

AWS Cloud Security Foundations– AWS-CSF

Dr. Ibrahim Gomaa

Lecture Intro - Course Overview



مجموعة جامعة
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للتعليم القابضة

Course Staff

Dr. Ibrahim Gomaa



Certified trainer for the following academies:



This course is designed to help students gain a foundational knowledge of cybersecurity principles and services for cloud computing through a guided hands-on approach. This course includes demonstrations, instructional guides, and real-life scenarios.

Upon completion of this course, students will be able to do the following:

- Identify security benefits and responsibilities of using the Amazon Web Services (AWS) Cloud.
- Use the identity and access management features of AWS.
- Describe how to secure network access to AWS resources.
- Explain the available methods for encrypting data at rest and data in transit.
- Determine which AWS services can be used for monitoring and incident response.

This course requires a strong foundation in IT concepts and skills. To ensure success in this course, students should have the following:

- Completed the AWS Academy Cloud Foundations course or have equivalent experience.
- Worked with distributed systems.
- Worked with multi-tier architectures.
- Introduced general networking concepts.
- Introduced cloud computing concepts.

- **Lecture 1:** Cloud Concepts and Pricing
- **Lecture 2:** AWS Identity, Networking and Content Delivery
- **Lecture 3:** AWS Foundational Services - Compute
- **Lecture 4:** AWS foundational services – Storage and database
- **Lecture 5:** Automatic Scaling, Logging and Monitoring
- **Lecture 6:** AWS Cloud Security
- **Lecture 7:** Securing Access to Cloud Resources
- **Lecture 8:** Securing your infrastructure
- **Lecture 9:** Protecting data in your application
- **Lecture 10:** Responding to and Managing an Incident

Lecture 1: Cloud Concepts and Pricing

Topics

- Introduction to cloud computing
- Advantages of cloud computing
- Introduction to Amazon Web Services (AWS)
- Fundamentals of pricing
- Total Cost of Ownership
- AWS Organizations
- AWS Billing and Cost Management
- Technical Support

Activities

- AWS Pricing Calculator

Demo

- Overview of the Billing Dashboard



Knowledge check

Lecture 2: AWS Identity, Networking and Content Delivery

Topics

- AWS shared responsibility model
- AWS Identity and Access Management (IAM)
- Networking basics
- Amazon VPC, networking and security
- Amazon Route 53
- Amazon CloudFront

Activities

- Label a network diagram

Demo

- VPC demonstration

Lab

- Build your VPC and launch a web server



Knowledge check

Lecture 3: AWS Foundational Services - Compute

Topics

- Compute services overview
- Amazon EC2
- Amazon EC2 cost optimization
- Container services
- Introduction to AWS Lambda
- Introduction to AWS Elastic Beanstalk

Activities

- Amazon EC2 versus Managed Service

Demo

- Recorded demonstration of Amazon EC2

Lab

- Introduction to Amazon EC2



Knowledge check



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Lecture 4: AWS Foundational Services – Storage and Database

Topics

- Amazon Elastic Block Store (Amazon EBS)
- Amazon Simple Storage Service (Amazon S3)
- Amazon Elastic File System (Amazon EFS)
- Amazon Simple Storage Service Glacier
- Amazon Relational Database Service (Amazon RDS)
- Amazon DynamoDB
- Amazon Redshift
- Amazon Aurora

Activities

- Storage solution case study
- Database case studies

Demo

- Amazon EBS console
- Amazon RDS console

Lab

- Working with Amazon EBS
- Build Your DB Server and Interact with Your DB Using an App



Knowledge check



Lecture 5: Automatic Scaling, Logging and Monitoring

Topics

- Elastic Load Balancing
- Amazon CloudWatch
- Amazon EC2 Auto Scaling
- Importance of logging and monitoring
- Capture and collect
- AWS services with built-in logs
- Monitor and report

Activities

- Elastic Load Balancing activity
- Reading a Log File

Demo

- Amazon EBS console
- Security Hub

Lab

- Scale and Load Balance Your Architecture
- Monitoring and Alerting with CloudTrail and CloudWatch



Knowledge check

Lecture 6: AWS Cloud Security

Topics

- Security in the AWS Cloud
- Security design principles
- Shared responsibility model
- Securing a new AWS account
- Securing accounts
- Securing data on AWS
- Working to ensure compliance

