

## Official Practice Exam Questions

Directions: Set a timer for 50 minutes. Answer the following 26 Questions.

Answers and Explanations are at the end.

- 1) An application with a 150 GB relational database runs on an EC2 Instance. While the application is used infrequently with small peaks in the morning and evening, what is the MOST cost effective storage type among the options below?

- A.** Amazon EBS provisioned IOPS SSD
  - B.** Amazon EBS Throughput Optimized HDD
  - C.** Amazon EBS General Purpose SSD
  - D.** Amazon EFS
- 

- 2) A website runs on EC2 Instances behind an ELB Application Load Balancer. The instances run in an Auto Scaling Group across multiple Availability Zones and deliver several large files that are stored on a shared Amazon EFS file system. The company needs to avoid serving the files from EC2 Instances every time a user requests these digital assets. What should the company do to improve the user experience of the web site?

- A.** Move the digital assets to Amazon Glacier.
  - B.** Cache static content using CloudFront.
  - C.** Resize the images so that they are smaller.
  - D.** Use reserved EC2 Instances.
-

- 3) A company is migrating an on-premises 10TB MySQL database to AWS. With a business requirement that the replica lag be under 100 milliseconds, the company expects this database to quadruple in size.

Which Amazon RDS engine meets the above requirements?

- A.** MySQL
  - B.** Microsoft SQL Server
  - C.** Oracle
  - D.** Amazon Aurora
- 

- 4) An organization hosts a multi-language website on AWS, which is served using CloudFront. Language is specified in the HTTP request as shown below:

```
http://d11111f8.cloudfront.net/main.html?language=de  
http://d11111f8.cloudfront.net/main.html?language=en  
http://d11111f8.cloudfront.net/main.html?language=es
```

How should AWS CloudFront be configured to delivered cache data in the correct language?

- A.** Forward cookies to the origin
  - B.** Based on query string parameters
  - C.** Cache objects at the origin
  - D.** Serve dynamic content
-

- 5) A Solutions Architect is designing a highly scalable system to track records. These records must remain available for immediate download for up to three months and then must be deleted.

What is the most appropriate decision for this use case?

- A.** Store the files in Amazon EBS and create a Lifecycle Policy to remove files after 3 months
  - B.** Store the files in Amazon S3 and create a Lifecycle Policy to remove files after 3 months
  - C.** Store the files in Amazon Glacier and create a Lifecycle Policy to remove files after 3 months
  - D.** Store the files in Amazon EFS and create a Lifecycle Policy to remove files after 3 months
- 

- 6) A company is to run a service on AWS to provide offsite backups for images on laptops and phones.

The solution must support millions of customers with thousands of images per customer. Though the images will be retrieved infrequently, they must be available for retrieval immediately.

Which is the MOST cost efficient storage option that meets these requirements?

- A.** Amazon Glacier with Expedited retrievals
  - B.** Amazon S3 Standard Infrequent Access
  - C.** Amazon EFS
  - D.** Amazon S3 Standard
-

- 7) While reviewing the Auto Scaling events for your application, you notice that your application is scaling up and down multiple times in the same hour.

What design choice could you make to optimize costs while preserving elasticity?  
Choose 2 answers from the options given below

- A.** Modify the Auto Scaling group termination policy to terminate the older instance first.
  - B.** Modify the Auto Scaling group termination policy to terminate the newest instance first.
  - C.** Modify the Auto Scaling group cool down timers.
  - D.** Modify the CloudWatch alarm period that triggers your Auto Scaling scale down policy
- 

8) A company is planning on allowing their users to upload and read objects from an S3 bucket. Due to the numerous amount of users, the read/write traffic will be very high. How should the architect maximize Amazon S3 performance?

- A.** Prefix each object name with a random string.
  - B.** Use the STANDARD\_IA storage class.
  - C.** Prefix each object name with the current data.
  - D.** Enable versioning on the S3 bucket.
-

9) For which of the following workloads should a Solutions Architect consider using Elastic Beanstalk?

Choose 2 answers from the options given below.

- A.** A Web application using Amazon RDS
  - B.** An Enterprise Data Warehouse
  - C.** Along running worker process
  - D.** A static website
- 

10) You are deploying an application on Amazon EC2, which must call AWS APIs. What method should you use to securely pass credentials to the application?

- A.** Pass API credentials to the instance using Instance user data.
  - B.** Store API credentials as an object in Amazon S3.
  - C.** Embed the API credentials into your application.
  - D.** Assign IAM roles to the EC2 Instances.
- 

11) A team is building an application that must persist and index JSON data in a highly available data store.

Latency of data access must remain consistent despite very high application traffic. What service should the team choose for the above requirement?

- A.** Amazon EFS
  - B.** Amazon Redshift
  - C.** DynamoDB
  - D.** AWS CloudFormation
-

12) A Solutions Architect is designing a web page for event registrations. He needs a managed service to send a text message to users every time someone signs up for an event.

Which AWS Service should the Architect use to achieve this?

- A.** Amazon STS
  - B.** Amazon SQS
  - C.** AWS Lambda
  - D.** Amazon SNS
- 

13) A Solutions Architect designing a solution to store and archive corporate documents, has determined Amazon Glacier as the right choice of solution.

An important requirement is that the data must be delivered within 10 minutes of a retrieval request.

