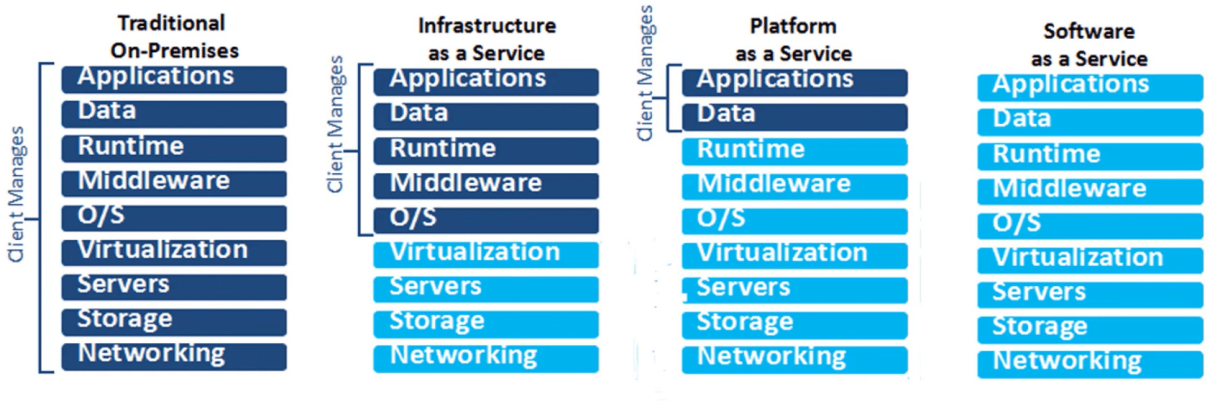
GCP vs AWS vs Azure Comparison

Overview of Cloud Computing

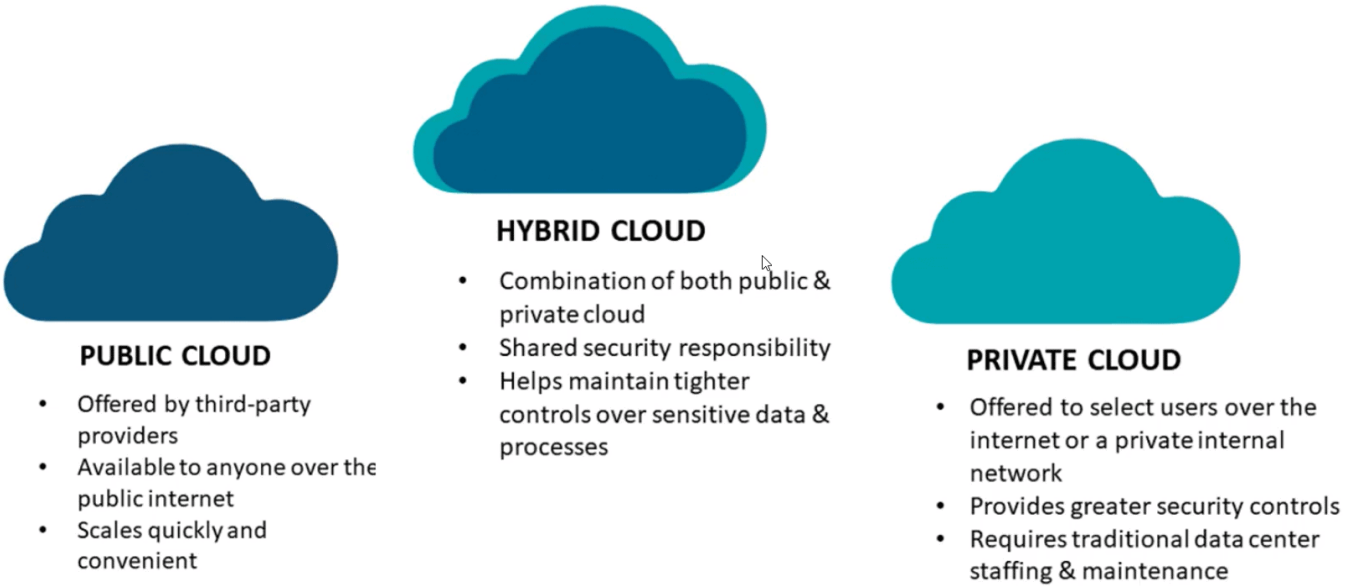
The traditional way of hosting applications was very complicated and expensive. The amount of hardware and software resources needed to run them was very complex. Moreover, you would need a team of experts to install, configure, test, run, secure, and update them.

