More AWS/AZURE/GCP

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Amazon, Microsoft and Google dominate the public cloud landscape providing the safest, flexible and reliable cloud services. Their respective cloud platforms, AWS, Azure and GCP offer clients a range of storage, computing and networking options.

Some of the features common among the three platforms include instant provisioning, self-service, autoscaling, identity management, security and compliance, among others.

At present, AWS can be considered to be much bigger than both Azure and GCP in terms of functionality and maturity.

However, the other two are also progressing at a faster rate to prove their market dominance.

AWS Vs Azure Vs GCP: Feature-wise Comparison

Features	aws	Azure	GCP
Compute Services	■ AWS Beanstalk ■ Amazon EC2 ■ Amazon EC2 Auto-Scaling ■ Amazon Elastic Container Registry ■ Amazon Elastic Kubernetes Service ■ Amazon Lightsail ■ AWS Serverless Application Repository ■ VMware Cloud for AWS ■ AWS Batch ■ AWS Fargate ■ AWS Lambda ■ AWS Outposts ■ Elastic Load Balancing	■ Platform-as-a-service (PaaS) ■ Function-as-a-service (FaaS) ■ Service Fabric ■ Azure Batch ■ Cloud Services ■ Container Instances Batch ■ Azure Container Service (AKS) ■ Virtual Machines Compute Engine ■ Virtual Machine Scale Sets	■ App Engine ■ Docker Container registry ■ Instant Groups ■ Compute Engine ■ Graphics Processing Unit (GPU) ■ Knative ■ Kubernetes ■ Functions
Storage Services	■ Simple Storage Service (S3) ■ Elastic Block Storage (EBS) ■ Elastic File System (EFS) ■ Storage Gateway ■ Snowball ■ Snowball Edge ■ Snowmobile	■ Blob Storage ■ Queue Storage ■ File Storage ■ Disk Storage ■ Data Lake Store	■ Cloud Storage ■ Persistent Disk ■ Transfer Appliance ■ Transfer Service
AI/ML	■ SageMaker ■ Comprehend ■ Lex ■ Polly ■ Rekognition ■ Machine Learning ■ Translate ■ Transcribe ■ DeepLens ■ Deep Learning AMIs ■ Apache MXNet on AWS ■ TensorFlow on AWS	■ Machine Learning ■ Azure Bot Service ■ Cognitive Services	■ Cloud Machine Learning Engine ■ Dialogflow Enterprise Edition ■ Cloud Natural Language ■ Cloud Speech API ■ Cloud Translation API ■ Cloud Video Intelligence ■ Cloud Job Discovery (Private Beta)

Database Services	■ Aurora ■ RDS ■ DynamoDB ■ ElastiCache ■ Redshift ■ Neptune ■ Database migration service	■ SQL Database ■ Database for MySQL ■ Database for PostgreSQL ■ Data Warehouse ■ Server Stretch Database ■ Cosmos DB ■ Table Storage ■ Redis Cache ■ Data Factory	■ Cloud SQL ■ Cloud Bigtable ■ Cloud Spanner ■ Cloud Datastore
Backup Services	Glacier	■ Archive Storage ■ Backup ■ Site Recovery	■ Nearline (frequently accessed data) ■ Coldline (infrequently accessed data)
Serverless computing	■ Lambda ■ Serverless Application Repository	Functions	Google Cloud Functions
Strengths	■ Dominant market position ■ Extensive, mature offerings ■ Support for large organizations ■ Global reach ■ Flexibility and a wider range of services	■ Second largest provider ■ Integration with Microsoft tools and software ■ Broad feature set ■ Hybrid cloud ■ Support for open source ■ Ideal for startups and developers	■ Designed for cloud-native businesses ■ Commitment to open source and portability ■ Flexible contracts ■ DevOps expertise ■ Most cost-efficient
Networking	Amazon Virtual Private Cloud (VPC)	Azure Virtual Network (VNET)	Cloud Virtual Network
Security	AWS Security Hub	Azure Security Center	Cloud Security Command Center
Location	77 availability zones within 24 geographic regions	Presence in 60+ regions across the world	Presence in 22 regions and 61 zones
Documentation	Best in class	High quality	High quality
Pricing/ Discount Options	One-year free trial along with a discount of up to 75% for a 1-3 year commitment	Up to 75% discount for a commitment ranging from one to three years	GCP Credit of $300 for 12 months apart from a sustained use discount of up to 30%
Caching	Elastic Cache	Redis Cache	Cloud CDN
File Storage	EFS	Azure Files	ZFS and Avere
DNS Services	Amazon Route 53	Azure Traffic Manager	Cloud DNS
Notifications	Amazon Simple Notification Service (SNS)	Azure Notification Hub	None
Load Balancing	Elastic Load Balancing	Load Balancing for Azure	Cloud Load Balancing
Automation	AWS Opsworks	Azure Automation	Compute Engine Management
Compliance	AWS CloudHSM	Azure Trust Center	Google Cloud Platform Security

