

➤ **Vendor: Amazon**

➤ **Exam Code: AWS Certified DevOps Engineer - Professional**

➤ **Exam Name: Amazon AWS Certified DevOps Engineer - Professional**

➤ **Question 1 – Question 20**

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QUESTION 1

You need your CI to build AMIs with code pre-installed on the images on every new code push. You need to do this as cheaply as possible. How do you do this?

- A. Bid on spot instances just above the asking price as soon as new commits come in, perform all instance configuration and setup, then create an AMI based on the spot instance.
- B. Have the CI launch a new on-demand EC2 instance when new commits come in, perform all instance configuration and setup, then create an AMI based on the on-demand instance.
- C. Purchase a Light Utilization Reserved Instance to save money on the continuous integration machine. Use these credits whenever you create AMIs on instances.
- D. When the CI instance receives commits, attach a new EBS volume to the CI machine. Perform all setup on this EBS volume so you don't need a new EC2 instance to create the AMI.

Answer: A

Explanation:

Spot instances are the cheapest option, and you can use minimum run duration if your AMI takes more than a few minutes to create.

Spot instances are also available to run for a predefined duration - in hourly increments up to six hours in length - at a significant discount (30-45%) compared to On-Demand pricing plus an additional 5% during off-peak times¹ for a total of up to 50% savings.

<https://aws.amazon.com/ec2/spot/pricing/>

QUESTION 2

When thinking of DynamoDB, what are true of Global Secondary Key properties?

- A. The partition key and sort key can be different from the table.
- B. Only the partition key can be different from the table.
- C. Either the partition key or the sort key can be different from the table, but not both.
- D. Only the sort key can be different from the table.

Answer: A

Explanation:

Global secondary index -- an index with a partition key and a sort key that can be different from those on the table. A global secondary index is considered "global" because queries on the index can span all of the data in a table, across all partitions.

<http://docs.aws.amazon.com/amazondynamodb/latest/developerguide/SecondaryIndexes.html>

QUESTION 3

You need to process long-running jobs once and only once. How might you do this?

- A. Use an SNS queue and set the visibility timeout to long enough for jobs to process.
- B. Use an SQS queue and set the reprocessing timeout to long enough for jobs to process.
- C. Use an SQS queue and set the visibility timeout to long enough for jobs to process.
- D. Use an SNS queue and set the reprocessing timeout to long enough for jobs to process.

Answer: C

Explanation:

The message timeout defines how long after a successful receive request SQS waits before allowing jobs to be seen by other components, and proper configuration prevents duplicate processing.

<http://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/MessageLifecycle.html>

QUESTION 4

You are getting a lot of empty receive requests when using Amazon SQS. This is making a lot of unnecessary network load on your instances. What can you do to reduce this load?

- A. Subscribe your queue to an SNS topic instead.
- B. Use as long of a poll as possible, instead of short polls.
- C. Alter your visibility timeout to be shorter.
- D. Use `<code>sqsd</code>` on your EC2 instances.

Answer: B

Explanation:

One benefit of long polling with Amazon SQS is the reduction of the number of empty responses, when there are no messages available to return, in reply to a `ReceiveMessage` request sent to an Amazon SQS queue. Long polling allows the Amazon SQS service to wait until a message is available in the queue before sending a response.

<http://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/sqs-long-polling.html>

QUESTION 5

You need to know when you spend \$1000 or more on AWS. What's the easy way for you to see that notification?

- A. AWS CloudWatch Events tied to API calls, when certain thresholds are exceeded, publish to SNS.
- B. Scrape the billing page periodically and pump into Kinesis.
- C. AWS CloudWatch Metrics + Billing Alarm + Lambda event subscription. When a threshold is exceeded, email the manager.
- D. Scrape the billing page periodically and publish to SNS.

Answer: C

Explanation:

Even if you're careful to stay within the free tier, it's a good idea to create a billing alarm to notify you if you exceed the limits of the free tier. Billing alarms can help to protect you against unknowingly accruing charges if you inadvertently use a service outside of the free tier or if traffic exceeds your expectations.

<http://docs.aws.amazon.com/awsaccountbilling/latest/aboutv2/free-tier-alarms.html>

QUESTION 6

You need to grant a vendor access to your AWS account. They need to be able to read protected messages in a private S3 bucket at their leisure. They also use AWS. What is the best way to accomplish this?