Which feature in Amazon Glacier can help meet this requirement?

- A.** Vault Lock
  - B.** Expedited retrieval
  - C.** Bulk retrieval
  - D.** Standard retrieval
-

14) An administrator runs a highly available application in AWS. A file storage layer is needed that can share between instances and scale the platform more easily. Which AWS service can perform this action?

- A.** Amazon EBS
  - B.** Amazon EFS
  - C.** Amazon S3
  - D.** Amazon EC2 Instance store
- 

15) An application allows a manufacturing site to upload files. Each uploaded 3 GB file is processed to extract metadata, and this process takes a few seconds per file. The frequency at which the uploads happen is unpredictable. For instance, there may be no updates for hours, followed by several files being uploaded concurrently.

What architecture addresses this workload in the most cost efficient manner?

- A.** Use a Kinesis Data Delivery Stream to store the file. Use Lambda for processing.
  - B.** Use an SQS queue to store the file, to be accessed by a fleet of EC2Instances.
  - C.** Store the file in an EBS volume, which can then be accessed by another EC2 Instancefor processing.
  - D.** Store the file in an S3 bucket. Use Amazon S3 event notification to invoke aLambda function for file processing.
-

16) A company is generating large datasets with millions of rows to be summarized column-wise. Existing business intelligence tools will be used to build daily reports from these datasets.

Which storage service meets these requirements?

- A.** Amazon Redshift
  - B.** Amazon RDS
  - C.** ElastiCache
  - D.** DynamoDB
- 

17) The security policy of an organization requires an application to encrypt data before writing to the disk. Which solution should the organization use to meet this requirement?

- A.** AWS KMS API
  - B.** AWS Certificate Manager
  - C.** API Gateway with STS
  - D.** IAM Access Key
- 

18) A retailer exports data daily from its transactional databases into an S3 bucket in the Sydney region. The retailer's Data Warehousing team wants to import this data into an existing Amazon Redshift cluster in their VPC at Sydney. Corporate security policy mandates that data can only be transported within a VPC.

What combination of the following steps will satisfy the security policy?

Choose 2 answers from the options given below.

- A.** Enable Amazon Redshift Enhanced VPC Routing.
- B.** Create a Cluster Security Group to allow the Amazon Redshift cluster to access Amazon S3.
- C.** Create a NAT gateway in a public subnet to allow the Amazon Redshift cluster to access Amazon S3.



**D. Create and configure an Amazon S3 VPC endpoint.**

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19) A data processing application in AWS must pull data from an Internet service. A Solutions Architect is to design a highly available solution to access this data without placing bandwidth constraints on the application traffic. Which solution meets these requirements?

- A. Launch a NAT gateway and add routes for 0.0.0.0/0**
  - B. Attach a VPC endpoint and add routes for 0.0.0.0/0**
  - C. Attach an Internet gateway and add routes for 0.0.0.0/0**
  - D. Deploy NAT instances in a public subnet and add routes for 0.0.0.0/0**
- 

20) A consulting firm repeatedly builds large architectures for their customers using AWS resources from several AWS services including IAM, Amazon EC2, Amazon RDS, DynamoDB and Amazon VPC. The consultants have architecture diagrams for each of their architectures, and are frustrated that they cannot use them to automatically create their resources.

Which service should provide immediate benefits to the organization?

- A. AWS Beanstalk**
  - B. AWS CloudFormation**
  - C. AWS CodeBuild**
  - D. AWS CodeDeploy**
-

21) You have an application running in us-west-2 requiring 6 EC2 Instances running at all times. With 3 Availability Zones in the region viz. us-west-2a, us-west-2b, and us-west-2c, which of the following deployments provides fault tolerance if an Availability Zone in us-west-2 becomes unavailable?

Choose 2 answers from the options given below.

- A.** 2EC2 Instances in us-west-2a, 2 EC2 Instances in us-west-2b, and 2 EC2 Instances in us-west-2c
  - B.** 3 EC2 Instances in us-west-2a, 3 EC2 Instances in us-west-2b, and 3 EC2 Instances in us-west-2c
  - C.** 4 EC2 Instances in us-west-2a, 2 EC2 Instances in us-west-2b, and 2 EC2 Instances in us-west-2c
  - D.** 6 EC2 Instances in us-west-2a, 6 EC2 Instances in us-west-2b, and no EC2 Instances in us-west-2c
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22) An application currently stores all its data on Amazon EBS Volumes. All EBS volumes must be backed up durably across multiple Availability Zones.

What is the MOST resilient way to backup the volumes?

- A.** Take regular EBS snapshots.
  - B.** Enable EBS volume encryption.
  - C.** Create a script to copy data to an EC2 Instance store.
  - D.** Mirror data across 2 EBS volumes.
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23) A Solutions Architect is developing a document sharing application and needs a storage layer. The storage should provide automatic support for versioning so that users can easily roll back to a previous version or recover a deleted account.

Which AWS service will meet the above requirements?

- A.** Amazon S3
  - B.** Amazon EBS
  - C.** Amazon EFS
  - D.** Amazon Storage Gateway VTL
- 

24) A consulting firm repeatedly builds large architectures for their customers using AWS resources from several AWS services including IAM, Amazon EC2, Amazon RDS, DynamoDB and Amazon VPC. The consultants have architecture diagrams for each of their architectures, and are frustrated that they cannot use them to automatically create their resources.