Cloud computing is the on-demand availability of computer resources like **Servers:** containing Memory, and CPU. Different types of **Storage:** block storage, and object storage. **Databases** like structured data, unstructured data, semi-structured data, and **networking include** virtual networks, subnets, connecting with the premise, etc. Cloud computing is like your water/ electricity bill; you **only pay for what you use**.



There are four types of cloud deployment models: Public, Private, Community, and Hybrid. Every deployment model is defined according to where the infrastructure for the environment is located.

In the public cloud, you can host websites, and web apps. A private cloud is for sensitive data. If you have a website and sensitive data, you can go with a Hybrid cloud. Community cloud allows systems and services accessible by a group of organizations. Each cloud deployment model satisfies different organizational needs, so you must choose a model that will fulfill your organization’s needs.



The main types of cloud computing include software as a service, platform as a service, and infrastructure as a service.

Amazon Web Service

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform. It provides on-demand cloud computing services to individuals, companies, and government organizations on a paid subscription basis.

- AWS has more than 200+ services upon running.
- It has over 99 availability zones in 31 Regions.
- The platform is developed with a combination of infrastructure as a service (IaaS), platform as a service (PaaS), and packaged software as a service (SaaS) offerings.

AWS provides a wide range of services that most branded companies use. Like Netflix, BBC, Facebook, Spotify, LinkedIn

Microsoft Azure

Azure is a cloud computing service provided by **Microsoft**. Collection of various cloud computing services, including remotely hosted and managed versions of proprietary Microsoft technologies, used to build, test, deploy, and manage applications in the cloud.

- Offer almost 200+ Services.
- It has 78 regions available in 140 countries which are huge compared to other cloud providers.

Some famous brands like Adobe, HP, eBay, Samsung, and Rolls-Royce use Azure.

Google Cloud Platform

Google Cloud Platform provides various cloud computing services needed to develop, deploy, scale, monitor and operates a cloud. The services are the same as running google's products like Google Search, Gmail, Youtube and Google Drive.

- With 100+ Services up on running.
- GCP offers 35 regions with 106 opertionl zones.

PayPal, Twitter, Airbus, Toyota trust on Google cloud platform.

Also Check: Our blog post on **AWS Secrets Manager**.

AWS, Azure, GCP Tools and Services

AWS, Azure GCP tools and services are divided into categories like Compute, Storage, Networking etc., in the table mentioned below.

Compute Services	Elastic Compute Cloud (EC2)	Virtual Machines	Compute Engine
Object Storage	Amazon S3	Azure Blob Storage	Cloud Storage
Networking	Amazon VPC	Azure Virtual Network	Cloud Virtual Network

AWS vs Azure vs GCP Comparison

Now let's compare each cloud provider in its respective areas

History And Open Source

History is also essential while comparing cloud providers. Because the more experience you have, the more powerful you will be. Being the oldest of the bunch, AWS started its journey in early 2006.

History And Open Source		
		
AWS came into the market in the Year **2006**	Azure Started services in Year **2010**	GCP Launched in the year **2008**
AWS is Friendly with the open-source model from the beginning.	Azure has not so good a relationship with the open-source community.	GCP offers managed open source services that are tightly integrated into Google Cloud.
Large and Complex scale offerings of services that can potentially manipulate.	Low-Quality Support	Quite costly support fee of about $150 per month for the silver class, which is the most basic of services

