AWS vs Google vs Azure: Pros and Cons with Each Cloud Provider

Migrating to the cloud is the go-to market move for businesses today, and it is an essential move for all sorts of businesses, whether small or big. Leading this 'cloud battle' are the three big tech giants: Amazon, Microsoft and Google and each vendor with their unique set of features, services and offers has sparked the debate of "Who can win the IaaS enterprise market?" In the following article we shall analyze the top three cloud services in the market today: AWS (Amazon Web Services), Microsoft Azure and Google Cloud Platform (GCP).

Amazon Web Services (AWS)

Amazon's AWS started their 'cloud' journey all the way back in 2006 and are one of the pioneers of cloud integration. Over the years AWS has massively taken over the majority market shares in the cloud business and is second to none in that regard. One of the key strengths in AWS's arsenal is their dominance over the public cloud platform in the past years due to a significantly greater number of availability zones. As of 2020 AWS have 77 availability zones within 24 geographical regions around the world, and have confirmed the introduction of 9 more in the upcoming years. Due to the same reason they rank very highly when it comes to matters of security and reliability. AWS provide their users with a large inventory of configuration options, monitoring and policy features which are key traits attracting large customer bases.

AWS	
Services	AWS Provider
IaaS	Amazon Elastic Compute Cloud
PaaS	AWS Elastic Beanstalk
Containers	Amazon Elastic Compute Cloud Container Service
Serverless Functions	AWS Lambda
Database Services	

Relational Database Management System	Amazon Relational Database Service
NoSQL: Key–Value	Amazon DynamoDB
NoSQL: Indexed	Amazon SimpleDB
Storage Services	
Object Storage	Amazon Simple Storage Service
Virtual Server Disks	Amazon Elastic Block Store
Cold Storage	Amazon Glacier
File Storage	Amazon Elastic File System
Networking Services	
Virtual Network	Amazon Virtual Private Cloud (VPC)
Elastic Load Balancer	Elastic Load Balancer
Peering	Direct Connect
DNS	Amazon Route 53

AWS's partnering policy is a seen as a huge upside by many businesses as they offer a significant number of third-party software services to their users, thus developing a healthy partner ecosystem. However, moving forward there are certain factors that might hinder AWS's growth in the upcoming years. The hesitance of enterprises to get in bed with the colossal parent company Amazon is a key concern as Amazon continues to spread across numerous industries such as those of tech, health and finance which is definitely raises a cause of concern for IT enterprises. AWS have been somewhat offhand about their hybrid cloud policy and have not been supporting on-premise private clouds. Certain enterprises may also find the vast array of 200+ feature services a little daunting to navigate through and manage but despite these restrictions, AWS remains the top contender in the market.

Noticeable customer base

Microsoft Azure

Microsoft Azure currently holds the second biggest share in the cloud market, preceding only AWS and the biggest cause of that is Microsoft's pre-existing strong foothold in multiple corporations due to the past many decades. Azure has a massive global infrastructure encompassing over 60+ regions worldwide with a minimum of three availability zones per region. One of the key strengths that Azure offers its customers is that its services integrate very well with existing Microsoft products that are in use in many enterprises. This way Azure enables a lot of its existing customers to easily migrate to cloud without facing much hassle. Moreover, a distinguishing policy that Azure has adopted that is making it popular among users is its operability with open source technologies as about half of its workloads are currently running on Linux systems. Azure offers about 100+ services to its users.

Microsoft Azure	
Services	Azure Provider
IaaS	Virtual Machines
PaaS	App Service and Cloud Services
Containers	Azure Kubernetes Service (AKS)
Serverless Functions	Azure Functions
Database Services	
Relational Database Management System	SQL Database
NoSQL: Key–Value	Table Storage
NoSQL: Indexed	Azure Cosmos DB

Storage Services	
Object Storage	Blob Storage
Virtual Server Disks	Managed Disks
Cold Storage	Azure Archive Blob Storage
File Storage	Azure File Storage
Networking Services	
Virtual Network	Virtual Networks (Vents)
Elastic Load Balancer	Load Balancer
Peering	ExpressRoute
DNS	Azure DNS

Despite having a rich history and reputation, the reason why Microsoft's Azure falls a little behind is mainly due its performance issues in the past couple of years. Azure has faced a series of outages over the years, the largest being of 39 hours 77 minutes in 2014, and while no vendor is unsusceptible to this problem, AWS and GCP have faced a lot less in the same year (AWS: 2 hours 69 minutes; GCP: 14 minutes). On top of that certain existing customers have complained about the quality of Azure's technical support especially in contrast with the increasing cost of this service and have claimed some of Azure's enterprise grade applications to be less 'enterprise-ready'.

