings. For data efficiency, software-optimized inline deduplication, compression, and optimization helps minimize I/O and network traffic, improving performance while delivering significant storage and bandwidth efficiency. In total, these advantages yield acquisition cost savings of up to 35% compared with other HCI solutions, 6% when compared with a traditional three-tier approach, and 75% compared to the public cloud five-year discounted spend. Minimum deployment for high availability is two nodes, and the cost analysis was conducted assuming HA. SimpliVity can support single node,

non-HA deployments with two nodes in production and a single node in a DR site. With this option, customers can enjoy further savings if they mix HA with non-HA. It should be noted that ESG's modeled scenario did not include hypervisor costs. If purchasing commercial licenses for hypervisors, organizations should consider this cost because deploying fewer total nodes, sockets, or cores could certainly provide additional savings.

Data Protection

Traditional approaches require additional costs for data protection, usually in the form of a backup and recovery appliance. Most HCI solutions provide no built-in backup software, which means third-party software must be used to back up data to primary storage and provide replication capabilities. Of course, these solutions come with software licensing and annual maintenance fees, which leads to added costs.

With built-in data protection at no additional cost, organizations save thousands of dollars in data protection expense.

With HPE SimpliVity, core data protection features are standard with every solution. This includes built-in VM backups, multisite replication, recovery and cloning, and disaster recovery (DR). HPE provides an additional, less obvious cost benefit through partner alliances. For organizations that require specialized data protection features and functions, HPE has key partnerships with other technology vendors to easily meet those requirements.

Administration

For IT administrators managing a traditional deployment, separate interfaces are used for each component, including compute, storage, virtualization, and data protection. There are two typical approaches to traditional data center management, each with different cost impacts. The first is that an organization would require a separate trained administrator for each resource. The second would be to employ an IT administrator capable of managing all the resources, but of course that employee comes at a higher salary.

Server, storage, virtualization, and data protection management is done through one familiar interface—VMware vSphere.

Most HCI solutions allow management of compute, storage, and virtualization through a single interface, whether through integration with VMware or through custom management interfaces. While HCI administration may require licensing costs, those costs are typically very low. Regardless of the overall management interface, the external backup application will create additional administrative costs for both traditional and typical HCI solutions. Without having built-in data protection, IT administrators are required to deploy and navigate to a separate interface to manage everything associated with backup and recovery.

With HPE SimpliVity, all aspects of management, including core infrastructure and data protection, are done directly in the familiar VMware vSphere interface and do not require special training. Even if the HPE SimpliVity implementation is distributed globally, the system is centrally managed through a single administrative interface and common APIs. This enables organizations to employ a single IT generalist to handle the management tasks of the entire deployment. The administrative efficiency of this architectural approach, which is generally known as HPE SimpliVity Federation, is a key reason why the cost savings multiply when more distributed edge sites are deployed. HPE GreenLake provides additional automation and visibility via Private Cloud Business Edition global dashboard, a standard interface that manages one cluster, one federation, or multiple federations from a centralized interface.

Data Center

Traditional deployments will always have higher data center costs simply due to the fact that there are more physical components, which consume more floor space, power, and cooling. For other HCI offerings, a minimum of three nodes is necessary for high availability, so the per-deployment data center costs and footprint are higher. HPE SimpliVity offers immediate data center costs savings because of its two-node minimum. In this case, fewer nodes mean less floor space, less power, and less cooling, leading to data center environmental cost savings of 35% compared with other HCI solutions and 65% compared with traditional three-tier approaches. Although direct data center costs can be avoided by using a public cloud service, HPE SimpliVity costs up to 58% less to purchase and operate on premises over a five-year period.

