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

—KATHLEEN CASEY, SITE EDITOR

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.

No one can be an expert on everything on a single cloud, let alone all three of the public cloud service providers that operate at this scale. 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 helps. 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.

Not all services are equal—each has its own set of features and capabilities, and the functionality might vary widely across platforms. 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.

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

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AI and machine learning

	AWS	AZURE	GOOGLE CLOUD
AI containers	AWS Deep Learning Containers	GPU support on Azure Kubernetes Service (AKS)	Deep Learning Containers
AI-powered assistant	Amazon Q	Azure OpenAI Service	Gemini for Google Cloud
AI prediction human review and moderation	Amazon Augmented AI (A2I)	Azure AI Content Safety	N/A
Chatbot builder	Amazon Lex	Azure AI Bot Service, Azure Health Bot, Azure AI Language question answering	Dialogflow
Data labeling	Amazon SageMaker Ground Truth	Azure Machine Learning data labeling	Vertex AI data labeling
Document extraction and content analysis	Amazon Textract	Azure AI Document Intelligence	Document AI
Generative AI platforms	Amazon Bedrock	Azure OpenAI Service	Vertex AI
Image recognition and analysis	Amazon Rekognition	Azure AI Vision	Vision AI
Inference accelerator	Amazon Elastic Inference, AWS Inferentia	GPU support on AKS	Cloud Tensor Processing Unit (TPU), Edge TPU
Language translation	Amazon Translate	Azure AI Translator	Translation AI
Machine learning and AI chips	AWS Inferentia, AWS Trainium	Azure Maia 100	Cloud TPU, Trillium TPU
Managed machine learning platform	Amazon SageMaker	Azure Machine Learning	TensorFlow Enterprise, Vertex AI
Notebooks	Amazon EMR Notebooks	Azure Notebooks	Colab Enterprise, Vertex AI Workbench
Online fraud detection	Amazon Fraud Detector	Azure AI Anomaly Detector, Azure Event Hubs and Stream Analytics	reCAPTCHA Enterprise

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	AWS	AZURE	GOOGLE CLOUD
Preconfigured images/VMs for deep learning	AWS Deep Learning Amazon Machine Images (DLAMI)	Data Science Virtual Machine (DSVM)	Deep Learning VM Image
Recommendation integration	Amazon Personalize	Azure AI Personalizer	Recommendations
Speech recognition and generator	Amazon Transcribe, Amazon Polly	Azure AI Speech	Speech-to-Text API, Text-to-Speech API
Text analysis	Amazon Comprehend	Azure AI Language	Natural Language API
Time-series forecasting	Amazon Forecast	AutoML in Azure Machine Learning	TimesFM, forecasting with AutoML in Vertex AI
Video analysis	Amazon Rekognition Video	Azure AI Video Indexer	Video Intelligence API
Visual inspection	Amazon Lookout for Vision	Azure AI Custom Vision	Visual Inspection AI

Analytics

	AWS	AZURE	GOOGLE CLOUD
Big data processing	Amazon EMR, AWS Glue	Azure Data Lake Analytics, Azure HDInsight	Dataproc
Business analytics	Amazon QuickSight, Amazon FinSpace	Power BI, Microsoft Graph Data Connect, Azure Synapse Analytics	Looker
Data exploration and metadata management	Amazon Athena, AWS Glue Data Catalog	Azure Data Explorer, Azure Data Catalog	Dataplex
Data lake creation	AWS Lake Formation	Azure Data Lake Storage Gen2	Cloud Storage
Data share and exchange	AWS Data Exchange, AWS Lake Formation, Amazon Managed Blockchain (AMB)	Azure Data Share	Analytics Hub, Datashare

