Module 1

Advantages of Cloud Computing

Which of the following is an advantage of cloud computing? (Select THREE.)

- Eliminates having to guess your infrastructure capacity needs
- Increases speed to market
- Helps you more easily reach your customers around the globe
- Ensures you meet all your security compliance requirements
- Reduces the need for developers to write code

Which of the following represent characteristics of cloud computing? (Select THREE.)

- On-demand delivery of IT resources
- Accessible over the internet
- Pay-as-you-go pricing
- Up-front capital investments leading to innovative applications
- Guaranteed and automated security
- Prioritization of hardware over software

Well-architected framework

Which principles are part of the AWS Well-Architected Framework? (Select THREE.)

- Security
- Cost Optimization
- Reliability
- Ownership
- Innovation

Match each pillar of the AWS Well-Architected Framework below with the scenario that best represents that pillar.

- Security - An infrastructure keeps track of which administrators perform which operations and when.
- Reliability - An application is still available when one of its servers crashes.
- Cost optimization - An infrastructure automatically shuts down resources when they are no longer needed.
- Operational excellence - An infrastructure is designed to be easily replicable in the event of failure or scaling.
- Performance efficiency - An architecture uses a relational database because an application performs complex joins.

Global Infrastructure

Which of the following describes a physical location around the world where AWS clusters data centers?

- Regions
- AWS Local Zones
- Edge Locations
- Availability Zones

Which of the following statements best describes an Availability Zone (AZ)?

- Each AZ consists of multiple discrete data centers with redundant power and networking/connectivity.
- Each AZ consists of a single discrete data center with redundant power and networking/connectivity.
- Each AZ consists of multiple discrete regions, each with a single data center with redundant power and networking/connectivity.
- Each AZ consists of multiple discrete data centers with shared power and redundant networking/connectivity.

What is the primary benefit of an AWS Edge Location?

- Lower latency delivery of content to end users
- Lower costs for content storage
- Stronger authentication controls
- Data sovereignty controls

Module 2

S3

Which of the following is not an appropriate use case for Amazon S3? (Select TWO.)

- Storing web content
- Storing a file system mounted to an Amazon EC2 instance
- Storing backups for a relational database
- Serving as primary storage for a database
- Storing logs for analytics

Which method can be used to restrict access to Amazon S3 data? (Select THREE.)

- Enable static website hosting on the bucket
- Create a pre-signed URL for an object
- Use an Amazon S3 Access Control List (ACL) on a bucket or object
- Use a lifecycle policy
- Use an Amazon S3 bucket policy

Your application stores critical data in Amazon S3, which must be protected against inadvertent or intentional deletion. How can this data be protected? (Select TWO.)

- Use cross-region replication to copy data to another bucket automatically
- Set a vault lock
- Enable versioning on the bucket
- Use a lifecycle policy to migrate data to Amazon Glacier
- Enable MFA Delete on the bucket

How is data stored in Amazon S3 for high durability?

- Data is automatically replicated within a region
- Data is automatically replicated to other regions
- Data is replicated only if versioning is enabled on the bucket
- Data is automatically backed up on tape and restored if needed

When using Amazon S3, which of the following do you pay for? (Select THREE.)

- GBs of storage per month
- Transfer OUT to other regions or the Internet
- PUT, COPY, POST, LIST, and GET requests
- Transfer IN to Amazon S3
- Transfer OUT to Amazon EC2 in the same region, or to Amazon CloudFront

S3 Glacier

Match the Amazon S3 storage class with its ideal access pattern.

- S3 Standard – Frequently and rapidly accessed data
- S3 Standard-1A – Infrequently but rapidly accessed data
- S3 One Zone-1A – Re-creatable, infrequently accessed data
- S3 Glacier – Archival data

Which statements about Amazon Glacier are true? (Select THREE.)

- Amazon Glacier stores data in objects that live in archives
- Amazon Glacier archives are identified by user-specified key names
- Amazon Glacier archives take three to five hours to restore
- Amazon Glacier vaults can be locked
- Amazon Glacier can be used as a standalone service and as an Amazon S3 storage class

Your company has 100TB of financial records that need to be stored for seven years by law. Experience has shown that any record more than one-year old is unlikely to be accessed. Which of the following storage plans meets these needs in the most cost-efficient manner?

- Store the data on Amazon EBS volumes attached to t2.micro instances
- Store the data on Amazon S3 with lifecycle policies that change the storage class to Amazon S3 Glacier after one year and delete the object after seven years.
- Store the data in Amazon DynamoDB and run a daily script to delete data older than seven years
- Store the data in Amazon EMR

Choosing regions for your architectures

When deciding in which AWS Region to launch a service, which of the following factors should be considered? (Select THREE.)

- A service's ability to function cross-region
- The degree of latency when using cross-region availability
- A service's availability in a particular Region
- The cost of using a service in a particular Region

Module 3

Launching EC2 instances with AMIs

In which of the following situations could there be a benefit to leveraging Amazon Machine Images (AMIs)? (Select THREE.)

- A developer wants to launch a new application onto a fleet of identical instances all at once
- A company wants to launch an Amazon EC2 instance running MongoDB
- A company wants to expand one of its applications to a new Region
- While launching a new instance, a developer wants to install software license keys and additional software
- A company needs to attach persistent, block level storage to their new instance

Which of the following is true about launching an Amazon EC2 instance with Amazon Machine Images (AMIs)? (Select THREE.)

