



A cloud services cheat sheet for *AWS*, Azure and Google Cloud

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AWS, Microsoft and Google each offer well over 100 cloud services. It's hard enough keeping tabs on what one cloud offers, so good luck trying to get a handle on the products from the three major providers.

Even trying to compare what's available in each cloud can quickly get convoluted, since naming conventions vary by vendor and service. For example, you can be forgiven for not knowing AWS Fargate, Microsoft Azure Container Instances and Google Cloud Run all essentially serve the same purpose.

So, if you ever feel at a loss for what's what, hopefully this cloud services cheat sheet will help. Consider it a guide for cloud directories -- a quick reference sheet for what each vendor calls the same service.

However, you can also use this as a starting point. You'll need to do your homework to get a more nuanced understanding of what distinguishes the

offerings from one another. Follow some of the links throughout this piece and take that next step in dissecting these offerings.

That's because not all services are equal -- each has its own set of features and capabilities, and the functionality might vary widely across platforms. And just because a provider doesn't have a designated service in one of these categories, that doesn't mean it's impossible to achieve the same objective. For example, Google Cloud doesn't offer an explicit disaster recovery service, but it's certainly [capable of supporting DR](#).

Here is our cloud services cheat sheet of the services available on AWS, Google Cloud and Azure. The list is broken down by category to help you start your cross-cloud analysis.

Editor's note: *Cloud services are constantly evolving. All information in this cheat sheet is up to date as of publication. We will periodically update the list to reflect the ongoing changes across all three platforms.*

AI AND MACHINE LEARNING

	AWS	Azure	Google Cloud
AI containers	AWS Deep Learning Containers	GPU support on AKS	Deep Learning Containers
AI machine images	AWS Deep Learning AMIs	Data Science Virtual Machines	Deep Learning VM Image
Chat bots builder	Amazon Lex	Azure Bot Service, QnA Maker	Dialogflow
Data labeling	Amazon SageMaker Ground Truth	Azure Machine Learning data labeling	Cloud Data Labeling
Document extraction, image content analysis	Amazon Textract	Azure Form Recognizer, Ink Recognizer, Computer Vision, Custom Vision	Vision API
Image and video recognition,	Amazon	Azure Face, Video	Video AI

	AWS	Azure	Google Cloud
indexing	Rekognition	Indexer	
Inference accelerator	Amazon Elastic Inference	GPUs on AKS	Cloud TPU, Edge TPU
Language recognition, sentiment analysis	Amazon Comprehend	Language Understanding, Text Analytics	Natural Language
Language translation	Amazon Translate	Speech Translation, Translator	Translation
Machine learning hardware	AWS Inferentia, AWS Trainium (preview*)	FPGA	Cloud TPU
Managed machine learning platform	Amazon SageMaker	Azure Machine Learning	Cloud AutoML
Online fraud detection	Amazon Fraud Detector	N/A	reCAPTCHA Enterprise
Prediction review	Amazon	Azure Content	N/A

	AWS	Azure	Google Cloud
and moderation	Augmented AI, Amazon SageMaker Clarify	Moderator	
Recommendation integration	Amazon Personalize	Personalizer	Recommendations AI (preview)
Speech recognition	Amazon Transcribe	Speaker Recognition, Speech to Text	Cloud Speech-to-Text API
Text-to-speech	Amazon Polly	Text to Speech	Cloud Text-to-Speech API
Time-series forecasting	Amazon Forecast	N/A	N/A
Vision/speech modeling packaged devices	AWS DeepLens	Azure Kinect DK	N/A

ANALYTICS

	AWS	Azure	Google Cloud
Big data processing	Amazon EMR	Azure Databricks , Azure HDInsight	Dataproc
Business analytics	Amazon QuickSight	Power BI Embedded	Looker , Google Data Studio
Data lake creation	Amazon HealthLake (preview), AWS Lake Formation	Azure Data Lake Storage	Cloud Storage
Data sharing	AWS Data Exchange, AWS Lake Formation	Azure Data Share	Cloud Dataprep (partnership with Trifacta)
Data warehousing	Amazon Redshift	Azure Synapse Analytics	BigQuery
ETL	AWS Glue, Amazon Kinesis Data Firehose, Amazon SageMaker Data	Azure Data Factory	Cloud Data Fusion, Dataflow, Dataproc