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Analytics

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Data streaming	Amazon Kinesis Data Analytics, Amazon Data Firehose, Amazon Kinesis Data Streams	Azure Stream Analytics	Dataflow, Pub/Sub, Datastream
Data warehousing	Amazon Redshift	Azure Synapse Analytics, Azure Databricks	BigQuery
Data wrangling	AWS Glue DataBrew, Amazon SageMaker Data Wrangler	Azure Data Factory	Google Cloud Dataprep by Trifacta in BigQuery
Extract, transform and load (ETL)	AWS Glue, AWS Data Pipeline	Azure Data Factory, Azure Synapse Analytics	Cloud Data Fusion, Dataflow, Dataproc
Hosted Hadoop/Spark	Amazon EMR	Azure HDInsight	Dataproc
Managed Kafka	Amazon Managed Streaming for Apache Kafka (MSK)	Azure Event Hubs for Apache Kafka	Confluent Cloud
Managed search	Amazon CloudSearch, Amazon OpenSearch Service, Amazon Kendra	Azure AI Search, Bing Web Search API	Cloud Search
Query service	Amazon Athena, Amazon Managed Grafana, Amazon Redshift	Azure Data Lake Analytics, Azure Synapse Analytics	BigQuery

Application integration

	AWS	AZURE	GOOGLE CLOUD
API development and management	Amazon API Gateway, AWS AppSync	Azure API Management, Azure API Apps	API Gateway, Apigee API Management
Distributed app coordination	Amazon Simple Workflow Service (SWF), AWS Step Functions	Azure Logic Apps	Cloud Tasks
Event handling	Amazon EventBridge	Azure Event Grid	Eventarc

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Application integration

	AWS	AZURE	GOOGLE CLOUD
Integration service	Amazon AppFlow	Azure Logic Apps	Application Integration
Messaging	Amazon MQ, Amazon Simple Queue Service (SQS), Amazon Simple Notification Service (SNS)	Azure Web PubSub, Azure Queue Storage, Azure Service Bus	Pub/Sub
Service discovery	AWS Cloud Map	DNS Service Discovery (DNS-SD) and multicast DNS (mDNS) in Azure Sphere	Service Directory
Service mesh	AWS App Mesh	Open Service Mesh (OSM) in AKS	Cloud Service Mesh
Workflow orchestration	AWS Data Pipeline, AWS Glue, Amazon Managed Workflows for Apache Airflow (MWAA)	Azure Data Factory	Cloud Composer

Business applications*

	AWS	AZURE	GOOGLE CLOUD
Collaboration tool suite	N/A	Microsoft 365, Azure FluidRelay	Google Workspace
Document sharing and storage	Amazon WorkDocs	Microsoft Word	Google Docs, Google Workspace Essentials
Email and calendar	Amazon WorkMail	Microsoft Outlook	Gmail
Low-code/no-code	Amazon QuickSight, AWS Amplify, AWS App Runner	Microsoft Power Apps	AppSheet
Video calls and chat	Amazon Chime	Microsoft Teams	Google Meet
Voice assistant	Amazon Alexa, Amazon Lex	Azure AI Speech	Google Assistant

*SEVERAL GOOGLE AND MICROSOFT SERVICES IN THIS SECTION ARE NOT EXPLICITLY AVAILABLE THROUGH GOOGLE CLOUD AND MICROSOFT AZURE. THEY ARE PART OF EACH VENDOR'S BROADER CLOUD PORTFOLIO.

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Autoscaling	AWS Auto Scaling, Amazon Elastic Compute Cloud (EC2) Auto Scaling	Autoscale in Azure Monitor, Azure Virtual Machine Scale Sets	Compute Engine managed instance groups (MIGs)
Batch scheduling, executing and processing	AWS Batch	Azure Batch	Batch
Extended infrastructure	AWS Outposts	Azure Stack	Google Distributed Cloud
Functions as a service, serverless computing	AWS Lambda	Azure Functions	Cloud Run functions
High-performance computing management	AWS ParallelCluster	Azure CycleCloud, Azure FXT Edge Filer	Cluster Toolkit
Isolated servers	Amazon EC2 Dedicated Hosts	Azure Dedicated Host	Sole-tenant nodes in Compute Engine
PaaS	AWS Elastic Beanstalk, Amazon Lightsail	Azure App Service	App Engine
Quantum computing	Amazon Braket	Azure Quantum	N/A
VMs	Amazon EC2	Azure Virtual Machines	Compute Engine
VM image builder	EC2 Image Builder	Azure VM Image Builder	Packer integration in Compute Engine
VMware integration	VMware Cloud on AWS	Azure VMware Solution	Google Cloud VMware Engine

