

Q1)

A solution architect would like to implement a caching solution for an application. The application is write-heavy performing frequent write operations.

What is the optimal solution to this problem?

- ☐ Deploy Amazon DAX cluster.
- ☒ Deploy Amazon ElastiCache for Redis (Cluster Mode Enabled) cluster.

**Explanation:**-ElastiCache for Redis with Cluster Mode Enabled clusters provide multiple write-endpoints which can be used to distribute traffic for write-heavy applications.

- ☐ Deploy Amazon ElastiCache for Redis (Cluster Mode Disabled) cluster.
- ☐ Implement Write-Through caching strategy.

Q2)

A solution architect is planning a deployment of Amazon ElastiCache for Redis with cluster mode disabled.

What is the maximum number of shards and read replicas that the cluster can have?

- ☐ 5 Shards and 0 Read Replicas
- ☐ 1 Shard and 90 Read Replicas
- ☒ 1 Shard and 5 Read Replicas

**Explanation:**-Amazon ElastiCache for Redis with cluster mode disabled cluster consists of a single shard with up to a maximum of 5 read replicas.

- ☐ 90 Shards and 0 Read Replicas

Q3)

A solution architect is planning a deployment of Amazon ElastiCache for Redis with cluster mode enabled. Each shard is planned to have 5 read replicas.

What is the maximum number of shards that can be deployed?

- ☐ 90
- ☒ 15

**Explanation:**-A deployment of Amazon ElastiCache for Redis with cluster mode enabled can have a maximum of 90 nodes. Each shard can consist of one primary node and up to five read replica nodes. Thus, with five read replicas, each shard consists of six nodes in total. This means that with five read replicas per shard, the maximum number of shards is 15.

- ☐ 5
- ☐ 450

Q4)

A solution architect is planning a database migration from an Oracle database to Amazon Aurora with PostgreSQL. During the planning phase, the solution architect would like to perform an assessment of migration complexity and size, and identify any proprietary technology that would require database and application modifications.

What service can help the solution architect with developing this assessment report and provide recommendations on migration strategies and tools?

- ☐ AWS SCT
- ☒ AWS WQF

**Explanation:**-AWS Workload Qualification Framework (AWS WQF) is a standalone tool that is used during the database migration planning phase to assess migration workloads. It produces an assessment report detailing migration complexity and size, and provides migration strategy and tool recommendations.

- ☐ AWS DMS
- ☐ AWS DataSync

Q5)

A database specialist would like to manually promote a read-replica node in an ElastiCache (Cluster Mode Disabled) cluster to a primary node.

What step must the specialist perform before they can promote the node to a primary?

- ☐ Create a manual backup
- ☒ Disable Multi-AZ with Automatic Failover

**Explanation:**-Multi-AZ with Automatic Failover must first be disabled on an ElastiCache (Cluster Mode Disabled) cluster in order to manually promote a read replica node to a primary node.

- ☐ Enable Multi-AZ with Automatic Failover
- ☐ Stop the cluster

Q6)

A database specialist wants to copy an Amazon Redshift cluster from a production AWS account to a non-production AWS account.

What is the optimal solution to meet this requirement?

- Use Amazon Redshift Spectrum to copy data from the source Amazon Redshift cluster to the target Amazon Redshift cluster.
- Export a CloudFormation template of the source Amazon Redshift cluster. Use the CloudFormation template to stand up a new Amazon Redshift cluster in the target AWS account.

✔ Create a manual snapshot of the source Amazon Redshift cluster. Share the snapshot with the target AWS account. In the target AWS account, create a new Amazon Redshift cluster by restoring from the shared snapshot.

**Explanation:-**sharing a manually created snapshot between AWS accounts and using that snapshot to restore an Amazon Redshift cluster is the simplest solution for copying a cluster between two AWS accounts.

- Create a target Amazon Redshift cluster. Enable VPC peering between the two VPCs in the two AWS accounts. Use AWS Glue to perform data copy from the source Amazon Redshift cluster to the target Amazon Redshift cluster.

---

**Q7)**

**A solution architect is developing a serverless application consisting of AWS Lambda functions and Amazon Aurora Serverless cluster.**

**What solution would enable the solution architect to establish a connection to the Aurora Serverless cluster from the Lambda function?**

- Connect to the Aurora Serverless public writer-endpoint.
- Create an AWS Lambda Execution Role.
- Configure VPC peering.
- ✔ Connect the AWS Lambda function to the private VPC via an elastic network interface.

