



# Cloud Economics

Oracle Cloud Infrastructure provides consistently lower prices

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## Purpose

Oracle Cloud Infrastructure (OCI) is built for enterprises seeking higher performance, lower costs, and production support for their mission-critical workloads. OCI allows customers to save consistently on compute, storage, and networking compared with AWS, Azure, and Google Cloud.

This document will review and compare pricing across compute, networking, storage, and container infrastructure.

This document is a companion to the [Cloud Economics page](#) on Oracle.com. It contains the same information.

## Customer-friendly pricing

*Oracle Cloud Infrastructure (OCI) pricing is designed to be simple, easy, and affordable.*

### Lower-priced infrastructure

OCI infrastructure—compute, storage, and networking—delivers the same or better performance at a consistently lower price than other cloud providers. OCI offers a modern cloud experience unencumbered by the legacy design choices other cloud providers have made; we redesigned our hardware on top of bare metal servers and use off-box virtualization for the control plane. Choose to pay less with OCI.

[Learn more about OCI Infrastructure](#)

### A data-friendly network

Companies like yours send vast quantities of data across the globe to customers, partners, branch offices, recovery sites, and other cloud providers. Instead of holding your data hostage with exorbitant egress fees, OCI offers 10 TB of free data egress every month and up to 10X lower network charges than other providers. Move your data wherever you want.

[Learn more about OCI Networking](#)

### Consistently low global pricing

OCI provides a consistent pricing experience in every region worldwide, including government regions. Where other providers have both higher and different prices in almost every region outside the US, OCI customers enjoy the same services, performance, and prices everywhere. Enable your global strategy while staying within budget.

[Learn more about pricing](#)

### Enterprise support included

OCI was purpose-built for mission-critical applications. The base fees for OCI services include enterprise-level support for those services. There is no extra charge for technical support for production workloads using OCI. This is in stark contrast with other cloud providers who can charge you 3% to 10% of the prior month's (or year's) bill, sometimes with a minimum fee, whether or not you ever contact support. Don't pay extra for enterprise support.

[Learn more about enterprise pricing](#)

### Reduce your tech support bill

With Oracle Support Rewards, the more you use Oracle Cloud Infrastructure, the more you save. Customers can accrue US\$0.25 to US\$0.33 in rewards for every US\$1 spent on OCI. Those rewards can be used to pay your on-premises tech software license support bill, even down to zero.<sup>1</sup>

[Learn more about Oracle Support Rewards](#)

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<sup>1</sup> Paying down the technology support bill is subject to regional tax regulations. Taxes can't be paid with Support Rewards. Only the pretax invoice amount can be paid with Support Rewards.

### **Bring your own license**

Keep your existing licenses for on-premises software at your negotiated rate when moving to supported OCI services or PaaS offerings. Use the Cost Estimator to model your savings.

[Learn more about Bring Your Own License](#)

### **Get help migrating**

Oracle Cloud Lift Services provide guidance from cloud engineers on planning, architecting, prototyping, and managing cloud migrations. Clients can move critical workloads in weeks, or even days, instead of months by leveraging these included services for customer tenancies.<sup>2</sup>

[Learn more about Cloud Lift Services](#)

### **Choose the compute you need**

Unlike some other providers, OCI Compute allows you to scale the size of a virtual machine by a single CPU core and 1 GB/core on AMD, Arm-based, and Intel processors, so you avoid overpaying for unneeded capacity. Other providers can require you to double your compute size even when you need just a little more capacity.

[Learn more about OCI Compute](#)

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<sup>2</sup> Cloud Lift Services are available in many regions. Contact your account team for details and availability.

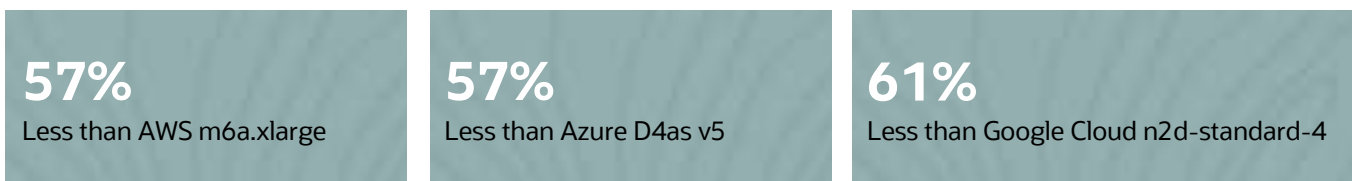
# Compute

*The foundation of cloud services*

Compute is at the heart of all cloud services and is the most well-known offering, whether virtual machines, containers, or serverless functions. OCI Compute is designed from the ground up to capitalize on bare metal performance and off-box virtualization, both of which provide predictable performance and avoid the noisy neighbor effect.