Containers

	AWS	AZURE	GOOGLE CLOUD
Container migration	AWS App2Container (A2C)	Azure Migrate	Migrate to Containers
Container registry	Amazon Elastic Container Registry (ECR), AWS CodeArtifact	Azure Container Registry	Artifact Registry
Managed container service	AWS Copilot, Amazon Elastic Container Service (ECS)	Azure Container Apps	N/A
Managed Kubernetes service	Amazon Elastic Kubernetes Service (EKS)	AKS	Google Kubernetes Engine (GKE)
Serverless containers	AWS App Runner, AWS Fargate	Azure Container Instances (ACI)	Cloud Run

Cost controls

	AWS	AZURE	GOOGLE CLOUD
Architecture assessment and recommendations	AWS Well-Architected Tool (WA Tool)	Azure Well-Architected Review	Google Cloud Architecture Framework
Billing and budgeting tools	AWS Budgets	Microsoft Billing, Microsoft Cost Management	Cloud Billing, Cloud Billing Budget API, Cost Management
Cloud optimization	Amazon CodeGuru Security, AWS Cost Explorer, AWS Trusted Advisor, AWS Compute Optimizer	Azure Advisor, Microsoft Cost Management	Cloud Profiler, Cost Management, Recommenders
Long-term commitment discount programs	Amazon EC2 Reserved Instances (RI), Compute Savings Plans, EC2 Instance Savings Plans	Azure Hybrid Benefit, Azure Reservations, Azure savings plans	Committed use discounts (CUDs), sustained use discounts (SUDs)
Low-cost, interruptible VMs	Amazon EC2 Spot Instances	Azure Spot Virtual Machines	Spot VMs
Spending tracker and analysis	AWS Cost Anomaly Detection, AWS Cost and Usage Reports (CUR), RI Reporting	Microsoft Cost Management analysis and reporting feature	Cost Management

Databases

	AWS	AZURE	GOOGLE CLOUD
Blockchain	Amazon Managed Blockchain (AMB), Amazon Quantum Ledger Database (QLDB)	Microsoft Azure confidential ledger	Blockchain Node Engine
In-memory data store	Amazon ElastiCache, Amazon MemoryDB	Azure Cache for Redis	Memorystore
NoSQL: Column-family	Amazon Keyspaces (for Apache Cassandra)	Azure Cosmos DB	Bigtable
NoSQL: Document	Amazon DocumentDB (with MongoDB compatibility)	Azure Cosmos DB	Firestore, Firebase Realtime Database
NoSQL: Graph	Amazon Neptune	Azure Cosmos DB for Apache Gremlin	Neo4j on Google Cloud
NoSQL: Key-value	Amazon DynamoDB	Azure Cosmos DB	Bigtable, Firestore
Relational database management system	Amazon Aurora, Amazon Relational Database Service (RDS), Amazon Redshift	Azure SQL Database, Azure Cosmos DB for PostgreSQL, Azure Database for MariaDB	AlloyDB for PostgreSQL, Cloud SQL, Cloud Spanner
Time-series database	Amazon Timestream	Azure Time Series Insights	Bigtable

