1. **What is Amazon EC2, and how does it work?**

Answer: Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides scalable computing capacity in the cloud. It allows users to launch virtual servers (instances) and run applications on them

1. **What are the different instance types available in EC2, and how do they differ from each other**

Answer: **General Purpose Instance**

The General Purpose Instance balances computing, memory, and networking resources

**Compute Optimized Instances**

The Compute Optimized Instances are best there is a need for high compute. The main difference is that this type is ideal for high-performance and compute-intensive needs.

**Memory Optimized Instances**

This type can deliver large dataset workloads fast. It loads from storage, holds the data, and processes it before the computer can run it. The Memory Optimized Instances are best when huge amounts of data need to be preloaded before running the app.

**Accelerated Computing Instances**

This type use hardware accelerators.

The accelerators boost the data processing.

The Accelerated Computing Instances are best for graphics applications and streaming.

**Storage Optimized Instances**

This type is best when you have large datasets on local storage.

Some examples:

* Large file systems
* Data warehouses
* Online transaction systems

The Storage Optimized Instances are designed to deliver many inputs as fast as possible.

## HPC Optimized

High performance computing (HPC) instances are purpose built to offer the best price performance for running HPC workloads at scale on AWS. HPC instances are ideal for applications that benefit from high-performance processors such as large, complex simulations and deep learning workloads.

1. How do you secure an EC2 instance, and what are some best practices for securing your instances?

Answer: You can secure your EC2 instances by following best practices such as using strong passwords, regularly patching your instances, using security groups, and enabling two-factor authentication. You should also restrict access to your instances to only those who need it.

4) How do you scale an EC2 instance vertically and horizontally, and what are some best practices for doing so?

Answer: You can scale an EC2 instance vertically by increasing its instance size, and horizontally by launching additional instances. Best practices for scaling include using Auto Scaling to automatically add or remove instances based on demand, and using load balancers to distribute traffic evenly across instances.

5)How do you troubleshoot an EC2 instance that is not responding, and what are some common causes of instance failure?

Answer: Common causes of instance failure include network issues, software errors, and insufficient resources. To troubleshoot an unresponsive instance, you can check the system logs, test the network connection, and try restarting the instance.

6) How do you manage Amazon EBS volumes, and what are some best practices for doing so?

Answer: You can manage EBS volumes by attaching and detaching them from instances, taking snapshots for backups, and resizing them as needed. Best practices include using multiple EBS volumes for high availability and using RAID to improve performance.

7) How do you configure EC2 instances to work with Amazon S3, and what are some best practices for doing so?

Answer: You can configure EC2 instances to work with S3 by using the AWS SDK or command-line tools. Best practices include using S3 for storing static content, using IAM roles for access control, and enabling encryption for data at rest.

8) How do you monitor EC2 instances, and what are some best practices for monitoring performance and availability?

Answer: You can monitor EC2 instances using CloudWatch, which provides metrics such as CPU usage, network traffic, and disk I/O. Best practices include setting alarms to notify you when metrics reach certain thresholds, and using CloudTrail to track changes to your instances.

9) How do you manage EC2 instances across multiple availability zones, and what are some best practices for doing so?

Answer: You can manage instances across multiple availability zones using Auto Scaling and Elastic Load Balancing. Best practices include designing your application to be highly available and fault-tolerant, and regularly testing your failover and recovery processes

10) How do you use Amazon EC2 with Auto Scaling, and what are some best practices for configuring Auto Scaling?

Answer: You can use Auto Scaling to automatically add or remove instances based on demand, and to maintain a desired level of capacity. Best practices for configuring Auto Scaling include setting appropriate scaling policies, using CloudWatch metrics to trigger scaling actions, and regularly testing your Auto Scaling group.

11) How does Amazon EC2 work with Amazon VPC

Answer: Amazon Virtual Private Cloud (Amazon VPC) allows you to create a virtual network in the cloud and launch EC2 instances within it. VPC provides advanced networking features such as custom IP address

12) What is the maximum number of Elastic IP addresses that can be associated with an EC2 instance?

Answer : it depends upon the type of the instance.

For the t2.micro instance maximum no. of elastic ip that can be associated are 2.

(note : no. of elastic ip is depend upon no. of privet ip that can be associated. If no. of privet ip is 2 than the no. of elastic ip is 2.

In one region the maximum no. of elastic ip that can be made is 5 by default)

13) What is the maximum size of an Amazon EBS volume?

EBS currently supports a maximum volume size of 64 TiB. This means that you can create an EBS volume as large as 64 TiB, but whether the OS recognizes all of that capacity depends on its own design characteristics and on how the volume is partitioned.

14) Can you use AWS CLI to create an EC2 instance?

Answer: Yes, you can use AWS CLI to create, start, stop, and terminate an EC2 instance.

15) What is the difference between an on-demand instance and a spot instance?

