



kahu  
BY LIGHTCREST

HYBRID CLOUDS



**Rent Your Peaks,  
Own Your Valleys –  
and 5 Technical Tips**

One of the major benefits of public cloud is the elasticity of the environment. You can spin infrastructure up and down on-demand, and you can shut everything down with the push of a button.

This is great when your business is starting out, and you are still getting a feel for baseline traffic levels and load averages. But as you scale, the cost premiums associated with these services grow in tandem and your bill can become excessively large.

The crux of the aforementioned problem is the “convenience premium”. Public cloud providers charge a premium in exchange for immediate access to IOPs, storage capacity, virtual CPU, and other services. This is the key cost driver as you scale your business up on their platform.

While pundits still debate whether or not the cloud “honeymoon” is over, one thing is clear: **hybrid cloud is the way of the future**, both from an economics and performance standpoint.

**Which begs the following two questions:**

1. How does a hybrid cloud deliver economic value?
2. Are there recommended key technical steps to optimize for its implementation?

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Lightcrest and Kahu Compute Fabric



OWN YOUR VALLEYS,  
RENT YOUR PEAKS

First, let's tackle the economic question. The primary financial driver of a hybrid cloud is that it largely eliminates the "convenience premium" charged by public clouds. This means that within a hybrid cloud model, you stop paying rent on the majority of your infrastructure.

By capitalizing a private cloud, you "own your valleys" - and drive all that cost out of your cloud bill. By leveraging a hybrid cloud, you "rent your peaks" - by bursting into public cloud services on an as-needed basis for temporary resources.

Here's an analogy: The bicycle factory.

Imagine you have a new business that manufactures bicycles, and you need a factory. When you first open your factory, you don't know how much demand you're going to have - so you rent a tiny factory. Over the years, your business grows and then it starts to boom! But to accommodate the growth, you have to increase the size of your factory, and as a result your costs increase and your margins thin.

At this point, you can continue to rent your factory forever. But if your business is continuing to grow, wouldn't it be ideal to eliminate the rent associated with your factory so you can keep more of your hard-earned profits as you sell my more bicycles? Ideally, you could own your factory and stop paying rent on it.

The beauty of the private cloud is, like the factory analogy, you can own it. Only it wouldn't take 15-30 years to pay off like a factory; it would take two or three.

This is a simplistic analogy, but it gets to the point. When you're in a public cloud, you're renting forever, even if your business is on a huge growth trajectory. This is why many companies leave public clouds at a certain scale. And infrastructure is so incredibly fast now that it is highly unlikely a hardware investment will be obsolete in 6 years as it pertains to your application.

To own your valleys, you buy a private cloud. It can be financed and deployed in various ways, and usually you can pay it off in 1-3 years.

To rent your peaks, you consume temporary resources on a utility grid, or on public clouds. There is nothing stopping you from bursting into AWS or Azure while leveraging the economics of private cloud for your steady-state workloads.

The combined implementation of “owning your valleys” and “renting your peaks” is called hybrid cloud.

To find out which cloud model is best for you, download [Cloud Economics 101: Are You Leaving Cloud Money on the Table?](#)



FIVE TECHNICAL TIPS  
TO CONSIDER BEFORE  
GOING HYBRID



**If the economic reasons for a hybrid cloud model make sense for your organization, below are five key technical tips - gleaned from hundreds of hours of implementations - to think about as you consider a transition off the public cloud.**

**1. Block storage vs. Object storage.** You will likely want to leave your object storage in public cloud unless you are approaching the several hundred TB in capacity.

**2. Benchmark your disk I/O.** You may see upwards of a 3x increase in performance on dedicated Flash/NVME in a hybrid cloud compared with public cloud block stores. Benchmarking is critical not only to sell your performance increases to the business, but also to ensure you do not overprovision your dedicated hardware. For Linux, consider fio and bonnie. For Windows, consider DiskSpd and SQLStress.

**3. Caching is king.** Are you using a CDN in front of your network application layer? What about application-layer caching like Varnish? Leveraging caching is critical to increasing the speed and quality of your user experience, but also lowering your overall cost structure for hosting static and dynamic web content.

**4. Energy savings vs. Performance.** Many hypervisor technologies do not disable the CPU governor that provides energy conservation for spiky workloads. If you have a very steady workload utilization i.e. a relational database or NoSQL store, disabling this CPU governor will improve your performance metrics by upwards of 25%, even for I/O heavy tasks that aren't necessarily CPU bound.

**5. Virtualize Everything.** Including networking assets. There is no longer a need for separate physical appliances such as load balancers and firewalls, they can all run on the hypervisor. This not only reduces complexity, but takes up less rack space and increases performance by keeping application VM's hypervisor-local to their default gateways.



LIGHTCREST AND KAHU  
COMPUTE FABRIC

**Lightcrest empowers its customers to navigate the hybrid cloud landscape and minimize their cloud overhead. With the Kahu Compute Fabric powering their environments, customers get best-of-breed cloud technology that enables a turn-key private cloud without any of the data center overhead or required staffing costs associated with a home-grown solution.**



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