Q1)

An RDS DBA changes the time zone of a Maria DB RDS Instance by setting the dynamic parameter time_zone in the DB Parameter Group to the local time zone of the application.

An application user is still reporting incorrect time zone. What actions should the DBA perform to resolve the issue?

○ Use rdsadmin.rdsadmin_util.alter_db_time_zone procedure to update the RDS instance time zone to value set in the DB Parameter Group.

○ Instruct the application developers to update the application code to use the dynamic parameter type for the time_zone parameter.

○ Reboot the RDS DB instance.

✅ Instruct the application user to disconnect from the database and start a new session.

Explanation:-the time zone change takes effect on any new sessions to the database. Any open connections to the database will use the session time zone. To resolve the issue, the user must close the current connection and open a new connection.

✅ Ensure that the DB Parameter Group is applied to the RDS instance.

Explanation:-DB Parameter Group where the time_zone parameter was set must be applied to the RDS instance.

Q2)

A Solution Architect is designing migration strategy from on-prem MySQL to Amazon Aurora. An assessment of features compatibility must be performed.

What engine is used by Amazon Aurora and must be taken into consideration during this analysis?

✅ InnoDB

Explanation:-Amazon Aurora only supports InnoDB MySQL compatible storage engine.

○ MYISAM

○ MYSQL5.4

○ XtraDB

Q3)

A DynamoDB table is configured in provisioned throughput mode with 100 RCU and 40 WCU.

How much data can be read and written to the table each second?

○ 400 KB for strongly consistent read operations, 800 KB for eventually consistent read operations, 160 KB for write operations

○ 100 KB for strongly consistent read operations, 200 KB for eventually consistent read operations, 40 KB for write operations

○ 100 KB for strongly consistent read operations, 200 KB for eventually consistent read operations, 160 KB for write operations

✅ 400 KB for strongly consistent read operations, 800 KB for eventually consistent read operations, 40 KB for write operations

Explanation:-One read capacity unit is equivalent to one strongly consistent read per second, or two eventually consistent reads per second, for an item up to 4 KB in size. One write capacity unit is equivalent to one write per second for an item up to 1 KB in size. Therefore, 1000 RCU is equivalent to: · Strongly Consistent Read operations: 100 RCU * 4KB = 400 KB per second · Eventually Consistent Read operations: 100 RCU * 4KB = 400 KB per second * 2 = 800 KB per second · Write operations = 40 WCU * 1KB = 40 KB per second

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Q4)

A solutions architect is designing a relational database solution for an application. Requirements specify automated backups and point-in-time recovery ability.

What database storage engines should the solution architect consider (choose two)?

✅ XtraDB

Explanation:-XtraDB storage engine supports automated backups on RDS Maria DB.

○ RocksDB

✅ InnoDB

Explanation:-InnoDB storage engine supports automated backups on RDS MySQL and RDS MariaDB.

○ Aria

○ MYISAM

Q5) What is NOT the best practice when deploying applications using Elastic Beanstalk?

○ Amazon RDS database should be launched outside of the Elastic Beanstalk environment as that provides more flexibility.

○ Amazon RDS Connection String should be stored in a controlled S3 bucket

✅ Amazon RDS databases should be included in the Elastic Beanstalk environment as that maintains the same life cycle for all components of the environment.

Explanation:-it is best to decouple an Amazon RDS instance from an Elastic Beanstalk environment, especially in production environment. Launching an RDS database may be suitable for development or PoC environments, but in general it isn't ideal as it means that termination of the Elastic Beanstalk environment will result in termination of the database as well.

○ Amazon RDS Delete Protection should be enabled.

Q6)

A DBA is planning a migration of on-premise enterprise Oracle Database to AWS. Current on-premise configuration utilizes Oracle Data Guard for data replication and the DBA would like to continue using this feature in AWS.

What solution would meet this requirement?

- Implement Amazon RDS for Oracle with custom Options Group with Oracle Data Guard option configured.
- ✅ Implement Oracle Database cluster on EC2 instances.

Explanation:-to utilize Oracle Database Enterprise features on AWS, Amazon EC2 instances must be used for implementation.
- Implement Amazon Aurora cluster with Aurora Replicas.
- Implement Amazon RDS for Oracle with Multi-AZ deployment.