Azure came into the market in 2010, where GCP launched in the year **2008.**

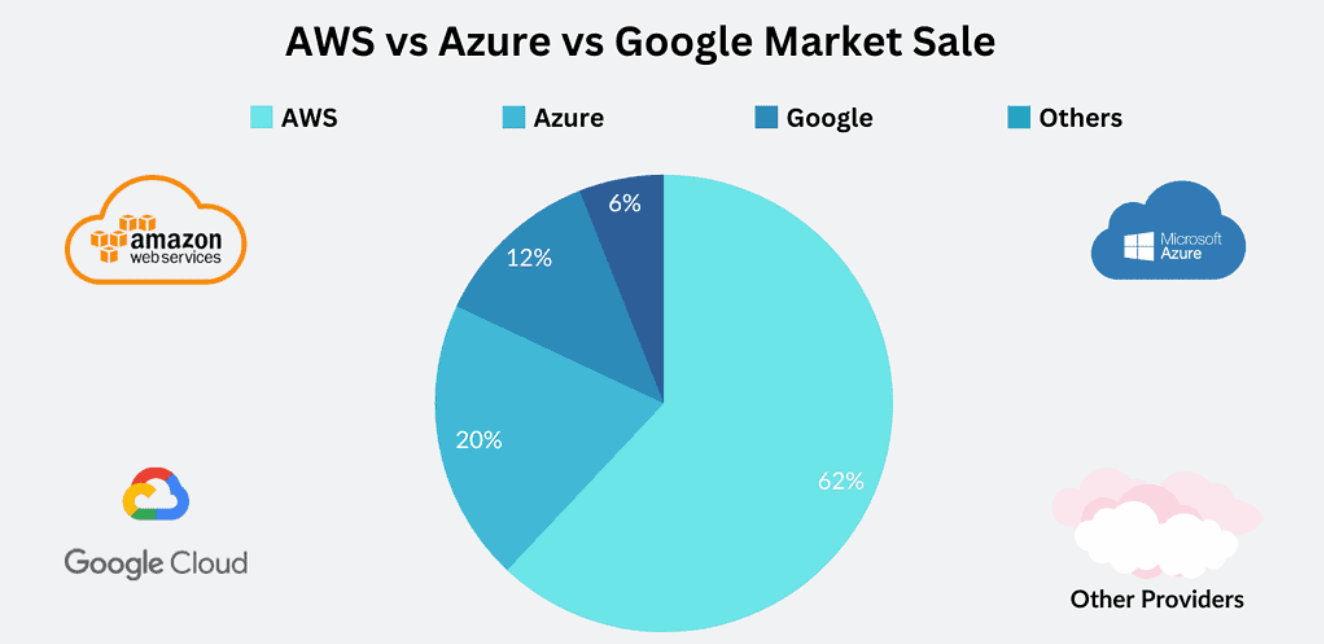
Service Integration

Service integration is a system of tools and technologies that combines various applications, systems, repositories, and real-time exchange of data and processes.

Service Integration		
aws	Azure	Google Cloud Platform
AWS allows users to integrate Services easily Amazon EC2, Amazon S3, Beanstalk etc.	AWS allows users to integrate Services easily Azure VM, Azure App Service, SQL databases etc	GCP allows users to integrate services Compute Engine, Cloud Storage, Cloud SQL etc.

GCP vs Azure vs AWS Market Share

Whenever the market share for a particular business is high, that basically implies many businesses or companies practising that specific technology. AWS has the maximum market share. In that case, a lot of companies are investing in AWS.



Managing Packages

If you take any software, you will need a package manager working on Angular or any node-based framework. You will need a node package manager(NPM) and manage this NPM; you will need a package manager.

Managing Packages		
		
In AWS, if you have to manage a package, you need to integrate external software or third-party software like Artifactory.	Azure has a package manager tool called Azure Artifacts to manage the packages like Nuget, Maven, etc.	Artifact Registry is a single place for your organisation to manage container images and language packages (such as Maven and npm)

Job Role

AWS vs Azure vs GCP certification can open the door to many high-paying, up-and-coming careers in IT. But, exactly which jobs are you qualified for? There is a wide range of job opportunities available to people. Let's look at some of them.

Amazon Web Service: Operational Support Engineer, Cloud Software Engineer, System Integrator — Cloud, DevOps Engineer, AWS Solutions Architect
Microsoft Azure: Azure Administrator, Azure Administrator, Azure Solution Architect, Azure DevOps Engineer
Google Cloud Platform: Solution Architect, Cloud Developer, Cloud Administrator, Cloud DevOps Engineer, Operational Support Engineer

Average Salary: Cloud Solution Architect

Azure vs AWS vs GCP cloud solution Architect certification can open the door to many high-paying jobs. The average salary of Azure vs AWS vs GCP cloud solution Architect.

India :

- AWAWS Solution Architect: ₹ 7.3 Lakhs/year
- Azure Solution Architect: ₹ 11.0 Lakhs/year
- Google Cloud Engineer: ₹ 17.2 Lakhs/year

USA :

- AWS Solution Architect: $138,000 per year
- Azure Solution Architect: $132,667 per year
- Google Cloud Engineer: $181,000 per year

Read More: About **AWS Cloud Storage**.