	AWS	Azure	Google Cloud
	Wrangler		
Hosted Hadoop/Spark	Amazon EMR	Azure HDInsight	Dataproc
Managed search	Amazon CloudSearch, Amazon Elasticsearch Service , Amazon Kendra	Azure Cognitive Search, Bing Search services	Cloud Search
Managed Kafka	Amazon Managed Streaming for Apache Kafka	Azure Event Hubs for Apache Kafka	N/A (available through a partnership with Confluent)
Real-time data streaming	Amazon Kinesis Data Analytics, Amazon Kinesis Data Streams	Azure Stream Analytics	Dataflow, Pub/Sub

	AWS	Azure	Google Cloud
Query service, data exploration	Amazon Athena, Amazon Elasticsearch Service, Amazon Managed Service for Grafana (preview)	SQL Server ML Services, Big Data Clusters (Spark), Data Lake Analytics, SQL Server Analysis Services, Azure Data Explorer	BigQuery

APPLICATION INTEGRATION

	AWS	Azure	Google Cloud
API development and management	Amazon API Gateway, AWS AppSync	Azure API Apps	API Gateway (preview), Apigee, Cloud Endpoints
Distributed app coordination	Amazon Simple Workflow Service, AWS Step Functions	Logic Apps	Cloud Tasks

	AWS	Azure	Google Cloud
Event routing, third-party integration	Amazon AppFlow, Amazon EventBridge , Amazon Simple Notification Service	Event Grid	Pub/Sub
Messaging	Amazon MQ, Amazon Simple Queue Service	Queue Storage, Service Bus	Pub/Sub
Service discovery	AWS Cloud Map	N/A	N/A
Service mesh	AWS App Mesh	Azure Service Fabric Mesh (preview)	Anthos Service Mesh
Workflow orchestration	AWS Data Pipeline	Logic Apps	Cloud Composer

BUSINESS APPLICATIONS**

	AWS	Azure	Google Cloud
Collaboration tool suite	N/A	Microsoft 365	Google Workspace
Document sharing and storage	Amazon WorkDocs	Microsoft Word	Google Docs
Email and calendar	Amazon WorkMail	Outlook	Gmail
Low-code/no-code	Amazon Honeycode (preview)	Microsoft PowerApps, Project Bonsai (preview)	AppSheet
Video calls and chat	Amazon Chime	Microsoft Teams	Google Meet
Voice assistant	Alexa for Business	Cortana	Google Assistant

COMPUTE

	AWS	Azure	Google Cloud
Autoscaling	AWS EC2 Auto Scaling	Azure Autoscale, Azure virtual machine scale sets	Managed instance groups (MIGs)
Batch scheduling, executing and processing	AWS Batch	Azure Batch	Batch on GKE (preview)
Functions as a service	AWS Lambda	Azure Functions	Cloud Functions
5G-based infrastructure	AWS Wavelength	Azure Edge Zones	Global Mobile Edge Cloud (GMEC)
High performance computing cluster management	AWS ParallelCluster	Azure CycleCloud	N/A
Isolated servers	Dedicated Instances	Azure Dedicated Host	Sole-tenant Nodes, Shielded VMs

	AWS	Azure	Google Cloud
PaaS	AWS Elastic Beanstalk	App Service, Azure Cloud Services, Azure Spring Cloud, Azure Red Hat OpenShift	App Engine
On-premises/edge devices	AWS Outposts , AWS Snow Family	Azure Stack Hub, Azure Stack HCI (preview), Azure Stack Edge	N/A
Quantum computing	Amazon Braket	Azure Quantum (preview)	N/A
Virtual machines	Amazon EC2	Virtual Machines	Compute Engine
Virtual private server	Amazon Lightsail	N/A	N/A
VMware integration	VMware Cloud on AWS	Azure VMware Solution	VMware Engine

CONTAINERS

	AWS	Azure	Google Cloud
Container registry	Amazon Elastic Container Registry (ECR), ECR Public	Azure Container Registry	Artifact Registry (preview), Container Registry
Managed container service	Amazon Elastic Container Service (ECS), Amazon Elastic Kubernetes Service (EKS)	Azure Kubernetes Service (AKS)	Google Kubernetes Engine (GKE)
Serverless container environment	AWS Fargate	Azure Container Instances (ACI)	Cloud Run

COST CONTROLS

	AWS	Azure	Google Cloud
<u>Long-term commitment discount programs</u>	EC2 Reserved Instances, Savings Plans	Reservations, Azure Hybrid Benefit	Committed use discounts, sustained use discounts
Low-cost, interruptible VMs	EC2 Spot	Azure Spot Virtual Machines	Preemptible Virtual Machines
Optimization tools	<u>Amazon CodeGuru</u> , Amazon DevOps Guru (preview), AWS Compute Optimizer, AWS Trusted Advisor, AWS Well-Architected Tool	Azure Advisor, Azure Well-Architected Review	Recommender, Network Intelligence Center, Cloud Profiler
Spending tracker and analysis	AWS Budgets, AWS Cost Anomaly Detection, AWS Cost Explorer, AWS	Azure Cost Management and Billing	Cost Management

