# Cloud Pricing Comparison: AWS vs. Azure vs. Google Cloud Platform in 2024

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- Laurent Gil
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If you're considering moving to the public cloud or optimizing the choice for your next project, picking between **AWS**, **Azure**, **Google Cloud Platform**, and **Oracle** can be a daunting task.


**Free resources**

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They all offer flexible **compute**, **storage**, and **networking** combined with everything engineers love about the cloud: self-service, instant provisioning, and autoscaling.

But each provider differs in key areas that may have a massive impact on your cloud bill.

Selecting one vendor over another comes down to knowing what your teams, applications, and workloads need. You need to fully understand your requirements before exploring the cloud landscape.

This cloud pricing comparison covers storage and compute pricing across top three cloud providers AWS, Azure, and Google Cloud, as well as Oracle to show you the nuanced differences between these cloud providers.

# Cloud landscape today: What are the unique strengths of AWS, Azure, and Google Cloud Platform?

## AWS

Companies choose to build their applications on AWS because of its **breadth and depth of services**. The rich array of tools, including databases, analytics, management, IoT, security, and enterprise applications, makes AWS the right solution for many teams. No wonder AWS has the most significant slice of the cloud market.

## Azure

Azure has slightly surpassed AWS in the percentage of enterprises using it (80% Azure vs. 77% AWS).[1]

Azure also offers various **services for enterprises**, and Microsoft's longstanding relationship with this segment makes it an easy choice for some customers. Azure, Office 365, and Microsoft Teams enable organizations to provide employees with enterprise software while also leveraging cloud computing resources.

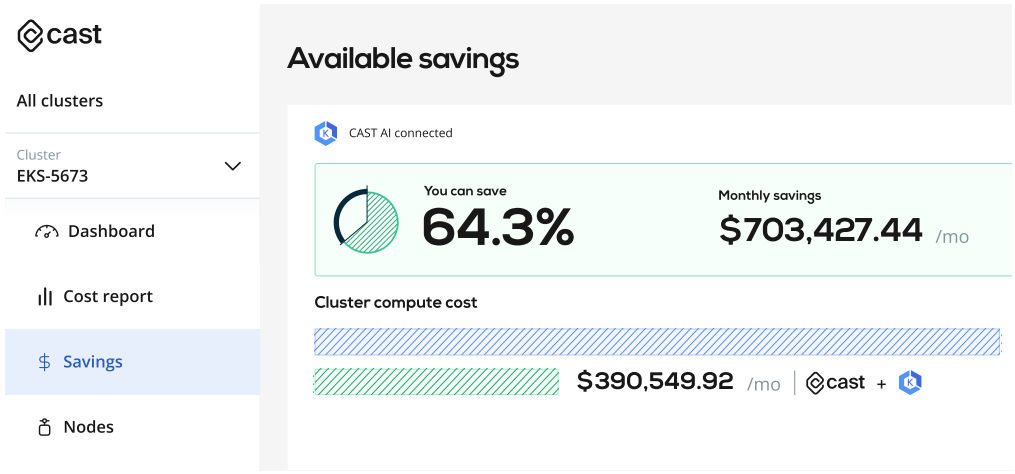
## Google Cloud Platform

Azure and AWS have strong machine learning capabilities. But Google Cloud Platform stands out thanks to its almost limitless internal research and expertise – the magic that has been powering the search engine giant throughout the years.

What makes GCP different is its role in developing various **open source technologies**. We're talking especially about containers and Google's central role in building Kubernetes for orchestration and Istio service mesh, today practically industry-standard technologies.

Google's culture of innovation lends itself really well to startups and companies that prioritize such approaches and technologies.

Watch a demo




# Billing in AWS vs. Azure vs. Google Cloud Platform

In addition to per-minute billing, AWS, Azure, and Google Cloud support per-second billing for various services. AWS first introduced per-second billing in 2017 for EC2 Linux-based instances and EBS volumes – but today, it applies to many other services.

Per-second billing works with a minimum 60-second limit in AWS. Azure allows per-second charges on its cloud platform, but this billing model isn't available for all instances – mostly container-based ones.

Google Cloud followed AWS in the introduction of per-second billing and now offers it for more than just instances based on Linux. This form of billing applies to all VM-based instances.

# Cloud storage pricing comparison

How do these major cloud providers differ in terms of storage pricing?

