Cool Vendors for Compute Platforms, 2017

Published: 24 April 2017   **ID:** G00327885

Analyst(s): *Andrew Butler | Philip Dawson | George J. Weiss | Julia Palmer*

Summary

I&O leaders yet to invest in hyperconvergence will find strong innovation from new vendors that are focusing on solving the bottlenecks and scaling limitations that many users experience today. We highlight five vendors at the forefront of this revolution aiming to disrupt the established players.

Overview
Key Findings

The hyperconverged integrated system (HCIS) market still provides scope for new vendors to differentiate, but vendors need to target specialized or emerging workload opportunities to compete against bigger and more proven rivals.

In contrast to established HCIS vendors, which are increasingly partnering with system vendors to market solutions based on standard hardware, the new-generation vendors we have highlighted are committed to achieving success by investing in strategies that blend the need for customized and optimized hardware alongside an innovative software stack.

Recommendations

Infrastructure and operations (I&O) leaders who seek to exploit agile infrastructure solutions should:

Profile your medium- to long-term scaling requirements as accurately as possible, as more specialized HCIS vendors — such as the ones we have evaluated here — will be best-suited to more challenging implementations.

Challenge new-generation HCIS vendors to demonstrate that their solutions will outscale or outperform better-known solutions, and insist on proven references wherever possible.

Establish the primary pain and pinch points of a new infrastructure investment — such as extreme hardware density, latency, security compromise, web-scale implementations or container management — so that the uniqueness claims of specialized vendors can be more easily verified.

More on This Topic

This is part of an in-depth collection of research. See the collection:

SERIES OVERVIEW

Cool Vendors, 2017 — Stand Up to Be Noticed, Stand Out to Lead: A Gartner Trend Insight Report (https://www.gartner.com/document /code/332620?ref=grbody&refval=3688824)

Analysis

This research does not constitute an exhaustive list of vendors in any given technology area, but rather is designed to highlight interesting, new and innovative vendors, products and services. Gartner disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

This document was revised on 1 May 2017. The document you are viewing is the corrected version. For more information, see the Corrections (http://www.gartner.com/technology/about/policies/current_corrections.jsp) page on gartner.com.

What You Need to Know

To deliver true differentiation to the market for compute platforms, vendors need to focus on the convergence of compute, storage, network and management tooling that is represented by hyperconverged integrated systems (HCISs) today. The appeal of such systems to I&O leaders is strong. They provide prebuilt, on-premises infrastructure elements that enable IT organizations to model the delivery of

workloads in ways similar to that of public cloud service providers, and increasingly build bridges between on-premises and off-premises consumption behavior. HCIS should also provide scope to save significant operating expenditure (opex) spending, although this can be partially offset by higher capital costs. Finally, we see growing evidence that IT leaders are investing in HCIS solutions as a form of modular server infrastructure — often replacing older blade infrastructure that is in need of refresh.

But with so many interesting and established HCIS vendors whose products and strategies are already well-proven, it is becoming harder for new HCIS startups to demonstrate a sufficiently differentiated message to allow them to grow. The situation is not helped by the strong push into the market by major system vendors, who have recognized that HCIS's momentum provides a channel for them to promote their own hardware and management software.

The mainstream HCIS market is rapidly morphing into a reference architecture or certified design strategy, where pure-play HCIS vendors focus on differentiating at the software stack level (sometimes with their own hypervisor strategies) while partnering with one or more major system vendors to create a complete solution. This is driving the newer breed of HCIS vendor to look for gaps in the market and/or market shifts that will create new end-user demand that has not yet been addressed by the more established brands. All five of the vendors we describe here fall into that category; rather than go head-to-head with the better-known HCIS vendors (and their system vendor allies), they are targeting the fringes of the market, in the belief that these fringes will become mainstream themselves over the next three to five years.

