

ESG Economic Validation

Economic Benefits of HPE SimpliVity 325 HCI for Edge

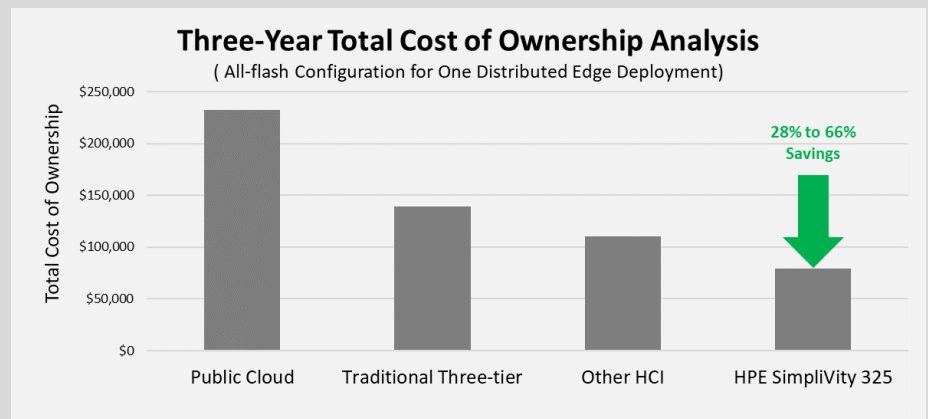
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Executive Summary

Budget restraints plague IT decision makers as management continues to ask them to do more with less. As such, organizations have turned to hyperconverged infrastructures (HCI) to meet budget requirements while continuing to meet critical application SLAs related to scalability, performance, and reliability. The all-flash HPE SimpliVity 325 offers organizations a lightweight, highly available, two-node solution that has the potential to cut costs even further when compared with traditional three-tier architecture, other hyperconverged offerings, and public cloud computing services. ESG completed a total cost of ownership analysis comparing a traditional infrastructure, a blend of other HCI offerings, and public cloud services to the HPE SimpliVity 325, with a goal of understanding the quantitative savings organizations can expect across five cost categories: cost of acquisition, data protection, administration, data center, and support.

ESG found that HPE SimpliVity 325 delivers savings of 28% to 66% over three years for a single all-flash HCI solution compared to public cloud, traditional three-tier infrastructure, and other HCI solutions. Those savings for a single distributed edge deployment can grow to one million dollars, or more, when HPE SimpliVity 325 all-flash HCI solutions are deployed in ten or more distributed edge locations. These savings for multi-site deployments, which can also be achieved for production workloads running in the data center, are driven by a variety of factors including the fact that HPE SimpliVity comes with built-in data protection and all management and administration can be controlled from a familiar VMware vSphere interface.



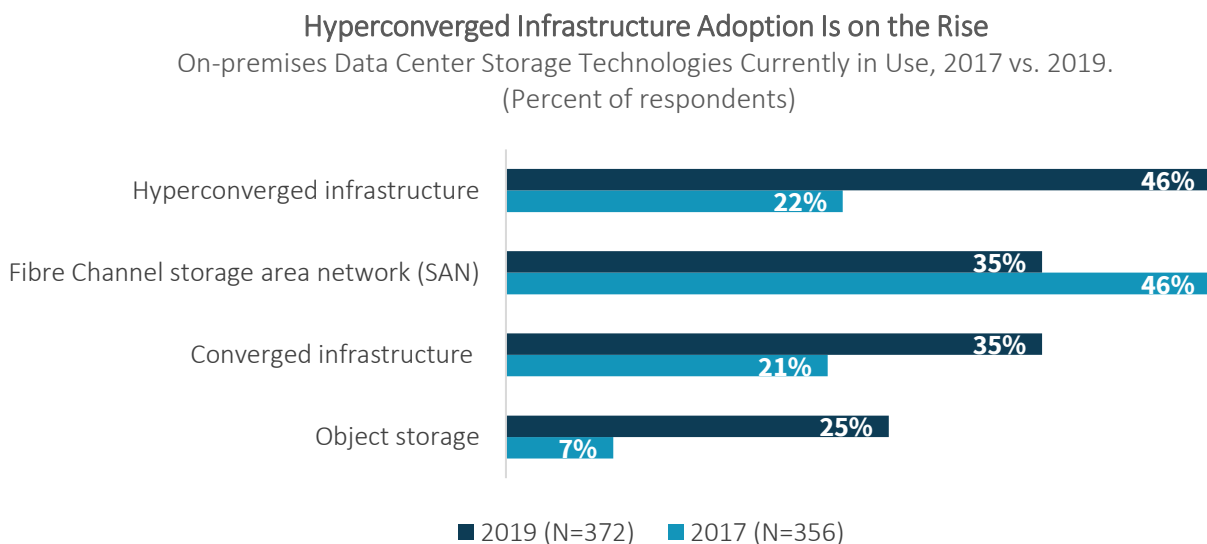
Introduction

This ESG Economic Validation focused on the quantitative and qualitative benefits organizations can expect from a two-node deployment of an all-flash HPE SimpliVity 325 compared with a traditional infrastructure, a blend of other hyperconverged offerings, and the public cloud. ESG 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.