Cloud Architect Certifications

1.) AWS Solutions Architect Certification

The AWS Certified Solutions Architect – Associate (SAA-C03) exam changes will validate current AWS services and best-practice knowledge and skills. This aligns with AWS's security, reliability, high performance, and cost optimization offerings and innovations.

2.) Microsoft Azure Solutions Architect [AZ-305]

Designing cloud and hybrid systems that use Microsoft Azure, including computing, network, storage, monitoring, and security, is a specialty of the Azure Solutions Architect. Additionally, the Solutions Architect is skilled in governance, data platforms, disaster recovery, virtualization, identity management, and IT operations. And to validate this Microsoft offers an expert-level certification [AZ-305] Microsoft Azure Solutions Architect Expert.

3.) Google Professional Cloud Architect Certification

A Google Professional Cloud Architect helps organizations to leverage Google Cloud technologies. With a thorough understanding of cloud architecture and Google Cloud Platform, cloud architects can design, develop, and manage robust, secure, scalable, highly available, and dynamic solutions to drive business objectives.

Azure vs. AWS vs GCP – Computation power

The virtual machine sizes supplied are at the core of IaaS computing, and precise sizes and features regularly change with each provider.

AWS offers EC2, or Elastic Cloud Compute. GCP calls their offering Compute Engine. Similar to what we have all benefited from with our on-premise VMs, Azure includes virtual machines that offer computational resources.

AWS

For common workloads, Amazon EC2 provides general-purpose virtual machines (VMs), compute-optimized types for applications requiring high-performance processing, and memory-optimized types for programs that profit from lots of memory, like programs that process data in memory.

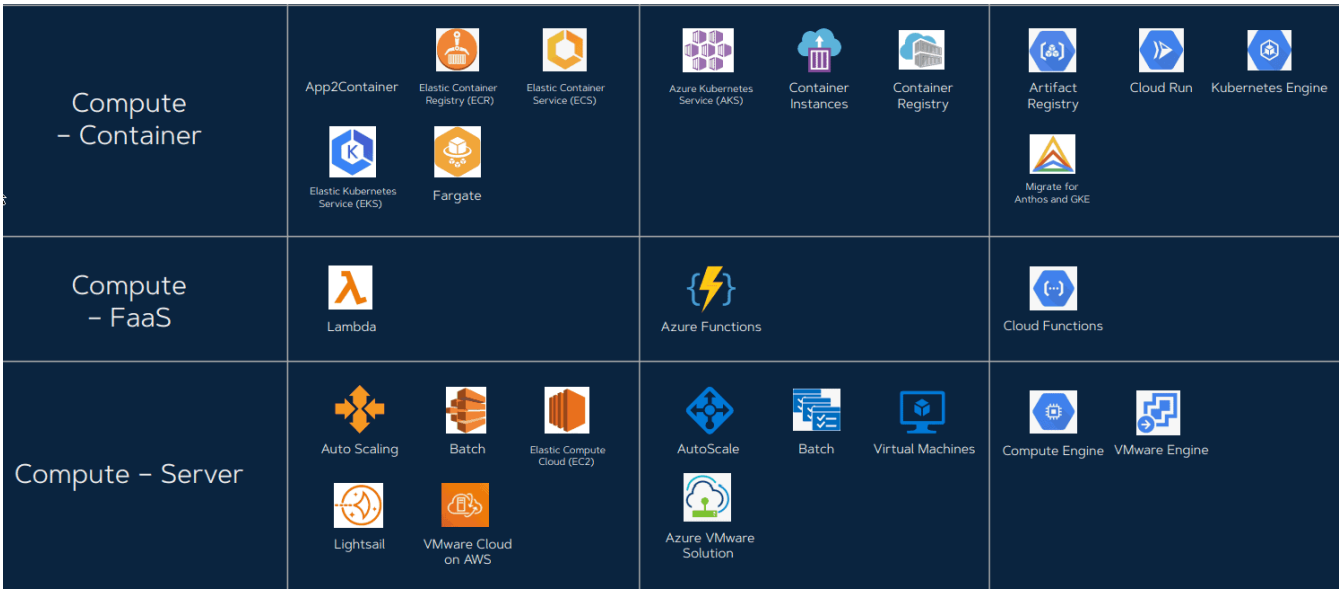
AWS provides a storage-optimized option for workloads requiring high sequential read and writes access to datasets as well as an accelerated compute option for hardware-accelerated processing using GPUs. Additionally, it provides burstable performance instances, a practical choice for programs with low average CPU utilization.

