AWS
Certified DevOps Engineer
– Professional level

By

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AWS – Certified DevOps Engineer- Course Introduction

1. Auto Scaling Deployment Concepts
   - How to configure Auto Scaling & Deploy applications using Auto Scaling.
2. Deployment Concepts with EC2
   - Using EC2 in deployments including EC2 logging and Backup Strategies.
3. Cloud Watch For DevOps
   - Utilizing Cloud Watch for DevOps including Monitoring & Logging.
4. CloudFormation for DevOps
   - Utilizing CloudFormation to deploy infrastructure on AWS
5. Elastic Beanstalk for DevOps
   - Using Elastic Beanstalk to quickly deploy applications on AWS.
6. Application Deployments with OpsWorks
   - Using OpsWorks to create and Manage resources for our applications, as well as managing the applications themselves.

7. DynamoDB Concepts

Reviewing the basics of DynamoDB as well as understanding the role of DynamoDB and its use cases in DevOps.

8. Data Pipeline with DynamoDB

We will use AWS Data Pipeline to retrieve data from a tab-delimited file in Amazon S3 to populate a DynamoDB table, use a Hive script to define the necessary data transformation steps, and automatically create an Amazon EMR cluster to perform the work.

9. S3 Concepts for DevOps

Utilizing S3 buckets as a key repository for DevOps via Cross-Account Access.

10. A/B Testing

A/B Testing concepts for DevOps

11. Blue/Green Deployments

Using Automation for DevOps to facilitate Blue/Green Deployments.

1. Auto Scaling Deployment Concepts

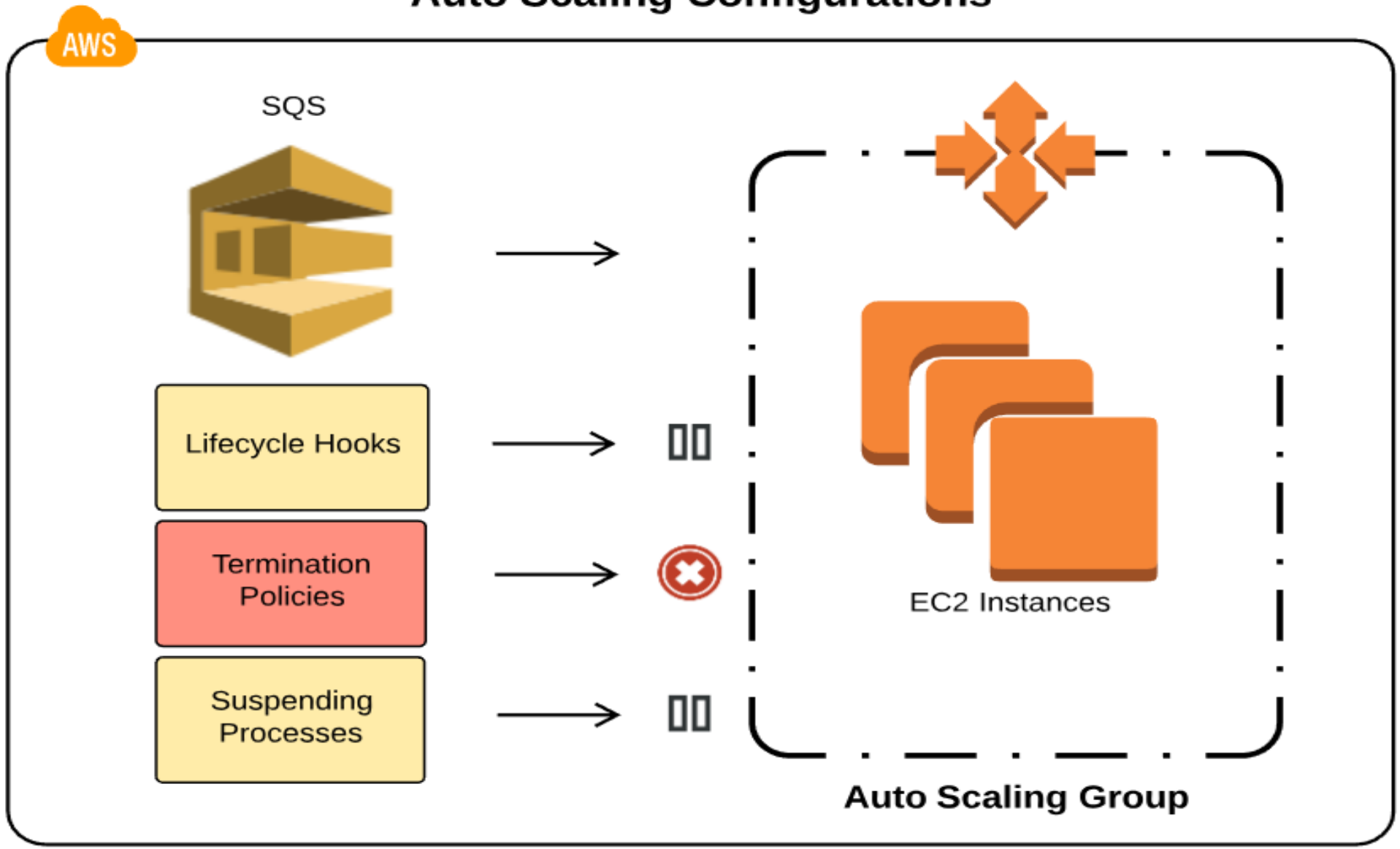
A DevOps Engineer will spend time in:

- Creating
- Monitoring &
- Tune Auto Scaling Groups

You will be learning:

- Auto Scaling
- Termination Policies
- Suspending Auto Scaling Processes
- LifeCycle Hooks
- Controlling instance &
- Application Deployment

Auto Scaling Configurations

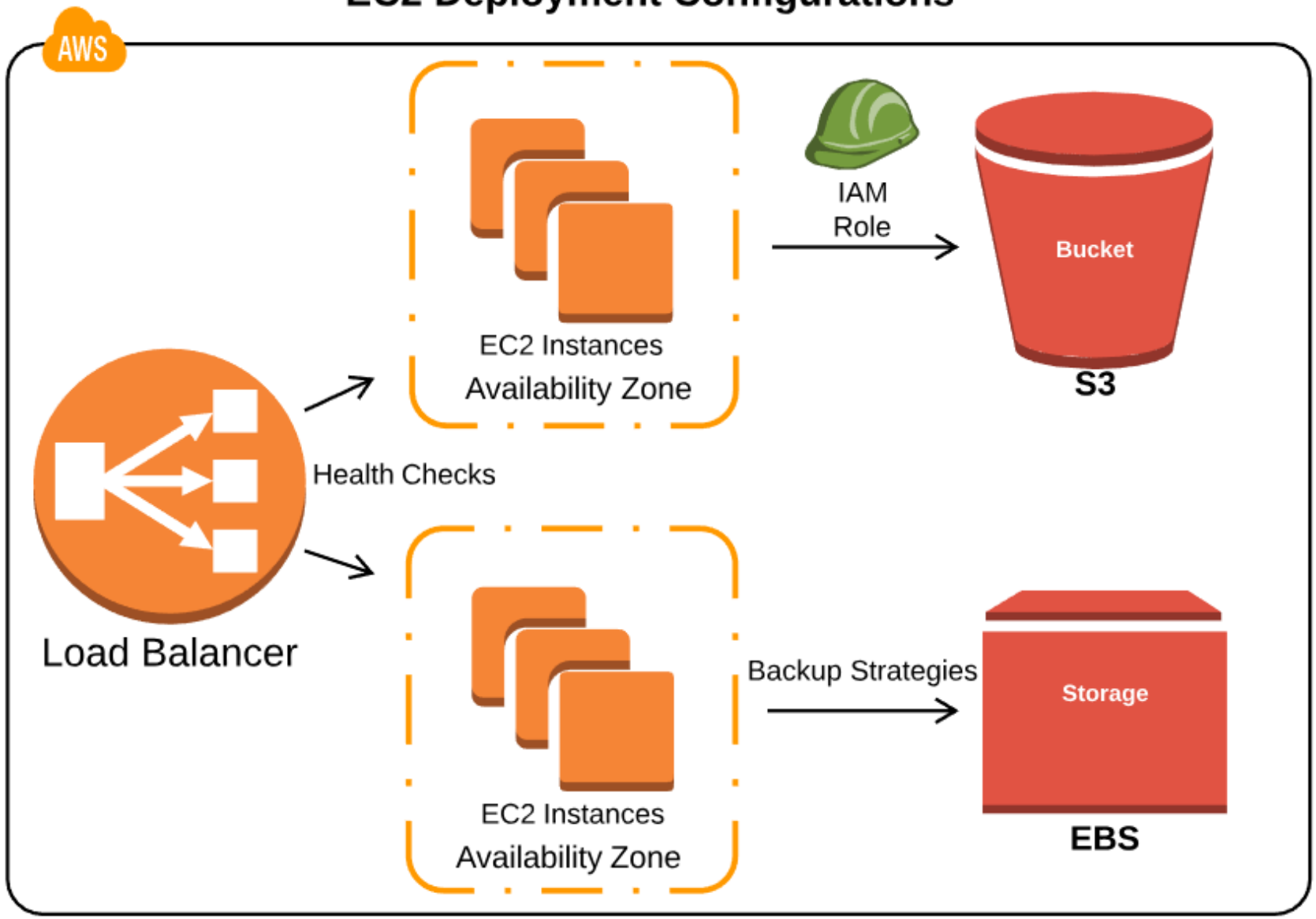


2. Deployment Concepts With EC2

- A DevOps engineer will be required to work with EC2 instances and a key will be using various techniques to backup EC2 instances.
- Elastic Load Balancers as a part of Deployments will be a common tool in the DevOps engineer's toolset.
- The ability to configure ELB's securely, with appropriate Health Checks, and to configure logging will be required both professionally and as a demonstrable skill.

