review

review questions

Relational Database Service (RDS)

V1.02

Course title

BackSpace Academy
AWS Certified Associate

BackSpace

This "learning by quizzes" exercise will be based upon the course videos and the following reference material:

Section: Amazon RDS DB Instances

Reference: Amazon Relational Database Service User Guide

https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.DBInstance.html

Question

You must set the master user password when you create a DB instance, but you can change it at any time using:

- Amazon RDS command line tools
- APIs
- AWS Management Console

Answers

A. True
B. False

A

Amazon RDS creates a master user account for your DB instance as part of the creation process. This master user has permissions to create databases and to perform create, delete, select, update, and insert operations on tables the master user creates. You must set the master user password when you create a DB instance, but you can change it at any time using the Amazon AWS command line tools, Amazon RDS API actions, or the AWS Management Console. You can also change the master user password and manage users using standard SQL commands.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.DBInstance.html

Question

I have a DB Instance Status of - failed. What should I do?

Answers

- A. Reboot the instance.
- B. Stop then Start the instance.
- C. Perform a point-in-time restore to the latest restorable time of the instance to recover the data.
- D. Terminate the instance.
- E. None of the above

C
See: table at https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.DBInstance.Status.html

Question

You can convert existing DB instances to Multi-AZ deployments by modifying the DB instance and specifying the Multi-AZ option using the console.

Answers

A. True
B. False

A
Using the RDS console, you can create a Multi-AZ deployment by simply specifying Multi-AZ when creating a DB instance. You can also use the console to convert existing DB instances to Multi-AZ deployments by modifying the DB instance and specifying the Multi-AZ option. The RDS console shows the Availability Zone of the standby replica, called the secondary AZ.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZ.html

Question

DB instances using Multi-AZ deployments may have increased write and commit latency compared to a Single-AZ deployment.

Answers

A. True
B. False

A
DB instances using Multi-AZ deployments may have increased write and commit latency compared to a Single-AZ deployment, due to the synchronous data replication that occurs. You may have a change in latency if your deployment fails over to the standby replica, although AWS is engineered with low-latency network connectivity between Availability Zones. For production workloads, we recommend that you use Provisioned IOPS and DB instance classes (m4.large and larger) that are optimized for Provisioned IOPS for fast, consistent performance.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZ.html

Question

You will need to re-establish any existing connections to your DB instance after failover.

Answers

A. True
B. False

A

The failover mechanism automatically changes the DNS record of the DB instance to point to the standby DB instance. As a result, you need to re-establish any existing connections to your DB instance.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZ.html#Concepts.MultiAZ.Failover

Question

In Multi-AZ, the primary DB instance switches over automatically to the standby replica if any of the following conditions occur:

Answers

   A.   An Availability Zone outage
   B.   The primary DB instance fails
   C.   The DB instance's server type is changed
   D.   The DB instance is undergoing software patching
   E.   A manual failover of the DB instance was initiated using Reboot with failover
   F.   Any of the above

F
See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZ.html#Concepts.MultiAZ.Failover

Question

Amazon RDS retains manually created DB snapshots after the DB instance is deleted.

Answers

A. True
B. False

A
See table at:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_DeleteInstance.html#USER_DeleteInstance.Snapshot

Question

Amazon RDS retains automated backups after the DB instance is deleted.

Answers

    A. True
    B. False

B
See table at:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_DeleteInstance.html#USER_DeleteInstance.Snapshot

Question

Read Replicas can be created with:

- A. MySQL
- B. PostgreSQL
- C. Oracle
- D. Microsoft SQL Server
- E. Aurora DB

Answers

- A. True
- B. False

B

You can create a Read Replica from an existing MySQL, MariaDB, or PostgreSQL DB instance using the AWS Management Console, AWS CLI, or AWS API.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_ReadRepl.html#USER_ReadRepl.Create

Question

Updates made to the source DB instance are synchronously copied to the Read Replica.

Answers

A. True
B. False

B
When you create a Read Replica, you first specify an existing DB instance as the source. Then Amazon RDS takes a snapshot of the source instance and creates a read-only instance from the snapshot. Amazon RDS then uses the asynchronous replication method for the DB engine to update the Read Replica whenever there is a change to the source DB instance.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_ReadRepl.html

This "learning by quizzes" exercise will be based upon the course videos and the following reference material:

Section: Storage for Amazon RDS

Reference: Amazon Relational Database Service User Guide

https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Storage.html

Question

This storage type can deliver single-digit millisecond latencies, with a base performance of 3 IOPS/GB and the ability to burst to 3,000 IOPS for extended periods of time.

