Magic Quadrant for Hyperconverged Infrastructure

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Hyperconverged infrastructure solutions are making substantial inroads into a broader set of use cases and deployment options, but limitations exist. I&O leaders should view HCI solutions as tools in the toolbox, rather than as panaceas for all IT infrastructure problems.

Strategic Planning Assumption

Driven by increased HCI scalability and management functionality, by 2023, 70% of enterprises will be running some form of HCI (i.e., appliance, software, cloud-tethered), up from less than 30% in 2019.

Market Definition/Description

Hyperconverged infrastructure (HCI) is a category of scale-out software-integrated infrastructure that applies a modular approach to compute, network and storage on standard hardware, leveraging distributed, horizontal building blocks under unified management. HCI vendors either build their own appliances using common, off-the-shelf infrastructure (hardware, virtualization, operating system), or they engage with system vendors that package the HCI vendor's software stack as an appliance. Alternatively, HCI vendors sell their software directly to end users, through resellers and integrators, for use as part of a reference architecture, or on an HCI-as-a-service basis, either on-premises or in a public cloud.

IT leaders should remain cognizant of the origins of HCI suppliers and the strategic importance of HCI within these vendors' larger portfolios. Some vendors approach HCI from a storage virtualization and data management perspective, partnering for all other components of the HCI stack (hypervisor, network virtualization, management).

Others approach HCI from a server virtualization perspective and add storage virtualization and data management services later. Many server vendors approach HCI from a hardware appliance perspective as the natural evolution of their installed base of x86 servers. These server vendors either acquired an existing HCI or hyperconverged integrated system (HCIS) company or partnered with multiple HCI companies to deliver appliances or reference architectures. A few smaller providers approach HCI from a full-stack perspective, willing to compete head-to-head with leading hypervisor suppliers by initially focusing on a single niche. Some approach edge requirements strategically, while others address these requirements reactively. For most HCI vendors, the public cloud is an extension of the strategy, but also could be a strategic threat if IT leaders buy public cloud services in lieu of spending on their own infrastructure.

During the past year, Gartner has witnessed increased consideration of HCI in mission-critical enterprise applications. With this change, users have increased their scrutiny of support and application certification. At the same time, HCI vendors have expanded their strategy to embrace hybrid/multicloud deployments, as either backup targets or disaster recovery options, or as an alternative for on-premises infrastructure for unpredictable or cyclical resource requirements. Some HCI providers have begun to offer artificial intelligence (AI) functions to automatically improve performance and prevent failures.

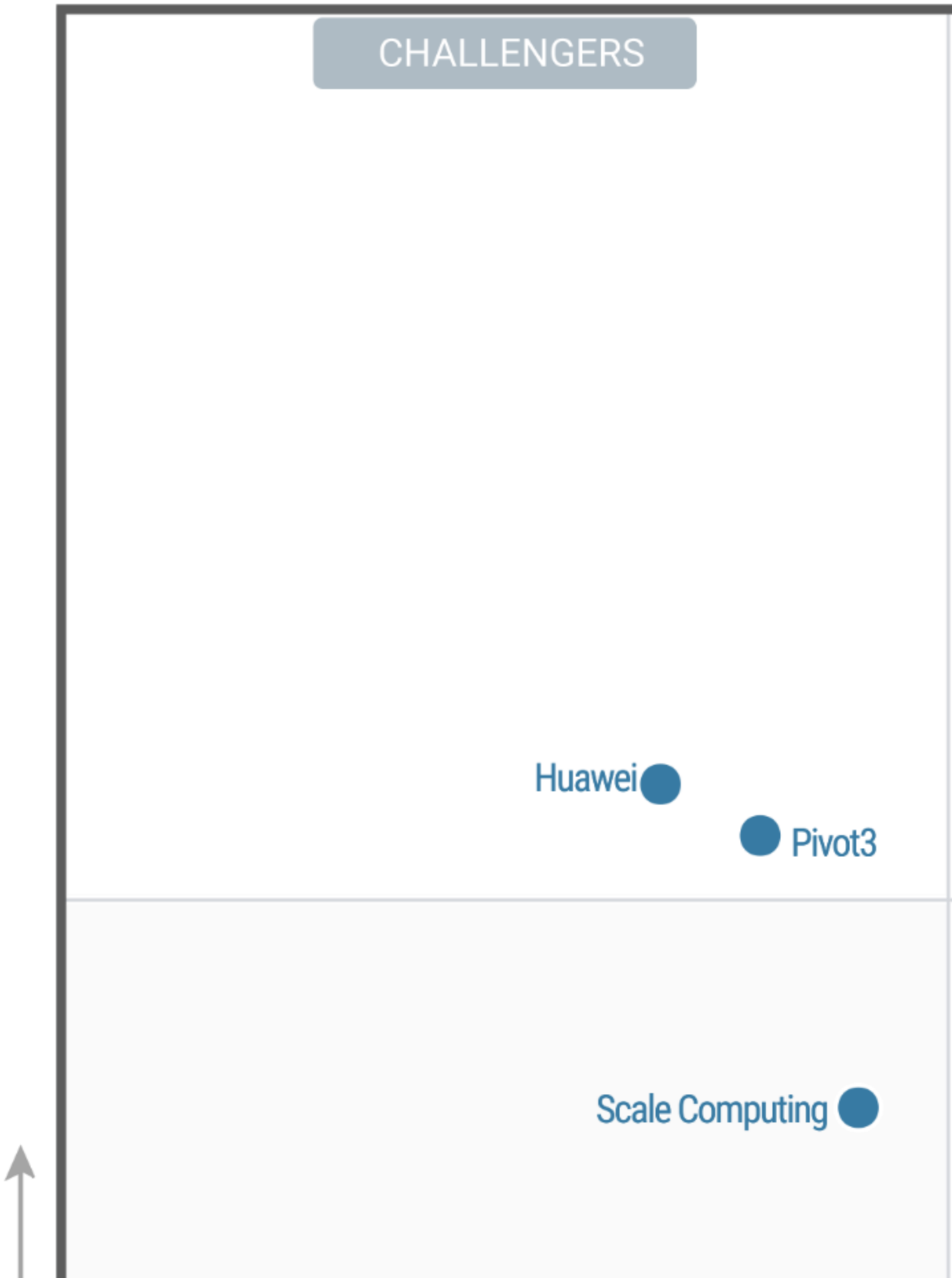
The HCI vendors that historically were data-center-focused have begun to target the needs of edge environments, previously only served by niche vendors. Small remote office and edge deployments require less storage capacity, fewer compute resources and fewer features, but benefit greatly from centralized management and high-availability designs. Much of the focus for this segment is on software that can be run on minimally configured servers that will support high availability (HA) with two-node clusters or even a single-node with limited availability. Finally, HCI vendors need to meet the asymmetrical scaling requirements of IT (compute, storage and network resource requirements do not always scale at the same rate) and are offering more compute-only, storage-only and software-defined networking options. These HCI providers offer that asymmetrical scaling while maintaining the server as the primary deployment method.