1. IAM Roles with EC2
2. ELB & EC2 logging
3. ELB Health Checks
4. ELB Security
5. EC2 Backup Strategies

EC2 Deployment Configurations

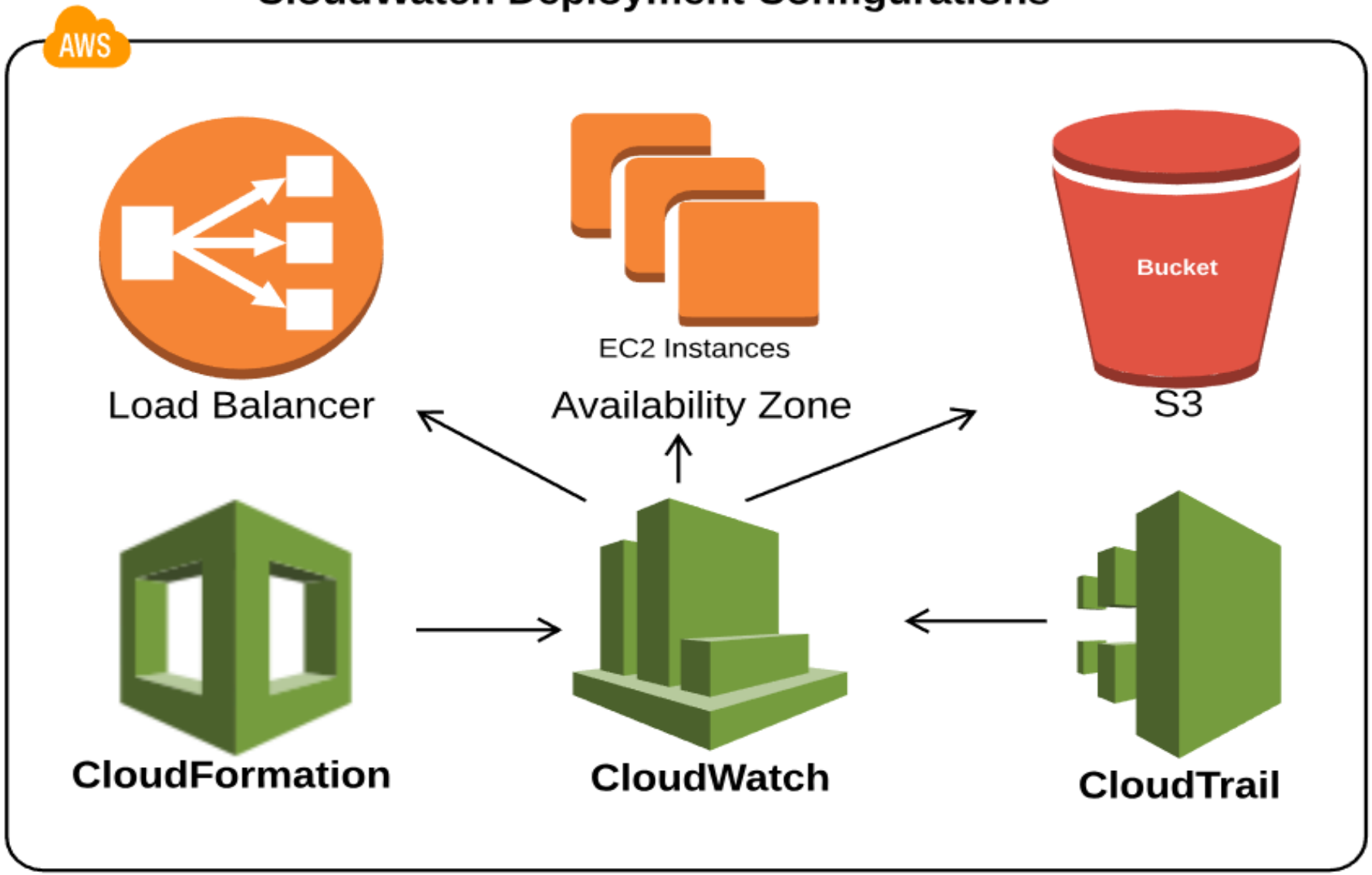


3. Cloud Watch For DevOps

- Cloud Watch is an essential tool for the DevOps Engineer.
- Cloud Watch supports the DevOps concepts of Automation, Communication, and Collaboration, by giving access to Monitoring and logging.
- Cloud Watch metrics can be used to work with Elastic Load Balancers and determine the scaling actions of Auto Scaling Groups.
- Custom Metrics are a very Powerful tool which allow the DevOps engineer to leverage Cloud Watch monitoring in a Wide range of scenarios.

1. Concepts & Terminology
2. ELB Metrics
3. Auto Scaling & EC2 Metrics
4. EC2 OS & Application Logging
5. Using SNS with Cloud Watch
6. Using Kinesis with Cloud Watch

