**Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage) and computing power, without direct active management by the user.**

What are the various available cloud service models?

**Cloud computing is offered in three different service models which each satisfy a unique set of business requirements. These three models are known as Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).**

What are the component layers found in Cloud architecture?

* **Infrastructure as a Service (IaaS) The basic layer of cloud is the infrastructure –IaaS (Infrastructure as a service). ...**
* **Platform as a Service (PaaS) The second layer of the cloud is the platform – the PaaS (Platform as a service). ...**
* **Software as a Service (SaaS) ...**
* **Business Process Outsourcing (BPO)**

What are some popular use cases for cloud computing?

* **Email.**
* **Virtual Desktops (VDI) / Desktop as a Service (DaaS) ...**
* **Test and Development. ...**
* **Infrastructure as a Service (IaaS) ...**
* **Private/Public/Hybrid Cloud. ...**
* **Software-Defined Wide Area Networking (SD-WAN) ...**
* **Big Data Analytics. ...**
* **Software as a Service (SaaS)**

What is On-Demand functionality?

**On-demand functionality is the main and most valuable characteristics of Cloud computing. On-demand functionality means provisioned the resources at a time when the consumer needs it.**

What are the platforms that use Cloud Computing?

* **Amazon Web Services: Amazon Web Services (AWS) is a subsidiary of Amazon (a leading company in eCommerce). ...**
* **Google Cloud Platform: ...**
* **Microsoft Azure: ...**
* **DigitalOcean. ...**
* **IBM Bluemix: ...**
* **Alibaba:**

What are the different modes of deployment available on the Cloud?

**There are four cloud deployment models: public, private, community, and hybrid. Each deployment model is defined according to where the infrastructure for the environment is located.**

What is cloud-native?

**The term cloud native refers to the concept of building and running applications to take advantage of the distributed computing offered by the cloud delivery model.**

What are some examples of popularly used Cloud Computing services?

**Here is a list of my top 10 cloud service providers:**

* **Amazon Web Services (AWS)**
* **Microsoft Azure.**
* **Google Cloud.**
* **Alibaba Cloud.**
* **IBM Cloud.**
* **Oracle.**
* **Salesforce.**
* **SAP.**

What is Edge computing?

**Edge computing is a form of computing that is done on site or near a particular data source, minimizing the need for data to be processed in a remote data center.**

What do you know about the Multi-cloud strategy?

**Multi-cloud is a strategy where an organization leverages two or more cloud computing platforms to perform various tasks.**

What are the basic types of Data Centres?

**Data centers are made up of three primary types of components: compute, storage, and network.**

What is Elastic Utility Computing Architecture - EUCALYPTUS?

**Eucalyptus is an acronym for Elastic Utility Computing Architecture for Linking Your Programs To Useful Systems. Eucalyptus enables pooling compute, storage, and network resources that can be dynamically scaled up or down as application workloads change.**

What is a cloud VPN?

**Cloud VPN securely connects your peer network to your Virtual Private Cloud (VPC) network through an IPsec VPN connection.**

What is the difference between RTO and RPO in Cloud Computing services?

**These are the Recovery Time Objective (RTO) and Recovery Point Objective (RPO). RTO is the goal your organization sets for the maximum length of time it should take to restore normal operations following an outage or data loss. RPO is your goal for the maximum amount of data the organization can tolerate losing.**

Give architectural details for VPC - Virtual Private Cloud

**Virtual Private Cloud (VPC) is a logically isolated network from another virtual network in the AWS cloud where you can launch the AWS resources. It gives all the benefits of the traditional network that you have for your own data center. Resources and applications are accessed through IPv4 or IPv6 in your AWS VPC.**

What is Virtualization in Cloud Computing?

**In the context of cloud computing, virtualization is a technique that makes a virtual ecosystem of storage devices and the server OS.**

How is Data protection in S3 achieved?

**Amazon S3 further protects your data using versioning. You can use versioning to preserve, retrieve, and restore every version of every object that is stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures.**

Explain the types of EC2 instances?

**Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instance types comprise varying combinations of CPU, memory, storage, and networking capacity and give you the flexibility to choose the appropriate mix of resources for your applications. They are On-Demand Instances, Reserved Instances, Spot Instances, and Savings Plans.**

How does AWS provide defence from Distributed Denial of Service (DDoS) attacks?

**WS Shield is a managed Distributed Denial of Service (DDoS) protection service that safeguards applications running on AWS. AWS Shield provides always-on detection and automatic inline mitigations that minimize application downtime and latency, so there is no need to engage AWS Support to benefit from DDoS protection.**

How can DDos attack be prevented and minimised?

**You can rely on the following types of network security to protect your business from DDoS attempts: Firewalls and intrusion detection systems that act as traffic-scanning barriers between networks. Anti-virus and anti-malware software that detects and removes viruses and malware.**

What are the key components of an AWS architecture?

* **Amazon API Gateway. This is a mode of accessing data, logic, and functions.**
* **AWS Lambda. ...**
* **Amazon SES. ...**
* **Load Balancing. ...**
* **Elastic Load Balancing. ...**
* **Amazon CloudFront. ...**
* **Security Management. ...**
* **Elastic Cache.**

How does AWS provide security for its customers?

**We provide tools that allow you to easily encrypt your data in transit and at rest to help ensure that only authorized users can access it, using keys managed by our AWS Key Management System (KMS) or managing your own encryption keys with CloudHSM using FIPS 140-2 Level 3 validated HSMs.**

What is Amazon Machine Image - AMI?

**An Amazon Machine Image (AMI) is a supported and maintained image provided by AWS that provides the information required to launch an instance.**

What is AWS lambda?

**AWS Lambda allows you to add custom logic to AWS resources such as Amazon S3 buckets and Amazon DynamoDB tables, so you can easily apply compute to data as it enters or moves through the cloud. It is easy to get started with AWS Lambda.**

How can AWS  vertically scale in AWS?

**Vertical scaling means that you scale by adding more power (CPU, RAM) to an existing machine. AWS provides instances up to 488 GB of RAM or 128 virtual cores. There are few challenges in basic architecture. First, we are using a single machine which means you don't have a redundant server.**

What are important features of Amazon S3

**S3 features include capabilities to append metadata tags to objects, move and store data across the S3 Storage Classes, configure and enforce data access controls, secure data against unauthorized users, run big data analytics, monitor data at the object and bucket levels, and view storage usage and activity trends .**

What is elastic IP

**An Elastic IP address is a reserved public IP address that you can assign to any EC2 instance in a particular region, until you choose to release it.**

How is elastic IP allocated?

**An Elastic IP address is allocated to your AWS account, and is yours until you release it. By using an Elastic IP address, you can mask the failure of an instance or software by rapidly remapping the address to another instance in your account.**

What is the EC2 (Elastic Compute Cloud) instance?

**Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster.**

What is S3 in AWS?

**Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. You can use Amazon S3 to store and retrieve any amount of data at any time, from anywhere.**

How is AWS IVM helpful in threat detection?

**IBM Security Managed Detect & Respond (MDR) Service delivers turnkey 24x7 threat prevention, detection, investigation, and fast response.**

How are S3 and EBS different from each other?

**Both S3 and EBS gives the availability of 99.99%, but the only difference that occurs is that S3 is accessed via the internet using API's and EBS is accessed by the single instance attached to EBS.**

What type of performance can you expect from Elastic Block Storage? How do you back it up and enhance the performance?

**Provisioned IOPS SSD (io2 Block Express, io2, and io1), General Purpose SSD (gp3 and gp2), Throughput Optimized HDD (st1) and Cold HDD (sc1)**.

**You can create a snapshot manually from the console. On the Amazon EC2 console, on the Elastic Block Store Volumes page, select the volume that you want to back up. Then on the Actions menu, choose Create Snapshot.**

**Making SSD storage standard for WorkSpaces will provide faster provisioning times, quicker reboots and logins, and a higher performance user experience.**

Imagine that you have an AWS application that requires 24x7 availability and can be down only for a maximum of 15 minutes. How will you ensure that the database hosted on your EBS volume is backed up?