Here's a comparison of prices in similar regions: AWS US East (Northern Virginia), Azure East US, and Northern Virginia (us-east4) in Google Cloud Platform.

| Cloud provider | Storage (GB/Month) |
|---|---|
| **Amazon S3** | $0.023 |
| **Azure** | $0.021 |
| **Google Cloud Platform** | $0.023 |
| **Oracle Object Storage – Standard** | $0.0255 |

It's clear that these cloud service providers compete closely with one another and have set similar price ranges for storage services, with Azure standing out as the most cost-effective alternative. However, be sure to check out other cost dimensions, **such as data transfer or operations charges** before picking the storage service.

**Also, pay attention to the provider's approach to pricing changes.**

> Google Cloud Platform recently introduced significant price increases **across various core services around storage**. Price hikes may affect other services and cloud providers

considering the current challenges like inflation rates running high around the world and supply chain issues.

# Compute pricing comparison

Compute often ends up racking up a cloud bill, but it also presents the greatest opportunity for cost optimization. That's why it's an essential element in every cloud pricing comparison.

We prepared this case study to show the incredible impact optimizing compute costs can have on your bottom line.

## Comparing cloud pricing – our example setup

To understand the pricing differences better, we're going to compare virtual machines within similar regions and with the same operating system.

The services analyzed are:

- AWS – Amazon Elastic Compute Cloud (EC2)
- Azure – Virtual Machines
- Google Cloud Platform – Compute Engine
- Oracle – Virtual Machines

Our example setup:

- Region: AWS US East (Northern Virginia), Azure East US, and Northern Virginia (us-east4) in Google Cloud Platform.
- Operating System: Linux.
- vCPUs: 4.

Types of instances/VMs we will analyze:

- General purpose
- Compute optimized

We picked instances with four vCPUs and similar RAM (the only exception is the compute optimized machine from Google Cloud Platform).

Here are the instances/VMs we selected for our cloud pricing comparison:

| Cloud provider | Instance type | vCPU | RAM (GB) |
|---|---|---|---|
| **AWS** general purpose | t4g.xlarge | 4 | 16 |
| **AWS** compute optimized | c6a.xlarge | 4 | 8 |
| **Azure** general purpose | B4ms | 4 | 16 |
| **Azure** compute optimized | F4s v2 | 4 | 8 |
| **Google Cloud Platform** general purpose | e2-standard-4 | 4 | 16 |
| **Google Cloud Platform** compute optimized | c2-standard-4 | 4 | 16 |
| **Oracle** standard | VM.Standard3.Flex | 4 | 16 |
| **Oracle** optimized | VM.Optimized3.Flex | 4 | 8 |

# AWS vs. Azure vs. Google Cloud Platform: Comparing On-Demand pricing

Here's the hourly On-Demand pricing of each of these cloud services across AWS, Azure, and Google Cloud Platform.

## Cloud pricing based on On-Demand rates

### General purpose

| Cloud provider | Instance type | Price |
|---|---|---|
| **AWS** | t4g.xlarge | $0.1344 |
| **Azure** | B4ms | $0.166 |
| **Google Cloud Platform** | e2-standard-4 | $0.150924 |
| **Oracle** | VM.Standard3.Flex | $0.104 |

### Compute optimized

| Cloud provider | Instance type | Price |
|---|---|---|
| **AWS** | c6a.xlarge | $0.153 |
| **Azure** | F4s v2 | $0.1690 |
| **Google Cloud Platform** | c2-standard-4 | $0.2351 |
| **Oracle** | VM.Optimized3.Flex | $0.120 |

**Takeaways:**

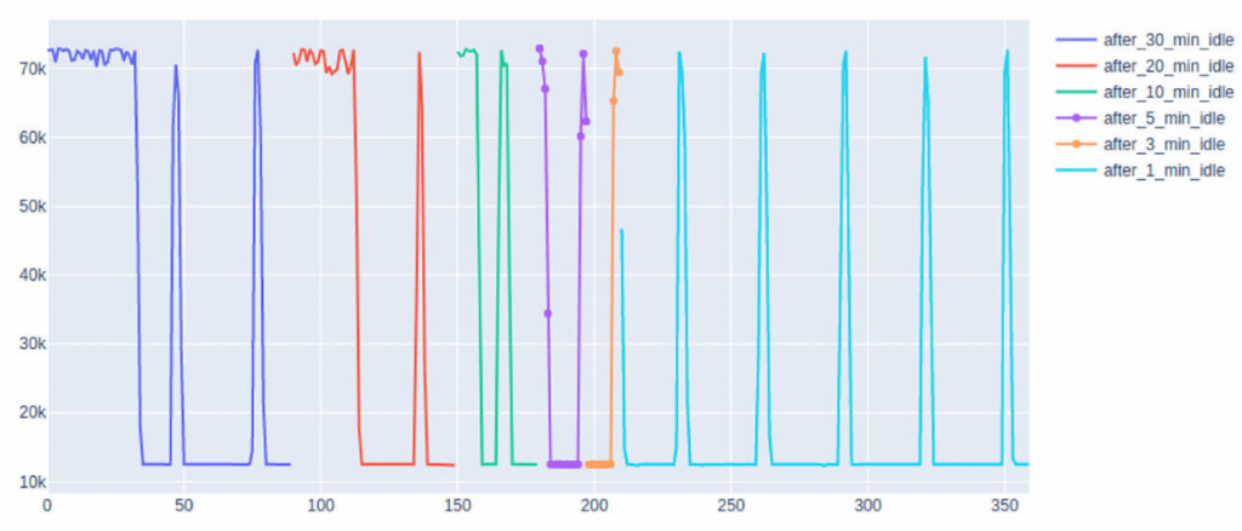
- While **Azure** is the most expensive choice for general purpose instances, it's one of the most cost-effective alternatives to compute optimized instances.
- **Google Cloud Platform** offers the highest price for compute optimized instances, but this machine has double the RAM of alternatives from AWS, Azure, and Oracle.

