# The Cost of Cloud

A Civo white paper looking into the complexity of cloud costs for businesses and alternatives beyond the hyperscalers.

CIVO

# Introduction

One of the main reasons the cloud has become so successful in the past decade or so is that it's built for developers. Developers don't want to spend their time making the infrastructure work, they want to go higher up the stack and get stuck into what they enjoy – problem-solving through code. The cloud gives them everything they need without the usual headaches.

A developer focus is what has made AWS so successful: in the early days it just cared about building features that were useful to its engineers. But at some point over the past ten years, this developer focus has been overtaken by something else entirely – the drive to deliver shareholder value.

At the first Amazon AWS re:Invent conference – which was 10 years ago this year - cloud computing was a different proposition. In 2012 enterprises certainly weren't sold on the idea of cloud and after years of running their own data centres they needed convincing. Security and perceived lack of control were massive hurdles that needed to be overcome. That first re:Invent conference was where Amazon fully embraced the developer community, and it sowed the seeds for the public cloud that we're all benefiting from today.

But a decade later, Amazon has not lived up to its promises.

The big theme in 2012 was the economy of scale. Amazon could build it cheaper, better, faster – and it would directly benefit you, the customer. However, there's a hazy point where scale starts to become market power. Where a few companies take control and prioritise profit over customers. And we've seen that with the big three hyperscalers.

In his first-ever re:Invent keynote[1] the then SVP of AWS, Andy Jassy (now CEO of Amazon) discussed the benefits of the cloud. Anyone who's been in this industry for any period of time will be well-versed on the reasons: trade CapEx for OpEx, don't pay for idle infrastructure thanks to variable capacity, increase your agility and go global in minutes. But his real focus was this: "lower variable expense than companies can do themselves."

The theory was that Amazon could use its massive size to leverage its economies of scale to lower infrastructure costs and reduce its prices to a point where nobody could do it for less. It was a massive flywheel that delivered cheaper and cheaper infrastructure as its size and momentum increased.

> ## HIGH MARGIN BUSINESSES ARE A VALID BUSINESS MODEL … IT'S JUST NOT OURS
>
> ANDY JASSY, SVP AWS AT RE:INVENT 2012.

**IN 2022, AMAZON'S OPERATING MARGIN IS OVER 30% AND ANDY JASSY IS AMAZON'S CEO.**

# Introduction

Fast forward to 2022 and Andy Jassy is the CEO of Amazon. AWS growth continues to break records: it recently reported record profits of nearly $25 billion for the full year 2021, and an operating margin of 29.8% in Q4 2021.

Economies of scale from hyperscalers haven't passed on to the customer, and they are damaging the bottom line for many businesses. When you then add to that their overly complex and opaque pricing practises, it means customers can't even work out how much they're going to be charged from month to month.

It's well known that hyperscalers are overcharging, I hear this all the time. But the same mentality that led to "nobody getting fired for buying IBM" in the 1970s applies to the hyperscalers of today. They are the perceived "safe" brand of cloud computing to the extent that pricing is often overlooked.

Don't buy into the hyperscaler narrative. There is a new breed of cloud providers like Civo who are challenging the status quo and believe things don't have to be that way..

Civo was built by developers for developers, and we listen to our community. In fact, everything we do is driven by the community, and our pricing is upfront and predictable, leading to no nasty surprises at the end of the month.

I invite you to read the research and hear what your fellow developers are saying – and if what you hear sounds familiar then why not try out Civo and see how we can help better support your business growth.

Mark Boost, CEO & Co-founder of Civo

[1] re:Invent 2012 Keynote: https://www.youtube.com/watch?v=8FJ5DBLSFe4

# Why economies of scale no longer apply

Our research highlights the degree to which hyperscalers are overpromising and underdelivering. We spoke to 1,000 cloud developers about the management of their cloud services, and the degree of costs associated with it.

We found clear disquiet amongst developers on the value offered by hyperscalers:

- Of the businesses surveyed, **82% think the big three hyperscalers should reduce their charges**.
- 81% agreed, saying that hyperscalers try to give the impression they are low cost.
- 68% of all respondents went a step further and believe the perception that cloud is cheaper is misleading.

Developers are clearly not satisfied with the status quo offered by hyperscalers. Despite the promises of leadership, choosing AWS or Azure **does not** lead to a drop in costs.



