

WHITEPAPER

Reducing cloud costs in an uncertain economy

How the cloud drives costs up, and how to reverse this effect



Overview

The cloud was supposed to save organizations money. At first it did, but exorbitant data egress fees, expensive architecture options, platform dependence, and vendor lock-in have almost completely undermined cloud computing's cost advantages — to the point that many enterprises today are delaying their move to the cloud, or even reverse-migrating out of the cloud. These concerns only grow more urgent during times of economic uncertainty.

But cloud computing's advantages — scalability, flexibility, global performance, lack of overhead, and so on — continue to make it the best choice for the modern, global, hybrid environment in which most business is conducted today.

Fortunately, there are ways to make the cloud a money-saving option again. In this paper, we explore the root cause of cloud costs, and how to address them.

The cost of the cloud

1. Egress fees: The inflated cost of moving data

Cloud storage is adaptable and object storage in particular is almost infinite. And cloud storage's pay-for-what-you-use structure makes it seem, at first, highly cost-effective, especially for large data sets. The amount of stored data for a typical organization continues to skyrocket. In an IDC survey, businesses said they expected their stored data to increase by 30% year over year.¹

For this reason, many organizations have turned to cloud storage in order to save on cost. Vast volumes of data can be saved at a fraction of the cost compared to maintaining internal servers with a comparable amount of accessible storage space. Best of all, uploading data is often free.

But many organizations fail to realize just how much they are paying in egress fees. Data ingress is, of course, the process of uploading data to the cloud, and it is often free or negligibly inexpensive. Data egress is the process of moving that data out of storage. And cloud providers often charge through the nose simply for the privilege of doing so.

Essentially, cloud storage providers are able to hold data hostage, driving costs up for their customers.

As an example, the cost structure for Amazon S3 is in the below table:*

Data Storage Costs (per Month per GB)		Data Transfer Costs (per Month per GB)	
First 50 TB	\$0.023	First 10 TB	\$0.09
Next 450 TB	\$0.022	Next 40 TB	\$0.085
Next 500 TB	\$0.021	Next 50 TB	\$0.023

*As of 2022²

Imagine a business stores 1,000 TB of data in S3 and reads one-fifth or 200TB of that data per month.

Using the table above, we can see that the cost for storing this business's data is \$21,550, then reading one-fifth of that data is another \$13,800, for a grand total of \$35,350 per month. Over a year, the monthly data transfer cost alone adds up to \$165,600.

2. Too many seats: Overpaying for unused seats or licenses

One study found that organizations with 1,000+ employees use 150+ SaaS applications.³ Even when the number is not quite so high, it is plain that keeping track of dozens or hundreds of cloud-based applications, and their usage, is a tall task for IT. The result is that organizations end up vastly overpaying for SaaS licenses they do not need. A study by Nexthink found that about 50% of licenses went unused in companies surveyed.⁴

3. The lack of choice: Suboptimal platform lock-in

Theoretically, the cloud offers endless flexibility. Data can be stored anywhere, applications can run anywhere, and organizations are no longer bound by infrastructure.

Often, however, cloud customers end up in the exact opposite scenario. Once they start using one service provider, they find themselves trapped by increasing discounts into using additional services from that provider. Disparate cloud services may not integrate easily, or at all, and often such integrations are restricted or costly.

4. Long-running functions: Unpredictable backend costs

Running code in the cloud is, in some cases, one of the most efficient architectural choices available to organizations today. Executing functions closest to the end users making requests helps reduce latency, ensuring a positive user experience with better engagement and conversion rates.⁵

Additionally, this architectural choice comes with far less overhead. Developers no longer need to worry about provisioning physical servers, or (depending on the model used) even VMs, for the computing power they need. Instead, the cloud provider offers this on-demand, with runtime environments built in.

However, the pricing structure can make complex, long-running functions cost-prohibitive. Compute time is paid for by the second, so every second a function runs makes it more expensive. This puts a cap on innovation and limits what developers can do with a cloud-based function-as-a-service (FaaS) model.

5. Vendor lock-in: When prices get hiked

Moving from one cloud service to another, or away from the cloud altogether, can be prohibitively difficult. It requires a long-term effort with coordination amongst multiple teams to move data and processes while ensuring business continuity. And it can be an expensive undertaking.

Cloud providers, knowing this, often take advantage by raising prices or reducing quality of service, assuming their customers will find it too difficult to leave.

Cloud customers today find themselves locked in to expensive vendors who may not even provide the best service available. And as costs escalate, the cloud starts to feel less like a cost-cutting, flexibility-enhancing blessing and more like a money-draining, growth-inhibiting curse.

The impact: The cloud is draining money and resources from businesses

The cloud should make organizations faster, more flexible, and above all more efficient. Instead, all too often it is bogging down innovation and draining financial resources. Overpaying for licenses alone was estimated to cost organizations \$536,923,812 a year on average, per Nexthink.⁴ The cumulative impact of all the challenges listed above will be different for every organization, but is certainly more than enough to make business leaders rethink their approach.

