# Understanding AWS Core Services

## *Guided Notes*

I am excited that you are on the journey to get your AWS Certified Cloud Practitioner certification. This guided outline is meant to complement the video course. Here are a few tips to help you get the most out of these resources:

1. Print this out before you start the video course.
2. Follow along with the course and fill out areas in this document as you watch the course. You'll notice that the module names in the course are the bold headings here in these notes. In addition, clips in the module have their titles in this document too. Not all clips have notes.
3. Review your notes against the completed notes that can be found in the exercise files.
4. Keep this document after you finish the course as a part of the materials you will use to study for the exam.

Remember, this course is just the first step in your journey to achieve this certification. Follow along with the remainder of courses in this path, and then register for the exam.

Don't forget to reach out on Twitter and LinkedIn to let me know how you are doing along the way.

# Interacting with AWS

## Learning Outcomes

- Interaction Methods
  - AWS Console
    - You should know what use cases would be best to be done within the AWS console
    - Know how to login to the console
  - AWS Command Line Interface (CLI)
    - You should know when it would make sense to leverage the CLI
    - Know where to find the installation instructions for your platform
  - AWS Software Development Kit (SDK)
    - Know when the use of the SDK makes sense

## Links You'll Need

- AWS Console
- AWS CLI Installation Instructions
- AWS SDK's

## Methods of Interacting with AWS

Three methods of interacting with AWS services:

1. ***AWS Console***
2. ***AWS CLI***
3. ***AWS SDK***

The AWS Management Console is a ***web*** and ***mobile app*** based interface for interacting with most all of the 150+ AWS services. All major browsers and mobile operating systems are supported.

The AWS SDK is supported in the following languages:

| | | |
|---|---|---|
| *Java* | *.NET* | *Node.js* |
| *JavaScript (Browser)* | *PHP* | *Python* |
| *Ruby* | *Go* | *C++* |

## Using the AWS CLI

Generating an access key:

1. Log into the AWS Console.
2. Select your username in the top bar and select My Security Credentials in the dropdown menu.
3. Next, select the Access Keys option.
4. Select the option to Create New Access Key (if this is a root account, you should delete these when you are done with them)
5. Download your key file
6. Install the CLI based on the installation instructions
7. Run AWS configure and pass in the access key and secret key that you just created.

You should now be able to leverage the AWS CLI at this point.

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Roger's company runs several production workloads in AWS
- They have a new web application that manages digital assets for marketing
- They need to automatically create a user account in Amazon Cognito on sign-up
- They want this step seamlessly integrated into the application
- Which interaction method would Roger's company use for this?

What's Your Answer: ***Software Development Kit (SDK)***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- Eliza's company is considering transitioning to AWS
- They want to leverage Amazon Relational Database Service
- Eliza wants to test out a single database on the service
- What interaction method would Eliza use for this use case?

What's Your Answer: ***AWS Console***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## SCENARIO 3

- Jennifer's company is a startup
- They created a social network for entrepreneurs with a web and mobile app
- Jennifer has a set of tasks she needs to run on AWS each day to generate reports
- What interaction method would Jennifer use for this use case?

What's Your Answer: ***AWS Command Line Interface (CLI)***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# Compute Services

## Learning Outcomes

- Understand the three different compute services that we introduced in this module:
  - Amazon EC2
    - Be able to define EC2 and what it does
    - Know what instance types are for EC2 and what capabilities they cover
    - Know when to use the different purchase types for EC2
    - Understand what an AMI is and what it provides to an EC2 instance
  - AWS Elastic Beanstalk
    - Be able to explain what Elastic Beanstalk is and how it differs from EC2
    - Know the different capabilities that are included with the service
  - AWS Lambda
    - Be able to define Lambda and explain how it differs from both EC2 and Elastic Beanstalk
    - Understand how you are charged for Lambda usage
    - Note that Lambda is the core of a serverless approach

## Links You'll Need

- Amazon EC2
- AWS Elastic Beanstalk
- AWS Lambda
- AWS Elastic Beanstalk - Sample Applications

## Amazon EC2 Overview

"Amazon EC2 is a web service that provides resizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers." - Amazon Web Services

The four concepts that we need to know to launch an EC2 instance are:

1. ***Instance Types***
2. ***Root Device Type***
3. ***Amazon Machine Image (AMI)***
4. ***Purchase Option***

The instance type defines the ***processor*** _____, memory, and ***storage type*** _____.