## 74%

OF BUSINESSES HAVE SEEN THEIR CLOUD USAGE, AND THEREFORE COSTS, INCREASE OVER THE PAST 12 MONTHS. THE AVERAGE INCREASE OF COST AMONGST THESE BUSINESSES OF 66%.

As businesses scale and increase their monthly cloud spend, hyperscaler price hikes only compound matters.

When we look deeper at these rising costs, it emerges that enterprise firms are particularly badly affected by this trend. On average, **enterprise respondents (1,000+ employees) say their organization is spending $49,600 a month on their cloud deployments**.

COVID-19 has created huge appetite for cloud services, prompting many businesses to rapidly launch cloud-native deployments to meet demand. Indeed, Gartner estimates that 51% of Enterprise IT Spending in Key Market Segments will shift to the cloud by 2025. Long-term, firms will need to reassess their provider to keep the costs of operating in this cloud-native world under control. Failure to do so risks costs spiralling further:

# Why economies of scale no longer apply

- Our research found over three-quarters of enterprise respondents (76%) report increased cloud costs, and the average increase in the past year is 93% (compared to 48% for SMB)

Every time we read bumper earnings from the hyperscalers, we should remember that they mask an uncomfortable truth: the big cloud providers are continuing to pursue profit at the expense of their users. Rather than pursuing fair and predictable pricing, AWS, Azure and Google Cloud have focused on ensuring consistently high profits for their shareholders.

This direction of travel has ensured that customer interests have taken a backseat; in March 2022 Google Cloud announced a raft of price increases for users, including a rise for multi-region nearline storage prices for all regions from October 2022.

# The big cloud providers are continuing to pursue profit at the expense of users

| Civo Kubernetes *g4s.kube.large* | Amazon (EKS) *4g.2xlarge* | Google GKE *e2-standard-8* | Microsoft (AKS) *d8 v5* |
|---|---|---|---|
| Compute: **$480.00** | Compute: **$588.66** | Compute: **$587.01** | Compute: **$840.96** |
| Storage: **$20.00** | Storage: **$20.00** | Storage: **$24.00** | Storage: **$38.02** |
| Control plane: **Free** | Control plane: **$73.00** | Control plane: **$71.60** | Control plane: **Free** |
| Data transfer: **Included** | Data transfer: **$460.80** | Data transfer: **$425.00** | Data transfer: **$399.60** |
| Total: **$500.00** | Total: **$1,142.46** | Total: **$1,107.61** | Total: **$1,278.58** |

\* Prices are correct as of 24th January 2022. Free tiers or offers are excluded from this comparison. Data transfer refers to egress data charges.

# Purposely opaque pricing is costing you money

Behind the trend in rising costs, the hyperscalers have created an environment of obfuscation, with deliberately complicated pricing models for users. Many businesses report billing tools are difficult to use, lacking in transparency and hindering firms' ability to properly plan technology costs.

You only have to search Google for "AWS cost management", and you'll find many different tools and organizations, such as The Duckbill Group, whose core function is to help you reduce and make sense of your cloud spend. It seems crazy it's got to this point where a whole industry is emerging solely to help you understand what your cloud bill means.

Our research showcases the opaque pricing that dominates cloud usage in today's market:

- We found that **37% of public cloud users have been stung by unexpected costs in the last 12 months**.
- Users report struggling to keep up with costs, as **34% claim to find it difficult to calculate how much their cloud provider is going to charge them each month**.

WHEN WE LOOK DEEPER AT WHERE THIS CONFUSION LIES, SEVERAL AREAS ARE
PARTICULARLY CHALLENGING FOR BUSINESSES TO MONITOR COSTS:

| 21% | 16% | 15% | 14% |
|---|---|---|---|
| DATA TRANSFER | COMPUTE | STORAGE | ON DEMAND INSTANCES |
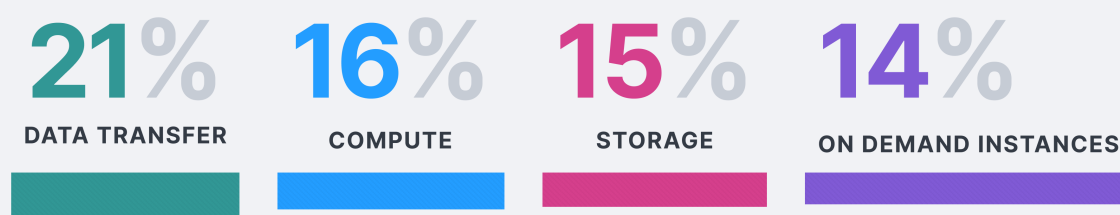
This evidence makes clear that the big cloud providers have a universal problem across their services with costs that are hard to monitor and difficult to control. Indeed, only 17% of respondents told Civo that there are no areas of their cloud usage where it is difficult to monitor costs.