	AWS	Azure	Google Cloud
	Cost and Usage Report		

DATABASES

	AWS	Azure	Google Cloud
Blockchain	Amazon Managed Blockchain , Amazon Quantum Ledger Database (QLDB)	Azure Blockchain Service (preview), Azure Blockchain Tokens (preview), Azure Blockchain Workbench (preview)	N/A
In-memory caching	Amazon ElastiCache (Memcached, Redis)	Azure Cache for Redis	Cloud Memorystore
NoSQL: Column-	Amazon Keyspaces	Azure Cosmos DB	Cloud Bigtable

	AWS	Azure	Google Cloud
family	(for Apache Cassandra)		
NoSQL: Document	Amazon DocumentDB (with MongoDB compatibility), Amazon DynamoDB	Azure Cosmos DB	Cloud Firestore , Firebase Realtime Database
NoSQL: Graph	Amazon Neptune	Azure Cosmos DB Gremlin API	N/A
NoSQL: Key-value	Amazon DynamoDB , Amazon Keyspaces	Azure Cosmos DB, Table storage	Cloud Bigtable, Firestore
Relational database management system	Amazon Aurora , Amazon RDS (MySQL, PostgreSQL, Oracle, SQL Server, MariaDB), Amazon	Azure Database (MySQL, MariaDB, PostgreSQL), Azure SQL (Database, Edge, Managed Instance)	Cloud SQL (MySQL, PostgreSQL, SQL Server), Cloud Spanner

	AWS	Azure	Google Cloud
	RDS on VMware		
Time-series database	Amazon Timestream	Azure Time Series Insights	Cloud Bigtable

DEVELOPER TOOLS

	AWS	Azure	Google Cloud
App configuration parameter storage	AWS AppConfig	App Configuration	Cloud Storage
Artifact management	AWS CodeArtifact	Azure Artifacts, GitHub Packages	Artifact Registry (preview)
Code debugging	AWS X-Ray	Visual Studio Code	Cloud Debugger, Firebase Crashlytics
CI/CD	AWS CodeBuild , AWS CodeDeploy, AWS CodePipeline,	Azure DevOps , Azure Pipelines	Cloud Build, Tekton

	AWS	Azure	Google Cloud
	AWS CodeStar		
Development kits	AWS Cloud Development Kit, Amazon Corretto	Azure SDKs	Cloud SDK
IDEs and other tools for interacting with cloud resources	AWS Cloud9, AWS CLI, AWS CloudShell, Amazon EMR Studio	Azure CLI, Azure PowerShell, Azure Cloud Shell, Visual Studio, Visual Studio Code, Visual Studio Codespaces	Cloud Code , Tools for Eclipse, Tools for PowerShell
Lab environment	N/A	Azure Lab Services	N/A
Mobile and Web app development	AWS Amplify	App Service, Mobile Apps, Xamarin with Azure, Web Apps, Static Web Apps (preview)	Google Firebase
Mobile and web	AWS Device Farm	Visual Studio App Center Test, Azure	Google Firebase

	AWS	Azure	Google Cloud
app testing		Test Plans	Test Lab
Private Git repository	AWS CodeCommit	Azure Repos	Cloud Source Repositories

IOT

	AWS	Azure	Google Cloud
Cloud-device connections, data collection and management	AWS IoT Analytics, AWS IoT Core, AWS IoT Device Defender, AWS IoT Device Management, AWS IoT Events, AWS IoT SiteWise	Azure IoT Central, Azure IoT Hub, Azure Defender for IoT, Azure Sphere	Cloud IoT Core
IoT edge compute	AWS Greengrass	Azure IoT Edge	Edge TPU

	AWS	Azure	Google Cloud
Microcontroller OS	FreeRTOS	Azure RTOS	N/A
Virtual modeling	AWS IoT Things Graph	Azure Digital Twins (preview)	N/A

MANAGEMENT AND GOVERNANCE

	AWS	Azure	Google Cloud
Automation	AWS CloudFormation , AWS Proton (preview), AWS OpsWorks	Azure Resource Manager , Azure Automation	Cloud Deployment Manager , Cloud Scheduler
Anomaly detection	CloudWatch Anomaly Detection	Anomaly Detector	Anomaly Detection
Application portfolio	AWS Service Catalog	Azure Managed Applications, Azure	Private Catalog