Answers

    A.   Magnetic (Standard)
    B.   General Purpose (SSD)
    C.   Provisioned IOPS

B
See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Storage.html#Concepts.Storage

Question

These are I/O requests that have been submitted by the application but have not been sent to the device because the device is busy servicing other I/O requests.

Answers

    A.   IOPS
    B.   Latency
    C.   Throughput
    D.   Queue Depth
    E.   None of the above

D

Queue Depth – The number of I/O requests in the queue waiting to be serviced. These are I/O requests that have been submitted by the application but have not been sent to the device because the device is busy servicing other I/O requests. Time spent waiting in the queue is a component of latency and service time (not available as a metric). This metric is reported as the average queue depth for a given time interval. Amazon RDS reports queue depth in 1-minute intervals. Typical values for queue depth range from zero to several hundred.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Storage.html#Concepts.Storage.Metrics

Question

RDS maximum channel bandwidth available is 10,000 megabits per second (Mbps) full duplex.

Answers

A. True
B. False

B
Maximum channel bandwidth depends on the DB instance class.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Storage.html#CHAP_Storage.FactsAbout

Question

With EBS PIOPS an I/O request smaller than 32 KB is handled as one I/O.

Answers

    A. True
    B. False

A
When small I/O operations are physically contiguous, Amazon EBS attempts to merge them into a single I/O up to the maximum size. For example, for SSD volumes, a single 1,024 KiB I/O operation counts as 4 operations (1,024÷256=4), while 8 contiguous I/O operations at 32 KiB each count as 1operation (8×32=256). However, 8 random I/O operations at 32 KiB each count as 8 operations. Each I/O operation under 32 KiB counts as 1 operation.

See: https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-io-characteristics.html

Question

EBS provisioned IOPS consumption is a linear function of I/O request size above 32 KB.

Answers

A. True
B. False

A
When small I/O operations are physically contiguous, Amazon EBS attempts to merge them into a single I/O up to the maximum size. For example, for SSD volumes, a single 1,024 KiB I/O operation counts as 4 operations (1,024÷256=4), while 8 contiguous I/O operations at 32 KiB each count as 1operation (8×32=256). However, 8 random I/O operations at 32 KiB each count as 8 operations. Each I/O operation under 32 KiB counts as 1 operation.

See: https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-io-characteristics.html

Question

The first time a DB instance created from a snapshot, a point-in-time restore, or a read replica is started and accesses an area of disk for the first time, the process can take longer than all subsequent accesses to the same disk area.

Answers

    A.   True
    B.   False

A
New EBS volumes receive their maximum performance the moment that they are available and do not require initialization (formerly known as pre-warming). However, storage blocks on volumes that were restored from snapshots must be initialized (pulled down from Amazon S3 and written to the volume) before you can access the block.

See: https://docs.aws.amazon.com/AWSEC2/latest/WindowsGuide/ebs-initialize.html

Question

If there isn't at least one system resource that is at or near a limit, and adding threads doesn't increase the database transaction rate, the bottleneck impacting performance is most likely contention in the database.

Answers

A. True
B. False

A

If there isn't at least one system resource that is at or near a limit, and adding threads doesn't increase the database transaction rate, the bottleneck is most likely contention in the database. The most common forms are row lock and index page lock contention, but there are many other possibilities. If this is your situation, you should seek the advice of a database performance tuning expert.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Storage.html#CHAP_Storage.FactsAbout

Question

Because Provisioned IOPS storage reserves resources for your use, you are charged for the resources only when you use them in a given month.

