

GROWING NEXT-GEN IT INFRASTRUCTURES: HYPER-CONVERGED AND COMPOSABLE

MARKET LANDSCAPE REPORT

■ AUTHOR: Enrico Signoretti - GigaOm Analyst



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GIGAOM



AUTHORED BY GIGAOM ANALYST, ENRICO SIGNORETTI

INTRODUCTION

Enterprise IT infrastructures have evolved dramatically in the last few years, following ever-changing business requirements due to digital transformation and growing data needs. Agility, fast provisioning, and scalability are now prerequisites of any enterprise IT infrastructure, as are resiliency and availability. Regardless of the size of the organization, or the type of business, IT infrastructures must provide application and data access around the clock to a growing number of users, applications and devices across the world.

Even more so, with new challenges coming from IoT and edge computing, CIOs and IT managers want to keep costs under control and get similar efficiency from their on-premises installations as they do from their public cloud providers.

In the last decade, there has been an increasing demand for simpler ways to provision and manage infrastructure resources. Traditionally, enterprise IT infrastructures were designed around NAS and SAN storage on dedicated FC equipment, with network connectivity provided by separate Ethernet switches, and large scale-up compute systems. Hypervisors, private cloud, and other technologies have contributed to changing the way the compute layer was organized and lately, the data center design approach has been impacted as well.

- **Converged infrastructure(CI)** was the first attempt to simplify traditional models. Pre-configured building blocks, based on converged Ethernet, traditional shared storage and a number of x86 servers were integrated together and shipped as a whole with specific management tools aimed at simplifying provisioning and management. Procurement and provisioning are simplified but at the cost of granularity and resource utilization efficiency.
- **Hyper-convergence (HCI)** has further improved this concept and improved efficiency. With the help of software-defined solutions for storage, and later networking, relatively small bricks with onboard compute and storage can be connected together to form a large cluster usually governed by a single hypervisor and additional software tools. A highly simplified infrastructure model which provides several benefits to enterprises of all sizes.
- **Composable infrastructures** take granularity and efficiency to the next level. By building pools of resources that can be distributed and reconfigured where necessary almost instantly, it is now possible to attach the right storage resource, both in size and performance, to the compute node in need. Improving efficiency, overall system provisioning and keeping costs as low as possible in large scale infrastructures. Composability is focused on bare-metal resources, without needing specific software layers such as hypervisors.

With enterprises now trying to mimic service providers and, up to a certain extent, hyper scalers, hyper-convergence (HCI) and composability enable them to overcome the limitations imposed by traditional and converged infrastructures. The goal is to build an agile infrastructure for a large number of modern applications and workloads, including Kubernetes clusters, HPC, AI/ML, Big Data analytics and so on. HCI is more focused on traditional enterprise workloads and hybrid cloud deployments, while the latter becomes the most interesting approach for large scale-out environments hosting multiple CPU-intensive applications such as big data analytics and AI workloads. In fact, a composable infrastructure can be repurposed in minutes to provide temporary resources necessary to different teams in the same organization to run their jobs quickly.

Hyperconvergence is now a mature product category, but infrastructure composability is relatively new in the IT industry and GigaOm has identified three major categories to classify different types of composable storage infrastructures: chassis-, rack- and datacenter-scale. Their characteristics are quite distinctive and are usually targeted to users with different needs in terms of virtualization and application support as well as scalability and automation requirements. Usually, the first category, chassis-scale, is aimed at enterprise environments and has some overlaps with HCI, while the others more inclined to serve large installations typically found in service providers and web-scale end users.

REPORT TOPICS

In this report, we will analyze several aspects of hyper-converged and composable infrastructures including:

- The benefits introduced by Hyperconvergence and infrastructure composability
- Applications and workloads that can take full advantage of a composable infrastructure
- Comparisons between HCI and composable infrastructures
- The role of automation
- Enabling storage protocols
- Hardware- and software-defined approaches to hyper-convergence and composability

KEY FINDINGS

- HCI is now widely adopted by enterprises of all sizes and the game is quickly shifting from on-premises installation to hybrid cloud and edge integration.
- Composable infrastructures are quickly gaining interest because of their ability to speed up the provisioning process of bare-metal resources, which is fundamental for both a growing number of applications and workloads in many types of organizations
- Composability offers unmatched granularity and efficiency, as well as performance, enabling end users to run big data and HPC clusters on their premises for the time necessary to get single jobs done and repurpose the cluster quickly for other tasks.
- New technology, such as NVMe for example, allow shifting from traditional storage paradigms to innovative architectural designs that are more suitable to swiftly meet demanding business requirements which need Big Data Analytics and other CPU and data-intensive applications.



ANALYST ENRICO SIGNORETTI

Enrico has **25+ years of industry experience** in technical product strategy and management roles. He has advised mid-market and large enterprises across numerous industries and software companies ranging from small ISVs to large providers.

Enrico is an **internationally renowned visionary author**, blogger, and speaker on the topic of data storage. He has tracked the changes in the storage industry as a Gigaom Research Analyst, Independent Analyst and contributor to the Register.

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