



## Cloud Computing

### SYLLABUS

#### Topics Covered

##### Introduction to Cloud Computing

- 1.Design solutions that incorporate AWS services to meet current business requirements and future projected needs
- 2.Design architectures that are secure, resilient, high-performing, and cost-optimized
- 3.Review existing solutions and determine improvements

##### Design Secure Architectures

- 1.Access controls and management across multiple accounts
- 2.Management [IAM], AWS Single Sign-On [AWS SSO])
- 3.AWS federated access and identity services (for example, AWS Identity and Access
- 4.AWS global infrastructure (for example, Availability Zones, AWS Regions)
- 5.AWS security best practices (for example, the principle of least privilege)
- 6.The AWS shared responsibility model

##### Design Resilient Architectures

- 1.AWS managed services with appropriate use cases (for example, AWS Transfer Family, Amazon
- 2.Simple Queue Service [Amazon SQS], Secrets Manager)
- 3.Caching strategies
- 4.Design principles for microservices (for example, stateless workloads compared with statefulworkloads)
- 5.Event-driven architectures
- 6.Horizontal scaling and vertical scaling
- 7.How to appropriately use edge accelerators (for example, content delivery network [CDN])
- 8.How to migrate applications into containers
- 9.Load balancing concepts (for example, Application Load Balancer)
- 10.Multi-tier architectures
- 11.Queueing and messaging concepts (for example, publish/subscribe)
- 12.Serverless technologies and patterns (for example, AWS Fargate, AWS Lambda)
- 13.Storage types with associated characteristics (for example, object, file, block)
- 14.The orchestration of containers (for example, Amazon Elastic Container Service [Amazon ECS], Amazon Elastic Kubernetes Service [Amazon EKS])
- 15.When to use read replicas
- 16.Workflow orchestration (for example, AWS Step Functions)

## Design High-Performing Architectures

1. Hybrid storage solutions to meet business requirements
2. Storage services with appropriate use cases (for example, Amazon S3, Amazon Elastic File System [Amazon EFS], Amazon Elastic Block Store [Amazon EBS])
3. Storage types with associated characteristics (for example, object, file, block)

## Design Cost-Optimized Architectures

1. Access options (for example, an S3 bucket with Requester Pays object storage)
2. AWS cost management service features (for example, cost allocation tags, multi-account billing)
3. billing)
4. AWS cost management tools with appropriate use cases (for example, AWS Cost Explorer,
5. AWS Budgets, AWS Cost and Usage Report)
6. AWS storage services with appropriate use cases (for example, Amazon FSx, Amazon EFS,
7. Amazon S3, Amazon EBS)
8. Backup strategies
9. Block storage options (for example, hard disk drive [HDD] volume types, solid state drive [SSD]
10. volume types)
11. Data lifecycles
12. Hybrid storage options (for example, DataSync, Transfer Family, Storage Gateway)
13. Storage access patterns
14. Storage tiering (for example, cold tiering for object storage)
15. Storage types with associated characteristics (for example, object, file, block)

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## **Analytics**

- 1.AWS Data Exchange
- 2.AWS Data Pipeline
- 3.Amazon EMR
- 4.AWS Glue
- 5.Amazon Kinesis
- 6.AWS Lake Formation
- 7.Amazon Managed Streaming for Apache Kafka (Amazon MSK)
- 8.Amazon OpenSearch Service (Amazon Elasticsearch Service)
- 9.Amazon QuickSight
- 10.Amazon Redshift

## **Application Integration**

- 1.AWS AppSync
- 2.Amazon EventBridge (Amazon CloudWatch Events)
- 3.Amazon MQ
- 4.Amazon Simple Notification Service (Amazon SNS)
- 5.Amazon Simple Queue Service (Amazon SQS)
- 6.AWS Step Functions

## **AWS Cost Management**

- 1.AWS Budgets
- 2.AWS Cost and Usage Report
- 3.AWS Cost Explorer
- 4.Savings Plans

## **Compute**

- 1.Amazon EC2
- 2.Amazon EC2 Auto Scaling
- 3.AWS Elastic Beanstalk
- 4.AWS Outposts
- 5.AWS Serverless Application Repository
- 6.VMware Cloud on AWS
- 7.AWS Wavelength