Answers

    A.   True
    B.   False

B
Provisioned IOPS Storage Costs
Because Provisioned IOPS storage reserves resources for your use, you are charged for the resources whether or not you use them in a given month. When you use Provisioned IOPS storage, you are not charged the monthly Amazon RDS I/O charge. If you prefer to pay only for I/O that you consume, a DB instance that uses magnetic storage might be a better choice.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Storage.html#USER_PIOPS

This "learning by quizzes" exercise will be based upon the course videos and the following reference material:

Section: Amazon RDS Security

Reference: Amazon Relational Database Service User Guide

https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/UsingWithRDS.html

Question

Types of security groups are used with Amazon RDS:

- DB security groups
- VPC security groups
- EC2 security groups

Answers

A. True
B. False

A

Security groups control the access that traffic has in and out of a DB instance. Three types of security groups are used with Amazon RDS: DB security groups, VPC security groups, and Amazon EC2 security groups. In simple terms, these work as follows:

- A DB security group controls access to EC2-Classic DB instances that are not in a VPC.
- A VPC security group controls access to DB instances and EC2 instances inside a VPC.
- An EC2 security group controls access to an EC2 instance.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.RDSSecurityGroups.html

Question

DB security group controls access to a DB instance that is in a VPC.

Answers

    A. True
    B. False

B
Controls access to DB instances outside a VPC.
See table at:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.RDSSecurityGroups.html#Overview.RDSSecurityGroups.Compare

Question

Security Groups allow access from other VPC security groups in your VPC or peered VPC only.

Answers

A. True
B. False

A

If you have a VPC peering connection, you can reference security groups from the peer VPC as the source or destination in your security group rules.

See: https://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC_SecurityGroups.html

Question

You cannot use a _____ for a DB instance inside a VPC

Answers

    A.   DB parameter group
    B.   DB option group
    C.   DB security group
    D.   None of the above

C
DB security groups are used with DB instances that are not in a VPC and on the EC2-Classic platform

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.RDSSecurityGroups.html#Overview.RDSSecurityGroups.DBSec

This "learning by quizzes" exercise will be based upon the course videos and the following reference material:

Section: Limits for Amazon RDS

Reference: Amazon Relational Database Service User Guide

https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Limits.html

Question

The maximum number of RDS read replicas per master is 5.

Answers

    A. True
    B. False

A
See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Limits.html#RDS_Limits.Limits

Question

The maximum number of RDS instances per region is 20.

Answers

    A.   True
    B.   False

B
See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Limits.html#RDS_Limits.Limits

This "learning by quizzes" exercise will be based upon the course videos and the following reference material:

Section: Amazon RDS DB Instance Lifecycle

Reference: Amazon Relational Database Service User Guide

https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_CommonTasks.html

Question

Amazon RDS uses _____ to enable and configure additional features that make it easier to manage data and databases, and to provide additional security for your database.

Answers

    A.   DB parameter group
    B.   DB option group
    C.   DB security group
    D.   None of the above

B

Some DB engines offer additional features that make it easier to manage data and databases, and to provide additional security for your database. Amazon RDS uses option groups to enable and configure these features. An option group can specify features, called options, that are available for a particular Amazon RDS DB instance. Options can have settings that specify how the option works. When you associate a DB instance with an option group, the specified options and option settings are enabled for that DB instance.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_WorkingWithOptionGroups.html

Question

If you don't specify a preferred weekly maintenance window when creating your DB instance, a 30-minute default value is assigned.

Answers

- A. True
- B. False

A
The 30-minute maintenance window is selected at random from an 8-hour block of time per region. If you don't specify a preferred maintenance window when you create the DB instance or DB cluster, then Amazon RDS assigns a 30-minute maintenance window on a randomly selected day of the week.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_UpgradeDBInstance.Maintenance.html#Concepts.DBMaintenance

Question

Amazon RDS Multi-AZ will conduct maintenance by following these steps:

1. Promote standby to primary
2. Perform maintenance on old primary
3. Perform maintenance on standby
4. Promote old primary back to primary

Answers

A. 1,2,3,4
B. 3,1,2
C. 3,1,2,4

B

Running a DB instance as a Multi-AZ deployment can further reduce the impact of a maintenance event, because Amazon RDS will apply operating system updates by following these steps:

- Perform maintenance on the standby.
- Promote the standby to primary.
- Perform maintenance on the old primary, which becomes the new standby.

Question

Some modifications, such as changing a parameter group, require that you manually reboot the DB instance for the change to take effect. When you modify a DB instance, you have the option of applying the changes immediately by selecting the Apply Immediately option in the RDS console or setting the ApplyImmediately parameter to true using the CLI or RDS API.