The expenses of the cloud are already changing the way decision makers act. One major software provider avoided migrating to the cloud altogether, instead building out their own infrastructure. Today this organization estimates the choice to avoid the cloud saves them as much as \$400 million over the course of three years.⁶ Another organization migrated from AWS back to their own infrastructure in a multi-week process and estimated they saved 80% on annual server costs.⁷

With these costs, why the cloud?

Even as cloud providers find more ways to extract money from their users, moving backwards, to on-premise hardware and selfhosted infrastructure, is not the answer. The cloud offers massive advantages that onpremise infrastructure cannot match.

Scalability

The cloud scales up on demand. Cloud computing can scale up to support larger workloads and greater numbers of users far more easily than on-premise infrastructure, which requires companies to purchase and set up additional physical servers, networking equipment, or software licenses.

Flexibility

The COVID-19 pandemic was a forcing function that resulted in mass adoption of a hybrid working model

(in-office plus remote). The cloud is a natural choice for this model. Employees, contractors, and other internal users can access the cloud services and data they need from anywhere with an Internet connection. This makes it easier for a business to expand into new territories, offer their services to international audiences, and let their employees work flexibly.

Performance

Relying on a centralized data center can result in:

 Tromboning, which is when traffic takes an inefficient network path. If an employee on the West Coast of the U.S. is accessing an application hosted nearby, but must send their requests through a centralized data center on the East Coast, traffic must travel 6,000 miles from and to their device, adding unnecessary seconds' worth of latency.



 Bottlenecking, which is when a large amount of traffic has to pass through a self-hosted LAN with a limited amount of bandwidth. This creates a bottleneck, slowing responses and inhibiting productivity.



A cloud platform, however, can serve users from any location, and should not carry nearly the same bandwidth concerns as a single data center or network.

Less overhead

Maintaining infrastructure requires a lot of person-hours, timeconsuming software updates, regular hardware replacement, security appliance installations, and other upgrades. But with cloud computing, this maintenance is abstracted to the cloud, freeing up IT and DevOps teams to solve more pressing challenges and provide better value to the business.

The true (and cost-effective) alternative

For the most part, forward-thinking enterprises want to stay at least partially in the cloud. Even with a hybrid cloud model, which blends onpremise infrastructure with cloud infrastructure, the challenges described above must be addressed to prevent cloud costs from spiraling out of control.

Here is the path to doing so:

Going egress-fee-free:

Despite the ubiquity of AWS and S3, highly scalable object storage with zero egress fees is, in fact, available today. With such a model, there are no surprise line items in the bill, and customers can move and read their data free of charge.



Cloudflare is the major vendor offering this pricing structure. Cloudflare R2 is a zero-egressfee object storage service. It gives businesses the ability to create any multi-cloud architectures they desire with S3-compatible object storage. Interested parties can experiment with R2 costs in contrast to S3 by using the R2 pricing calculator: https://r2-calculator.cloudflare.com/.

Reintroducing choice:

By design, Cloudflare eliminates vendor lock-in. Cloudflare is infrastructure agnostic, and unlike traditional cloud computing providers, Cloudflare does not run its services in regions — large clusters of data centers in specific areas. Instead, Cloudflare has a distributed global network with data centers in over 300 cities,** and can sit in front of any infrastructure or service. As a result, Cloudflare customers can switch easily between cloud vendors and integrate services from diverse providers, while managing visibility of the whole from a unified dashboard.

Cloudflare also offers a powerful cost-effective platform for both developers and enterprises building on the cloud or running workloads in the cloud. Applications can be built directly within the Cloudflare ecosystem (using Cloudflare Workers) and securely integrated with additional services (via Cloudflare API Gateway).

**As of August 2023.

A new model for FaaS:

The Cloudflare Workers platform has long allowed developers to spin up functions with zero cold starts on a global network. Workers Unbound is the same service, but for applications that need longer execution times. By avoiding hidden extras like API gateway or DNS request fees, Workers Unbound is much less expensive than comparable services like AWS Lambda.

	Workers Unbound	AWS Lambda
Requests (per MM requests)	\$0.15	\$0.20 - \$0.28
Duration (per MM GB-sec)	\$12.50	\$16.67 - \$22.92
Data Transfer (per egress GB)	\$0.045	\$0.09 - \$0.16
Data Transfer (per egress GB)	\$0	\$3.50 - \$4.68
DNS Queries (per MM requests)	\$0	\$0.40

Separating cost from seat numbers:

Paying by the seat causes costs to scale as companies scale. In addition, the cost of unused seats can add up in a hurry, adding a totally unnecessary and growing expense to an organization's budget.

Cloudflare does not charge a per seat fee for its developer platform. Cloudflare Pages allows unlimited seats, unlike comparable services from competitors.

Conclusion

Leaving the cloud is not the answer for your company's bottom line. But relying on a vendor-agnostic cloud platform with global presence might be.

Cloudflare is a global network built for the cloud. It is designed to make everything you connect to the Internet secure, private, fast, and reliable. In times of economic uncertainty, Cloudflare can help you lower your TCO, gain control of your spending, and remain flexible and ready to scale. Contact Cloudflare to learn how to take back control of your cloud spend: <u>https://www.cloudflare.com/take-back-control/</u>



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