Microsoft Azure
Similar general-purpose VMs and compute and memory-optimized VMs are available with Azure to compute, much as the others. There are VMs that are GPU-type optimized for accelerators.

For applications that don't require constant access to the CPU, Azure provides burstable choices in addition to a virtual machine that is optimized for storage.

GCP
Along with computing optimization, which offers high performance per CPU core, GCP Compute Engine also supports general-purpose VMs.

Similar to AWS, there is a shared core or burstable VM option, as well as memory optimization and accelerated virtual machines. A storage-optimize option is not available on GCP as of the time of publication.



AWS vs. Azure vs GCP – Storage

Data can be kept on paper, discs, magnetic tape, optical discs, and even in bacteria's DNA. However, storing all of this data requires a lot of space, is expensive, and some data storage media isn't actually made for long-term use. the cloud, please.

Cloud service providers have worked out how to scale up the creation of a variety of storage techniques, producing excellent reliability at a low price. You only pay for the features and performance that meet your needs. You only pay for what you use.

The most popular types of data storage are file storage, block storage, object storage, and archive storage, and each is suitable for a particular function.

Consider an object like a file when it comes to object storage. You can use object storage services in the cloud to store your outstanding collection of dad joke memes.

Amazon Simple Storage Service, or S3, is the abbreviation for AWS's object storage offering.
Google Cloud Storage is a feature of GCP which offers services like cloud storage, persistent disk & filestore.
The name of Azure's offering, Azure Blob Storage (BLOB stands for "binary large object," ups the geek factor even more). Azure refers to the objects you use to store your data as "containers," whereas AWS and GCP refer to them as "buckets."
Many of these storage services are similar. They all provide:

- Versioning
- Encryption at rest
- Fine-grained security

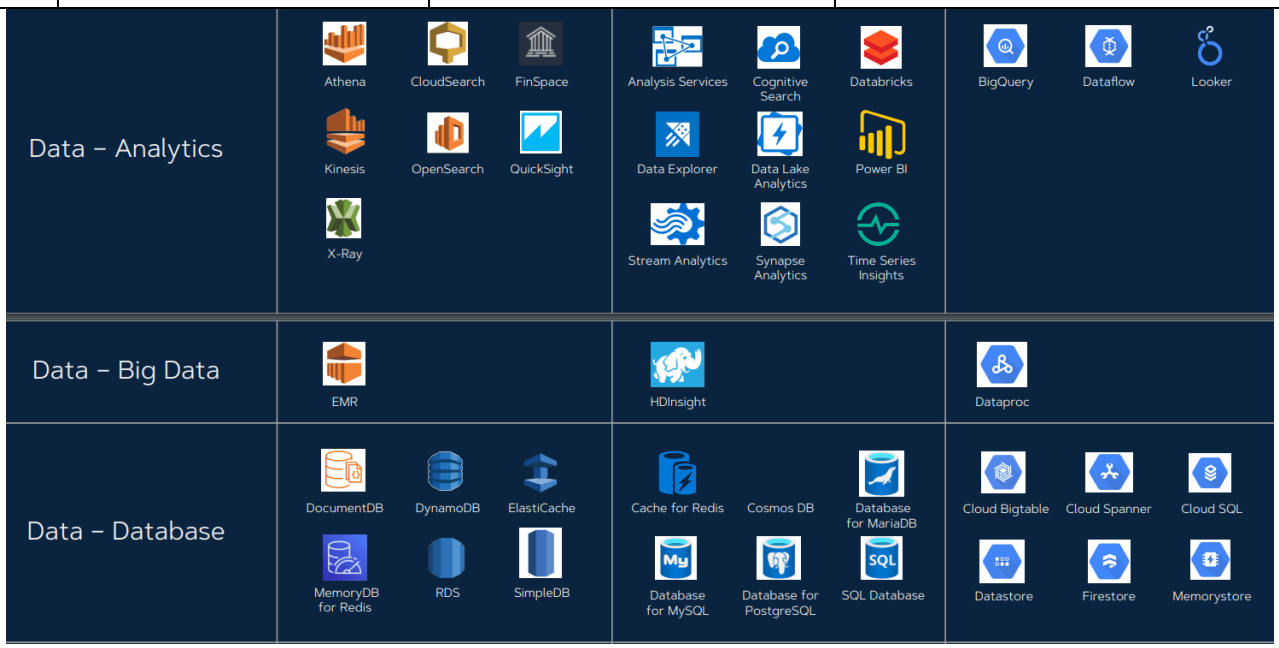
Storage class tiers are available for S3, Cloud Storage, and Blob Storage; the more redundant and effective the storage class, the higher the cost. For regulatory or legal reasons, many firms must retain data for a specific period of time. This might get pricey. Luckily cloud service companies have their own affordable archiving options.

