# AWS Module 3 - AWS Global Infrastructure Overview

By lemasyma

Posted Feb 9, 2021 • Updated Oct 3, 2021 • 4 min read • 1 views

Lien de la note Hackmd

## Section 1: AWS Global Infrastructure

- The **AWS Global Infrastructure** is designed and built to deliver a *flexible, reliable, scalable* and *secure* cloud computing environmnent with high-quality **global network performance**

### AWS Region

> An AWS Region is a geographical area
>
> - Data replication across Regions is controlled by you
> - Communication between Regions uses AWS backbone network infrastructure

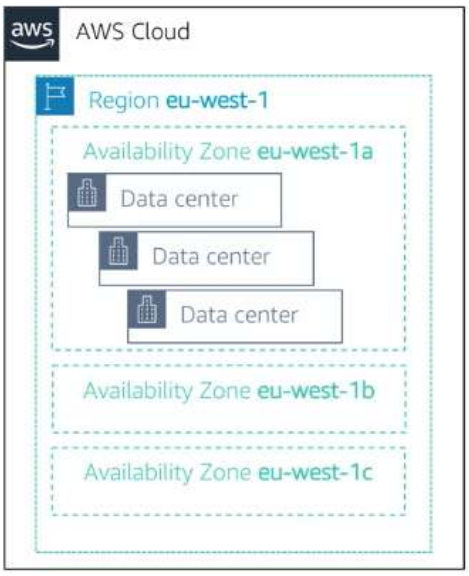
- Each region provides full redundancy and connectivity to the network
- A region typically consists of two or more *Availability Zone*

### Selecting a Region


- Might be legal requirements
  - Local laws can restrict the Region
  - Ex: European Union
- Latency
  - Can test with Cloud Ping

## Availability Zones

- Each *Region* has multiple Availabiity Zones
- Each *Availability Zone* is fully isolated partition of the AWS infrastructure
  - 69 Availability Zones worldwide
  - Availability Zones consist of discrete *data centers*
    - Usually 3
  - They are designed for fault isolation
  - They are interconnected with other Availability Zones by using high-speed private networking
    - Dedicated fiber
  - You choose your Availability Zones
  - **AWS recommends replicating data and resources across Availability Zones** for resiliency
    - Protected for tornadoes, lightning, earthquakes…




## AWS data centers

- AWS data centers are *designed for security*
- Data centers are where the data resides and data processing occurs
- Each data has redundant power, networking and connectivity, and is housed in a separate facility
- A data center typically has 50,000 to 80,000 physical servers

AWS uses custom netowrking equipment source from multiple ODMs.

> ODM: Original Device Manufacturers Design and manufacture product based on specifications from a second company. The second company rebrand the products for sale.

## Points of Presence

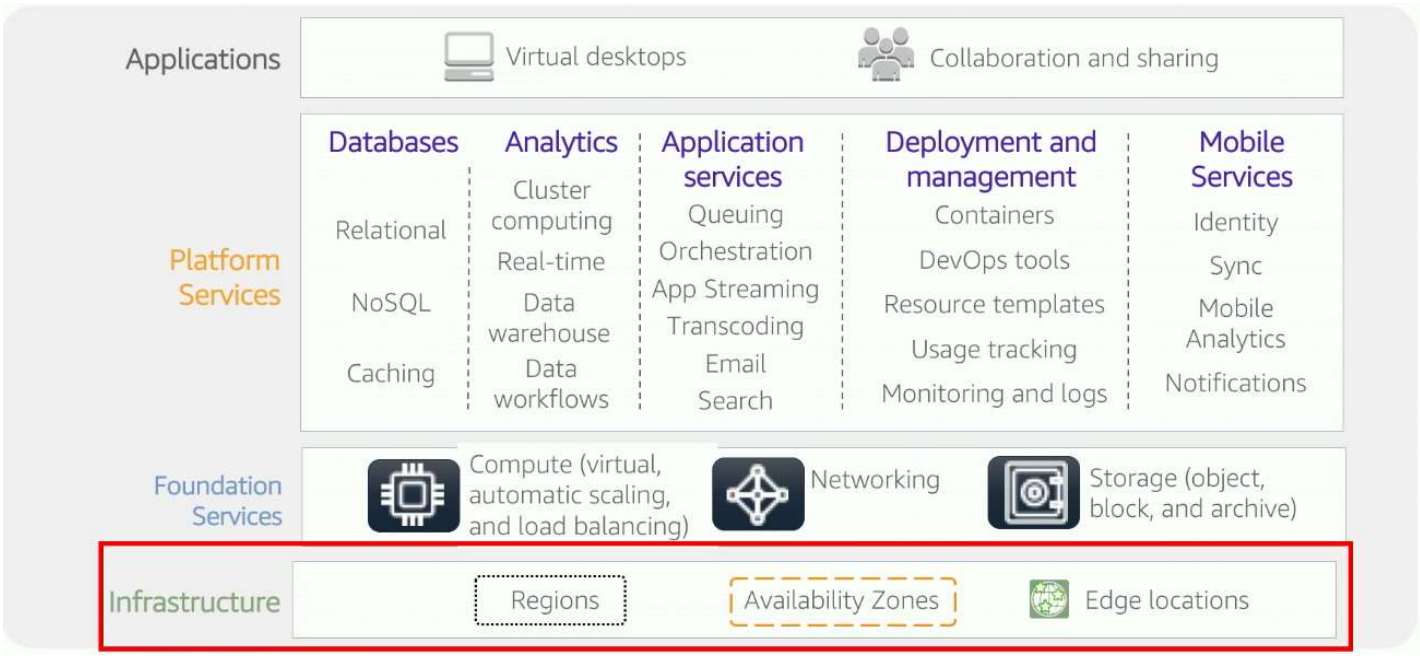
- AWS provides a global network of 187 *Points of Presence* locations

