aws certified solution architect

Course outline

Module 1: Introduction to AWS

Module 1: Introduction to AWS is an introductory course for those interested in becoming an AWS Certified Solution Architect. This module covers the basics of cloud computing, the AWS platform, and the different services offered by AWS. It also provides an overview of the AWS architecture and the different components of the AWS platform. Finally, it provides an introduction to the AWS CLI and the AWS SDKs.

Lessons

- Overview of AWS Cloud Platform
- AWS Global Infrastructure
- AWS Security and Compliance
- AWS Compute Services
- AWS Storage Services
- AWS Database Services
- AWS Networking Services
- AWS Management Tools
- AWS Application Services
- AWS Serverless Computing
- AWS Cost Optimization Strategies
- AWS Best Practices

After completing this module, students will be able to:

- Understand the core AWS services, including EC2, S3, VPC, and IAM
- Create and configure Amazon EC2 instances, S3 buckets, and VPCs
- Utilize AWS Identity and Access Management (IAM) to securely control access to AWS resources
- Deploy and manage applications on AWS using services such as Elastic Beanstalk, CloudFormation, and OpsWorks

Module 2: AWS Core Services

Module 2 of the AWS Certified Solution Architect Course covers the core services of Amazon Web Services (AWS). This module provides an overview of the different services available, including Amazon Elastic Compute Cloud (EC2), Amazon Simple Storage Service (S3), Amazon Virtual Private Cloud (VPC), Amazon Relational Database Service (RDS), Amazon Elastic Block Store (EBS), Amazon Elastic Load Balancing (ELB), Amazon CloudFront, Amazon Route 53, Amazon Simple Queue Service (SQS), Amazon Simple Notification Service (SNS), and Amazon Simple Workflow Service (SWF). It also covers

the basics of security, networking, and monitoring in the AWS environment.

Lessons

- Introduction to AWS Core Services
- Amazon Elastic Compute Cloud (EC2)
- Amazon Simple Storage Service (S3)
- Amazon Virtual Private Cloud (VPC)
- Amazon Elastic Block Store (EBS)
- Amazon Relational Database Service (RDS)
- Amazon DynamoDB
- Amazon Simple Queue Service (SQS)
- Amazon Simple Notification Service (SNS)
- Amazon CloudFront
- Amazon Elastic Load Balancing (ELB)
- Amazon Route 53
- AWS Identity and Access Management (IAM)
- AWS CloudFormation
- AWS CloudTrail
- AWS Config
- AWS Lambda
- AWS Auto Scaling
- AWS OpsWorks
- AWS Service Catalog

After completing this module, students will be able to:

- Understand the core services offered by AWS and how to use them to build secure, reliable, and cost-effective cloud solutions.
- Utilize the AWS Management Console to create and manage AWS resources.
- Design and deploy applications using AWS services such as EC2, S3, and RDS.
- Implement security best practices to protect data and applications in the cloud.

Module 3: Designing Highly Available and Fault Tolerant Systems

Module 3 of the AWS Certified Solution Architect course focuses on designing highly available and fault tolerant systems. It covers topics such as designing for high availability, fault tolerance, scalability, and security. It also covers best practices for designing and deploying applications on AWS, as well as strategies for monitoring and managing applications.

Lessons

- Introduction to High Availability and Fault Tolerance
- Designing Highly Available and Fault Tolerant Systems with AWS
- Implementing Fault Tolerance with AWS Services
- Designing for Disaster Recovery
- Automating High Availability and Fault Tolerance

- Monitoring and Troubleshooting Highly Available and Fault Tolerant Systems
- Best Practices for Designing Highly Available and Fault Tolerant Systems

After completing this module, students will be able to:

- Understand the principles of high availability and fault tolerance in AWS
- Design and implement highly available and fault tolerant architectures in AWS
- Utilize AWS services to build resilient systems
- Monitor and troubleshoot highly available and fault tolerant systems in AWS

Module 4: Designing Cost-Optimized Systems

Module 4 of the AWS Certified Solution Architect course focuses on designing cost-optimized systems. This module covers topics such as cost optimization strategies, cost-effective storage solutions, and cost-effective compute solutions. It also covers how to use AWS services to reduce costs and optimize performance. Additionally, this module provides an overview of the AWS pricing models and how to use them to make cost-effective decisions.