**Explanation:-**Aurora Serverless DB cluster can't have a public IP address. An Aurora Serverless DB cluster can only be accessed from within a VPC. Therefore we require to connect the AWS Lambda to the private VPC using an elastic network interface.

---

**Q8)**

**A database specialist wants to load some XML data from an S3 bucket into an Amazon RDS database.**

**What is the optimal solution to accomplish this?**

- ✔ Use LOAD XML FROM S3 SQL statement to import the data into the database.

**Explanation:-**the simplest solution is to use LOAD XML FROM S3 SQL statement to import the XML file from the S3 bucket into the database.

- Use AWS CLI to read the file and import the data into the database.
- Use AWS Lambda Function to read the file and import the data into the database.
- Use AWS Data Pipeline to read the file and import the data into the database.

---

**Q9)**

**A photo sharing application uses Amazon Aurora MySQL to store user data. A development team would like to enhance the application by sending a welcome email every time a new user is created. They've implemented an AWS Lambda function that will generate email text and send it using AWS SES.**

**What is the optimal solution for triggering the Lambda function when a new user is created?**

- Configure Audit Log export on the Amazon Aurora database. Configure CloudTrail SNS notification. Create an AWS Lambda subscription to the SNS topic.
- Configure Audit Log export on the Amazon Aurora database. Configure CloudWatch subscription filter to trigger the AWS Lambda function.
- ✔ Create a trigger and stored procedure in the Amazon Aurora database. In the stored procedure, call mysql.lambda\_async function to trigger the AWS Lambda function

**Explanation:-**Amazon Aurora MySQL mysql.lambda\_async function can be used within a stored procedure to invoke an AWS Lambda function. The stored procedure can be triggered when a new user is created.

- Update the application code to invoke the AWS Lambda function every time it inserts a new user in the Amazon Aurora database.

---

**Q10)**

**A developer is doing some testing on an application using Amazon Aurora database. During the testing activities, the developer accidentally executes a DELETE statement without a WHERE clause.**

**They wish to undo this action. What is the optimal solution to revert the database to the correct state with minimal effort?**

- Use Amazon Aurora "Restore to point in time" feature.
- Restore the Amazon Aurora database from a snapshot.
- ✔ Use Amazon Aurora Backtracking feature.

**Explanation:-**Amazon Aurora backtracking ability enables one to revert an Amazon Aurora cluster to a specific point in time, without restoring data from a backup.

- Restore the Amazon Aurora from a read replica.

---

**Q11)**

**A solution architect would like to integrate Amazon RDS for SQL Server instance with an existing Active Directory Domain.**

**What service would enable the solution architect to implement a solution?**

- AWS Single Sign-On
- ✔ AWS Directory Service

**Explanation:-**AWS Directory Service provides Microsoft Active Directory (AD) directory service that can be used to create an Active Directory environment in the AWS cloud. Other applications can join the provided domain and access the RDS for SQL Server instances in that same domain.

- AWS Cognito
- Amazon WorkLink

---

#### Q12)

**A DBA is planning a migration of on-premise enterprise Microsoft SQL Server to AWS. Current on-premise configuration utilizes SQL Server Reporting Services and the DBA would like to continue using this feature in AWS.**

**What solution would meet this requirement?**

● Create a Microsoft SQL Server on Amazon RDS database instance. Configure Amazon RDS Performance Insights on the RDS database instance.

✔ Install Microsoft SQL Server on EC2 instances.

**Explanation:-**SQL Server Reporting Services is not available on Amazon RDS instances. If this service and feature is required in AWS cloud, the only viable option is to install Microsoft SQL Server database on EC2 instances.

● Create a Microsoft SQL Server on Amazon RDS database instance. Create a new Parameter Group and configure SQLSERVER\_SSRS parameter. Associate the parameter group with the RDS database instance.

● Create a Microsoft SQL Server on Amazon RDS database instance. Create a new Option Group and configure SQLSERVER\_SSRS option. Associate the option group with the RDS database instance.

---

#### Q13)

**A company would like to use a third-party vendor SaaS product to perform data analytics on data stored inside an Amazon Aurora Serverless cluster.**

**What is the simplest, and most secure solution to integrate the SaaS product with the Amazon Aurora cluster?**

● Create a Site-to-site VPN connection from Amazon Aurora Serverless cluster's VPC to the SaaS product vendor's network.

