**GLOBAL INFRASTRUCTURE AND RELIABILITY**

**AWS REGIONS(global infrastructure)**

Many data centres instead of a single centre in many regions.Each region connected to the other regions through high speed fibre networks. Regions does not share data unless you give the permission to do it. 4 factors in choosing region:

* Compliance: client requirements
* Proximity: choose region where most of the customers are ie customer base
* Feature availability or Available services
* Pricing

**AVAILABILITY ZONES:**

AWS calls a single data centre or a group of data centres, an Availability Zone or AZ. Each Availability Zone is one or more discrete data centres with redundant power, networking, and connectivity. When you launch an Amazon EC2 instance, it launches a virtual machine on a physical hardware that is installed in an Availability Zone. This means each AWS Region consists of multiple isolated and physically separate Availability Zones within a geographic Region.



A best practice is to run applications across at least two Availability Zones in a Region.

A Region is a geographical area that contains AWS resources.

**CDN**

Caching copies of data closer to the customers all around the world uses the concept of CONTENT DELIVERY NETWORKS, or CDNs.

CDNs are commonly used, and on AWS, we call our **CDN Amazon CloudFront**. Amazon CloudFront is a service that helps deliver data, video, applications, and APIs to customers around the world with low latency and high transfer speeds. Amazon CloudFront uses what are called **Edge locations**, all around the world, to help accelerate communication with users, no matter where they are.

Edge locations are separate from Regions, so you can push content from inside a Region to a collection of Edge locations around the world, in order to accelerate communication and content delivery. AWS Edge locations also run more than just CloudFront. They run a domain name service, or DNS, known as **Amazon Route 53.**

**AWS outposts**

AWS services inside their own building? Well sure. AWS can do that for you. Introducing AWS Outposts, where AWS will basically install a fully operational mini Region, right inside your own data center. That's owned and operated by AWS, using 100% of AWS functionality, but isolated within your own building.

* Regions are geographically isolated areas, where you can access services needed to run your enterprise
* Regions contain Availability Zones that allow you to run across physically separated buildings, tens of miles of separation, while keeping your application logically unified.
* AWS Edge locations run Amazon CloudFront to help get content closer to your customers, no matter where they are in the world

**AWS Outposts**, where AWS will basically install a fully operational mini Region, right inside your own data centre



**INTERACTING WITH AWS**

Everything is an api call.

* Aws management console :- test environments, view bills, view monitoring, work with non technical resources.
* Aws command line interface CLI
* Aws software development kit: through various programming languages.

**AWS Elastic Beanstalk**

AWS Elastic Beanstalk is a service that helps you provision Amazon EC2-based environments. Instead of clicking around the console or writing multiple commands to build out your network, EC2 instances, scaling and Elastic Load Balancers, you can instead provide your application code and desired configurations to the AWS Elastic Beanstalk service, which then takes that information and builds out your environment for you. AWS Elastic Beanstalk also makes it easy to save environment configurations, so they can be deployed again easily. AWS Elastic Beanstalk gives you the convenience of not having to provision and manage all of these pieces separately, while still giving you the visibility and control of the underlying resources. You get to focus on your business application, not the infrastructure.

With AWS Elastic Beanstalk, you provide code and configuration settings, and Elastic Beanstalk deploys the resources necessary to perform the following tasks:

* Adjust capacity
* Load balancing
* Automatic scaling
* Application health monitoring

**AWS CloudFormation**

Amazon CloudFront is a content delivery service.AWS CloudFormation is an infrastructure as code tool that allows you to define a wide variety of AWS resources in a declarative way using JSON or YAML text-based documents called CloudFormation templates.A declarative format like this allows you to define what you want to build without specifying the details of exactly how to build it.CloudFormation supports many different AWS resources from storage, databases, analytics, machine learning, and more. Once you define your resources in a CloudFormation template, CloudFormation will parse the template and begin provisioning all the resources you defined in parallel. CloudFormation manages all the calls to the backend AWS APIs for you. You can run the same CloudFormation template in multiple accounts or multiple regions, and it will create identical environments across them.

With AWS CloudFormation, you can treat your infrastructure as code. This means that you can build an environment by writing lines of code instead of using the AWS Management Console to individually provision resources. AWS CloudFormation provisions your resources in a safe, repeatable manner, enabling you to frequently build your infrastructure and applications without having to perform manual actions. It determines the right operations to perform when managing your stack and rolls back changes automatically if it detects errors.