Which service should provide immediate benefits to the organization?

- A.** AWS Beanstalk
  - B.** AWS CloudFormation
  - C.** AWS CodeBuild
  - D.** AWS CodeDeploy
- 

25) A company hosts a popular web application that connects to an Amazon RDS MySQL DB instance running in a private VPC subnet that was created with default ACL settings. The web servers must be accessible only to customers on an SSL connection. The database should only be accessible to web servers in a public subnet.

Which solution meets these requirements without impacting other running applications? (choose 2)

Options are:

- A.** Create a network ACL on the DB subnet, allow MySQL port 3306 inbound for web servers, and deny all outbound traffic
- B.** Create a network ACL on the web server's subnet, allow HTTPS port 443 inbound, and specify the source as 0.0.0.0/0
- C.** Create a DB server security group that allows MySQL port 3306 inbound and specify the source as a web server security group
- D.** Create a web server security group that allows HTTPS port 443 inbound traffic from Anywhere (0.0.0.0/0) and apply it to the web servers
- E.** Create a DB server security group that allows the HTTPS port 443 inbound and specify the source as a web server security group

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26) A Solutions Architect is designing a shared service for hosting containers from several customers on Amazon ECS. These containers will use several AWS services. A container from one customer should not be able access data from another customer. Which of the below solutions should the architect use to meet these requirements?

- A.** IAM roles for tasks
  - B.** IAM roles for EC2 Instances
  - C.** IAM Instance profile for EC2 Instances
  - D.** Security Group rules
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## Answers with Explanations

- 1) An application with a 150 GB relational database runs on an EC2 Instance. While the application is used infrequently with small peaks in the morning and evening, what is the MOST cost effective storage type among the options below?
- A. Amazon EBS provisioned IOPS SSD
  - B. Amazon EBS Throughput Optimized HDD
  - C. Amazon EBS General Purpose SSD
  - D. Amazon EFS

### **Answer:**

**C. Amazon EBS General Purpose SSD**

Since the database is used infrequently and not throughout the day, and the question mentions the MOST cost effective storage type, the preferred choice would be EBS General Purpose SSD over EBS provisioned IOPS SSD.

The minimum volume of Throughput Optimized HDD is 500 GB. As per our scenario, we need 150 GB only. Hence, option C: Amazon EBS General Purpose SSD, would be the best choice for cost-effective.

For more information on AWS EBS Volumes, please visit the following URL:

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/EBSVolumes.html>

### **Note:**

SSD-backed volumes are optimized for transactional workloads involving frequent read/write operations with small I/O size, where the dominant performance attribute is IOPS. The question is focusing on a relational DB where we will give importance to Input/output operations per second. Hence gp2 seems to be a good option in this case. Since the question does not mention on any mission-critical low-latency requirement PIOPS is not required.

HDD-backed volumes are optimized for large streaming workloads where throughput (measured in MiB/s) is a better performance measure than IOPS.

2) A website runs on EC2 Instances behind an ELB Application Load Balancer. The instances run in an Auto Scaling Group across multiple Availability Zones and deliver several large files that are stored on a shared Amazon EFS file system. The company needs to avoid serving the files from EC2 Instances every time a user requests these digital assets. What should the company do to improve the user experience of the web site?

- A. Move the digital assets to Amazon Glacier.
- B. Cache static content using CloudFront.
- C. Resize the images so that they are smaller.
- D. Use reserved EC2 Instances.

**Answer:**

**B.** Cache static content using CloudFront.

AWS Documentation mentions the following on the benefits of using CloudFront:

Amazon CloudFront is a web service that speeds up distribution of your static and dynamic web content, such as .html, .css, .js, and image files to your users. CloudFront delivers your content through a worldwide network of data centers called edge locations. When a user requests content that you're serving with CloudFront, the user is routed to the edge location that provides the lowest latency (time delay), so that content is delivered with the best possible performance. If the content is already in the edge location with the lowest latency, CloudFront delivers it immediately.

For more information on AWS Cloudfront, please visit the following URL:

<https://docs.aws.amazon.com/AmazonCloudFront/latest/DeveloperGuide/Introduction.html>

Glacier is not used for frequent retrievals. So Option A is not a good solution. Option C & D scenarios will also not help in this situation.

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3) A company is migrating an on-premises 10TB MySQL database to AWS. With a business requirement that the replica lag be under 100 milliseconds, the company expects this

database to quadruple in size.

Which Amazon RDS engine meets the above requirements?

- A. MySQL
- B. Microsoft SQL Server
- C. Oracle
- D. Amazon Aurora

**Answer:**

**D. Amazon Aurora**

AWS Documentation clarifies that the above requirements are supported by AWS Aurora.

Amazon Aurora (Aurora) is a fully managed, MySQL- and PostgreSQL-compatible, relational database engine. It combines the speed and reliability of high-end commercial databases with the simplicity and cost-effectiveness of open-source databases. It delivers up to five times the throughput of MySQL and up to three times the throughput of PostgreSQL without requiring changes to most of your existing applications.

All Aurora Replicas return the same data for query results with minimal replica lag—usually much less than 100 milliseconds after the primary instance has written an update.