Lessons

- Understanding Cost Optimization Strategies
- Utilizing Reserved Instances
- Leveraging Spot Instances
- Optimizing Storage Costs
- Optimizing Network Costs
- Utilizing Auto Scaling
- Utilizing AWS Trusted Advisor
- Utilizing AWS Cost Explorer
- Utilizing AWS Budgets
- Utilizing AWS CloudFormation

After completing this module, students will be able to:

- Understand the cost optimization strategies for AWS services
- Analyze the cost of running applications on AWS
- Design cost-effective architectures for AWS
- Utilize AWS cost optimization tools to reduce costs and optimize performance

Module 5: Designing Secure Systems

Module 5: Designing Secure Systems is a module in the AWS Certified Solution Architect course that focuses on the fundamentals of designing secure systems in the AWS cloud. It covers topics such as identity and access management, encryption, network security, and logging and monitoring. This module provides an overview of the security features available in AWS and how to use them to protect your data and applications.

Lessons

- Introduction to Security in the Cloud
- Identity and Access Management (IAM)
- Encryption and Key Management
- Network Security
- Logging and Auditing
- Security Best Practices
- Securing Data at Rest and in Transit
- Security Automation and Orchestration
- Incident Response and Disaster Recovery
- Security Compliance and Governance

After completing this module, students will be able to:

- Understand the security features of AWS services and how to use them to secure applications and data.
- Implement authentication and authorization mechanisms to control access to AWS resources.
- Implement encryption and key management to protect data in transit and at rest.
- Design secure networks using AWS services such as VPC, Direct Connect, and CloudFront.

Module 6: Designing Scalable Systems

Module 6 of the AWS Certified Solution Architect course focuses on designing scalable systems. It covers topics such as scalability, availability, fault tolerance, and cost optimization. It also covers best practices for designing and deploying applications on AWS, as well as strategies for monitoring and managing performance.

Lessons

- Introduction to Scalable System Design
- Designing for High Availability
- Designing for Fault Tolerance
- Designing for Scalability
- Designing for Security
- Designing for Cost Optimization
- Automating System Design
- Monitoring and Troubleshooting Scalable Systems
- Best Practices for Designing Scalable Systems
- Designing for Disaster Recovery

After completing this module, students will be able to:

- Understand the fundamentals of scalability and how to design systems that can scale to meet customer demand.
- Utilize AWS services to design and deploy scalable systems.
- Analyze and optimize system performance and scalability.

- Implement best practices for designing and deploying scalable systems on AWS.

Module 7: Implementing and Deploying Applications on AWS

Module 7 of the AWS Certified Solution Architect course covers the implementation and deployment of applications on AWS. It covers topics such as setting up and configuring AWS services, deploying applications, and monitoring and troubleshooting applications. It also covers best practices for deploying applications on AWS, such as using automation and version control.

Lessons

- Overview of AWS Application Services
- Deploying Applications with AWS Elastic Beanstalk
- Managing Applications with AWS OpsWorks
- Automating Application Deployment with AWS CodeDeploy
- Monitoring Applications with AWS CloudWatch
- Securing Applications with AWS Identity and Access Management
- Optimizing Applications with AWS CloudFormation
- Troubleshooting Application Deployment Issues
- Best Practices for Application Deployment on AWS

After completing this module, students will be able to:

- Understand the different deployment options available on AWS and how to choose the best option for a given application.
- Utilize AWS services such as Elastic Beanstalk, CloudFormation, and OpsWorks to deploy applications.
- Implement best practices for deploying applications on AWS, such as using version control and automated testing.
- Monitor and troubleshoot applications deployed on AWS.

Module 8: Monitoring and Logging on AWS

Module 8: Monitoring and Logging on AWS is a course designed to help AWS Certified Solution Architects understand the various monitoring and logging services available on AWS. It covers topics such as CloudWatch, CloudTrail, and CloudFormation, as well as how to use these services to monitor and log your AWS environment. Additionally, the course covers best practices for monitoring and logging on AWS, and how to use these services to troubleshoot and debug issues.