- You must specify a source AMI when launching an instance
- You can launch multiple instances from a single AMI
- You must choose an AMI from AWS Marketplace or leverage one of the pre-built AMIs to launch an instance
- Your AMI includes one or more EBS volumes that will attach to your instance

Launching EC2 instances with user data

In order for User Data to complete the launch of a new Amazon EC2 instance, it may need to look up information about the instance itself (like the public IP address and hostname). Which resource provides that information in order to complete the launch?

- Instance Metadata
- EC2 Image Builder
- The Amazon Machine Image (AMI)
- The Instance Type

EC2 and storing data

Which of the following are features of Amazon Elastic Block Store (Amazon EBS)? (Select TWO.)

- Data stored on Amazon EBS is automatically replicated within an Availability Zone
- Amazon EBS volumes can be encrypted transparently to workloads on the attached instance
- Amazon EBS data is automatically backed up to tape
- Data on an Amazon EBS volume is lost when the attached instance is stopped

Match the Amazon EBS volume type with its relative IOPS performance.

- Provisioned IOPS SSD – Highest
- General Purpose SSD – High
- Throughput Optimized HDD – Low
- Cold HDD - Lowest

You need to take a snapshot of an Amazon EBS volume. How long will the volume be unavailable?

- It depends on the provisioned size of the volume
- The volume will be available immediately
- It depends on the amount of data stored on the volume
- It depends on whether the attached instance is an Amazon EBS-optimized instance

You have a workload that requires 15,000 consistent IOPS due to the fact that your data must be durable. What storage resource must you leverage to meet this requirement? (Select TWO.)

- An Amazon EBS-optimized instance
- An instance store
- An Amazon EBS Provisioned IOPS SSD volume
- A magnetic volume

Which of the following is the ideal AWS storage service to use with multiple instances that need to use the same read/write storage?

- Amazon EBS
- Amazon Instance Store
- Amazon S3
- Amazon EFS

EC2 instance types

For the instance type C5.xlarge, match the different components of the type with what each represents.

- "C" – Instance family
- "5" – Instance family generation
- "xlarge" – Instance size

Match the instance types below with the most appropriate use case.

- T2/T3 instances – Development environments
- C5 instances – High-performance web servers
- R4/R5 instances – High-performance databases
- P3 instances – Deep learning
- H1 instances – Distributed file systems

EC2 pricing options

Which Amazon EC2 pricing model allows you to pay a set hourly price for compute, giving you full control over when the instance launches and terminates?

- On-Demand instances
- Spot instances
- Reserved instances
- Dedicated instances

You have provisioned several Amazon EC2 instances to support your applications. Your applications receive steady traffic throughout the year. Which is the most cost-effective pricing model for your situation?

- Reserved instances
- Spot instances
- On-Demand instances
- Dedicated instances

You have a regular batch processing workload. The job runs once a week and takes only a few hours. Which Amazon EC2 pricing option would work best for this situation?

- Spot instances
- Reserved instances
- On-demand instances
- Dedicated instances

Which of the following represents a good use case for Amazon EC2 Spot Instances? (Select TWO.)

- Applications that have flexible start and end times
- Applications that are only feasible at very low compute prices
- Applications that cannot be interrupted
- Applications with steady state usage
- Applications that require reserved capacity

Which Amazon EC2 feature could be used to ensure that your instances will not share a physical server with any other instance, including instances from the same AWS account?

- Dedicated Hosts
- Amazon Virtual Private Cloud (VPC)
- Dedicated Instances
- Reserved Instances

What is the main difference between Amazon EC2 Dedicated Instances and Dedicated Hosts?

- Dedicated Instances are isolated at the instance level from other AWS accounts. Dedicated Hosts are isolated at the physical server level.
- Dedicated Hosts are isolated at the host level. Dedicated Instances are isolated at the physical server level.
- Dedicated Hosts provide physical isolation from other AWS accounts. Dedicated Instances provide physical isolation from all other instances.
- Dedicated Instances let you choose where your instances are placed on a server. Dedicated Hosts let you choose where your server is placed on a server rack.

Which of the following are recommended when tagging Amazon EC2 instances? (Select TWO.)

- Make sure your tags are standardized and case-sensitive
- Manage resource tags with automated tools
- Limit your tag use since using too many tags is likely to cause too much confusion and require unnecessary management
- Be careful when creating and applying tags, as once an instance is running you can't change them

Module 4

Database layer considerations

Which of the following are good reasons to choose a relational database over a non-relational database? (Select TWO.)

- You require strict schema rules and data quality enforcement
- Your application's requests include complex JOIN operations
- You need your database to scale horizontally
- Your data does not lend itself well to traditional schemas
- Your read/write rates exceed those that can be economically supported through traditional SQL databases

Which of the below is a non-relational databases? (Select FOUR.)

- MongoDB
- Amazon DynamoDB
- Cassandra
- Redis
- MySQL
- Microsoft SQL Server
- Oracle Database

Which of the following are you responsible for when using an AWS managed database service like Amazon RDS or Amazon DynamoDB? (Select TWO.)

- Database patches and installs
- Configuring database backups
- Application optimization
- OS patches and installs
- Server maintenance

RDS and DynamoDB

Which of the following workload requirements are appropriate for Amazon RDS? (Select TWO.)

- Your data is complex and requires join operations
- Your data requires that strict syntax rules be enforced
- Your data is simple and high-volume
- Your data needs to scale quickly and easily

Which of the following is an appropriate use case for Amazon DynamoDB? (Select TWO.)

- Live video game scoreboards
- Shopping cart data
- Inventory and order management
- Customer Relationship Management (CRM)

You are designing an e-commerce web application that will scale to potentially hundreds of thousands of concurrent users. Which database technology is best suited to hold the session state for large numbers of concurrent users?