8kpc

Milpitas, California and Bangalore, India (www.8kpc.com (http://www.8kpc.com/))

Analysis by Andrew Butler

Why Cool: 8kpc is one of a new breed of hyperconvergence (HCIS) vendors that is focused on adding innovation and differentiation at the hardware level, together with its investment in an HCIS software stack. 8kpc recognizes that as HCIS installations mature, the regular addition of more and more nodes creates ever-growing latency, leading to performance bottlenecks and diminishing returns from new investment. To address these user concerns, 8kpc has created its own flash-based hardware architecture that focuses on delivering a lower-latency data path, real-time analytics, and a high degree of automation when sizing and optimizing system components. The aim is to break through the scaling bottlenecks that can affect fast-growing HCIS configurations based on more commoditized hardware. The outcome is a "shared nothing" architecture that achieves very high levels of throughput, together with the ability to achieve system resilience starting from only two nodes. 8kpc has also taken a different geographic approach compared to most other HCIS vendors; the company has targeted big system integrators and service providers in India, China and Singapore for much of its early business. But as the solution is perfectly capable of supporting smaller HCIS workloads, and as the Asian markets are so price-sensitive, the company has also targeted midmarket and smaller enterprises. The company takes advantage of performance density as an economic differentiator to deliver solutions at a low cost. A solution capable of supporting over 250 virtual desktop infrastructure (VDI) users typically starts at $22K ($88/user for infrastructure, including three years of support).

Challenges: The focus on extreme performance and scaling gives 8kpc scope to address larger enterprises and service providers, but it places the onus on 8kpc to differentiate the solution versus better-known and more widely deployed rival products. An early focus on the Indian service provider market has provided 8kpc with a springboard to address other geographies and HCIS use cases. But this has left the company with limited visibility outside India (and some other Asia/Pacific countries) and the U.S.; 8kpc will need to invest in market development and channel recruitment to achieve true international awareness. The company particularly needs to accelerate midmarket channel partner recruitment. By retaining a focus on tuned and optimized hardware appliances, 8kpc is also less able to recruit major system vendors as a channel for the product, although this does not stop it from partnering with system vendors that are willing to engineer a specific solution.

Who Should Care: The 8kpc solution is well-suited to centralized deployments of HCIS that are likely to grow rapidly and strain the potential scaling limitations of HCIS products based on commodity hardware. The company is targeting enterprises and service providers that are implementing HCIS as an alternative to modular server architectures, such as blades. Any use case suited to hyperconverged systems is appropriate for 8kpc's two appliance options (including edge-computing workloads and classic workloads such as VDI). But by reducing the potential for scaling bottlenecks, I&O leaders who are implementing larger-scale workloads like DBMS should also evaluate 8kpc as a potential solution. The company is particularly focused on Microsoft SQL Server workloads, with support for Microsoft Always On in conjunction with cloning, snapshot and virtual machine (VM) failover.

Diamanti

San Jose, California (http://diamanti.com (http://diamanti.com/))

Analysis by Andrew Butler and Philip Dawson

Why Cool: Diamanti is pinning its future success on the emerging market opportunity for containers, but is focused on the creation of a

purpose-built hardware appliance that is able to support multiple container management frameworks. With a marketing philosophy aimed equally at developers and IT operations, Diamanti's proposition is that a hardware appliance designed with container environments in mind is able to deliver dramatic improvements in application deployment time, utilization, input/output (I/O) performance and consolidation density. Diamanti does not aim to compete with container management frameworks or micro OS vendors; the appliance supports Docker, Red Hat, Kubernetes, CoreOS and Apache Mesos today, and the company will support other vendors if there is sufficient demand. Diamanti already supports multiple applications (such as Azure Redis, Python and Java), particularly open-source DBMS products (such as MariaDB, MongoDB, MemSQL, MySQL and PostgreSQL); plus Kafka and Cassandra. The Diamanti appliance can support bare-metal containers and enables automated control of isolation boundaries for secure multitenant support. The automated processes that Diamanti has developed allow users to deploy new systems very quickly for easy addition of new resources, and also permit the orchestration of new containers in a matter of seconds.

