Summary Report

AWS Academy Cloud Foundations - Module 6: Compute Summary

Module Overview

1 **Topics Covered**:

1 Compute services overview

1 Amazon EC2

1 Amazon EC2 cost optimization

1 Container services

1 Introduction to AWS Lambda

1 Introduction to AWS Elastic Beanstalk

Activities

1 . **Amazon EC2 vs Managed Service**: Compare running a database on EC2 vs Amazon RDS.

2. **Hands-on with AWS Lambda**: Create and configure a Lambda function.

3. **Hands-on with AWS Elastic Beanstalk**: Deploy a web application using Elastic Beanstalk.

Key Concepts

1 . **Compute Services Overview**:

1 AWS offers a variety of compute services, including EC2, Lambda, Elastic Beanstalk, and container services like ECS and EKS.

1 Services are categorized into:

1 **Virtual Machines (IaaS)**: EC2

1 **Serverless**: Lambda

1 **Container-based**: ECS, EKS, Fargate

1 **Platform as a Service (PaaS)**: Elastic Beanstalk

2. **Amazon EC2**:

1 Provides resizable virtual machines in the cloud.

1 Key features:

1 **Instance Types**: General purpose, compute-optimized, memory-optimized, etc.

1 **AMI (Amazon Machine Image)**: Template for launching EC2 instances.

1 **Security Groups**: Act as virtual firewalls.

1 **Elastic IPs**: Persistent public IP addresses.

1 **Lifecycle**: Pending, Running, Stopped, Terminated, etc.

1 **Cost Optimization**:

1 **Pricing Models**: On-Demand, Reserved, Spot, Dedicated Hosts.

1 **Four Pillars of Cost Optimization**:

1 . Right-size instances

2. Increase elasticity

3. Choose optimal pricing models

4. Optimize storage choices

3. **Container Services**:

1 **Docker**: Platform for packaging applications into containers.

1 **Amazon ECS**: Manages Docker containers on EC2 or Fargate.

1 **Amazon EKS**: Managed Kubernetes service for running containerized applications.

1 **Amazon ECR**: Docker container registry for storing and managing container images.

4. **AWS Lambda**:

1 Serverless compute service that runs code in response to events.

1 **Key Features**:

1 Pay only for compute time used.

1 Supports multiple programming languages.

1 Built-in fault tolerance and automatic scaling.

1 **Event Sources**: S3, SNS, CloudWatch, API Gateway, etc.

1 **Quotas**: Max memory allocation (10,240 MB), max runtime (15 minutes).

5. **AWS Elastic Beanstalk**:

1 Platform as a Service (PaaS) for deploying and managing web applications.

1 **Key Features**:

1 Automates deployment, scaling, and monitoring.

1 Supports multiple platforms (Java, .NET, PHP, Python, etc.).

1 No additional charge; pay only for underlying resources.

Hands-on Labs

1 . **Introduction to Amazon EC2**:

1 Launch, monitor, resize, and manage EC2 instances.

1 Explore EC2 limits and termination protection.

2. **AWS Lambda Activity**:

1 Create a Lambda function to stop EC2 instances.

3. **AWS Elastic Beanstalk Activity**:

1 Deploy a web application using Elastic Beanstalk.

Key Takeaways

1 **Amazon EC2**: Flexible virtual machines for various workloads.

1 **AWS Lambda**: Serverless compute for event-driven applications.

1 **Elastic Beanstalk**: Simplifies web application deployment and management.

1 **Container Services**: ECS and EKS for container orchestration.

1 **Cost Optimization**: Right-sizing, elasticity, and optimal pricing models are crucial for reducing costs.

Additional Resources

1 **Documentation**:

1 [Amazon EC2](https://docs.aws.amazon.com/ec2/)

1 [AWS Lambda](https://docs.aws.amazon.com/lambda/)

1 [AWS Elastic Beanstalk](https://docs.aws.amazon.com/elastic-beanstalk/)

1 **Workshops**:

1 [Amazon ECS Workshop](https://ecsworkshop.com/)

1 [Amazon EKS Workshop](https://www.eksworkshop.com/)

1 **Cost Optimization**: [AWS Cost Optimization Playbook](https://d1.awsstatic.com/pricing/AWS_CO_Playbook_Final.pdf)

Sample Exam Question

Question**: Which AWS service helps developers quickly deploy resources which can make use of different programming languages, such as .NET and Java?

1 **Answer**: **C. AWS Elastic Beanstalk**

Conclusion

This module provides a comprehensive introduction to AWS compute services, including EC2, Lambda, Elastic Beanstalk, and container services. Hands-on activities and cost optimization strategies are key components of the learning experience.