Lessons

- Introduction to CloudWatch
- Setting up CloudWatch Alarms
- Configuring CloudWatch Logs
- Using CloudWatch Logs Insights
- Using CloudTrail for Logging
- Setting up CloudTrail Trails

- Configuring CloudTrail Logging
- Using CloudWatch Events
- Setting up CloudWatch Events Rules
- Using CloudWatch Metrics
- Setting up CloudWatch Dashboards
- Using CloudWatch Logs for Automation
- Using CloudWatch Logs for Security
- Using CloudWatch Logs for Troubleshooting
- Using CloudWatch Logs for Compliance
- Using CloudWatch Logs for Cost Optimization

After completing this module, students will be able to:

- Understand the different types of monitoring and logging services available on AWS.
- Set up and configure CloudWatch for monitoring and logging.
- Utilize CloudTrail to track user activity and API calls.
- Analyze log data to identify trends and anomalies.

Module 9: AWS Security Services

Module 9 of the AWS Certified Solution Architect course covers the various security services available on the AWS platform. It covers topics such as Identity and Access Management (IAM), Security Token Service (STS), CloudTrail, CloudWatch, and AWS Config. It also covers the various security best practices and how to use them to secure your AWS environment.

Lessons

- Introduction to AWS Security Services
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (KMS)
- AWS CloudHSM
- AWS CloudTrail
- AWS Config
- AWS Shield
- AWS WAF
- AWS Inspector
- AWS Certificate Manager
- AWS Directory Service
- AWS Security Hub
- AWS Firewall Manager
- AWS Organizations
- AWS Trusted Advisor

After completing this module, students will be able to:

- Understand the different security services offered by AWS and how to use them to secure applications and data.

- Implement identity and access management (IAM) policies to control access to AWS resources.
- Configure AWS CloudTrail to monitor and audit user activity.
- Utilize AWS Security Hub to monitor and respond to security findings.

Module 10: AWS Networking Services

Module 10 of the AWS Certified Solution Architect course covers AWS Networking Services. This module provides an overview of the different networking services available on the AWS platform, including Amazon Virtual Private Cloud (VPC), Amazon Route 53, Amazon Direct Connect, and AWS Network Load Balancer. It also covers topics such as security groups, network access control lists, and network address translation.

Lessons

- Introduction to AWS Networking Services
- Amazon Virtual Private Cloud (VPC)
- Amazon Route 53
- Amazon Direct Connect
- AWS Network Access Control Lists (ACLs)
- AWS Security Groups
- AWS Network Load Balancing
- AWS Elastic Load Balancing
- AWS Network Address Translation (NAT)
- AWS Site-to-Site VPN
- AWS Transit Gateway
- AWS Global Accelerator
- AWS PrivateLink
- AWS CloudFormation for Networking
- AWS Network Troubleshooting and Monitoring

After completing this module, students will be able to:

- Understand the fundamentals of Amazon Virtual Private Cloud (VPC) and its components.
- Configure and manage Amazon VPCs, subnets, route tables, network gateways, and security groups.
- Utilize Amazon VPC peering, Direct Connect, and VPN Connections to connect multiple VPCs.
- Implement Amazon Elastic Load Balancing (ELB) to distribute traffic across multiple EC2 instances.

Module 11: AWS Storage Services

Module 11 of the AWS Certified Solution Architect course covers the various storage services offered by Amazon Web Services (AWS). It provides an overview of the different types of storage services available, such as Amazon Simple Storage Service (S3), Amazon Elastic Block Store (EBS), Amazon Glacier, and Amazon Elastic File System (EFS). It also covers the different features and use cases for each service, as well as best practices for using them.

Lessons

- Introduction to AWS Storage Services
- Amazon S3 Overview
- Amazon S3 Storage Classes
- Amazon S3 Security and Encryption
- Amazon S3 Lifecycle Management
- Amazon Glacier Overview
- Amazon EBS Overview
- Amazon EBS Volume Types
- Amazon EBS Security and Encryption
- Amazon EFS Overview
- Amazon EFS Security and Encryption
- Amazon Storage Gateway Overview
- Amazon Snowball Overview
- Amazon Snowball Edge Overview
- Amazon Snowmobile Overview
- AWS Storage Service Best Practices

After completing this module, students will be able to:

- Understand the different types of storage services offered by AWS and how to use them.
- Be able to identify the best storage service for a given use case.
- Be able to configure and manage storage services such as Amazon S3, Amazon EBS, and Amazon Glacier.
- Be able to design and implement a secure and cost-effective storage solution for an organization.