Details	AWS	Azure	GCP
Compute Services	1) AWS Beanstalk 2) Amazon EC2 3) Amazon EC2 Auto-Scaling 4) Amazon Elastic Container Registry 5) Amazon Elastic Kubernetes Service 6) Amazon Lightsail 7) AWS Serverless Application Repository 8) VMware Cloud for AWS 9) AWS Batch 10) AWS Fargate 11) AWS Lambda 12) AWS Outposts 13) Elastic Load Balancing	1) Platform-as-a-service (PaaS) 2) Function-as-a-service (FaaS) 3) Service Fabric 4) Azure Batch 5) Cloud Services 6) Container Instances Batch 7) Azure Container Service (AKS) 8) Virtual Machines Compute Engine 9) Virtual Machine Scale Sets	1) App Engine 2) Docker Container Registry 3) Instant Groups 4) Compute Engine 5) Graphics Processing Unit (GPU) 6) Knative 7) Kubernetes 8) Functions
Storage Services	1) Simple Storage Service (S3) 2) Elastic Block Storage (EBS) 3) Elastic File System (EFS) 4) Storage Gateway 5) Snowball 6) Snowball Edge 7) Snowmobile	1) Blob Storage 2) Queue Storage 3) File Storage 4) Disk Storage 5) Data Lake Store	1) Cloud Storage 2) Persistent Disk 3) Transfer Appliance 4) Transfer Service
AI/ML	1) SageMaker 2) Comprehend 3) Lex 4) Polly 5) Rekognition 6) Machine Learning 7) Translate 8) Transcribe 9) DeepLens 10) Deep Learning AMIs 11) Apache MXNet on AWS 12) TensorFlow on AWS	1) Machine Learning 2) Azure Bot Service 3) Cognitive Services	1) Cloud Machine Learning Engine 2) Dialogflow Enterprise Edition 5) Cloud Natural Language 6) Cloud Speech API 7) Cloud Translation API 8) Cloud Video Intelligence 9) Cloud Job Discovery (Private Beta)
Database Services	1) Aurora 2) RDS 3) DynamoDB 4) ElastiCache 5) Redshift 6) Neptune 7) Database Migration Service	1) SQL Database 2) Database for MySQL 3) Database for PostgreSQL 4) Data Warehouse 5) Server Stretch Database 6) Cosmos DB 7) Table Storage 8) Redis Cache 9) Data Factory	1) Cloud SQL 2) Cloud Bigtable 3) Cloud Spanner 4) Cloud Datastore
Backup Services	Glacier	1) Archive Storage 2) Backup 3) Site Recovery	1) Nearline (frequently accessed data) 2) Coldline (infrequently accessed data)

Serverless computing	1) Lambda 2) Serverless Application Repository	Functions	Google Cloud Functions
Strengths	1) Dominant market position 2) Extensive, mature offerings 3) Support for large organizations 4) Global reach 5) Flexibility and a wider range of services	1) Second largest provider 2) Integration with Microsoft tools and software 3) Broad feature set 4) Hybrid cloud 5) Support for open source 6) Ideal for startups and developers	1) Designed for cloud-native businesses 2) Commitment to open source and portability 3) Flexible contracts 4) DevOps expertise 5) Complete container-based model 6) Most cost-efficient
Caching	Elastic Cache	Redis Cache	Cloud CDN
File Storage	EFS	Azure Files	ZFS and Avere
Networking	Amazon Virtual Private Cloud (VPC)	Azure Virtual Network (VNET)	Cloud Virtual Network
Security	AWS Security Hub	Azure Security Center	Cloud Security Command Center
Location	77 availability zones within 24 geographic regions	Presence in 60+ regions across the world	Presence in 24 regions and 73 zones. Available in 200+ countries and territories
Documentation	Best in class	High quality	High quality
DNS Services	Amazon Route 53	Azure Traffic Manager	Cloud DNS
Notifications	Amazon Simple Notification Service (SNS)	Azure Notification Hub	None
Load Balancing	Elastic Load Balancing	Load Balancing for Azure	Cloud Load Balancing
Automation	AWS Opsworks	Azure Automation	Compute Engine Management
Compliance	AWS CloudHSM	Azure Trust Center	Google Cloud Platform Security
Pricing/ Discount Options	One-year free trial along with a discount of up to 75% for a 1-3 year commitment	Up to 75% discount for a commitment ranging from one to three years	GCP Credit of $300 for 12 months apart from a sustained use discount of up to 30%

AWS Vs Azure Vs Google Cloud: Pricing

While choosing a public cloud service provider, the price aspect is considered to be the prime impetus that influences the decision making of IT firms.

The following comparison among AWS, Azure and GCP in terms of price and machine type will assist you in your decision making:

Machine Type	AWS	Azure	GCP
Smallest Instance	An instance with 2 virtual CPUs and 8 GB RAM will cost you around USD69/month.	An instance with 2 virtual CPUs and 8 GB RAM will cost you around USD70/month.	Instance with 2 virtual CPUs and 8 GB RAM will cost you around USD52/month.
Largest	Largest instance that includes	Largest instance that includes	Largest instance that includes

Instance	3.84 TB RAM and 128 vCPUs will cost you around USD 3.97/hour.	3.89 TB RAM and 128 vCPUs will cost you around USD 6.79/hour.	3.75 TB RAM and 160 vCPUs will cost you around USD 5.32/hour.