OCI Compute is one of the fastest and most cost-effective ways to migrate your existing applications to the cloud without re-architecting.

For a similar configuration on current hardware, OCI costs less.<sup>3</sup>



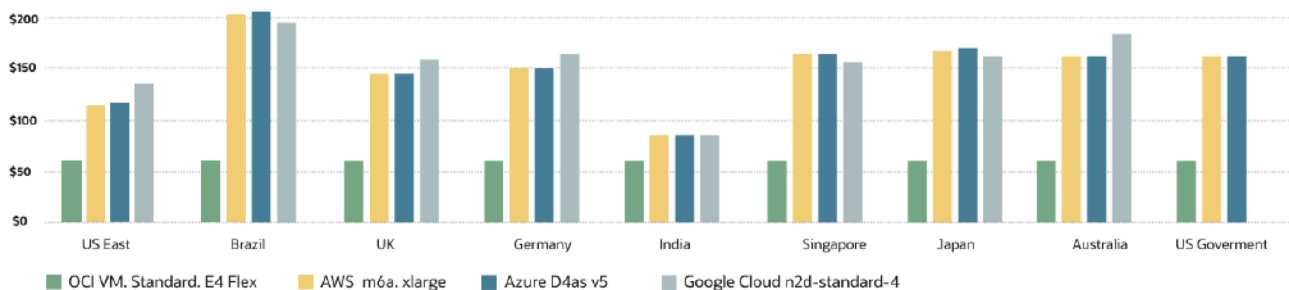
## Monthly virtual machine cost

Virtual machines are a foundational service in the cloud, capable of running a variety of workloads. Virtual machines provide a high degree of control because you manage the operating system and any software you install.

The graph shows the costs of running a typically sized AMD-based virtual machine for an entire month. (Intel-based virtual machines show a similar trend.)

OCI charges the same in all regions, which is reflected in the graph. The other cloud providers charge a varying amount, depending on the region. The difference can be significant.

### On-demand pricing—AMD, 4 vCPU, 16 GB



Note: Google Cloud doesn't offer government-only regions.

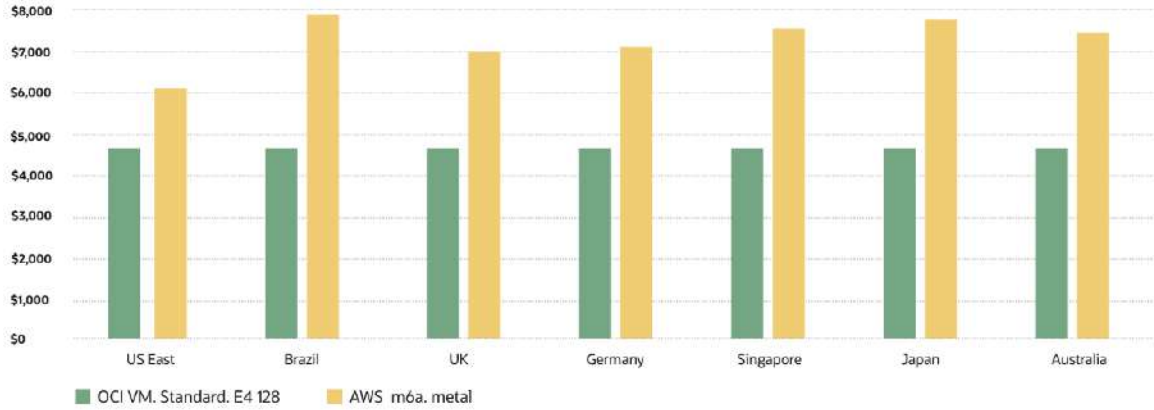
<sup>3</sup> Compared with the monthly cost of 2 OCPU (4 vCPU) AMD (E4) with 16 GB in US eastern regions. On-demand prices as of June 16, 2023.