Answer: An on-demand instance is a pay-as-you-go model where you pay for the compute capacity by the hour. A spot instance is a way to bid for unused EC2 instances, which can be significantly cheaper than on-demand instances but can be terminated at any time.

16) How do you create a custom AMI

Answer: You can create a custom AMI by launching an EC2 instance and select the instance click on action 🡪 templetes and images 🡪 create image, then customizing it with your software and configuration. You can then create an image of the instance and use it to launch new instances with the same configuration.

17) What is an instance profile in EC2?

Answer: An instance profile is a container for an IAM role that you can use to grant permissions to an EC2 instance.

18) What is an EC2 security group?

Answer: An EC2 security group is a virtual firewall that controls inbound and outbound traffic to an EC2 instance.

19) Can you attach multiple security groups to an EC2 instance?

Answer: Yes, you can attach multiple security groups to an EC2 instance.

20) What is a placement group in EC2?

Answer: A placement group is a logical grouping of instances within a single availability zone to provide low latency, high throughput, and high-availability network performance.

21) What is an Amazon Machine Image (AMI)?

Answer: An Amazon Machine Image (AMI) is a pre-configured virtual machine image used to create EC2 instances.

22) Can you encrypt EBS volumes?

Answer: Yes, you can encrypt EBS volumes with AWS-managed keys or customer-managed keys

23) What is the difference between an instance storage and an EBS volume?

Answer: An instance store is a temporary storage that is directly attached to the EC2 instance. An EBS volume is a persistent storage that can be detached from and attached to an instance.

Data of instance storage lost after termination of the instance, but EBS data is not lost. EBS volume can be shared using snapshot but instance storage volume can not be shared

24) What is an instance tenancy in EC2?

Answer: Instance tenancy refers to the physical host on which your EC2 instances run. You can choose between a shared tenancy, where instances run on a shared host, or a dedicated tenancy, where instances run on a dedicated host.

25) How do you troubleshoot connectivity issues between EC2 instances?

Answer: You can troubleshoot connectivity issues between EC2 instances by checking the security groups, network ACLs, and routing tables

26) How do you attach an EBS volume to an EC2 instance?

Open the the ec2

Go to the navigation bar elastic block store 🡪 volumes

Click on create volume. Give the configuration like the size, and availability zone.

After creating the volume select it and click on action 🡪 attach volume.

Select the instance in which we want to attach it (note : instance must be in same availability zone) then click on attach volume

27) what is the elastic fabric adapter ?

Answer: An Elastic Fabric Adapter (EFA) is a network device or network interface that you can attach to your Amazon EC2 instance to accelerate High Performance Computing (HPC) and machine learning applications.

28) which type of instance type has most elastic ip’s

Answer: dl1.24xlarge, p4d.24xlarge (accelerated computing) - 60

29)what are the types of load balancer ?

Answer : Application Load Balancer. ...

Network Load Balancer.

30) difference between application load balancer and network load balancer

Answer:

| **Application Load Balancer (ALB)** | **Network Load Balancer (NLB)** |
| --- | --- |
| Layer | Layer 7 (HTTP/HTTPS) | Layer 4 (TCP/UDP) |
| Target types | Can route requests to EC2 instances, containers, IP addresses and Lambda functions | Can route requests to EC2 instances and IP addresses |
| Load balancing algorithms | Round Robin, Least Connection, IP Hash, and Least Outstanding Requests | Round Robin, Least Connection, and Source IP Hash |
| Sticky sessions | Supports cookie-based and application-based sticky sessions | Supports TCP/UDP-based sticky sessions |
| Health checks | Supports both HTTP and HTTPS health checks | Supports TCP, HTTP, HTTPS, and ICMP health checks |
| SSL/TLS offloading | Can offload SSL/TLS encryption and decryption from backend servers | Can offload SSL/TLS encryption and decryption from backend servers |
| Scalability | Can automatically scale to handle changing traffic patterns | Can automatically scale to handle changing traffic patterns |
| Availability | Supports cross-zone load balancing | Supports cross-zone load balancing and static IP addresses |
| Pricing | Charged per hour plus per GB of data processed | Charged per hour plus per GB of data processed |

Overall, ALB is designed to balance application-level traffic using Layer 7 routing and advanced features such as sticky sessions and SSL offloading. NLB, on the other hand, is designed for low-latency, high-throughput traffic at the transport layer using Layer 4 routing.

## 31) How does Elastic Load Balancer work?

A load balancer accepts incoming traffic from clients and routes requests to its registered targets (such as EC2 instances) in one or more Availability Zones. It then resumes routing traffic to that target when it detects that the target is healthy again.

## 32) What is auto-scaling?

## Amazon EC2 Auto Scaling helps you maintain application availability and allows you to automatically add or remove EC2 instances according to conditions you define. Dynamic scaling responds to changing demand and predictive scaling automatically schedules the right number of EC2 instances based on predicted demand.