Noticeable customer base

Google Cloud Platform (GCP)

GCP currently has the smallest infrastructure of the 'BIG 3' as they are relatively new to expanding their cloud-based industry. Their infrastructure expands over 24 regions with a total of 73 availability zones, falling quite behind AWS and Azure's massive network. Google has proved to have a good track record with innovative, cloud-native companies as their marketing strategy in recent history has been to target smaller yet innovative projects. Google launched its cloud services for enterprises fairly recently. A key strength that Google possesses is its reputation and work in 'big data and other analytics' which essentially gave birth to their cloud, and Google vastly supports open source technologies, thus providing modern customers a really interesting dynamic. However, dealing with enterprise accounts Google has struggled as it's new in the game and has reported to show immaturity of process. Enterprises have complained about Google's inability to propose attractive packages along with flexible pricings. Negotiations are one of the key sectors that are affecting GCP but the future can be very bright for this emerging giant as they have the highest percentage increase in the market at about 83%, with Azure at 75%, and AWS at about 41%.

Google Cloud Platform	
Services	GCP Provider
IaaS	Google Compute Engine
PaaS	Google App Engine
Containers	Google Kubernetes Engine
Serverless Functions	Google Cloud Functions
Database Services	
Relational Database Management System	Google Cloud SQL
NoSQL: Key–Value	Google Cloud Datastore Google Cloud Bigtable
NoSQL: Indexed	Google Cloud Datastore

Storage Services	
Object Storage	Google Cloud Storage
Virtual Server Disks	Google Compute Engine Persistent Disks
Cold Storage	Google Cloud Storage Nearline
File Storage	ZFS/Avere
Networking Services	
Virtual Network	Virtual Private Cloud
Elastic Load Balancer	Google Cloud Load Balancing
Peering	Google Cloud Interconnect
DNS	Google Cloud DNS

Noticeable customer base

Pricing

Pricing is a critical concern for businesses when choosing a suitable vendor. Although the figures seem to keep varying, we summarize the basic packages of launching the smallest and largest instances on all three platforms respectively.

	Basic Series	Instance Type	Details	Pricing ($)
AWS	T2-series	tT2.nano	512 MiB memory 1 vCPU	0.0065 per hour
Azure	B-series	B1ls	512 MiB memory 1 vCPU	0.0052 per hour

GCP	E2-machines	E2-standard-4	8 GiB memory 2 vCPUs	0.067006 per hour

Pricing can vary according to the performance feature the client wants to opt for. Below the basic package models with respect to different instance types are displayed.

Instance Type	AWS*	Azure*	GCP*	AWS Pricing ($) per hour	Azure Pricing ($) per hour	GCP Pricing ($) per hour
General Purpose	m5.xlarge	B4MS	n1-standard-4	0.192	0.166	0.214
Compute Optimized	c5.xlarge	F4s v2	n1-highcpu-4	0.170	0.17	0.1626
Memory optimized	r5.xlarge	E4 v3	n1-highmem-4	0.252	0.252	0.2696
GPU Instances	g3s.4xlarge	NC 6	NVIDIA@Tesla@P4	0.75	0.899	2.4

As seen from the above data, AWS tends to have the lowest prices and moreover offers great discounts to its enterprise customers with Azure's price plans closely following. Google's cloud services are the most expensive on a general trend which is why they have not exploded into the enterprise market yet.

Provider	Instance	vCPU	Memory (GiB)	Network Bandwidth (Gbps)	GPU
AWS	m5.xlarge	4	16	up to 10	-
	c5.xlarge	4	8	up to 10	-
	r5.xlarge	4	32	up to 10	-
	g3s.4xlarge	4	30.5	-	1

				Local SSD (GiB)	
	B4MS	4	16	32	-
	F4s v2	4	8	32	-
Azure	E4 v3	4	32	100	-
	NC 6	6	56	340	1 (12 GiB)
				Max total PD size (TB)	
	n1-standard-4	4	15	257	-
	n1-highcpu-4	4	3.60	257	-
	n1-highmem-4	4	26	257	-
GCP	NVIDIA@Tesla@P4	1-24 1-48 1-96	1-156 1-312 1-624	-	1 GPU (8 GiB) 2 GPUs (16 GiB) 4 GPUs (32 GiB)

Conclusion

In conclusion, there is no point in hiding the fact that AWS has been dominating the cloud industry but in recent times the gap between Amazon, Microsoft and Google has significantly decreased. Azure will always remain a strong contender for cloud migration due to Microsoft's rich history and reputation, and Google will continue to expand their horizons as depicted by their heavily increasing market growth rate.