CloudWatch Deployment Configurations

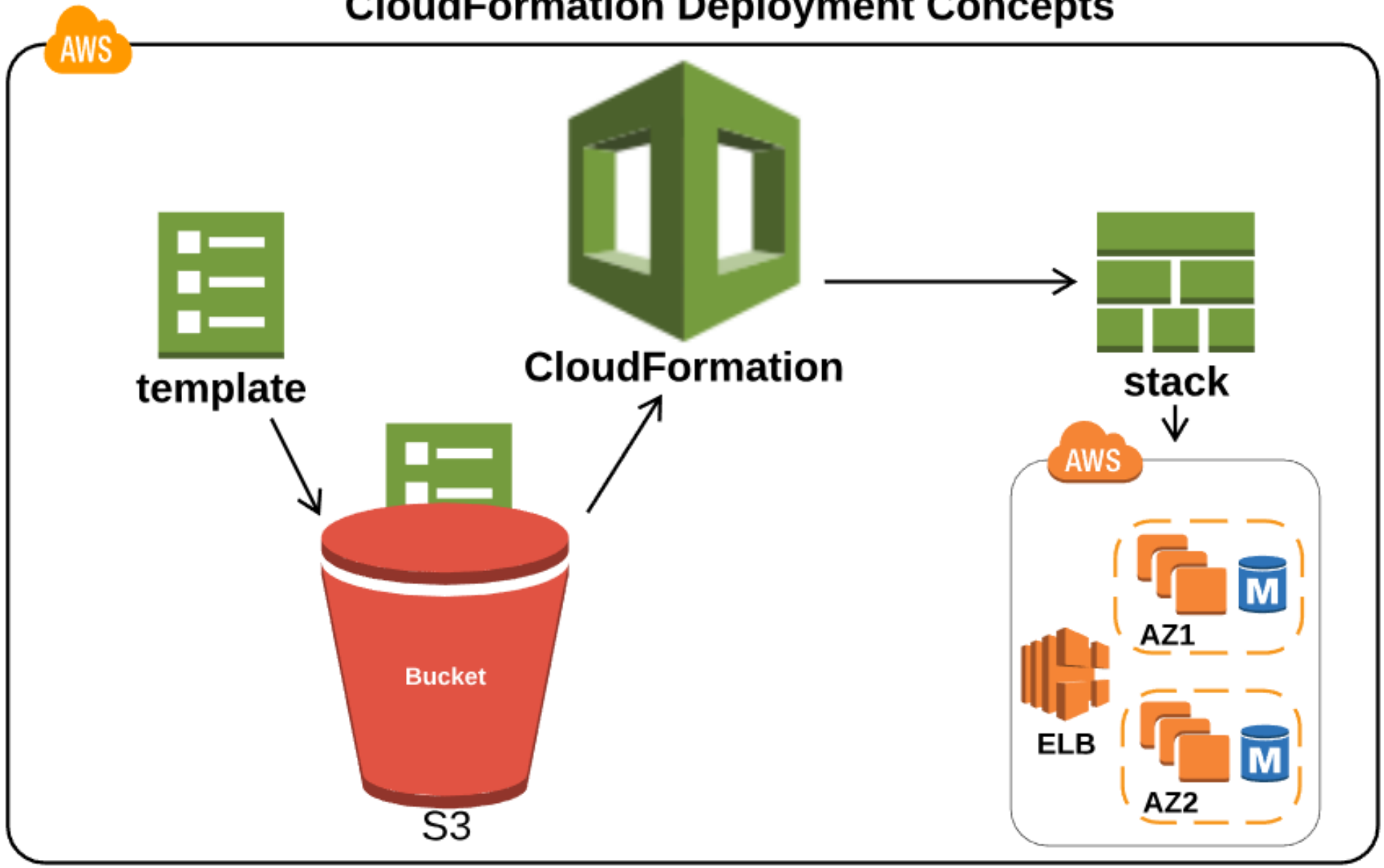


4. CloudFormation For DevOps

- Using CloudFormation to create infrastructure, known as infrastructure as Code, is a common technique that a DevOps Professional will need to master.
- The Code is a CloudFormation template which describes the infrastructure that will be deployed.
- The infrastructure is a CloudFormation Stack, created from the template.
- In this scenario we'll create a stack containing an Auto Scaling Group of EC2 instances backed by an Amazon RDS database.
- **Several ways to Work with Stacks:**

1. Key Points
2. Deployment Strategies
3. Wait Conditions