- Amazon Relational Database Service (RDS)
- Amazon DynamoDB
- Amazon Redshift
- Amazon S3

Your application needs to calculate the loyalty rewards a customer has earned. It needs to store customer records in an Amazon DynamoDB table. The following data will be collected and stored:

Reward points earned
Reward points spent
Customer ID
Customer address

How should the key or keys be assigned to the attributes on the table?

- Customer ID as Partition key
- Customer ID as Partition key; Customer address as Sort key
- Customer ID as Sort key; Customer address as Partition key
- Rewards points earned as Partition key; Rewards points spent as Sort key
- Rewards points earned as Sort key; Rewards points spent as Partition key

Security controls for RDS and DynamDB

You want to track changes to your Amazon RDS database's security group. Which Amazon RDS feature could you use to do this?

- Event Notifications
- Security Group Logging
- DB Parameter Groups
- Tags

You have been using Amazon RDS for the last year to run an important application with automated backups enabled. One of your team members is performing routine maintenance and accidentally drops an important table, causing an outage. How can you recover the missing data while minimizing the duration of the outage?

- Perform an undo operation and recover the table
- Restore the database from a recent automated DB snapshot
- Restore only the dropped table from the DB snapshot
- The data cannot be recovered

Migrating data into your databases

You need to migrate your Oracle database into AWS. Once migrated, you're considering converting it into an Amazon Aurora database. Is AWS Database Migration Service a solution you can leverage for this particular migration?

- Yes, you can migrate Oracle databases into AWS using the AWS Database Migration Service. You can even convert it into another database type, such as Amazon Aurora.
- Yes, you can migrate Oracle databases into AWS using the AWS Database Migration Service. However, you can't convert it into a different database type like Amazon Aurora as that requires a schema conversion.
- No, AWS Database Migration Service doesn't support migrations from Oracle databases.
- No, for all Oracle database migrations you have to use AWS Snowball due to size limitations on migrations.

Which of the following is true about AWS Database Migration Service?

- It supports one-time migrations, but not ongoing migrations
- It can be used to migrate between databases on Amazon EC2, Amazon RDS, Amazon S3, and on-premises
- It supports multi-terabyte storage during migration
- It can perform migrations without using the Internet

Module 5

Amazon VPC

What is the minimum size subnet that you can have in an Amazon VPC?

- /24
- /26
- /28
- /30

What is the maximum size IP address range that you can have in an Amazon VPC?

- /16
- /24
- /28
- /30

Match each situation below with the most appropriate VPC pattern needed for that situation.

- A distributed genome research application that requires low latency between instances – Single VPC
- A managed service provider – Multi-VPC
- An enterprise corporation with multiple subsidiaries – Multi-Account

You want to divide your VPC into subnets. What best practices should you follow? (Select THREE.)

- Create one private and one public subnet for each Availability Zone in your Region
- Reserve substantially more IP addresses for private subnets than for public subnets
- Start with larger subnets so you'll have more IP addresses reserved
- Start with smaller subnets so you can add more IP addresses to it later as you need them
- Reserve the same amount of IP addresses for private subnets as for public subnets
- Create one subnet in each Availability Zone

Match the AWS networking resource with its appropriate description.

- Elastic Network Interface - Allows you to maintain the same IP and MAC addresses across instances in the same Availability Zone
- Internet Gateway - Enables communication between resources in your VPC and the public Internet
- NAT Gateway - Enables outbound traffic from a private subnet to reach the public Internet
- Elastic IP address - Allows you to swap a static public IP address between instances and network interfaces

You are a solutions architect working for a large travel company that is migrating its existing server estate to AWS. You have recommended that they use a custom Amazon VPC, and they have agreed to proceed. They will need a public subnet for their web servers and a private subnet in which to place their databases. They also require that the web servers and database servers be highly available and that there be a minimum of two web servers and two database servers each. How many subnets should you have to maintain high availability?

- 2
- 3
- 4
- 1

By default, what is the limit for the number of VPCs you can have in one Region, per account?

- 5
- 3
- 20
- 100
- There is no limit

You create a new subnet and then add a route to your route table that routes traffic out from that subnet to the Internet using an Internet Gateway. What type of subnet have you created?

- An internal subnet
- A private subnet
- An external subnet
- A public subnet

What happens when you create a new Amazon VPC?

- A main route table is created by default
- Three subnets are created by default – one for each Availability Zone
- Three subnets are created by default in one Availability Zone
- An Internet Gateway is created by default

You create a new VPC in US-East-1 and provision three subnets inside this Amazon VPC. Which of the following statements is true?

- By default, these subnets will not be able to communicate with each other; you will need to create routes
- All subnets are public by default
- All subnets will be able to communicate with each other by default
- Each subnet will have identical CIDR blocks

Which Amazon VPC feature allows you to create a dual-homed instance?

- Elastic IP address
- Elastic Network Interface
- Security Groups
- Internet Gateway

Security in the cloud

Security groups provide a virtual firewall around which boundary?

- Instance
- VPC
- Network
- Application

Network ACLs provide a virtual firewall around which boundary?

- Instance
- Application
- Subnet
- VPC

Which of the following is true about the default settings of security groups?

- They are stateful, allowing responses to allowed inbound traffic.
- They are stateless, allowing responses to allowed inbound traffic.
- They are stateful. Responses to allowed inbound traffic must be re-evaluated before being allowed outbound.
- They are stateless. Responses to allowed inbound traffic must be re-evaluated before being allowed outbound.

Which of the following Amazon VPC elements acts as a stateless firewall?