For more information on AWS Aurora, please visit the following URL:

<http://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Aurora.Overview.html>

The company expects the database to quadruple in size and the business requirement is that replica lag must be kept under 100 milliseconds.

Aurora Cluster can grow up to 64 TB in size and replica lag—is less than 100 milliseconds after the primary instance has written an update.

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- 4) An organization hosts a multi-language website on AWS, which is served using CloudFront. Language is specified in the HTTP request as shown below:

http://d11111f8.cloudfront.net/main.html?language=de  
http://d11111f8.cloudfront.net/main.html?language=en  
http://d11111f8.cloudfront.net/main.html?language=es

How should AWS CloudFront be configured to delivered cache data in the correct language?

- A.** Forward cookies to the origin
- B.** Based on query string parameters
- C.** Cache objects at the origin
- D.** Serve dynamic content

**Answer:**

- B.** Based on query string parameters

Since language is specified in the query string parameters, CloudFront should be configured for the same.

For more information on configuring CloudFront via query string parameters, please visit the following URL:

<https://docs.aws.amazon.com/AmazonCloudFront/latest/DeveloperGuide/QueryStringParameters.html>

- 
- 5) A Solutions Architect is designing a highly scalable system to track records. These records must remain available for immediate download for up to three months and then must be deleted.

What is the most appropriate decision for this use case?

- A.** Store the files in Amazon EBS and create a Lifecycle Policy to remove files after 3 months
- B.** Store the files in Amazon S3 and create a Lifecycle Policy to remove files after 3 months



**C.** Store the files in Amazon Glacier and create a Lifecycle Policy to remove files after 3 months

**D.** Store the files in Amazon EFS and create a Lifecycle Policy to remove files after 3 months

**Answer:**

**B.** Store the files in Amazon S3 and create a Lifecycle Policy to remove files after 3 months

Option A is invalid, since the records need to be stored in a highly scalable system.

Option C is invalid, since the records must be available for immediate download.

Option D is invalid, because it does not have the concept of a Lifecycle Policy.

AWS Documentation mentions the following on Lifecycle Policies:

Lifecycle configuration enables you to specify the Lifecycle Management of objects in a bucket. The configuration is a set of one or more rules, where each rule defines an action for Amazon S3 to apply to a group of objects. These actions can be classified as follows:

Transition actions – In which you define when the objects transition to another storage class. For example, you may choose to transition objects to the STANDARD\_IA (IA, for infrequent access) storage class 30 days after creation, or archive objects to the GLACIER storage class one year after creation.

Expiration actions – In which you specify when the objects expire. Then Amazon S3 deletes the expired objects on your behalf.

For more information on AWS S3 Lifecycle Policies, please visit the following URL:

<https://docs.aws.amazon.com/AmazonS3/latest/dev/object-lifecycle-mgmt.html>

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- 6) A company is to run a service on AWS to provide offsite backups for images on laptops and phones.

The solution must support millions of customers with thousands of images per customer. Though the images will be retrieved infrequently, they must be available for retrieval immediately.

Which is the MOST cost efficient storage option that meets these requirements?

- A. Amazon Glacier with Expedited retrievals**
- B. Amazon S3 Standard Infrequent Access**
- C. Amazon EFS**
- D. Amazon S3 Standard**

**Answer:**

**B. Amazon S3 Standard Infrequent Access**

Amazon S3 Infrequent Access is perfect if you want to store data that need not be frequently accessed. It is must more cost effective than Amazon S3 Standard (Option D). And if you choose Amazon Glacier with expedited retrievals, then you defeat the whole purpose of the requirement, because you would have an increased cost with this option.

For more information on AWS Storage classes, please visit the following URL:

<https://aws.amazon.com/s3/storage-classes/>

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- 7) While reviewing the Auto Scaling events for your application, you notice that your application is scaling up and down multiple times in the same hour.

What design choice could you make to optimize costs while preserving elasticity?  
Choose 2 answers from the options given below

- A. Modify the Auto Scaling group termination policy to terminate the older instance first.**
- B. Modify the Auto Scaling group termination policy to terminate the newest instance first.**
- C. Modify the Auto Scaling group cool down timers.**
- D. Modify the CloudWatch alarm period that triggers your Auto Scaling scale down policy**

**Answer:**

- C. Modify the Auto Scaling group cool down timers.**
- D. Modify the CloudWatch alarm period that triggers your Auto Scaling scale down policy**

Here, not enough time is being given for the scaling activity to take effect and for the entire infrastructure to stabilize after the scaling activity. This can be taken care of by increasing the Auto Scaling group CoolDown timers.

For more information on Auto Scaling CoolDown, please visit the following URL:

<https://docs.aws.amazon.com/autoscaling/ec2/userguide/Cooldown.html>

You will also have to define the right threshold for the CloudWatch alarm for triggering the scale down policy.

For more information on Auto Scaling Dynamic Scaling, please visit the following URL:

<https://docs.aws.amazon.com/autoscaling/ec2/userguide/as-scale-based-on-demand.html>

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8) A company is planning on allowing their users to upload and read objects from an S3 bucket. Due to the numerous amount of users, the read/write traffic will be very high. How should the architect maximize Amazon S3 performance?

- A. Prefix each object name with a random string.
- B. Use the STANDARD\_IA storage class.
- C. Prefix each object name with the current data.
- D. Enable versioning on the S3 bucket.

