This cheat sheet provides a comparison of the key services and cloud terms between Amazon Web Services (AWS), Microsoft’s Azure and Google Cloud Platform (GCP).

| **Comparison of AWS, Azure and GCP Cloud Services** | | | | |
| --- | --- | --- | --- | --- |
| **Area** | **AWS Service** | **Azure Service** | **GCP** | **Description** |
| **Compute** | | | | |
| Virtual servers | Elastic Compute Cloud (EC2) Instances | Azure Virtual Machines | Compute Engine | Virtual servers allow users to deploy, manage and maintain OS and server software; instance types provide combinations of CPU/RAM; users pay for what they use with the flexibility to change sizes |
| Amazon Lightsail | Azure Virtual Machines and Images | – | Collection of virtual machine templates to select from when building out your virtual machine |
| Container instances | EC2 Container Service (ECS) | Azure Container Service | Container / Kubernetes Engine | Provides clustering and an orchestration layer for controlling the deployment of containers onto hosts and the management of the containers within a cluster |
| EC2 Container Registry | Azure Container Registry | Container Registry | Repository service for storing container images that is used to create different types of container deployments |
| Microservices / container orchestrators | Elastic Container Service for Kubernetes (EKS) | Azure Container Service (AKS) | – | Deploy orchestrated containerized applications with Kubernetes that simplify monitoring and cluster management through auto upgrades and a built-in operations console |
| Serverless | Lambda | * Azure Functions * Azure Event Grid * Web Jobs | Cloud Functions | Enables users to integrate systems and run backend processes in response to events or schedules without provisioning or managing servers |
| Lambda @Edge | Functions on Azure IoT Edge | – | Runs functions at the edge (directly on IoT devices) even with intermittent cloud connectivity |
| Batch computing | AWS Batch | Azure Batch | – | Runs large-scale parallel and high-performance computing applications efficiently in the cloud |
| Scalability | AWS Auto Scaling | * Virtual Machine Scale Sets * Azure Auto Scaling | Instance Groups | Service allowing customers to automatically change the number of instances providing a particular compute workload; configure defined metric and thresholds that determine if the platform adds or removes instances |
| **Management and Monitoring** | | | | |
| Cloud advisor | Trusted Advisor | Azure Advisor | Cloud Platform Security | Provides analysis of cloud resource configuration and security so subscribers can ensure they’re making use of best practices and optimum configurations |
| Deployment orchestration (DevOps) | CloudFormation | * Azure Resource Manager * VM extensions * Azure Automation | Cloud Deployment Manager | Provides a way for users to automate manual, long-running, error-prone and frequently repeated IT tasks |
| Management and monitoring (DevOps) | CloudWatch | * Azure Portal * Azure Monitor | * Stackdriver Monitoring * Cloud Shell Debugger * Trace Error Reporting | A unified console that simplifies building, deploying and managing cloud resources |
| AWS Usage and Billing Report | Azure Billing API | Cloud Billing API | Services to help generate, monitor, forecast and share billing data for resource usage by time, organization or product resources |
| AWS Management Console | Azure Portal | Google Cloud Console | A unified management console that simplifies building, deploying and operating cloud resources |
| AWS X-Ray | Azure Application Insights + Azure Monitor | * Stackdriver Monitoring * Debugger * Trace Error Reporting | An application performance management service for web developers on multiple platforms, this lets them monitor live web applications, detect performance anomalies and diagnose issues |
| Administration | AWS Application Discovery Service | Azure Log Analytics | Cloud Console | Provides deeper insights into applications and cloud workloads by collecting, correlating and visualizing all machine data, such as event logs, network logs and performance data |
| Amazon EC2 Systems Manager | Operations Management Suite | Cloud Console | Enables continuous IT services and compliance through process automation and configuration management; helps automate complex and repetitive IT tasks |
| **Security, Identity and Access** | | | | |
