class — is used when we are ~~using~~ giving a common style to our webpage

id — to target any element we use id to call it

— x ——— x ——— x ———

AWS training and certification
Cloud Practitioner

* Imp for exam

1) Explain the value of the AWS Cloud
2) Understand and explain the AWS shared responsibility model.
3) Understand AWS Cloud costs, economics and billing practies
4) Describe and position the core AWS services, including compute, network, databases and storage.
5) Identify AWS services for common use cases.

...ization by using applicati...
...gement & virtualization technologies.

* Deployment model for cloud computing

When selecting a cloud strategy, a company must consider factors such as required cloud application components, preferred management tools and legacy IT infra requirements.

The three cloud computing deployment models are

1) Cloud-based
2) On-Permises
3) Hybrid.

1) Cloud-based deployment

- Run all parts of the application in the cloud.
- Migrate existing application to the cloud.
- Design & build new application in the cloud.

In a cloud-based deployment model, you can do the above things.

2) On-Permises deployment

- Deploy resources by using virtualization & resource management tools.
- Increase resources utilization by using application management & virtualization technologies.

On permises deployment is also known as private cloud deployment

- Increase resources utilization by using application management & virtualization technologies.

2) Hybrid deployment

- Connect cloud-based resources to on-premises infrastructure.
- Integrate cloud-based resources with legacy IT applications.

* Benefits of cloud computing

1) Trade upfront expense for variable expense
2) Stop spending money to run & maintain data centers.
3) Stop guessing capacity
4) Benefit from massive economies of scale
5) Increase speed & agility
6) Go global in minutes.

* Amazon Elastic Compute Cloud (Amazon EC2)

* Pay for what you need is a key value of AWS

* What is a client-server model?

In computing, a client can be a web browser or desktop application that a person interacts with to make requests to computer servers. A server can be services such as Amazon EC2, a type of virtual server.

* Cloud computing

It is the on-demand delivery of IT resources over the internet with pay-as-you go pricing

- On-demand delivery indicates that AWS has the resources you need, when you need them.
- IT resources
- pay-as-you-go pricing.

It indicates that pay only for them and those when you need them

* Connect -

Connect to the instance. You can connect to the instance in several ways. Your programs & applications have multiple different methods to connect directly to the instance & exchange data.

* Use -

After you have connected to the instance you can begin using it. You can run commands to install software, add storage, copy & organize file & more.

* Amazon EC2 instance types (1yr or 3yrs contract)

- Each Amazon EC2 instance type is grouped under an instance family.

1) General purpose instance

provides a balance of compute, memory and network resources.

- application servers
- gaming servers
- backend servers for enterpise application
- small and medium databases.

2) Compute optimized instance

are ideal for compute-bound applications that benefit from high-performance processors.

- high performance web server
- compute-intensive applications servers

Amazon EC2 is a web service that provides secure, resizable compute capacity in the cloud.

* Amazon Elastic Compute Cloud (EC2)
  - Highly flexible
  - Cost Effective
  - Quick

* Instance is a virtual server in AWS cloud.
- Multitenancy - Sharing underlying hardware between virtual machines

- EC2 instances are resizable
  You might start with a small instance, realize the application you are running is starting to max out the server, and then you can give that instances more memory and more CPU.

- You control the networking aspect of Amazon EC2 i.e how they can be accessed public or private.

* Compute as a services model (CaaS)

* How Amazon EC2 works

Launch → Connect → Use

* Launch -
First, you launch an instance. Begin by selecting a template with basic configurations for your instance. These configurations include the operating system (OS), application server, or applica You also select the instance type

- Increase resources utilization by using applica management & virtualization technologies.

* Amazon EC2 pricing

With Amazon EC2 you pay only for the compute time that you use.
Amazon EC2 provides variety of pricing options for different use cases.

1) On-demand -
are ideal for short term, irregular workloads that cannot be interrupted.
The instances run continuously until you stop them, and you pay for only the compute time you see.

2) Amazon EC2 Saving Plans -
enable you to reduce your compute costs by committing to a consistent amount of compute usage for a 1-year or 3-year term.
This helps in savings of upto 66% over On Demand cost.

3) Reserved instances -
are a billing discount applied to the uses of On-Demand Instances in your account.
- Terminates the instance.
- Purchase a new Reserved instance ~~term.y~~ that matches the instance attributes (instance type, Region, tenancy and platform).

4) Spot Instance -
Are ideal for workloads with flexible start and end times, or that can withstand interruptions.
Spot instance uses unused Amazon EC2 computing capacity ~~and~~ and offer you cost saving at up to 90% of On-Demand prices.

3) Memory optimized instances

are designed to deliver fast performance for workloads that process large datasets in memory.

- Memory intensive tasks

4) Accelerated computing instances

~~are~~ use hardware accelerators, or co processors, to perform some functions more efficiently than is possible in software running on CPU's.

- Floating point number calculations
- Graphics processing
- Data pattern
- Utilize hardware accelerators

5) Storage computing instances

are designed for workloads that requires high, sequential read and write access to large datasets on local storage.

management & virtualization technologies.

* Directing traffic with Elastic Load Balancing

- Elastic Load Balancing (ELB)

ELB is the AWS service that automatically distributes incoming application traffic across multiple resources, such as Amazon EC2 instances.