**Answer:**

- A. Prefix each object name with a random string.

If the request rate is high, you can use hash keys or random strings to prefix to the object name. Here, partitions used to store the objects will be better distributed and hence allow for better read/write performance for your objects.

For more information on how to ensure performance in S3, please visit the following URL:

<https://docs.aws.amazon.com/AmazonS3/latest/dev/request-rate-perf-considerations.html>

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9) For which of the following workloads should a Solutions Architect consider using Elastic Beanstalk?

Choose 2 answers from the options given below.

**A.** A Web application using Amazon RDS

**B.** An Enterprise Data Warehouse

**C.** Long running worker process

**D.** A static website

**Answer:**

**A.** A Web application using Amazon RDS

**C.** Long running worker process

For more information on AWS Elastic beanstalk Web server environments, please visit the following URL:

<https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/concepts-webserver.html>

For more information on AWS Elastic beanstalk Worker environments, please visit the following URL:

<https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/concepts-worker.html>

Explanation: A web application using RDS is a good fit as it includes multiple services and Elastic Beanstalk is an orchestration engine. A data lake would not be a good fit for Elastic Beanstalk. A Long running worker process is a good Elastic Beanstalk use case where it manages an SQS queue - again this is an example of multiple services being orchestrated.

<https://aws.amazon.com/elasticbeanstalk/faqs/>

---

10) You are deploying an application on Amazon EC2, which must call AWS APIs. What method should you use to securely pass credentials to the application?

**A.** Pass API credentials to the instance using Instance user data.

**B.** Store API credentials as an object in Amazon S3.

- C. Embed the API credentials into your application.
- D. Assign IAM roles to the EC2 Instances.

**Answer:**

D. Assign IAM roles to the EC2 Instances.

AWS Documentation mentions the following: You can use roles to delegate access to users, applications, or services that don't normally have access to your AWS resources. It is not a good practice to use IAM credentials for a production based application. A good practice however, is to use IAM Roles. For more information on IAM Roles, please visit the following URL:  
[https://docs.aws.amazon.com/IAM/latest/UserGuide/id\\_roles.html](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html)

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11) A team is building an application that must persist and index JSON data in a highly available data store.  
Latency of data access must remain consistent despite very high application traffic.  
What service should the team choose for the above requirement?

- A. Amazon EFS
- B. Amazon Redshift
- C. DynamoDB
- D. AWS CloudFormation

**Answer:**

C. DynamoDB

Amazon DynamoDB is a fully managed NoSQL database service that provides fast and predictable performance with seamless scalability.

The data in DynamoDB is stored in JSON format, and hence is the perfect data store for the requirement in question.

For more information on AWS DynamoDB, please visit the following URL:

<https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html>

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12) A Solutions Architect is designing a web page for event registrations. He needs a managed service to send a text message to users every time someone signs up for an event.

Which AWS Service should the Architect use to achieve this?

- A. Amazon STS
- B. Amazon SQS
- C. AWS Lambda
- D. Amazon SNS

**Answer:**

**D. Amazon SNS**

The AWS Documentation mentions the following:

You can use Amazon SNS to send text messages or SMS messages, to SMS-enabled devices. A message can be sent directly to a phone number, or to multiple phone numbers at once by subscribing those phone numbers to a topic and sending your message to the topic.

For more information on configuring SNS and SMS messages, please visit the following URL:

<https://docs.aws.amazon.com/sns/latest/dg/SMSMessages.html>

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13) A Solutions Architect designing a solution to store and archive corporate documents, has determined Amazon Glacier as the right choice of solution.

An important requirement is that the data must be delivered within 10 minutes of a retrieval request.

Which feature in Amazon Glacier can help meet this requirement?

- A. Vault Lock
- B. Expedited retrieval
- C. Bulk retrieval
- D. Standard retrieval

**Answer:**

**B. Expedited retrieval**

AWS Documentation mentions the following:

Expedited retrievals to access data in 1 – 5 minutes for a flat rate of \$0.03 per GB retrieved. Expedited retrievals allow you to quickly access your data when occasional urgent requests for a subset of archives are required.

For more information on AWS Glacier Retrieval, please visit the following URL:

<https://docs.aws.amazon.com/amazonglacier/latest/dev/downloading-an-archive-two-steps.html>

The other two are standard ( 3-5 hours retrieval time) and Bulk retrievals which is the cheapest option.(5-12 hours retrieval time)

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14) An administrator runs a highly available application in AWS. A file storage layer is needed that can share between instances and scale the platform more easily. Which AWS service can perform this action?

- A.** Amazon EBS
- B.** Amazon EFS
- C.** Amazon S3
- D.** Amazon EC2 Instance store

**Answer:**

**B. Amazon EFS**

AWS Documentation mentions the following:

Amazon EFS provides scalable file storage for use with Amazon EC2. You can create an EFS file system and configure your instances to mount the file system. The EFS file system can be used as a common data source for workloads and applications running on multiple instances.

For more information on AWS EFS, please visit the following URL:

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/AmazonEFS.html>

Option C is incorrect. S3 object based storage.

Option A is incorrect. EBS is block based storage.

Option D is incorrect. Instance stores are ephemeral.

EFS is the file storage which is scalable and elastic and can be used as a common storage for many instances.