It is worth noting that some vendors are operating outside the sphere of Gartner’s strict definition of HCI and are designing solutions from the outset that offer unified

management, but are intended to scale compute and storage resources independently (e.g., disaggregated HCI [dHCI]). These solutions look much like integrated infrastructure solutions, but with scale-out architectures for back-end storage. They do not meet the inclusion criteria for this Magic Quadrant because they typically do not combine virtual machine (VM) and software-defined storage (SDS) resources, both running on the same physical servers, as the primary deployment method (see the Inclusion Criteria section).

Magic Quadrant

Figure 1. Magic Quadrant for Hyperconverged Infrastructure


CHALLENGERS
Huawei
Pivot3
Scale Computing

Vendor Strengths and Cautions

Cisco

Cisco is a global provider of networking, security and other IT infrastructure. The Cisco HyperFlex appliance is Cisco's HCI offering. Cisco HyperFlex was introduced in April 2016. Since the last Magic Quadrant was published, Cisco has introduced a cloud-managed two-node cluster with Cisco SD-WAN integration for edge and remote office/branch office (ROBO) use cases. To enhance HyperFlex's capabilities to support workloads, Cisco has introduced support for the latest-generation Intel Xeon Scalable Processors, formerly Cascade Lake, and a nonvolatile memory express (NVMe) hyperconverged appliance that utilizes 3D XPoint technology in both cache and capacity storage tiers. It is powered by the Intel Optane Peripheral Component Interconnect Express (PCIe), (and other) solid-state drives (SSDs) and the Intel 3D NAND NVMe SSDs. Other product enhancements include the HyperFlex Acceleration Engine, an optional acceleration card that offloads in-line compression from the CPU, large-capacity drives to enable petabyte scalability, and enhanced Kubernetes support including Container Storage Interface (CSI) plug-in. The top three use cases for Cisco HyperFlex are mission-critical, cloud and edge.

Strengths

- For IT leaders who use Cisco as their network provider or those seeking an HCI provider with a strong business base, Cisco's installed base of networking customers, along with its global service and support capabilities, makes HyperFlex an appealing path to a single source for their server, storage and network needs.
- With a comprehensively engineered HCI solution that comprises compute, software-defined storage and integrated networking, as well as hybrid/multicloud support, Cisco's HyperFlex has product depth that can be attractive to IT leaders.
- For IT leaders seeking to deploy HCI for edge, HyperFlex Edge offers features such as integration with Cisco SD-WAN and services through Cisco Intersight.

Cautions

- Some IT leaders whose systems are standardized on competing suppliers' servers may be hesitant to shortlist Cisco HyperFlex because it is only available as an HCI appliance on Cisco UCS servers.

- Cisco chooses to provide HyperFlex as a fully integrated HCI appliance and does not offer the HyperFlex HX Data Platform as a software-only solution or through third-party server integration partnerships.
- Cisco relies on Microsoft and VMware for the hypervisor, which may cause some IT leaders to prefer the solutions from those vendors.

DataCore

DataCore, founded in 1998, with headquarters in the U.S., is a privately held developer of infrastructure SDS and storage virtualization solutions. DataCore's product is DataCore SDS, which can be deployed on existing servers or new, custom configurations. The solution, originally marketed as Hyperconverged Virtual SAN, was launched in 2014 and is based on the DataCore's SANsymphony SDS product. DataCore recently introduced DataCore HCI-Flex fixed-configuration hardware appliances; data-at-rest encryption using an industry-standard Advanced Encryption Standard (AES) algorithm with 256-bit strength encryption for improved security; and DataCore Insight Services, a SaaS analytics platform for improved monitoring and management. DataCore SDS also offers Continuous Data Protection (CDP) for physical servers and virtual machines, as well as container hosts via Docker and Kubernetes plug-ins. DataCore SDS is used primarily for mission-critical, core IT, and edge use cases in small and midsize enterprises.

Strengths

- DataCore integrates with existing Internet Small Computer System Interface (iSCSI) and FC storage area networks (SANs) and x86 servers, as well as enables independent scaling of compute and storage resources.
- DataCore provides a robust set of data services and price-competitive, scaled-down solutions, including a two-node high-availability configuration for ROBO computer rooms, edge deployments, and the data centers of small and medium enterprises.
- The company's pace of innovation has increased with greater focus on ease of implementation with a hardware appliance, security with data-at-rest encryption and improved management with DataCore Insight Services.

Cautions

- Customers should watch for changes in strategic direction, as the company has undergone significant changes over the past year in leadership across sales, marketing, engineering and support.
- The company has deployed limited resources outside EMEA and the Americas and has few partnerships that can support customers in the Asia/Pacific (APAC) region.
- Some IT leaders cite poor support and channel partner knowledge as areas of concern.