A load balancer acts as a single point of contact for all incoming web traffic to your Auto Scaling group.

* Messaging and queuing

- Amazon Simple Notification Service (Amazon SNS) -

→ Amazon Simple Notification service (Amazon SNS) is a publish / subscribe service.
→ Using Amazon SNS topics, a ~~publisher~~ publisher publishes message to subscribe.
→ This is similar to the coffee shop; the cashier provides coffee orders to the barista who makes the drinks.

- Amazon Simple Queue Service (Amazon SQS) -

→ is a message Queuing service.
→ Using Amazon SQS, you can send, store, and receive messages between software components, without losing message or requiring other services to be available.
→ In Amazon SQS, an application sends messages into a queue.
→ A user or service retrieves a message from the queue, processes it, and then deletes it from the queue.

management & virtualization technologies.

* Serverless computing

→ Earlier in this module, you learned about Amazon EC2, a service that lets you run virtual servers in the cloud.

→ If you have applications that you want to run in Amazon EC2, you must do the following:

1) Provision instance (virtual servers)
2) Upload your code.
3) Continue to manage the instances while your application is running.

* AWS Lambda is a service that lets you run code without needing to provision or manage servers.

* How AWS Lambda works

Upload code to Lambda → Set code to trigger from an event source → Code runs only when triggered → Pay only for the compute time you use.

* In AWS you can also build and run containerized applications.

5) Dedicated Hosts -

are physical servers with Amazon EC2 instance capacity that is fully dedicated to your use.

* Scaling Amazon EC2

- Scalability -

involves beginning with only the resources you need and designing your architecture to automatically respond to changing demand by scaling out or in.

- Amazon EC2 AutoScaling -

Amazon EC2 AutoScaling enables you to automatically add or remove Amazon EC2 instances in response to changing application demand.

- Dynamic scaling responds to changing demand.
- Predictive scaling automatically schedules the right number of Amazon EC2 instances based on predicted demand.

- Amazon EC2 AutoScaling, adds instances based on demand and then decommissions instances when they are no longer needed.

- Scaling up - means adding more power to the machines that are running.

management & virtualization technologies.

* In AWS everything is done using API calls.

* AWS global Infrastructure

- Selecting a Region

1) Compliance with data governance and legal requirements

Depending on your company & location, you might need to run your data out of specific area.
Not all companies have location-specific data
2) regulations, so you might need to focus more on the other three factors.

2) Proximity to your customers

Selecting a Region that is close to your customers will help you to get content to them faster.

3) Available services within a Region

4) Pricing

* Ways to interact with AWS services

1) AWS Management Console

2) AWS Commad Line Interface (CLI) - Makes API calls using the terminal on your machine.

3) Software Development Kits

* AWS Fargate -

→ is a serverless compute engine for containers. It works with both Amazon ECS and Amazon EKS.

→ Using AWS fargate, you do not need to provision or manage servers. AWS Fargate manages your server infrastructure for you.

* Containers -

Containers provide you with a standard way to package your application's code and dependencies into a single object.

You can also use containers for processes and workflows in which there are essential requirements for security, reliability and scalability.

* Amazon Elastic Container Service (Amazon ECS)

→ Amazon ECS is a highly scalable, high-performance container management system that enables you to run and scale containerized applications on AWS.
→ Amazon ECS supports Docker containers.
→ Docker is a software platform that enables you to build, test, and deploy applications quickly.

* Amazon Elastic Kubernetes Service (Amazon EKS)

→ Amazon EKS is a fully managed services that you can use to run Kubernetes on AWS.
→ Kubernetes is an open-source software that enables you to deploy and manage containerized applications at scale.

management & virtualization technologies.

* AWS Elastic Beanstalk.

- With AWS Elastic Beanstalk you provide code and configuration settings, and Elastic Beanstalk deploys the resource necessary to perform the following tasks:
  1) Adjust capacity
  2) Load balancing
  3) Automatic scaling
  4) Application health monitoring.

* AWS Cloudformation.

- With AWS ~~to~~ Cloudformation, you can treat your infrastructe as code.
- This means that you can build an environment by writing lines of code instead of using the AWS Management Console to individually provision resources.
- AWS Cloudformation provisions your resource in a safe repeatable manner, enabling you to frequently build your infracture & applications without having to perform manual actions.
- It determines the right operations to perform when managing your stack & rolls back changes automatically if it detects errors.

1) AWS Management Console

- The AWS management console is a web-based interface for accessing and managing AWS services.
- The console includes coizards and automated coorkflows that can simplify the process of completing tasks.
- You can also use the AWS console moblie application to perform task such as monitoring resources, viecoing alarms, and accessing biling information.

2) AWS Command Line Interface (CLI)

- To save time cohen making API requests, you can use the AWS CLI.
- AWS CLI enables yout to control multiple AWS services directly from the command line coithin one tool.
- AWS CLI, you can automate the actions that your services & applications perform through scripts.

3) Software Development Kits (SDKs)

- SDKs make it- easier for you to use AWS services through an API designed for your programming languey or platform.
- SDKs enable you to use AWS services with your existing applications or create entirely neco application that run on AWS.

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- It is the on-demand delivery of IT resources over the internet with pay-as-you go pricing.
- It is also a on-demand availability of computer system resources, especially data storage and computing power without direct active management by the user.
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