## A note about chips and processors

Providers roll out virtual machines with different hardware and performance characteristics. As a result, you might end up with an instance type that provides strong (and expensive!) performance your teams don't actually need.

**Benchmarking** is one way to see what you're really paying for: you can run the same workload on each machine and check its performance characteristics.

This approach might help you discover something interesting, just like we did. The chart below shows CPU operation in AWS (t2.2xlarge with eight virtual cores) at varying times after several idle periods. Would you expect such unpredictable CPU behavior within a single cloud provider?




Source: CAST AI

The 2022 Cloud Report from CockroachLabs used this method to evaluate AWS, Azure, and Google Cloud machines.[2] One of their conclusions was that Google performs better than AWS and Azure. **GCP instances occupied 6 out of 10 spots in the top 10 instances in price-for-performance**.

# AWS vs. Azure vs. Google Cloud: Comparing discounted pricing with a 1-year upfront commitment

All three providers offer price discounts if you commit to using them for at least one year. This pricing model is called Reserved Instances in AWS, Reserved Savings in Azure, and Committed use discounts in Google Cloud.

The following tables compare the discounted pricing among AWS, Azure, and Google Cloud cloud services with a one-year commitment period with an all upfront payment.

## Cloud pricing with a 1-year commitment

### General purpose

| Cloud provider | Instance type | Price | Discount |
|---|---|---|---|
| **AWS** | t4g.xlarge | $0.084 | 41% |
| **Azure** | B4ms | $0.1118 | 32% |
| **Google Cloud Platform** | e2-standard-4 | $0.095092 | 37% |
| **Oracle** | VM.Standard3.Flex | $0.1038 | 1% |

### Compute optimized

| Cloud provider | Instance type | Price | Discount |
|---|---|---|---|
| **AWS** | c6a.xlarge | $0.1010 | 38% |
| **Azure** | F4s v2 | $0.1143 | 32% |
| **Google Cloud Platform** | c2-standard-4 | $0.14072 | 41% |
| **Oracle** | VM.Optimized3.Flex | $0.1198 | 1% |

**Takeaways:**

- General-purpose instances with a 1-year commitment receive quite similar discount rate in **AWS** and **Azure**. Still, AWS offers a cheaper alternative.
- In both general purpose and compute optimized instances, **Google Cloud Platform** offers the biggest discounts – still, it's not the cheapest option. Note: the compute optimized GCP instance we picked has 16 GB RAM, not 8 GB like the other instances.

Take a look here if you're unsure how Reserved Instances work and whether they really bring discounts: Do AWS Reserved Instances and Savings Plans really reduce costs?

## Here's how CPU bursting can drive your costs down

All cloud providers in question offer burstable performance instances. These instances offer you a baseline level of CPU performance with the option to burst to a higher level whenever your workload requires that.

> **Burstable performance** instances are suitable for low-latency interactive applications, microservices, small and medium databases, or product prototypes.

Our research into AWS burstable instances showed that if you load your instance for **4 hours or more per day** on average, it's better pick a non-burstable one for cost-effectiveness. However, if you run an e-commerce business that may receive a large stream of visitors once in a while, a burstable instance is often a good match.

## AWS vs. Azure vs. Google Cloud: Comparing Spot Instances/Preemptible VMs

Another way to snatch some discounts and reduce your cloud bill is to take advantage of capacity that's currently not being used by anyone else. Cloud providers sell excess capacity at incredible discounts. AWS Spot instances offer up to 90% off the On-Demand rates, Preemptible VMs in Google can be even 80% cheaper than regular ones.

