Solution Profile

2023-24 DCIG TOP 5

Rising Vendors HCI Software Solutions VergeIO Solution Profile

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SOLUTION

VergeIO VergeOS

COMPANY

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DISTINGUISHING FEATURES OF VergeIO VergeOS

- Benefits through the power of one
- Data center agility
- Unified management of disparate clusters

DISTINGUISHING FEATURES OF TOP 5 SOLUTIONS

- Robust support
- High availability (HA)
- Value-added services

SOLUTION FEATURES EVALUATED:

- *Deployment capabilities*
- *Data protection capabilities*
- *Product and performance management features*
- *Technical support*

IT Challenges for Small to Large Enterprises.

To set context on why IT organizations should adopt hyperconverged infrastructure (HCI) software into their operating environment, it is helpful to survey the current challenges of managing small to large enterprise IT infrastructure. While these challenges also concern the very largest multi-national corporations, smaller organizations experience many of these same issues with perhaps even greater intensity.

Information technology serves a vital role in the success of all organizations. IT departments provide essential digital services that drive or support every part of today's modern enterprise. IT also serves as the keeper of the organization's most valuable digital asset, its data. Yet, today's IT organizations experience many challenges in their backbone role of providing and safeguarding digital services. These challenges include:

Slow-rising budgets. The average growth in IT budgets remains in the low single digits year after year.[1] Flat or slowly growing budgets force IT organizations to make difficult decisions for competing priorities. Slow-growth budgets also cause organizations to keep infrastructure longer before refreshes, which in turn affects performance and scalability needs. Tight budgets can prolong manual processes when investment in new automation tools would benefit the organization.

Limited resources. Limited resources, such as funding or staff shortages, impact today's enterprise organizations. IT departments may be unable to upgrade their infrastructure as they would like. Staff shortages make it difficult to properly monitor and maintain systems, resulting in outages or security incidents. A lack of skilled IT personnel and related resources limits options to explore new technologies and solutions that could benefit stakeholders.

Legacy hardware. Many organizations must extend their use of legacy hardware to save costs. Legacy hardware may lack the processing power or scalability to support new applications. Infrastructure managers may face obstacles sourcing replacement parts or hiring personnel with experience in these systems. Equipment manufacturers commonly stop supporting legacy hardware at some point which means increased risks of security vulnerabilities and system degradation.

Escalating threats. Cybercriminals constantly look for security weaknesses. Limited resources within smaller organizations result in exposures that bad actors can exploit. Enterprises may also struggle with complying with changing data privacy regulations with their notable penalties for non-compliance. While these threats are at play, IT departments must still protect their organization's data from incidents like hardware failures, natural disasters, and other unforeseen events.

Management complexity. Managing technology infrastructure can be complex, involving application servers, storage, networking, applications, and data protection processes. Legacy infrastructure must be managed as multiple data and management silos. As a result, IT staff invest much of their time just maintaining the status quo rather than adding new value to the business.

Massive data growth. More devices and applications generating data, larger file sizes, and the pressure to keep data for longer periods of time has resulted in a tsunami of data growth. Data growth entails storage expenses for hardware, software, management, and maintenance.

IT services at the edge. Edge locations generate their share of data that needs to be processed, stored, and potentially analyzed for business insights. Globally, the edge computing market is expected to reach $206B by 2032.[2] One of the many challenges for edge computing is either no IT personnel or no on-site personnel at all. This lack of available

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personnel, coupled with less-than-ideal environments, often calls for an edge computing solution that is small, ruggedized, cost-effective, highly-available, and simple to install. Then take this scenario and multiply it by hundreds or thousands of locations.

HCI software addresses these challenges and gives organizations the flexibility to adapt more quickly to trends and emerging opportunities within their industry.

Uptime and availability. Today's global economy pressures organizations to provide 24x7 availability. Any downtime can bring significant hits to revenue or costs. Not only must organizations provide 24x7 infrastructure availability, but they must also maintain backup, incident, and disaster recovery processes for outages. These outage recovery processes have their own budget-impacting costs.