The two root device types for an EC2 instance are:

***Instance store*** _____ - Ephemeral storage that is physically attached to the host the virtual server is running on

***Elastic Block Store (EBS)*** _____ - Persistent storage that exists separately from the host the virtual server is running on

## Amazon EC2 Purchase Types

Amazon EC2 Purchase Options

1. ***On-demand*** _____ - You pay by the second for the instances that are launched

2. ___Reserved___ - You purchase at a discount instances in advance for 1-3 years
3. ___Spot___ - You can leverage unused EC2 capacity in a region for a large discount

Reserved Instance Cost Models:

___All Upfront___ - Entire cost for the 1 or 3 year period is paid upfront

___Partial Upfront___ - Part of 1 or 3 year cost is paid upfront along with a reduced monthly cost

___No Upfront___ - No upfront payment is made, but there will be a reduced monthly cost

## Launching EC2 Instances

1. Log into the AWS Console.
2. Open the EC2 service dashboard (search for EC2 in the 'Find Services' input).
3. Select the **Launch Instance** option.
4. Select the Amazon Linux 2 AMI.
5. Be sure that the **t2.micro** instance type is selected (it should be selected by default). Select the **Next** button.
6. Set the **Auto-assign Public IP** option to **Enable**.
7. Scroll down to **Advanced Details** and open these settings. In the **User data** field, enter the text included below these instructions. Select the **Next** button.
8. Leave the storage settings with their default values. Select the **Next** button.
9. Add tags if you would like. Select the Next button.
10. In the Configure Security Group settings view, change the Source for the SSH type to be **My IP Address**.

11. Next. select the **Add Rule** button. In the new role, set the type to be **HTTP**. Select the **Next** button.
12. Next, select **Launch**.
13. Create a keypair (if you don't have one) and then select **Launch Instance**.
14. Next, select the ID of the server that you just launched.
15. Once the instance has transitioned from pending to running, copy the public DNS into your browser. You should see the test page in your browser.
16. Finally, back in the AWS console select the instance and then navigate to **Actions**. Select **Instance State - Terminate**. Confirm your decision.

User Data:

```
#!/bin/bash
yum install httpd -y
service httpd start
```

## AWS Elastic Beanstalk Overview

Elastic Beanstalk is a ___*platform*___ as a service solution on AWS.

Note the Supported Application Platforms for Elastic Beanstalk:

***Java, .NET, PHP, Node.js, Python, Ruby, Go, Docker***

## Launching an App on Elastic Beanstalk

1. Navigate to the Elastic Beanstalk Tutorials and Samples page. Select a sample application to download to your local machine.
2. Log into the AWS console and navigate to the Elastic Beanstalk service page.
3. If you see the "Welcome to AWS Elastic Beanstalk" screen, select **Get Started**.
4. In the screen that follows, give your application a name and select the platform (it will need to be the same platform as the sample application you downloaded.
5. Select the option to upload your code, and then upload the zip file you downloaded that contains your sample application.
6. Select the option to **Configure More Options**.
7. Next, review the settings for this environment. Select **Create app**.
8. Wait for the application and then navigate to the URL near the top of the page.
9. After viewing the application, navigate back to the console and select **Actions - Terminate Environment.**

## AWS Lambda Overview

"_____*AWS Lambda*_____ lets you run code without _____*provisioning*_____ or _____*managing*_____ servers. You pay only for the compute time you consume. You can run code for virtually any type of application or backend service - all with zero administration." - Amazon Web Services

AWS Lambda is the primary service for _____*serverless*_____ architectures.

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Sylvia's company is in the process of moving multiple workloads into AWS
- One workload is an application that will be leveraged for at least 5 more years
- The organization is looking to be as cost efficient as possible for its EC2 usage
- What EC2 purchase option should be chosen for this application?