4. Creation Policy
5. Creation Policy with Auto Scaling
6. Helper Scripts
7. Stack Policies
8. Update Policies

CloudFormation Deployment Concepts

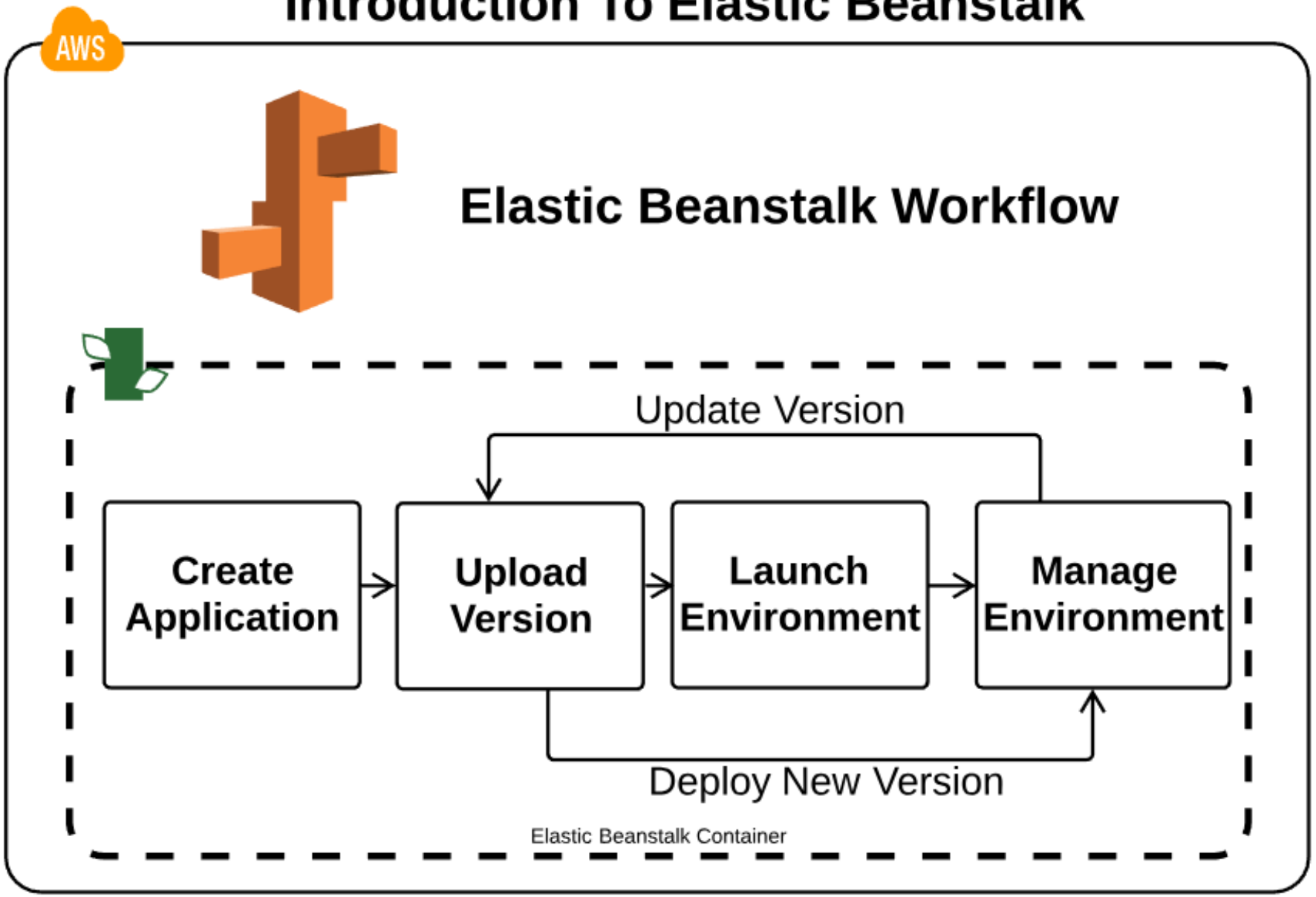


5. Elastic Beanstalk for DevOps

- With Elastic Beanstalk, you can quickly deploy and manage applications in the AWS Cloud without worrying about the infrastructure that runs those applications.
- AWS Elastic Beanstalk reduces management complexity without restricting choice or control.
- You simply upload your application, and Elastic Beanstalk automatically handles the details of capacity provisioning, load balancing, scaling, and application health monitoring.

