**What is a CDN?**

A content delivery network (CDN) refers to a geographically distributed group of servers which work together to provide fast delivery of Internet content.

A CDN allows for the quick transfer of assets needed for loading Internet content including HTML pages, javascript files, stylesheets, images, and videos. The popularity of CDN services continues to grow, and today the majority of web traffic is served through CDNs, including traffic from major sites like Facebook, Netflix, and Amazon.

A properly configured CDN may also help protect websites against some common malicious attacks, such as [Distributed Denial of Service (DDOS) attacks](about:blank).

Diagram

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**Difference between AWS, Azure, Google Cloud**

Cloud Provider make sure these belong

The top three brands that govern the market will be compared based on the most common cloud services:

* **Compute**
* **Storage**
* **Database**
* **Networking and Content Delivery**
* **Availability zone**

| **Top Features** | **AWS** | **Azure** | **GCP** |
| --- | --- | --- | --- |
| SLA(Service Level Agreement)  availability | Amazon EC2- 99.5% annual uptime  Amazon S3 – A monthly uptime of at least 99.9% for a billing cycle | 99.9% uptime | 99.95% monthly uptime |
| Max processors  in Virtual Machines | 128 nos | 128 nos | 96 nos |
| Maximum Memory in Virtual Machines | 3904GiB | 3800GiB | 1433GiB |
| Marketplace | AWS marketplace | Azure marketplace | G Suite Marketplace |
| Supported OS | Core OS, Windows, SLES, Cloud Linux, Ubuntu, etc | SLES, Windows, CentOS, Oracle Linux, etc | Windows, SLES, CoreOS, FreeBSD, etc |

**Compute**

This is one of the most fundamental roles in dealing with computing workloads. A cloud service provider should be able to scale a considerable number of nodes in a fraction of minutes.  On the basis of computing, the top comparisons are:

| **Service** | **AWS** | **Azure** | **GCP** |
| --- | --- | --- | --- |
| Maintaining and managing virtual servers | EC2 | VM & VM scale sets | Compute Engine |
| PaaS | Elastic Beanstalk | Cloud services | Google App engine |
| Easing of virtual private servers | Lightsail | Virtual Machine Image | – |
| Container Deployment | – | Container service | Container Engine |
| Running backend & system integration | Lambda | Event Grid & Web Jobs | Cloud Beta Functions |
| Container register | EC2 registry | Container registry | Container registry |

**Storage**

This is yet another important function and is related to data storage. On the basis of services, the comparisons are enlisted below:

| **Storage service** | **AWS** | **Azure** | **GCP** |
| --- | --- | --- | --- |
| Hybrid storage | Storage gateway | StorSimple | Egnyte Sync |
| Bulk data transfers | Snowball edge, Import/Export disk & Snow Mobile | Data Box & Import/Export | Storage transfer service |
| Back-up solutions | Cold Archive storage & Storage gateway | Backup | – |
| Disaster recovery | Disaster recovery | Site recovery | – |

**Database**

A Database comparison is essential for database workloads. The below table provides the perfect comparison of the database domain.

| **Database services** | **AWS** | **Azure** | **Azure** |
| --- | --- | --- | --- |
| Caching | ElastiCache | RedisCache | CloudCDN |
| Object Storage | S3 | Blobs and files | Cloud storage block |
| Block storage | EBS | Page Blobs | Persistent disks |
| Indexed NoSQL | DynamoDB | Cosmos DB | Datastore, Big table |
| Database migration | Database migration services | Database migration services | – |

**Networking Service**

| **Networking service** | **AWS** | **Azure** | **GCP** |
| --- | --- | --- | --- |
| Virtual Network | Amazon VPC | Virtual Networks | Virtual Private cloud |
| Elastic load balancer | Elastic load balancer | Load balancer | Cloud load balancing |
| DNS | Amazon Route 53 | Azure DNS | Google Cloud DNS |
| Peering | Direct Connect | ExpressRoute | Google cloud interconnect |

**Pricing**

| **Machine Type** | **AWS** | **Azure** | **GCP** |
| --- | --- | --- | --- |
| Smallest Instance | 2 virtual CPUs and 8 GB of RAM will cost nearly US$69 per month | Instance with 2 vCPUs and 8 GB of RAM, in Azure, costing US$70/month | 2 virtual CPUs and 8 GB of RAM at a 25 percent cheaper rate costing US$52/month |
| Largest Instance | 3.84 TB of RAM and 128 vCPUs will cost around US$3.97/hour | 3.89 TB of RAM and 128 vCPUs. It costs around US$6.79/hour | 3.75 TB of RAM and 160 vCPUs. It will cost close to US$5.32/hour |

**Market Winner:**

1. **Establishment**– AWS is the clear winner as it has a head start over its counterparts.
2. **Growth Rate**– Here the winner is AWS as it is currently clocking growth rate close to 100%.
3. **Market Share**– Hands down goes to AWS with a 33% market share.
4. **Brands**– With several top companies using all three, it is a tie between them.
5. **Availability zone**– Clear winner is AWS with a greater number of regions and availability zones.
6. **Pricing model**–   the presence of customer-friendly pricing models and discounts makes GCP the clear winner.
7. **Services**– AWS leads the way with the volumes of services provided but with respect to the integration with open-source and on-site platforms Azure leads the pack.

**Global Infrastructure :**

Map

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AWS Global Infrastructure

As of today, AWS has 24 regions and 76 availability zones across the globe and Amazon announced 3 more regions and 9 more availability zones.

Availability zones are nothing but data centers. Regions are geographical area always consist of two or more availability zones. Availability zones are spread out in a region so that during any natural calamities at one availability zone it won't affect the other availability zone

Graphical user interface

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Along with regions and availability zones, we have edge locations.

Edge locations are used for caching the data. For example, a user in India accessing a file from US east region for the first time the file will be accessed from US East region. If any user from India tries to access the same file they can directly access it from caching server in India.

**Which Regions to choose?**

* You can choose the nearest region based on where the more number of your users are located.
* Sometimes the government doesn’t allow data to reside in different countries.
* Choose a particular region where particular services are available..
* **Region**: Regions are geographical area always consist of two or more availability zones
* **Availability Zone** : Availability zones are nothing but data centers.
* **Local Zones:** [AWS Local Zones](about:blank) place compute, storage, database, and other select AWS services closer to end-users.
* **Wave Length**: [AWS Wavelength](about:blank) enables developers to build applications that deliver single-digit millisecond latencies to mobile devices and end-users.
* **AWS Outposts**: [AWS Outposts](about:blank) bring native AWS services, infrastructure, and operating models to virtually any data center, co-location space, or on-premises facility.