

# ORCHESTRATING COMPOSABLE INFRASTRUCTURE:

## Six Ways to Ensure Operational and Financial Harmony

Composable infrastructure brings the promise of tightly integrated compute, storage and networking fabric architected to meet workload demand with less cost, less complexity and more agility. It takes convergence and hyperconvergence of infrastructure to a new level of optimization that's less focused on physical hardware and more software-driven. It's architected to provide fluid pools of resources that can be utilized faster, driving more value from data center expense. Along with the promise of agility and efficiency of composable, however, comes some challenges. Chief among those is a company's ability to take advantage of all that composable has to offer without losing the very flexibility it's trying to achieve.

Infrastructure modernization by its very nature can be difficult—politically, financially and operationally. Not only do you have human resistance to change, but also financial and operational barriers take time to break through. Composable infrastructure is no different. Politically, new adopters of composable infrastructure may face criticism by opponents who fear taking a risk on a next-generation solution. Yet the future of the data center is trending toward next-generation applications like cloud, mobile, social and big data. The ability of the data center to scale to meet these demands necessitates a highly orchestrated and automated solution, such as composable infrastructure. Additionally, legacy data centers in their rigid architectures are ill-equipped to compete with the born-in-the-cloud IT agility inherent in today's disruptive startups. According to IDC,<sup>1</sup> companies must now adopt solutions to support a transition to infrastructures that deliver new capacity for next-generation applications while maintaining mission-critical IT workloads. The benefit of composable, says IDC, is that it aggregates compute, storage and fabric into shared pools of resources that can be allocated on demand, to orchestrate and deliver resources to meet service demands.

As companies explore the pros and cons of composable adoption, some may choose to adopt a bimodal approach in which legacy and new service delivery models coexist for different purposes—one to meet predictable workloads and another to drive growth and innovation.



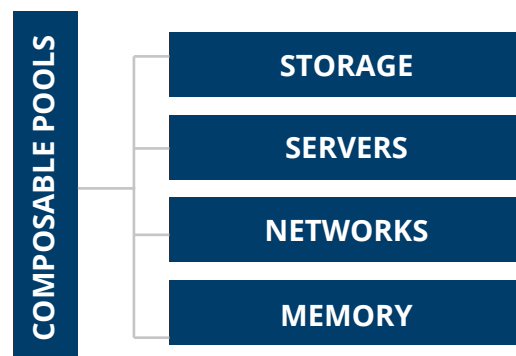
Composable infrastructure is an innovative infrastructure approach that can drive innovation, yet it's important to make the right choice based on business requirements. The right composable solution will make it possible to arrange infrastructure resources in accordance with business demands in real time. It will also mitigate financial risk and maximize operational reward. In this white paper, we will explore the six key ways to ensure investments in composable infrastructure are harmonized with business and financial needs.

## 1. KNOW WHAT YOU'RE BUYING

The difference between composable and other infrastructure solutions can be defined in one simple word: integration. Traditional infrastructures are discrete and siloed, unable to orchestrate resources between different workloads. There's a server for every workload architecture that makes it nearly impossible to mobilize resources to support new applications or increased IT service delivery requirements. Converged infrastructure adds a software layer to unite discrete physical components, while hyperconverged combines compute and storage resources into a single appliance that's workload-optimized and software-defined. Composable is the next step in the journey toward a truly software defined data center. It disaggregates hardware so it can be provisioned for any workload at any time, and reprovisioned for future needs.

Composable infrastructure is a new approach to IT service delivery in which compute, storage and network components are software-defined and centrally managed. Hardware doesn't define workload provisioning, the software does. Infrastructure is delivered as code and dynamically provisioned in real time. Resources can be allocated, provisioned and reprovisioned as workloads change. This flexibility leaves hardware available to be provisioned for whichever workload is calling for it. But most important, it can orchestrate and automate workload provisioning across physical, virtual and containerized workloads. Resources are composed in pools on demand to be delivered when and where they are needed. As a result, any investment that's made in the data center can be ensured to provide ongoing business value, because it can support any business need. In short, what you're buying into is a new form of IT service delivery.

**How does composable infrastructure orchestrate resources?** It's a harmony of provisioning, deploying and reprovisioning of resources for continuous delivery of IT resources via pools of resources.