Answers

    A. True
    B. False

A

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Overview.DBInstance.Modifying.html

Question

When you rename a DB instance, the endpoint for the DB instance does not change.

Answers

    A. True
    B. False

B
When you rename a DB instance, the endpoint for the DB instance changes, because the URL includes the name you assigned to the DB instance. You should always redirect traffic from the old URL to the new one.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_RenameInstance.html

Question

All read replicas associated with a DB instance remain associated with that instance after it is renamed.

Answers

A. True
B. False

A
All read replicas associated with a DB instance remain associated with that instance after it is renamed. For example, suppose you have a DB instance that serves your production database and the instance has several associated read replicas. If you rename the DB instance and then replace it in the production environment with a DB snapshot, the DB instance that you renamed will still have the read replicas associated with it.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_RenameInstance.html

Question

You can delete a DB instance in any state and at any time.

Answers

A. True
B. False

A

You can delete a DB instance in any state and at any time. To delete a DB instance, you must specify the name of the instance, and specify whether to take a final DB snapshot taken of the instance.

If the DB instance you want to delete has a Read Replica, you should either promote the Read Replica or delete it.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_DeleteInstance.html

Question

If your DB instance is deployed in multiple Availability Zones, you can force a failover from one AZ to the other when you select the Reboot option.

Answers

- A. True
- B. False

A

If your DB instance is a Multi-AZ deployment, you can force a failover from one availability zone to another when you reboot. When you force a failover of your DB instance, Amazon RDS automatically switches to a standby replica in another Availability Zone, and updates the DNS record for the DB instance to point to the standby DB instance. As a result, you need to clean up and re-establish any existing connections to your DB instance. Rebooting with failover is beneficial when you want to simulate a failure of a DB instance for testing, or restore operations to the original AZ after a failover occurs.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_RebootInstance.html

Question

You can use the Amazon RDS console, the Amazon RDS API, or the Command Line Interface (CLI) to modify a DB instance to use Standard, General Purpose (SSD), or Provisioned IOPS storage.

Answers

A. True
B. False

A

You can use the Amazon RDS Management Console, the Amazon RDS API, or the AWS Command Line Interface (AWS CLI) to modify a DB instance to use Standard (Magnetic), General Purpose (SSD), or Provisioned IOPS storage. You must specify either a value for allocated storage or specify both allocated storage and IOPS values. You might need to modify the amount of allocated storage in order to maintain the required ratio between IOPS and storage.

See :
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_PIOPS.StorageTypes.html#USER_PIOPS.ModifyingExisting

Question

All Amazon RDS resources can be tagged except DB snapshots.

Answers

A. True
B. False

B

All Amazon RDS resources can be tagged
- DB instances
- DB clusters
- Read Replicas
- DB snapshots
- DB cluster snapshots
- Reserved DB instances
- Event subscriptions
- DB option groups
- DB parameter groups
- DB cluster parameter groups
- DB security groups
- DB subnet groups

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_Tagging.html

Question

If you don't set the backup retention period when creating an RDS with the console, Amazon RDS uses a default period retention period of_____.

Answers

    A.   One hour
    B.   One day
    C.   One week
    D.   None of the above

C

You can set the backup retention period when you create a DB instance. If you don't set the backup retention period, the default backup retention period is one day if you create the DB instance using the Amazon RDS API or the AWS CLI, or seven days if you create the DB instance using the AWS Console. For Amazon Aurora DB clusters, the default backup retention period is one day regardless of how the DB cluster is created.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_WorkingWithAutomatedBackups.html#USER_WorkingWithAutomatedBackups.BackupRetention

Question

You can modify the backup retention period; valid values are 0 (for no backup retention) to a maximum of 35 days.

Answers

    A. True
    B. False

A
You can set the backup retention period when you create a DB instance. If you don't set the backup retention period, the default backup retention period is one day if you create the DB instance using the Amazon RDS API or the AWS CLI, or seven days if you create the DB instance using the AWS Console. For Amazon Aurora DB clusters, the default backup retention period is one day regardless of how the DB cluster is created. After you create a DB instance, you can modify the backup retention period. You can set the backup retention period to between 1 and 35 days. For non–Aurora DB engines, you can also set the backup retention period to 0, which disables automated backups. Manual snapshot limits (100 per region) do not apply to automated backups.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_WorkingWithAutomatedBackups.html#USER_WorkingWithAutomatedBackups.BackupRetention

Question

Creating a backup on a Multi-AZ DB instance results in a brief I/O suspension f or MariaDB, MySQL, Oracle, and PostgreSQL.