Activities

- AWS shared responsibility model activity

Demo

- Recorded demonstration of IAM

Lab

- Introduction to AWS IAM



Knowledge check

Lecture 7: Securing Access to Cloud Resources

Topics

- IAM fundamentals
- Authenticating with IAM
- Authorizing with IAM
- Examples of authorizing with IAM
- Additional authentication and access management services
- Using AWS Organizations

Demo

- Amazon S3 Cross-Account Resource-Based Policy

Lab

- Using Resource-Based Policies to Secure an S3 Bucket



Knowledge check

Lecture 8: Securing your infrastructure

Topics

- Structure of a three-tier web application
- Using a VPC
- Setting up public and private subnets and internet protocols
- Using AWS security groups
- Using AWS network ACLs
- Using AWS load balancers
- Pulling it all together
- Protecting your compute resources

Lab

- Securing VPC Resources by Using Security Groups



Knowledge check

Lecture 9: Protecting data in your application

Topics

- Protect data at rest
- Amazon S3 protection features
- Protection through encryption
- Protect data in transit
- Best practices to protect data in Amazon S3
- Additional data protection services

Lab

- Encrypting Data at Rest by Using AWS KMS



Knowledge check

Lecture 10: Responding to and Managing an Incident

Topics

- Identifying an incident
- AWS services that support the discovery and recognition phase
- AWS services that support the resolution and recovery phase
- Best practices for handling an incident

Lab

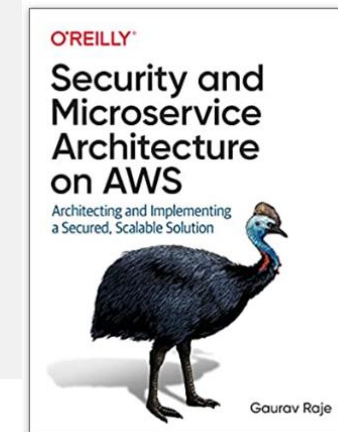
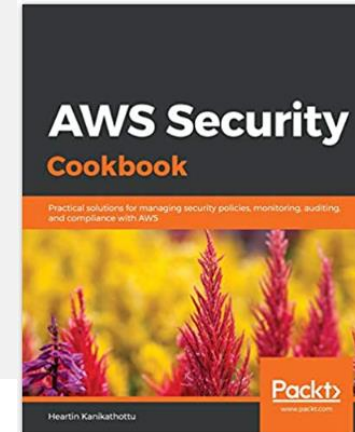
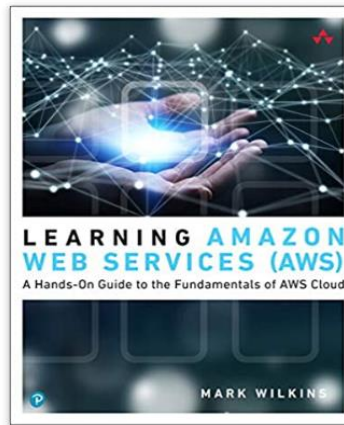
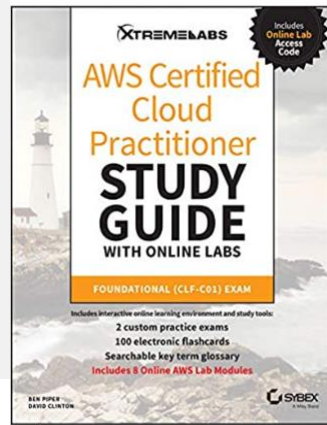
- Remediating an Incident by Using AWS Config and Lambda



Knowledge check

References

- <https://docs.aws.amazon.com/>
- **AWS Certified Cloud Practitioner Study Guide with Online Labs: Foundational (CLF-C01) Exam 1st Edition**, [Ben Piper](#) (Author), [David Clinton](#) (Author)
- **Learning Amazon Web Services (AWS): A Hands-On Guide to the Fundamentals of AWS Cloud 1st Edition**, Mark Wilkins (Author)
- **AWS Security Cookbook: Practical solutions for managing security policies, monitoring, auditing, and compliance with AWS**, Heartin Kanikathottu (Author)
- **Security and Microservice Architecture on AWS: Architecting and Implementing a Secured, Scalable Solution 1st Edition**, Gaurav Raju (Author)



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Thanks