Developer tools

	AWS	AZURE	GOOGLE CLOUD
App configuration	AWS AppConfig	Azure App Configuration	Firebase Remote Config
Artifact management	AWS CodeArtifact	Azure Artifacts	Artifact Registry
CI/CD	AWS CodeBuild, AWS CodeDeploy, AWS CodePipeline	Azure DevOps, Azure Pipelines	Cloud Build, Cloud Deploy
CLI tools	AWS Command Line Interface (CLI)	Azure Command-Line Interface (CLI)	Cloud SDK, gcloud CLI

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Developer tools

	AWS	AZURE	GOOGLE CLOUD
Code debugging	AWS X-Ray	Visual Studio Code (VS Code)	Cloud Trace, Google Cloud Observability, Firebase Crashlytics
Development kits and client libraries	AWS Cloud Development Kit (CDK), Amazon Corretto, AWS SDKs	Azure SDKs	Cloud SDK
Git repositories	AWS CodeCommit, AWS Serverless Application Repository	Azure Repos	Cloud Source Repositories
Integrated development environments and related tools	Amazon EMR Studio, AWS Cloud9, AWS CloudShell	Azure Cloud Shell, VS, VS Code	Cloud Code, Cloud Shell
Mobile and web app development	AWS Amplify	Azure App Service, Azure mobile apps, Azure Static Web Apps, Xamarin apps with Azure	Firebase
PowerShell	AWS Tools for PowerShell	Azure PowerShell	Cloud Tools for PowerShell
Scheduling	Amazon EventBridge	Azure Logic Apps	Cloud Scheduler
Testing	AWS Device Farm, AWS Fault Injection Service (FIS)	VS App Center, Azure Test Plans	Firebase Test Lab

IoT

	AWS	AZURE	GOOGLE CLOUD
Cloud-device connections, data collection and management	AWS IoT Analytics, AWS IoT Device Management, AWS IoT Events, AWS IoT SiteWise	Azure IoT Central, Azure Sphere	Leverage Connect for Google Cloud
Device security management	AWS IoT Device Defender	Microsoft Defender for IoT	N/A

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IoT

	AWS	AZURE	GOOGLE CLOUD
IoT edge compute	AWS IoT Greengrass	Azure IoT Edge	Edge TPU
IoT gateway	AWS IoT Core	Azure IoT Hub	N/A
Virtual modeling	AWS IoT Things Graph, AWS IoT TwinMaker	Azure Digital Twins	N/A

Management and governance

	AWS	AZURE	GOOGLE CLOUD
Anomaly detection	Amazon CloudWatch anomaly detection, Amazon Lookout for Metrics	AI Anomaly Detector	Apigee anomaly detection
Application and data management	AWS Service Catalog	Azure Managed Applications, Azure Blueprints, Microsoft Purview	Dataplex, Service Catalog, Service Directory
Automation	AWS CloudFormation, AWS Proton, AWS OpsWorks	Azure Resource Manager, Azure Automation, Bicep, Azure VM extensions	Cloud Deployment Manager, Cloud Foundation Toolkit, Cloud Scheduler, VM Manager
Configuration management	AWS Config	Azure App Configuration	Cloud Asset Inventory
General monitoring	Amazon CloudWatch	Azure Monitor	Cloud Monitoring
Health service and dashboard	AWS Health	Azure Resource Health, Azure Service Health	Cloud Monitoring
Hybrid and multi-cloud management	AWS Outposts, VMware Cloud on AWS, Amazon ECS Anywhere, Amazon EKS Anywhere	Azure Arc, Azure Stack	Google Distributed Cloud
License management	AWS License Manager	N/A	N/A

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Management and governance

	AWS	AZURE	GOOGLE CLOUD
Logging	Amazon CloudWatch Logs, AWS CloudTrail	Azure Monitor Logs, Azure Monitor Log Analytics	Cloud Logging, Cloud Audit Logs
Management console	AWS Management Console	Azure Portal	Google Cloud console
Multi-account management	AWS Control Tower, AWS Organizations	Azure Management Groups, Azure Lighthouse	Resource Manager
Network monitoring	AWS Network Manager	Azure Network Watcher	Network Intelligence Center
Policy management	AWS Organizations	Azure Policy	Organization Policy Service

