DIFFERENCES BETWEEN AZURE, AWS, AND GCP

Establishments:

Azure:

Microsoft Azure, initially called Azure, was launched in 2010 with the intent to provide a competent Cloud Computing platform for businesses. Azure was renamed as ‘Microsoft Azure’ in 2014, though the name ‘Azure’ is still commonly used. Since its inception, Microsoft Azure has shown a great progress among its competitors.

AWS (Amazon Web Services):

Amazon Web Services is a subsidiary of amazon.com, which provides an on-demand Cloud Computing platform to individuals, companies, and governments on a paid-subscription basis.

Amazon Web Services is the oldest and the most experienced player in the cloud market. As one of the oldest cloud providers, it has established a bigger user base, as well as bigger trust and reliability factors.

AWS was publicly launched in 2006 with service offerings such as Elastic Compute Cloud (EC2), Simple Storage Service (Amazon S3), etc. By 2009, Elastic Block Store (EBS) was made public and services such as Amazon CloudFront, Content delivery network (CDN), and more formally joined the AWS Cloud Computing Service offerings.

GCP (Google Cloud Platform):

Google Cloud Platform (GCP), which is offered by Google, is a suite of Cloud Computing services that runs on the same infrastructure that Google uses internally for its end-user products such as Google Search engine, YouTube, and more.

Google Cloud Platform began its journey in 2011, and in less than a decade it has managed to create a good presence in the cloud industry. The initial intent of Google Cloud was to strengthen Google’s own products such as Google Search engine and YouTube. But now, they have also introduced their enterprise services so that anyone can use Google Cloud Platform.

Availability Zones:

It has been already established that AWS was the earliest in the cloud domain which means that they have had more time to establish and expand their network. So, AWS is hosting in multiple locations worldwide. Azure and GCP are also hosting in multiple locations worldwide, but the difference occurs in the number of their respective availability zones.

* AWS has 66 availability zones with 12 more on the way.
* Azure has 54 regions worldwide and is available in 140 countries all around the world.
* Google Cloud Platform has been made available in 20 regions around the world with 3 more.

Compute Services:

Azure:

|  |  |
| --- | --- |
| Services | Azure |
| IaaS | Virtual Machines |
| PaaS | App Service and Cloud Services |
| Containers | Azure Kubernetes Service (AKS) |
| Serverless Functions | Azure Functions |

Iaas: Infrastructure as a service.

Paas: Platform as a service.

AWS:

|  |  |
| --- | --- |
| Services | AWS |
| IaaS | Amazon Elastic Compute Cloud |
| PaaS | AWS Elastic Beanstalk |
| Containers | Amazon Elastic Compute Cloud Container Service |
| Serverless Functions | AWS Lambda |

GCP:

|  |  |
| --- | --- |
| Services | GCP |
| IaaS | Google Compute Engine |
| PaaS | Google App Engine |
| Containers | Google Kubernetes Engine |
| Serverless Functions | Google Cloud Functions |

Database Services:

|  |  |  |  |
| --- | --- | --- | --- |
| Services | Azure | AWS | GCP |
| RDBMS | SQL Database | Amazon Relational Database Services | Google cloud SQL |
| No SQL: Key-Value | Table storage | Amazon DynamoDB | Google Cloud Datastore  Google Cloud Bigtable |
| No SQL: Indexed | Azure cosmos DB | Amazon SimpleDB | Google Cloud Datastore |

**RDBMS** stands for **Relational Database** Management System. **RDBMS** is the basis for **SQL**, and for all modern database systems such as MS **SQL** Server, IBM DB2, Oracle, MySQL, and Microsoft Access. The data in **RDBMS** is stored in database objects called tables.

A **key**-**value** database (also known as a **key**-**value** store and **key**-**value** store database) is a type of **NoSQL** database that uses a simple **key**/**value** method to store data. The **key**-**value** part refers to the fact that the database stores data as a collection of **key**/**value** pairs.

**Indexing** Structures for **NoSQL** Databases. **Indexing** is the process of associating a key with the location of a corresponding data record. There are many **indexing** data structures used in **NoSQL** databases. We will briefly discuss some of the more common methods; namely, B-Tree **indexing**, T-Tree **indexing**, and O2-Tree **indexing.**

Storage Service:

|  |  |  |  |
| --- | --- | --- | --- |
| Services | Azure | AWS | GCP |
| Object Storage | Blob Storage | Amazon Simple Storage Service | Google Cloud Storage |
| Virtual Server Disks | Managed Disks | Amazon Elastic Block Store | Google Compute Engine Persistent Disks |
| Cold Storage | Azure Archive Blob Storage | Amazon Glacier | Google Cloud Storage Nearline |
| File Storage | Azure File Storage | Amazon Elastic File System | ZFS/Avere |

**Cloud object storage** is a format for storing unstructured data in the **cloud**. ... The architecture stores and manages data as **objects** compared to block **storage**, which handles data as blocks, and logical volumes and file **storage** which store data in hierarchical files.

A **virtual disk** is a file or set of files that appears as a physical **disk drive** to a guest operating system. The files can be on the host **machine** or on a remote computer. ... You may also configure **virtual disks** so all the **disk** space is allocated at the time the **virtual disk** is created.

**Cold storage** is defined as an operational mode and **storage** system for inactive data. It has explicit trade-offs when compared to other **storage** solutions. When deploying **cold storage**, expect data retrieval times to be beyond what may be considered normally acceptable for online or production applications.

**Cloud file storage** is a method for storing data in the **cloud** that provides servers and applications access to data through shared **file** systems. This compatibility makes **cloud file storage** ideal for workloads that rely on shared **file** systems and provides simple integration without code changes.

Networking Service:

|  |  |  |  |
| --- | --- | --- | --- |
| **Services** | **AWS** | **Azure** | **GCP** |
| Virtual Network | Amazon Virtual Private Cloud (VPC) | Virtual Networks (VNets) | Virtual Private Cloud |
| Elastic Load Balancer | Elastic Load Balancer | Load Balancer | Google Cloud Load Balancing |
| Peering | Direct Connect | ExpressRoute | Google Cloud Interconnect |
| DNS | Amazon Route 53 | Azure DNS | Google Cloud DNS |

A **virtual network** connects services and resources like **virtual** machines and database applications with each other and the rest of the internet via a secure, encrypted, and private **network**. The **virtual network** provides a framework that gives your enterprise **cloud** infrastructure substance.

**Elastic Load Balancing** (**ELB**) is a **load**-**balancing** service for Amazon Web Services (**AWS**) deployments. **ELB** automatically distributes incoming application traffic and scales resources to meet traffic demands. **ELB** helps an IT team adjust capacity according to incoming application and network traffic.

In computer networking, **peering** is a voluntary interconnection of administratively separate Internet networks for the purpose of exchanging traffic between the users of each network.

Domain Name System (**DNS**) is critical to the performance and reliability of your internet applications and **cloud** services. A **cloud**-based **DNS** can deliver even better results than regular **DNS** infrastructure. **DNS** is mission-critical to all organizations that rely on the Internet for conducting business.

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