Answers

A. True
B. False

B
Automated backups occur daily during the preferred backup window. If the backup requires more time than allotted to the backup window, the backup continues after the window ends, until it finishes. The backup window can't overlap with the weekly maintenance window for the DB instance.

During the automatic backup window, storage I/O might be suspended briefly while the backup process initializes (typically under a few seconds). You may experience elevated latencies for a few minutes during backups for Multi-AZ deployments. For MariaDB, MySQL, Oracle, and PostgreSQL, I/O activity is not suspended on your primary during backup for Multi-AZ deployments, because the backup is taken from the standby. For SQL Server, I/O activity is suspended briefly during backup for Multi-AZ deployments.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_WorkingWithAutomatedBackups.html#USER_WorkingWithAutomatedBackups.BackupWindow

Question

The option group associated with the DB snapshot is not associated with the restored DB once it is created.

Answers
- A. True
- B. False

B
The option group associated with the DB snapshot that you restore from is associated with the restored DB instance once it is created. For example, if the DB snapshot you restore from uses Oracle Transparent Data Encryption (TDE), the restored DB instance uses the same option group, which had the TDE option.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_Tutorials.RestoringFromSnapshot.html#CHAP_Tutorials.RestoringFromSnapshot.Prerequisites

Question

You can copy either an automated or manual DB snapshot from one region to create a manual DB snapshot in another region.

Answers

A. True
B. False

A
With Amazon RDS, you can copy DB snapshots and DB cluster snapshots. You can copy automated or manual snapshots. After you copy a snapshot, the copy is a manual snapshot.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_CopySnapshot.html

Question

You can restore a DB Instance to any point in time during your backup retention period.

Answers

    A. True
    B. False

A
You can restore to any point in time during your backup retention period. To determine the latest restorable time for a DB instance, use the AWS CLI describe-db-instances command and look at the value returned in the LatestRestorableTime field for the DB instance. The latest restorable time for a DB instance is typically within 5 minutes of the current time.

See: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_PIT.html

Question

RDS Instances options available, additional to rerserved instances are:

- No Upfront
- Partial Upfront
- All Upfront
- Spot

Answers

A. True
B. False

B
No Upfront, Partial Upfront, All Upfront

See: https://aws.amazon.com/rds/mysql/pricing/

Question

Each DB subnet group should have subnets in at least two Availability Zones in a given region.

Answers

A. True
B. False

A

Each DB subnet group should have subnets in at least two Availability Zones in a given region. When creating a DB instance in VPC, you must select a DB subnet group. Amazon RDS uses that DB subnet group and your preferred Availability Zone to select a subnet and an IP address within that subnet to associate with your DB instance. If the primary DB instance of a Multi-AZ deployment fails, Amazon RDS can promote the corresponding standby and subsequently create a new standby using an IP address of the subnet in one of the other Availability Zones.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_VPC.WorkingWithRDSInstanceinaVPC.html#USER_VPC.Subnets

Question

If you restore a DB instance into a different VPC or onto a different platform, you must assign the default option group to the instance, assign an option group that is linked to that VPC or platform, or create a new option group and assign it to the DB instance.

Answers

    A. True
    B. False

A

When you assign an option group to a DB instance, the option group is also linked to the supported platform the DB instance is on, either VPC or EC2-Classic (non-VPC). If a DB instance is in a VPC, the option group associated with the DB instance is linked to that VPC. This means that you cannot use the option group assigned to a DB instance if you attempt to restore the instance into a different VPC or onto a different platform. If you restore a DB instance into a different VPC or onto a different platform, you must either assign the default option group to the instance, assign an option group that is linked to that VPC or platform, or create a new option group and assign it to the DB instance. For persistent or permanent options, when restoring a DB instance into a different VPC you must create a new option group that includes the persistent or permanent option.

See:
https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_RestoreFromSnapshot.html#USER_RestoreFromSnapshot.Options

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