Migration

	AWS	AZURE	GOOGLE CLOUD
Database migration	AWS Database Migration Service (DMS)	Azure Database Migration Service	Database Migration Service
Data transfer appliance	AWS Snowball, AWS Snowcone	Azure Data Box	Transfer Appliance
Migration and modernization offerings	AWS Migration Acceleration Program (MAP), AWS Mainframe Modernization, AWS Migration Hub	Azure Migrate and Modernize, FastTrack for Azure	Rapid Migration and Modernization Program (RaMP)
Online data transfer	AWS DataSync, AWS Transfer Family, AWS Mainframe Modernization	Azure Storage Mover	Storage Transfer Service
On-premises application analysis	AWS Application Discovery Service, Migration Evaluator	Azure Migrate, Azure Resource Mover	N/A
Server migration	AWS Application Migration Service	Azure Migrate	Migrate to Virtual Machines

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Miscellaneous

	AWS	AZURE	GOOGLE CLOUD
Customer multichannel communication	Amazon Connect, Amazon Connect Contact Lens	Azure Communication Services	Contact Center AI
End-user communications	Amazon Pinpoint, Amazon Simple Email Service (SES)	Azure Notification Hubs	Firebase Cloud Messaging (FCM)
Fast Healthcare Interoperability Resources (FHIR)	AWS HealthLake	Azure Health Data Services	Apigee HealthAPIx, Cloud Healthcare API
Gaming	Amazon GameLift, Amazon Lumberyard	Azure PlayFab	Google Cloud for Games
Genomics	Amazon Genomics CLI	Microsoft Genomics	Batch
Geolocation APIs and services	Amazon Maps API, Amazon Location Service	Azure Maps	Google Maps Platform
Media services	AWS Elemental, AWS Thinkbox, Amazon Interactive Video Service (IVS), Amazon Kinesis Video Streams, Amazon Nimble Studio	Azure AI Video Indexer	Live Stream API, Transcoder API, Video Stitcher API, Video AI
Robotics application development	AWS RoboMaker	N/A	Cloud Robotics Core
Satellite ground stations	AWS Ground Station	Azure Orbital Ground Station	N/A
Virtual desktop	Amazon WorkSpaces, Amazon AppStream 2.0	Azure Virtual Desktop	N/A

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Networking and content delivery

	AWS	AZURE	GOOGLE CLOUD
5G-based infrastructure	AWS Wavelength, AWS Private 5G	Azure private multi-access edge compute (MEC), Azure Private 5G Core	N/A
Build, deploy and manage APIs	Amazon API Gateway	Azure API Management	Apigee API Management
Content delivery network (CDN)	Amazon CloudFront	Azure Front Door	Cloud CDN, Media CDN
Dedicated network connection	AWS Direct Connect	Azure ExpressRoute	Cloud Interconnect
Domain name system (DNS)	Amazon Route 53	Azure DNS	Cloud DNS
Load balancing	Elastic Load Balancing (ELB)	Azure Application Gateway, Azure Load Balancer, Azure Traffic Manager	Cloud Load Balancing
Network accelerator	AWS Global Accelerator	Azure Front Door	Premium Network Service Tier
Network address translation (NAT)	Amazon VPC NAT gateways	Azure NAT Gateway	Cloud NAT
Peering	Amazon Virtual Private Cloud (VPC) peering	Azure Virtual Network peering	VPC Network Peering
Private network connector	AWS PrivateLink	Azure Private Link	Private Service Connect
Service discovery	AWS Cloud Map, Amazon VPC Lattice	N/A	Service Directory
Traffic control plane	AWS App Mesh	Azure Service Fabric	Cloud Service Mesh

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Networking and content delivery

