AWS vs Azure vs Google Cloud

Category	AWS	Microsoft Azure	Google Cloud
Compute (VMs)	EC2 (Elastic Compute Cloud)	Azure Virtual Machines	Compute Engine
Container Services	ECS, EKS (Kubernetes), Fargate	Azure Kubernetes Service (AKS)	Google Kubernetes Engine (GKE)
Serverless Compute	Lambda	Azure Functions	Cloud Functions
Autoscaling	Auto Scaling, EC2 Fleet	VM Scale Sets	Managed Instance Groups
Hybrid Cloud	Outposts, Local Zones	Azure Arc, Azure Stack	Anthos
Object Storage	S3	Azure Blob Storage	Cloud Storage
Block Storage	EBS	Azure Disk Storage	Persistent Disk
File Storage	EFS	Azure Files	Filestore
Database (SQL)	RDS (MySQL, PostgreSQL, Aurora, SQL Server)	Azure SQL, Managed PostgreSQL/ MySQL	Cloud SQL
Database (NoSQL)	DynamoDB	Cosmos DB	Firestore, Bigtable
Data Warehouse	Redshift	Azure Synapse	BigQuery
Caching	ElastiCache (Redis, Memcached)	Azure Cache for Redis	Memorystore
Big Data Processing	EMR	HDInsight	Dataproc
AI/ML Services	SageMaker, Bedrock, Rekognition, Comprehend	Azure ML, Cognitive Services, OpenAI Integration	Vertex AI, Gemini, Vision API, NLP APIs

DevOps & CI/CD	CodeBuild, CodeDeploy, CodePipeline, Cloud9	Azure DevOps, GitHub Actions	Cloud Build, Cloud Deploy
Networking (VPC)	VPC	Virtual Network	VPC
Load Balancers	ALB, NLB, CLB	Azure Load Balancer, App Gateway	Cloud Load Balancing
DNS	Route 53	Azure DNS	Cloud DNS
API Gateway	Amazon API Gateway	Azure API Management	Apigee, Cloud Endpoints
CDN	CloudFront	Azure CDN	Cloud CDN
Security & Identity	IAM, Cognito, Shield, WAF, KMS	Azure AD, Defender, Key Vault, Azure WAF	IAM, Identity-Aware Proxy, Shielded VMs, KMS
Monitoring & Logging	CloudWatch, CloudTrail, X-Ray	Azure Monitor, Log Analytics	Cloud Logging, Cloud Monitoring, Trace
Edge Computing	AWS Wavelength, CloudFront Edge	Azure Edge Zones	Google Edge Network
IoT Platform	AWS IoT Core	Azure IoT Hub	Google IoT Core (deprecated), partner ecosystem
Migration Tools	DMS, SMS, Application Migration Service	Azure Migrate	Migrate for Compute Engine, Database Migration Service
Enterprise Tools	AWS Organizations, Control Tower	Azure AD + Policy + Blueprints	Resource Manager, Organization Policies

Short Explanations for Each Cloud Service Category

1. Compute (VMs)

Virtual Machines that provide customizable CPU, RAM, and OS for running applications at scale.

2. Container Services

Managed platforms to run Docker/Kubernetes workloads without handling cluster complexity.

3. Serverless Compute

Event-driven compute where code runs automatically without provisioning servers.

4. Autoscaling

Automatically increases or decreases compute resources based on real-time demand.

5. Hybrid Cloud

Services that connect on-premise datacenters with cloud environments for unified management.

6. Object Storage

Highly scalable storage for unstructured data like images, logs, backups, and datasets.

7. Block Storage

Fast, persistent disks attached to VMs—ideal for databases and enterprise applications.

8. File Storage

Shared file systems accessible across VMs, used for enterprise apps and content workloads.

9. Database (SQL)

Fully managed relational databases supporting MySQL, PostgreSQL, SQL Server, etc.

10. Database (NoSQL)

Non-relational databases built for massive scale, low latency, and flexible schemas.

11. Data Warehouse

Cloud-native analytical engines for processing petabyte-scale structured data.

12. Caching

In-memory data stores to speed up applications by reducing database load.

13. Big Data Processing

Platforms for processing large datasets using distributed engines like Hadoop or Spark.

14. AI/ML Services

End-to-end machine learning platforms + ready AI APIs for vision, speech, NLP, and generative AI.

15. DevOps & CI/CD

Tools to automate code builds, testing, deployments, and environment management.

16. Networking (VPC)

Isolated virtual networks in the cloud that host compute, databases, and services securely.

17. Load Balancers

Distribute incoming traffic across multiple servers to ensure high availability.

18. DNS
Manages domain names and routes internet traffic to services efficiently.
19. API Gateway
Manages, secures, and scales APIs used by applications and microservices.
20. CDN (Content Delivery Network)
Delivers content from edge locations globally to reduce latency and improve performance.
21. Security & Identity
Access control, encryption, threat detection, and security monitoring tools.
22. Monitoring & Logging
Centralized tools to track performance, logs, events, and application behavior.
23. Edge Computing
Running applications closer to end-users to reduce latency (useful for IoT, 5G, AR/VR).
24. IoT Platform
Services to connect, manage, and analyze data from IoT devices.
25. Migration Tools
Automated tools to migrate servers, databases, VMs, and applications to the cloud.
26. Enterprise Tools
Governance, identity, cost control, and organization management services for large companies.

Scaling Type	What It Means	Pros	Cons	When to Use
Vertical Scaling	Increase power of one machine	Easy, simple	Limited, can cause downtime	Monoliths, small workloads
Horizontal Scaling	Add more machines	Highly scalable, HA	Complex design	Web apps, microservices, high traffic