	AWS	Azure	Google Cloud
governance		Blueprints (preview)	
Automated Windows Server management	N/A	Azure Automanage (preview)	N/A
Configuration management	AWS Config	Azure App Configuration	Cloud Asset Inventory
Health dashboard	Personal Health Dashboard	Resource Health, Azure Service Health	Cloud Monitoring
Hybrid and multi-cloud management	Amazon EKS Anywhere (preview), Amazon ECS Anywhere (preview)	Azure Arc	Google Anthos
License management	AWS License Manager	N/A	N/A

	AWS	Azure	Google Cloud
Monitoring	Amazon CloudWatch, Amazon CloudWatch Logs, AWS Transit Gateway Network Manager, Amazon Lookout for Metrics (preview), Amazon Managed Service for Prometheus (preview)	Azure Monitor , Network Watcher, Log Analytics	Operations, Cloud Operations for GKE (formerly Stackdriver), Network Intelligence Center
Multi-account management	AWS Control Tower, AWS Organizations	Azure Management Groups, Azure Lighthouse	N/A
Policy management	AWS Organizations	Azure Policy	Organization Policy Service
Telemetry collection and	AWS Systems Manager	Azure Monitor	Service Monitoring (preview)

	AWS	Azure	Google Cloud
response			
Web-based user interface	AWS Management Console	Azure Portal	Cloud Console

MIGRATION

	AWS	Azure	Google Cloud
Database migration	AWS Database Migration Service	Azure Database Migration Service	Database Migration Service (preview)
Data transfer appliance	Snow Family	Data Box	Transfer Appliance
Disaster recovery	CloudEndure Disaster Recovery	Azure Site Recovery	N/A
Online data transfer	AWS DataSync, AWS Transfer	Azure File Sync	BigQuery Data Transfer Service,

	AWS	Azure	Google Cloud
	Family		Cloud Data Transfer
On-premises application analysis	AWS Application Discovery Service, Migration Evaluator	Azure Migrate , Movere , Azure Resource Mover (preview)	N/A
On-premises and cloud storage integration	Storage Gateway	StorSimple	N/A (offered by partner Cloudian)
Migration tracker	AWS Migration Hub	Azure Migrate	N/A
Server migration	AWS App2Container, AWS Server Migration Service, CloudEndure Migration	Azure Migrate	Migrate for Anthos, Migrate for Compute Engine, VM migration

MISCELLANEOUS

	AWS	Azure	Google Cloud
Customer engagement	Amazon Connect, Contact Lens for Amazon Connect	Azure Communication Services (preview)	Contact Center AI
End user communications	Amazon Pinpoint, Amazon Simple Email Service	Azure Notification Hubs	Firebase Cloud Messaging
Gaming	Amazon GameLift, Amazon Lumberyard	Game Stack	Game Servers
Geolocation APIs and services	Amazon Maps API, Amazon Location Service (preview)	Azure Maps	Google Maps Platform
Genomics	N/A	Microsoft Genomics	Cloud Life Sciences (preview)
Industrial and other workplace	Amazon Lookout for Vision, Amazon	Azure IoT	Vision AI

	AWS	Azure	Google Cloud
monitoring tools	Lookout for Equipment, Amazon Panorama, Amazon Monitron		
Media services	Amazon Elastic Transcoder, AWS Elemental suite, Amazon Interactive Video Service, Amazon Kinesis Video Streams	Azure Media Player, Content Protection, Encoding, Live and On-Demand Streaming, Live Video Analytics (preview), Media Services	OpenCue
Mobile access to internal web apps	Amazon WorkLink	N/A	Identity-Aware Proxy
Robotics application development	AWS RoboMaker	N/A	Cloud Robotics Core
<u>Satellite ground</u>	AWS Ground	Azure Orbital	N/A

	AWS	Azure	Google Cloud
stations	Station	(preview)	
Virtual desktop	Amazon WorkSpaces, Amazon AppStream 2.0	Windows Virtual Desktop	N/A
Virtual reality, mixed reality app development	Amazon Sumerian	Azure Digital Twins (preview), Kinect DK, Remote Rendering (preview), Spatial Anchors	Google VR

NETWORKING

	AWS	Azure	Google Cloud
Build, deploy and manage APIs	Amazon API Gateway	Azure API Apps, API Management	Apigee API Management

