Module 3: AWS Global Infrastructure Overview

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A. Learning Outcomes (LOs)

- Identify the difference between AWS Regions, Availability Zones, and edge locations.
- Identify AWS service and service categories

B. AWS Global Infrastructure

- The **AWS Global Infrastructure** is designed and built to deliver a **flexible, reliable, scalable**, and **secure** cloud computing environment with high-quality **global network performance.**
- An **AWS Region** is a georaphical 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 Zones.**
- Selecting a Region: Determine the right Region for your services, applications, and data based on following factors:
    + Data governance, legal requirements.
    + Proximity to cutomers (latency)
    + Services available within the Region
    + Costs (vary by region)
- Availability region:
    + Each Region has multiple Availability Zones
    + Each Availability Zone is fully isolated partition of the AWS infrastructure:
        * There are currently 69 Availability Zones worldwide.
        * Availability Zones consist of discrete **data centers.**
        * Thay are designed for fault isolation
        * They are interconnected with other Availability Zones by using high-speed private networking.
        * **AWS recommends replicating data and resources across Availability Zones** for resiliency.
- AWS Data centers:
    + AWS data centers are designed for **security.**
    + Data centers are where the data resides and data processing occurs.
    + Each data center 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.
- Points of Presence:
    + AWS provides a global network of 187 Points of Presence locations.
    + Consists of 176 edge locations and 11 Regional edge caches.
    + Used with Amazon CloudFront: A global Content Delivery Network
    + Regional edge caches used for content with infrequent access.
- AWS Infrastructure features:
    + Elasticity and scalability:
        * Elastic infrastructure, dynamic adaption of capacity
        * Scalable infrastructure, adapts to accommodate growth
    + Fault-tolerance:
        * Continues operating property in the presence of a failure
        * Built-in redundancy of components

+ High availability:
  * High level of operational performance
  * Minimized downtime
  * No human intervention