| Authentication and authorization | Identity and Access Management (IAM) | Azure Active Directory / Premium | Cloud IAM, Cloud Identity-Aware Proxy | Control access to services and resources while offering data security and protection; create and manage users and groups, and set user permissions to allow and deny access to resources |
| AWS Organizations | Azure Subscription and Service Management + Azure RBAC | Cloud IAM | Security policy and role management for working with multiple accounts |
| Multi-Factor Authentication | Multi-Factor Authentication | 2-Step Verification | Service designed to safeguard access to data and applications by requiring multiple forms of identity validation prior to authentication users; provides a range of verification options. |
| Encryption | Server-side encryption with Amazon S3 Key Management Service | Azure Storage Service Encryption | – | Provides encryption for data at rest |
| * Key Management Service * CloudHSM | Key Vault | Cloud Key Management Service | Provides security and works with other services by providing a way to manage, create and control encryption keys stored in hardware security modules (HSMs) |
| Firewall | Web Application Firewall | Application Gateway Web Application Firewall | – | A firewall that protects web applications from common web exploits; users can define customizable web security rules |
| Security groups + network access control lists | Network Security Groups | Firewall | Provide basic firewall protection and ingress and egress control to virtual networks and/or specific cloud hosts |
| Security | Inspector | Security Center | Cloud Security Command Center | An automated security assessment service that improves the security and compliance of applications, this automatically assesses applications, hosts and networks for vulnerabilities or deviations from best practices |
| Certificate Manager | App Service Certificates | – | Service that allows customers to create, manage and consume certificates seamlessly in the cloud |
| AWS Shield | Azure DDoS Protection Service | Cloud Armor | Provides cloud services with protection from distributed denial-of-services (DDoS) attacks |
| Directory services | AWS Directory Service + Windows Server Active Directory on AWS | Azure Active Directory Domain Services + Windows Server Active Directory on Azure IaaS | – | Identity and access management cloud solution that provides a robust set of capabilities to manage users and groups |
| Cognito | Azure Active Directory B2C | – | A highly available, global, identity management service for consumer-facing applications that scales to hundreds of millions of identities |
| Compliance | AWS Artifact | Service Trust Platform | – | Provides access to audit reports, compliance guides and trust documents from across cloud services |
| **Networking** | | | | |
| Cloud Virtual Networking | Virtual Private Cloud (VPC) | Virtual Network | Virtual Private Cloud | Provides an isolated, private environment in the cloud; users have control over their virtual networking environment, including selection of their own IP address range, creation of subnets, and configuration of route tables and network gateways |
| Cross-premises connectivity | AWS VPN Gateway | Azure VPN Gateway | Cloud VPN | Provides secure VPN connections between on-premises and cloud-based workloads over the internet |
| Domain name system management | Route 53 | * Azure DNS * Traffic Manager | * Google Domains * Cloud DNS | Service to manage your DNS records and hosts’ domain names, plus routes users to internet applications, connects user requests to data centers, manages traffic to apps, and improves app availability with automatic failover |
| Content delivery network | CloudFront | Azure Content Delivery Network | Cloud Content Delivery Network | Global content delivery network that delivers audio, video, applications, images and other files |
| Dedicated network | Direct Connect | ExpressRoute | Cloud Interconnect | Establishes a dedicated, private network connection from a location to the cloud provider (not over the internet) |
| Load balancing | * Classic Load Balancer * Network Load Balancer * Application Load Balancer | * Load Balancer * Application Gateway | Cloud Load Balancing | Automatically distributes incoming application traffic to add scale, handle failover and route to a collection of resources |
| **Storage** | | | | |
