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* 1) AWS cloud – Amazon Web Services.
* 2) AZURE cloud – Microsoft
3) GCP – google cloud.
4) IBM cloud
5) Alibaba cloud.

→ These are all public clouds.

What is cloud?

→ cloud generally refers to cloud computing, which is the delivery of computing services - such as storage, server, databases, networking, software and more - over the internet.

↳ Instead of storing data or running applications on a local computer or private server, users can access these resources remotely via cloud service providers.

→ Technology and ideology is almost same in every cloud services.

↳ But, the terminology will be different.

ex: AWS – ec_2
Azure – vm
AWS – VPC
Azure – Vnet

cloud computing :

IAAS – Infrastructure as a service.
PAAS – platform as a service.
SAAS – software as a service.

*IAAS:

→ They will provide us the infrastructure, where we can host our application.

*Public data centers can be used by anyone across the globe.

Why everyone is transfering towards public cloud when companies have their own data centers?

↓

→ In cloud platform we are not worried about the infrastructure. (whether it is running or not).

→ When it comes to physical/private data centers, we need to assign a team to take care of the infrastructure.

* prior to cloud services, companies used to have their own data centers/ own infrastructure to host their application.

↓

we call them as

* physical data center
* private data center

*PAAS:

Platform as a service: ex: AWS-Elastic beanstalk

PAAS is a type of cloud computing service that provides a platform for developers to build, deploy, and manage applications without worrying about the underlying infrastructure. It includes operating systems, development tools, database management, and other services needed for application development.

SAAS (Software as a service): is a cloud computing model where software applications are hosted and managed by a service provider and accessed over the internet. Instead of installing and maintaining software on local devices, users can use Saas applications through web browsers on a subscription basis. ex: Github.

On-site	IaaS	PaaS	SaaS
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
MiddleWare	MiddleWare	MiddleWare	MiddleWare
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

AWS cloud - https://aws.amazon.com/console/

Azure cloud - https://portal.azure.com/

Region - Region is a geographic location / collection of data centers.

Availability zone - is an data center.

* which region should we use?
  ↓
  This depends on the client requirement and govt policies as well.

* MFA → Multi Factor Authentication
  ↓
  is the extra layer of security.

*Interview question

How AWS accounts were you using?

2 AWS accounts

*1 is used for development/staging activities.

*1 is used for production activities.

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EC_2 in AWS:

EC_2 - Elastic cloud compute

VM in Azure:

VM - Virtual Machine

→ With the help of EC_2 we can create virtual servers in the cloud.

AMI (Amazon Machine images):

AMI is a operating system required to lauch an instance.

↳ which o.s we want to configure, we can select from AMI.

Types of AMI's:

1) Quick start AMI's
2) My AMI's
3) AWS market place AMI's (to get the softwares which are required for our application).
4) community AMI's.

Instance type:

Instance type decides the no.of CPU's, RAM, Hard disk.

Key Pair:

A key pair consists of a public key and a private key used for securely connecting to EC_2 instances.

Firewall (security groups): is a set of rules used to control the inbound and outbound network traffic to and from resources in a network, commonly used in cloud computing environments.

EC_2
↓
Launch an instance
↓
Name
↓
AMI
↓
Instance type
↓
Key Pair
↓
Network settings
↓
Firewall (security groups)
↓
Launch Instance.

Elastic Block Storage:

1) HDD – Hard disk drive
2) SSD – Solid state drive
3) Magnetic

→ The difference is because of the input and output speed of that particular process.

↓

It depends on how fast the EC_2 performance should be.

Advanced details:

EC_2 purchasing options:

1) On demand Instances
2) Reserved instances
3) Spot instances.

→ The difference is in terms of the pricing.

* spot instances are cheaper
* Reserved instances prices are moderate
* on demand prices are higher.
* we will be buying the instances as per our requirement on Amazon.

↓

If i need 10 servers for my project, i will ask AWS to provide for specific period of time (Reserved instances).

↳ we go for reserved instances, when we need bulk servers for a specific period of time.

* we will be using on demand instances.

* spot instances can be purchased based on bidding.

* on demand instance will be available, till we terminate the instance.

* spot instances are provided with the left over hardware at the data center.

↳ If the other person bids more than us, we might loose our instance in a short period of time. We need to get backup of our instance before we loose it.

→ Spot instances are not recommended for the production. Spot instances can only be used for the development and testing environments.

* For any application, we have 2 categories:

1) Stateless applications → doesn't store any data.

2) Stateful applications. → stores the data.

Userdata (or) boot strapping : will help us to execute a particular script.

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