● Create a VPC security group rule allowing inbound traffic from the SaaS product IP range. Apply the security group to the Amazon Aurora Serverless cluster's VPC endpoint.

✔ Enable Data API on the Amazon Aurora Serverless cluster.

**Explanation:-**enabling Data API on Amazon Aurora Serverless cluster allows web-based applications to access the cluster over a secure HTTP endpoint.

● Create a VPC endpoint service inside the Amazon Aurora Serverless cluster's VPC using AWS PrivateLink.

---

#### Q14)

**A solution architect would like to improve the disaster recovery capability of an Amazon Aurora database cluster by creating additional read-replicas in a secondary AWS region.**

**What is the optimal solution to implement this requirement?**

✔ Configure binlog\_format parameter for the source Amazon Aurora cluster. Create a cross region read replica in the target AWS region.

**Explanation:-**it is possible to create up to five cross region read replicas of a source Amazon Aurora cluster. A requirement for this is to enable and configure binary logging on the source database cluster. This can be done by setting the binlog\_format parameter on the source database cluster.

● Configure VPC Peering between the two VPC's in the two AWS regions. Create a cross region read replica in the target AWS region.

● Create an Amazon Aurora cluster in the target AWS region. Create an AWS Glue job to perform data copy from the source Amazon Aurora cluster to the target Amazon Aurora cluster. Create a cron expression to define a time-based schedule for the AWS Glue job.

● Create a Lambda function to create a snapshot of the source Amazon Aurora cluster, perform a cross-region copy of the snapshot, and load the snapshot into the target Amazon Aurora cluster.

---

#### Q15)

**Security team is enforcing all connections to Amazon RDS databases to be encrypted in transit using SSL/TLS.**

**How can a user obtain the root certificate?**

● Download it from AWS Management Console.

● Generate it using openssl tool.

✔ Download it from <https://s3.amazonaws.com/rds-downloads/rds-ca-2019-root.pem>.

**Explanation:-**Amazon RDS root certificates are available for download at <https://s3.amazonaws.com/rds-downloads/rds-ca-2019-root.pem>.

● Generate it using AWS Certificate Manager.

---

#### Q16)

**A database specialist has configured IAM authentication on an Amazon RDS for MySQL database instance. A user is trying to connect to the database.**

**What does the user need to do in order to authenticate and access the database?**

● Generate an authentication token using AWS STS service.

● Configure AWS\_ACCESS\_KEY\_ID and AWS\_SECRET\_ACCESS\_KEY environment variables in their local environment.

✔ Generate an authentication token using aws rds generate-db-auth-token CLI command.

**Explanation:-**the user must use authentication token to access Amazon RDS database instances when IAM authentication is configured. To generate a temporary authentication token, aws rds generate-db-auth-token CLI command can be used.

● Configure their database user id and password in their local environment.

---

#### Q17)

**A MySQL on Amazon RDS database is deleted.**

### What happens to the read replicas?

- Read replicas in the same region are deleted. Cross-region read replicas are set to replication status “terminated”.
- ✔ All read replicas are promoted.

**Explanation:**-For MariaDB, MySQL, and Oracle RDS instances, when the source database is deleted, read replicas in the same region and cross-region read replicas are promoted. For PostgreSQL RDS instances, when the source database is deleted, read replicas in the same region are promoted, and cross-region read replicas are set to replication status “terminated.”

- All read replicas are set to replication status “terminated”.
  - Read replicas in the same region are promoted. Cross-region read replicas are set to replication status “terminated”.
- 

### Q18)

**A database specialist is doing a code review of code implemented by a team developer. A sample of the code is given below:**  
**aws dynamodb create-table \ --table-name Donations \ --attribute-definitions \ AttributeName=Organization,AttributeType=S \ AttributeName=User,AttributeType=S \ --key-schema \ AttributeName=Organization,KeyType=HASH \ AttributeName=User,KeyType=RANGE \ --provisioned-throughput \ ReadCapacityUnits=10,WriteCapacityUnits=5**

**Which statement is true about the shema attributes?**

- User attribute is the primary key. Organization attribute is the sort key.
- User attribute is the partition key. Organization attribute is the sort key.
- Organization attribute is the primary key. User attribute is the sort key.
- ✔ Organization attribute is the partition key. User attribute is the sort key.