## Monthly bare metal server cost

Bare metal servers allow you to leverage the full power of a server, including your own hypervisor, on OCI. Bare metal servers are ideal for high performance computing (HPC) workloads, where many servers operate as a clustered unit.

The graph shows the cost of running a bare metal server for an entire month. Similar to virtual machines, OCI charges the same for the same bare metal servers in all regions, which is reflected in the graph. The other cloud provider charges a varying amount, depending on the region.

### On-demand pricing—AMD, 256 vCPU, 2,048 GB



Note: Azure and Google Cloud don't publish pricing for their bare metal offerings.

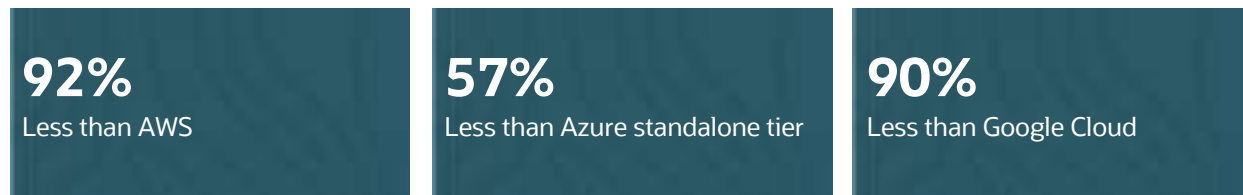
# Networking

*The key to connecting cloud services*

Networking enables cloud services to operate, communicate, and scale. OCI Networking allows you to create virtual data centers in the cloud that are securely isolated but fully connected to the entire range of OCI services.

Network design significantly impacts application performance. OCI created a nonblocking network that provides performance guarantees.

For 50 TB of monthly data egress, OCI costs less.<sup>4</sup>



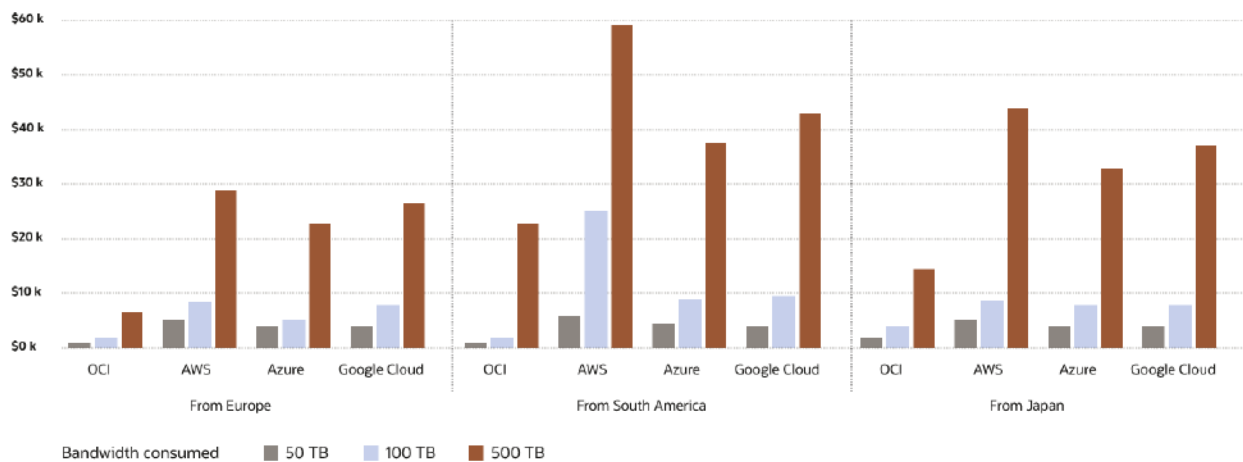
## Monthly data egress fees

A per-byte fee is charged for data leaving a region—a data egress cost. Because the networking infrastructure is owned by different companies, the pricing varies across the globe for all cloud providers.

However, the other cloud providers can use data egress fees to trap your data by making it too expensive to move data outside of one of their regions.