Q7)

A CloudFormation template is used to deploy an application stack that includes a backend database. The development team would like to know if the existing database will be deleted or replaced before applying any template updates.

What service feature will enable this?

- CloudFormation Rolling Updates
- ✅ CloudFormation Change Sets

Explanation:-CloudFormation Change sets enable the preview of proposed changes to a stack in order to assess the impact on existing resources. This functionality allows the team to check if any existing databases will be deleted or replaced upon application of the updated CloudFormation template.
- CloudFormation StackSets
- CloudFormation Registry

Q8)

A CloudFormation template is used to deploy an application stack that includes a DynamoDB backend database. The development team would like to prevent accidental replacements or deletions of the production database when a template update is applied.

What is the best method for the team to achieve this requirement?

- Implement IAM policy: { "Effect" : "Deny", "Action" : "Update:*", "Principal": "*", "Resource" : "LogicalResourceId/ProductionDatabase" } Assign the IAM Policy to the development team IAM group.
- Configure Delete Protection on the database
- ✅ Implement CloudFormation Stack Policy: { "Effect" : "Deny", "Action" : "Update:*", "Principal": "*", "Resource" : "LogicalResourceId/ProductionDatabase" }

Explanation:-CloudFormation Stack Policies can be used to deny actions on specific stack or resources to protect them from unintended modifications.
- Implement IAM policy: { "Effect" : "Deny", "Action" : "Update:*", "Principal": "*", "Resource" : "LogicalResourceId/ProductionDatabase" } Assign the IAM Policy to the CloudFormation Service Role.

Q9)

An application uses DynamoDB table to store data with each record being 6KB in size. The application needs to perform 100 strongly consistent read operations per second, and 40 write operations per second.

What is the provisioned RCU value required to meet these requirements?

- ✅ 2ooRCU

Explanation:-1RCU is equivalent to one strongly consistent read per second for an item up to 4 KB in size. Thus, to calculate the required RCU in this scenario we need to: 1. Round up the item size to the nearest 4KB (8KB) 2. Divide by 4KB to calculate number of strongly consistent read units (8/4 = 2) 3. Multiple by operations per second to get the total RCU required (2*100 = 200 RCU)
- 15o RCU
- 6oo RCU
- 1oo RCU

Q10)

An application uses DynamoDB table to store data with each record being 6KB in size. The application needs to perform 100 eventually consistent read operations per second, and 40 write operations per second.

What is the provisioned RCU value required to meet these requirements?

- 2ooRCU
- 6oo RCU
- 3oo RCU
- ✅ 100 RCU

Explanation:-1RCU is equivalent to two strongly consistent reads per second of an item up to 4KB in size. Thus, to calculate the required RCU in this scenario we need to: 1. Round up the item size to the nearest 4KB (8KB) 2. Divide by 4KB to calculate number of read units (8/4 = 2) 3. Divide by 2 to calculate the number of eventually consistent read units per item (2/2 = 1) 4. Multiple by operations per second to get the total RCU required (1*100 = 100 RCU)

Q11)

An application uses DynamoDB table to store data with each record being 6KB in size. The application needs to perform 100 eventually consistent read operations per second, and 40 write operations per second.

What is the provisioned WCU value required to meet these requirements?

- 8o
- ✅ 24o

Explanation:-One write capacity unit is equivalent to one write per second for an item up to 1 KB in size. Thus, the required WCU in this scenario is

6KB x 40 write operations per second = 240 WCU.
- ⚪ 16o
- ⚪ 12o

Q12)

An application uses DynamoDB tables for its data store. The application requires to perform a write operation on a sequence of items, and roll back and reverse all operations in case of any one faulty operation.

What is the best method to accomplish this requirement?

- ⚪ Use BatchWriteItem operation
- ✅ Use TransactWriteItems operation

Explanation:-DynamoDB transactions provides ability to group multiple items into a single atomic transaction and perform all-or-nothing operation coordinated operations. This can be done programmatically using TranactWriteItems operation.

- ⚪ DynamoDB does not support atomic transactions. Use relational database (such as RDS) that supports atomic transactions.
- ⚪ Update the application to manage and perform roll-back operations.

Q13)

A solution architect is migrating an enterprise Oracle database to local SSD-backed EC2 instances requiring high random I/O performance and high IOPS.

Which EC2 instance type would be appropriate for this scenario?