**AWS snapshot automation for EBS volume back up is the key to meeting strict recovery objectives. Automating the backup process is ideal since creating multiple regularly scheduled snapshots can be too time consuming to carry out manually. There are a number of methods that can be used to automate the snapshot creation process. It can be done programmatically through the AWS API and the AWS CLI, or through the fully managed**[**AWS Backup service**](https://cloud.netapp.com/blog/aws-backup-centrally-managed-cvo-blg)**. Since AWS Backup is a much easier process, it has largely eclipsed the usage of the API and CLI.**

You create a Route 53 latency record set from your domain to a system in Singapore and a similar record to a machine in Oregon. When a user located in India visits your domain, to which location will he be routed to?

**Singapore, Oregon, both because 2 requests are made- 1 to each machine**

Differentiate between on-demand instance and spot instance.

**A Spot Instance is an instance that uses spare EC2 capacity that is available for less than the On-Demand price. Because Spot Instances enable you to request unused EC2 instances at steep discounts, you can lower your Amazon EC2 costs significantly. The hourly price for a Spot Instance is called a Spot price.**

How will you access the data on EBS in AWS ?

**All of the EBS functionality can be accessed through the EC2 APIs, through the EC2 Command Line tools, through ElasticFox, and via a number of third-party tools and libraries. Third party tool and library support is already starting to appear.**

Is it possible to vertically scale on an Amazon Instance?  If yes, how ?

**Yes, Amazon EC2 instances can be scaled vertically**.

**With vertical scaling, the solution automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost.**

Differentiate between vertical and horizontal scaling in AWS.

**In AWS, vertical scaling is about changing the instance up and down, and horizontal scaling is about adding more machines of similar capacity to the infrastructure.**

What is the total number of buckets that can be created in AWS by default ?

**By default, you can create up to 100 buckets in each of your AWS accounts.**

An organisation wants to deploy two-tier web applications on AWS.  The application requires complex query processing and table joins. However, the company has limited resources and requires high availability. Which is the best configuration that company can opt for based on the requirements ?

If you have half of the workload on a public cloud while the other half is on local storage, what kind of architecture will you use for this ?

Is it possible to cast-off S3 with EC2 instances ? If yes, how ?

**Yes, it is possible to cast off with EC2 instances by using root approaches which have the backup of native occurrence storage.**

How can you safeguard EC2 instances running on a VPC ?

**Amazon EC2 security groups can be used to help secure instances within an Amazon VPC. Security groups in a VPC enable you to specify both inbound and outbound network traffic that is allowed to or from each Amazon EC2 instance.**

How many EC2 instances can be used in a VPC ?

**You are initially limited to launching 20 Amazon EC2 instances at any one time and a maximum VPC size of /16 (65,536 IPs).**

What are some of the key best practices for security in Amazon EC2?

* **Manage access to AWS resources and APIs using identity federation, IAM users, and IAM roles. ...**
* **Implement the least permissive rules for your security group. ...**
* **Regularly patch, update, and secure the operating system and applications on your instance.**

What should be the instance’s tenancy attribute for running it on a single tenant hardware ?

**The answer is dedicated. If I want my instance to run on single-tenant hardware, the value of the instance's tenancy attribute must be set to dedicated. Once the tenancy attribute value is set to dedicated, you can change it to default after the attribute is created.**

There is a distributed application that processes huge amounts of data across various EC2 instances.  Application is designed in such a way that it can recover gracefully from EC2 instance failures. How will you accomplish this in a cost effective manner ?

**On-demand or reserved instance will not be ideal in this case as the task here is not continuous. Moreover. It does not make sense to launch an on-demand instance whenever work comes up because on-demand instances are expensive.In this case, the ideal choice would be to opt for a spot instance owing to its cost effectiveness and no long term commitments.**

What are the important features of a classic load balancer in EC2 ?

**Classic load balancer can decide whether to route the traffic or not based on the results of health check.  
You can implement secure load balancing within a network by creating security groups in a VPC.  
Classic load balancer supports sticky sessions which ensure that the traffic from a user is always routed to the same instance for a seamless experience.**

What parameters will you take into consideration when choosing the availability zone ?

**Performance, pricing, latency, and response time are some of the factors to consider when selecting the availability zone.**

Which instance will you use for deploying a 4-node Hadoop cluster in AWS ?