- Used with Amazon CloudFront
  - A global Content Delivery Network (CDN) that delivers content to end users with *reduced latency*
- Regional edge caches used for content with infrequent access

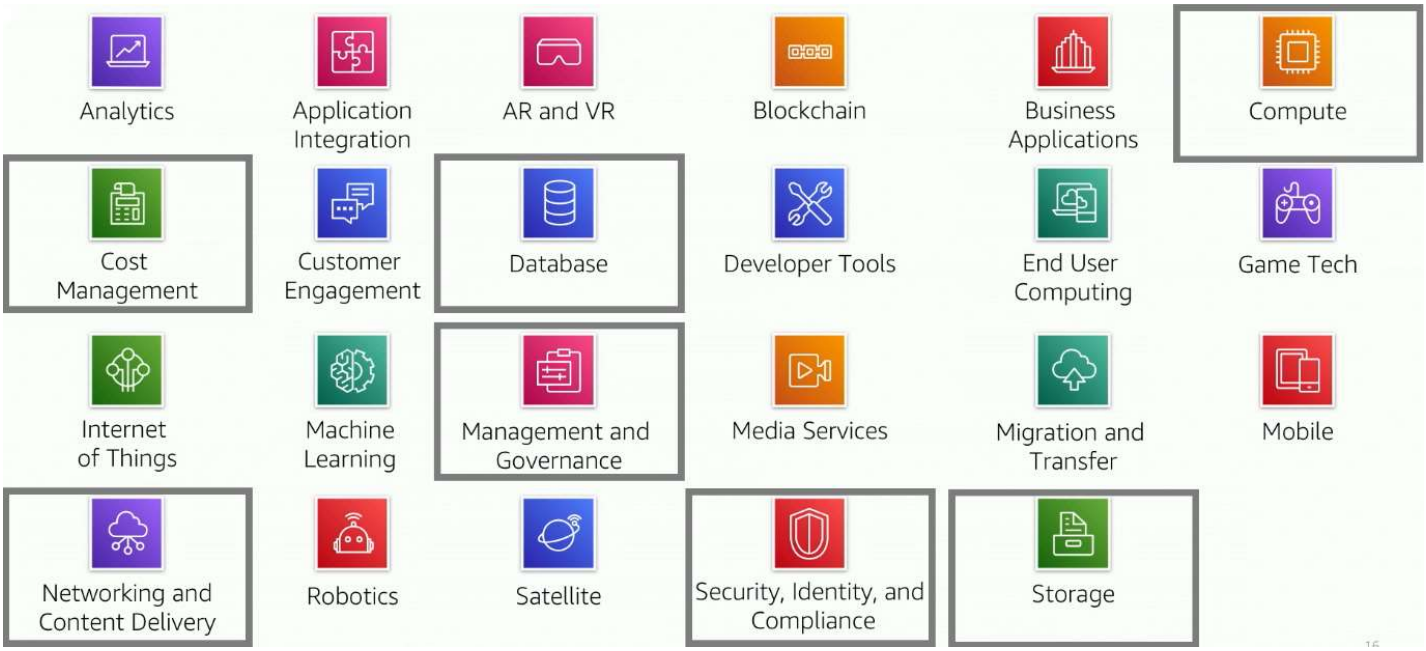

## AWS infrastructure features

- Elasticity and scalability
  - Elastic infrastructure; dynamic adaption of capacity
  - Scalable infrastructure; adpats to accomodate growth
- Fault-tolerance
  - Continues operating properly in the presence of a failure
  - Built-in redundancy of components
- High availability
  - High level of operational performance
  - Minimize downtime
  - No human intervention

