Day 1/13 – Introduction to Cloud Computing
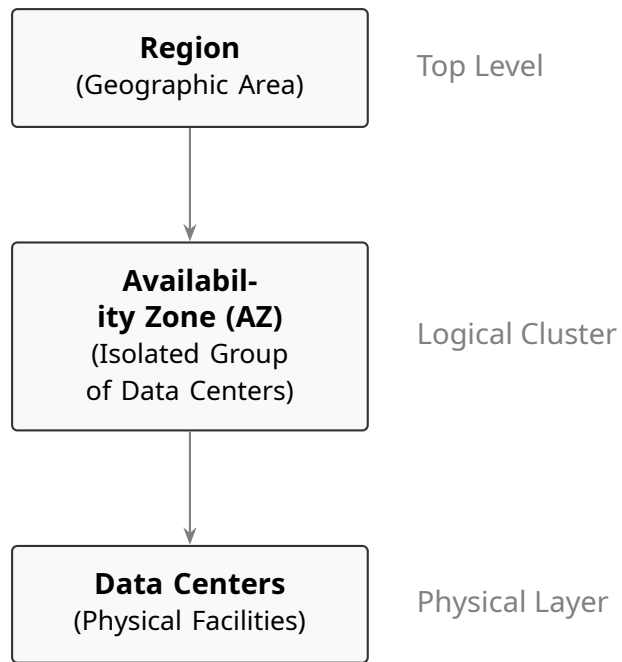
Cloud Computing Definition

> Cloud computing is the on-demand delivery of IT resources over the internet with pay-as-you-go pricing.

Six Key Benefits of Cloud Computing

- **Trade fixed expenses for variable expenses:** Instead of upfront investment in data centers, pay only for what you consume.

- **Benefit from massive economies of scale:** AWS achieves higher economies of scale, translated into lower pay-as-you-go prices.

- **Stop guessing capacity:** Eliminate under-utilization or crashing by scaling resources up or down automatically.

- **Increase speed and agility:** New IT resources are only a click away, reducing the time to make resources available to developers.

- **Stop spending money on running and maintaining data centers:** Focus on projects that differentiate your business rather than infrastructure.

- **Go global in minutes:** Deploy applications in multiple regions around the world with just a few clicks.

AWS Global Infrastructure Basics

The physical structure of AWS is organized hierarchically to ensure high availability and fault tolerance:

```
┌─────────────────────────┐
│         Region          │     Top Level
│     (Geographic Area)   │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│      Availabil-         │
│     ity Zone (AZ)       │     Logical Cluster
│     (Isolated Group     │
│     of Data Centers)    │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│     Data Centers        │     Physical Layer
│   (Physical Facilities) │
└─────────────────────────┘
```

Note: Each Region contains at least three Availability Zones, and each Availability Zone contains one or more physical Data Centers.