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15) An application allows a manufacturing site to upload files. Each uploaded 3 GB file is processed to extract metadata, and this process takes a few seconds per file. The frequency at which the uploads happen is unpredictable. For instance, there may be no updates for hours, followed by several files being uploaded concurrently.

What architecture addresses this workload in the most cost efficient manner?

- A. Use a Kinesis Data Delivery Stream to store the file. Use Lambda for processing.
- B. Use an SQS queue to store the file, to be accessed by a fleet of EC2Instances.
- C. Store the file in an EBS volume, which can then be accessed by another EC2 Instancefor processing.
- D. Store the file in an S3 bucket. Use Amazon S3 event notification to invoke aLambda function for file processing.

**Answer:**

C. Store the file in an EBS volume, which can then be accessed by another EC2 Instancefor processing.

You can first create a Lambda function with the code to process the file.  
You can then use an Event Notification from the S3 bucket to invoke the Lambda function whenever a file is uploaded.

For more information on Amazon S3 event notification, please visit the following URL:  
<https://docs.aws.amazon.com/AmazonS3/latest/dev/NotificationHowTo.html>



Option A is incorrect. Kinesis is used to collect, process and analyze real time data. The frequency of updates are quite unpredictable. By default SQS uses short polling. In this case, it will lead to the cost factor going up since we are getting messages in an unpredictable manner and many a times it will be returning empty responses. Hence option B is not a solution.

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16) A company is generating large datasets with millions of rows to be summarized column-wise. Existing business intelligence tools will be used to build daily reports from these datasets.

Which storage service meets these requirements?

**A.** Amazon Redshift

**B.** Amazon RDS

**C.** ElastiCache

**D.** DynamoDB

**Answer:** Amazon Redshift

AWS Documentation mentions the following:

Amazon Redshift is a fully managed, petabyte-scale data warehouse service in the cloud. You can start with just a few hundred gigabytes of data and scale to a petabyte or more. This enables you to use your data to acquire new insights for your business and customers.

For more information on AWS Redshift, please visit the following URL:

<https://docs.aws.amazon.com/redshift/latest/mgmt/welcome.html>

Columnar storage for database tables is an important factor in optimizing analytic query performance because it drastically reduces the overall disk I/O requirements and reduces the amount of data you need to load from disk.

Amazon Redshift uses a block size of 1 MB, which is more efficient and further reduces the number of I/O requests needed to perform any database loading or other operations that are part of query execution.

More information on how redshift manages the columnar storage is available here:

[https://docs.aws.amazon.com/redshift/latest/dg/c\\_columnar\\_storage\\_disk\\_mem\\_mgmnt.html](https://docs.aws.amazon.com/redshift/latest/dg/c_columnar_storage_disk_mem_mgmnt.html)

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17) The security policy of an organization requires an application to encrypt data before writing to the disk. Which solution should the organization use to meet this requirement?

- A. AWS KMS API
- B. AWS Certificate Manager
- C. API Gateway with STS
- D. IAM Access Key

**Answer:**

**A. AWS KMS API**

Option B is incorrect – The AWS Certificate Manager can be used to generate SSL certificates to encrypt traffic in transit, but not at rest.

Option C is incorrect – It is used for issuing tokens while using the API gateway for traffic in transit.

Option D is used for secure access to EC2 Instances.

AWS Documentation mentions the following on AWS KMS:

AWS Key Management Service (AWS KMS) is a managed service that makes it easy for you to create and control the encryption keys used to encrypt your data. AWS KMS is integrated with other AWS services including Amazon Elastic Block Store (Amazon EBS), Amazon Simple Storage Service (Amazon S3), Amazon Redshift, Amazon Elastic Transcoder, Amazon WorkMail, Amazon Relational Database Service (Amazon RDS), and others to make it simple to encrypt your data with encryption keys that you manage.

For more information on AWS KMS, please visit the following URL:

<https://docs.aws.amazon.com/kms/latest/developerguide/overview.html>

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18) A retailer exports data daily from its transactional databases into an S3 bucket in the Sydney region. The retailer's Data Warehousing team wants to import this data into an existing Amazon Redshift cluster in their VPC at Sydney. Corporate security policy mandates that data can only be transported within a VPC.

What combination of the following steps will satisfy the security policy?

Choose 2 answers from the options given below.

- A.** Enable Amazon Redshift Enhanced VPC Routing.
- B.** Create a Cluster Security Group to allow the Amazon Redshift cluster to access Amazon S3.
- C.** Create a NAT gateway in a public subnet to allow the Amazon Redshift cluster to access Amazon S3.
- D.** Create and configure an Amazon S3 VPC endpoint.

**Answer:**

- A.** Amazon Redshift Enhanced VPC Routing provides VPC resources, the access to Redshift.
- D.** Create and configure an Amazon S3 VPC endpoint.

Redshift will not be able to access the S3 VPC endpoints without enabling Enhanced VPC routing, so one option is not going to support the scenario if another is not selected.

NAT instance (the proposed answer) cannot be reached by Redshift without enabling Enhanced VPC Routing.

<https://aws.amazon.com/about-aws/whats-new/2016/09/amazon-redshift-now-supports-enhanced-vpc-routing/>

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19) A data processing application in AWS must pull data from an Internet service. A Solutions Architect is to design a highly available solution to access this data without placing bandwidth constraints on the application traffic. Which solution meets these requirements?