1. Introduction
2. Deployment Strategies
3. Docker with Elastic Beanstalk
4. Environment Configurations
5. Using With CloudFormation
6. Elastic Beanstalk Scenarios

Introduction To Elastic Beanstalk

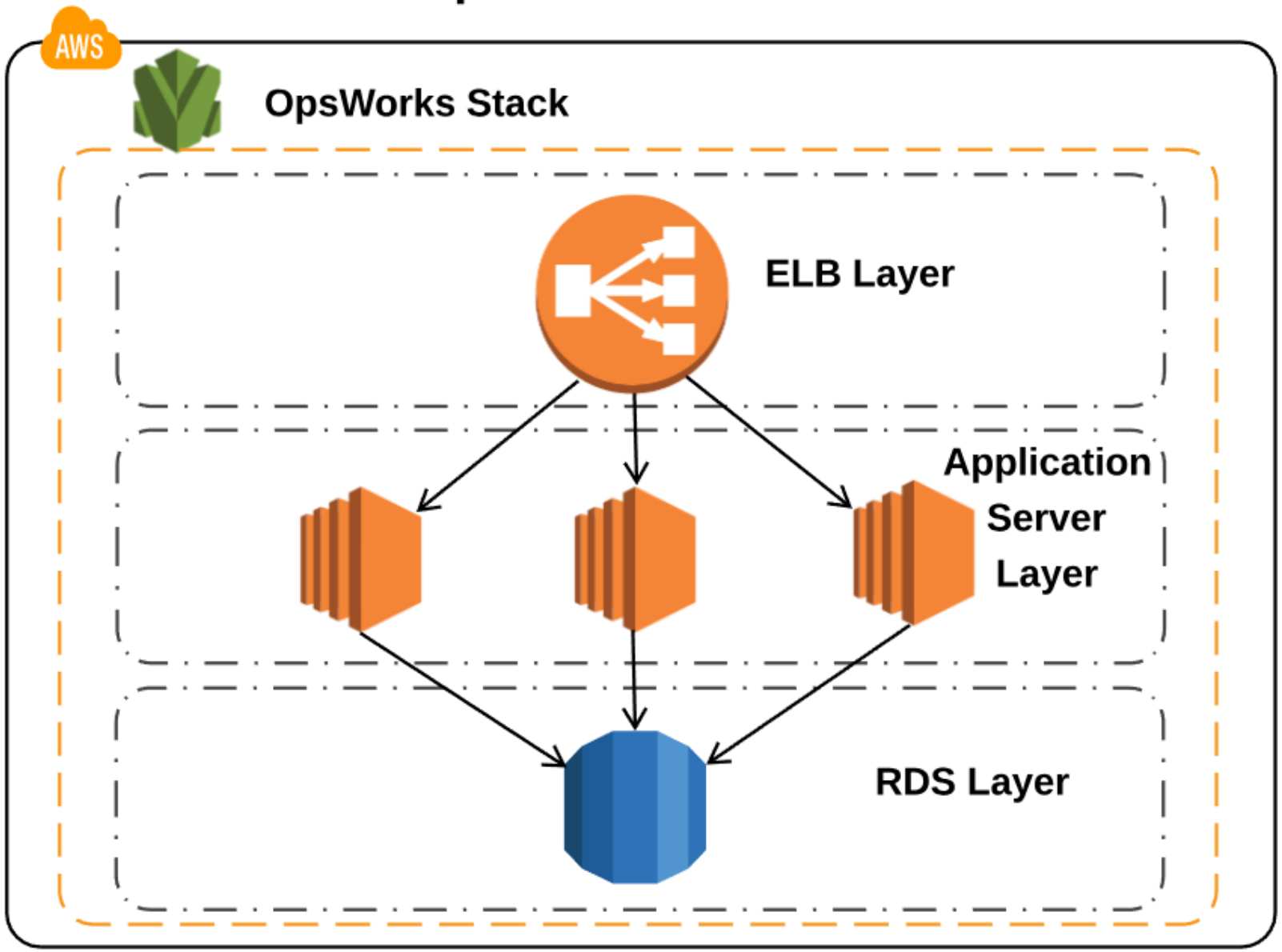


6. Application Deployments with OpsWorks

- AWS OpsWorks is a configuration management service that provides managed instances of Chef & Puppet.
- Chef & Puppet are automation platforms that allow you to use code to automate the configurations of your servers.
- OpsWorks lets you use Chef & Puppet to automate how servers are configured, deployed, and managed across your Amazon EC2 instances or On-Premises compute environments.
- OpsWorks can be seen as a Platform as a Service, however, unlike most PaaS, you have full control over the OS, Instance Count, and can make changes directly to the deployment mechanisms.

