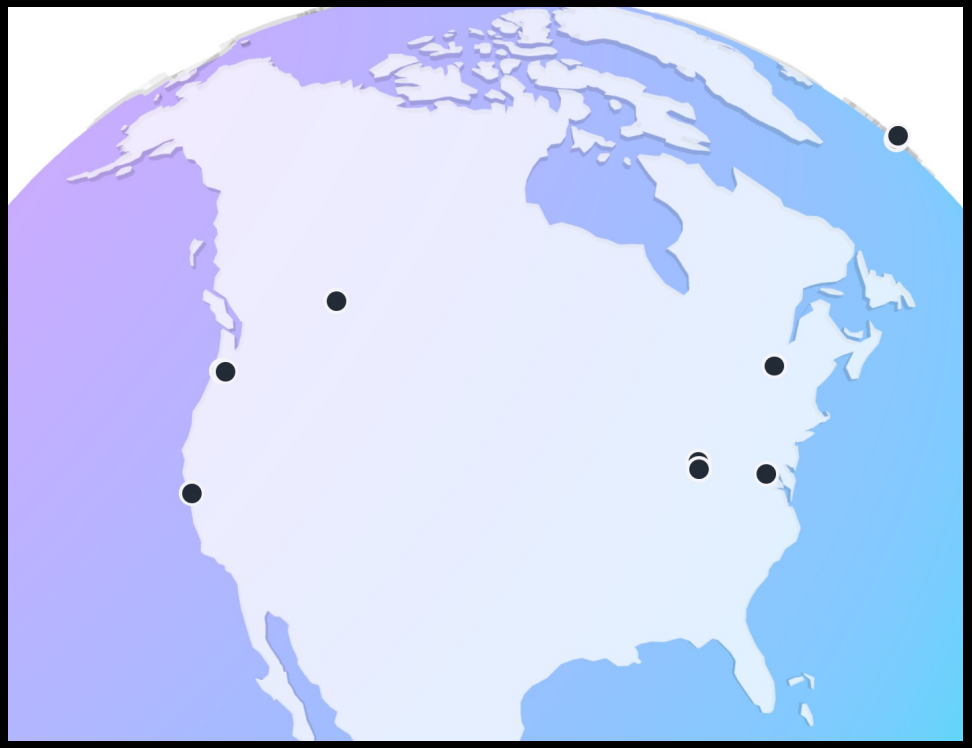
AWS Solution Architect Training

Module 01
Elastic Compute Cloud (EC2)

Instructor: Tim Platt, Cloud Solution Architect

Regions and Availability Zones



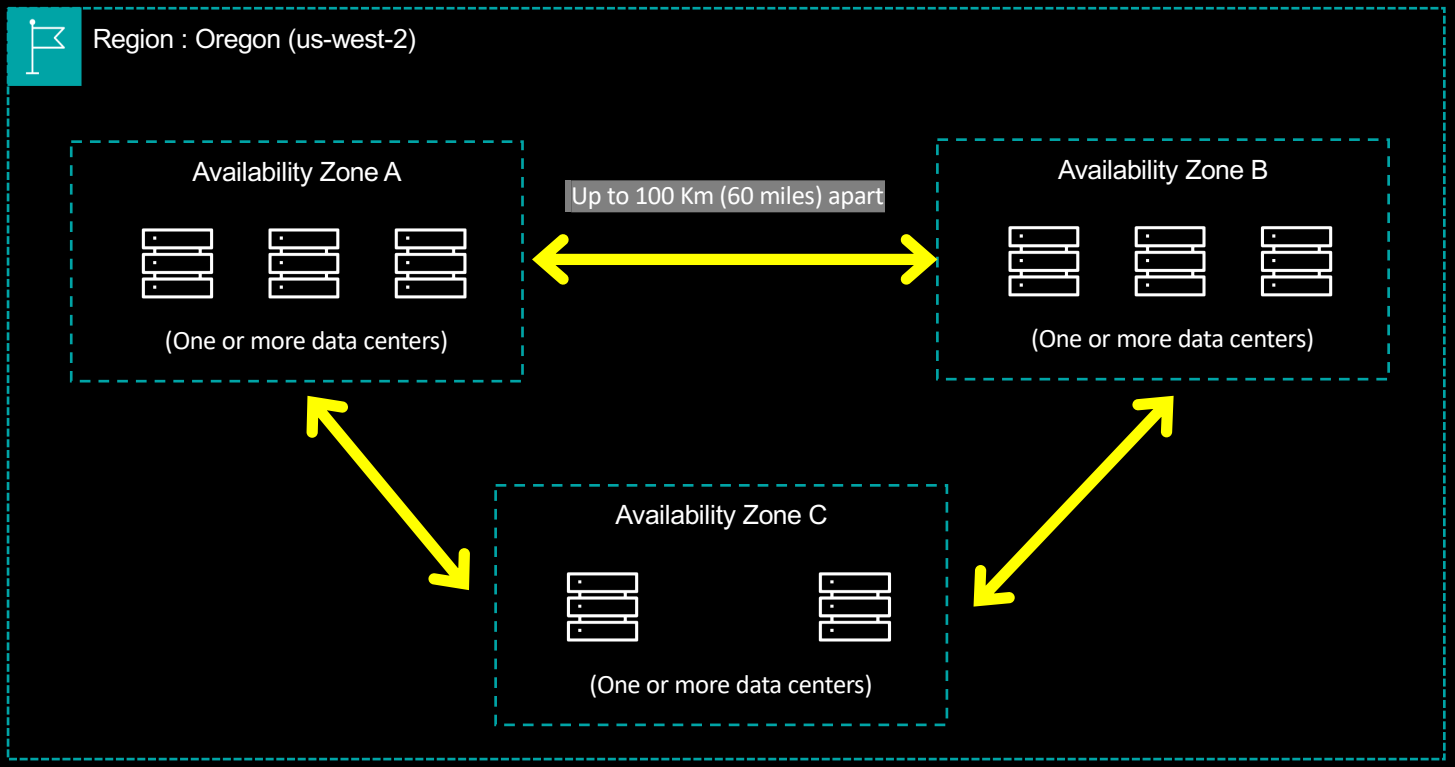
We can place our AWS Resources in REGIONS all around the globe