OCI is different. OCI includes 10 TB of monthly data egress for free, which is significantly more than the other cloud providers. After the free 10 TB, OCI charges significantly less. This graph shows how your costs can escalate as you move more data from different cloud providers' global regions to a US destination.

### Public internet



<sup>4</sup> Compared with the monthly cost of outbound data leaving US regions. On-demand prices as of June 16, 2023.



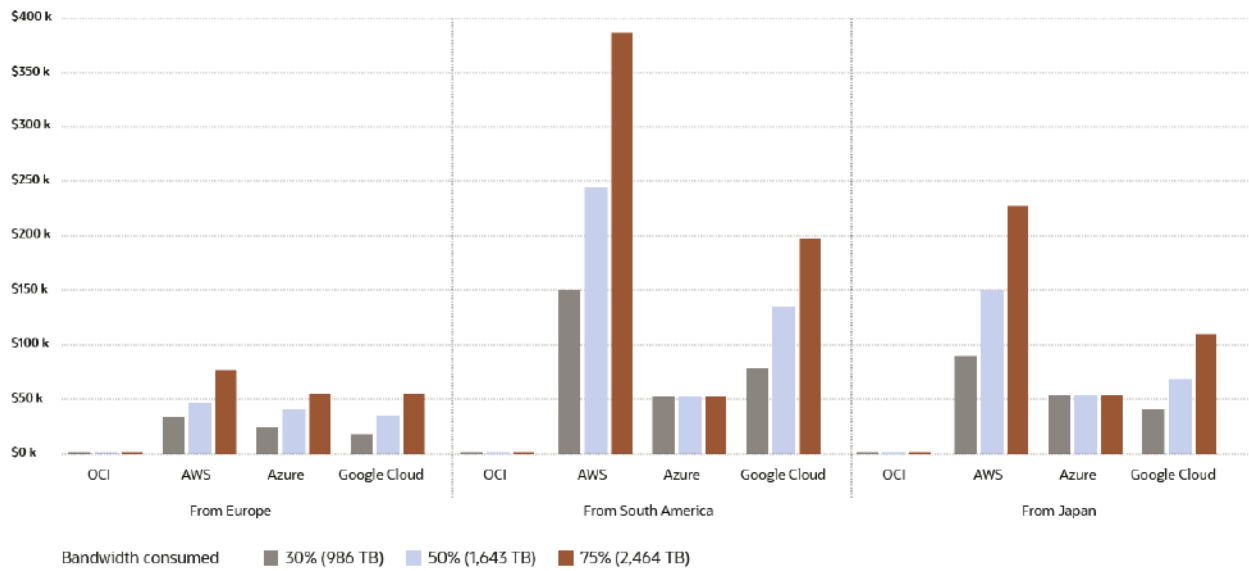
If you need more control or consistent connectivity, you can use a private line service. A private (or dedicated) line can have two pricing components: a “port” charge and a per-byte charge.

OCI is again different because there is no per-byte charge. All the other cloud providers have both a port and per-byte charge.

For a dedicated, 10 Gb/sec connection, the pricing difference is significant. The OCI FastConnect service is just US\$931 per month, regardless of how much data is transferred. The other cloud providers start charging significantly more when the data volume increases.

The pricing doesn’t include the third-party cost of the private line itself, which varies globally.

**Private line, 10 Gb/sec**



Note: Azure costs are based on the best metered or unlimited prices.

## Storage

*Providing sustained I/O and dynamic performance*

Some workloads require demanding I/O: high operations per second and high throughput bandwidth. OCI offers flexible, NVMe-based block storage volumes with the ability to select your desired performance—and only OCI provides a performance SLA for block storage.

You can change the performance of OCI Block Volumes dynamically without detaching or recreating them. You can also enable automatic tuning so the performance of the volumes adjusts between limits you set—all at competitively low prices.

For a similar configuration on current hardware, OCI costs less.<sup>5</sup>

**82%**

Less than AWS  
gp3, 100 GB, 6K IOPS

**57%**

Less than Azure  
Premium SSD v2, 100 GB, 6K IOPS

**61%**

Less than Google Cloud  
Zonal balanced persistent disk,  
100 GB, 3.6K IOPS

<sup>5</sup> Compared with OCI block storage, 100 GB, balanced performance, 6K IOPS. On-demand prices as of June 16, 2023.