Dell EMC

Under its parent company, Dell Technologies, Dell EMC is a global provider of products and services spanning compute, storage and networking. This Magic Quadrant evaluates Dell EMC VxRail that began shipping in 2016. Dell EMC has introduced VxRail Analytical Consulting Engine (ACE), a cloud-based, centralized data collection and analytics platform to simplify the management of VxRail clusters. VMware Cloud Foundation (VCF) is available on the VxRail solution with full stack integration or customers can use VxRail's REST APIs for customizable cloud solutions. The leading use cases for Dell EMC VxRail are core IT, mission-critical, cloud, edge and virtual desktop infrastructure (VDI). Dell EMC develops software specifically for VxRail (for example, RecoverPoint and Smart Fabric Services) that is designed to enhance VMware functionality and ease of use for a number of use cases, including core IT.

Strengths

- For IT leaders seeking mission-critical solutions, Dell EMC's VxRail has been deployed in a variety of mission-critical environments, including those running SAP HANA, Oracle RAC, Microsoft SQL, SAS Analytics and Splunk applications.
- Dell EMC has developed features and functions specifically for VxRail HCI System Software, like REST APIs and the VxRail ACE, and it provides tight integration with Dell EMC Networking platforms, which can offer advantages for IT leaders.
- For IT leaders needing HCI in multiple locations around the world, Dell EMC has a broad global sales and support reach that enables the sale and installation of VxRail in many geographies.

Cautions

- Dell EMC supports a portfolio of HCI choices beyond VxRail, including Nutanix, vSAN ReadyNodes and Microsoft Storage Spaces, all of which can be confusing when IT leaders are trying to determine what is best for their situation.
- Dell EMC VxRail is tightly coupled with VMware, so it limits IT leaders to a single hypervisor option on the VxRail offerings.
- Some client feedback indicates that there can be inconsistencies in VxRail presales and installation customer experiences.

HPE

Hewlett Packard Enterprise (HPE) is a global provider of professional services, software, servers, storage, networking and other IT infrastructure. The HPE SimpliVity hyperconverged solution was introduced in May 2017 as a result of HPE's acquisition of SimpliVity earlier that year.

The HCI solution, delivered as an appliance, integrates HPE servers, hypervisors (VMware or Hyper-V), SDS, backup and data services. HPE offers a guarantee on its data services, with notable data efficiency and reliability. Customers can acquire HPE SimpliVity through resellers, with a limited number of direct sales available. Recently, HPE added SimpliVity Validated Design for Google Cloud's Anthos for container-based private or hybrid cloud, and released AMD-based single-socket HPE SimpliVity 325 solution for ROBO and edge. In October 2019, HPE announced InfoSight integration with SimpliVity adding artificial intelligence for IT operations (AIOps) function benefits. HPE SimpliVity's most popular use cases are core IT, VDI, edge and mission-critical workloads.

Strengths

- HPE is a trusted global technology provider with a well-established channel and mature worldwide sales, service and support capabilities.
- End users are expressing a high degree of satisfaction with HPE SimpliVity data efficiency (global in-line deduplication and compression), data protection and disaster recovery features.
- HPE offers flexible consumption models and has introduced the HPE GreenLake as-a-service offering based on metered usage, built-in support and managed services.

Cautions

- For some large enterprises and service providers who are seeking a software-only solution supported on an array of server choices, SimpliVity will not be the right match, as it currently is not available as a software-only product.
- HPE SimpliVity is considered for only on-premises deployments, as it does not currently support native hybrid cloud workflows and has no integration with public cloud infrastructure as a service (IaaS) for virtualized workloads.
- Because HPE offers SimpliVity, broadened its HCI portfolio to include Nutanix, introduced dHCI and also sells the Synergy composable platform, IT leaders can find it challenging to determine which HPE solution is optimal for a given situation.

Huawei

Huawei, a global infrastructure vendor based in China, leverages its FusionCube brand, which was an early integrated infrastructure system in 2013 and is now positioned as an HCI. The product includes storage, Huawei's own Kernel-based Virtual Machine (KVM) and Xen-based FusionSphere hypervisors, as well as support for VMware. The Huawei HCI solution is managed by FusionCube Center. For 2019, Huawei has targeted three initiatives: "Any workload, Any Site, One System"; "High Performance, High Reliability, Simple"; and "Hybrid Cloud-Native." FusionCube is used primarily by midsize businesses for high-density, server-virtualized workloads; VDI, database and mission-critical applications, including Oracle and SAP HANA; edge environments; and hybrid cloud installations. FusionCube's growth is a result of Huawei leveraging its networking business in Asia, Europe, Africa and South America. Huawei continues to be strong in China, and it is helped by its partnerships with SAP, Oracle and Microsoft, thus making Huawei a "provider of choice" for many customers seeking those solutions in China.

Strengths

- FusionCube, positioned as HCI, is now established and proven in Asia and EMEA across many verticals.
- Huawei's customers benefit from the vendor's strong foundation of ecosystem partners, including Oracle, SAP, VMware, Microsoft, Red Hat and SUSE.
- Huawei's deal pipeline and installed base of network infrastructure make FusionCube appealing for IT leaders implementing use cases for cloud, edge, mission-critical and VDI.

Cautions

- Huawei has limited market presence, third-party support and certification for its FusionCube and related products in North America and some other western geographies.
- IT leaders should qualify Huawei's strategic adjustments to address the inconsistency between product roadmap and delivery.
- IT leaders will want to compare FusionCube's storage functions, such as deduplication, backup and recovery tool integration, and management capabilities to more mainstream products to ensure adequate performance for their needs.