1. OpsWorks Essentials
2. Deplyment Strategies
3. Stack Creation

OpsWorks Essentials



7. DynamoDB with Applications

- Amazon DynamoDB is a fully managed NoSQL database service that makes it simple and cost-effective to store and retrieve any amount of data and serve any level of request traffic.
- It is important to understand the foundational concepts of DynamoDB, such as Partition Keys and Sort Keys as well as Local and Global Secondary indexes, at the DevOps Pro level it is important to understand the use case for DynamoDB, such as storing metadata and the services used to export data to DynamoDB(Data Pipline, DynamoDB streams).

1. Secondary Indexes
2. Provisioned Throughput
3. Web Identity Federation
4. Data Pipeline

DynamoDB Essentials

AWS

Unique Item ID

Indexes:

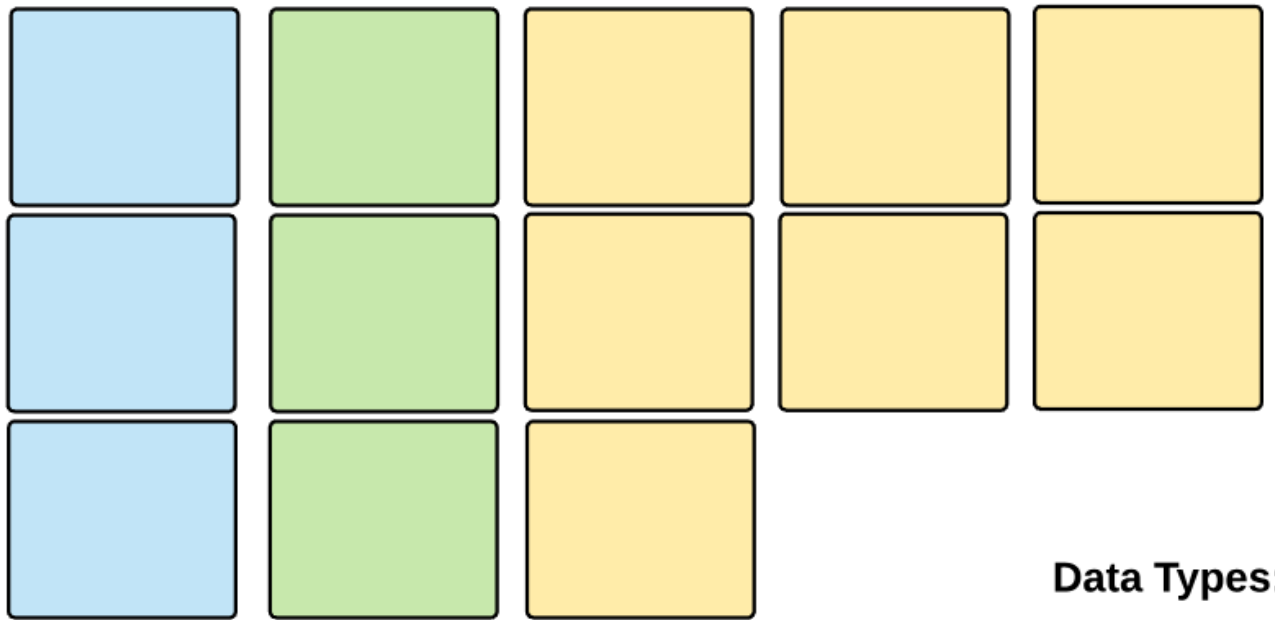
Local Secondary Indexes

Global Secondary Indexes

Partition Key

Sort Key

Attributes



Data Types:

String

Number

Binary

Provisioned Throughput:

