



# AWS Solution Architect Real-World Scenarios: Practical Q&A for Certification and Interview Preparation Part - 1

## Introduction

In this guide, we present multiple scenarios with questions and answers that delve into critical aspects of EC2 and Auto Scaling. These scenarios cover topics like scaling for high availability, cost optimization, security compliance, and performance tuning. They'll not only aid your AWS certifications journey but also equip you with the practical knowledge needed for hands-on work and technical interviews.

The image shows the cover of a guide titled "AWS SOLUTION ARCHITECT REAL-WORLD SCENARIOS PART 1". The cover has a black background with orange and red diagonal stripes at the top and bottom. On the left, there is a blue hexagonal badge with the "aws certified" logo and the text "Solutions Architect ASSOCIATE". On the right, there is a circular profile picture of a man and a blue "Follow" button with a plus sign. The central text "AWS SOLUTION ARCHITECT REAL-WORLD SCENARIOS PART 1" is written in white. Below the title, there is a list of topics in orange text:

- EC2 & it's types
- ELB - Elastic Load balancing
- Auto - Scaling
- Multi AZ
- EC2 saving plans

### EC2 and Auto Scaling

**Scenario 1:** Your company's web application is experiencing high traffic during certain hours of the day. You need to ensure that the application can handle the increased load without manual intervention.

**Question 1:** What AWS service and feature would you use to automatically scale your EC2 instances based on traffic?

**Answer 1:** We would use **Auto Scaling Groups** in conjunction with **Elastic Load Balancing (ELB)**. Auto Scaling Groups can automatically add or remove EC2 instances based on predefined scaling policies, such as CPU utilization or request count. ELB distributes incoming traffic across multiple instances, ensuring high availability and reliability.



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**Scenario 2:** Your application requires a specific type of EC2 instance that is not available in the default instance types. You need to ensure that your application can run on this specific instance type.

**Question 2:** What AWS feature would you use to launch EC2 instances with custom hardware configurations?

**Answer 2:** We would use **EC2 Instance Types** and select the appropriate instance family and size that meets your application's requirements. If the specific instance type is not available, we might need to use **EC2 Reserved Instances** or **EC2 Spot Instances** to ensure availability and cost-efficiency.

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**Scenario 3:** Your company needs to ensure that its EC2 instances are highly available and can recover from failures automatically.

**Question 3:** What AWS feature would you use to ensure high availability and automatic recovery of EC2 instances?

**Answer 3:** We would use **Auto Scaling Groups** with **Multi-AZ deployments**. This ensures that your instances are distributed across multiple Availability Zones, providing high availability and automatic recovery in case of instance failures.

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**Scenario 4:** Your company wants to reduce costs by using spare EC2 capacity.

**Question 4:** What AWS feature would you use to take advantage of spare EC2 capacity at a lower cost?

**Answer 4:** We would use **EC2 Spot Instances**. Spot Instances allow you to bid for unused EC2 capacity at a lower cost compared to On-Demand Instances. You can use Spot Instances for non-critical workloads that can tolerate interruptions.

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**Scenario 5:** Your company needs to ensure that its EC2 instances are backed up regularly.

**Question 5:** What AWS feature would you use to automate the backup of EC2 instances?

**Answer 5:** We would use **Amazon Data Lifecycle Manager (DLM)** to automate the creation, retention, and deletion of EBS snapshots. DLM allows you to define policies for snapshot management, ensuring that your EC2 instances are backed up regularly.

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**Scenario 6:** Your company wants to ensure that its EC2 instances are secure and comply with industry standards.



**Question 6:** What AWS feature would you use to ensure the security and compliance of EC2 instances?

**Answer 6:** We would use **AWS Shield**, **AWS WAF (Web Application Firewall)**, and **AWS Config** to ensure the security and compliance of your EC2 instances. AWS Shield provides DDoS protection, AWS WAF protects against common web exploits, and AWS Config helps you assess, audit, and evaluate the configurations of your AWS resources.

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**Scenario 7:** Your company needs to ensure that its EC2 instances are optimized for performance.

**Question 7:** What AWS feature would you use to optimize the performance of EC2 instances?

**Answer 7:** We would use **AWS Trusted Advisor** and **AWS CloudWatch** to optimize the performance of your EC2 instances. Trusted Advisor provides recommendations for cost optimization, performance improvement, and security enhancements. CloudWatch allows you to monitor and analyze the performance of your EC2 instances.

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**Scenario 8:** Your company wants to ensure that its EC2 instances are cost-effective.

**Question 8:** What AWS feature would you use to ensure cost-efficiency for EC2 instances?

**Answer 8:** We would use **EC2 Reserved Instances** and **EC2 Savings Plans**. Reserved Instances provide significant savings compared to On-Demand Instances when you commit to a one-year or three-year term. Savings Plans offer flexible pricing models that can further reduce costs.