## Monthly block storage cost

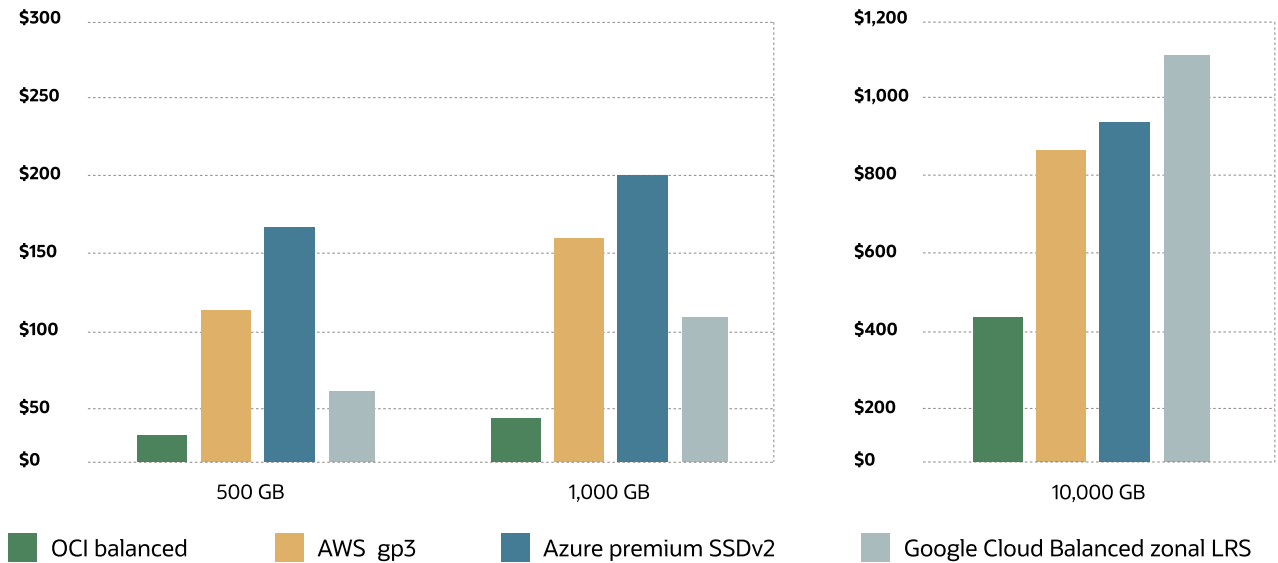
Block storage is the performant storage you attach to virtual machines or bare metal servers. In addition to size, you can select performance characteristics, such as the throughput (measured in MB/sec) and I/O operations (measured in input/output operations per second (IOPS)).

For moderate workloads, a balanced performance is sufficient, which means lower performance characteristics.

The graph shows the cost of block storage that provides 6K IOPS. If the cloud provider offered multiple options, including the need to purchase “performance credits,” the cheapest option was selected. Additional options, such as replication, were declined. For AWS, the choice was gp3. For Azure, it was Premium SSD v2. For Google Cloud, it was balanced Persistent Disk.

OCI provides the needed performance at a significantly lower cost for the selected sizes.

### On-demand pricing for balanced performance, 6K IOPS



Block storage needs to provide significantly more performance for high performance workloads, such as a database or HPC. With large workloads, the performance demands can escalate significantly as the size increases.