| Object storage | Simple Storage Services (S3) | Azure Storage – Block Blob | Cloud Storage | Object storage service for use cases including cloud applications, content distribution, backup, archiving, disaster recovery and big data analytics; typically used for content logs and files |
| Virtual server disk infrastructure | Elastic Block Store (EBS) | Azure Storage – Page Blob | Persistent Disk | SSD storage optimized for I/O intensive read/write operations; typically used for VHDs or other random-write type data |
| Shared file storage | Elastic File System | Azure Files | Cloud Filestore | Provides a simple interface to create and configure file systems and share common files |
| Backup /  archival storage | Glacier /  S3 Infrequent Access Data Archive | Azure Backup Storage (Cool) /  Storage (Archive) | Cloud Storage Nearline /  Cloud Storage Coldline | Backup and archival solution allowing files and folders to be backed up and recovered from the cloud and provides off-site protection against data loss; consists of two components: the software service that orchestrates backup/ retrieval and the underlying backup storage infrastructure |
| Bulk data transfer | AWS Import/  Export Disk | Import/Export | Data Transfer Service | Data transport solution that uses secure disks and appliances to transfer large amounts of data; also offers data protection during transit |
| * AWS Import/ Export Snowball * AWS Snowball Edge * AWS Snowmobile | Azure Data Box | Transfer Appliance | Petabyte- to exabyte-scale data transport solution that uses secure data storage devices to transfer large amounts of data into and out of the cloud, at lower cost than internet-based transfers |
| **Marketplace** | | | | |
| Marketplace | AWS Marketplace | Azure Marketplace | GCP Marketplace | Easy-to-deploy and automatically configured third-party applications, including single virtual machine or multiple virtual machine solutions |
| **Developer Resources** | | | | |
| Messaging | Simple Queue Service (SQS) | Azure Queue Storage | Cloud Pub/Sub | Provides a managed message-queuing service for communicating between decoupled application components |
| Workflow | Simple Workflow Service (SWF) | Logic Apps | – | Serverless technology for connecting apps, data and devices anywhere (on-premises or in the cloud) for large ecosystems of SaaS and cloud-based connectors |
| API management | API Gateway | API Management | Cloud Endpoints | A turnkey solution for publishing APIs to external and internal consumers |
| Elastic Beanstalk | * Web Apps * Cloud Services * API Apps | App Engine | Managed hosting platforms providing easy-to-use services for deploying and scaling web applications and services |
| * CodeDeploy * CodeCommit * CodePipeline | Visual Studio Team Services | – | Developer tools for scripting application deployment |
| App customer payment service | Amazon Flexible Payment Service, Amazon Dev Pay | – | – | Cloud service that provides developers with a payment service for their cloud-based applications |
| DevOps | AWS CodeBuild | Visual Studio Team Services | Cloud Build | Fully managed build service that supports continuous integration and deployment |
| Backend process logic | AWS Step Functions | Logic Apps | – | Cloud technology to build distributed applications using out-of-the-box connectors to reduce integration challenges; connects apps, data and devices on-premises or in the cloud |
| Programmatic access | Command Line Interface | * Azure Command Line Interface (CLI) * Azure PowerShell | Cloud SDK | Built on top of the native REST API across all cloud services, various programming language-specific wrappers provide easier ways to create solutions |
| Predefined templates | AWS Quick Start | Azure Quickstart templates | – | Community-led templates for creating and deploying virtual machine–based solutions |
| **Internet of Things (IoT)** | | | | |
| Internet of Things | AWS IoT Other Services (Kinesis, Machine Learning, EMR, Data Pipeline, SNS, QuickSight) | Azure IoT Suite (IoT Hub, Machine Learning, Stream Analytics, Notification Hubs, PowerBI) | Cloud Dataflow,  Cloud IoT Core | Provides a preconfigured solution for monitoring, maintaining and deploying common IoT scenarios |
| Edge compute for IoT | AWS Greengrass | Azure IoT Edge | Cloud IoT Edge | Managed service that deploys cloud intelligence directly on IoT devices to run in on-prem scenarios |
| ***Key:***  ***– No comparable offering Source: IANS, 2018*** | | | | |