Background/Problem/Challenges

Hyperconverged infrastructure (HCI) continues to gain momentum as organizations are turning to the technology to cost-effectively consolidate and simplify their IT infrastructure. In fact, ESG surveyed 372 midmarket and enterprise-class organizations, and 46% of those organizations reported using hyperconverged technology.¹ With budget restraints continuing to plague IT decision makers, the cost savings advantage of hyperconverged solutions continues to be appealing. In a previous ESG survey of organizations that already deployed hyperconverged technology, ESG asked what the most significant realized benefits have been since deploying the technology and improved total cost of ownership tied with improved scalability for the most-cited response.²

Figure 1. Hyperconverged Infrastructure Adoption Is on the Rise



Organizations are realizing the benefits of hyperconverged infrastructure in a variety of new scenarios. One way an organization can leverage the benefits of HCI is by deploying the systems in distributed edge environments. 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.

¹ Source: ESG Master Survey Results, [2019 Data Storage Trends](#), November 2019.

² Source: ESG Master Survey Results, [Converged and Hyperconverged Infrastructure Trends](#), October 2017.

HPE SimpliVity 325

Building on HPE SimpliVity's early success in the hyperconverged market, HPE is providing cloud-like flexibility and cost benefits on-premises with the HPE SimpliVity 325. By combining HPE SimpliVity's unique software architecture and feature set with powerful HPE ProLiant DL325 Gen10 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 multi-site 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, 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. It includes storage features that will boost efficiency without negatively affecting performance, such as inline compression and deduplication. This optimization technology enables customers to reduce costs, speed up data backup, and ultimately realize significant data efficiency benefits. With these features, organizations gain a complete IT infrastructure built with proven technology that delivers the simplicity and speed they demand.

ESG Economic Validation

ESG 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.

ESG'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 ESG's core competencies in market and industry analysis, forward-looking research, and technical/economic validation. ESG conducted in-depth interviews with end-users to better understand and quantify how the HPE SimpliVity 325 platform has impacted 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

ESG's economic analysis revealed that an effective deployment of an HPE SimpliVity all-flash solution can provide significant cost savings over a three-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 ESG modeled was a distributed edge deployment that required 32 virtual machines with four processor threads, 16 GB of RAM and 700 GB of flash storage capacity. Each distributed edge site was configured with a pair of HPE SimpliVity 325 nodes with a 16 core AMD EPYC processor, 256 GB of memory and four 1.6TB SSD drives (4.6TB 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, ESG 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 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 three years.

- 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 \$/GB of provisioned storage capacity per 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 three 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.

For HCI vendors, the building block approach enables an easier way to scale, but most vendors have a minimum deployment requirement 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, 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 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 28% compared with other HCI solutions, 43% when compared with a traditional three-tier approach, and 66% compared to the public cloud.

The HPE SimpliVity 325 requires just two nodes yielding a three-year total cost of ownership savings of at least 28% and up to 66%.



Data Protection

Traditional approaches require additional costs for data protection, usually in the form of a backup/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 costs.

With HPE SimpliVity, core data protection features are standard with every solution. This includes built-in VM backups, multi-site replication, recovery and cloning, and disaster recovery. 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 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.

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.

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



Data Center

Traditional deployments will always have higher data center costs due simply 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 16% 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 66% less to operate on-premises over a three-year period.



With more components, whether physical hardware or virtual software, traditional approaches require more support. Further, 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.

Three-year TCO Savings with HPE SimpliVity

ESG 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 factor in expected discounts. The results are shown in Figure 2 and Table 1.