- Network Access Control List (NACL)
- Security group
- Network Address Translation (NAT) instance
- Amazon VPC endpoint

You are responsible for your company's AWS resources and you notice a significant amount of traffic from an IP address in a foreign country in which your company does not have customers. Further investigation of the traffic indicates the source of the traffic is scanning for open ports on your EC2-VPC instances. Which one of the following resources can deny the traffic from reaching the instances?

- Security group
- Network ACL
- NAT instance
- An Amazon VPC endpoint

Module 6

Connecting Networks

Which of the following is the Amazon side of an Amazon VPN connection?

- An Elastic IP address
- A customer gateway
- Internet gateway
- A virtual private gateway

On the AWS side, how many VPN endpoints does one AWS Virtual Private Gateway have?

- 1
- 2
- 3
- 4

Which of the following is a characteristic of an AWS Direct Connect connection? (Select THREE.)

- Can be 1 Gbps
- Can be 10 Gbps
- Ideal for short-term high bandwidth requirements
- Ideal for long-term high bandwidth requirements
- Will not work with hybrid architectures because both ends of the connection need to be on AWS

Which of the following Amazon VPC resources would you use in order for EC2-VPC instances to send traffic directly to Amazon S3?

- VPC endpoint
- Internet gateway
- AWS Transit Gateway
- AWS Direct Connect

Your colleague suggests that you use VPC peering between some of your networks. You have three VPCs (VPC “A”, “B”, and “C”), each one in a different Region. Your colleague's plan is to connect VPCs “A” and “C” to VPC “B”. That way, each VPC will be connected to one another, either directly or through “B”, which acts as the central hub VPC. Will this suggestion work? Choose the most accurate answer below.

- No. VPCs “A” and “C” will not be connected to each other because VPC peering does not allow for transitive routing.
- Yes. This plan will work.
- No. VPCs cannot be connected between different Regions.
- No. VPCs cannot be connected between different Regions. Additionally, VPCs “A” and “C” will not be connected to each other because VPC peering does not allow for transitive routing.

Which of the following are characteristics of VPC endpoints? (Select THREE.)

- Horizontally scaled
- Highly available by default
- Do not require traversal over the Internet
- Can be established between Regions
- Do not require a VPN to connect privately to on-premises networks

How many connections can you have between two VPCs using VPC peering?

- 1
- 2
- 5
- Unlimited

Load Balancing

You have created an Elastic Load Balancing load balancer listening on port 80, and you registered it with a single Amazon EC2 instance also listening on port 80. A client makes a request to the load balancer with the correct protocol and port for the load balancer. In this scenario, how many connections does the balancer maintain?

- 1
- 2
- 3
- 4

Your web application front end consists of multiple Amazon EC2 instances behind an Application Load Balancer. You have configured the load balancer to perform health checks on these instances. If an instance fails to pass health checks, which statement will be true?

- The instance is replaced automatically by the load balancer
- The instance is terminated automatically by the load balancer
- The load balancer stops sending traffic to the instance that failed its health check
- The instance is quarantined by the load balancer for root cause analysis

Which of the following are characteristics of the Network Load Balancer? (Select TWO.)

- Operates at the request level (Layer 7)
- Operates at the connection level (Layer 4)
- Load balances TCP, TLS, and UDP traffic
- Operates at both the request level (Layer 7) and connection level (Layer 4)
- Load balances HTTP and HTTPS traffic

High availability

You are planning an architecture that will need the following: a public-facing web server, a private backend, and an Amazon DynamoDB table. Select the appropriate combination of resources you need to provide for basic high availability.

- 1 Availability Zone, 1 web server instance, 1 backend server instance, 1 load balancer, 1 DynamoDB table, 1 NAT instance or gateway
- 2 Availability Zones, 2 web server instances, 2 backend server instances, 2 load balancers, 1 DynamoDB table, 2 NAT instances or gateways
- 2 Availability Zones, 2 web server instances, 2 backend server instances, 1 load balancer, 1 master DynamoDB table with a secondary replica table, 2 NAT instances or gateways
- 2 Availability Zones, 1 web server instance, 1 backend server instance, 2 load balancers, 1 DynamoDB table, 2 NAT instances or gateways

You would like to build your application within your VPC ensuring high availability. Which strategy would deliver the required results?

- Deploy two EC2 instances, ensuring that each are in a separate Availability Zone. You then use Elastic Load Balancing to distribute traffic to each instance.
- Deploy two EC2 instances within a single Availability Zone with Elastic Load Balancing.
- Deploy a single EC2 instance within a single Availability Zone, this will be more cost effective and is still highly available.
- Applications deployed into your VPC are automatically highly available. There is no need to do anything.

Which of the following options will help increase the availability of a web server fleet? (Select TWO.)

- Launch the web server instances across multiple Availability Zones.
- Leverage Auto Scaling to recover from failed instances.
- Use Amazon CloudFront to deliver content to the end users with low latency and high data transfer speeds.
- Deploy the instances in an Amazon Virtual Private Cloud (Amazon VPC).
- Add more CPU and RAM to each instance.

Multi-region HA and DNS

Choose the most appropriate Amazon Route 53 routing method to use for each of the given situations below.

- Your application needs to undergo A/B testing – Weighted round robin
- Players of your online game demand the fastest server response times or they complain about lag. – Latency-based routing
- Your website is popular globally and is available in seven different languages – Geolocation routing
- You need to route traffic based on location and available resources – Geoproximity routing

Module 7

Account Users and IAM

What's the first thing you should do when you create a new AWS account?