Huayun Data Group

Huayun Data Group, founded in 2010, is a China-based private company that provides cloud and big data services. Huayun Data Group's flagship HCI offering is ArcherOS, which it offers within China, with Maxta continuing to be the brand offered outside China. Huayun Data Group launched ArcherOS in August 2019. ArcherOS is based on Maxta's core HCI and SDS technology that Huayun Data Group acquired in March 2019. Huayun Data Group has integrated its own technology with what it has acquired from Maxta to provide private and hybrid cloud capabilities. Huayun Data Group has also enabled the integration of ArcherOS with other technologies from security to independent software vendor (ISV) applications via its existing ecosystem of partners. Huayun Data Group intends to follow a dual-brand strategy by utilizing the ArcherOS name in China and retaining the Maxta name outside of China for an unspecified shorter term. Huayun Data Group's primary use cases, in order of importance, are cloud, core IT, VDI, edge and mission-critical. For the cloud use case, ArcherOS/Maxta seeks to bring more public-cloud-like operational efficiency to managed service providers (MSPs) and enterprises by enabling independent compute and storage scaling.

Strengths

- Huayun Data Group supports a wide array of server hardware platforms with both ArcherOS and Maxta brands to give IT leaders many x86 server choices.
- IT leaders may find Huayun Data Group's cloud use-case experience appealing when combined with Maxta HCI functionality.

- Huayun Data Group offers single-node pricing for its software options that can make its HCI solutions appealing for IT leaders of small and medium enterprises and organizations with large-scale/small-node edge requirements.

Cautions

- Huayun Data Group's dual-brand strategy of using both ArcherOS and Maxta may be confusing to IT leaders seeking an HCI deployment.
- IT leaders considering ArcherOS and Maxta may find that support capabilities vary by location due to Huayun Data Group's limited geographic footprint.
- IT leaders who prefer brands with more global levels of market recognition may decide not to consider ArcherOS and Maxta.

Microsoft

Microsoft is a global, publicly held infrastructure software, application and public cloud service company founded in 1975. The company's HCI offering is Azure Stack HCI. Azure Stack HCI was introduced in the Windows Server 2019 Datacenter edition, which follows Microsoft's initial HCI offering based on Microsoft's Windows Server 2016 Datacenter edition, introduced in 2016. Azure Stack HCI includes Microsoft's Hyper-V hypervisor and Storage Spaces Direct for storage virtualization. Over the past year, Azure Stack HCI enhancements have included improved manageability through Windows Admin Center; integration with improved security; and Day 1 support for Samsung's Z-SSD, Intel Optane, AMD's EPYC and Intel's Xeon Scalable processors. Azure Stack HCI is used primarily for cloud, edge and core IT use cases.

Strengths

- Microsoft provides organizations a comprehensive edge, core data center and cloud portfolio, with many common components and familiar management tools.
- Existing Microsoft Windows Server 2016/2019 Datacenter edition customers can implement HCI without paying additional license fees for hypervisors, management, software-defined networking, security or storage virtualization.
- Organizations have a wide range of platform and acquisition options, as Microsoft's Azure Stack HCI is supported on more than 2,000 devices and 134 prevalidated

Azure Stack HCI SKUs. Microsoft has a rich, global network of reseller and system integrator partners.

Cautions

- Many organizations are unaware of Azure Stack HCI or confuse Azure Stack HCI with Azure Stack, as it is insufficiently marketed within Microsoft's broad portfolio.
- Organizations that have standardized on market-share-leading VMware ESXi cannot use Microsoft's Azure Stack HCI without migrating to Hyper-V.
- Since Microsoft does not report revenue for the Azure Stack HCI product and measures adoption based on telemetry data, it is not included in some analysis reports, which measure revenue share. IT organizations may face resistance from senior management due to the lack of inclusion.

Nutanix

Founded in 2009, Nutanix was the early market and mind share leader in the HCI space since 2011. Nutanix's HCI solution is composed of its software-defined stack: Software-defined storage; AOS; an infrastructure control plane, Prism; and optionally its hypervisor, AHV. Over the last two years, Nutanix has evolved from a vendor of HCI system appliances and data services, to a provider of a broad portfolio of software solutions and cloud services. Over the past year, Nutanix introduced a database-as-a-service offering (Nutanix Era), application self-service and app life cycle management (Nutanix Calm), S3 object storage (Nutanix Objects), file storage services (Nutanix Files) and Xi Leap disaster recovery service. Nutanix offers subscription, term-based software licenses that are portable across hardware platforms and clouds. IT leaders deploy the Nutanix HCI solution for core IT, VDI, cloud and mission-critical use cases.

Strengths

- Nutanix has established itself as a leading HCI solution provider, which has contributed to significant traction in large enterprises and resulted in multimillion-dollar purchases by repeat and new customers across multiple industries and geographies.

- The Nutanix HCI software platform attracts IT leaders who prioritize flexibility because it supports multiple third-party servers, storage protocols and hypervisors, as well as a broad range of procurement and deployment options.
- Customers and end-user references continue to report positive support and service experiences, which contribute to strong customer loyalty.

Cautions

- Nutanix's transformation to a software company model triggered some IT leaders to question the company's long-term operational consistency in the areas of hardware integration, seamless global support and robustness of third-party server OEM solutions.
- Nutanix Xi Clusters' integration with Amazon Web Services (AWS) public cloud is still a nascent offering that is currently in tech preview.
- Cultural resistance within some infrastructure teams to adopting Nutanix's native virtualization (AHV) prevents IT leaders from taking full advantage of additional Nutanix stack offerings.

Pivot3

Pivot3 was founded in 2002, and it is a provider of automated and intelligent HCI solutions for on-premises, edge or cloud environments. Acuity is Pivot3's HCI offering. Pivot3 started shipping HCI solutions in 2008. Pivot3 has incorporated new security policy management features, including policy-based data-at-rest encryption and algorithm offloading. Pivot3 offers its Virtual Security Operations Center (SOC), which allows customers to replace expensive-to-manage graphics-enabled workstations with an HCI solution that delivers secure client desktops to security operators or first responders at any location. The primary use cases for Pivot3's HCI are mission-critical, VDI, core IT, edge and cloud. Pivot3's largest defense and intelligence deployments are advanced VDI use cases. Pivot3 leverages its own automation to facilitate functionality for both core IT and cloud use cases.