- ⚪ p3.2xlarge
- ✅ i3.xlarge

Explanation:-family EC2 instance type provides SSD-backed instance storage optimized for low latency, high random I/O performance, and high IOPS performance.

- ⚪ c5.2xlarge
- ⚪ db.t3.large

Q14)

A CustomerOrders DynamoDB table has following items:

Customer Name (PK)	Order Item	Cost
Albert Einstein	Candle	15
Albert Einstein	Spaceship Toy	50
Albert Einstein	Hair Comb	5
Isaac Newton	Bag of Apples	15

Which operation would you use to find all orders with cost greater than 10?

- ⚪ query operation with "--filter-expression" parameter
- ✅ scan operation with "--filter-expression" parameter

Explanation:-a scan operation can be used to read every item in a table. A filter expression parameter can be used to narrow down the results based on some required criteria (Cost of the item in this case).

- ⚪ query operation with "--key-condition-expression" parameter
- ⚪ scan operation with "--projection-expression" parameter

Q15)

A CustomerOrders DynamoDB table has following items:

CustomerName (PK)	Order Item	Cost
Albert Einstein	Candle	15
Albert Einstein	Spaceship Toy	50
Albert Einstein	Hair Comb	5
Isaac Newton	Bag of Apples	25

Following operation is executed: aws dynamodb query \ --table-name CustomerOrders \ --key-condition-expression " CustomerName = :name " \ --filter-expression "Cost > :amount" \ --expression-attribute-values '{ ":name": { "S": "Albert Einstein" }, ":amount": { "N": "20" } }' How many items are read by the DynamoDB query operation?

- ⚪ 2

✅ 3

Explanation:-The query operation is used to search items based on primary key values. The name of the partition key attribute and a single value for that attribute must be provided with the query. Query returns all items with that partition key value. A filter expression parameter can be used to narrow down the results based on some required criteria. A filter expression is applied AFTER a query operation competes, but BEFORE the results are returned to the client. Therefore, a query operation consumes the same amount of read capacity, regardless of whether a filter expression is present. This means that for the query operation in this scenario ALL items with primary key of "Albert Einstein" are returned. Thus, the correct answer is 3.

⦿ 1
⦿ 4

Q16)

A CloudFormation template is being used to deploy an Amazon Redshift cluster. You want the setting of the administrator password to be done at CloudFormation runtime.

What CloudFormation section should be used for this requirement?

⦿ Mappings
✅ Parameters
Explanation:-parameters section is used to pass values to the template during CloudFormation runtime.
⦿ metadata
⦿ Resources

Q17)

A company is migrating their on-premise data warehouse to Amazon Redshift.

What methods can be used to establish a private connection from on-premise network to Amazon Redshift (Select TWO)?

⦿ PrivateLink Interface Endpoint
✅ Direct Connect
Explanation:-AWS Direct Connect can be used to establish a secure and private connection between on-premise network and Amazon VPC over a dedicated line.
✅ Site-to-site VPN
Explanation:-Site-to-site VPN can be used to establish a secure and private connection between an on-premise network and Amazon VPC over Internet.
⦿ VPC Peering
⦿ PrivateLink Gateway Endpoint

Q18)

A company is migrating their on-premise MongoDB database to Amazon DynamoDB. Security team mandates that all data must be transferred over a dedicated, private, and secured connection with no data transport occurring over the public Internet.

What AWS services must be part of the solution (Select TWO)?

✅ PrivateLink Gateway Endpoint
Explanation:-PrivateLink Gateway endpoint is used to integrate DynamoDB to Amazon VPC without the use of Internet Gateway.
⦿ PrivateLink Interface Endpoint
⦿ VPC Peering
⦿ Site-to-site VPN
✅ Direct Connect
Explanation:-AWS Direct Connect can be used to establish a secure and private connection between on-premise network and Amazon VPC over a dedicated line.

Q19)

A company business intelligence team has a number of reporting application deployed on EC2 instances in their AWS account. The company data warehouse team has provisioned a new set of database source using AWS RDS in a different AWS account.

What is the optimal solution to achieve secure and reliable connectivity from the business intelligence applications to the new RDS databases?

⦿ Site-to-site VPN
✅ VPC Peering
Explanation:-VPC peering is used to establish connectivity between two Amazon VPC's over Amazon's secure and reliable backbone network.
⦿ Direct Connect
⦿ PrivateLink

Q20)

A company security team wants to implement a solution for securely storing database credentials. The solution should provide automatic rotation of database credentials.

