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WHITE PAPER

# Composable Cloud: The Logical & Indispensable Evolution of the Modern Cloud Stack

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# Composable Cloud

## The Logical and Indispensable Evolution of the Modern Cloud Stack

Although Microsoft, Amazon, and Google – the hyperscalers – are by far the biggest vendors of cloud infrastructure today, their control over the marketplace is steadily eroding as new vendors that embrace a composable approach to the cloud tech stack attract new customers.

Organizations looking for alternatives to the high prices and vendor lock-in inherent in the offerings of the hyperscalers are turning to the composable cloud model, which addresses technology at the infrastructure, platform, and application layers of the cloud stack.

Vendors that embrace the composable cloud give their customers the freedom to choose from the best tools on the market today and provide an open structure that makes it easy to add, replace, or remove technologies in the future.

To avoid overspending by paying for cloud components and services that the hyperscalers force customers to invest in whether or not they use them, organizations should look to partner with vendors that are certified by the MACH Alliance, which identifies vendors that embrace composability.

# Introduction

Developers and operators want a seamless and flexible experience at all layers of the tech stack, from infrastructure to platform to application, so that coding, deploying, and optimizing new applications are as easy as possible. IT leaders want cost efficiency, flexibility (no vendor lock-in), and scalability to create dev and hosting environments that meet developers' diverse needs and preferences and support applications that perform superbly without breaking the bank. Organizations look to cloud environments to address all these needs.

The hyperscaler cloud providers have dominated this market for years. They entice new customers by offering ease, convenience, and low introductory pricing to get organizations started on their cloud journey. But once a startup or existing company with a new initiative gets out of the blocks and is up and running in one of the hyperscaler's cloud environments, many are frustrated to find a lack of choice of components and services at their disposal, and they are surprised to find how quickly their cloud costs increase.

Fortunately, innovation's incessant march into the future has brought forth a new approach to cloud operations that gives startups and established businesses an alternative to the hyperscalers' offerings. Composable cloud lets organizations take advantage of best-in-class solutions from vendors operating at all layers of the cloud stack. It eliminates vendor lock-in most frequently associated with the hyperscalers, and it keeps cloud costs manageable, even as the organization scales its operations.

IT leaders are seeking:

- Cost efficiency
- Flexibility
- Scalability

# The evolution of today's cloud paradigm, and the revolution that will tear it asunder

The hyperscalers can't by themselves provide a cloud complete with infrastructure, tools, and services to fully enable tech companies. They have the infrastructure layer, but they need to partner with vendors who supply the developer resources and application services to have a complete offering that software companies can leverage to build their applications. Because the hyperscalers are so big, they have the market position to negotiate very favorable deals with these complementary providers in exchange for a cut of the revenue the hyperscalers extract from their customers.

This is the hyperscaler cloud paradigm as we've known it for the past several years. On the surface, it all seems very attractive to customers looking for end-to-end cloud services. What most experience, however, are skyrocketing costs for cloud resources as their usage scales. Gartner says, "Seventy-seven percent of enterprises have been 'surprised' by incidents in which costs suddenly spiked, and only 22% of infrastructure and operations (I&O) leaders are confident that their spending in the cloud is 'under control'."

Fortunately, we are now at the threshold of the new age of composable cloud, which is emerging from the natural evolution of data center and IT operations over the past decade. From on-prem infrastructure to software-defined data center to cloud-based infrastructure and services, composable cloud is the next logical step. Early forays into this new approach to cloud operations have started crumbling the current cloud paradigm. Widespread adoption will smash it completely.

Composability blends software-defined resources with interoperability to give consumers of these resources – developers, operators, and IT – flexibility and choice in the infrastructure, tools, and services they use to create, host, and scale applications. Composability fights the trend of vendor lock-in that plagues the hyerscalers' business model.

77%

of enterprises have been 'surprised' by incidents in which costs suddenly spiked

22%

of infrastructure and operations (I&O) leaders are confident that their spending in the cloud is 'under control'.

Gartner

# So just what is composable cloud, anyway?

Many people are familiar with composable infrastructure, which abstracts compute, storage, and networking resources from their physical locations so they can be managed by software through a web-based interface. Composable infrastructure makes data center resources readily available as cloud services and is the foundation for private and hybrid cloud solutions. While this may sound like infrastructure as a service, the difference is that composable infrastructure has no dependencies between infrastructure components, allowing customers infinite flexibility to assemble and reassemble components and capacity to meet their unique and changing needs.