Strengths

- IT leaders have two main Pivot3 Acuity series options — the Acuity Datacenter Series and the Acuity IoT-Surveillance Series — from which they can choose, depending on specific use-case needs.

- Pivot3 offers its analytics and VDI features for large-scale, demanding applications in the higher education, healthcare and federal markets. IT leaders will appreciate Pivot3's prescriptive solutions and templates for use cases.
- For IT and security leaders in healthcare, defense, transportation and hospitality, Pivot3's platform is designed to ensure that video solutions meet both the high-performance and reliability needs of those environments. Due to increasing demand for video analytics, Pivot3 has enhanced its solutions to meet those needs.

Cautions

- IT leaders seeking core IT and cloud HCI solutions may opt not to consider Pivot3 because of Acuity's lower market penetration outside of video surveillance and VDI use cases.
- For IT leaders seeking hypervisors beyond VMware, Pivot3's integrated hypervisor support is limited to ESXi, although other hypervisors such as Hyper-V or KVM can be supported as external hosts to a Pivot3 HCI system.
- When engaging with Pivot3 working in conjunction with an OEM partner, IT leaders should ensure that project management expectations and timelines are well documented and agreed to ahead of deployments.

Red Hat

Red Hat is a global provider of Linux-based open-source software for enterprise on-premises and hybrid cloud subscriptions and maintenance contracts — and since July 2019, Red Hat is now a wholly owned subsidiary of IBM. Red Hat Hyperconverged Infrastructure for Virtualization was released in June 2017 on top of its Red Hat Virtualization product, which uses the KVM hypervisor and Gluster Storage virtualization. Red Hat released Red Hat Hyperconverged Infrastructure for Cloud in 2018, which is built on its Red Hat Ceph Storage and Red Hat OpenStack Platform as core components in the solutions. Red Hat has expanded its HCI for Cloud offering to its virtualization offering, which includes integrated deduplication and compression capability via the acquisition of Permabit and a unified life cycle for OpenStack and Ceph Storage technologies. Red Hat restructured its business organization and built a dedicated marketing function to drive internal and outbound awareness, promotion, product readiness, and sales enablement for its HCI solution. Red Hat's HCI offering should be considered predominantly for cloud, core IT and mission-critical use cases

for customers and providers adopting Red Hat Linux, Virtualization and hybrid cloud-based OpenStack deployments.

Strengths

- Customers with Red Hat Linux and OpenShift initiatives have an open-source HCI offering to consider as part of a single vendor's broader virtualization and storage catalog.
- Red Hat's HCI offering is an alternative for existing Red Hat customers and new customers seeking a single-vendor, integrated experience specifically for edge, data center, hybrid and cloud infrastructure use cases.
- Red Hat has a combined OS, virtualization, storage and cloud management toolset to manage HCI that leverages Red Hat's depth of Linux and open-source software expertise.

Cautions

- Red Hat's strong support for Linux, virtualization and cloud offerings still needs to be extended to Red Hat's HCI.
- Red Hat's currently low market penetration with HCI may cause some IT leaders to be reluctant to consider it.
- IBM's acquisition of Red Hat may cause some IT leaders to wait to see the longer-term effects on Red Hat's HCI initiatives.

Sangfor Technologies

Sangfor Technologies, founded in 2000, with headquarters in the People's Republic of China, is a publicly held developer of IT infrastructure, security and cloud solutions. Sangfor's HCI offering is Sangfor HCI. Sangfor shipped its first HCI solution in 2015 and initially focused on Oracle RAC, but now supports a broader range of enterprise applications. Over the past 12 months, Sangfor has focused on expansion beyond its home country and Asia, with notable expansion in select countries in Europe and the Middle East. Sangfor has also launched Sangfor Community, which provides a knowledge base, online technical support, installation and configuration guides, and a community forum. Sangfor aCloud is used primarily for mission-critical, core IT and VDI use cases in midsize enterprises.

Strengths

- Organizations in the People's Republic of China, where more than 90% of Sangfor HCI sales occur, will benefit from a mature support organization that can meet needs within the local market.
- Sangfor provides a cost-competitive alternative for small and medium enterprises.
- Sangfor has developed an industry-vertical approach to the market, creating partnerships with ISVs, deploying vertically focused sales teams, and developing knowledge of regulations to meet the needs of manufacturing, government, healthcare and education organizations.

Cautions

- Local support resources may be limited outside of the People's Republic of China, Italy, Thailand, Malaysia, Indonesia, the Philippines, South Korea and Singapore.
- Sangfor has limited integration with ecosystem partners when compared with its larger international competitors.
- Sangfor is not cost-competitive in edge locations.

Scale Computing

Scale Computing, founded in 2007, with headquarters in the U.S., is a global provider of HCI. Scale Computing's HCI offering is HC3. Scale Computing began shipping HC3 in 2012. Scale Computing recently introduced the HE500 model for edge computing environments, with cost-competitive pricing per node. Scale Computing also established an OEM agreement with Acronis to provide long-term on-premises or cloud backup and bare-metal restore to non-HC3 systems, and ransomware protection of backups. Scale Computing introduced Intel Cascade Lake processors in the HC1000 and HC5000 product series for improved VDI performance. HC3 is used primarily in edge and ROBO deployments and the primary data centers of small and medium enterprises for business-critical and consolidation workloads.

Strengths

- For organizations seeking independent peer validation of HC3's fit for their specific use case, Scale Computing provides access to more than 900 case studies and customer reviews.