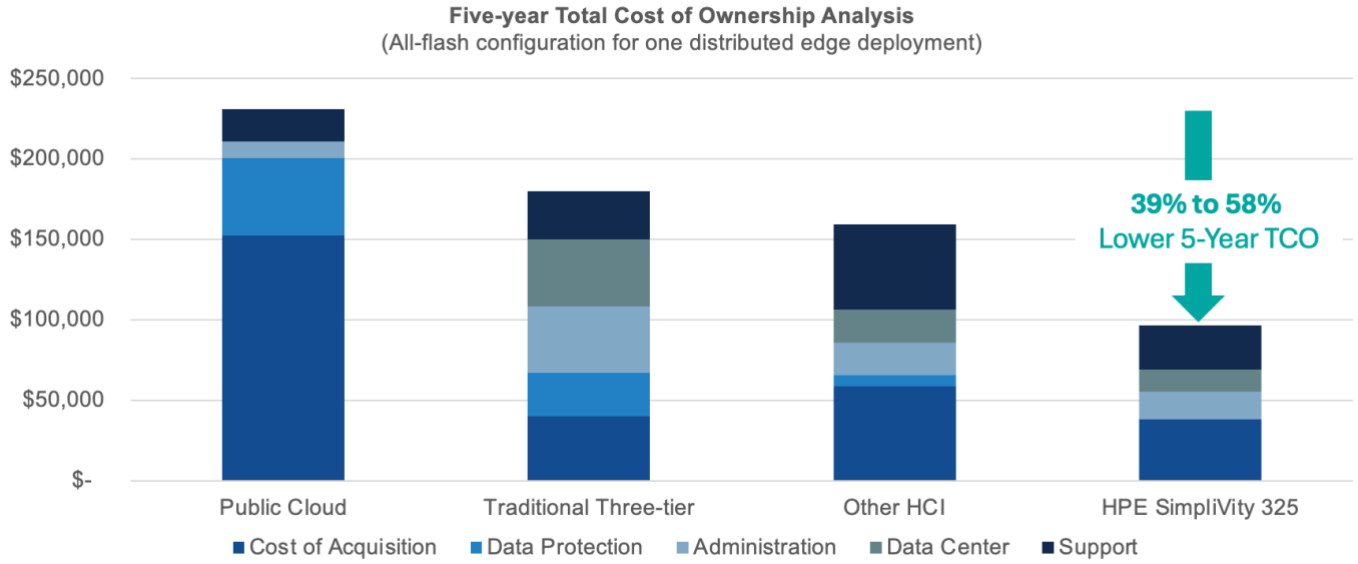
Support

With more components, whether physical hardware or virtual software, traditional approaches require more support. That support comes at an added cost of having to deal with different support centers depending on how many vendors are being leveraged to deliver compute, storage, virtualization, and data protection. Traditional three-tier and other HCI solutions can be supported through a single vendor, but they also require support for the external data protection solution. For HPE SimpliVity, less hardware and built-in data protection mean lower support costs and a single support center for infrastructure, software, and backups. Cloud support costs can be lower as there is no hardware to support, and larger organizations can achieve discounts due to increased spend across all cloud services.

Enterprise Strategy Group Analysis

Enterprise Strategy Group created a model and applied pricing associated with each cost component—cost of acquisition, data protection, administration, data center, and support—across the three scenarios (public cloud, traditional three-tier, other HCI solutions, and HPE SimpliVity 325). Pricing was based on publicly available data and industry knowledge, and all costs were based on street pricing, which factors in expected discounts. The results are shown in Figure 3 and Table 1.

Figure 3. HPE SimpliVity Five-year Total Cost of Ownership Analysis



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

Table 1. Five-year Total Cost of Ownership Analysis Details

Component	Public Cloud	Traditional Three-tier	Other HCI	HPE SimpliVity 325
Cost of Acquisition	$152,328	$40,305	$58,695	$37,929
Data Protection	$48,300	$26,700	$6,990	Included
Administration	$10,317	$41,267	$19,832	$17,487
Data Center	N/A	$41,542	$20,715	$13,495
Support	$20,063	$30,228	$52,996	$27,711
Five-year Total	**$231,007**	**$180,042**	**$159,229**	**$96,622**