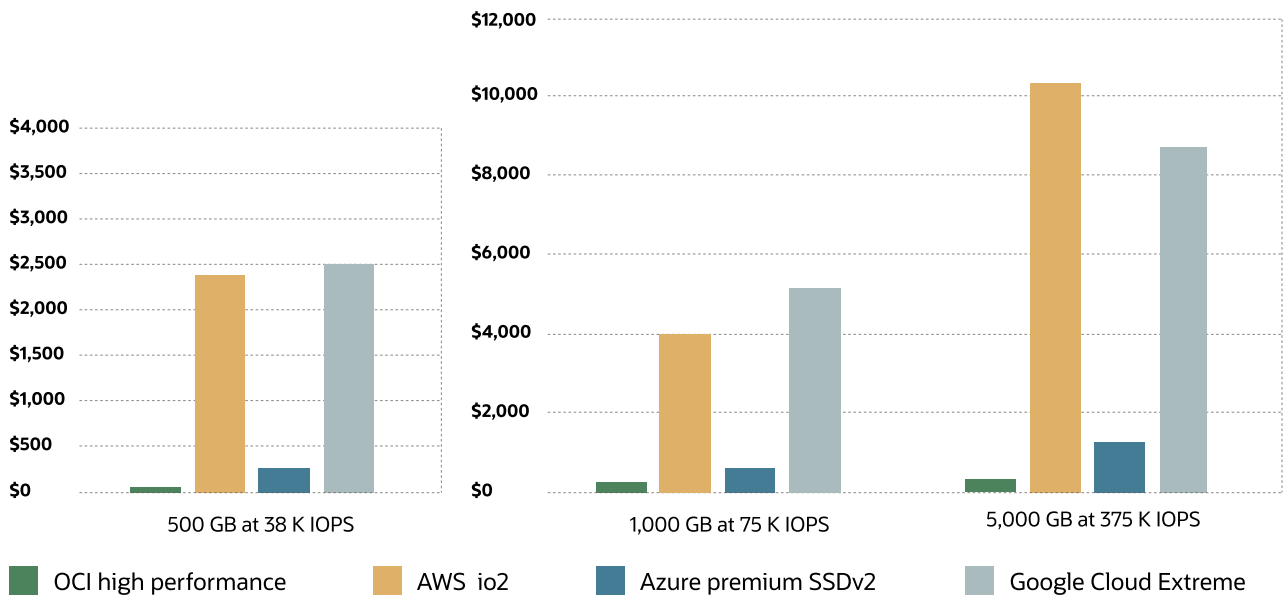
The graph shows the cost of block storage that provides increasing throughput, from 38K IOPS up to a blistering 375 K IOPS, as the storage size increases.

Again, the cheapest option was selected for each cloud provider and any additional options were declined. For AWS, the choice was io2 as gp3 tops out at just 256K IOPS. For Azure, it was Premium SSD v2. For Google Cloud, it was extreme Persistent Disk.

However, Azure Premium SSD v2 tops out at 80K IOPS. So while the price compares favorably, it is providing almost 5X less performance compared with OCI and the other cloud providers.

OCI again provides the needed performance at a significantly lower cost for the selected sizes.

**On-demand pricing for high performance from 8K to 375K IOPS**



Note: Azure performance is limited to 80K IOPS.

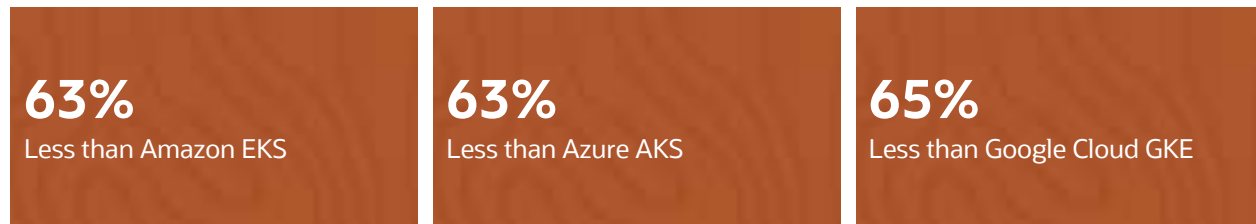
## Containers and serverless

Enabling cloud native development

Cloud native architectures and modern technologies (including microservices, containers, Kubernetes, and serverless) are transforming the way we design, develop, and ship applications. OCI provides rapid time to value when building modern apps.

OCI Container Engine for Kubernetes (OKE) enables you to simplify the operation of enterprise-grade Kubernetes as a managed service. Serverless Kubernetes allows you to scale your containerized application without manually administrating the clusters.

OKE provides more value for less money for serverless operations.<sup>6</sup>



<sup>6</sup> Compared with OKE, the monthly cost of a 20-pod cluster on serverless nodes. On-demand prices as of April 14, 2023.

# Enterprise discounting

*Reducing costs made simple*

## OCI

Oracle offers Universal Credits, which can be used for IaaS and PaaS services across all regions. You aren't restricted to a particular compute type or service, and you don't need to specify your allocations in advance.

If your needs change, if your workloads shift, or if new services are offered, you can switch and still use your Universal Credits for a discount.