These storage classes are called:

- Amazon S3 Infrequent Access (also S3 Glacier Instant Retrieval)
- Azure Blob Storage Cool Tier
- GCP Nearline Storage and Coldline Storage

Machine Type	AWS	Azure	GCP
Smallest Instance	A very basic instance with 2 virtual CPUs and 8 GB of RAM on AWS will run you about US$69 per month.	You will pay about US$70 per month for the same type of instance in Azure, i.e., an instance with 2 vCPUs and 8 GB of RAM.	The most fundamental instance on GCP costs 25% less than the equivalent one on AWS and has 2 virtual CPUs and 8 GB of RAM. It will therefore cost you about US$52 per month.
Largest Instance	AWS's largest instance, with 3.84 TB of RAM and 128 vCPUs, will run you about $3.97 per hour.	Azure's largest instance comes with 3.89 TB of RAM and 128 vCPUs. It	With its largest instance, which comes with 3.75 TB of RAM and 160 vCPUs, GCP takes the lead in our comparison. You'll pay about US$5.32 per hour for it.

		costs about $6.79 USD each hour.	



AWS vs Azure vs Google Cloud – Pricing

The pricing structures of AWS, Azure, and GCP are contrasted below based on the machine types they each offer:

It's also important to know that AWS has lately begun to provide pay-per-minute billing. The pay-per-second billing models offered by Google Cloud allow users to save far more than those offered by AWS or Azure. Azure already offers pay-per-minute billing. When compared to AWS, Google also provides a variety of discounts that can sometimes help users save up to 50%. "Google offers huge discounts and very flexible contracts to try to win projects from clients," claims Gartner.

Amazon AWS vs. Microsoft Azure vs GCP – Databases

The main variations between cloud service providers are whether you can license the database engine on the hypervisor of the cloud and whether any additional guidance, services, or capabilities, like automatic patching, are offered.

Services	**AWS**	**Azure**	**GCP**
RDBMS	Amazon Relational Database Service	SQL Database	Google Cloud SQL
NoSQL: Key–Value	Amazon DynamoDB	Table Storage	Google Cloud Datastore, Google Cloud Bigtable
NoSQL: Indexed	Amazon SimpleDB	Azure Cosmos DB	Google Cloud Datastore

PaaS SQL database comparison: AWS vs Azure vs GCP

The well-established PasS database service is known as Amazon Relational Database Service in AWS (or RDS).

Azure SQL Database Managed Instance for SQL Server and Azure SQL Database for MySQL, PostgreSQL, or Maria DB are the two names for these services. It is also known as Cloud SQL in GCP.

Only Amazon RDS offers native support for hosting an Oracle PaaS database. Additionally, GCP is the sole cloud service provider without a PaaS Maria DB service. It's important to note that compared to the other services, Azure SQL Database Managed Instance has a somewhat different model. It offers a patched, evergreen version of SQL Server so you don't have to select the database version you want to host.

All three companies provide native cloud monitoring tools, as well as performance analysis and advice. Azure has a greater SLA and automatic cross-region fail-over, giving it a modest advantage in terms of availability.

Automatic backup options are offered by all providers, however, Azure's is the most complete. While Azure offers an optional long-term retention feature for SQL Server, the default backup retention in GCP can be set for a much longer duration.

All three include a point-in-time restoration option, which is useful if you need to recover from unintentional data loss, but using it in GCP is significantly more cumbersome and has a shorter retention lifetime.

Amazon AWS vs. Microsoft Azure vs GCP – Machine Learning

For their different machine learning systems, all cloud providers particularly enjoy using containers, and for a good reason. Containers can be moved around easily and are comparatively light and portable.