While the above is not a comprehensive list of current IT challenges, it illustrates the complex reality that IT departments face. Notice how many of the challenges affect each other. For example, flat budgets result in extending the use of legacy hardware challenges which contributes to rising threats and management complexity, which in turn can affect availability and data security.

Providing solutions in one or more of these areas has positive collateral effects in the other areas. HCI software addresses these challenges and gives organizations the flexibility to adapt more quickly to trends and emerging opportunities within their industry.

HCI Software Characteristics

The term 'hyperconverged infrastructure' was first popularized over a decade ago as a new paradigm for data center infrastructure. Traditionally, the three pillars of the data center architecture are compute, storage, and networking. Each of these infrastructure stacks requires time, labor, and expense to size, deploy, manage, and integrate. Further, organizations must allocate funds for specialists in each of these three areas. Hyperconverged infrastructures collapse these three pillars into a single system that simplifies the deployment and ongoing management of IT infrastructure.

It may be helpful to think of HCI as a management software layer that *ideally* includes or integrates hypervisor, storage, and networking software (each of these three abstracting the underlying resources below it) to present a unified interface for managing the infrastructure stack. Administrators can create logical groups containing compute, storage, and networking resources that can be managed from a single interface.

The reason for the word *ideally* is that for some on-premises HCI use cases, the software-defined networking piece of the equation may not be as relevant to the hyperconverged solution. Which leaves just the compute and storage piece of the equation. Some HCI software solutions focus on virtualizing the underlying storage while integrating with other popular hypervisors for a hyperconverged solution. Two of the five DCIG TOP 5 solutions can be characterized this way.

Another reason for the word *ideally* is that while HCI software is designed for use within a hyperconverged appliance containing compute, storage, and networking capabilities, the HCI software may also be able to leverage external storage like a SAN or NAS for a disaggregated HCI solution. Again, several of the DCIG TOP 5 solutions offer these capabilities.

Regardless, and as a general practice, the characteristic of HCI software is that it can be deployed on commodity servers with direct attached storage. Some HCI software solution providers may narrow deployment capabilities by furnishing a list of popular server manufacturers. The main point is that the HCI software compatibility is not limited to a single server vendor but rather deployable on equipment of the customer's choosing. If networking is involved, network switches may be needed for communication between hosts in the cluster.

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Finally, some HCI solutions software solutions are cloud compatible. Organizations may be able to deploy HCI solutions on bare metal servers with popular cloud providers, as cloud compute instances, or as part of a containerized environment.

HCI Software Benefits

As summarized above, IT organizations have a number of challenges to consider these days. While there is no silver bullet for meeting these issues, IT leaders look for solutions that solve problems and provide positive outcomes in many ways. HCI software fulfills these goals while addressing current IT challenges through:

Many organizations discover they can eliminate some software licenses and their costs through capabilities provided by their HCI software solution.

Cost savings. By extending the life of existing hardware or through using commodity hardware, HCI software brings notable savings when compared to proprietary systems. Virtualizing the underlying components means organizations extract more work from the physical resources. Many organizations discover they can eliminate some software licenses and their costs through capabilities provided by their HCI software solution. Because HCI solutions are designed for modular expansion, organizations can purchase only the capacity they need in the short term and then expand the solution as needed, rather than purchasing capacity up front based on multi-year projections.

Administrative savings. HCI software vendors design their HCI software so it can be administered by IT generalists, which helps organizations overcome skill set shortages. For distributed enterprises, HCI software solutions allow one person to administer a broad set of data center services across hundreds and thousands of nodes from a single interface. Many HCI software products provide automation features, scripts, APIs, or deployment libraries to save time and money.

Data security and protection. HCI software solutions characteristically include security features to protect data from bad actors and recover data from unpredictable events. For security, HCI software often supports features such as active directory integration, role-based access controls, and data encryption. For data protection, HCI software integrates such features as snapshots, replication, or cloud tiering. HA capabilities ensure continuous availability to end users and applications.