	AWS	AZURE	GOOGLE CLOUD
Virtual WAN	AWS Cloud WAN	Azure Virtual WAN	Network Connectivity Center
Virtual private cloud (VPC)	Amazon VPC, AWS Transit Gateway	Azure Virtual Network	Virtual Private Cloud (VPC)
VPN	AWS VPN, AWS Client VPN	Azure VPN Gateway	Cloud VPN

Security

	AWS	AZURE	GOOGLE CLOUD
Audit and compliance reports and controls	AWS Artifact, AWS Audit Manager	Microsoft Service Trust Portal (STP)	Assured Workloads
Centralized security management	AWS Security Hub	Microsoft Defender for Cloud	Security Command Center (SCC)
Certificate management	AWS Certificate Manager	Azure App Service certificate	Certificate Authority Service
Confidential computing	AWS Nitro Enclaves	Azure confidential computing	Confidential Computing
Container security	Amazon ECR	Microsoft Defender for Containers	Artifact Analysis, Binary Authorization
Data discovery and classification	Amazon Macie	Azure Data Catalog, Azure Information Protection	Data Catalog, Cloud Data Loss Prevention (DLP) in Sensitive Data Protection
Distributed denial-of-service (DDoS) protection	AWS Shield	Azure DDoS Protection	Google Cloud Armor
End-user identity management	Amazon Cognito	Azure Active Directory (AD) B2C	Firebase Authentication

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Security

	AWS	AZURE	GOOGLE CLOUD
Firewall management	AWS Firewall Manager, AWS Network Firewall, AWS Web Application Firewall (WAF)	Azure Firewall, Azure Web Application Firewall (WAF)	Cloud Next Generation Firewall (NGFW)
Identity and access management	AWS Identity and Access Management (IAM), Amazon Cognito	Azure AD B2C, Microsoft Entra External ID	Identity Platform, Firebase Authentication
Key management	AWS Key Management Service (KMS), AWS Cloud Hardware Security Module (CloudHSM)	Azure Key Vault, Azure Dedicated HSM	Cloud Key Management, Cloud HSM
Microsoft AD-compatible directory service	AWS Directory Service for Microsoft AD	Microsoft Entra Domain Services	Managed Service for Microsoft AD
Regulated services	AWS GovCloud	Azure Government	Assured Workloads
Resource access management	AWS Resource Access Manager	Azure Resource Manager	Resource Manager
Secrets management	AWS Secrets Manager	Azure Key Vault	Secret Manager
Secure access based on identity and/or context	AWS Verified Access	Microsoft Entra application proxy	Identity-Aware Proxy (IAP)
Sign-off for cloud provider data access requests	N/A	Customer Lockbox for Microsoft Azure	Access Transparency and Access Approval
Single sign-on (SSO)	AWS IAM Identity Center	Microsoft Entra Single Sign-On	Cloud Identity
Threat detection	Amazon Detective, Amazon GuardDuty	Microsoft Defender for Cloud, Microsoft Sentinel	SCC
Vulnerability scanning	Amazon Inspector	Microsoft Defender for Cloud	Web Security Scanner

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Storage

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Archival storage	Amazon Simple Storage Service (S3) Glacier Instant Retrieval, Amazon S3 Glacier Flexible Retrieval, Amazon S3 Glacier Deep Archive	Azure Archive Storage	Archive storage in Cloud Storage
Backup	AWS Backup, AWS Resilience Hub	Azure Backup	Backup and DR Service
Block storage	Amazon Elastic Block Store (EBS)	Azure Disk Storage	Persistent Disk, Local solid-state drive (SSD) disks, Google Cloud Hyperdisk
File storage	Amazon Elastic File System (EFS), Amazon FSx	Avere vFXT for Azure, Azure Files, Azure NetApp Files, Azure FXT Edge Filer	Filestore
Object storage	Amazon S3	Azure Blob Storage	Cloud Storage, Cloud Storage for Firebase