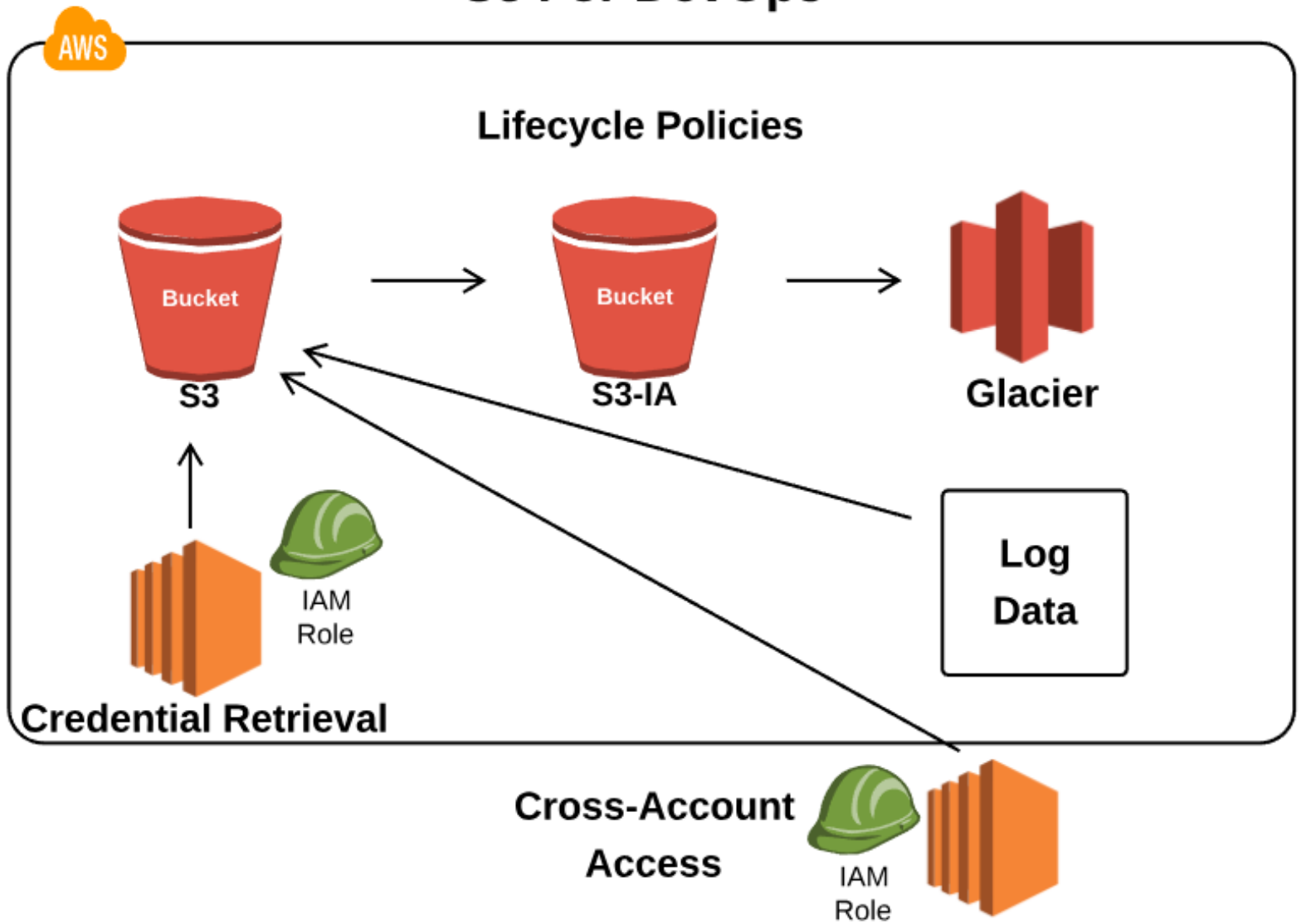
Specify Read/Write capacity at table creation

8. Deployment Concepts with S3

- Amazon S3 is used extensively in AWS DevOps operations.
- It’s low cost and high durability dictates that it should always be considered as a storage option.
- Additionally, S3 provides comprehensive security and compliance capabilities that meet even the most stringent regulatory requirements.
- DevOps specific uses for S3 including Log Data storage, secure storage to only be accessed via IAM Roles, and configuring Cross-Account Access for S3 access from other AWS accounts.

1. Lifecycle Management
2. Cross-Account Access
3. Exporting Log Data

S3 For DevOps



9. Blue/Green Deployments

- Blue/Green deployments is a technique for releasing applications by shifting traffic between two identical environments running different versions of the application.
- Blue/Green deployments can mitigate common risks associated with deploying software, such as downtime and rollback capability.
- The DevOps Engineer will be required to properly configure Blue/Green environments in such a way that switching environments is seamless with no downtime.

1. Update DNS Routing
2. Swap ASG Behind ELB
3. Update ASG Launch Configuration
4. Docker B/G Deployments
5. A/B Testing

Blue/Green Deployments