Scalability. Data organizations look for scalable solutions that can grow (or contract) as needs require. Infrastructure managers can scale up or out their HCI solutions by adding resources or nodes. HCI software addresses data growth challenges through its flexibility to scale incrementally as needed.

Flexibility. HCI software supports a wide variety of applications and use cases. Such flexibility enables organizations to change resource allocations of compute, storage and network as needs of the business may change.

Infrastructure at the edge. HCI has moved out of the data center to the farthest edges of fixed or mobile enterprise locations. The ability to provide a consolidated IT infrastructure at remote locations brings many benefits, including small footprints, remote management, high availability, scalability, and cost-effectiveness.

Common HCI Software Use Cases

As noted above, IT departments can use HCI software for a wide variety of use cases spanning from the data center, to the cloud, and to the edge. Common HCI use cases include:

Data center consolidation. A key use case for HCI software is data center consolidation. Because HCI software solutions combine computer, storage and networking into a single system, infrastructure management becomes much simpler than managing a

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disparate three-tier architecture. Smaller organizations using a closet or a single rack of equipment will find a consolidated HCI solution attractive. HCI solutions can help organizations reduce hardware, labor, and power costs.

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Server virtualization. HCI's inherent nature is virtualization. Consequently, HCI software providers frequently promote server virtualization as a use case for their products. With server virtualization, companies can use their HCI solution in conjunction with virtualization software to enable numerous virtual machines to reside on a single HCI node.

Virtual desktops. Another popular use case involves using HCI software to provide virtual desktops to their end-users. Here the HCI software partnered with desktop virtualization software, enables multiple desktops to run off on an HCI node or cluster. In this way, businesses can use HCI software to simplify desktop management while providing a consistent desktop experience to end-users.

Private cloud. Many organizations are repatriating their cloud storage and workloads back to on-premises storage to avoid unexpected cloud costs and for data governance reasons. Because of its single integrated system architecture, organizations can use HCI software to private cloud environments. Organizations can scale up or out their private cloud by adding more components or nodes. Some HCI software solutions can auto-tier storage to the cloud or be deployed as a cloud instance, opening possibilities for HCI-based hybrid-cloud solutions.

Disaster recovery. HCI can serve as a second virtual data center in the event of a disaster or extended outage at a primary data center. HCI software allows infrastructure managers to oversee their DR environment to ensure a seamless transition for critical workloads and applications. HCI can provide a cost-effective DR solution by eliminating the need for specific hardware and software.

Edge computing. HCI becomes a natural fit for providing IT infrastructure at the edge because of HCI's compact footprint and remote management capabilities. Organizations can architect a highly available HCI solution with two small nodes with all the key data protection and security features necessary for edge computing use cases.

Testing and development. IT departments can use HCI to provide isolated environments for developing and testing software. Administrators can quickly create virtual machines and applications for developers. If more resources are needed, organizations can simply scale the HCI test environment.

The distributed enterprise. Infrastructure managers can leverage HCI for the distributed enterprise through its centralized management capabilities. HCI software can manage all their HCI instances through a single dashboard interface. HA and disaster recovery features with HCI software ensure that applications and data remain available in the face of equipment failures.

In short, HCI software provides organizations with flexible, adaptable solutions that address today's IT challenges. Flexible and adaptable also means that IT organizations can more quickly respond to tomorrow's business requirements and opportunities. And given the pace of change in today's business world, it is these types of solutions that help IT leaders succeed in meeting the changing needs of the business.

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Distinguishing Features of DCIG TOP 5 Rising Vendors HCI Software Solutions

DCIG identified fifteen software solutions for an HCI software use case. Of these, eleven are from Rising Vendors. Using feature-based analysis and comparisons of defensible data derived from publicly available sources, vendors, and DCIG's own experience, DCIG's TOP 5 Rising Vendors HCI Software Solutions share these characteristics that distinguish them from the other vendors DCIG evaluated.

