8. AWS Global Infrastructure

AWS services are growing worldwide.

Availability Zones (AZs)

A **cluster** of **physical data centers** close together forms an AZ.

Each AZ will have at least one other neaby, usually in the same city. Linked by high speed fibre optics. These low-latency links replicate data for availability and resilience, avoiding downtime when one AZ fails. The customer chooses this architecture.

Regions

Each region has at least two AZs. This allows data to be replicated within certain regions (eg.to adhere to EU data security laws).

You can architect across multiple regions and connect VPCs in different regions.

At time of writing there are 27 regions and 87 AZs.

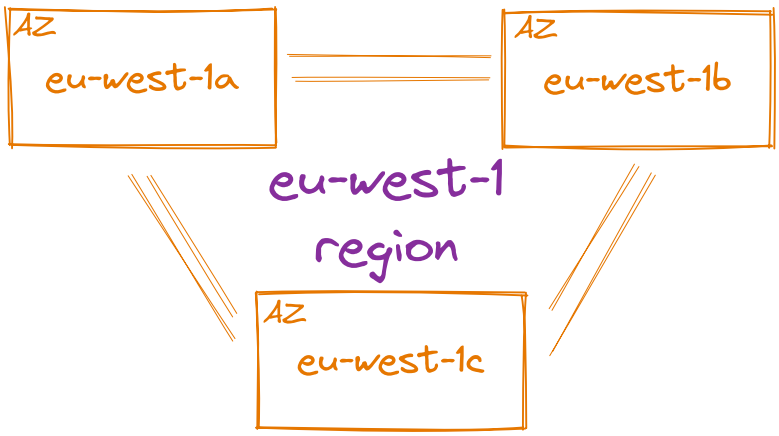
Most AWS services are region-specific (IAM and Cloudfront are global). Regions are independent, and Govcloud is an isolated cloud only for the US Government.

Naming Conventions

Regions have friendly names and code names:

Friendly name	Code name
EU (Ireland)	eu-west-1

AZs within a region are denoted with a letter added to the end of the region's code name:



It is important to note that **these names are mapped to different Availability Zones for different accounts** to ensure even distribution (eu-west-1a does not refer to the same AZ for every user).

Edge Locations

These are part of a Content Delivery Network (CDN). They **cache data for reduced latency**, often placed in densely populated areas like major cities, and they outnumber AZs significantly. Most of the data accessed by end users is delivered from edge locations.

Regional Edge Cache

These are a newer addition, sitting between Edge Locations and Cloudfront servers. They have a larger cache-width than Edge Locations and retain data to be retrieved by Edge Locations if needed.