Composable cloud expands that idea of ultimate flexibility and customizability across all levels of the cloud stack, from the infrastructure layer (IaaS) to the platform layer (PaaS) to the application layer (SaaS). Customers have free rein to choose infrastructure, tools and code as needed to build applications, get them into production, and optimize their performance.

On top of composable infrastructure sits a container registry – a marketplace of prebuilt Kubernetes containers from which customers can assemble a composable cloud and build cloud applications. The container registry contains both PaaS and SaaS offerings.

The PaaS layer includes developer tools (software development kits, runtime environments, development tools, database services, middleware, etc.) and application services (load balancing, application performance monitoring, application security, traffic management, application acceleration, etc.). The SaaS layer includes complete applications that developers and operators might use to further facilitate their work.

Together, the IaaS layer and the container registry comprise all the pieces to build a customized composable cloud that addresses each organization's unique profile of needs.

## Four tenets of composability

- Every component must be modular; there can be no monoliths.
- There are no dependencies among components.
- Every component must be atomic.
- All componenets must be individually and collectively orchestratable.

# What makes a cloud composable?

There are four tenets of composability:

### Every component must be modular; there can be no monoliths

Composable cloud requires a discrete set of microservices, and each microservice can be packaged as its own container that can be independently deployed and scaled in the runtime environment.

### Every component must be atomic

With a nod to atomicity in chemistry, atomic components in composable cloud form the basic building blocks or the smallest unit of value that can be encapsulated to deliver a discrete outcome when called.

### There are no dependencies among components

If a customer chooses to use a particular tool or service from the registry, they can use that component independent of any other component they may or may not choose to use.

### All componenets must be individually and collectively orchestratable

When a customer chooses to mobilize any number of containers from the registry, all of the containers must organically work together. If component one needs data from component two, it can find component two, call component two, and get an output from component two. Everything works together. Further, every component has to be fully autonomous and discoverable, and each must expose what it is, what it does, and what inputs it needs.

There's wider recognition of the need for composability at the application level. But, to truly achieve the benefits of composability – flexibility, scalability, cost efficiency – you can't have any monolithic aspects at any layer. There's little advantage to building a composable application if you have a monolithic cloud underneath that. Kubernetes is an open standard, meaning customers should be able to use Kubernetes containers and port them from one Kubernetes instance to another Kubernetes instance.

This is where the hyperscalers fall short: They build in dependencies across all the resources they and their partner organizations cobble together to offer customers a complete cloud solution. When an organization signs a contract with one of the hyperscalers, they are contractually obligated to pay for components and services that they may not now or ever need from vendors they may not want to work with (vendor lock-in).

There may be an initial advantage to signing on with one of the hyperscalers, but the constrictive nature and cost of these agreements with the hyperscalers frequently leave customers with regret, especially as the customers try to scale their cloud operations and find their options greatly reduced and their cloud invoices greatly increased.

When an organization signs up for cloud access with one of the hyperscalers:

They are contractually obligated to pay for components and services that they may not now or ever need from vendors they may not want to work with. This not only greatly restricts flexibility and choice, but it also becomes unnecessarily expensive, especially as the customer scales their cloud operations and finds themselves paying for components and services they don't need.

# What are the benefits of a composable cloud approach?

There are numerous advantages to working with cloud vendors that embrace composability:

**Flexibility, agility, and no vendor lock-in:** Business requirements can change quickly. Companies that are the most agile thrive when market conditions change and they are able to adapt quickly. To maintain that agility, organizations must be able to reconfigure their cloud stack on demand. Composability ensures they can add or drop components and services and work with new vendors as they need to, without incurring burdensome financial penalties.

**Cost efficiency:** When organizations adopt a composable cloud, they can be sure they are only paying for the components and services that they need at the time they are needed. This stands in stark contrast to the cloud models the hyperscalers offer, as cloud components from these vendors include interdependencies that may require the organization to use (and pay for) components from vendors they aren't interested in supporting.

**True multicloud capability:** The openness of the composable cloud approach means organizations can choose the vendors, components, and services they want to use, which could even mean using a hyperscaler for some of their cloud operations while using cloud providers committed to composability for everything else.

**Future-proofing of cloud investments:** This one could be filed under "flexibility," as well, because a composable cloud approach gives organizations the flexibility to reconfigure their cloud stack whenever they need to. This means customers are free from the risk of making rigid investments in components and services that are no longer useful as their business evolves.