DCIG TOP 5 providers display robust support capabilities when compared with the other evaluated solutions.

Robust support. DCIG TOP 5 providers display robust support capabilities when compared with the other evaluated solutions. All DCIG TOP 5 vendors provide at least 8 AM to 8 PM PST support, and most offer 24x7x365 availability for trouble resolution. All DCIG TOP 5 winners offer an online knowledge base for self-service support. Each DCIG TOP 5 provider offers 4-hour response times to reported troubles, with most offering one-hour response times. DCIG TOP 5 winners also offer different alerting mechanisms to speed up the trouble resolution process.

High availability (HA). All DCIG TOP 5 solutions support HA configurations for ensuring continuous availability to mission-critical applications and workloads. Examples of such HA configurations include synchronous mirroring and automatic failovers and failback for drive, network, or node failures.

Value-added services. In addition to their HCI product offering, DCIG TOP 5 Solution providers offer value-added services such as installation and training services. Value-added services help customers accelerate deployments and maximize the effectiveness of the HCI software for their organization.

VergeIO VergeOS

Upon DCIG's completion of reviewing multiple, available HCI software solutions, DCIG ranked VergeIO VergeOS as a DCIG TOP 5 solution. VergeIO designed VergeOS to simplify operations of IT infrastructure. Promoted as Ultraconverged Infrastructure (UCI) software, VergeOS goes beyond other HCI solutions by creating virtual data centers (VDC) from bare metal servers. The result is that with a few mouse clicks, an IT generalist can create multiple encapsulated data centers with a full stack of hypervisor, storage, and networking features all integrated into a single code base.

Bare metal installations allow enterprises to run VergeOS in the cloud, data center, or edge. Organizations may deploy VergeOS VDCs on small, two-node servers at the edge, such as Intel's Next Unit of Computing (NUC). IT departments implementing VergeOS in core data centers or the cloud can pool multiple servers, of different types, into clusters to support a wide variety of workloads. Administrators can manage hundreds of core and edge VergeOS nodes with Site Manager.

VergeiO offers four editions of VergeOS (Edge, Data Center, Enterprise, and DR) of VergeOS licensed by the physical node not by processor or core. VergeIO makes a free test drive available of VergeOS from VergeIO's website.

Notable features that earn VergeIO a DCIG TOP 5 award include:

Benefits through the power of one. Rather than silos of technologies, VergeIO built VergeOS as a single piece of software for greater efficiency. VergeIO includes all its features under one license. Combining virtualization, storage, networking, and workloads into one operating environment benefits IT budgets by eliminating other licensing costs. One dashboard reduces operational complexity for IT departments.

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The result is that with a few mouse clicks, an IT generalist can create multiple encapsulated data centers with a full stack of hypervisor, storage, and networking features all integrated into a single code base.

Data center agility. VergeIO defines a virtual data center (VDC) as an abstracted encapsulation of all the VMs, storage, networking, user management, and security to run a particular workload or set of workloads. With VergeOS, each VDC is its own operating system instance and stands free from external dependencies. Organizations may modify, nest, copy, or move their created VDCs for agility and portability. Administrators can leverage VergeIO's recipes to deploy secure, compliant VDCs tailored for small to medium size data centers. Alternatively, administrators can create their own templates to spin up new data center instances for internal or external tenants.

Unified management of disparate clusters. With VergeIO, IT organizations can group servers (e.g., Intel, HPC, or GPU nodes) into individual clusters, then manage multiple disparate clusters in a single environment. Administrators will find no limit to the number of nodes within a cluster or the number of clusters within a VergeOS environment. Organizations may assign or share these clusters to workloads based on workload priorities. Thus, IT departments can use VergeOS to optimize hardware investments by leveraging legacy infrastructure and the latest server hardware through a single piece of hyperconverged software and management plane. ■

Sources - Referenced in April 2023

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