Here's a quick overview of the potential savings you can get for these instances in the US East (Northern Virginia) region:

### Cloud pricing with Spot Instances/Preemptible VMs

#### General purpose

| Cloud provider | Instance type | Price | Discount |
|---|---|---|---|
| **AWS** | t4g.xlarge | $0.0436 | ~68% |
| **Azure** | A4 v2* | $0.0638 | ~67% |
| **Google Cloud Platform** | e2-standard-4 | $0.045272 | ~70% |
| **Oracle** | VM.Standard3.Flex | $0.052 | 50% |

*Note that we changed the machine type to a similar one with 4 vCPU and 8 GB RAM. Why? Because Azure's machines in Bs-series aren't available as spot instances!

**Compute optimized**

| Cloud provider | Instance type | Price | Discount |
|---|---|---|---|
| **AWS** | c6a.xlarge | $0.0768 | 50% |
| **Azure** | F4s v2 | $0.0295 | ~82% |
| **Google Cloud Platform** | c2-standard-4 | $0.054 | ~77% |
| **Oracle** | VM.Optimized3.Flex | $0.06 | 50% |

**Takeaways:**

- **AWS** offers a great price for general-purpose machines even though the discount isn't the highest.
- **Azure** offers the greatest discounts for both compute optimized instances. The pricing of the compute optimized F4s v2 is very attractive.
- **Oracle** offers Preemptible VMs at a flat 50% discount.

To take advantage of spot instances, you need to ensure that your application can handle interruptions. How? Here's a step by step guide: Spot Instances: How to reduce AWS, Azure, and GCP costs by 90%

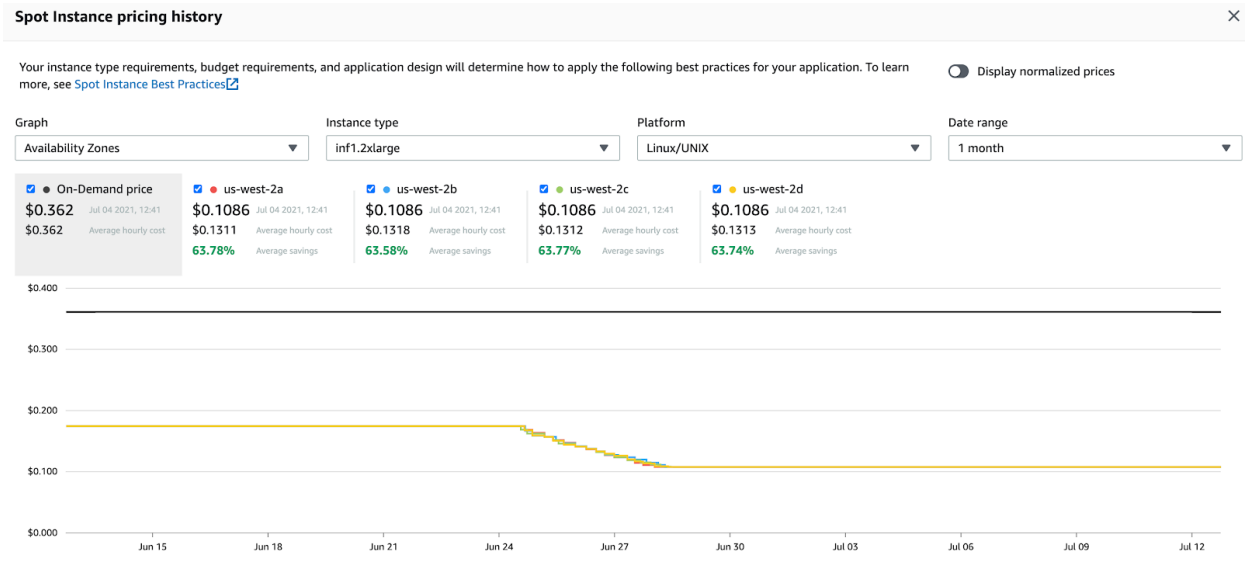
# Optimizing cloud costs is a real-time activity

Spot instance prices may be different from one minute to the next. So we once decided to use our own platform to analyze our setup. Cloud tools can be incredibly helpful in discovering potential cost savings that don't make you compromize on performance.

We looked for the most cost-effective spot instance alternatives for a machine with 8 CPUs and 16 GB.

> CAST AI suggested that we run our workload on an instance called INF1. But this powerful GPU instance would usually cost a lot of money. So, why did CAST AI pick it?