- A. Create an IAM User with API Access Keys. Grant the User permissions to access the bucket. Give the vendor the AWS Access Key ID and AWS Secret Access Key for the User.
- B. Create an EC2 Instance Profile on your account. Grant the associated IAM role full access to the bucket. Start an EC2 instance with this Profile and give SSH access to the instance to the vendor.
- C. Create a cross-account IAM Role with permission to access the bucket, and grant permission to use the Role to the vendor AWS account.
- D. Generate a signed S3 PUT URL and a signed S3 GET URL, both with wildcard values and 2 year durations. Pass the URLs to the vendor.

Answer: C

Explanation:

When third parties require access to your organization's AWS resources, you can use roles to delegate access to them. For example, a third party might provide a service for managing your AWS resources. With IAM roles, you can grant these third parties access to your AWS resources without sharing your AWS security credentials. Instead, the third party can access your AWS resources by assuming a role that you create in your AWS account.

http://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles_common-scenarios_third-party.html

QUESTION 7

Your serverless architecture using AWS API Gateway, AWS Lambda, and AWS DynamoDB experienced a large increase in traffic to a sustained 400 requests per second, and dramatically increased in failure rates. Your requests, during normal operation, last 500 milliseconds on average. Your DynamoDB table did not exceed 50% of provisioned throughput, and

Table primary keys are designed correctly. What is the most likely issue?

- A. Your API Gateway deployment is throttling your requests.
- B. Your AWS API Gateway Deployment is bottlenecking on request (de)serialization.
- C. You did not request a limit increase on concurrent Lambda function executions.
- D. You used Consistent Read requests on DynamoDB and are experiencing semaphore lock.

Answer: C

Explanation:

AWS API Gateway by default throttles at 500 requests per second steady-state, and 1000 requests per second at spike. Lambda, by default, throttles at 100 concurrent requests for safety. At 500 milliseconds (half of a second) per request, you can expect to support 200 requests per second at 100 concurrency. This is less than the 400 requests per second your system now requires. Make a limit increase request via the AWS Support Console.

AWS Lambda: Concurrent requests safety throttle per account -> 100

http://docs.aws.amazon.com/general/latest/gr/aws_service_limits.html#limits_lambda

QUESTION 8

Why are more frequent snapshots or EBS Volumes faster?

- A. Blocks in EBS Volumes are allocated lazily, since while logically separated from other EBS Volumes, Volumes often share the same physical hardware. Snapshotting the first time forces full block range allocation, so the second snapshot doesn't need to perform the allocation phase and is faster.
- B. The snapshots are incremental so that only the blocks on the device that have changed after your last snapshot are saved in the new snapshot.
- C. AWS provisions more disk throughput for burst capacity during snapshots if the drive has been pre-warmed by snapshotting and reading all blocks.
- D. The drive is pre-warmed, so block access is more rapid for volumes when every block on the device has already been read at least one time.

Answer: B

Explanation:

After writing data to an EBS volume, you can periodically create a snapshot of the volume to use as a baseline for new volumes or for data backup. If you make periodic snapshots of a volume, the snapshots are incremental so that only the blocks on the device that have changed after your last snapshot are saved in the new snapshot. Even though snapshots are saved incrementally, the snapshot deletion process is designed so that you need to retain only the most recent snapshot in order to restore the volume.

<http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-creating-snapshot.html>

QUESTION 9

For AWS CloudFormation, which stack state refuses UpdateStack calls?

- A. `UPDATE_ROLLBACK_FAILED`
- B. `UPDATE_ROLLBACK_COMPLETE`
- C. `UPDATE_COMPLETE`
- D. `CREATE_COMPLETE`

Answer: A

Explanation:

When a stack is in the UPDATE_ROLLBACK_FAILED state, you can continue rolling it back to return it to a working state (to UPDATE_ROLLBACK_COMPLETE). You cannot update a stack that is in the UPDATE_ROLLBACK_FAILED state. However, if you can continue to roll it back, you can return the stack to its original settings and try to update it again.

<http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/using-cfn-updating-stacks-continueupdaterollback.html>

QUESTION 10

You need to migrate 10 million records in one hour into DynamoDB. All records are 1.5KB in size. The data is evenly distributed across the partition key. How many write capacity units should you provision during this batch load?

