**WEEK-1**

What Is Cloud Computing?

Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing.

Six Advantages and Benefits of Cloud Computing

* Trade capital expenses for variable expense
* Benefit from massive economies of scale
* Stop guessing capacity
* Increase speed and agility
* Stop spending money on running and maintaining data centers
* Go global in minutes

**Deployment Models**

There is a range of deployment models, from all on-premises to fully deploy in the cloud. Many users begin with a new project in the cloud, and they might integrate some on-premises applications with these new projects in a hybrid architecture. They might decide to keep some legacy systems on-premises. Over time, they might migrate more and more of their infrastructure to the cloud, and they might eventually reach an all-in-the-cloud deployment.

Products and Services

AWS offers a broad set of global cloud-based products, including compute, storage, databases, analytics, networking, mobile, developer tools, management tools, Internet of Things (IoT), security, and enterprise applications.

AWS Partner Network (APN)

APN Partners are focused on your success, and they help customers take full advantage of all the business benefits that AWS has to offer.

AWS Marketplace

The AWS Marketplace is a digital catalog with thousands of software listings from independent software vendors, where you can find, test, buy, and deploy software to run on AWS.

These offerings can range from simple web server applications to security, networking business intelligence, databases, DevOps, and media. Many of these applications offer pay-as-you-go or Bring Your Own License (BYOL) models.

The AWS Cloud infrastructure is built around Regions and Availability Zones. AWS Regions provide multiple, physically separated, and isolated Availability Zones that are connected with low latency, high throughput, and highly redundant networking.

As of the time of publication, the AWS Cloud spans 55 Availability Zones within 18 geographic Regions and 1 Local Region around the world. There are announced plans for 15 more Availability Zones and five more Regions in Bahrain, Hong Kong SAR, Sweden, and South Africa; and a second AWS GovCloud Region in the US.

There is a*Local Region* in Osaka, Japan (**Osaka-Local**). An AWS Local Region is a single data center that is designed to complement an existing AWS Region. It is available to select AWS customers who request access. Customers who want to use the Asia Pacific (Osaka) Local Region should speak with their sales representative. Like all AWS Regions, AWS Local Regions are completely isolated from other AWS Regions.

Each AWS Region has multiple, isolated locations that are known as Availability Zones. Amazon Relational Database Service (Amazon RDS) provides you with the ability to place resources (such as instances) and data in multiple locations. Resources aren't replicated across AWS Regions unless you do so specifically.

Building and running your application starts with compute, whether you are building enterprise, cloud-native, or mobile applications; or running massive clusters to sequence the human genome.

AWS offers a comprehensive portfolio of compute services that allow you to develop, deploy, run, and scale your applications and workloads in the world’s most powerful, secure, and innovative compute cloud.

Later in this module, you will learn about both Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Lightsail. See those sections for more details.

Both server less computing and container services are beyond the scope of this class. We will cover these topics in subsequent courses, but the following descriptions provide an introduction to some of the key services for server less computing and containers.

## AWS Lambda

AWS Lambda lets you run code without provisioning or managing servers. You pay only for the compute time you consume--there is no charge when your code isn't running.

## AWS Container Services

Amazon Elastic Container Service (Amazon ECS) is a highly scalable, high-performance container orchestration service that supports Docker containers. It allows you to run and scale containerized applications on AWS.

Amazon Elastic Container Service for Kubernetes (Amazon EKS) makes it straightforward to deploy, manage, and scale containerized applications that use Kubernetes on AWS.

AWS Fargate is a compute engine for Amazon ECS and Amazon EKS that allows you to run containers without having to manage servers or clusters.

**Amazon Elastic Compute Cloud (Amazon EC2**) is a web service that provides secure and resizable compute capacity in the cloud. It's designed to make web-scale cloud computing easier for developers.

Amazon EC2 presents a true virtual computing environment, and it allows you to use web service interfaces to launch instances with a variety of operating systems, load them with your custom application environment, manage your network’s access permissions, and run your image by using as many or few systems as you want.

### Amazon EC2 instance types

Amazon EC2 provides a wide selection of instance types that are optimized to fit different use cases. Instance types comprise varying combinations of CPU, memory, storage, and networking capacity. They give you the flexibility to choose the appropriate mix of resources for your applications. Each instance type includes one or more instance sizes, which allows you to scale your resources to the requirements of your target workload.

**Amazon Lightsail** is the easiest way to get started with AWS for developers, small businesses, students, and other users who need a simple virtual private server (VPS) solution. Lightsail provides developers compute, storage, and networking capacity, and it also provides capabilities to deploy and manage websites and web applications in the cloud. Lightsail includes everything you need to launch your project quickly--a virtual machine, solid state drive (SSD)-based storage, data transfer, Domain Name System (DNS) management, and a static IP--for a low, predictable monthly price.