## **Containers**

- 1.Amazon Elastic Container Registry (Amazon ECR)
- 2.Amazon Elastic Container Service (Amazon ECS)
- 3.Amazon ECS Anywhere
- 4.Amazon Elastic Kubernetes Service (Amazon EKS)
- 5.Amazon EKS Anywhere
- 6.Amazon EKS Distro

## Database

1. Amazon Aurora Serverless
2. Amazon DocumentDB (with MongoDB compatibility)
3. Amazon DynamoDB
4. Amazon ElastiCache
5. Amazon Keyspaces (for Apache Cassandra)
6. Amazon Neptune
7. Amazon Quantum Ledger Database (Amazon QLDB)
8. Amazon RDS
9. Amazon Redshift
10. Amazon Timestream

## Developer Tools

- AWS X-Ray

## Front-End Web and Mobile

1. AWS Amplify
2. Amazon API Gateway
3. AWS Device Farm
4. Amazon Pinpoint

## Machine Learning

1. Amazon Comprehend
2. Amazon Forecast
3. Amazon Fraud Detector
4. Amazon Kendra
5. Amazon Lex
6. Amazon Polly
7. Amazon Rekognition
8. Amazon SageMaker
9. Amazon Textract
10. Amazon Transcribe
11. Amazon Translate

## Management and Governance

- 1.AWS Auto Scaling
- 2.AWS CloudFormation
- 3.AWS CloudTrail
- 4.Amazon CloudWatch
- 5.AWS Command Line Interface (AWS CLI)
- 6.AWS Compute Optimizer
- 7.AWS Config
- 8.AWS Control Tower
- 9.AWS License Manager
- 10.Amazon Managed Grafana
- 11.Amazon Managed Service for Prometheus
- 12.AWS Management Console
- 13.AWS Organizations
- 14.AWS Personal Health Dashboard
- 15.AWS Proton
- 16.AWS Service Catalog
- 17.AWS Systems Manager
- 18.AWS Trusted Advisor
- 19.AWS Well-Architected Tool

## Media Services

- 1.Amazon Elastic Transcoder
- 2.Amazon Kinesis Video Streams

## Migration and Transfer

- 1.AWS Application Migration Service (CloudEndure Migration)
- 2.AWS Database Migration Service (AWS DMS)
- 3.AWS DataSync
- 4.AWS Migration Hub
- 5.AWS Server Migration Service (AWS SMS)
- 6.AWS Snow Family
- 7.AWS Transfer Family

## Networking and Content Delivery

- 1.Amazon CloudFront
- 2.AWS Direct Connect
- 3.Elastic Load Balancing (ELB)
- 4.AWS Global Accelerator
- 5.AWS PrivateLink
- 6.Amazon Route 53
- 7.AWS Transit Gateway
- 8.Amazon VPC
- 9.AWS VPN



## **Security, Identity, and Compliance**

- 1.AWS Artifact
- 2.AWS Audit Manager
- 3.AWS Certificate Manager (ACM)
- 4.AWS CloudHSM
- 5.Amazon Cognito
- 6.Amazon Detective
- 7.AWS Directory Service
- 8.AWS Firewall Manager
- 9.Amazon GuardDuty
- 10.AWS Identity and Access Management (IAM)
- 11.Amazon Inspector
- 12.AWS Key Management Service (AWS KMS)
- 13.Amazon Macie
- 14.AWS Network Firewall
- 15.AWS Resource Access Manager (AWS RAM)
- 16.AWS Secrets Manager
- 17.AWS Security Hub
- 18.AWS Shield
- 19.AWS Single Sign-On
- 20.AWS WAF

## **Serverless**

- 1.AWS AppSync
- 2.AWS Fargate
- 3.AWS Lambda

## **Storage**

- 1.Amazon Elastic Block Store (Amazon EBS)
- 2.Amazon Elastic File System (Amazon EFS)
- 3.Amazon FSx (for all types)
- 4.Amazon S3
- 5.Amazon S3 Glacier
- 6.AWS Storage Gateway

## **Networking and Content Delivery**

- 1.AWS App Mesh
- 2.AWS Cloud Map