What's Your Answer: ***All Upfront Reserved – 3 years***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- Edward is looking to deploy his PHP web application to a virtual server
- He doesn't have experience managing EC2 instances on AWS
- He needs the ability to scale this application to meet user demand
- What is the best compute option for Edward based on these criteria?

What's Your Answer: ***AWS Elastic Beanstalk***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 3

- Cindy's company is transitioning to the cloud for its data processing workloads
- These workloads happen daily and can start or stop without a problem
- This workload will be leveraged for at least one year
- What EC2 purchase option would be the most cost-efficient choice?

What's Your Answer: *Spot Instances*

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# Content and Network Delivery Services

## Learning Outcomes

- Be able to explain the purpose of each of the following services:
  - Amazon Route 53
  - Amazon Virtual Private Cloud (VPC)
  - AWS Direct Connect
  - Amazon API Gateway
  - Amazon CloudFront
  - Elastic Load Balancing
- Be able to explain the differences between two cloud scaling approaches:
  - Vertical Scaling (scale up)
  - Horizontal Scaling (scale out)

## Helpful Links

- Amazon Route 53
- Amazon VPC
- AWS Direct Connect
- Amazon API Gateway
- Amazon CloudFront
- Elastic Load Balancing

## Amazon VPC and Direct Connect

Write the definition for Amazon Virtual Private Cloud (VPC):

***A logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define.***

***AWS Direct Connect*** - A cloud service solution that makes it easy to establish a dedicated network connection from your data center to AWS.

## Amazon Route 53

Amazon Route 53 is a ___*global*___ service (meaning it does not require region selection).

## Elastic Load Balancing

Distributes traffic across multiple ___*targets*___

Integrates with ___*EC2*___, ___*ECS*___, and ___*Lambda*___.

Types of load balancers:

1. ***Application Load Balancer (ALB)***
2. ***Network Load Balancer (NLB)***
3. ***Classic Load Balancer***

Types of Scaling:

___*Vertical*___ Scaling - You "scale up" your instance type to a larger instance type with additional resources

___*Horizontal*___ Scaling - You "scale out" and add additional instances to handle the demand of your application

## Amazon CloudFront and API Gateway

CloudFront utilizes AWS ___*edge*___ ___*locations*___.

Supports both ___*static*___ and ___*dynamic*___ content.

*Amazon API Gateway* is a fully managed API management service.

## AWS Global Accelerator

The AWS Global Accelerator is a networking service that can route your traffic through the AWS *global* *network* *infrastructure* to improve performance.

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Jane's company maintains two corporate data centers
- They want their data centers to work alongside AWS for specific workloads
- She is wondering if there is a way to have a persistent connection to AWS
- What service from AWS would you recommend her company implement?

What's Your Answer: *AWS Direct Connect*

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- Tim's company serves content through their site to users around the globe
- They are looking to optimize performance to users around the world
- They want to leverage a Content Delivery Network (CDN)
- Which service would enable optimized performance globally for their content?

What's Your Answer: *Amazon CloudFront*

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## SCENARIO 3

- Ellen's company has an internal application that runs on an EC2 server
- Currently there is downtime as demand is greater than capacity for the server
- Ellen is trying to decide if she should use bigger servers or more servers
- Which scaling approach would you recommend and what services should they use?

What's Your Answer: ***Horizontal Scaling using Elastic Load Balancing***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# File Storage Services

## Learning Outcomes

- Be able to explain the core features of Amazon S3
  - Different storage classes
  - Multiple availability zone (durability)
  - URL file access
  - Lifecycle policies
  - S3 Transfer Acceleration
- Be able to identify when S3 Glacier or S3 Glacier Deep Archive would be a good choice
- Know the differences between the two EC2 storage options:
  - Elastic Block Store (EBS)
  - Elastic File Store (EFS)
- Understand when the data transfer services should be leveraged
  - AWS Snowball
  - AWS Snowmobile

## Helpful Links

- Amazon S3
- Amazon S3 Glacier
- Amazon Elastic Block Store (EBS)
- Amazon Elastic File System (EFS)
- AWS Snowball
- AWS Snowmobile

## Amazon S3 Overview

**S3 Non-Archival Storage Classes**

| Storage Class | Description |
|---|---|
| `S3 Standard` | the default storage class and is for frequently accessed data |
| `S3 Intelligent-Tiering` | will move your data to the correct storage class based on usage |
| `S3 Standard - IA` | for infrequently accessed data with the |

| | |
|---|---|
| | standard resilience |
| ***S3 One Zone Infrequent Access*** | is for infrequently access data that is only stored in one AZ |

***S3 Transfer Acceleration*** is a feature that can be enabled per bucket that allows for optimized uploading of data using the AWS Edge Locations as a part of Amazon CloudFront.

