HPE SYNERGY HELPS SIMPLIFY HYBRID IT

ACCELERATES APPLICATION DEPLOYMENT & PERFORMANCE

SUMMARY

IT is undergoing a significant transformation as businesses look to streamline costs and roll out a new class of cloud-based applications driven by a changing digital economy accelerated by mobility, IoT, and AI. The IT infrastructure as we know it today is not well equipped to improve on the cost structure for traditional workloads nor handle the velocity demands of a new generation of workloads where IT is a focal point for competitive differentiation. Hybrid IT, with its mix of on-premises and public as well as private cloud deployment is a logical next step in datacenter evolution. As one approach to address IT's changing demands, vendors are bringing to market solutions under a new category called composable infrastructure.

At a very high level, composable infrastructure is designed to treat hardware like software, allowing IT to manage "infrastructure as code". Infrastructure defined by software has the potential for significant efficiency benefits. Composability empowers IT to allocate the optimal set of resources—compute, storage, networking / fabric—for each application. Vendors promoting composable infrastructure solutions claim this approach will deliver a cloud-like experience and superior economics with the control and security of on-premises infrastructure.
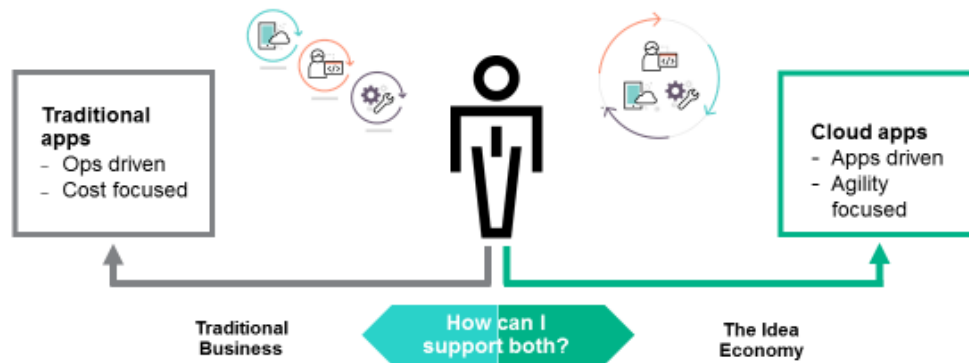
The composable infrastructure market is new, with Hewlett Packard Enterprise (HPE) emerging as the leading vendor promoting a solution. HPE's Synergy is the first platform delivering the architecture given its launch and availability in January 2017. IT organizations and service providers that could benefit from a self-service, flexible approach to application provisioning, as well as those deploying a mix of both traditional and new applications, should consider composable infrastructure. HPE has made a significant investment in composable infrastructure, software, and services that enable traditional IT and DevOps customers to transition to composable infrastructure solutions. HPE claims that hundreds of its customers are deploying HPE Synergy; this paper examines its impact on two of those customers' lines-of-business.

SUPPORT FOR TWO INFRASTRUCTURE MODELS IS UNSUSTAINABLE

Technology is a key driver in today's economy for turning ideas into new market opportunities. To keep pace with changing business needs, IT organizations face more

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pressure than ever before both to ensure the business runs efficiently and to help line-of-business leaders achieve their goals of delivering new products and services quickly.

FIGURE 1: HYBRID DELIVERY MODELS

Source: Hewlett Packard Enterprise

In the past, IT's primary function was to support traditional applications designed to help automate existing business processes and lower operating costs. IT organizations historically used a siloed approach to deploy traditional applications with a range of administrative domains, application programming interfaces (APIs), complex processes, and an endless number of workload-specific hardware platforms. Decades of siloed IT management resulted in a proliferation of costly, over-provisioned infrastructure.
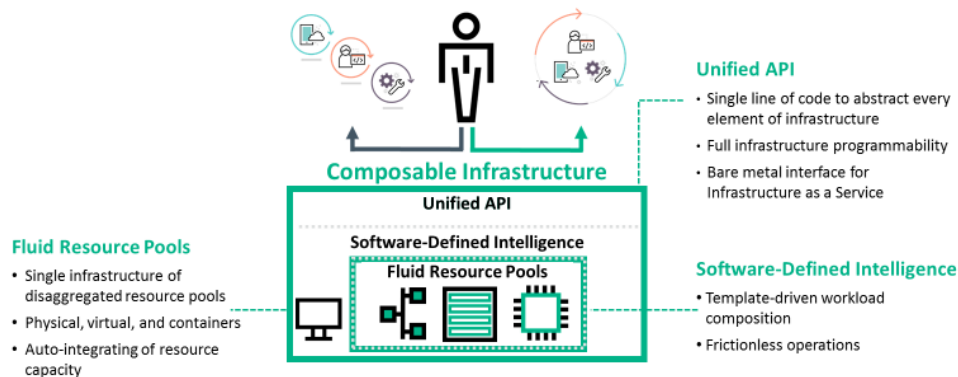
In contrast, in today's "Idea Economy" ideas are the currency, and IT has the opportunity to transform its role from a support function to one of creating tangible value. Technology fuels the creative process and turns ideas into new products and services. Success is defined by the ability to turn those ideas into reality faster than the competition. Subsequently, composable infrastructure architecture, the backbone of HPE Synergy, has the power to bring fluidity in which apps can be developed and deployed quickly with the added ability to leverage data in real-time versus the static nature of traditional datacenter infrastructures.