## Composable versus traditional IT service delivery:

TRADITIONAL	COMPOSABLE
Discrete	Integrated
Static	Fluid
Manual	Automated
Hardware-defined	Software-driven

## Advantages of composable infrastructure:

- Continuous IT service delivery
- Infrastructure flexibility
- Workloads align with business demand
- IT value to the data center increases
- Automation provides simplified infrastructure management

## 2. EVALUATE THE BUSINESS AND OPERATIONAL ROI

Before you launch into a composable deployment, consider what your operational and financial goals are, i.e., what problems you are trying to solve. It's never recommended to jump onto a trending technology bandwagon simply because your competitors are doing it. Evaluate what this new infrastructure delivery approach can do for your business. If your company is trying to solve a single discrete business challenge, your business might benefit from tapping into a public cloud service to achieve this particular goal. However, if your business is looking for end-to-end infrastructure optimization to overcome legacy data center rigidity or to scale compute and storage resources for enterprise-wide initiatives like IT-as-a-Service or DevOps, then composable infrastructure can deliver the following improvements in your business and operational ROI:

**Hardware optimization.** Traditional infrastructure involves purchasing hardware that has physical boundaries. Composable infrastructure is driven by software that eliminates boundaries between hardware assets, so there's less risk of resources being trapped or stranded in one part of the business unable to support another. It allows all compute and storage resources to be used for any application workload. As a result, hardware investments are more likely to deliver long-term value to the business, because they can be provisioned for more workload scenarios.



**Application speed.** With composable infrastructure that combines compute, storage and network equipment integrated within a single appliance and managed with management software, there's no need to configure physical devices to specific applications. Automation is used to configure hardware to service whichever application demand calls for it. This fluidity of provisioning means that applications can be deployed in near real time, delivering faster IT service to the business, including physical, virtual and containerized applications.

**Improved governance.** Composable leverages a template-driven infrastructure that supports a predefined workflow that follows governance set up by a company or IT group. This oversight ensures that IT is being effectively utilized to support business goals and reduces the risks of investments that don't deliver business value.

**Infrastructure modernization.** Many enterprise companies have made significant investments in legacy hardware assets that are supporting many different parts of the organization. The nature of composable infrastructure is an approach that can provision those assets for any workload demand, ensuring that assets add business value. Also, legacy assets can support next-generation application demand and extend the ROI of these hardware investments by supporting more IT service requests in an agile process.

### 3. ANALYZE THE DOLLARS AND CENTS OF IT ADVANTAGE

The infrastructure that supports your business can make or break your competitive advantage. That's because it determines how quickly your business can respond to market changes or competitive forces. Today's lean startups can rise to market leadership by leveraging technologies like cloud, mobile and big data. Meg Whitman, CEO of Hewlett Packard Enterprise, says that "success today is defined by the ability to turn ideas into value faster than your competition."<sup>2</sup> Enterprise companies are now looking at composable infrastructure to meet this new business demand in the following ways:

**Optimized IT service delivery.** Some estimates reveal that the average server overprovisioning is between 82% and 88%.<sup>3</sup> That's a lot of server value lost to the business. With only 20% of server resources being fully utilized, the opportunity that composable infrastructure can provide to optimize provisioning across all assets becomes very attractive to both financial and operational stakeholders. Vendors like HPE claim that their product, Synergy, can reduce overprovisioning by as much as 60%, saving up to 17% in up-front CapEx and 30% of ongoing CapEx<sup>3</sup>; while Cisco claims that its composable infrastructure solutions can speed provisioning by 86%, and reduce ongoing management costs by 74%.<sup>4</sup> With these types of promises for speed and workload optimization, a business can pivot to meet changes with affordability and efficiency. This agility can save a company the cost of potential missed market opportunities and the productivity loss associated with waiting for workloads to be provisioned.



**Operational agility.** Traditional infrastructure can take as long as six weeks to stand up a new application or service.<sup>3</sup> With composable infrastructure, integration of compute, storage and networking resources along with application-specific templates can streamline and simplify this down to near-real-time levels – in some cases, minutes instead of months. By consolidating the complexity of IT service delivery down to programmable code, it's possible to eliminate weeks of time-consuming scripting.<sup>3</sup> HPE, for instance, claims its Synergy product can deploy infrastructure in three minutes, instead of 28 days using traditional methods.<sup>5</sup>

#### 4. CONSIDER HOW IT ALIGNS WITH NEAR- AND LONG-TERM BUSINESS GOALS

While composable infrastructure is growing in adoption, not all composable solutions are the same. There are some differences in the approaches by vendors of how resources are composed and components are leveraged to achieve this goal. Understanding and examining your IT objectives, then, becomes mission-critical to investing in the right solution. It's important to evaluate your current infrastructure to decide which solution will work best with the components that are already in place.

**Storage.** Your existing storage infrastructure might prove mission-critical to your composable infrastructure choice. Consider the fact there are many different types of storage, including DAS, NAS, software-defined and flash. It's important to be sure that the composable solution you're considering offers the right storage resources for your workloads. Is it the right class of storage? Does it meet your scalability requirements?