Module 12: AWS Database Services

Module 12 of the AWS Certified Solution Architect course covers the various database services offered by Amazon Web Services (AWS). It provides an overview of the different types of databases available, such as relational, non-relational, and in-memory databases, and how to use them to store and manage data. It also covers topics such as database security, scalability, and performance.

Lessons

- Introduction to AWS Database Services
- Amazon Relational Database Service (RDS)
- Amazon Aurora
- Amazon DynamoDB
- Amazon ElastiCache
- Amazon Redshift
- Amazon Neptune
- Amazon DocumentDB
- Amazon Quantum Ledger Database (QLDB)
- Database Migration Services (DMS)
- Database Security Services
- Database Performance Optimization
- Database Backup and Recovery
- Database Monitoring and Troubleshooting

- Database Cost Optimization Strategies

After completing this module, students will be able to:

- Understand the different types of databases available on AWS and how to choose the right one for a given application.
- Set up and configure a relational database on AWS using Amazon RDS.
- Create and manage NoSQL databases using Amazon DynamoDB.
- Utilize Amazon Redshift for data warehousing and analytics.

Module 13: AWS Serverless Computing

Module 13 of the AWS Certified Solution Architect course covers AWS Serverless Computing, which is a cloud computing model that allows developers to build and run applications without having to manage servers. This module will teach students how to use AWS services such as AWS Lambda, Amazon API Gateway, and Amazon DynamoDB to create serverless applications. Students will also learn how to use AWS CloudFormation to automate the deployment of serverless applications.

Lessons

- Introduction to Serverless Computing
- AWS Lambda Overview
- Setting up a Serverless Environment
- Working with AWS Lambda Functions
- Working with AWS API Gateway
- Working with AWS Step Functions
- Working with AWS DynamoDB
- Working with AWS Kinesis
- Working with AWS S3
- Working with AWS CloudFormation
- Working with AWS CloudWatch
- Working with AWS X-Ray
- Security and Compliance Considerations
- Best Practices for Serverless Computing
- Troubleshooting Serverless Applications
- Cost Optimization Strategies for Serverless Computing

After completing this module, students will be able to:

- Understand the fundamentals of serverless computing and its benefits
- Design and deploy serverless applications using AWS Lambda
- Utilize AWS services such as API Gateway, DynamoDB, and S3 to build serverless applications
- Monitor and troubleshoot serverless applications using AWS CloudWatch and AWS X-Ray

Module 14: AWS Migration Services

Module 14 of the AWS Certified Solution Architect course covers AWS Migration Services, which are designed to help customers move their applications, data, and other resources to the cloud. This module covers topics such as AWS Database Migration Service, AWS Server Migration Service, AWS Application Discovery Service, and AWS Snowball. It also covers best practices for migrating to the cloud, as well as strategies for managing and optimizing cloud migrations.

Lessons

- Overview of AWS Migration Services
- AWS Database Migration Service
- AWS Server Migration Service
- AWS Application Discovery Service
- AWS Migration Hub
- AWS Snowball
- AWS Snowmobile
- AWS DataSync
- AWS Transfer for SFTP
- Best Practices for Migrating to AWS

After completing this module, students will be able to:

- Understand the different types of AWS migration services and how to use them to migrate applications and data to the cloud.
- Utilize AWS Database Migration Service to migrate databases to the cloud.
- Leverage AWS Server Migration Service to migrate on-premises servers to the cloud.
- Implement AWS Snowball to transfer large amounts of data to the cloud.

Module 15: AWS Management Tools

Module 15 of the AWS Certified Solution Architect Course covers the various AWS management tools available to help manage and monitor your AWS environment. Topics include AWS CloudFormation, AWS OpsWorks, AWS Config, AWS CloudTrail, and AWS Trusted Advisor. This module will provide an overview of each tool and how to use them to manage and monitor your AWS environment.

