Architecting on AWS - Key Concepts



Module 0 (Core Concepts)

Six advantages and benefits Cloud Adoption Framework (CAF)

Module 1 (Core Knowledge)

Global Infrastructure Data Center Availability Zone Region Edge Location Regional Edge Cache Unmanaged vs. Managed Services Shared Responsibility Model

Module 2 (Core Services)

VPC EC2 AMI Instance Type Pricing On-Demand Spot Hibernation Reserved Dedicated Hosts Storage S3 Bucket Object S3 Standard S3 Standard - IA EBS Volume Type EFS Glacier Lifecycle Database RDS DynamoDB Global Table On-Demand Backup RCU

IAM

Types of Security Credentials User Group Policy Role MFA CloudTrail Config

WCU

Module 3 (Design Environment)

How to choose a region? Multi-AZ Multi-VPC vs. Multi-Account VPC endpoint (S3, DynamoDB) CIDR Subnet Public Private Route Table

Provisioned Throughput strongly consistent eventually consistent

Security Group Chaining Network ACL Internet Gateway NAT Gateway vs. NAT Instance VPC Flow Logs Connecting VPCs VPC Peering VPN

VGW

Security Group

CGW

Direct Connect

Default VPC, Default Subnets

Module 4 (High Available Environment)

High Availability RTO, RPO Multi-AZ Inherently HA Services ELB Products Application Load Balancer Network Load Balancer Classic Load Balancer

> Features Cross-zone load balancing Connection draining Sticky sessions

EIP Route53

ELB-Alias Queries

Routing

Weighted round robin Latency-based routing Geolocation routing

Connection Redundancy VPN

Direct Connect

Module 5 (Event-Driven Scaling)

Scalability Vertical Horizontal CloudWatch Metrics Custom Metrics Alarm Logs Auto Scaling Launch Configuration Auto Scaling Group Min Max Desired ELB Auto Scaling Policy

Scheduled Action

Warm-up period / Cooldown period EC2 Auto Recovery

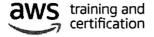
Scaling Data Store

RDS

Sharding Cache Read Replica

DynamoDB

Auto-Scaling RCU/WCU Lambda and Event-Driven Scaling



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Module 6 (Automating Infrastructure)

Infrastructure as Code
CloudFormation

Description

Metadata
Parameters

Mappings
Conditions
Resources
DependsOn
WaitCondition
CreationPolicy
Outputs
Elastic Beanstalk
Blue-Green Deployment
OpsWorks

EC2 System Manager Run Command

Module 7 (Decoupling Infrastructure)

Loose Coupling Strategies Microservices SOS Types Standard FIFO Asynchronous processing Visibility Timeout Dead Letter Queue (DLQ) SNS Vs. SQS Fan-out Amazon MQ DvnamoDB API Gateway Lambda Limitation Free tier

Module 8 (Designing Web-Scale Storage)

Data consistency model
read-after-write for PUTS
eventual consistency for overwrite PUTS,
DELETES
Object naming scheme
hex hash prefix
secondary index
CloudFront
Static & Dynamic

Static & Dynamic
Distribution
cache control header
expire contents
TTL
Change object name
Invalidate object

DynamoDB
strongly or eventually consistent read
Global Table
On-demand backup

Aurora

Module 9 (Well-Architected Framework)

Well-Architected Framework
Operational Excellence
Security
Reliability
Performance Efficiency
Cost Optimization

Module 10 (Operational Excellence)

Module 11 (Security)

DDoS Inspector Shield Standard Advanced GuardDuty CloudTrail Events VPC Flow Logs DNS Query Logs CloudFront signed-URL OAI (origin access identity) Vs. CloudHSM Directory Service AWS Directory Service AD Connector Simple AD STS assumeRole assumeRoleWithSAML assumeRoleWithWebIdentity

Module 12 (Reliability)

Disaster Recovery (RTO, RPO)
WorkSpaces

Module 13 (Performance Efficiency)

ElastiCache Memcached, Redis Kinesis

Module 14 (Cost Optimization)

TAG
Free Tier
Trusted Advisor
Caching
Simple Montly Calculator
TCO Calculator

Module 15 (Troubleshooting)

EBS-optimized instance type

Module 16 (Sample Architecture)

EMR
RedShfit
Kinesis
Kinesis Data Streams
Kinesis Data Firehose
Kinesis Data Analytics
Elastic Transcoder