https://aws.amazon.com/about-aws/global-infrastructure/regions_az/

Why?

- Get CLOSER to the customer
- Resilience against disasters
- Compliance needs – some data must reside within the US
- Cost differences in different regions (Example: Tokyo vs Ohio)

Regions are SUB-DIVIDED into Availability Zones (AZ)



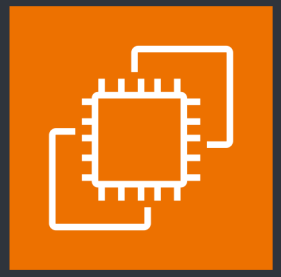
Why? We can minimize Single Points of Failure for High Availability (HA)

Elastic Compute Cloud (EC2)

Compute

Servers running in the cloud!

(Virtual Machines running on Physical Servers)



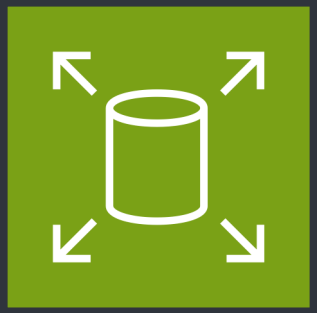
Key Points

- Run “On Demand” – Delete (Terminate) when done using the server
- You choose: Operating System, # CPUs, RAM, Disk Storage, Chip set – AMD, ARM (Graviton), Intel, or Mac
- Instance Types:
  - General Purpose
  - Memory Optimized
  - Compute Optimized
  - Accelerated (GPUs for Graphics or Machine Learning)
  - Storage Optimized
- It’s a “Virtual” server. It will use virtual storage (Elastic Block Store - EBS) and a virtual network card (Elastic Network Interface – ENI)
- SUPERPOWER: You can STOP these and make them BIGGER or SMALLER then RESTART them.

Elastic Block Store (EBS)

Storage

Virtual Hard Disk Drives and Solid State Drives (SSDs) used by EC2



Key Points

- Storage devices used by EC2
- You choose: Solid State Drive (SSD) or Hard Disk Drive (HDD)
- EBS Types:
  - General Purpose – GP2 and GP3 (newer) SSDs
  - IO1 – Provisioned Input/Output Operations Per Second (IOPS) – High performance SSD
  - IO2 – Even higher performance SSD (and more $$$$)
  - ST1 – Throughput Optimized HDD (slower but cheaper than SSD options). You CANNOT boot from these!
  - SC1 – Slowest (and cheapest) HDD option
- SUPERPOWER 1: You can “Snapshot” these as a point-in-time backup
- SUPERPOWER 2: You can make these BIGGER or change the TYPE easily (but hard to make them smaller!)

CloudWatch

Monitoring system for your AWS resources – “How busy are my servers?”

Logs

Text records with Date/Time

Metrics

Numerical data – CPU%, # of IOPS, # of requests

Traces

Flow of execution through many components (AWS X-Ray)

Links

- AWS Certifications: https://aws.amazon.com/certification/
- AWS Certified Solution Architect Associate: https://aws.amazon.com/certification/certified-solutions-architect-associate/
- Exam Guide: https://d1.awsstatic.com/onedam/marketing-channels/website/aws/en_US/certification/approved/pdfs/docs-sa-assoc/AWS-Certified-Solutions-Architect-Associate_Exam-Guide.pdf
- EC2 User Data: https://github.com/tplatt37/resources-aws-solution-architect/blob/main/ec2/user-data-apache.md
- Regions & AZs: https://aws.amazon.com/about-aws/global-infrastructure/regions_az/
- Pricing Calculator: https://calculator.aws/#/
- EC2 User-data for a SIMPLE Apache web server: https://github.com/tplatt37/resources-aws-solution-architect/blob/main/ec2/user-data-apache.md