- Scale Computing offers extremely low-cost solutions that require limited hardware investment for edge locations by providing resource-efficient, full-stack software that includes Scale Computing's own KVM-based hypervisor.
- Scale Computing is making major investments to expand API-based orchestration and third-party tool integrations to enable customers to manage widely distributed infrastructure and applications.

Cautions

- IT leaders who wish to leverage existing skills and enterprise license agreements for Microsoft Hyper-V or VMware ESXi will find Scale Computing less appealing.
- Support for organizations with deployment sites outside the U.S. may find limited support, as more than 80% of Scale Computing's bookings are currently in the U.S., and OEM partnerships that expand Scale Computing's reach outside the U.S. are new.
- Scale Computing is not a fit for large organizations seeking a standardized core-to-edge-to-cloud strategy, as the company lacks a cloud and large-data-center offering.

StarWind

Founded in 2008, StarWind develops HCI and SDS solutions. StarWind's HCI offering is the StarWind HyperConverged Appliance (HCA). StarWind first started shipping an HCI solution in 2009. The vendor also enables hardware-agnostic offerings with its StarWind Virtual SAN (VSAN) HCI software and sells a backup appliance, the StarWind Virtual Tape Library Appliance (VTLA). StarWind has honed its marketing focus to bring enterprise-level HCI features to the small and medium enterprise market at appealing costs. Over the past year, StarWind has introduced its Command Center, Virtual Appliance and ProActive Premium Support Extended as enhancements to its HCI offerings. StarWind has been expanding its channel partner relationships outside of its base country of the U.S. to grow business in EMEA, Asia/Pacific and Japan. The StarWind HCA primary use cases are edge, mission-critical, core IT, VDI and cloud. StarWind focuses on specific features for each use case like high availability and high performance for edge, storage replication to prevent downtime and data loss for mission-critical workloads, and simplicity and flexibility for core IT.

Strengths

- For IT leaders seeking low-cost solutions with high availability, StarWind offers either a single cluster of two physical on-site nodes, or one physical on-site node and one virtual node in the cloud.
- For IT leaders seeking specific features and functions, StarWind offers a high level of customization through its engineering teams.
- StarWind's NVMe over Fabrics (NVMe-oF) support for Windows Server uses significantly less compute resources than nonfabric NVMe solutions for Windows.

Cautions

- For IT leaders desiring larger providers with greater resources, StarWind's small company size may bar it from consideration.
- For IT leaders requiring an HCI provider with broad market penetration and brand recognition, StarWind may not make their shortlists.
- As StarWind grows its small and medium enterprise business, its support approach of utilizing its relatively small engineering team may create concerns for some IT leaders who question StarWind's ability to scale support quality across all of StarWind's customers.

StorMagic

StorMagic, founded in 2006, with headquarters in England, is a privately held developer of storage virtualization and HCI solutions. StorMagic's HCI product is SvSAN. SvSAN began shipping in 2008. StorMagic recently introduced StorSecure encryption with integrated key management; three-node high availability clustering that enables continuous availability in the event of a double-node failure; and open KVM support. StorMagic's SvSAN is used primarily for mission-critical applications running in edge and ROBO locations ranging from medium to very large businesses across all major regions: the Americas, EMEA and Asia/Pacific. StorMagic is also deployed in the core data centers of small and medium enterprises.

Strengths

- StorMagic has a consistent focus on cost-effective, simple-to-manage solutions for ROBO and edge environments, and it enables two-node, HA solutions for less than $10,000 per site (inclusive of hardware, software and maintenance).

- StorMagic SvSAN supports asynchronous scaling of compute and storage, supports dissimilar HCI nodes to avoid server vendor lock-in and enables HA upgrades in “brownfield” deployments. It also has a resource-efficient software design that minimizes compute, memory, storage and network requirements.
- StorMagic’s SvSAN provides hypervisor flexibility with support for VMware ESXi, Microsoft Hyper-V and open KVM.

Cautions

- Despite being in operation for more than 13 years and having large deployments in global enterprise customers, StorMagic has limited brand awareness.
- StorMagic has no offerings for organizations seeking a single-vendor, core-to-edge-to-cloud solution, and it does not integrate directly with any cloud providers.
- StorMagic does not offer data deduplication, compression or erasure coding, limiting its fit for larger-storage-capacity requirements.

VMware

VMware is a provider of virtualization and cloud infrastructure solutions that is publicly listed and majority-owned by Dell Technologies. VMware vSAN is a software-defined storage product that serves as the foundation of VMware’s HCI and is natively integrated with the vSphere hypervisor. VMware expanded HCI on-premises to offer VMware Cloud Foundation (VCF), which consists of vSphere, vSAN, NSX (network virtualization) and vRealize (advanced management), along with life cycle automation for Day 0 to Day 2 operations, to accelerate private cloud deployments. VCF is also deployed on VMware Cloud on AWS, Microsoft Azure, Alibaba Cloud, Oracle Cloud, IBM Cloud and Google Cloud Platform as well as a private-cloud-managed service, VMware Cloud on Dell EMC, enabling consistent infrastructure and operations for hybrid cloud deployments. VMware’s HCI can be deployed on vSAN ReadyNodes or as an appliance from Dell Technologies, VxRail. vSAN ReadyNodes are jointly certified by both VMware and more than 15 OEM vendors, including Atos, Acer, Cisco, Dell EMC, Ericsson, Fujitsu, HPE, Hitachi Vantara, IBM Inspur, Intel, Lenovo, NEC, Quanta Cloud Technology (QCT), Supermicro and Toshiba.

New capabilities in the latest update of vSAN 6.7 are focused on more consistent performance, simplification of some aspects of operations and management, and

native support for persistent storage for containers. vSAN is deployed for a broad range of use cases across both midsize businesses and global enterprises.