- A. 6667
- B. 4166
- C. 5556
- D. 2778

Answer: C

Explanation:

You need 2 units to make a 1.5KB write, since you round up. You need 20 million total units to perform this load. You have 3600 seconds to do so. Divide and round up for 5556.

<http://docs.aws.amazon.com/amazondynamodb/latest/developerguide/HowItWorks.ProvisionedThroughput.html>

QUESTION 11

Your CTO thinks your AWS account was hacked. What is the only way to know for certain if there was unauthorized access and what they did, assuming your hackers are very sophisticated AWS engineers and doing everything they can to cover their tracks?

- A. Use CloudTrail Log File Integrity Validation.
- B. Use AWS Config SNS Subscriptions and process events in real time.
- C. Use CloudTrail backed up to AWS S3 and Glacier.
- D. Use AWS Config Timeline forensics.

Answer: A

Explanation:

You must use CloudTrail Log File Validation (default or custom implementation), as any other tracking method is subject to forgery in the event of a full account compromise by sophisticated enough hackers. Validated log files are invaluable in security and forensic investigations.

For example, a validated log file enables you to assert positively that the log file itself has not changed, or that particular user credentials performed specific API activity. The CloudTrail log file integrity validation process also lets you know if a log file has been deleted or changed, or assert positively that no log files were delivered to your account during a given period of time.

<http://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-log-file-validation-intro.html>

QUESTION 12

Which of these is not a Pseudo Parameter in AWS CloudFormation?

- A. AWS::StackName
- B. AWS::AccountId
- C. AWS::StackArn
- D. AWS::NotificationARNs

Answer: C

Explanation:

This is the complete list of Pseudo Parameters:

AWS::AccountId, AWS::NotificationARNs, AWS::NoValue, AWS::Region, AWS::StackId, AWS::StackName

<http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/pseudo-parameter-reference.html>

QUESTION 13

What is the scope of an EBS volume?

- A. VPC
- B. Region
- C. Placement Group
- D. Availability Zone

Answer: D

Explanation:

An Amazon EBS volume is tied to its Availability Zone and can be attached only to instances in the same Availability Zone.

<http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/resources.html>

QUESTION 14

You are experiencing performance issues writing to a DynamoDB table. Your system tracks high scores for video games on a marketplace. Your most popular game experiences all of the performance issues. What is the most likely problem?

- A. DynamoDB's vector clock is out of sync, because of the rapid growth in request for the most popular game.
- B. You selected the Game ID or equivalent identifier as the primary partition key for the table.

- C. Users of the most popular video game each perform more read and write requests than average.
- D. You did not provision enough read or write throughput to the table.

Answer: B

Explanation:

The primary key selection dramatically affects performance consistency when reading or writing to DynamoDB. By selecting a key that is tied to the identity of the game, you forced DynamoDB to create a hotspot in the table partitions, and over-request against the primary key partition for the popular game. When it stores data, DynamoDB divides a table's items into multiple partitions, and distributes the data primarily based upon the partition key value. The provisioned throughput associated with a table is also divided evenly among the partitions, with no sharing of provisioned throughput across partitions.

<http://docs.aws.amazon.com/amazondynamodb/latest/developerguide/GuidelinesForTables.html#GuidelinesForTables.UniformWorkload>

QUESTION 15

You meet once per month with your operations team to review the past month's data. During the meeting, you realize that 3 weeks ago, your monitoring system which pings over HTTP from outside AWS recorded a large spike in latency on your 3-tier web service API. You use DynamoDB for the database layer, ELB, EBS, and EC2 for the business logic tier, and SQS, ELB, and EC2 for the presentation layer. Which of the following techniques will NOT help you figure out what happened?

- A. Check your CloudTrail log history around the spike's time for any API calls that caused slowness.
- B. Review CloudWatch Metrics graphs to determine which component(s) slowed the system down.
- C. Review your ELB access logs in S3 to see if any ELBs in your system saw the latency.
- D. Analyze your logs to detect bursts in traffic at that time.

Answer: B

Explanation:

Metrics data are available for 2 weeks. If you want to store metrics data beyond that duration, you can retrieve it using our GetMetricStatistics API as well as a number of applications and tools offered by AWS partners.

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

QUESTION 16

Which of these is not an intrinsic function in AWS CloudFormation?