## Hosting a Website on Amazon S3

1. Log into the AWS Console, and select the S3 service.
2. Click the **Create Bucket** button.
3. In the dialog, give the bucket a unique name and click **Next**.
4. In the next view, you can simply click **Next**.
5. Deselect the option to **Block all Public Access**. Once the warning appears you will need to click the checkbox in the acknowledgement. Click **Next**.
6. In the Review view, you can click the Create Bucket button.
7. Next, click on the newly created bucket in the list.
8. Next, click the **Upload** button. From the dialog, click the **Add Files** button.
9. Select the files from the exercise files. Click **Next**.
10. From the Permissions view, you can click **Next**.
11. In the properties view, leave the default storage class. Scroll down and set encryption to the **Amazon S3 Master Key**. Click **Next**.
12. From the Review view, click **Upload**.
13. Select the ps-logo.jpg file from the list. Attempt to navigate to the Object URL for this image.
14. Navigate back to the console and click on the image in the list. Click the permissions option to edit the permissions.
15. Scroll down to the section titled **Public Access** and select the **Everyone** group.
16. Be sure that **Read object** option is selected in the dialog. Click **Save**.
17. Reload the image URL, and it should load without issue.
18. Back in the console, navigate to the bucket and then select the Properties tab.
19. From the properties tab, select Static Website Hosting.
20. Next, select the option to **Use this bucket to host a website**. Enter index.html for the index document, Click **Save.**
21. Navigate to the URL for the static website hosting option. You will see that it is forbidden.
22. Next, navigate back to the console and select the index.html file. Update the permissions just as you did for the image.
23. Next, navigate back to the static website hosting URL. The site should now work.

## Glacier and Glacier Deep Archive

Both S3 Glacier and Glacier Deep Archive are designed for _____*archival*_____ of data within S3 as a separate storage class.

*Fill in the missing spots in the table below comparing S3 Glacier with S3 Glacier Deep Archive:*

| S3 Glacier | S3 Glacier Deep Archive |
|---|---|
| Designed for archival data | *Designed for archival data* |
| *90 days minimum storage* | *180 days minimum storage* |
| *Can be retrieved in either minutes or hours* | Can be retrieved in hours |
| You pay a fee for GB retrieved | *You pay a fee per GB retrieved* |
| *Over 5 times less expensive than S3 Standard storage class* | *Over 23 times less expensive than S3 Standard storage class* |

## Elastic Block Store

Amazon Elastic Block Store (EBS) is _____*block*_____ storage designed to be connected to a single _____*EC2*_____ instance that can scale to support _____*petabytes*_____ of data and supports multiple volume types based on need.

*Please fill in the following table related to EBS volume types:*

| Volume Type Name | Description |
|---|---|
| General Purpose SSD | ***Cost effective type designed for general workloads*** |
| ***Provisioned IOPS SSD*** | high performance volume for low latency applications |
| ***Throughput Optimized HDD*** | is designed for frequently accessed data |
| Cold HDD | ***Designed for less frequently accessed workloads*** |

## Elastic File System

Amazon Elastic File System (EFS) is a fully managed ***NFS*** file system designed to support ***Linux*** workloads.

Amazon FSx for ***Windows File Server*** is a fully managed native Windows file system.