**We can use a c4.8x large instance or i2.large for this, but using a c4.8x will require a better configuration on PC.**

Will you use encryption for S3 ?

**Amazon recommends the use of S3 encryption when storing data in Amazon S3 buckets. The first reason for this recommendation is security. Encryption increases the level of security and privacy. However, there is another reason for why data stored in the cloud should be encrypted.**

How can you send a request to Amazon S3 ?

**Using the REST API or the AWS SDK wrapper libraries which wrap the underlying Amazon S3 REST API.**

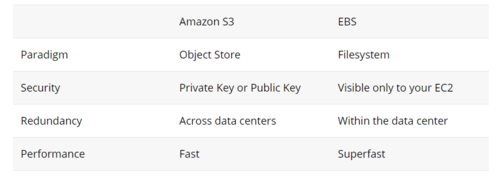
How will you bind the user session with a specific instance in ELB (Elastic Load Balancer) ?

**We can use the sticky session feature (also known as session affinity) to enable the load balancer to bind a user's session to a specific target.**

What are the possible connection issues you encounter when connecting to an EC2 instance ?

**Unprotected private key file  
Server refused key  
Connection timed out  
No supported authentication method available  
Host key not found,permission denied.  
User key not recognized by the server, permission denied.**

What is the difference between Amazon S3 and EBS ?

****

Can you run multiple websites on an EC2 server using a single IP address?

**More than one elastic IP is required to run multiple websites on EC2.**

What happens when you reboot an EC2 instance?

**Rebooting an instance is just similar to rebooting a PC. You do not return to image's original state, however, the contents of the hard disk are same as before the reboot.**

A content management system running on an EC2 instance is approaching 100% CPU utilisation. How will you reduce the load on EC2 instances ?

**This can be done by attaching a load balancer to an autoscaling group to efficiently distribute load among all instances.**

What happens when you launch instances in Amazon VPC ?

**Each instance has a default IP address when the instance is launched in Amazon VPC. This approach is considered ideal when you need to connect cloud resources with the data centers.**

Can you modify the private IP address of an EC2 instance while it is running in a VPC ?

**It is not possible to change the primary private IP addresses. However, secondary IP addresses can be assigned, unassigned or moved between instances at any given point.**

You are launching an instance under the free usage tier from AMI having a snapshot size of 50GB. How will you launch the instance under the free usage tier ?

**It is not possible to launch this instance under the free usage tier.**

Which load balancer will you use to make routing decisions at the application layer or transport layer that  supports either VPC or EC2?

**Classic Load Balancer**

What is a DDoS attack, and how can you handle it?

**In a DDoS attack, cybercriminals take advantage of normal behavior that occurs between network devices and servers, often targeting the networking devices that establish a connection to the internet. Therefore, attackers focus on the edge network devices (e.g., routers, switches), rather than individual servers.**

What is RTO and RPO in AWS?

**Recovery time objective (RTO): The maximum acceptable delay between the interruption of service and restoration of service. This determines an acceptable length of time for service downtime. Recovery point objective (RPO): The maximum acceptable amount of time since the last data recovery point.**

RPO and RTO are set by the organization using AWS and have to be set based on business needs. The cost of recovery and the probability of disruption can help an organization determine the RPO and RTO.

How is stopping an EC2 instance different from terminating it?

**The key difference between stopping and terminating an instance is that the attached bootable EBS volume will not be deleted. The data on your EBS volume will remain after stopping while all information on the local (ephemeral) hard drive will be lost as usual.**

How can you automate EC2 backup by using EBS?

1. **Get the list of instances.**
2. **Connect to AWS through API to list the Amazon EBS volumes that are attached locally to the instance.**
3. **List the snapshots of each volume.**
4. **Assign a retention period to the snapshot.**
5. **Create an AWS snapshot of each volume.**

Explain how one can add an existing instance to a new Auto Scaling group?

**(Optional) On the navigation pane, under AUTO SCALING, choose Auto Scaling Groups. Select the Auto Scaling group and verify that the maximum size of the Auto Scaling group is large enough that you can add another instance.**