Figure 2. HPE SimpliVity Three-year Total Cost of Ownership Analysis

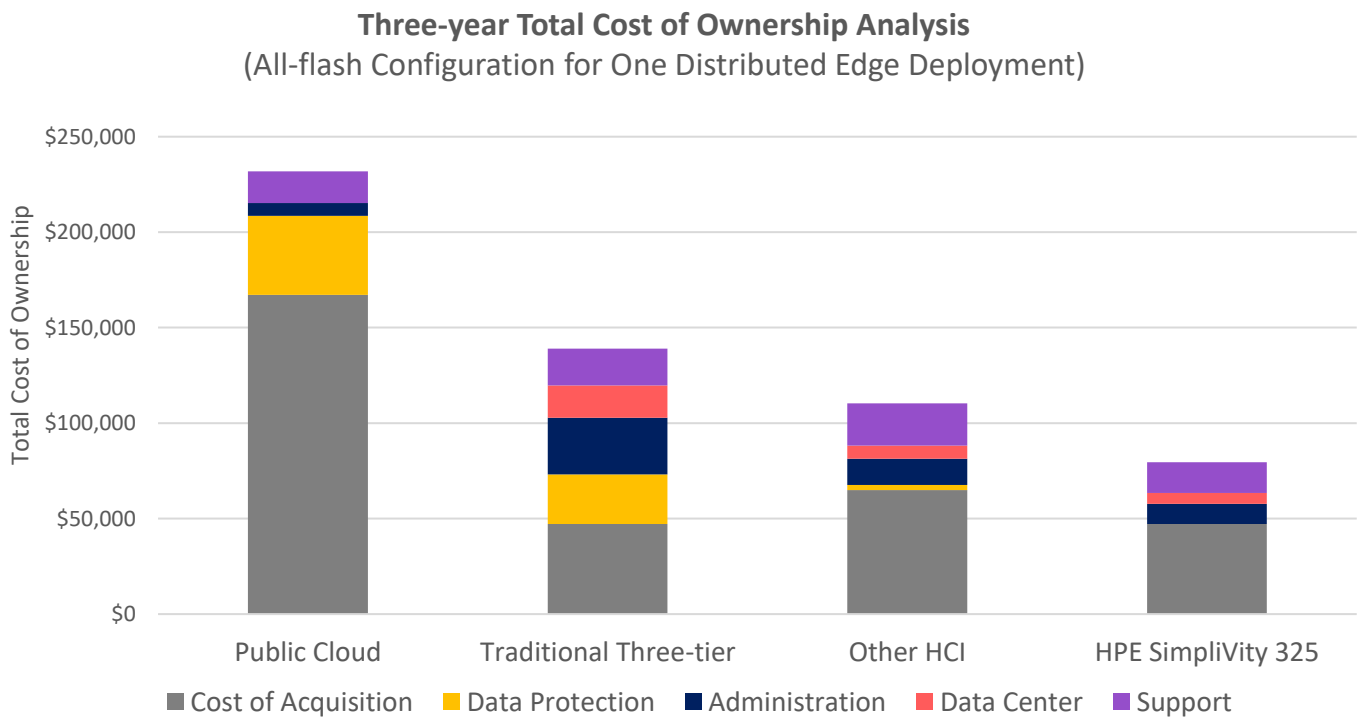


Table 1. Three-year Total Cost of Ownership Analysis

Component	Public Cloud	Traditional Three-tier	Other HCI	HPE SimpliVity 325
Cost of Acquisition	\$167,123	\$47,257	\$64,889	\$47,198
Data Protection	\$41,400	\$25,928	\$2,796	\$0.00
Administration	\$6,700	\$29,712	\$13,684	\$10,492
Data Center	\$0.00	\$16,777	\$6,912	\$5,826
Support	\$16,712	\$19,283	\$21,996	\$16,000
Total	\$231,935	\$138,958	\$110,277	\$79,516