- Create an admin IAM user, lock away the account root user credentials, and only use the account root user for tasks that no other user can perform.
- Turn on AWS CloudTrail to track all API calls to your resources.
- Turn on billing alerts to make sure you're notified if your spending goes beyond what you expect.
- Create a VPC for your resources to be deployed in.

Which of the following are IAM security features? (Select TWO.)

- Password policies
- Multi-factor authentication
- Modification of security groups
- User pools

Match the use case with the appropriate identity and access management resource needed for that situation.

- Your full-time salaried developers only need access to the projects they're working on. – IAM user
- All of your system administrators need the same general permissions. – IAM group
- Your web server application occasionally needs to access resources in another account. – IAM role
- Your users log in through a Google authentication portal. – Identity provider

Rank the following Effects in the order an IAM Policy evaluates them.

- Explicit Deny - First
- Explicit Allow - Second
- Implicit Deny – Third

Choose the answer that best describes what this AWS IAM policy does.

```
{
    "Version":"2012-10-17",
   "Statement":[
      {
         "Effect":"Allow",
         "Action":"s3:PutObject",
         "Resource":"arn:aws:s3:::my_corporate_bucket/uploads/widgetco/*"
       },
      {
         "Effect":"Deny",
         "NotAction":"s3:PutObject",
         "Resource":"arn:aws:s3:::my_corporate_bucket/uploads/widgetco/*"
       },
      {
         "Effect":"Deny",
         "Action":"s3:*",
         "NotResource":"arn:aws:s3:::my_corporate_bucket/uploads/widgetco/*"
      }
   ]
}
```

- Allows PutObject API calls on the designated bucket, while denying any other API calls on that bucket and denying any actions on any other resources.
- Allows PutObject API calls on the designated bucket, while denying PutObject API calls on any other bucket and denying access to any S3 buckets except that bucket.
- Nothing. The permissions of this policy contradict each other and this policy will fail. The user will be left with no permissions by default.

Federating Users

Which of the following can be used to assume an IAM role? (Select FOUR.)

- AWS Management Console
- AWS CLI
- AssumeRole API call
- AWS Security Token Service (STS)
- AWS Key Management Service (KMS)
- Amazon Cognito

You have an application that will run on an Amazon EC2 instance. The application will make requests to Amazon S3 and Amazon DynamoDB. Using best practices, what type of AWS IAM principal should you create for your application to access the identified services?

- IAM role
- IAM user
- IAM group
- IAM directory

Which feature of AWS is designed to permit calls to the platform from an Amazon EC2 instance without needing access keys placed on the instance?

- IAM roles
- IAM users
- IAM groups
- Amazon EC2 key pairs

Which of the following is a best practice for managing IAM user access keys? (Select THREE.)

- Use different access keys for different applications
- Rotate access keys periodically
- Configure Multi-Factor Authentication (MFA) for your most sensitive operations
- Embed access keys directly into application code
- Keep unused access keys for an indefinite period of time

Multiple Accounts

Which of the following are good reasons for using multiple AWS accounts? (Select TWO.)

- Greater workload isolation
- Better security
- Reduced costs
- Better performance

You work for a large company that includes many different divisions, all of which use AWS for different reasons. You want to ensure that these different divisions only have access to the AWS services they need. What AWS service can you use to help you control access in this manner?

- AWS Organizations
- Amazon Cognito
- AWS Key Management Service (AWS KMS)
- Amazon CloudHSM

Your company would like to use AWS Organizations for its multi-account strategy. The company currently consists of four accounts: Development, Testing, Production, and Administration. What are the most appropriate ways of organizing its accounts? (Select TWO.)

- Have one root account with two Organizational Units (OUs). One OU for Administration and the other for Development, Testing, and Production.
- Have two root accounts, each with one Organizational Unit (OU). One OU for Administration and the other for Development, Testing, and Production.
- Have four root accounts, one each for Administration, Development, Testing, and Production.
- Have one root account with four Organizational Units (OUs). One OU each for Administration, Development, Testing, and Production.

Module 8

Understanding the basics

Which of the following are examples of making an infrastructure elastic? (Select THREE.)

- Designing your development environment so it can be turned off over the weekend
- Determining your maximum capacity needs and provisioning production instances to constantly meet those needs
- Creating an Auto Scaling group for your production instances that responds to capacity needs by scaling in or out
- Paying an annual fixed price for your IT resources
- Launching Read Replicas for your Amazon RDS database that has read-heavy workloads

Monitoring

Match the following Amazon CloudWatch features with the appropriate descriptions.

- Metrics – Data about the performance of your resources
- Logs – Where you can store records about the performance, usage, security, etc. of your resources
- Alarms – Perform actions based on detecting specific conditions in your resources
- Events – Stream of information related to changes in your AWS resources
- Rules – Routes streams of information about changes to your AWS resources to other resources for processing

Which AWS cloud service allows organizations to gain system-wide visibility into resource utilization, application performance, and operational health?

- Amazon CloudWatch
- AWS Identity and Access Management (IAM)
- Amazon Simple Notification Service (Amazon SNS)
- AWS CloudFormation

Which AWS service records API calls made on your account and delivers log files to your Amazon S3 bucket?

- AWS CloudTrail
- Amazon CloudWatch
- Amazon Kinesis
- AWS Data Pipeline

How are VPC Flow Logs streams stored?

- Using Amazon CloudWatch Logs
- In a designated Amazon DynamoDB table
- In a default Amazon S3 bucket
- On all Amazon EBS volumes of the Amazon EC2 instances in that VPC

Gaining elasticity and scaling your architecture

What is meant by Desired Capacity in the context of Auto Scaling?