We checked the pricing and got this:




As it turned out, at that time, INF1 just happened to be cheaper than the usual general purpose instances we used. If we just stuck to our standard practices, we would have never guessed to look in this category

and missed out on this incredible gem.

This is not the kind of knowledge cloud providers share with you.

## That’s why you need automation to optimize cloud costs

We hope this **cloud pricing comparison** helped you understand the differences between major cloud services out there.

Even if you outsource the management of your cloud expenses to **DevOps** or **FinOps** specialists, you’re probably spending twice as much as you should. It’s high time you took control of your cloud bill with an automated solution.

**CAST AI is a great place to start your path towards cost-cutting if your teams work with Kubernetes.** The solution automatically creates and implements tactics for guaranteed savings without any manual and repetitive work for your engineers.

You can start with free Kubernetes cost monitoring, run a cluster savings report and see the instance type and resource amount CAST AI would automatically implement if it managed your cluster.

**CAST AI clients save an average of 63%**
**on their Kubernetes bills**

Find out how much you can save on your cloud bill.

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Peter

2022-05-06 6:27 AM

Google is providing at least 60% discount for their spot instances, you are saying it's 24%/30%. Something seems to be really off here, you should double check that.
Just look for Spot VM and pricing, it's easy to find.

Cheers

Reply

Allen CAST AI

2022-05-11 11:30 AM

Reply to Peter

Thanks for pointing it out Peter, we fixed it!

Reply

Hemanth

2022-05-06 9:05 AM

Can you compare the Oracle Cloud too? Their pricing is aggressive compared to other players…

Reply

Allen CAST AI

2022-05-11 11:31 AM

Reply to Hemanth

We added Oracle Cloud to the comparison. What did you mean by aggressive in this context though?

Reply

Joe Hahn

2022-05-06 7:41 PM

Oracle cloud is concise, complete, and quite cost effective. Please also include OCI when comparing clouds

Reply

Allen CAST AI

2022-05-11 11:31 AM

Reply to Joe Hahn

Sure thing Joe, we have since added Oracle Cloud to the comparison.

Reply

Himanshu

2022-05-07 4:51 AM

Thanks for a useful comparison. I think you missed out one critical factor though, that of disaster recovery set-up cost. The DRS is a seldom, if ever, used functionality, but essential for most enterprises, particularly the regulated ones / in finance. One has to keep the DR ready with the same specs as the main, even if they would use hopefully never. And the cost with firewall and protections, etc. being practically fixed irrespective of DR being actioned could really hike the actual cloud cost drastically. I see none of the providers give a economically sensible pricing for the same.

Any thoughts?

Last edited 1 year ago by Himanshu

Reply

Allen CAST AI

2022-05-11 11:36 AM

Reply to Himanshu

We had an option of very cost-efficient DR for Kubernetes that's in active-active mode and capable of switching to another region or even cloud provider faster than anyone notices there's trouble.
Not as many people were interested in such a solution, but if there's a large scale application you have in mind, I'm sure someone in our team would love to talk it over with you and possibly suggest a solution.
You can book a call here: https://cast.ai/book-a-demo/
P.S. You have to be on Kubernetes for the mentioned above to work.

Reply

Judah

2022-05-09 11:56 AM

The hourly price I see for F4s v2 on the Azure website is $0.1690. It appears that your price above, $0.0846, is from the F2s v2 instance.

source: https://azure.microsoft.com/en-us/pricing/details/virtual-machines/windows/#pricing

Reply

Allen CAST AI

2022-05-11 11:36 AM

Reply to Judah

Well spotted, thank you! We have fixed the data accordingly.

Reply

CloudStakes Technology

2022-05-13 8:18 AM

Great and awesome post.It is very helpful.

Reply

Amrit

2022-06-25 11:14 PM

Please add linode also

Reply

Anonymous

2022-08-18 10:59 AM

thanks for info

Reply

Jigar

2022-11-17 6:46 PM

Pricing alone is not a good indicator. We should compare additional instruments for cost optimization like Reservations, Compute Savings plans etc.. AWS seems to have most instruments followed up Azure. Does GCP has compute savings plan? Also, important to note further in is some of the RIs in AWS could be sold in marketplace. What does Azure and GCP offer?

Reply

Vito Clover

2022-11-23 6:59 AM

Reply to Jigar

GCP has committed use discounts (CUD) and sustained use discounts (SUD)

Reply

Angel Garcia

2022-11-20 9:23 PM

Podrian por favor agregar a Huawei Cloud a la comparación, esta muy competitivo frente a las demas.

Reply

Vito Clover

2022-11-24 6:27 AM

Reply to Angel Garcia

Thanks for your input. Will add it to our list.

Reply