Amazon EC2 - Questions and Answers

1. What is Amazon EC2?

Amazon EC2 is a web service that provides resizable compute capacity in the cloud. It allows users to launch and manage virtual servers (instances) to run applications on AWS infrastructure.

2. What are the different types of EC2 instances?

Instance types include:

- General Purpose: t2, t3, m5, etc.

- Compute Optimized: c5, c6g

- Memory Optimized: r5, r6g

- Storage Optimized: i3, d2

- Accelerated Computing: p3, inf1

3. What is the difference between a Security Group and a Network ACL?

Security Group acts as a virtual firewall at the instance level and is stateful. NACL controls traffic at the subnet level and is stateless.

4. What is an AMI in EC2?

Amazon Machine Image (AMI) is a template with a software configuration (OS, application server, and apps) to launch an EC2 instance.

5. What are key pairs in EC2?

Key pairs are used for secure SSH access to instances. A public key is stored in AWS, and the private key is used to access the instance.

6. What is the difference between stopping and terminating an EC2 instance?

Stopping shuts down the instance, retaining the EBS data. Terminating deletes the instance and usually the data too.

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7. How can you automatically scale EC2 instances?

Use Auto Scaling Groups with policies to automatically increase/decrease instance count based on demand.

8. What is an Elastic IP in EC2?

A static, public IPv4 address you can associate with any instance to mask failure of instances or software.

9. How do you monitor EC2 instance performance?

Use Amazon CloudWatch to monitor metrics like CPU utilization, disk I/O, and network traffic.

10. What are Spot and On-Demand Instances?

On-Demand: Pay as you go.

Spot: Purchase unused capacity at reduced rates for flexible workloads.

11. How does EC2 networking work? What are ENIs and VPCs?

Instances are launched in a VPC and connected using ENIs. VPC is a private network and ENI is like a virtual NIC.

12. What are the different storage options for EC2?

- EBS: Persistent block storage
- Instance Store: Temporary storage
- EFS: Shared file storage
- FSx: File system service

13. What are the states of an EC2 instance lifecycle?

Pending, Running, Stopping, Stopped, Terminating, Terminated

14. What is the difference between EBS-optimized and non-optimized instances?

EBS-optimized instances provide dedicated bandwidth to EBS, improving performance.

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15. What is a placement group in EC2?

Controls how instances are placed:

- Cluster: Low-latency

- Spread: High availability

- Partition: Big data use cases

16. What is EC2 metadata and how do you access it?

Use `http://169.254.169.254/latest/meta-data/` inside the instance to get instance details.

17. How can you secure an EC2 instance?

Use security groups, IAM roles, patching, encryption, and tools like SSM or EC2 Instance Connect.

18. What is EC2 Hibernate? How is it different from Stop?

Hibernate saves memory state to EBS and resumes quickly. Stop loses in-memory state.

19. What are the pricing models for EC2?

On-Demand, Reserved, Spot, Savings Plans, Dedicated Hosts/Instances

20. What is the difference between EC2 and AWS Lambda?

EC2: You manage servers.

Lambda: Serverless, AWS manages everything. Just upload code.