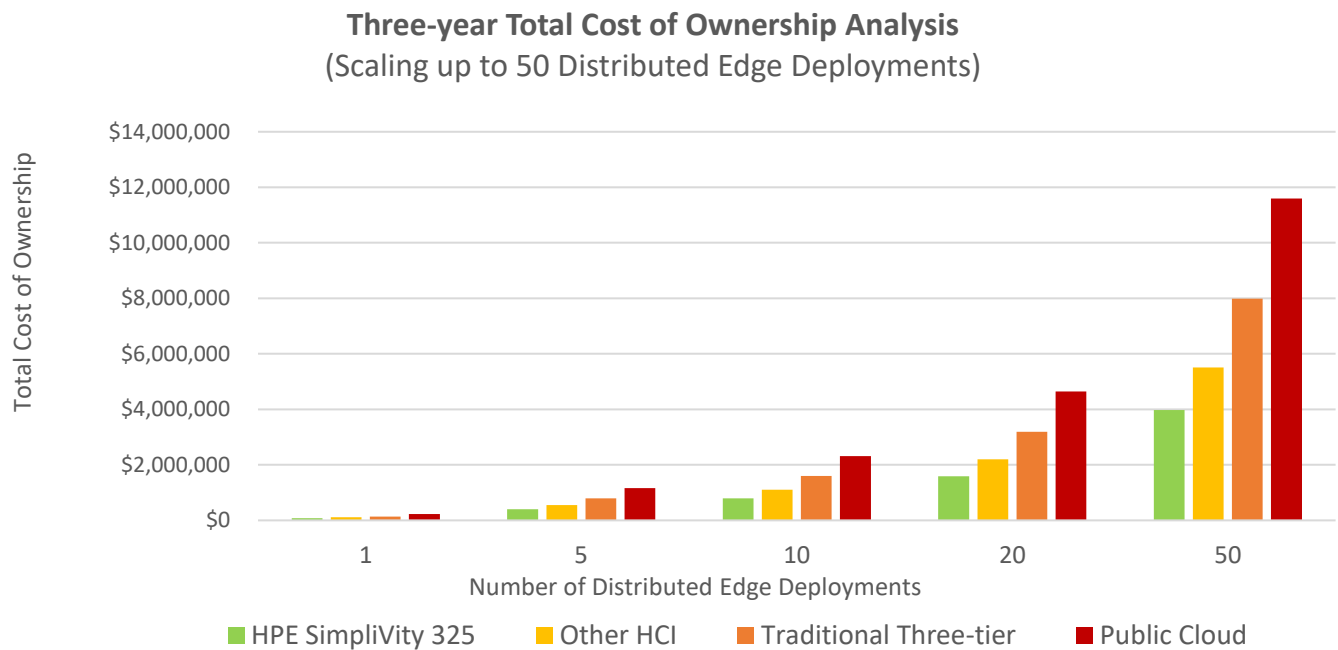
Source: Enterprise Strategy Group, 2020

The HPE SimpliVity 325 delivers overall savings of 43% compared with a traditional three-tier deployment, 28% compared with a blend of other HCI solutions, and 66% compared with a leading public cloud infrastructure services 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 impact 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, ESG 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 3, the three-year total costs of the public cloud (\$231,935), a traditional three-tier solution (\$138,958), the average cost of two other industry-leading HCI solutions (\$110,277), and a two-node HPE SimpliVity 325 (\$79,516) represent a single deployment (the first set of columns on the left of the chart). As shown in Figure 3, 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 three years, the cumulative savings that can be achieved with HPE SimpliVity 325 HCI is \$1,538,036 compared to other HCI solutions, \$4,014,271 compared to traditional three-tier solutions, and \$7,620,942 compared to public cloud.

While the single edge deployment with an HPE SimpliVity 325 delivers savings of 43% 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 an 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 3. HPE SimpliVity 325 Total Cost of Ownership Analysis

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 ESG TCO analysis, but should be considered:

Hypervisor and application software licenses. With up to 64 AMD EPYC cores in a single CPU socket, the HPE SimpliVity 325 Gen10 can be used to reduce the per socket 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 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 ESG cost analysis, which examined a more typical distributed edge deployment with 32 virtual machines running on a pair of 16 core HPE SimpliVity 325 hardware nodes.

Business continuity and disaster recovery. HPE SimpliVity Rapid DR reduces recovery point objectives (RPOs) and recovery time objectives (RTOs) 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 disaster recovery for distributed edge deployments. While the economic analysis presented in this report includes the benefits of HPE SimpliVity for local backup and recovery, the costs associated with disaster recovery were not included due to the plethora of technologies and the wide range of costs associated with providing disaster recovery for distributed edge deployments across different regions. For example, the public cloud scenario that was modelled 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, ESG 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 (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 ESG is confident that the HPE SimpliVity economic benefits that are presented in this report will hold true.

The Bigger Truth

Hyperconverged infrastructures are 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.

ESG completed a total cost of ownership analysis across five cost categories for a distributed edge deployment: cost of acquisition, data protection, administration, data center, and support, finding that over a three-year period, the HPE SimpliVity 325 with 16 cores per socket can yield a total savings of 28% when compared with a blend of other HCI offerings. That same HPE hyperconverged infrastructure can save 43% compared to a traditional three-tier infrastructure and 66% 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. ESG 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 \$7.62MM over a three-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, ESG recommends that you consider HPE SimpliVity 325 all-flash solutions.

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