## Data Transfer with AWS Snowball

*Please fill in the following table related to data transfer services on AWS:*

| AWS Snowball | AWS Snowmobile |
|---|---|
| Designed for large-scale data transfer | *Designed for large-scale data transfer* |
| *Supports petabyte scale transfer* | Supports exabyte scale transfer |
| Physical device is delivered by AWS | *Ruggedized shipping container is delivered to your location* |
| *You connect the Snowball to your network and upload your data* | *AWS sets up a connection to your network* |
| *Device is returned by local carrier* | *You load your data on the Snowmobile* |
| *AWS receives data and loads your data into S3* | AWS will load data into S3 when the container is received at an AWS location |

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Elaine launched a site that offers daily tutorials for developers
- She uses S3 to store the assets needed per tutorial
- These assets are very popular within the week the tutorial is launched
- After this initial week, these assets are rarely accessed
- How could Elaine reduce her S3 costs while maintaining durability?

What's Your Answer: ***S3 Lifecycle rules with S3-Standard IA storage class***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- Esteban works for a social networking company and they are moving to AWS
- They have 2 PB of user-generated content that they need to migrate
- Esteban is trying to determine if there is a faster than uploading over the internet
- Would there be another approach you would recommend for Esteban's company?

What's Your Answer: ***AWS Snowball***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 3

- Emily works for a company that produces a messaging app
- She is looking for a shared file system between 8 different Linux EC2 instances
- The file system would need to support roughly 1 PB of data
- What approach would you recommend for Emily?

What's Your Answer: ***Amazon Elastic File System***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# Database Services and Utilities

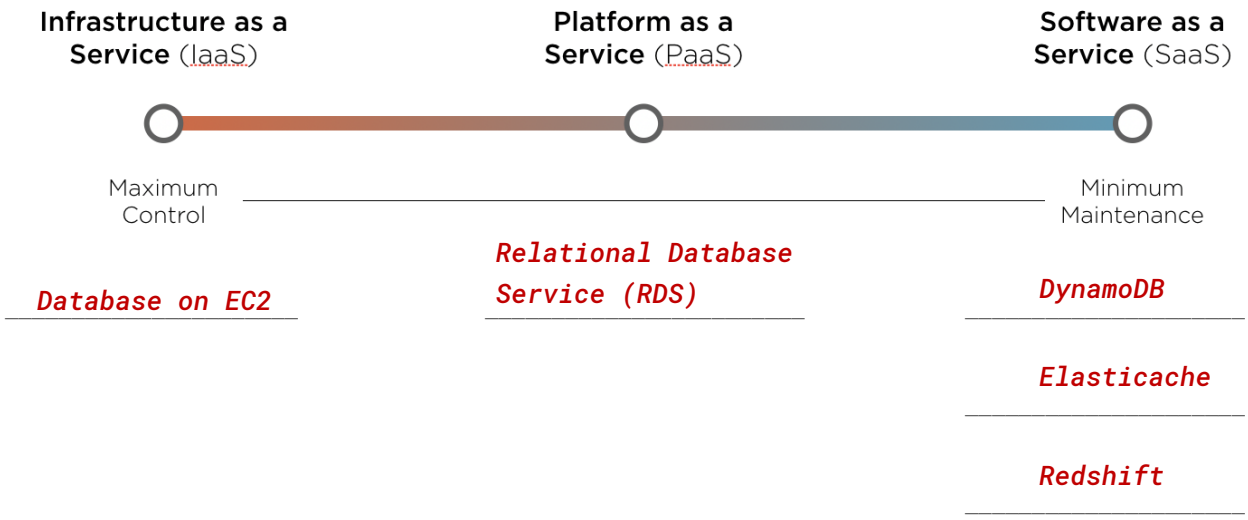
## Learning Outcomes

- Be able to define the following database services:
  - Amazon Relational Database Service (RDS)
    - Understand what the Amazon Aurora database engine is within RDS
  - Amazon DynamoDB
  - Amazon Elasticache
- Be able to define the following data warehousing services and know when they would be used
  - Amazon Redshift and Redshift Spectrum
- Know when someone would leverage the AWS Database Migration Service

## Helpful Links

- Amazon RDS
- Amazon Aurora
- Amazon DynamoDB
- Amazon Redshift and Redshift Spectrum
- Amazon Elasticache
- AWS Database Migration Service

## Overview



## Amazon Relational Database Service

Amazon RDS is a fully managed service for _____*relational*_____ databases.