- The number of instances the Auto Scaling group will initially launch and which will change as Auto Scaling policies are executed.
- The number of instances the Auto Scaling group will have available at all times.
- The range of acceptable capacity usage. If capacity usage drops below or above this range, it scales in or out, respectively.
- The number of instances the Auto Scaling group will scale out to in order to handle an increase in demand.

To avoid thrashing, which of the following is an Auto Scaling best practice?

- Scale out early and scale in slowly
- Scale out quickly and scale in slowly
- Scale out early and scale in quickly
- Scale out slowly and scale in quickly

Scaling your databases

Your Amazon RDS deployment is having trouble keeping up with requests. Too many items in your database are being retrieved at once. What is the most efficient way to handle this?

- Add Read Replicas to your RDS deployment.
- Use push-button scaling to replace your master instance with a larger, more powerful instance type.
- Shard your database.
- Launch another Amazon RDS deployment in another Region, and use Amazon Route 53 to route some of the traffic there instead.

You are a solutions architect that is asked to provide a media company, which hosts is website on AWS - with guidance on how they can increase performance of their Amazon RDS instance. 99% of the company's end users are magazine subscribers who will be reading additional articles on the website, so only 1% of end users will need to write data to the site. What should you suggest to increase performance?

- Alter the connection string so that if a user is going to write data, it is written to the secondary copy of the Multi-AZ database
- Alter the connection string so that if a user is going to write data, it is written to the primary copy of the Multi-AZ database
- Recommend that the company use read replicas, and distribute the traffic across multiple read replicas
- Migrate the MySQL database to Amazon Redshift to take advantage of columnar storage and maximize performance

Your Amazon RDS deployment is slowing down from having to perform too many complex joins. What is the most efficient way to handle this?

- Add Read Replicas to your RDS deployment
- Use push-button scaling to replace your master instance with a larger, more powerful instance type
- Shard your database
- Launch another Amazon RDS deployment in another Region, and use Amazon Route 53 to route some of the traffic there instead

With Amazon DynamoDB, what's the best way to avoid having a "hot" key or "hot" partition?

- Use partition keys that have a high number of distinct values and a good level of uniformity of use between them.
- Enable DynamoDB adaptive capacity, which adds capacity automatically when hot partitions are detected.
- Use DynamoDB Auto Scaling to efficiently scale your throughput as needed.
- Set your RCU and WCU thresholds as high as possible; because you'll only pay for what you use, you'll always have capacity and won't need to scale.

Module 9

Automating your infrastructure

A firm is moving its testing platform to AWS in order to provide developers with instant access to clean test and development environments. The primary requirement for the firm is to make environments easily reproducible and replaceable. What service will help the firm meet their requirements?

- AWS CloudFormation
- AWS Config
- Amazon Redshift
- AWS Trusted Advisor

Which formats does AWS CloudFormation templates support? (Select TWO.)

- JSON
- YAML
- CSV
- RTF

Automating deployments

Your organization uses Chef heavily for its deployment automation. What AWS cloud service provides integration with Chef recipes to start new application server instances, configure application server software, and deploy applications?

- AWS Elastic Beanstalk
- Amazon Kinesis
- AWS OpsWorks
- AWS CloudFormation

You have been put in charge of managing a large group of Amazon EC2 instances. Current security policies require that instances are updated with the latest patches within 7 days of release. The security team must also have a list of instances that are in and out of compliance. The existing process consists of manually signing into each host, running updates, and then moving on to the next instance. As the application has scaled out, this process has been unable to keep up.

What is the best way to automate compliance with your company's security policy?

- Write an AWS Lambda function that will perform this task for you. Upload the key pair as an environment variable to allow the AWS Lambda function to sign into each host and run the requested commands for you.
- Use the AWS Systems Manager Run command to remotely execute updates across all of the EC2 instances.
- Create a patch baseline using the AWS Systems Manager Patch Manager. Place the EC2 instances in a patch group. Set the maintenance window to dictate when new patches will be installed.
- Create an AWS OpsWorks Stack. Migrate the instances into this stack and write a custom Chef Recipe to update the instances. Set the Chef Recipe to apply on a weekly basis.

A little more hands off

All website deployments are currently done by your company's development team. With a surge in website popularity, the company is looking for ways to be more agile with deployments. What AWS cloud service can help developers focus more on writing code instead of spending time managing and configuring servers, databases, load balancers, firewalls, and networks?

- AWS Elastic Beanstalk
- AWS Config
- AWS CloudFormation
- AWS OpsWorks

Match each AWS service below with the most appropriate description.

- AWS Systems Manager - Helps you manage Windows and Linux instances at scale, including patches and on-prem.
- AWS OpsWorks - Helps you with configuration management and application deployment.
- AWS CloudFormation - Enables you to describe and deploy your infrastructure as code.
- AWS Elastic Beanstalk - Provisions infrastructure and manages application stack based on provided source code.

Module 10

Caching overview

Which of the following objects are good candidates to store in a cache? (Select THREE.)

- Sales orders with detailed descriptions of all items sold
- The header image for a website
- Search suggestions
- Prices for online auctions that are in progress, served to prospective buyers
- A list of the items on sale this month

Which of the following objects are good candidates to store in a cache? (Select THREE.)

- Session state
- Shopping cart
- Product catalog
- Bank account balance

Caching on AWS

Which of the following is true of Amazon CloudFront? (Select THREE.)

- No direct service costs; use is included with Amazon S3 transfer out costs
- Delivers content from edge locations
- Can be used to increase the security of your architectures
- Provides traffic relief to your origin servers
- Can only be used with origins based in AWS

Your company needs to provide streaming video to authenticated users around the world. What is a good way to accomplish this?