COMPOSABLE INFRASTRUCTURE: DESIGNED FOR THE CHANGING IT LANDSCAPE

As one approach to address this major shift in application requirements, industry-leading enterprise hardware vendors are bringing to market a new category of solutions called composable infrastructure. Moor Insights & Strategy (MI&S) defines composable infrastructure as fluid pools of resources that can be configured dynamically through

software with an application of policy tuned to optimize application performance, then provisioned through a common API to drive the most efficient use of infrastructure.

FIGURE 2: COMPOSABLE INFRASTRUCTURE ARCHITECTURAL DESIGN PRINCIPALS

Source: Hewlett Packard Enterprise

At a high level, composable infrastructure flips the hierarchical relationship between hardware and software. Composable infrastructure allows IT professionals to deploy and manage their hardware infrastructure resources using software commands (*i.e.*, infrastructure as code), instead of force-fitting applications onto static, siloed hardware. Infrastructure defined by software has the potential for enormous efficiency benefits. Composability empowers IT to allocate the right set of resources—compute, storage, networking / fabric—needed to optimize each application's performance

HPE distills the composable infrastructure architecture down to the following value proposition points in its *HPE Synergy for Dummies Guide*:

- Deploy quickly with simple flexing, scaling, and updating
- Run workloads anywhere: on physical servers, on virtual servers, or in containers
- Operate any workload upon which the business depends, without worrying about infrastructure resources or compatibility
- Ensure the infrastructure can provide the right service levels so the business can stay in business
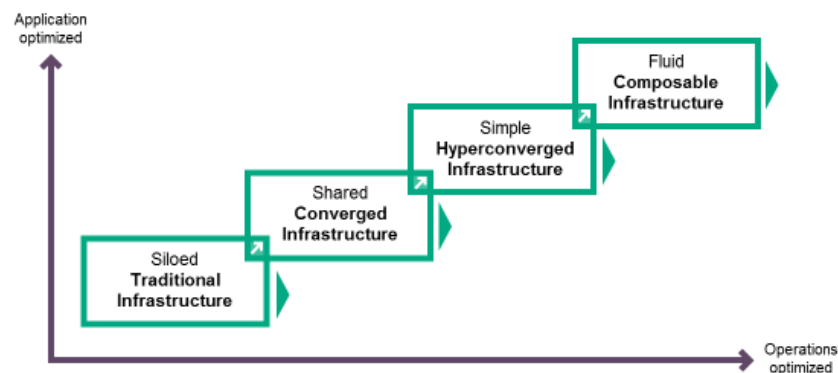
The composable infrastructure market is new with a range of vendor solutions and approaches emerging. MI&S expects enterprise IT organizations will increasingly adopt composable infrastructure over the next three to five years. Enterprise datacenters will likely prioritize applications that could benefit from a self-service, flexible approach to

application provisioning as the first to move to composable infrastructure, including a mix of both traditional and new applications in their deployment plans.

MULTIPLE PATHS TO COMPOSABLE INFRASTRUCTURE

Many IT organizations that use converged or hyperconverged platforms are good candidates for a transition to composable infrastructure. These customers are already familiar with the benefits of a single platform with server, storage, and networking / fabric resources and the efficiencies from an application-centric approach to resource deployment. Organizations that decide to take the next step to composable infrastructure from a converged or hyperconverged platform could experience additional benefits by pooling those resources and dynamically provisioning / re-provisioning their infrastructure as workload needs evolve.

FIGURE 3: DATACENTER INFRASTRUCTURE EVOLUTION

Source: Hewlett Packard Enterprise

Another potential path to composable infrastructure includes organizations that have moved to the public cloud to improve efficiencies and save money. For example, IT organizations using DevOps environments have recognized the benefits of deploying the specific resources needed to optimize application performance, and they have the tools in place to deploy and manage their applications efficiently. As the market evolves, these organizations may consider using composable infrastructure in a hybrid cloud model, potentially saving costs and gaining flexibility to deploy each application in a way that makes the most sense for the business. HPE customer EMIS Health Group, a UK healthcare services organization, is deploying HPE Synergy to take advantage of rapid IT automation within a DevOps environment.