- A.** Launch a NAT gateway and add routes for 0.0.0.0/0
- B.** Attach a VPC endpoint and add routes for 0.0.0.0/0
- C.** Attach an Internet gateway and add routes for 0.0.0.0/0
- D.** Deploy NAT instances in a public subnet and add routes for 0.0.0.0/0

**Answer:**

- C.** Attach an Internet gateway and add routes for 0.0.0.0/0
- The AWS Documentation mentions the following:

An Internet gateway is a horizontally scaled, redundant, and highly available VPC component that allows communication between instances in your VPC and the Internet. It therefore imposes no availability risks or bandwidth constraints on your network traffic.

For more information on the Internet gateway, please visit the following URL:

[https://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC\\_Internet\\_Gateway.html](https://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC_Internet_Gateway.html)

Note: NAT gateway is also a highly available architecture and is used to enable instances in a private subnet to connect to the internet or other AWS services, but prevent the internet from initiating a connection with those instances.

It can only scale up to 45 Gbps.

NAT instances' bandwidth capability depends up on the instance type.

VPC Endpoints are used to enable private connectivity to services hosted in AWS, from within your VPC without using an Internet Gateway, VPN, Network Address Translation (NAT) devices, or firewall proxies. So it cannot be used to connect to internet.

An Internet gateway is horizontally-scaled, redundant, and highly available. It imposes no bandwidth constraints.

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20) A consulting firm repeatedly builds large architectures for their customers using AWS resources from several AWS services including IAM, Amazon EC2, Amazon RDS, DynamoDB and Amazon VPC. The consultants have architecture diagrams for each of their architectures, and are frustrated that they cannot use them to automatically create their resources.

Which service should provide immediate benefits to the organization?

- A. AWS Beanstalk
- B. AWS CloudFormation
- C. AWS CodeBuild
- D. AWS CodeDeploy

**Answer:**

**B. AWS CloudFormation**

AWS CloudFormation: This supplements the requirement in the question and enables consultants to use their architecture diagrams to construct CloudFormation templates.

AWS Documentation mentions the following on AWS CloudFormation:

AWS CloudFormation is a service that helps you model and set up your Amazon Web Service resources so that you can spend less time managing those resources and more time focusing on your applications that run in AWS. You create a template that describes all the AWS resources that you want (like Amazon EC2 instances or Amazon RDS DB instances), and AWS CloudFormation takes care of provisioning and configuring those resources for you.

For more information on AWS Cloudformation, please visit the following URL:

<https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/Welcome.html>

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21) You have an application running in us-west-2 requiring 6 EC2 Instances running at all times. With 3 Availability Zones in the region viz. us-west-2a, us-west-2b, and us-west-2c, which of the following deployments provides fault tolerance if an Availability Zone in us-west-2 becomes unavailable?

Choose 2 answers from the options given below.

- A. 2EC2 Instances in us-west-2a, 2 EC2 Instances in us-west-2b, and 2 EC2 Instances in us-west-2c
- B. 3 EC2 Instances in us-west-2a, 3 EC2 Instances in us-west-2b, and 3 EC2 Instances in us-west-2c
- C. 4 EC2 Instances in us-west-2a, 2 EC2 Instances in us-west-2b, and 2 EC2 Instances in us-west-2c
- D. 6 EC2 Instances in us-west-2a, 6 EC2 Instances in us-west-2b, and no EC2 Instances in us-west-2c

**ANSWER:**

- B. 3 EC2 Instances in us-west-2a, 3 EC2 Instances in us-west-2b, and 3 EC2 Instances in us-west-2c
- D. 6 EC2 Instances in us-west-2a, 6 EC2 Instances in us-west-2b, and no EC2 Instances in us-west-2c

Option A is incorrect because, even if one AZ becomes unavailable, you would only have 4 instances available. This does not meet the specified requirements.

Option C is incorrect because, if us-west-2a becomes unavailable, you would only have 4 instances available. This also does not meet the requirements.

For more information on AWS Regions and Availability Zones, please visit the following URL:

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.RegionsAndAvailabilityZones.html>

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22) An application currently stores all its data on Amazon EBS Volumes. All EBS volumes must be backed up durably across multiple Availability Zones. What is the MOST resilient way to backup the volumes?

- A. Take regular EBS snapshots.
- B. Enable EBS volume encryption.
- C. Create a script to copy data to an EC2 Instance store.
- D. Mirror data across 2 EBS volumes.

**ANSWER:**

- A. Take regular EBS snapshots.

Option B is incorrect, because it does not help the durability of EBS Volumes.

Option C is incorrect, since EC2 Instance stores are not durable.

Option D is incorrect, since mirroring data across EBS volumes is inefficient in comparison with the existing option for EBS snapshots.

AWS Documentation mentions the following on AWS EBS Snapshots:

You can back up the data on your Amazon EBS volumes to Amazon S3 by taking point-in-time snapshots. Snapshots are incremental backups, which means that only the blocks on the device that have changed after your most recent snapshot are saved. This minimizes the time required to create the snapshot and saves on storage costs by not duplicating data. When you delete a

snapshot, only the data unique to that snapshot is removed. Each snapshot contains all of the information needed to restore your data (from the moment when the snapshot was taken) to a new EBS volume.