Apart from the aforementioned pricing models, there is another model that is worth mentioning!! AWS and Azure are offering their cloud services with pay-per-minute billing options, whereas GCP is ahead of them by providing a pay-per-second billing option. Moreover, GCP is offering various discounts and flexible contracts to gain maximum demand influx.

Useful Link: AWS Vs Azure Vs GCP: Cloud Market Share Q1 2021

Amazon Web Services (AWS)

A pioneer of cloud computing, Amazon has been the first entrant into the cloud services market over a decade ago and leads in terms of both the number of products and customers, with AWS considered to be the benchmark of cloud service quality.
AWS offers a range of Infrastructure as a Service (IaaS) offerings that can be classified into computing, database, content delivery and storage, and networking.
AWS enables a smooth and flexible data collection flow using serverless services such as Amazon Kinesis Streams, Amazon SQS Queues and AWS Lambda Functions. It provides organizations with the option to choose the web application platform, operating system, database and programming languages, among others as per their requirement.
Cloud infrastructure resource usage can be monitored using AWS management tools such as AWS CloudTrail and Amazon CloudWatch for tracking user activity and AWS Config for managing the resource inventory and changes.
AWS contributes to significant enhancement in the productivity and business growth of organizations. A few drawbacks of AWS include the complex infrastructure and default service limits which are set in accordance with average user needs.
Amazon data centers are the largest among the three cloud providers and are located in 84 regions across the world.

Useful Link: Best Practices for AWS Cloud Migration and Benefits

Microsoft Azure

Microsoft Azure platform has been designed for building, deploying and managing various services and applications through the huge network of Microsoft-managed datacenters. Azure's offerings include compute, networking, data management databases and performance.
Azure Site Recovery enables organizations of all sizes to orchestrate site-to-site replication and data recovery to VMs hosted on Azure itself. Azure offers Zone Redundant Storage (ZRS) or data storage redundancy across multiple data center regions.
Azure ExpressRoute facilitates connectivity of the data center to Azure through a private link without using the Internet, thereby providing higher security, greater reliability and lower latency.
Azure also has extensive networking capabilities including support for multiple site-to-site connections to virtual networks, along with the ability to connect virtual networks across different regions to each other.
Azure has the lowest on-demand and discounted instance pricing. Specialist developers can write, test and deploy algorithms using the Azure Machine Learning Studio.

Useful Link: Steps to a Successful Microsoft Azure Cloud Migration

Google Cloud Platform (GCP)

With an intuitive interface, lower costs, preemptible instances and flexible compute options, GCP is an attractive alternative to both AWS and Azure. Google uses full-scale encryption of all data and communication channels including the traffic between data centers.
Some of the areas where Google Cloud strongly competes with AWS include instance and payment configurability, privacy and traffic security, cost-efficiency, and Machine Learning.
While all the three cloud providers offer discounts up to 75 percent for a commitment of one to three years, Google additionally offers a sustained use discount of up to 30 percent on each

instance type running for more than 25 percent each month.

AWS' 1-year-free trial has matched by GCP's credit of USD 300 for 12 months along with a free tier that isn't time-limited. GCP's credits model is more suited for organizations newly venturing into cloud services.

Google offers several off-the-shelf APIs pertaining to computer vision, natural language processing and translation. Machine learning engineers can build models based on Google's Cloud Machine Learning Engine's open-source TensorFlow deep learning library.

AWS vs Azure vs GCP: pros & cons

AWS	
Pros	**Cons**
• Most services available, from networking to robotics • Most mature • Considered the gold standard in cloud reliability and security • More compute capacity vs Azure & GCP • All major software vendors make their programs available on AWS	• Dev/Enterprise support must be purchased • Can overwhelm newcomers with the sheer number of services and options • Comparatively limited options for hybrid cloud
MICROSOFT AZURE	
Pros	**Cons**
• Easy integration and migrations for existing Microsoft services • Many services available, including best-in-class AI, ML, and analytics services • Relatively cheaper for most services vs AWS & GCP • Great support for hybrid cloud strategies	• Fewer service offerings vs AWS • Particularly geared towards enterprise customers
GCP	
Pros	**Cons**
• Plays nicely with other Google service and products • Excellent support for containerized workloads • Global fiber network	• Limited services vs AWS & Azure • Limited support for enterprise use cases

Summing up the Big 3

Even though AWS is the current market leader in terms of capacity and service, Microsoft and Google are also rapidly growing to compete with AWS.

Microsoft in particular is hot on the heels of AWS with its strong emphasis on the enterprise. Meanwhile, Google continues to evolve its presence by providing excellent integrations with open-source projects and third-party services.

In the end, of course, it all boils down to your specific use case. As the market grows, most enterprises are looking for multi-cloud strategies to leverage the strengths offered by each cloud provider [without locking themselves to a single provider](#).