You can commit to one or three years; increased commitment levels result in higher discounts. If you use up your Universal Credits before the end of the term, you still enjoy the discounted service rates for the rest of your term.

OCI also offers reserved capacity, provisioned concurrency, preemptible instances, and more. And you can [bring your Oracle licenses from on-premises](#).

## AWS

AWS offers a commitment-based discount, known as an Enterprise Discount Program (EDP). AWS also offers reserved instances, an EC2 discount savings plan, a compute discount savings plan, a SageMaker discount savings plan, and spot instances.

Not all discount savings plans are compatible with an EDP, which means you have to estimate your usage over the next year or three years if you want to take advantage of them.

What if your needs change? If you commit to a savings plan, you're locked in. Some discount programs are tied to a specific region, requiring you to guess which region will be best. If a new region opens up, your discount program might not be applicable there.

If you're bringing your Oracle Database licenses, you get [twice as many CPUs on OCI as you do on AWS](#).

## Azure

Azure offers a commitment-based discount, known as an Enterprise Agreement (EA). Azure also offers reserved instances, a savings plan for compute, Azure Hybrid Benefit, and spot instances.

The savings plan for compute isn't listed as compatible with an EA, which means you have to estimate your usage over the next year or three years if you want to take advantage of it.

What if your needs change? If you commit to the savings plan, you're locked in. Or, if you choose reserved virtual machines, you're tied to a specific region, requiring you to guess which region will be best. If a new region opens up, your reserved virtual machine won't be transferable.

If you're bringing your Oracle Database licenses, you get [twice as many CPUs on OCI as you do on Azure](#).

## Google Cloud

Formally, Google Cloud doesn't advertise an enterprise discount that applies to all services. Google does state in their financial filings that they do offer discounts to customers, but they don't disclose if these discounts are part of a program or custom discounts offered per customer.

Google Cloud also offers an automatic discount (sustained use discount) and two forms of a commitment-based discount (committed use discounts). These discounts can't be combined with each other and may or may not be able to be combined with an enterprise agreement. You have to estimate your usage over the next year or three years if you want to take advantage of committed use discounts.

What if your needs change? If you commit to the committed use discount, you're locked in. For some services, the committed use discount is tied to a specific region, requiring you to guess which region will be best. If a new region opens up, your discount might not be applicable there.

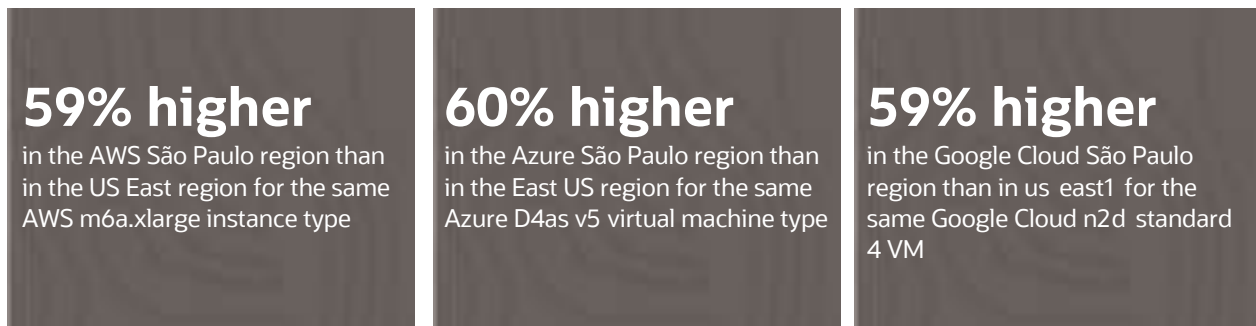
Note: Google Cloud is [not an Oracle authorized cloud environment](#), and Oracle products are not certified for use on Google Cloud.

## Distributed cloud

*Put the cloud where you need it*

Oracle Cloud Infrastructure’s distributed cloud offers customers the flexibility to deploy their workloads wherever they like—even across multiple clouds—with the benefits of cloud innovation and greater control over data residency, locality, and authority. Customers use OCI’s distributed cloud to satisfy their business, regulatory, and performance requirements, which are often not met by other public cloud providers.