For more information on AWS EBS Snapshots, please visit the following URL:

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/EBSSnapshots.html>

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23) A Solutions Architect is developing a document sharing application and needs a storage layer. The storage should provide automatic support for versioning so that users can easily roll back to a previous version or recover a deleted account.

Which AWS service will meet the above requirements?

- A. Amazon S3
- B. Amazon EBS
- C. Amazon EFS
- D. Amazon Storage Gateway VTL

**Answer:**

A. Amazon S3

Option B is incorrect. EBS provides persistent block storage volumes for use with EC2.

Option C is incorrect. EFS is an elastic and scalable file storage.

Option D is incorrect. AWS Storage Gateway VTL helps to integrate your on premise IT infrastructure with AWS storage.

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24) A consulting firm repeatedly builds large architectures for their customers using AWS resources from several AWS services including IAM, Amazon EC2, Amazon RDS, DynamoDB and Amazon VPC. The consultants have architecture diagrams for each of their architectures, and are frustrated that they cannot use them to automatically create their resources.

Which service should provide immediate benefits to the organization?

- A. AWS Beanstalk
- B. AWS CloudFormation

**C. AWS CodeBuild**

**D. AWS CodeDeploy**

**Answer:**

**B. AWS CloudFormation**

AWS CloudFormation: This supplements the requirement in the question and enables consultants to use their architecture diagrams to construct CloudFormation templates.

AWS Documentation mentions the following on AWS CloudFormation:

AWS CloudFormation is a service that helps you model and set up your Amazon Web Service resources so that you can spend less time managing those resources and more time focusing on your applications that run in AWS. You create a template that describes all the AWS resources that you want (like Amazon EC2 instances or Amazon RDS DB instances), and AWS CloudFormation takes care of provisioning and configuring those resources for you.

For more information on AWS Cloudformation, please visit the following URL:

<https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/Welcome.html>

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25) A company hosts a popular web application that connects to an Amazon RDS MySQL DB instance running in a private VPC subnet that was created with default ACL settings. The web servers must be accessible only to customers on an SSL connection. The database should only be accessible to web servers in a public subnet.

Which solution meets these requirements without impacting other running applications? (choose 2)

Options are:

**A. Create a network ACL on the DB subnet, allow MySQL port 3306 inbound for web servers, and deny all outbound traffic**

**B. Create a network ACL on the web server's subnet, allow HTTPS port 443 inbound, and specify the source as 0.0.0.0/0**

**C. Create a DB server security group that allows MySQL port 3306 inbound and specify the source as a web server security group**



**D.** Create a web server security group that allows HTTPS port 443 inbound traffic from Anywhere (0.0.0.0/0) and apply it to the web servers

**E.** Create a DB server security group that allows the HTTPS port 443 inbound and specify the source as a web server security group

**Answer :**

**C.** Create a DB server security group that allows MySQL port 3306 inbound and specify the source as a web server security group

**D.** Create a web server security group that allows HTTPS port 443 inbound traffic from Anywhere (0.0.0.0/0) and apply it to the web servers

Explanation: A VPC automatically comes with a modifiable default network ACL. By default, it allows all inbound and outbound IPv4 traffic. Custom network ACLs deny everything inbound and outbound by default but in this case a default network ACL is being used Inbound connections to web servers will be coming in on port 443 from the Internet so creating a security group to allow this port from 0.0.0.0/0 and applying it to the web servers will allow this traffic The MySQL DB will be listening on port 3306. Therefore, the security group that is applied to the DB servers should allow 3306 inbound from the web servers security group The DB server is listening on 3306 so creating a rule allowing 443 inbound will not help.

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26) A Solutions Architect is designing a shared service for hosting containers from several customers on Amazon ECS. These containers will use several AWS services. A container from one customer should not be able access data from another customer. Which of the below solutions should the architect use to meet these requirements?

**A.** IAM roles for tasks

**B.** IAM roles for EC2 Instances

**C.** IAM Instance profile for EC2 Instances

**D.** Security Group rules

**Answer:**

**A.** IAM roles for tasks

The AWS Documentation mentions the following: With IAM roles for Amazon ECS tasks, you can specify an IAM role to be used by the containers in a task. Applications are required to sign their AWS API requests with AWS credentials, and this feature provides a strategy to manage credentials for your application's use. This is similar to how Amazon EC2 instance profiles provide credentials to EC2 instances. For more information on configuring IAM Roles for tasks in ECS, please visit the following URL:

<https://docs.aws.amazon.com/AmazonECS/latest/developerguide/task-iam-roles.html>

Note : IAM roles for ECS tasks enabled you to secure your infrastructure by assigning an IAM role directly to the ECS task rather than to the EC2 container instance. This means you can have one task that uses a specific IAM role for access to S3 and one task that uses an IAM role to access DynamoDB. With IAM roles for EC2 instances you assign all of the IAM policies required by tasks in the cluster to the EC2 instances that host the cluster. This does not allow the secure separation requested. An instance profile is a container for an IAM role that you can use to pass role information to an EC2 instance when the instance starts. Again, this does not allow the secure separation requested. Network ACLs are applied at the subnet level and would not assist here References: <https://aws.amazon.com/blogs/compute/help-secure-container-enabled-applications-with-iam-roles-for-ecs-tasks/>