Supported Amazon RDS Platforms:

1. *MySQL*
2. *PostgreSQL*
3. *MariaDB*
4. *Oracle*
5. *SQL Server*
6. *Amazon Aurora*

"_____*Amazon Aurora*_____ is a MySQL and PostgreSQL-compatible relational database built for the cloud, that combines the performance and availability of traditional enterprise databases with the simplicity and cost-effectiveness of open-source databases." - Amazon Web Services

## Amazon DynamoDB Overview

Amazon DynamoDB is a fully managed _____*NoSQL*_____ database service.

"DynamoDB can handle more than _____*10 Trillion*_____ requests per day and can support peaks of more than _____*20 Million*_____ requests per second." - Amazon Web Services

## Amazon Elasticache & Redshift

Amazon Elasticache is an in-memory data store that supports the ___Memcached___ and ___Redis___ engines.

*Enter the service name based on the description:*

| Service | Description |
|---|---|
| *Amazon Redshift* | Data warehousing solution that supports petabytes of data |
| *Amazon Redshift Spectrum* | Service that enables querying exabytes of data stored in S3 |

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Jennifer is an IT executive in a financial services company
- They are transitioning their data warehouse to AWS for analysis
- The data warehouse would need to support up to 2 PB of data
- Which approach would you recommend for Jennifer?

What's Your Answer: ***Amazon Redshift***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- Sam is a DevOps engineer at a tech company
- Sam needs to launch a MySQL database for a new web application
- They need to have direct access to the virtual server that MySQL is running on
- What approach would you recommend for Sam's company?

What's Your Answer: ***Database on EC2***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## SCENARIO 3

- Frank is the CTO at a gaming company
- They are trying to determine how to store real-time user analytics
- They need low latency and the ability to scale to handle up to 1 million players
- Frank wants to minimize the amount of time it takes to maintain the database
- Which AWS approach would you recommend for Frank?

What's Your Answer: ***DynamoDB***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# App Integration Services

## Learning Outcomes

- Be able to define the AWS messaging services but also know the differences in how they work
  - Amazon Simple Queue Service (SQS)
    - Know the two types of queues and how they are different
    - Be able to explain how SQS can enable fault tolerance
  - Amazon Simple Notification Service (SNS)
- Understand the purpose of AWS Step Functions and how they are defined

## Helpful Links

- Amazon Simple Queue Service (SQS)
- Amazon Simple Notification Service (SNS)
- AWS Step Functions

*DynamoDB*

## AWS Messaging Services

*Fill in the service in the table based on the description:*

| Service | Description |
|---|---|
| *Amazon SNS* | Fully managed pub/sub messaging service |
| *Amazon SQS* | Fully managed message queue service |

Within Amazon SNS, messages are organized according to *topics* .

Within Amazon SQS, messages are organized into *queues*. There are two types of these. They are *standard* and *fifo*.

## AWS Step Functions

***AWS Step Functions*** enables orchestration of workflows through a fully managed service.

With AWS Step Functions, you are charged per ***state*** ***transition***.

Within AWS Step Functions, workflows are defined using ***Amazon States Language***.

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Ruth started a non-profit that assigns volunteers to opportunities
- Recently their database server went down, and users were unable to signup
- While the situation is better, there is still some downtime expected in the future
- She wants to explore an AWS service that could prevent lost user signups
- What service would you recommend to Ruth?

What's Your Answer: ***Amazon Simple Queue Service (SQS)***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- Jessi created a list of onboarding steps for new customers for their new app
- These steps detail integrations with their CRM, emails to the user, and analytics
- Jessi is worried about the time it will take to build all of this from scratch
- Is there an AWS service that can help with this approach?

What's Your Answer: ***AWS Step Functions***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## SCENARIO 3

- Roger's company is an eCommerce company building a custom platform
- They are still adding new functionality
- He wants aspects of the platform to listen for events like orders and refunds
- They don't yet know all of the elements that would need to respond to events
- Is there a service that would allow current and future parts of the platform to listen for these events?