Challenges: By creating an x86-optimized hardware appliance, Diamanti is taking aim at major system vendors, whose commodity x86 servers would otherwise be deployed for new container environments. This limits Diamanti's potential to utilize hardware vendors as a channel for its technology (as software-based HCIS vendors are increasingly able to do).

Diamanti's technology is only applicable to container management framework vendors certified on the Diamanti appliance. The community of supported vendors is sizable, and growing. However, end users should establish that the company can deliver its performance and agility promises for the combination of container management and orchestration tools they plan to deploy.

Diamanti only came out of stealth mode in 2Q16, and the breadth of production users, channel partners and international presence is still at a nascent stage. As with many emerging vendors, this expansion of markets both vertical and geographic will be a test of Diamanti's commercial capabilities.

Who Should Care: I&O leaders who are investing in production deployment of containers and who are willing to pay for a custom-designed hardware appliance should evaluate Diamanti as an alternative to regular hardware platforms. The Diamanti solution is also relevant to users of existing container environments who are struggling to deliver minimum required levels of utilization, storage throughput or orchestration efficiency that need proving in their use cases.

Kaleao

Cambridge, U.K. (www.kaleao.com (http://www.kaleao.com/))

Analysis by Julia Palmer

Why Cool: In an HCIS market almost exclusively populated by x86-based offerings, Kaleao's KMAX brand appliances are based on the ARM architecture, which promises lower-power consumption and higher density. The goal of creating an ARM-based infrastructure building block for web-scale-grade data centers was the driving factor behind Kaleao's aim to build a more efficient platform for large-scale hyperconverged deployments. KMAX, released in October 2016, is based on the latest 14-nanometer (nm) technology and supports ARM big.LITTLE technology to reduce energy waste during idle periods.

The KMAX product comes in server and appliance form factors. KMAX Server Edition leverages all-flash storage and energy savings, and provides a cost advantage through its use of ARM 64-bit hardware. KMAX can scale up to 12 blades with 192 servers and 1,536 cores, delivering up to 370TB of Nonvolatile Memory Express (NVMe) solid-state drive (SSD) storage with 960 gigabit per second (Gb/s) networking bandwidth, while drawing less than three kilowatts (kW) of power per chassis. Pricing for a server blade starts at under $12,000.

KMAX Appliance Edition is the KMAX Server plus a preinstalled base platform compatible with OpenStack (Nova, Cinder and Neutron), with an integrated orchestration and management suite, software-defined networking and software-defined distributed storage services. Kaleao's solution features an integrated OpenStack cloud environment and scaled-down hypervisors that dynamically define physical computing resources, and assigns them directly to virtual machines and applications. These "microvisors," as Kaleao calls them, are orchestrated global pools of networking, storage and processing resources with much lower overhead than that of typical hypervisors, and will reduce hardware latency due to their board-level convergence. KMAX Appliance Edition is targeted to hyperscalers, managed service providers and extra-large enterprises that are looking for a hyperconverged enterprise infrastructure platform with a high degree of price and performance efficiency.

Challenges: Even given its unique differentiation, Kaleao, like many other newcomers to hyperconverged market, will face some difficulties to gain traction in the market and scale the business in the next few years. Kaleao KMAX might not be able to attract mainstream enterprise users looking for x86-centric products with a standard set of hypervisor support. I&O leaders might be concerned with limited ecosystem support for ARM-based products, yet the ARM factor could be appealing today to web scalers and cloud builders. Kaleao is betting its product success on end users looking for an OpenStack enterprise infrastructure platform. However, OpenStack has not gained wide adoption and is still maturing as a platform.

Who Should Care: I&O leaders tasked with selecting and managing infrastructure for web-scale operations will find the density and power consumption of Kaleao KMAX differentiating to their data center bottom line. Cloud service providers that are standardizing on OpenStack deployments will consider Kaleao KMAX appliances to lower total cost of ownership (TCO) for both capital expenditure (capex) and opex, to disrupt regular server vendors and hyperconverged alternatives. Kaleao will appeal to the enterprise architects building a platform for next-generation workloads — like the Internet of Things (IoT), machine learning and data analytics — where high-throughput and low-latency requirements are paramount.