These highly complex billing models can be highly damaging for businesses. In the search for sustainable growth, organisations rely on accurate cost planning. This can easily be put at risk if a business faces recurrent unexpected bills from cloud providers for simple, core functions of cloud computing like data transfer or compute.

# Purposely opaque pricing is costing you money

For a large enterprise, such costs are damaging. For a start-up or organisation running on fine margins, they have the potential to be crippling.

In 2020, this fear became a reality for start-up Milkie Way. The firm's founder was exploring new directions to develop their product and set up a new project with a cloud billing budget of $7. In the process of just a few hours testing, the start-up accidentally incurred a bill of over $71,000. The founder set out the stark reality they now faced: "as a bootstrapped company, there was no way for us to come up with $72k". Google cancelled the bill as a one-time gesture, but the incident demonstrated the potential dangers.

**IN THE PROCESS OF JUST A FEW HOURS TESTING, MILKIE WAY ACCIDENTALLY INCURRED A BILL OF OVER**

# $71,000⬇

This world of opaque and unpredictable pricing cannot continue. The industry needs to put the needs of their customers first, offering businesses a streamlined approach to infrastructure that is transparent on pricing and delivers for the organisation. Cloud providers should remember that the goal is not to create additional anxieties and worries for IT teams about spiralling costs. We should be streamlining infrastructure management and developing features for tech professionals to focus on what these businesses do best: creating the innovative solutions that are essential for success in today's tech-driven world.

# Debunking the myths about hyperscalers

One of the common misconceptions that leaves organisations tethered to hyperscalers is the perception that their business is more secure and stable with a larger public cloud provider. Despite pushback from businesses on soaring cloud costs, our research reinforces that firms are wary of leaving AWS, Azure or GCP for an alternative provider.

The top reasons cited for staying with the big three were:

- 51% believe the alternative cloud providers outside the 'Big Three' are less secure.
- 47% believe they will suffer more outages.
- 37% say it's more convenient.

There is nothing inherently insecure about cloud infrastructure. Security is a core part of the package when using cloud, with providers implementing best practise security controls and techniques.

The problem with the hyperscalers comes with their scale. Size is no guarantee of uptime for cloud providers. Amazon, Google and Microsoft have all suffered significant outages in the last year. One major outage of AWS's us-east 1 region in December 2021 led to Amazon services going offline for lots of US users, along with other applications that run on AWS infrastructure including Disney Plus.

The stats speak for themselves: Users of Amazon alone have suffered 27 outages in the last 12 months.



## Meta outage - October 2021

In 2021, Meta (as Facebook is now known) suffered an unprecedented outage. For around six hours, Meta services relied on by billions of people like Facebook, Instagram and WhatsApp were all inaccessible.

The cause? Meta revealed the origin of the issue was a configuration change to the routers that coordinate network traffic between the company's data centres. This problem escalated through Meta's systems and brought all the company's services – including internal systems like office locks – down.

Crucially, the complexity in Meta's systems, with layers of physical security (that were also brought down in the outage) made the problem far slower to fix and extended the impact on Meta staff and customers

It should not be forgotten that these outages do not exist in a vacuum. Downtime has very real consequences for businesses. On a reputational level, outages damage trust in a business, negatively impacting partners' and customers' faith in a business to reliably deliver for them. It also has an economic cost. In today's connected world, companies rely on the cloud right across their operations, from customer-facing apps through to back-end functions like office or warehouse management systems.

Any outage here will hit firms financially, as customers who are unable to access a site look elsewhere, and staff are delayed in performing vital functions for the business.

# Hyperscaler complexity contributes to insecurity

Time and again, we see businesses using hyperscalers face damaging security breaches with hyperscaler complexity a big factor. This complexity is routinely contributing to end-user misconfiguration of their cloud infrastructure, exposing weaknesses in their security.

Yet our research showed that 51% of enterprises still believe that alternative cloud providers outside the Big Three are less secure.