Because composability is a new concept for most enterprise IT organizations, and each organization is starting from a different place, it will be critical for HPE to leverage its

global services organization and channel partners to provide expertise and guidance that customers can use to determine their best path to deploy HPE Synergy.

HPE SYNERGY: PURPOSE-BUILT FOR COMPOSABILITY

HPE Synergy is the first major bet from HPE in the composable infrastructure space and is one of the first platforms in the market that is purpose-built for composability. Its core customer benefits can be viewed through the lens of composable infrastructure design principles: fluid resource pools, software-defined intelligence, and a unified API.

FLUID RESOURCE POOLS

The HPE Synergy platform provides the fluid pools of resources—compute, storage, networking / fabric—required to implement a composable infrastructure environment. By allocating the right resources for each application, IT can eliminate over-provisioning capacity, significantly lower CapEx, and increase operational velocity.

A key advantage of a composable infrastructure environment is that it can support both the requests for VMs and applications by line-of-business and dev teams as well as dynamically provision for dev, test, or production environments. When the application need is no longer present, the HPE Synergy infrastructure can be unallocated and returned to its original stateless form as fluid pools of resources, awaiting the next request to provision infrastructure and applications.

SOFTWARE-DEFINED INTELLIGENCE

HPE claims that Synergy simplifies systems management and application deployment more efficiently than traditional infrastructure by using software-defined intelligence. Historically, change operations required coordination across multiple teams, multiple tools, and complex interdependent processes often taking weeks to complete. HPE Synergy leverages HPE OneView as the unified management interface for all Synergy resources, allowing an IT administrator to discover, search, inventory, configure, provision, update, and diagnose in a fraction of the time compared to traditional siloed management approaches. HPE Synergy also uses one firmware / driver set for all resources, resulting in easier systems maintenance and the potential for less downtime.

In addition, HPE Synergy leverages infrastructure templates for composability, which allows infrastructure to be deployed and updated quickly and consistently. The same hardware—servers, storage, and networking / fabric—can be configured and reconfigured via a library of templates facilitating an on-demand composability while ensuring infrastructure optimization for each application's performance needs.

UNIFIED API

HPE recognizes the importance of the DevOps ecosystem environment and that many customers use it to both lower the cost and increase the speed of application development. Subsequently, HPE Synergy and its composable infrastructure design are focused on aligning to these needs by integrating a unified, REST-based API. This open standards approach allows IT organizations to leverage management frameworks such as Microsoft Systems Center and VMware vCenter, among others. HPE Synergy's tight integration with leading management tools also facilitates IT automation of operational processes and workflow design that optimizes the use of existing tools and frameworks.

The unified API also supports open source automation and DevOps tools, such as Chef, Docker, OpenStack, Mesosphere, and Puppet to name a few. This support allows developers to use same tools as they use for the public cloud to build, test, and deploy applications. In addition, the unified API aggregates physical resources in the same way as virtual and public cloud resources, so developers can code without needing a detailed understanding of the underlying physical elements. Subsequently, HPE claims that developers will be able to provision new boot images in a matter of seconds using the HPE Synergy Image Streamer appliance.

BENEFITS OF EVOLVING BLADE & RACK ENVIRONMENTS TO HPE SYNERGY

HPE claims several powerful efficiencies that customers can take advantage of in transitioning from any blade and rack environment including the HPE BladeSystem c-Class portfolio to HPE Synergy.

- Single infrastructure that can run both traditional applications and cloud-native workloads quickly and efficiently
- Deployments use advanced software-defined intelligence and have the potential to reduce overall operational complexity
- Realization of superior cloud-like economics that can deliver a lower total cost of ownership (TCO) through improved resource utilization
- Design for the future: composable infrastructure is a modern architecture designed for delivering value now and in the future

HPE Synergy provides additional advantages around occupying the same datacenter footprint, backward compatibility around application support, and a shared management environment through HPE OneView. Released nearly three years ago and with over 600,000 licenses sold to date, HPE OneView has an impressively large installed base.

MI&S believes these elements have the potential to support a smooth migration for current HPE BladeSystem customers to an HPE Synergy implementation. HPE's technical white paper *The Benefits of Evolving Your HPE BladeSystem Environment to HPE Synergy* provides more technical details and benchmarks.

HPE SYNERGY IMPLEMENTATIONS AND CASE STUDIES

HPE has demonstrated a leadership position in deploying the composable infrastructure architecture through HPE Synergy installations around the globe. Two implementations that warrant further consideration are HudsonAlpha Institute for Biotechnology and EMIS Health Group.