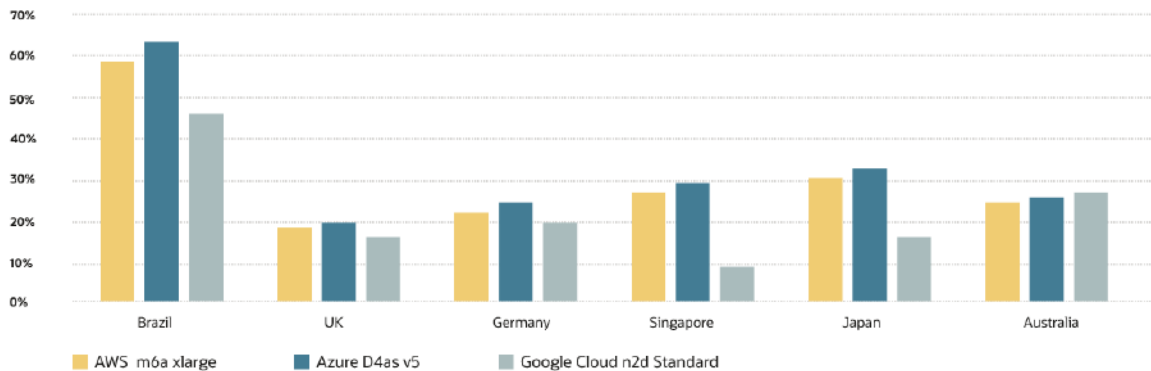
Other cloud providers charge higher prices in different regions for the same services.<sup>7</sup>



OCI is unique among the cloud providers in that it provides the same services at the same prices in all regions. This provides you with the confidence to add or move workloads as needed without encountering unexpected expenses.

The other cloud providers can charge significantly more for the same service. The graph shows how the price of the same virtual machine can vary dramatically from the price in the provider’s US eastern regions. For example, both AWS and Azure charge almost 60% more for the same virtual machine in the Brazil region.

### Percentage price increase over a US region for the same VM type



<sup>7</sup> On-demand prices as of June 16, 2023.



## Government cloud

*The same price as commercial*

OCI Government Cloud—for IaaS and PaaS—is priced the same as our commercial public cloud and meets U.S. Defense Department (Impact Levels 2 and 4) and FedRAMP High authorization standards. Oracle also operates a sovereign, dual-region service in the UK for UK government and defense customers.

Commercial customers who need to meet government accreditation requirements should consider using OCI Government Cloud, which can enable them to achieve their compliance goals.

Service	OCI SKU	OCI hourly cost	AWS SKU	AWS hourly cost	Azure SKU	Azure hourly cost
Virtual machine, 4 vCPU, 16 GB	VM.Standard.E4.Flex	\$0.07	m6a.xlarge	\$0.17	D4as v5	\$0.17
Storage optimized virtual machine, 16 vCPU, 120 GB	VM.DenseIO.E4.Flex	\$0.81	i3.4xlarge	\$1.25	L16 s	\$1.37
Bare metal 128 vCPU, 1024 GB	BM.Standard3.64	\$4.10	m6i.metal	\$6.14		
Kubernetes, 100 vCPU, 750 GB	VM.Standard.E4.Flex	\$2.38	r5a.xlarge	\$5.75	E4as v5	\$5.75
Block storage, 1 TB, 1 volume, 15 K IOPS, 125 MB/sec	Block storage (balanced)	\$0.72	EBS (gp3)	\$2.33	Premium SSD v2	\$2.39
Data egress, 50 TB	First 10,000 GB free	\$0.47	First 100 GB free	\$5.88	First 100 GB free	\$4.65
Private line, 1 Gb/sec, 100 TB	FastConnect circuit fee	\$0.21	Direct Connect	\$3.07	Express Route	\$4.02
MySQL, 4 vCPU	MySQL DB standard	\$0.47	db.m5.4xlarge	\$1.45	General purpose Gen 5, 8 vCore, 40 GB	\$1.76

All prices assume 730 hours per month and constant usage throughout the month. Prices rounded to the nearest cent. Prices effective on June 16, 2023, on OCI. Prices effective on June 16, 2023, in the AWS GovCloud East region. Prices effective on June 16, 2023, in the Azure US Gov Virginia region.

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