- A. Fn::Split
- B. Fn::FindInMap
- C. Fn::Select
- D. Fn::GetAZs

Answer: A

Explanation:

This is the complete list of Intrinsic Functions: Fn::Base64, Fn::And, Fn::Equals, Fn::If, Fn::Not, Fn::Or, Fn::FindInMap, Fn::GetAtt, Fn::GetAZs, Fn::Join, Fn::Select, Ref.

<http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/intrinsic-function-reference.html>

QUESTION 17

For AWS CloudFormation, which is true?

- A. Custom resources using SNS have a default timeout of 3 minutes.
- B. Custom resources using SNS do not need a `<code>ServiceToken</code>` property.
- C. Custom resources using Lambda and `<code>Code.ZipFile</code>` allow inline nodejs resource composition.
- D. Custom resources using Lambda do not need a `<code>ServiceToken</code>` property.

Answer: C

Explanation:

Code is a property of the AWS::Lambda::Function resource that enables to you specify the source code of an AWS Lambda (Lambda) function.

You can point to a file in an Amazon Simple Storage Service (Amazon S3) bucket or specify your source code as inline text (for nodejs runtime environments only).

<http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/template-custom-resources.html>

QUESTION 18

Your API requires the ability to stay online during AWS regional failures. Your API does not store any state, it only aggregates data from other sources - you do not have a database. What is a simple but effective way to achieve this uptime goal?

- A. Use a CloudFront distribution to serve up your API. Even if the region your API is in goes down, the edge locations CloudFront uses will be fine.
- B. Use an ELB and a cross-zone ELB deployment to create redundancy across datacenters. Even if a region fails, the other AZ will stay online.
- C. Create a Route53 Weighted Round Robin record, and if one region goes down, have that region redirect to the other region.
- D. Create a Route53 Latency Based Routing Record with Failover and point it to two identical deployments of your stateless API in two different regions. Make sure both regions use Auto Scaling Groups behind ELBs.

Answer: D

Explanation:

Latency Based Records allow request distribution when all is well with both regions, and the Failover component enables fallbacks between regions. By adding in the ELB and ASG, your system in the surviving region can expand to meet 100% of demand instead of the original fraction, whenever failover occurs.

<http://docs.aws.amazon.com/Route53/latest/DeveloperGuide/dns-failover.html>

QUESTION 19

You are designing an enterprise data storage system. Your data management software system requires mountable disks and a real filesystem, so you cannot use S3 for storage. You need persistence, so you will be using AWS EBS Volumes for your system. The system needs as low-cost storage as possible, and access is not frequent or high throughput, and is mostly sequential reads. Which is the most appropriate EBS Volume Type for this scenario?

- A. gp1
- B. io1
- C. standard
- D. gp2

Answer: C

Explanation:

standard volumes, or Magnetic volumes, are best for: Cold workloads where data is infrequently accessed, or scenarios where the lowest storage cost is important.

<http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/EBSVolumeTypes.html>

QUESTION 20

You need to deploy an AWS stack in a repeatable manner across multiple environments. You have selected CloudFormation as the right tool to accomplish this, but have found that there is a resource type you need to create and model, but is unsupported by CloudFormation. How should you overcome this challenge?

- A. Use a CloudFormation Custom Resource Template by selecting an API call to proxy for create, update, and delete actions. CloudFormation will use the AWS SDK, CLI, or API method of your choosing as the state transition function for the resource type you are modeling.
- B. Submit a ticket to the AWS Forums. AWS extends CloudFormation Resource Types by releasing tooling to the AWS Labs organization on GitHub. Their response time is usually 1 day, and they complete requests within a week or two.
- C. Instead of depending on CloudFormation, use Chef, Puppet, or Ansible to author Heat templates, which are declarative stack resource definitions that operate over the OpenStack hypervisor and cloud environment.
- D. Create a CloudFormation Custom Resource Type by implementing create, update, and delete functionality, either by subscribing a Custom Resource Provider to an SNS topic, or by implementing the logic in AWS Lambda.

Answer: D

Explanation:

Custom resources provide a way for you to write custom provisioning logic in AWS CloudFormation template and have AWS CloudFormation run it during a stack operation, such as when you create, update or delete a stack. For more information, see Custom Resources.

<http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/template-custom-resources.html>

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