Skyport Systems

Mountain View, California (www.skyportsystems.net (http://www.skyportsystems.net/))

Analysis by George Weiss

Why Cool: Few hyperconverged systems position security as a central design concern. Some deal with security as an encryption issue, while others shift it to policy authorization. However, none have been capable of wrapping a layer of software around each workload that insulates it from intrusion. Skyport Systems developed its SkySecure System for I&O leaders, CIOs and business management who place high priority on trusted security of applications. The system is designed from the bottom up as a turnkey, hardened, hyperconverged system with centralized security management as a service. SkySecure is managed from the cloud, with various security and health monitoring features, such as secure boot, Trusted Platform Module, an independently connected secure I/O controller, full system software upgrades and compartmentalized workloads with context-specific policies. The SkySecure Center serves as a data warehouse for traffic metadata, application performance and operational changes to compartmentalized workloads. Skyport asserts its "hypersecure" systems can be set up and implemented in a fraction of the time IT would need to implement such security in general-purpose HCIS deployments. SkySecure System is especially valuable in data center demilitarized zones (DMZs), Active Directory, DNS or other data center control plane systems, remediating out of compliance legacy applications and remote offices/branch offices (ROBOs) with security requirements.

Challenges: Not all HCIS workloads need the high security lockdown available from Skyport Systems. Therefore, I&O leaders must make a choice to integrate such specialized systems with IT's overall clustered system workload architecture with more than one pane of glass for management. If Skyport HCIS systems are to coexist with other implementations, I&O leaders should plan a distributed implementation approach to security policy. For example, a tiered approach could use Skyport for front-end systems with its cloud-based SaaS security, while the database system back ends are configured with their own integrated security. As peer configurations, Skyport would be interoperable with other HCIS using VM image import functionality using differing security policies and add-on security software.

Who Should Care: I&O leaders and CIOs who are wrestling with the need to deliver high-level security and are attracted to the operational efficiencies of hyperconverged systems should seek demos and consultations with Skyport if these use cases are a particular challenge: 1) upgrading the security associated with legacy applications on more modern infrastructure such as hyperconvergence; 2) implementing a strong security-centric SaaS management plane; 3) managing and controlling network traffic usage and unrestrained user access as it moves across systems, and within DMZs; 4) experiencing performance impacts from monitoring agents running on the applications; and 5) facing labor-intensive redesign of applications to meet the security and compliance requirements of third parties.

Symbolic IO

Holmdel, New Jersey, USA (www.symbolicio.com (http://www.symbolicio.com/))

Analysis by Julia Palmer

Why Cool: Symbolic IO first introduced its IRIS (Intensified RAM Intelligent Server) product in October 2016 to enable superior performance by implementing computational-defined storage, which processes data directly in the memory channel through a patented computational algorithmic engine. IRIS consists of a 2U server, along with a custom basic input/output system (BIOS) modified to recognize Symbolic IO StorModules. It also features an operating system (SymCE) that drives both encoding and decoding in the memory channel, and facilitates the amplification of the underlying media from a storage perspective, potentially increasing the limits of its physical density threefold to fivefold. IRIS is focused on high-performance workload optimization by leveraging new mathematically driven compute methodologies to deliver in-memory persistent storage without application code change.

Unlike traditional compression and deduplication, SymCE processes data computationally: SymCE takes raw binary data and encodes it at CPU speeds into bit markers. In turn, these are stored in DRAM while data is deconstructed into data vectors and mapped to the bit markers. So raw data is not stored, but rather encoded by the CPU and stored into memory. Data persistency is enabled by internally developed StorModule. With potential 10:1 data amplification and up to 21 StorModules per server, IRIS can handle up to 2.688TB of raw primary memory speed storage and can also tier data if needed to internal NVMe SSDs. Data services such as snapshots, cloning and replication are done on the entire infrastructure stack (OS level). The IRIS platform is available in three flavors: IRIS Compute, IRIS Vault and IRIS Store, and is currently shipping to selected customers. Symbolic IO claims that early IRIS customers report reduction of CPU requirements by a factor of four, and memory by a factor of 20, with order of magnitude improvement of application performance enabling server consolidation for memory-intensive applications.