Lessons

- Introduction to AWS Management Tools
- AWS CloudFormation
- AWS OpsWorks
- AWS Config
- AWS Systems Manager
- AWS Service Catalog
- AWS Trusted Advisor
- AWS CloudWatch
- AWS Auto Scaling
- AWS Command Line Interface (CLI)
- AWS Management Console
- AWS Organizations

- AWS Budgets
- AWS Cost Explorer
- AWS Resource Groups

After completing this module, students will be able to:

- Understand the different AWS management tools available and how to use them to manage and monitor AWS resources.
- Utilize AWS CloudFormation to automate the deployment of AWS resources.
- Use AWS Systems Manager to manage and monitor AWS resources.
- Leverage AWS Config to audit and monitor changes to AWS resources.

Module 16: AWS Cost Optimization Strategies

Module 16 of the AWS Certified Solution Architect course covers strategies for optimizing costs on the AWS platform. It covers topics such as cost-effective instance types, Reserved Instances, Spot Instances, and other cost-saving strategies. It also covers how to use AWS Cost Explorer and AWS Budgets to monitor and manage costs.

Lessons

- Understanding AWS Cost Optimization Strategies
- Utilizing Reserved Instances
- Leveraging Spot Instances
- Optimizing Storage Costs
- Automating Cost Optimization
- Utilizing AWS Cost Explorer
- Optimizing Network Costs
- Utilizing AWS Trusted Advisor
- Optimizing Database Costs
- Utilizing AWS Budgets

After completing this module, students will be able to:

- Understand the different cost optimization strategies available in AWS and how to apply them to reduce costs.
- Analyze the cost of running applications on AWS and identify areas of potential cost savings.
- Utilize AWS services such as Reserved Instances, Spot Instances, and Auto Scaling to reduce costs.
- Implement best practices for cost optimization in AWS, such as using tags and monitoring usage.

Module 17: AWS Best Practices

Module 17 of the AWS Certified Solution Architect course covers best practices for using AWS services. It covers topics such as security, cost optimization, scalability, and performance. It also provides guidance on how to design and implement solutions that are secure, cost-effective, and highly available.

Lessons

- Understanding AWS Security Best Practices
- Implementing AWS Identity and Access Management (IAM)
- Securing Network Connectivity with AWS VPC
- Utilizing AWS CloudTrail for Auditing
- Leveraging AWS CloudFormation for Infrastructure Automation
- Optimizing AWS Storage Solutions
- Utilizing AWS Auto Scaling for High Availability
- Implementing AWS Database Solutions
- Monitoring AWS Resources with CloudWatch
- Utilizing AWS Lambda for Serverless Computing

After completing this module, students will be able to:

- Understand the core principles of AWS best practices and how to apply them to their own cloud architecture.
- Identify and implement strategies to optimize cost and performance of their AWS environment.
- Utilize AWS services to improve security, scalability, and reliability of their cloud infrastructure.
- Implement automation and monitoring tools to ensure their AWS environment is running efficiently.

Module 18: Exam Preparation and Tips

Module 18: Exam Preparation and Tips module for AWS Certified Solution Architect course provides students with the necessary knowledge and skills to prepare for the AWS Certified Solution Architect exam. It covers topics such as exam structure, study tips, and practice questions. It also provides guidance on how to approach the exam and how to maximize your chances of success.

Lessons

- Understanding the Exam Structure and Format
- Developing a Study Plan
- Utilizing AWS Documentation and Resources
- Practicing with Sample Questions
- Understanding the Exam Scoring System
- Strategies for Answering Multiple Choice Questions
- Tips for Answering Written Response Questions
- Managing Test Anxiety
- Exam Day Tips and Strategies
- Post-Exam Reflection and Review

After completing this module, students will be able to:

- Understand the structure and format of the AWS Certified Solutions Architect exam.
- Develop a study plan and identify resources to help prepare for the exam.
- Utilize strategies to maximize performance on the exam.

- Identify and address areas of weakness in order to increase the chances of passing the exam.