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 manage Lambda functions.

3. **Hands-on with AWS Elastic Beanstalk**: Deploy and manage web applications.

Demos

1   **Amazon EC2 Demonstration**: Launching an EC2 instance using the AWS Management Console.

Labs

1   **Lab 3: Introduction to Amazon EC2**:

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

1   Tasks include launching instances, monitoring, updating security groups, resizing instances, exploring EC2 limits, and testing termination protection.

Key Concepts

1   . **Amazon EC2**:

- Provides resizable virtual machines (VMs) in the cloud.

- Key features: Elasticity, scalability, and full control over the OS.

- Use cases: Application servers, web servers, database servers, etc.

- **EC2 Instance Types**: General purpose, compute optimized, memory optimized, storage optimized, and accelerated computing.

- **EC2 Lifecycle**: Pending, running, rebooting, stopping, stopped, terminated.

- **EC2 Pricing Models**: On-Demand, Reserved, Spot, Dedicated Hosts, and Scheduled Reserved Instances.

2. **Amazon EC2 Cost Optimization**:

- **Four Pillars**:

- . **Right-size**: Choose the appropriate instance type based on workload.

2. **Increase Elasticity**: Use auto-scaling and stop/hibernate instances when not in use.

3. **Optimal Pricing Model**: Combine On-Demand, Reserved, and Spot Instances.

4. **Optimize Storage**: Resize EBS volumes, delete unused snapshots, and use lifecycle policies.

3. **Container Services**:

- **Containers**: Lightweight, portable, and efficient compared to VMs.

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

- **Amazon ECS**: Managed container orchestration service.

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

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

4. **AWS Lambda**:

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

- Pay only for the compute time used.

- **Event Sources**: Amazon S3, SNS, CloudWatch, DynamoDB, etc.

- **Lambda Function Configuration**: Runtime, memory allocation, execution role, and triggers.

- **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   Supports multiple programming languages: Java, .NET, PHP, Python, Ruby, Go, and Docker.

1   Automates deployment, scaling, and monitoring.

1   No additional charge; pay only for the underlying resources used.

Key Takeaways

1   **Amazon EC2**: Flexible, scalable, and cost-effective virtual machines.

1   **Cost Optimization**: Right-sizing, elasticity, optimal pricing, and storage optimization.

1   **Containers**: Efficient, portable, and managed by services like ECS and EKS.

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

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

Additional Resources

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

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

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

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

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

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

Knowledge Check

1   **Sample Exam Question**:

1   **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

1 This module provided an introduction to AWS compute services, including EC2, Lambda, Elastic Beanstalk, and container services. It covered key concepts, cost optimization strategies, and hands-on activities to reinforce learning.