Challenges: Symbolic IO is a small startup vendor that is positioned to compete with the large, well-established OEM/ODM server market, and it will have to overcome the risk-averse behavior of decision makers. Some IT leaders may be concerned with the proprietary nature of the Symbolic IO stack, and will question IRIS ecosystem support. While the Symbolic IO platform might show better ROI for the variety of data center workloads, in the near future it will be focused on gaining customer traction and managing the opportunities of a niche set of customers looking for a next-generation data processing server platform to achieve specific business goals.

Who Should Care: Symbolic IO will appeal to I&O leaders and enterprise architects that are looking for the next best-in-class server platform for highly transactional workloads and latency-sensitive applications. Due to more efficient use of the resources, Symbolic IO can disrupt more established vendors by demonstrating superior TCO on both hardware capex and software opex licensing costs compared to the deployment of a traditional infrastructure stack or public cloud-based approaches for workloads like data analytics, machine learning, transactional databases or any other workloads that actively process data in-memory.

Where Are They Now?

Stratoscale

Boston, Massachusetts and Herzliya, Israel (www.stratoscale.com (http://www.stratoscale.com/))

Analysis by Andrew Butler

Profiled in "Cool Vendors in Servers and Virtualization, 2015" (https://www.gartner.com/document/code/275895?ref=grbody&refval=3688824)

Why Cool Then: Stratoscale dared to be different in 2015, when the principal HCIS market was driven by vendors that branded and sold their own hardware appliances in order to achieve market growth. Stratoscale was an early proponent of a "bring your own hardware" concept, preferring to work with system vendors who would not only certify the stack, but also enable IT leaders to create their own HCIS experience based on existing hardware. Stratoscale was one of the first HCIS vendors to build a strategy based on its own KVM-based hypervisor, rather than pursue the lower-hanging fruit of VMware optimization. The company was also an early advocate of container support and OpenStack. None of these concepts were very well known or accepted in 2015, and by placing early bets on market adoption, Stratoscale became an evangelist for a number of disruptive industry trends that are only now becoming popular.

Where They Are Now: Stratoscale continues to trade, and many of the early bets that Stratoscale made are beginning to pay off; multiple HCIS vendors now offer their own hypervisors, or pursue a "bring your own hardware" approach. And most HCIS vendors have active support strategies for OpenStack and containers. To maintain the company focus at the leading edge of the HCIS market, Stratoscale has now strongly embraced the concept of a services-driven hybrid cloud ecosystem, with a particular focus on the ability to create an on-premises region — deployable on any x86 server — that is compatible with Amazon Web Services (AWS).

Who Should Care: Stratoscale offers a proven solution for end users who want to leverage existing hardware to implement an HCIS solution. The company's products can run any workload, including workloads coming from VMware and Hyper-V environments. This is supported in the same workflow as in AWS. But the primary appeal will be for IT organizations that need to deploy an AWS-compatible region on-premises — particularly those who anticipate the potential to move workloads on- and off-premises as dynamically as possible.

Gartner Recommended Reading

"Make Your Data Center More Agile With Next-Generation HCIS" (https://www.gartner.com/document/code/325922?ref=ggrec&refval=3688824)

"How to Evaluate the Risks and Benefits of Hyperconverged Appliances Versus Alternative Procurement Options" (https://www.gartner.com/document/code/313604?ref=ggrec&refval=3688824)

"Lessons Learned by I&O Leaders About Hyperconverged Integrated System Total Cost of Ownership" (https://www.gartner.com/document/code/303676?ref=ggrec&refval=3688824)

"How to Evaluate Vendors in the Hyperconverged Space" (https://www.gartner.com/document/code/273547?ref=ggrec&refval=3688824)

"Gartner Retires the Magic Quadrant for Modular Servers" (https://www.gartner.com/document/code/325282?ref=ggrec&refval=3688824)