THE POWER TO CHANGE LIVES THROUGH RESEARCH

HudsonAlpha Institute for Biotechnology, in Huntsville, Alabama, is where scientists, educators, and entrepreneurs translate the power of genomics into real world results. On the nonprofit side, over 200 researchers are discovering new ways to diagnose rare diseases in children. On the profit side, 34 companies employ over 600 individuals who work on initiatives that have the potential to deliver improved patient care and quality of life. Subsequently, the demands placed on IT are challenging based on not only the diverse user base but also the rapid scale and growth of genomic research.

According to both its founder and its CIO, HudsonAlpha's biggest challenge is managing the enormous amount of data produced from its research efforts and determining how to share data across the different research teams. The demands of traditional workloads and the need to iterate IT change then rapidly place the best solution into researchers' and eventually physicians' hands define the needed IT framework. HPE Synergy has delivered that support with a composable infrastructure architecture that bridges the company's resources efficiently while simplifying an otherwise elaborate and expensive traditional SAN environment. In HudsonAlpha's video testimonial, Peyton McNully, CIO says, "HPE Synergy reduces resource revision times for whole human genome analysis workloads down to seconds."

BETTER PATIENT CARE THROUGH IT EFFICIENCY

EMIS Health Group, in Leeds, UK, supplies electronic patient record systems and software used in primary care in more than half of GP practices across the United Kingdom. Over the past 30 years, the company has transformed itself into a full-service provider to the healthcare industry. Its portfolio of offerings range from EMR (electronic medical recording) solutions, electronic prescription services, HIT (healthcare IT) infrastructure, engineering, and support services.

Improving patient care and delivering innovation to patients is at the forefront of EMIS Health Group's mission. According to its IT staff, HPE Synergy has enabled the healthcare solution provider to deliver new services and functionality rapidly. From an IT infrastructure build-out standpoint, what once required human intervention is now an automated process. Subsequently, staff is now able to focus on solving problems, improving services and enhancing point of care.

Furthermore, the organization reports dramatically improved flexibility with the implementation of a DevOps approach that facilitates a rapid scale out of infrastructure and deployment of new services. This has translated into putting cutting edge functionality and relevant healthcare information in the hands of patients. David Gee, Technical Solutions Manager comments, "The segregation of dev and test environments of the past has started to disappear with the feature set that the (HPE) Synergy Frame gives us." EMIS Health Group's video testimonial helps contextualize these DevOps benefits.

CALL TO ACTION

MI&S believes the market for composable infrastructure is still new with a range of vendor solutions and approaches emerging. Enterprise datacenters will likely prioritize applications that could benefit from a self-service, flexible approach to application provisioning as the first to move to composable infrastructure, including a mix of both traditional and new applications in their deployment plans.

As IT organizations become familiar with composable infrastructure over the next few years, market demand will likely increase to include a wider range of workloads and use cases. IT organizations running next-generation applications with dynamic resource needs that are core to their business success (big data, software-defined storage, cloud-based services) should consider evaluating composable infrastructure solutions as a potential fit for their environments. In addition, traditional workloads (collaboration, data processing and analytics, supply chain, web infrastructure) could benefit from composable infrastructure via improved costs due to smarter allocation of resources and unified management.

In the near term, MI&S recommends that IT organizations begin evaluating vendor product roadmaps and consider proof-of-concept deployments for target applications. Over the next 12 to 18 months, the market is expected to dramatically ramp with additional new products, tighter integrations across vendors, and usability enhancements to make deploying and managing composable infrastructure easier for mainstream IT organizations to adopt more widely.

HPE has a broad datacenter infrastructure portfolio, with HPE Synergy emerging as the first big bet in the company's composable infrastructure strategy. HPE has world-class Pointnext services and support organizations to help enterprise IT customers make the transition to composable infrastructure, and HPE has a long-term investment strategy to bring composable capabilities to more products in its portfolio over time. In addition, HPE says that Synergy will support the use of third-party storage and networking / fabric platforms, and MI&S expects HPE will continue to develop tighter integration with third-party platforms. HPE also plans to take composability to more sophisticated levels in the future. IT organizations looking to evaluate composable infrastructure for their environments should add HPE to their short list of vendors for consideration.

IMPORTANT INFORMATION ABOUT THIS PAPER

AUTHORS
Gina Longoria, Senior Analyst at Moor Insights & Strategy
Patrick Moorhead, Founder, President, & Principal Analyst at Moor Insights & Strategy

EDITOR / DESIGN
Scott McCutcheon, Director of Research at Moor Insights & Strategy

PUBLISHER
Patrick Moorhead, Founder, President, & Principal Analyst at Moor Insights & Strategy

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