Let's explore a few of the recent data breaches that have impacted users of hyperscalers:

## Pfizer Google Cloud breach

**October 2020**

One of the foundational principles of modern healthcare is that patients give their data to providers on the understanding that they will keep it safe. In 2020, however, pharmaceutical giant Pfizer faced a nightmare. Researchers revealed that Pfizer had exposed the personal records of hundreds of prescription drug takers for over two months. The information (recorded in transcripts between users and the firm's interactive voice response software) included personal details like full names and home and email addresses, along with partial details on an individual's health status.

The cause of the breach? A misconfiguration in a Google Cloud Storage bucket had left the data exposed to potentially be accessed by bad actors.

The rise of eCommerce, particularly during the pandemic, has driven a huge acceleration in firms rolling out digital shopping experiences for customers. Many of them rely on cloud infrastructure provided by hyperscalers. This new world poses significant security challenges. In 2021, it was revealed that Turkish beauty products firm Cosmolog Kozmetik had exposed data on 567,000 unique users through a misconfigured Amazon S3 bucket. The 20GB file included a raft of personal information, ranging from customer full names to physical addresses.

## aws Cosmolog Kozmetik AWS breach

**June 2021**

[1] https://www.infosecurity-magazine.com/news/pfizer-exposes-data-hundreds-drug

[2] https://www.infosecurity-magazine.com/news/aws-misconfiguration-exposes

# Hyperscaler complexity contributes to insecurity

## Microsft Azure 'ChoasDB' vulnerability

**August 2021**

In 2021, Microsoft Azure faced "the worst cloud vulnerability you can imagine". Researchers discovered a flaw in Microsoft Azure's Cosmos DB database. Dubbed the 'ChaosDB' vulnerability, researchers identified that they were able to access keys that were intended to control access to databases used by thousands of companies on Azure. In effect, this meant a hostile actor could have the ability to view, edit and even delete a database. After being warned by the research team, Microsoft fixed the problem.

Fundamentally, the lesson here is that bigger is rarely better when it comes to choosing a cloud provider. The additional complexity involved in securing public cloud endpoints using the hyperscalers is an ongoing security risk for businesses. We see the cost of this time and again with the recurrent data breaches caused by simple misconfigurations of services like Amazon S3 or Microsoft's Azure Container Instances.

Hyperscalers have lots of unnecessary complexity and more moving parts in their offerings, increasing the chance of issues or bugs for users. In addition, the footprint of hyperscalers across an unwieldy number of products and regions creates a far greater attack surface for bad actors to exploit.

Dashboard and tooling complexity is also a persistent concern when using hyperscaler services. Users often become bogged down coordinating the complex array of services offered, leading to easily solved security vulnerabilities or misconfigurations lingering on unaddressed.

[3] https://www.reuters.com/technology/exclusive-microsoft-warns-thousands-cloud-customers-exposed-databases-emails-2021-08-26

# Conclusion

So where now? What can be done to build a better cloud-native world? The perceived safety of firms investing in hyperscaler services cannot become a justification to excuse them when they underdeliver.

Our research has identified that the myths around hyperscalers remain widespread. In particular, there remains a lingering misconception on security, with 51% of businesses staying with the "Big Three" because they believed alternative providers to the hyperscalers are less secure. For 37% it came down to a matter of convenience.

Yet our research revealed a growing undercurrent of dissatisfaction with the hyperscalers. Users report spiralling costs, lack of transparency on billing, and general disquiet about how they hyperscalers operate. Indeed, of the businesses surveyed, 82% think the big three hyperscalers should reduce their charges. If this trend is allowed to continue, customers will vote with their feet and start to look elsewhere.

There is a better way. Emerging cloud providers are redefining what is possible in today's market. Civo is one such provider. We are committed to putting transparency back at the heart of cloud computing, giving users a streamlined experience that cuts through the complexity and delivers reliable, super-fast cluster launch times – all for a fair price.

At our core, we are built by developers, for developers.

We believe developers and the businesses they work for are being underserved by today's status quo in the cloud market, left worrying about managing the complexity and costs of IT infrastructure. By addressing these concerns, developers can be freed up to focus on innovating and crafting the cutting-edge solutions businesses are looking for in today's tech-driven world.

Civo is ready to make this new world a reality. We hope you can join us!

Mark Boost, CEO & Co-founder of Civo

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## The Cloud native service provider

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