# Who's buying into the composable cloud movement?

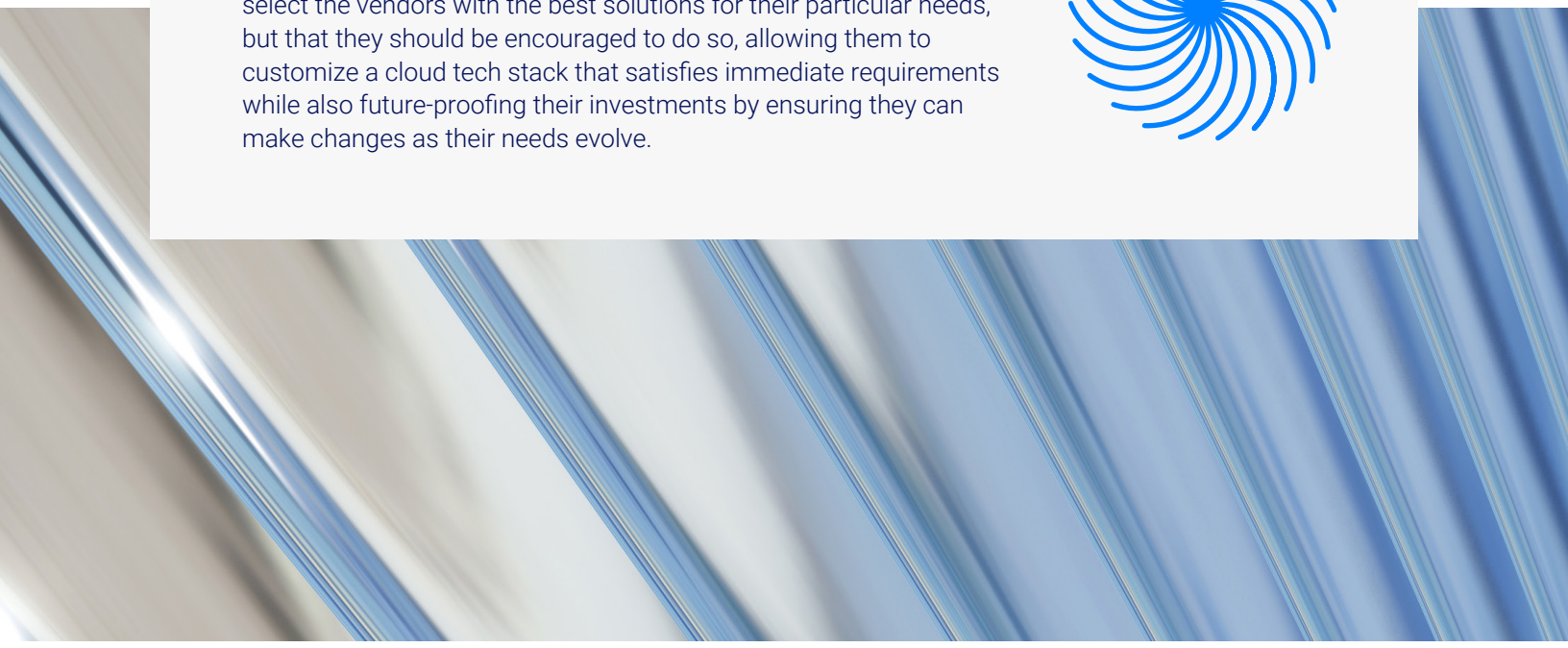
Organizations looking to venture into the realm of composable cloud should look to the MACH Alliance. This not-for-profit industry group advocates for open, best-of-breed enterprise technology ecosystems and identifies vendors committed to the composable cloud approach. MACH-certified vendors operate at all levels of the cloud stack, from IaaS to PaaS to SaaS.

The MACH Alliance's significant growth over the recent past – nearly 90 organizations achieved MACH certification in the three years leading up to June 2023 – demonstrates a growing commitment to this open approach to cloud operations.

Vendors committed to composability are breaking vendor lock-in by encouraging customers to right-size their investments, add or drop infrastructure, tools, or services as their needs change, and pay as they grow. As the MACH Alliance expands, the hyperscalers' control over the marketplace for cloud components and services will continue to erode, leveling the playing field for companies of all sizes.

## Vultr is a certified MACH Alliance vendor

We firmly believe that customers should not only be permitted to select the vendors with the best solutions for their particular needs, but that they should be encouraged to do so, allowing them to customize a cloud tech stack that satisfies immediate requirements while also future-proofing their investments by ensuring they can make changes as their needs evolve.



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# A final word

Are you ready to learn more about how composability and a composable cloud approach can benefit your cloud operations? Let's talk!

To learn more about Vultr visit vultr.com or contact sales.

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