What AWS service can the team use to meet these requirements?

✅ AWS Secrets Manager
Explanation:-Secrets Manager can be used to securely store, retrieve, and automatically rotate database credentials.
⦿ AWS Resource Access Manager
⦿ AWS Key Management Service

○ AWS Systems Manager Parameter Store

Q21)

A CloudFormation template is being used to deploy an RDS instance. AWS Secrets Manager is being used for management of database credentials.

How can the CloudFormation template reference the database credentials?

○ "Mappings" : { "DatabaseCredentials" : { "Username" : { "arn:aws:secretsmanager:region:123456789012:secret:username" }, "Password " : { "arn:aws:secretsmanager:region:123456789012:secret:password" }, } }, … { "MyRDSInstance": { "Type": "AWS::RDS::DBInstance", "Properties": { "DBName": "MyRDSInstance", "AllocatedStorage": "20", "DBInstanceClass": "db.t2.micro", "Engine": "mysql", "MasterUsername": { ["DatabaseCredentials", { "Ref" : "Username" }]}, "MasterUserPassword": { ["DatabaseCredentials", { "Ref" : "Password" }]} } } }

○ { "MyRDSInstance": { "Type": "AWS::RDS::DBInstance", "Properties": { "DBName": "MyRDSInstance", "AllocatedStorage": "20", "DBInstanceClass": "db.t2.micro", "Engine": "mysql", "MasterUsername": { "Ref" : "username" }, "MasterUserPassword": { "Ref" : "password" } } } }

○ { "MyRDSInstance": { "Type": "AWS::RDS::DBInstance", "Properties": { "DBName": "MyRDSInstance", "AllocatedStorage": "20", "DBInstanceClass": "db.t2.micro", "Engine": "mysql", "MasterUsername": "{{resolve:ssm-secure:username:1}}", "MasterUserPassword": "{{resolve:ssm-secure:password:1}}" } } }

✅ { "MyRDSInstance": { "Type": "AWS::RDS::DBInstance", "Properties": { "DBName": "MyRDSInstance", "AllocatedStorage": "20", "DBInstanceClass": "db.t2.micro", "Engine": "mysql", "MasterUsername": "{{resolve:secretsmanager:MyRDSSecret:SecretString:username}}", "MasterUserPassword": "{{resolve:secretsmanager:MyRDSSecret:SecretString:password}}" } } }

Explanation:-CloudFormation Dynamic References pattern needs to be used. Dynamic reference pattern is '{{resolve:service-name:reference-key}}'. "secretsmanager" dynamic reference pattern is used for accessing specific secret values stored in Secrets Manager.

Q22) What graph query languages are supported by Amazon Neptune (Select TWO)?

✅ SPARQL
Explanation:-Amazon Neptune supports Gremlin and SPARQL query languages.
○ Cypher
✅ Gremlin
Explanation:-Amazon Neptune supports Gremlin and SPARQL query languages.
○ PGQL
○ GraphQL

Q23)

An application consists of a front end hosted on EC2 instances in a public VPC subnet and an RDS databases in a private VPC subnet. When attempting to establish a connection to the database, the application times out.

What could be the source of this problem?

○ Database credentials are incorrect.
✅ Database NSG is not configured to allow traffic from EC2 instances.
Explanation:-VPC NSG's on the RDS database subnet must be configured to allow inbound traffic from the public subnet on the database port.
○ VPC Peering is not configured properly.
○ The public subnet does not have Internet Gateway configured.

Q24)

A relational database is deployed to EBS-backed EC2 instances.

What striping configuration can be used to increase IOPS and throughput performance of the EBS volumes?

✅ RAID 0
Explanation:-RAID 0 is used to distribute I/O across volumes and achieve increased IOPS and throughput performance.
○ RAID 1
○ RAID 5
○ RAID 6

Q25) Taking Advantage of Parallel Scans
*) https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/bp-query-scan.html
An application developer finds that a scan operation on a large DynamoDB table is taking a long time to execute. What can be used to decrease the execution time of the scan operation?

○ Use of filter expression
✅ Use of parallel scans
Explanation:-parallel scans can be used by multiple worker threads in an application to perform a scan of a DynamoDB table much faster.
○ Use of pagination
○ Use of projection expression