What's Your Answer: ***Amazon Simple Notification Service (SNS)***

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# Management and Governance Services

## Learning Outcomes

- Understand the benefit of AWS CloudTrail
  - Know where CloudTrail logs can be stored
- Know what services can help you monitor your AWS infrastructure
  - Amazon CloudWatch
  - AWS Config
- Be able to explain the purpose of AWS Systems Manager
- Be able to explain the value of launching infrastructure with AWS CloudFormation
- Be able to explain the purpose of AWS Control Tower

## Helpful Links

- AWS CloudTrail
- Amazon CloudWatch
- AWS Config
- AWS Systems Manager
- AWS CloudFormation
- AWS Control Tower
- AWS OpsWorks

## AWS CloudTrail

"_____ provides event history of your AWS account activity, including actions taken through the AWS Management Console, AWS SDKs, command line tools, and other AWS services." - Amazon Web Services

***AWS CloudTrail***

CloudTrail inserts an audit trail in an _____ or into _____.

***S3 Bucket***

***CloudWatch Logs***

## Amazon CloudWatch and AWS Config

Fill in the following table by entering the service name based on the description:

| Service | Description |
|---|---|
| *Amazon CloudWatch* | Provides metrics, logs, and alarms for infrastructure |
| *AWS Config* | Continually evaluates infrastructure against a set of rules |
| *AWS Systems Manager* | Provides operational data and automation across infrastructure |

*Amazon CloudWatch* allows for custom dashboards based on collected metrics.

"*AWS Config* continuously monitors and records your AWS resource configurations and allows you to automate the evaluation of recorded configurations against desired configurations." - Amazon Web Services

AWS Config provides specific *Conformance packs* with rules for specific compliance standards.

## AWS Systems Manager

*AWS Systems Manager* provides multiple tools that make it easier to manage your AWS infrastructure.

## AWS CloudFormation

_____*AWS CloudFormation*_____ is a managed service for provisioning infrastructure based on templates. The templates can be written in _____*YAML*_____ or _____*JSON*_____.

_____*Drift detection*_____ is a feature that enables you to find changes in your infrastructure after it was launched by CloudFormation.

## AWS OpsWorks

"AWS OpsWorks is a _____*configuration*_____ _____*management*_____ service that provides managed instances of _____*Chef*_____ and _____*Puppet*_____."

## AWS Organizations and Control Tower

**AWS Control Tower** - A service to create a _____*Multi-account*_____ environment on AWS that follows the recommended best practices in operational efficiency, security, and governance. It provides a way to create new AWS accounts based on _____*templates*_____.

## Scenarios

*The following scenarios are presented in the course as a way to explore your understanding of the module. Include your answer here in this outline, as well as your notes on the solution to each scenario.*

### SCENARIO 1

- Elliott is an operations engineer at a financial services company
- He recently discovered that someone had disabled a security setting on a server
- He is concerned that events like this might go unnoticed until a breach
- Which service would allow the organization to continually track configuration of infrastructure?

What's Your Answer: *AWS Config*

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 2

- James is the lead architect at a SaaS company
- They will be launching a new application that includes several components
- He is looking to minimize manual work required when creating infrastructure
- What service would enable James to automate much of this effort?

What's Your Answer: *AWS CloudFormation*

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

### SCENARIO 3

- Candace is the CTO at a manufacturing company
- A cloud server needed to support their manufacturing process was deleted
- They want to make sure the follow up with the person who deleted this instance
- Which service could show the individual that deleted this specific server?

What's Your Answer: ***AWS CloudTrail*** _____

Why did you pick this answer:

If you didn't get this one right, what insight did you gain from the explanation:

## Module Wrap Up

Take a minute to write down any areas from this module that you don't fully understand or where you still have questions:

# Next Steps

Complete all of the courses in this path to prepare for your AWS Certified Cloud Practitioner exam. In the last course of this path, we will include steps for registering, studying, and taking the exam.

## Stay in Touch

If you have questions along the way, feel free to reach out to **David Tucker** on Twitter (@_davidtucker_) or through his website. Also, feel free to connect on LinkedIn.

## For More Information

As a part of creating this course, the following resources from Amazon Web Services were referenced. If you want to learn more, feel free to go check out these resources directly:

- AWS Services
- Amazon EC2
- AWS Lambda
- Amazon Aurora
- Amazon DynamoDB
- AWS Config