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

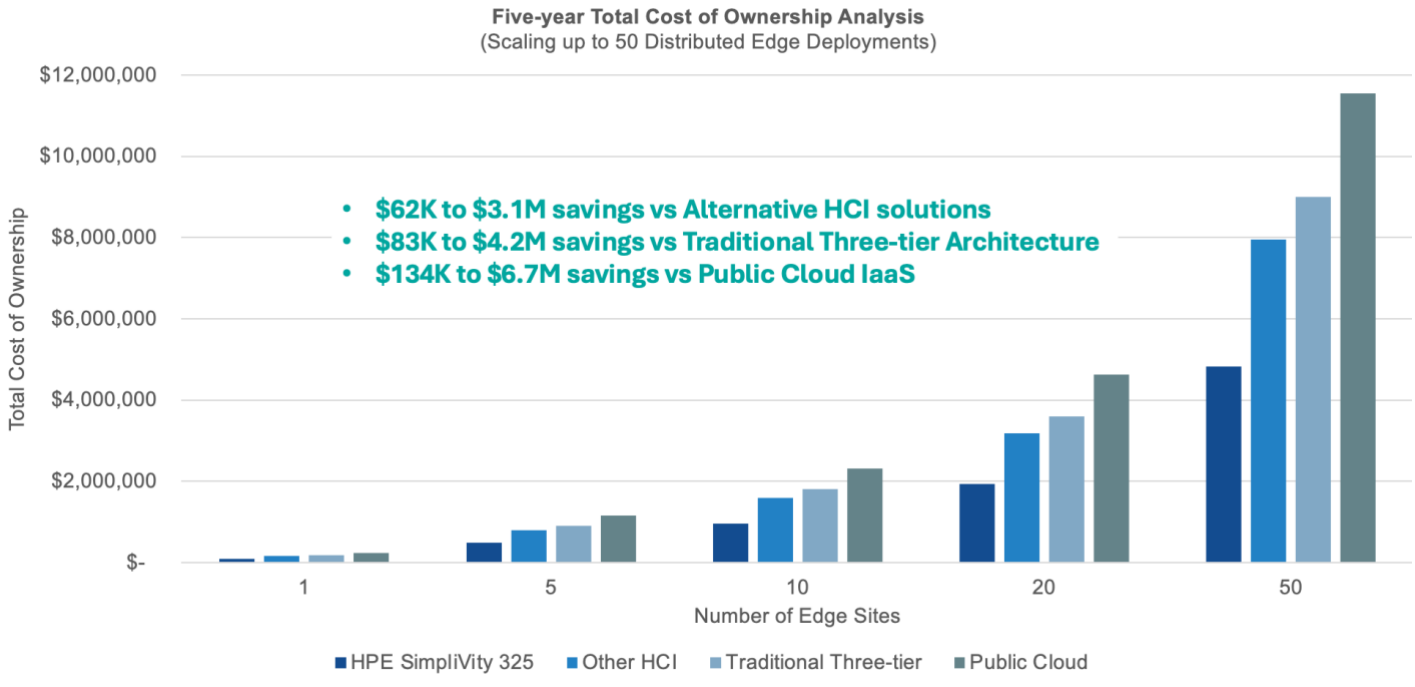
The HPE SimpliVity 325 delivers overall savings of 46% compared with a traditional three-tier deployment, 39% compared with a blend of other HCI solutions, and 58% compared with a leading public cloud infrastructure service provider. Savings are achieved across all modeled components, with the greatest savings coming from the price, performance, and efficiency of the HPE SimpliVity 325 hardware platform when deployed in a two-node cluster at a distributed edge location with built-in data protection at no additional cost. These core advantages then affect savings across all other categories, including lower administration costs enabled by converging all management tasks into a single interface, lower data center costs due to a smaller physical footprint, and lower support costs due to its fewer components—all of which can be handled through a single support center.

Scaling the Number of Distributed Edge Deployments

Based on the results of the model, Enterprise Strategy Group applied costs to a distributed edge scenario to understand the magnitude of savings organizations can achieve based on an increasing number of edge deployments. In Figure 4, the five-year total costs of the public cloud ($231,007), a traditional three-tier solution ($180,042), the average cost of two other industry-leading HCI solutions ($159,229), and a two-node HPE SimpliVity 325 ($96,622) represent a single deployment (the first set of columns on the left of the chart). Also shown in Figure 4: organizations with ten or more edge deployments have the potential to save millions of dollars when deploying HPE SimpliVity compared with a traditional three-tier architecture or the public cloud. For a 50-site edge solution over five years, the cumulative savings that can be achieved with HPE SimpliVity 325 HCI is $3,130,330 compared to other HCI solutions, $4,170,979 compared to traditional three-tier solutions, and $6,719,259 compared to public cloud. The savings grow with each additional edge location.

While the single edge deployment with an HPE SimpliVity 325 delivers savings of 46% when compared with a traditional three-tier architecture, as mentioned in the previous section of the report, the savings become greater with an increased number of deployments. This is due to administrative savings that can be achieved by managing all aspects of the infrastructure from a single pane of glass. HPE SimpliVity Federation makes it easy to manage multiple distributed edge deployments from a single location. This significantly increases the potential savings when comparing HPE SimpliVity with a traditional three-tier architecture in multiple distributed edge deployments. While some degree of savings can be achieved with other HCI offerings, efficiencies in the HPE SimpliVity architecture can boost the savings to 50% or more in large, distributed edge deployments.