# Section 2: AWS services and service category overview




## AWS categories of services




## Storage service category

- Amazon Simple Storage Service (Amazon S3)
  - Object storage
  - Scalability, data availbility and performance
- Amazon Elastic Block Store (Amazon EBS)
  - high performance block storage
  - Used with Amazon EC2
- Amazon Elastic File System (Amazon EFS)
  - Scalable file system (NFS)

- Amazon Simple Storage Service Glacier
  - Extremely low-cost
  - Data archiving

## Compute service category

- Amazon EC2
  - Resizable compute capacity
- Amazon EC2 Auto Scaling
  - Automaticaly add or remove EC2 instances
- Amazon Elastic Container Service
  - Supports docker container
- Amazon EC2 Container Registry (ECR)
  - Fully managed docker container registry
- AWS Elastic Beanstalk
  - Deploying and scaling web applications
- AWS Lambda
  - Run code without servers
  - No charge when the code is not running
- Amazon Elastic Kubernetes Service (Amazon EKS)
  - Deploy, manage and scale applications using Kubernetes
- AWS Fargate
  - Run container without having to manage servers

## Database service category

- Amazon Relational Database Service (RDS)
  - Relational database in the cloud
  - Scalable
  - Automating database setup, patching, back-ups
- Amazon Aurora
  - MySQL and PostreSQL
  - 5 time faster than MySQL
  - 3 times faster than PostreSQL
- Amazon Redshift
  - Analytic queries against petabytes of data
  - Fast
- Amazon DynamoDB
  - NoSQL database

## Networking and content delivery service category

- Amazon VPC
  - Isolated sections AWS Cloud
- Elastic Load Balancing
  - Automatically distributes incoming application traffic
- Amazon CloudFront
  - Delivery network (CDN)
  - Secures data to cutsomers
- AWS Transit Gateway
  - Connect Amazon VPC and on-premises network
- Amazon Rout 53
  - Scalable cloud domain name system
  - Translate URL to IP addresses
- AWS Direct Connect
  - Established dedicated private network
- AWS VPN
  - Secure private tunnel to AWS global network

## Security, identity and compliance service category

- AWS Identity and Access Management (IAM)
  - Enables you to manage access
- AWS Organizations
  - Restricts actions and services allowed in your account
- Amazon Cognito
  - Let you add user authentification and access control to web and mobile apps
- AWS Artifact
  - On-demand access to AW security and compliance reports
- AWS Key Management Service (KMS)
  - Create and manage encryption keys
- AWS Shield
  - Managed distributied denial of service protection service

## AWS cost management category

- AWS Cost and Usage Report
  - Set AWS cost and usage data

- Set custom budget

- AWS Cost Explorer
  - Visualize and manage AWS cost and usage

### Management and governance service category

- AWS Management Console
  - Web-based user interface for accessing your AWS account
- AWS Config
  - Track resource inventory
- Amazon CloudWatch
  - Monitor resources and app
- AWS Auto Scaling
  - Scale multiple resources to meet demand
- AWS Command Line Interface (CLI)
  - Unified tool to manage AWS services
- AWS Trusted Advisor
  - Optimize perfomance and security
- AWS Well-Architected Tool
  - Reviewing and improving workloads
- AWS CloudTrail
  - Track user activity an API usage

## Wrap-up video

### Sample exam question

Which component of AWS global infrastructure does Amazon CloudFront use to ensure low-latency delivery ?

1. AWS Regions
2. AWS edge locations
3. AWS Availability Zones
4. Amazon Virtual Private Cloud (Amazon VPC)

▶ Answer

tronc commun S8 , AWS

tronc commun AWS S8

Share:

## Further Reading

Feb 8, 2021

### AWS Module 1 - Cloud Concepts Overview

Lien de la note Hackmd Introduction Intro to cloud computing Advantages of cloud…

Feb 8, 2021

### AWS Module 2 - Cloud Economics and Billing

Lien de la note Hackmd Section 1: Fundamentals of pricing AWS pricing mode…

Feb 9, 2021

### AWS Module 4 - AWS Cloud Security

Lien de la note Hackmd Section 1: AWS shared responsibility model AWS: Security …

OLDER
GPRO - Refresh from ing1 classes

NEWER
AWS Module 4 - AWS Cloud Security