	AWS	Azure	Google Cloud
			Platform
Content delivery network	Amazon CloudFront	Content Delivery Network (CDN)	Cloud CDN
Dedicated fiber connection between VPCs and private network	AWS Direct Connect	Azure ExpressRoute	Cloud Interconnect
Domain name system	Amazon Route 53	Azure DNS	Cloud DNS
<u>Load balancing</u>	Elastic Load Balancing (ELB)	Application Gateway, Load Balancer, Traffic Manager	Cloud Load Balancing
Network accelerator	AWS Global Accelerator	Accelerated Networking	Premium Network Service Tier

	AWS	Azure	Google Cloud
Network area translation	NAT Gateway	Virtual Network NAT	Cloud NAT
Satellite ground station	AWS Ground Station	Azure Orbital (preview)	N/A
Service discovery	Amazon ECS, AWS Cloud Map	N/A	Service Discovery (preview)
Traffic control plane	AWS App Mesh	Azure Front Door, Azure Service Fabric	Traffic Director
Virtual WAN	N/A	Virtual WAN	N/A
VPC	Amazon VPC	Azure Virtual Network	Virtual Private Cloud
VPC/VM secure connector	AWS Transit Gateway, AWS VPN	Azure Bastion, Azure Private Link, Azure VPN gateway	Cloud VPN, Direct Peering

SECURITY

	AWS	Azure	Google Cloud
Audit and compliance reports	AWS Artifact, AWS Audit Manager	Service Trust Portal	N/A
Centralized security management	AWS Security Hub	Security Center	Security Command Center
Certificate management	AWS Certificate Manager	App Service Certificates	Certificate Authority Service (preview)
Confidential computing	AWS Nitro Enclaves	Azure Confidential Computing	Confidential Computing (preview)
Container deploy-time security control	N/A	N/A	Binary Authorization
Data discovery and classification	Amazon Macie	Data Discovery & Classification (feature of Azure)	Data Catalog, Cloud Data Loss

	AWS	Azure	Google Cloud
		SQL Database, Azure SQL Managed Instance and Azure Synapse Analytics)	Prevention
Distributed denial-of-service (DDoS) protection	AWS Shield	Azure DDoS Protection	Google Cloud Armor
End-user identity management	Amazon Cognito	Azure Active Directory B2C	Firebase Authentication
Firewall management	AWS Firewall Manager, AWS WAF	Azure Firewall, Web Application Firewall	Cloud Armor, Cloud firewalls
Identity and access management	AWS Identity and Access Management	Azure Active Directory, role-based access control (Azure RBAC)	Identity and Access Management, Identity Platform, Identity-Aware Proxy
Key management	AWS Key Management	Key Vault, Azure	Cloud Key

	AWS	Azure	Google Cloud
	Service, AWS CloudHSM	Dedicated HSM	Management
Multifactor authentication	AWS Multi-Factor Authentication	Azure MFA	Google Authenticator, Titan Security Key
Microsoft Active Directory compatible directory service	AWS Directory Service for Microsoft Active Directory	Azure Active Directory Domain Service	Managed Service for Microsoft Active Directory
Resource access management	AWS Resource Access Manager	Azure Resource Manager	Resource Manager
Security data analysis	Amazon Detective	Security Center	Chronicle
Secrets management	AWS Secrets Manager	Azure Key Vault	Secret Manager
Single sign-on	AWS Single Sign-On	Azure Active Directory single	Cloud Identity


	AWS	Azure	Google Cloud
		single-on	
Signoff for cloud provider data access requests	N/A	Customer Lockbox	Access Transparency
Threat Detection	Amazon GuardDuty	Advanced Threat Protection, Azure Defender	Chronicle, Phishing Protection, Web Risk, Event Threat Detection (preview)
Vulnerability scanning	Amazon Inspector	Security Center	Web Security Scanner

STORAGE

	AWS	Azure	Google Cloud
Archival storage	S3 Glacier, S3 Glacier Deep	Archive Storage	Archive Storage

	AWS	Azure	Google Cloud
	Archive		
Backup	AWS Backup	Azure Backup	N/A
Block storage	Amazon Block Store (EBS)	Disk Storage	Persistent Disk, Local SSD
File storage	Amazon Elastic File Service (EFS), Amazon FSx for Windows File Server, Amazon FSx for Lustre	File Storage, Azure NetApp Files	Filestore
Object storage	Amazon S3	Blob storage	Cloud Storage, Cloud Storage for Firebase

*AWS, Google and Microsoft use different terminology to describe services that are in preview, beta or alpha. For the purposes of this piece, any service that is not generally available is listed as being in preview.



**Several Google and Microsoft services in this section are not explicitly available through Google Cloud Platform and Microsoft Azure, respectively. They are part of each vendor's broader cloud portfolio.