Strengths

- VMware can be deployed as software only, through validated designs or turnkey appliances, as well as an HCI-as-a-service offering on-premises or as public cloud IaaS, to meet diverse needs of enterprise IT organizations.
- VMware has a large and loyal installed base and is considered by infrastructure and operations (I&O) leaders as one of the most trusted global IT software solution providers.
- The VMware Cloud on AWS managed service attracts IT leaders looking to deploy the VMware HCI stack across on-premises and public cloud IaaS.

Cautions

- VMware's HCI offering is not suitable for IT leaders who are looking to build a hypervisor-independent infrastructure platform.
- VMware's HCI offering does not include production support for applications requiring unstructured data services, causing IT leaders to deploy third-party solutions for file and object services.
- Gartner clients note that VMware HCI deployments for complex large-scale configurations require careful planning and that these deployments may take a long time for hardware selection, integration and maintenance.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

Huayun Data Group was added because of its acquisition of Maxta.

Sangfor Technologies was added because it met the inclusion criteria.

Dropped

Maxta was dropped because it was acquired by Huayun Data Group.

Inclusion and Exclusion Criteria

To qualify for inclusion in the HCI Magic Quadrant, vendors need to meet the following criteria.

Functional Criteria

Included HCI vendors must:

- Provide an integrated software stack, which includes unified management, software-defined compute (SDC), storage and, optionally, networking.
- Combine VM and SDS resources, both running on the same physical servers, as the primary deployment method.
- Virtualize local, internal and direct-attached storage (DAS), rather than shared, networked storage, such as a SAN and/or network-attached storage (NAS).
- Provide a mechanism to pool internal and direct-attached primary storage across servers into logical, abstracted virtual storage.
- Develop the storage and data management services integrated in the offering.

Business Criteria

Eligible HCI vendors must:

- For each product to be evaluated, provide evidence of a minimum of 100 production customers brought to revenue in at least two of the major geographies. These are the Americas; EMEA; the APAC region; and Japan — in the 12 months ending 31 August 2019.
- Deliver complete Level 1 (call center/service desk) and Level 2 (escalation) support either directly or through a contracted services provider to facilitate quick and easy problem resolution. However, Level 3 (engineering) support can be delivered separately, based on vendors' engineering partnerships.

- Deliver solutions that meet user requirements in at least four of the use cases identified in the Critical Capabilities for Hyperconverged Infrastructure research.
- Deliver the product or products to be evaluated in the Critical Capabilities in general availability by 31 August 2019.

Evaluation Criteria

Ability to Execute

Gartner analysts evaluate technology providers on the quality and efficacy of the processes, systems, methods and procedures that enable IT provider performance to be competitive, efficient and effective, and to positively impact revenue, retention and reputation. Ultimately, technology providers are judged on their ability and success in capitalizing on their vision.

Product or Service: This criterion evaluates core goods and services offered by the technology provider that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the Market Definition/Description section and detailed in the subcriteria.

Overall Viability: This includes an assessment of the overall organization’s financial health, and the financial and practical success of the business unit. This also includes the likelihood of the individual business unit to continue to invest in the product, continue offering the product and advancing the state of the art within the organization’s portfolio of products. The growing proportion of startups in the industry require validation of business models and investment risk.

Sales Execution/Pricing: This criterion refers to the vendor’s capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

Market Responsiveness/Record: The ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor’s history of responsiveness. The dynamics in the market require increasing flexibility.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the vendor's message in order to influence the market, promote the brand and business, increase awareness of products, and establish positive identification with the product/brand and organization in buyers' minds are evaluated. This mind share can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities.

Customer Experience: This includes relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on. Conservative buyers will consider references critical in this emerging market.

Operations: The ability of the organization to meet its goals and commitments is evaluated. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Table 1: Ability to Execute Evaluation Criteria

Enlarge Table

Evaluation Criteria	Weigh
Product or Service	High
Overall Viability	High
Sales Execution/Pricing	Mediu
Market Responsiveness/Record	High
Marketing Execution	Mediu

Evaluation Criteria	Weigh
Customer Experience	High
Operations	Low

Source: Gartner (November 2019)

Completeness of Vision

Gartner analysts evaluate technology providers on their ability to convincingly articulate logical statements about current and future market direction, innovation, customer needs and competitive forces, and how well they map to the Gartner position. Ultimately, technology providers are rated on their understanding of how market forces can be exploited to create opportunity for the provider.

Market Understanding: The ability of the vendor to understand buyers' needs and to translate these needs into products and services are evaluated. Vendors that show the highest degree of vision will listen and understand buyers' wants and needs, and can shape or enhance those wants with their added vision. This is a relatively new market and continues to evolve.

Marketing Strategy: This criterion refers to a clear, differentiated set of messages consistently communicated throughout the organization, externalized through the website, advertising, customer programs and positioning statements. The constant stream of new entrants puts pressure on positioning and the ability to differentiate.

Sales Strategy: This refers to the strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: This criterion evaluates a vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set as they map to current and future requirements. Strong strategy is required for product differentiation.

Business Model: The soundness and logic of a technology provider's underlying business proposition are evaluated.

Vertical/Industry Strategy: This refers to the technology provider's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or preemptive purposes are evaluated. Emerging technologies must be addressed and integrated.

Geographic Strategy: This refers to the vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries, as appropriate for that geography and market.

Table 2: Completeness of Vision Evaluation Criteria

Enlarge Table

Evaluation Criteria	Weighting
Market Understanding	High
Marketing Strategy	Medium
Sales Strategy	Medium
Offering (Product) Strategy	High
Business Model	Medium
Vertical/Industry Strategy	Medium
Innovation	High
Geographic Strategy	Medium

Source: Gartner (November 2019)

Quadrant Descriptions

Leaders

Leaders will typically be able to execute strongly across multiple geographies, verticals, use cases and deployment models. They will have a support and channel organization that ensures a high-quality customer experience regardless of whether the solution is purchased directly or through resellers, integration partners or OEMs.