Figure 4. HPE SimpliVity 325 Total Cost of Ownership Analysis Versus Number of Edge Locations



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

Other Considerations

A variety of factors that influence the choice between HPE SimpliVity 325 and other distributed edge infrastructure solutions were not included in this Enterprise Strategy Group total cost of ownership (TCO) analysis, but should be considered:

- **Hypervisor and application software licenses.** With the choice of 4th Generation AMD EPYC processors ranging from 8 to 128 cores in a single CPU socket, the HPE SimpliVity 325 Gen11 can be used to reduce the per-socket resources, licensing cost of hypervisor, and other software packages compared to traditional three-tier and HCI solutions with only 32 cores per socket. For example, an HPE SimpliVity 325 node with 64 cores per AMD EPYC socket that's deployed in the data center to meet the needs of a compute-intensive mix of virtualized database applications can be used to cut per-socket database and hypervisor licensing costs in half compared to HCI and tiered solutions with twice as many CPUs and only 32 cores per socket. While these savings can be dramatic in the core data center and for distributed edge deployments with extreme CPU and storage requirements (e.g., IoT data collection and real-time analytics), they weren't included in this Enterprise Strategy Group cost analysis, which examined a more typical distributed edge deployment with 32 VMs running on a pair of 24 core HPE SimpliVity 325 hardware nodes.
- **Business continuity and DR.** HPE SimpliVity Rapid DR reduces recovery time objectives from days or hours to minutes after a site-level disaster (e.g., fire or flood). This powerful built-in technology leverages capacity- and bandwidth-efficient deduplication and snapshot replication technology to cost-effectively deliver business continuity and DR for distributed edge deployments. HPE SimpliVity can start with just one node in edge locations replicating to a central DC with a larger cluster. While the economic analysis presented in this report includes the benefits of HPE SimpliVity for local backup and recovery, the costs associated with DR were not included due to the plethora of technologies and the wide range of costs associated with providing DR for distributed edge deployments across different regions. For example, the public cloud scenario that was modeled in this TCO analysis was deployed in one region and does not include the storage and networking costs associated with replication between clouds. The costs associated with meeting strict DR and service level agreements for other HCI solutions (e.g., VMware Site Recovery Manager licenses) and traditional three-tier infrastructure (remote replication between storage arrays, software-based remote replication, and WAN optimization) were also not included in this analysis. That said, regardless of the DR technology being considered, Enterprise Strategy Group is confident that the built-in DR capabilities of the HPE SimpliVity 325 architecture will magnify the savings presented in this report.
- **Public cloud storage surcharges.** The cost of public cloud infrastructure typically includes network egress fees (that is, fees for network bandwidth to retrieve data from the public cloud) and IOPS fees (fees based on storage performance). These fees can vary significantly depending on the amount of data that is processed in the cloud and the volume of data that's being moved from the cloud to distributed edge sites. Including these surcharges in this analysis would increase the cost of the public cloud and magnify the TCO benefits of HPE SimpliVity.

The level of savings that your organization will achieve depends on a variety of factors including the number of virtualized applications that are deployed in each distributed edge location and the compute and capacity requirements of each of those applications. That said, if your organization plans on deploying application workloads at the distributed edge, then Enterprise Strategy Group is confident that the HPE SimpliVity economic benefits that are presented in this report will hold true.

Conclusion

HCI is an increasingly popular choice for organizations pressed to do more with less. The all-flash HPE SimpliVity 325 offers organizations a lightweight two-node deployment that costs less than other hyperconverged offerings or public cloud services, and significantly less than a traditional three-tier architecture.

Enterprise Strategy Group completed a TCO analysis across five cost categories for a distributed edge deployment: cost of acquisition, data protection, administration, data center, and support, finding that over a five-year period the HPE GreenLake for Private Cloud Business Edition using HPE SimpliVity 325 with 24 cores per socket can yield a total savings of 39% when compared with a blend of other HCI offerings. That same HPE HCI can save 46% compared to a traditional three-tier infrastructure and 58% compared to public cloud services. The two-node HPE SimpliVity infrastructure cost advantages are largely due to built-in data protection, compression, and deduplication, as well as the fact that all management and administration across compute, storage, virtualization, and data protection can be conducted from a single HPE SimpliVity Federation interface. Enterprise Strategy Group found that the efficiency benefits of HPE SimpliVity 325 grow with scale, and each additional edge site yields additional amplified cost savings compared to traditional infrastructure.

As we've shown in this report, HPE SimpliVity HCI deployed across 50 distributed edge sites can yield cumulative savings of up to $6.7M over a five-year cost of ownership compared to building your own traditional three-tier infrastructure or renting infrastructure from a public cloud service provider. The savings will be magnified when you include the cost of DR for other HCI, three-tier, and cloud solutions and the software license savings that can be achieved with up to 64 AMD EPYC cores per HPE SimpliVity 325 CPU socket.

If you're looking for a hyperconverged offering to meet business-critical application requirements in distributed edge locations while staying on budget, Enterprise Strategy Group recommends that you consider HPE SimpliVity 325 all-flash solutions.

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contact@esg-global.com
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