- Enable Amazon CloudFront with geolocation and signed URLs
- Use Amazon S3 buckets in each region with website hosting enabled
- Store the videos on Amazon EBS volumes
- Run a fleet of Amazon EC2 instances to host the videos

Your company has been a victim of a Distributed Denial-of-Service (DDoS) attack in the past. You want to prevent another DDoS attack by ensuring that you can distribute your users (including illegitimate requests) across multiple regions. Which AWS service will help you achieve this?

- Amazon CloudFront
- AWS WAF
- AWS Shield
- Auto Scaling

What origin servers are supported by Amazon CloudFront? (Select THREE.)

- An Amazon Route 53 Hosted Zone
- An Amazon S3 bucket
- An HTTP server running on Amazon EC2
- An Amazon EC2 Auto Scaling Group
- An HTTP server running on-premises

Which of the following are good use cases for Amazon CloudFront? (Select TWO.)

- A popular software download site that supports users around the world, with dynamic content that changes rapidly.
- A corporate website that serves training videos to employees. Most employees are located in two corporate campuses in the same city.
- A heavily used video and music streaming service that requires content to be delivered only to paid subscribers.
- A corporate HR website that supports a global workforce. Because the site contains sensitive data, all users must connect through a corporate VPN.

Caching your database

Which of the following cache engines are supported by Amazon ElastiCache? (Select TWO.)

- MySQL
- Memcached
- Redis
- Couchbase

How many nodes can you add to an Amazon ElastiCache cluster running Memcached?

- 1
- 5
- 20
- 100

How can you back up data stored in Amazon ElastiCache running Redis? (Select TWO.)

- Create an image of the Amazon EC2 instance
- Configure automatic snapshots to back up the cache environment every night
- Create a snapshot manually
- Redis clusters cannot be backed up

You are working on a mobile gaming application and are building the leaderboard feature to track the top scores across millions of users. Which AWS services are best suited for this use case?

- Amazon Redshift
- Amazon ElastiCache using Memcached
- Amazon ElastiCache using Redis
- Amazon S3

What is the primary drawback to storing sessions on local hosts, such as servers and load balancers?

- If the node storing those sessions fails, you're likely to lose the sessions.
- It costs more than storing them on a caching service.
- Load balancers can't be used to store sessions at scale.
- Setting up local session caching creates serious security risks.

What is the primary reason that Amazon ElastiCache is faster than traditional databases?

- It uses in-memory data stores rather than disk-based databases.
- It has higher throughput than Amazon RDS instances.
- Amazon ElastiCache deployments are located at edge locations, so it can reach users more quickly.
- It isn't faster. It's about the same speed as a traditional database. The primary reason to use Amazon ElastiCache is to save on your Amazon RDS read request costs.

Match each situation below with its related caching strategy.

- The client updates a value to the database. That value is then added to the cache. – Write through
- After a cache miss, the client gets the data from the origin and then writes to the cache. – Lazy loading
- The client requests an item that has expired, so it requests the item from the origin. – Adding TTL

Module 11

Decoupling your architecture

Which of the following services are commonly used to decouple architectures? (Select THREE.)

- Elastic Load Balancing
- Amazon Simple Queue Service (Amazon SQS)
- Amazon Simple Notification Service (Amazon SNS)
- Amazon Route 53
- Amazon Elastic Block Store (Amazon EBS)

Decoupling with Amazon SQS

Which of the following are true about Amazon SQS? (Select FOUR.)

- Processes billions of messages a day
- Designed for asynchronous operations
- Replicates queues across two Regions for high availability
- Can encrypt messages with SSE
- Access to a queue is restricted to resources within that account for greater security
- Messages in standard queues are not necessarily processed in the order in which they are received

What is Amazon SQS's visibility timeout feature?

- The period of time that a message is "invisible" to the rest of the application after a component gets it from the queue
- The period of time that a new message is "invisible" to all components before it can be retrieved from the queue
- The amount of time that a message persists until it is expired if it hasn't been processed first; afterward, it's sent to the dead-letter queue
- The period of time that a message is being processed by another component and is "invisible" to the rest of the application

With Amazon SQS, when does long polling return a response? (Select TWO.)

- After a specified period of time has passed if no message has arrived
- After a specified number of messages have been added to the queue
- After the queue hasn't received a new message after a specified period of time
- When a message arrives in the message queue

When designing a loosely coupled system, which AWS service provides an intermediate durable storage layer between components?

- Amazon Simple Queue Service (Amazon SQS)
- Amazon CloudFront
- Amazon Route 53
- AWS CloudFormation

What is the default time for an Amazon SQS visibility timeout?

- 30 seconds
- 60 seconds
- 1 hour
- 12 hours

In what order can Amazon SQS deliver messages? (Select TWO.)

- Last In, First Out (LIFO)
- First In, First Out (FIFO)
- Sequentially
- Best-Effort Ordering

Your application polls an Amazon SQS queue frequently and returns immediately, often with empty ReceiveMessageResponses. What is one thing that can be done to reduce Amazon SQS costs?

- Pricing on Amazon SQS does not include a cost for service requests; therefore, there is no concern
- Increase the timeout value for short polling to wait for messages longer before returning a response
- Change the message visibility value to a higher number
- Use long polling by supplying a WaitTimeSeconds of greater than 0 seconds when calling ReceiveMessage

What is the longest configurable message retention period for Amazon SQS?

- 30 minutes
- 4 days
- 30 seconds
- 14 days

What is the default message retention period for Amazon SQS?