**Explanation:**-In a DynamoDB table, a composite primary key consists of the partition key and the sort key. The partition key is also called the hash attribute (since an internal hash function determines the physical storage partition where the item will be stored). Sort key is also called the range attribute since items in the same partition are stored locally together in sorted order based on this key value. In this scenario, Organization attribute is the partition key, and User attribute is the sort key.

---

### Q19)

**A database specialist is creating a new parameter group for an Amazon RDS database instance.**

**What property do parameters of type “static” have?**

- Database instances will not require a manual reboot before the parameter is applied. The parameter is applied immediately.
- They cannot be modified.
- They can be modified.
- ✔ Database instances will require a manual reboot before the parameter is applied.

**Explanation:**-Static parameters require a manual reboot of the Amazon RDS instance before they are applied. Dynamic parameters do not require a manual reboot and are applied immediately.

---

### Q20)

**An application is deployed and running on an EC2 instance. The application uses Amazon RDS as a database.**

**What is a secure method to authenticate to the Amazon RDS database from the EC2 application?**

- Embed database user id and password in the application source code.
- ✔ Use an IAM user and role, and generate an authentication token.

**Explanation:**-Amazon RDS supports IAM authentication. This is done by creating an IAM user and role with access to the database and generating a temporary authentication token.

- Store the access key ID and secret access key in System Manager Parameter Store.
  - Store credentials in the EC2 instance user data.
- 

### Q21)

**An application uses a DynamoDB database for storing user data. The application starts receiving 400 error codes.**

**What is a possible cause of the issue?**

- Service is currently unavailable.
- ✔ Provisioned throughput limit has been exceeded.

**Explanation:**-exceeding provisioned throughput limit returns a 400 error code.

- Internal server processing error.
  - The HTTP version used in the request is not supported by the server.
- 

### Q22)

**A database specialist working with an Amazon RDS database would like to be notified if the master password is changed.**

**What service provides the optimal solution for this requirement?**

- AWS CloudTrail
- AWS CloudWatch
- AWS Config
- ✔ Amazon RDS Event Notification

**Explanation:**-Amazon RDS Event Notification is a native capability of RDS that can be enabled and provides notifications for various categories of database events. Specifically, a configuration change event with id RDS-EVENT-0016 is created when an RDS instance master password is reset.

---

**Q23)**

**A company has LAMP (Linux, Apache, MySQL, PHP) stack application deployed to AWS. The availability requirements for their backend database specify automatic failover in case of disaster recovery.**

**What is the optimal solution that meets this requirement?**

- ☐ RDS with Read-Replica deployment
- ☐ DynamoDB with Global Tables deployment
- ☐ Deploy multiple RDS instances. Use Route53 with Health-Check and DNS failover configured
- ☒ RDS with Multi-AZ deployment

**Explanation:-**with RDS Multi-AZ deployment, a primary DB instance is automatically and synchronously replicated to a secondary RDS instance in a different availability zone (AZ). In case of a disaster causing primary instance failure, RDS performs automatic failover to the standby RDS instance.

---

**Q24)**

**A company regulatory compliance policy requires that all RDS backups occur automatically on a specified schedule, and are stored for 90 days.**

**What is the optimal solution to meet this requirement?**

- ☐ Implement a Step Function to copy the RDS backup to an S3 bucket. Configure Start condition of the Step Function to execute according to the required schedule.
- ☒ Implement a Lambda function to create an RDS DB snapshot. Create CloudWatch Events Rule to trigger the Lambda function according to the required schedule.

**Explanation:-**To retain backups longer than 35 days, RDS snapshots must be used. Lambda function can be implemented to initiate the RDS snapshot. The Lambda function can be triggered on a schedule using CloudWatch Events Rule.

- ☐ Enable automated backups on RDS. Configure backup retention period to 90 days.
  - ☐ Configure RDS backup lifecycle policy to archive data in S3 Glacier.
- 

**Q25)**

**A company disaster recovery policy requires that all RDS backups are retained in a secondary AWS region.**

**What is the optimal solution to meet this requirement?**

- ☒ Copy manual RDS DB snapshot to the secondary region.

**Explanation:-**we must copy manual RDS DB snapshot to the secondary region.

- ☐ Copy manual RDS DB snapshot to an S3 bucket. Enable Cross-Region replication on the S3 bucket.
  - ☐ Configure RDS automated backups target region to the secondary region.
  - ☐ Configure RDS Read-Replica instance in the secondary region. Enable RDS automated backups on the read-replica instance
-