For particular iterations of the ML frameworks that are designed for training, validation, and inferences, all three providers offer push-button container deployment. For those who want to do things themselves, each provider also offers platform-optimized virtual machines for each of the main frameworks. The latter is typically used by those who already have a model that has been trained locally.

With regard to machine learning, there is a small-arms race among cloud providers. All three are relying on hardware that has been tuned, with each provider boasting greater economics and performance. Different tiers of CPU and GPU virtual machine types are available from all of the providers. ASICs and FPGAs, two types of customized hardware that some have also purchased, are application-specific integrated circuits (FPGA).

- For model training, AWS provides Habana Gaudi ASIC instances and a special processor they call AWS Trainium. Additionally, AWS provides an Inferential ASIC for machine learning inferences.
- A range of FPGA-based virtual machines optimized for machine learning workloads is available from Azure.
- The Tensor Processing Unit (TPU) from GCP is a specially designed ASIC-optimized TPU for the TensorFlow framework.

There is always a tradeoff. Although these specialized Hardware platforms are excellent at machine learning tasks, they are not very effective for other activities economically. Since they are significantly more adaptable, CPU and GPU-based computers are typically used first while ML models are developed and improved.

AWS vs Azure vs GCP Pros and Cons

AWS vs Azure vs GCP Pros.