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**Scenario 9:** Your company needs to ensure that its EC2 instances are highly available and can recover from failures automatically.

**Question 9:** What AWS feature would you use to ensure high availability and automatic recovery of EC2 instances?

**Answer 9:** We would use **Auto Scaling Groups** with **Multi-AZ deployments**. This ensures that your instances are distributed across multiple Availability Zones, providing high availability and automatic recovery in case of instance failures.

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**Scenario 10:** Your company wants to ensure that its EC2 instances are secure and comply with industry standards.

**Question 10:** What AWS feature would you use to ensure the security and compliance of EC2 instances?



**Answer 10:** We would use **AWS Shield**, **AWS WAF (Web Application Firewall)**, and **AWS Config** to ensure the security and compliance of your EC2 instances. AWS Shield provides DDoS protection, AWS WAF protects against common web exploits, and AWS Config helps you assess, audit, and evaluate the configurations of your AWS resources.

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## Scenario 11

Your web application demands low latency and needs to be highly responsive for users worldwide.

### Question 11:

What AWS service would you use to improve the global availability and performance of your application?

### Answer 11:

We would use Amazon CloudFront, a global Content Delivery Network (CDN) that caches content at Edge locations worldwide, reducing latency and improving load times for users by serving content from the nearest location.

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## Scenario 12

Your team wants to collect logs from EC2 instances for analysis and troubleshooting.

### Question 12:

What AWS service can you use to centrally manage and analyze logs?

### Answer 12:

We would use Amazon CloudWatch Logs, which collects and stores logs from EC2 instances, enabling centralized log management and monitoring for insights and troubleshooting.

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## Scenario 13

Your company wants to ensure its EC2 instances are monitored continuously to identify unusual patterns.

### Question 13:

Which AWS service would you use for continuous monitoring and alerts?

### Answer 13:

We would use Amazon CloudWatch, which provides real-time monitoring and can send alerts based on set thresholds for metrics like CPU, memory usage, and network traffic.

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## Scenario 14

The company needs to track all actions taken on EC2 instances for audit purposes.

### Question 14:

Which AWS service would you enable for tracking and logging changes to EC2 instances?

### Answer 14:

We would enable AWS CloudTrail, which provides detailed logs of all API calls made within your account, tracking changes to EC2 instances and other resources.

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## Scenario 15

Your application experiences intermittent connectivity issues between EC2 instances.

### Question 15:

How would you diagnose network issues affecting EC2 instances?

### Answer 15:

We would use VPC Flow Logs to capture information about the IP traffic going to and from network interfaces in your VPC, helping to diagnose connectivity issues.

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## Scenario 16

Your application must comply with strict data residency requirements, ensuring data remains in a specific region.

### Question 16:

What feature in AWS can help enforce regional data residency?

### Answer 16:

We would use EC2 Placement Groups with specific availability zones in the desired region to ensure data and resources stay within the required geographic boundaries.

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## Scenario 17

To save costs, you plan to terminate idle EC2 instances at off-peak hours.

### Question 17:

What AWS feature would help automate the start and stop of instances based on schedule?

### Answer 17:

We would use AWS Instance Scheduler to automate starting and stopping of EC2 instances based on your defined schedules, which can save costs during off-peak times.



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## Scenario 18

Your organization needs to ensure that its EC2 instances only accept traffic from specific trusted IP addresses.

### Question 18:

Which AWS service and feature can you use to enforce this security measure?

### Answer 18:

We would configure Security Groups and Network ACLs (Access Control Lists) within your VPC to allow only specific IP addresses to access the EC2 instances.

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## Scenario 19

You need to implement a backup solution for the data on your EC2 instances.

### Question 19:

What AWS feature would you use for regular backups of EC2 instance data?

### Answer 19:

We would use Amazon Elastic Block Store (EBS) Snapshots, which capture the state of EBS volumes attached to EC2 instances for regular backups.

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## Scenario 20

The business needs to quickly replicate EC2 instances in a new region for disaster recovery.

### Question 20:

What AWS service and feature would facilitate cross-region replication?

### Answer 20:

We would use AMIs (Amazon Machine Images) to create cross-region copies of EC2 instances, enabling quick deployment in other regions.

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Understanding how to leverage AWS tools and features will enhance your capabilities, support certification preparation, and boost confidence in real-world problem-solving for DevOps, cloud engineering, and SRE roles. In the up-coming parts, we will discuss more such practical challenges along with steps for the different AWS based scenarios. So, stay tuned for the and follow @Prasad Suman Mohan for more such posts.



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