Challengers

Challengers are typically vendors whose achievements, while significant, are based on a narrower subset of the market, having gaps in geographic coverage, product portfolios and use cases. These vendors have the potential to establish themselves across the broader, global market, but have not yet done so.

Visionaries

Visionaries are typically vendors that are focusing on strong innovation and product differentiation, with the potential to significantly disrupt the market if execution improves. These may be smaller vendors with limited reach or achievement to date, or larger vendors with innovation programs that are still unproven.

Niche Players

Niche Players are typically vendors with market programs focused on a limited set of geographies, deployment models, customer segments or use cases. These vendors have met the inclusion criteria and may address their specific market category effectively.

Context

All hyperconverged integrated systems include HCI software, but HCI software is not limited to a system (hardware appliance) deployment model. Software-only/bring-your-own-server, reference architectures, cloud and as-a-service deployments are growing, placing pressure on HCIS appliance vendors to consider software-only deployment options and to reduce hardware dependencies, which offsets the simplicity and agility of HCIS appliance models. The advantages of software-only deployments, which include the avoidance of hardware vendor lock-in, are at least

somewhat offset by the added complexity of the support model and inability of software-only vendors to test and certify the myriad configuration options customers may choose. Vendors with software-only options are expanding their OEM partnerships and server certifications to provide greater choice and an improved support experience.

One limitation of the traditional HCIS appliance model is that compute, storage and networking do not scale in tandem for all workloads. To compete across the broadest range of workloads, more vendors are offering compute-only and storage-only nodes. Because resource and performance requirements vary substantially by workload, Gartner continues to recommend that I&O leaders conduct a proof of concept (POC) to evaluate the compute, storage and networking requirements of their workloads running on HCI. I&O leaders also should estimate the component growth requirements to determine the need for asymmetrical scaling. The POC should include a careful analysis of performance during node failures, the increase in risk during node failures and the time to recover from node failures.

Although there are multiple 100-node-plus deployments today, most HCI implementations can be measured in tens of nodes or fewer. Even large deployments tend to be segmented into smaller clusters, but with centralized management across clusters. As HCI becomes more broadly adopted across a broader range of nonhomogeneous workloads, requirements will increase for HCI to operate more autonomously, including the capability to automatically provision, rebalance, adapt to meet quality of service (QoS) requirements, detect anomalies, and prevent failures and data loss. When HCI is deployed at large scale, these capabilities will be both increasingly necessary and key points of vendor differentiation.

One of the attractions of integrated systems and HCI is the potential to create a cloudlike provisioning model while maintaining physical control of IT assets and data on-premises in the data center, remote site or branch office. Over the next few years, cloud deployment models will become increasingly important to meet both short-term scale-up/scale-down requirements and backup and disaster-recovery requirements. An important question for users is whether HCI is a stepping stone to the cloud or a “foreseeable future” resting place for applications; and ultimately, whether it is a good alternative to the public cloud from performance, manageability at scale and cost perspectives.

The adoption of HCI-based solutions continues to grow, but, outside of smaller organizations, HCI is unlikely to become a full-service platform for IT services across all workloads. I&O leaders should evaluate HCI solutions and select vendors and products not because HCI or that vendor is rapidly growing, but because it fits their particular use case, growth expectations and application architecture direction. HCI is likely to become yet another silo to manage, so integration with higher-level management frameworks (including cloud, container and security management) becomes key to supporting an already overtaxed operations staff.

Adopting technology innovation must be business-led, not technology-driven. There is no ideal integrated system or “endgame” infrastructure. New hardware and software innovations will continue to appear, moving the goalposts and pushing the boundaries of infrastructure design and delivery. Consolidation, rationalization and virtualization set the foundation for ultimately delivering integrated systems like hyperconverged, SDI and composable infrastructure.

Market Overview

HCI is a market that has significant overlap with the hyperconverged integrated system submarket of integrated systems. The two, however, cannot be equated, as HCI includes flexible deployment and sourcing models that extend to cloud, on-premises as a service, bring your own hardware, reference architectures, and OEM or branded appliances. At one extreme, vendors that offer multiple HCIS solutions may not develop any of their own HCI software. Conversely, HCI software vendors may partner with multiple hardware, software and cloud providers to deliver their solutions to market.

As HCI vendors expand their deployment options to include more cloud providers, such as Amazon, Google and Microsoft, acquisition activity increasingly is focused on tools and capabilities to monitor, secure, manage, optimize, and govern diverse on-premises and cloud deployments.

Many partners in the HCI market are also competitors, and I&O leaders must remain cognizant of the sometimes conflicting priorities and incentives of HCI vendors and their partners as well as rapidly expanding HCI partner networks. Full-stack infrastructure software suppliers, such as Microsoft, VMware and Red Hat, pose interesting partnership challenges, as each has significant HCI opportunities within their substantial installed base of customers. Vendors that have more hypervisor-

neutral — or at least hypervisor-flexible — offerings may have advantages for customers that want to avoid hypervisor lock-in. I&O leaders pursuing multihypervisor strategies should carefully evaluate the ability of solution providers to deliver simplicity at the management layer. Cloud providers Amazon and Google, together with Microsoft, which already has a substantial position in the market, could ultimately disrupt the entire HCI market as they further extend their cloud offerings to on-premises infrastructure. Meanwhile, I&O leaders will have an alternative to public cloud and private data centers by leveraging IaaS providers that use simpler-to-manage HCI for their own infrastructure.

Evidence

This Magic Quadrant is based on vendors' written responses to an extensive Gartner survey, vendor presentations, reference customer surveys, Gartner interviews with vendor partners and competitors, Gartner client inquiries, and independent validation of vendor claims through assessment of third-party resources.

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability: Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

Market Responsiveness/Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer

needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

By Jeffrey Hewitt, Philip Dawson, Julia Palmer, John McArthur