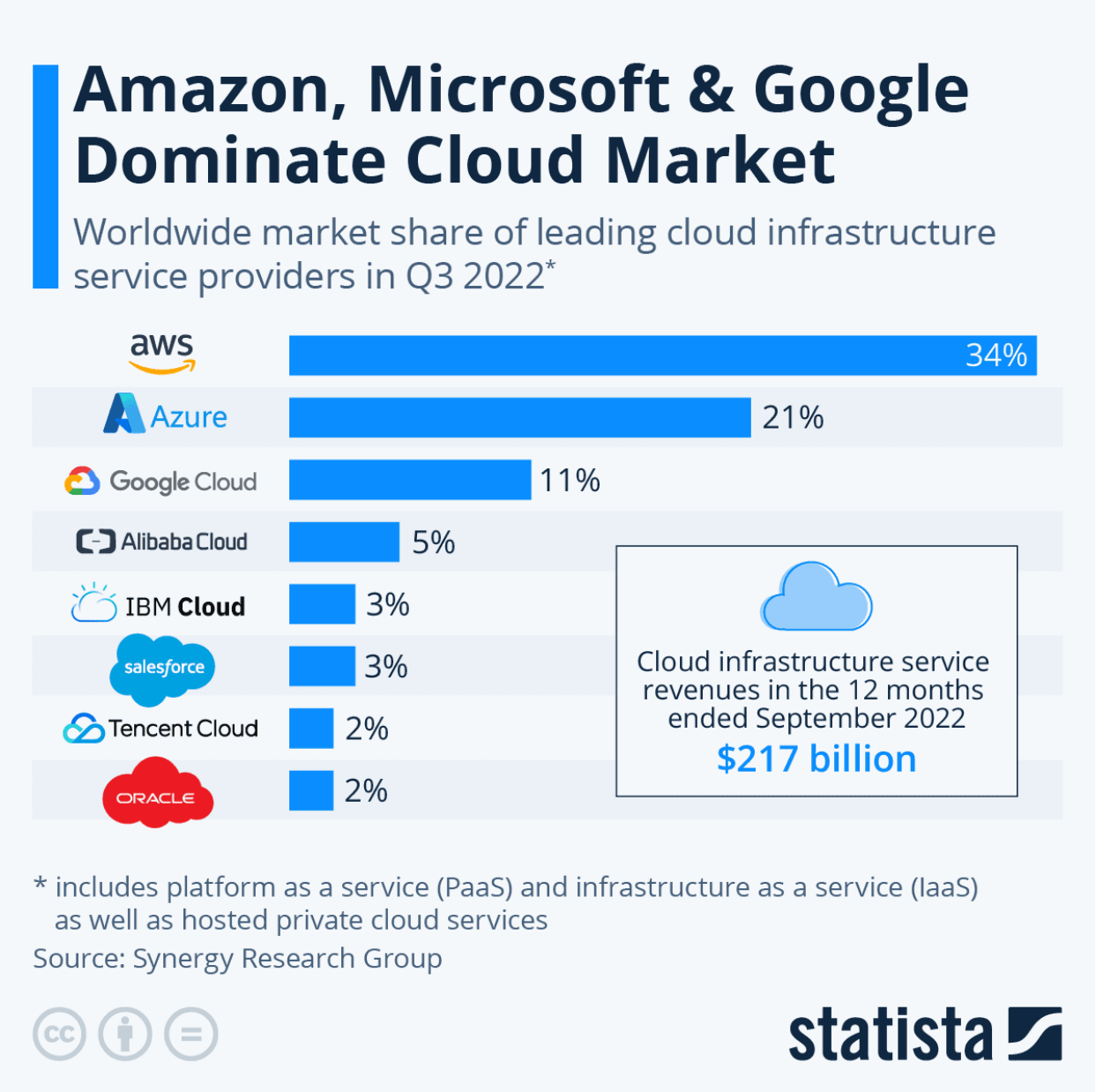
		
AWS is a Stablish market leader.	Azure is Open to Hybrid Cloud systems.	GCP specializes in high compute offerings like Big data, Machine Learning.
High Transfer Stability: Minimal data loss during server and storage transfer.	Easy integration with Microsoft tools and software.	Easy integration with other GCP Services like Compute Engine, Kubernetes Engine, or App Engine.
Easy Availability of Data: users can choose to store data close to their location.	Azure has a more profound knowledge of enterprise needs.	Well-detailed documentation, including an API reference guide.
78 Azure regions available across 140 countries (which is higher in all cloud giants)	Higher Availability Zones (106) with 24 Countries.	Outstanding reputation in the open-source community

Every cloud provider in the market is famous for its unique way of serving solutions. But there are also some cons let's have a look at the Pros and cons.

AWS vs Azure vs GCP Cons.		
		
Incomplete and weak Hybrid Strategy	Integration with non-Microsoft is complex.	Google's App Engine is limited to Java, Python, PHP and Google Go.
No demonstrated support for hybrid cloud outputs is still in its nascence	Restrictive Platform, Less flexible with non-windows server platforms	The cost of downloading data from Google Cloud Storage is relatively high
Large and Complex scale offerings that can potentially manipulate.	Low-Quality Support	Quite costly support fee of about $150 per month for the silver class, which is the most basic of services

Cloud Providers Worldwide Adoption

After analyzing various parameters, We found that in the war of AWS vs Azure vs Google Cloud. AWS is scoring more points than Azure and Google Cloud. However, it's hard to say when AWS will wear the leading cloud platform's crown. No doubts Azure and GCP Cloud offer top-level Services and features; that's why any of these cloud platforms can be the leader in the future.



AWS vs Azure vs GCP – Which is better?

Now, let's wrap up this Azure vs AWS vs Google Cloud blog by examining the most important advantages and disadvantages of these three cloud giants. So, which cloud provider would be declared the winner based on all of the factors discussed above?

- **Establishment:** AWS is the clear winner in this category, with a 5-year head start.
- **Availability zones:** AWS wins in this category because it has a greater number of regions and availability zones.
- **Market shares:** With roughly one-third of the market shares in its name, AWS is the clear winner here.
- **Growth rate:** GCP wins the growth rate category with a nearly 100 percent growth rate.
- **Who uses them:** It's a tie, with various high-end customers using all three cloud platforms!

- **Services:** AWS is the clear winner in terms of the number of services offered.
  Azure wins in terms of integration with open-source and on-premise systems, such as Microsoft tools, which are widely used in almost all organizations.
- **Pricing Models:** Google Cloud comes out on top with more customer-friendly pricing models and discount models.

With more points in this cloud battle of Azure vs AWS vs Google Cloud, AWS easily takes the lead over all of the major cloud providers today. However, it's difficult to predict how long AWS will retain the title of the leading cloud provider, given that Azure and GCP are steadily climbing the list. Although AWS has the advantage of being the first of its kind, Azure and GCP each have their own set of advantages. Because it is simple to integrate MS tools with Azure cloud, using Azure cloud makes more sense for several organizations that use MS tools.

And the only reason customers should use GCP is that it has the best pricing model for the infrastructure that Google Search and YouTube run on.

So, all things considered, it is better to say that it is not about selecting the best cloud providers, but rather about selecting the best-suited cloud provider based on your needs.