**Applications.** The ability of composable to stand up applications quickly is enticing, but be sure that the solution you choose also delivers the quality-of-service levels you're seeking for the applications you're deploying, including traditional and 3rd Platform technologies like the cloud, mobile, big data and the Internet of Things. Be sure to evaluate how well the API supports your goals for speed, security and reliability in aligning service requests to service delivery.

**Management.** The big promise of composable is efficiency—and that includes day-to-day IT management efficiencies. Be sure to choose a solution that lets you automate everything from a single task. If it doesn't, then you might be looking at a multistep provisioning approach that adds to data center complexity instead of eliminating it.

**Security.** The requirements that your business has for secure data handling can impact your composable choice. The ability for your data center to manage and control security policies should be straightforward and automated to protect data accessed across the composed infrastructure.



**Platform stability.** Be sure to choose a composable platform that supports your programming languages and widgets of choice, along with the use of containers to move applications back and forth. These controls let you manage how you deploy on-premises and cloud workloads. Additionally, it's wise to choose a composable vendor that has a long history of providing platform stability along with a commitment to ongoing innovation to support the solution, including any support that the vendor provides with the service.

### 5. BE REALISTIC ABOUT THE PROBLEMS IT SOLVES

Composable infrastructure isn't a panacea for every IT challenge, but it does provide a new way to deliver IT-as-a-Service to support lean, agile delivery that can be leveraged for the following gains:

**Value.** Composable infrastructure can reduce the risk and cost of IT overprovisioning while ensuring that the data center is adding more value—and revenue—to the business.

**Efficiency.** It can help reduce data center sprawl by reducing the amount of data center hardware that's needed to support different workflow demands, saving on CapEx.

**Agility.** It can bridge the gap between traditional and 3rd Platform applications, helping support the bimodal IT operations that most businesses are now operating within.

**Modernization.** It can overcome the limitations of legacy data centers with software defined technology that optimizes resources for competitive advantage.

Evaluate what your business is trying to achieve with this infrastructure optimization. If your business has a single, discrete operational challenge, you might not want to make a complete infrastructure overhaul to address that one requirement when a public, cloud-based service might offer a more practical solution.

### 6. DON'T LET JARGON GET IN YOUR WAY

The range of verbiage associated with composable solutions isn't making it easy to evaluate the solution. Terms like "infrastructure as code" and "programmable infrastructure" are often used to describe composable solutions, and both of these terms mean essentially the same thing. They refer to the provisioning of infrastructure through automated, software-defined configurations leveraged in the form of scripts instead of a hardware-defined approach. The key differentiator between the different composable choices comes down to the API. Specifically, are the APIs unified or not? The API includes routines, protocols and tools to dictate what the software does. A unified API can provide a single interface to compose physical and virtual resources, streamlining the process to support faster stand-up of composable infrastructure.



Compare this with tiers of APIs that might take time to integrate.

According to Forrester Research, there are only two vendors that currently offer composable products: HPE and Cisco.<sup>6</sup> The differences between the two, says Forester, has to do with the number, size and configuration of the compute nodes, along with enterprise networks and management environments.

- Cisco: 2U enclosure that contains four to 16 single-socket or dual-socket server nodes up to 24 terabytes of disk connected via fabric interconnect.<sup>6</sup>
- HPE: 10U enclosure with up to 12 two-socket servers and 120 2.5-inch disks in either two- or four-socket nodes.<sup>6</sup>

Either way, the business advantage of composable infrastructure is evident—it makes infrastructure resources available when and where they're needed, with predictability, agility, efficiency and cost control. Lines of business can be charged back for resources, so no one part of the business is assuming the cost of infrastructure to support another part. It helps the data center operate with less cost, less risk and more value while providing financial predictability and control. A Gartner report, for example, indicates that composable provides infrastructure and optimization leaders with simple, flexible resource utilization and faster application development, and can help speed next-generation application development.<sup>7</sup>

## CONCLUSION

While the promise of composable is clear, so are the business challenges – to ensure that the company invests in a solution that can consistently and reliably support all application and service delivery requests that pass through the data center in one streamlined process or workflow. Composable is helping IT address any scenario that a business could run into, including a mix of traditional and 3rd Platform applications. Application-specific templates that follow predefined workflows in adherence to previously established governance are essential. The gold standard for success is the business's ability to deliver near-immediate resources to satisfy any business goal. When this is achieved, the data center can begin to provide value back to the business—and help drive revenue for the business. Composable infrastructure is the last and final step in the journey to converged infrastructure that ends with a software-defined approach that helps the business scale to any challenge with automation and orchestration and in harmony with business needs.



## Sources

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