- 30 minutes
- 4 days
- 30 seconds
- 14 days

Decoupling with Amazon SNS

Which of the following is true about Amazon SNS? (Select FOUR.)

- Leverages the pub-sub model
- Allows you to specify within a topic which subscribers receive which messages
- Both topics and messages can be encrypted
- Your SNS topic can publish only to Amazon SQS queues, where the messages are then handled by Amazon SQS
- There is no ability to recall a message once it's been published
- Order and delivery are not guaranteed

Amazon SNS is a push notification service that lets you send individual or multiple messages to large numbers of recipients. What types of clients are supported?

- Java and JavaScript clients that support publisher and subscriber types
- Producers and consumers supported by C and C++ clients
- Mobile and AMQP support for publisher and subscriber client types
- Publisher and subscriber client types

Which of the following is NOT a supported Amazon SNS protocol?

- HTTPS
- AWS Lambda
- Email – JSON
- Amazon DynamoDB

When you create a new Amazon SNS topic, which of the following is created automatically?

- An Amazon Resource Name (ARN)
- A subscriber
- An Amazon SQS queue to deliver your Amazon SNS topic
- A message

Which of the following are features of Amazon SNS? (Select THREE.)

- Publishers
- Readers
- Subscribers
- Topics

Module 12

Building Microservices

Which of the following are characteristics of a microservices architecture? (Select THREE.)

- Tightly coupled processes
- Dependent application components that run as a single service
- Components communicate over well-defined APIs
- Each component is designed for a particular set of capabilities
- Independent application components that can be operated and scaled without affecting the other services

Container services

How are containers different from virtual machines?

- Containers are just virtual machine images designed for mass deployment
- Containers can't be hosted on bare metal servers
- Containers don't have a hypervisor and work directly with the operating system kernel
- Containers include the host operating system within them

Which of the following is true about Amazon ECS? (Select TWO.)

- Can scale a fleet of containers automatically
- Requires an agent be set up on a container to monitor the container
- Has a built-in scheduler
- Must be run with On-Demand instances

Match the container terminology to the correct description.

- Dockerfile – File used to build Docker image
- Image – File for Docker containers at runtime
- Registry – Version control system for Docker images (centralized repository)
- Container – Runnable instance on an image
- Host – Machine that containers are run on

Which of the following statements is TRUE about containers?

- AWS Fargate is a compute engine for Amazon ECS that enables you to run containers without having to manage servers or clusters.
- Amazon ECS, Amazon EKS or an orchestration package on Amazon EC2 can provision and scale a cluster of servers to meet your application's needs.
- When using AWS Fargate, the containers running in your task definition do not consume CPU and memory, so you only pay for resources on a per-second basis.
- With EC2 launch type you can package your applications in a container, specify CPU and memory, define networking and IAM policies and launch your application.

Which of the following services are appropriate when building serverless architectures? (Select FOUR.)

- AWS Lambda
- Amazon API Gateway
- Amazon S3
- Amazon DynamoDB
- Amazon RDS
- Amazon EC2
- Amazon VPC
- Amazon EBS

Going serverless

Which of the following is true about AWS Lambda? (Select THREE.)

- Runs stateless code
- Can run at Edge Locations
- Runs your code on a schedule by default
- Includes within each function a handler for receiving events
- Can only be triggered by events from Elastic Load Balancers, Amazon SQS, or Amazon API Gateway

Which of the following is true about Amazon API Gateway? (Select THREE.)

- It's recommended as a layer of defense against DDoS attacks
- It allows you to host multiple versions of your APIs
- It's deployed within an AWS Region
- AWS recommends you deploy two gateways and enable Amazon API Gateway Failover as it is not highly available by default

Module 13

Disaster planning

Which of the following is high availability measured by?

- Application uptime
- Application errors
- Component failures
- Security breaches

What is the term for the acceptable amount of data loss measured in time?

- Recovery point objective
- Recovery time objective

How can you leverage Amazon Route 53 for your disaster recovery needs?

- It can automatically fail over to infrastructure in another Region
- You can serve cached static content from it directly, without having to reach resources that might be unavailable
- It can detect when a VPC is receiving too much traffic and switch to a different kind of routing method
- When it detects an unhealthy Region, it can launch a replica of your Region's infrastructure into another Region and fail over to it

Which of the following are actual Amazon RDS disaster recovery features? (Select THREE.)

- Snapshots can be saved to another Region.
- Read Replicas can be deployed and promoted to primary instances.
- Backups can be performed automatically on a schedule.
- Amazon ElastiCache can be used to back up your Amazon RDS database and serve as a backup when your RDS database goes down.
- Amazon RDS databases are replicated across regions by default, so you have built-in disaster recovery protection

You deploy a new version of your application to your existing AWS Elastic Beanstalk stack. This deployment causes your entire application to become unavailable. What should you do?

- Use Elastic Beanstalk's built-in feature to roll back to the previous version of your application.
- Deploy a new stack of the previous version of your application, and use Amazon ELB to route traffic to the new stack automatically.
- Let Elastic Beanstalk's automatic rollback feature take over. It will detect the failure and roll back to your earlier version by default.

Recovery strategies

Your company data center is completely full, but the sales group has determined a need to store 200TB of product video. The videos were created over the last several years, with the most recent being accessed by sales the most often. The data must be accessed locally, but there is no space in the data center to install local storage devices to store this data. What AWS cloud service will meet sales' requirements?

- AWS Storage Gateway Gateway-Stored volumes
- Amazon EC2 instances with attached Amazon EBS volumes
- AWS Storage Gateway Gateway-Cached volumes
- AWS Import/Export Disk