



# NUTECH COMPUTER TRAINING INSTITUTE

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## AWS Certified Solutions Architect - Professional

### Introduction

The AWS Certified Solutions Architect – Professional Level is intended for individuals who perform a Solutions Architect role.

- Identify and gather requirements in order to define a solution to be built on AWS
- Evolve systems by introducing new services and features
- Assess the tradeoffs and implications of architectural decisions and choices for applications deployed in AWS
- Design an optimal system by meeting project requirements while maximizing characteristics such as scalability, security, reliability, durability, and cost effectiveness
- Evaluate project requirements and make recommendations for implementation, deployment, and provisioning applications on AWS
- Provide best practice and architectural guidance over the lifecycle of a project

The knowledge and skills required at the professional level include the majority of the following AWS and general IT knowledge areas:

### AWS Knowledge

- AWS core services, including: Compute and Networking, Storage and CDN, Database, Application Services, Deployment and Management.
- Security features that AWS provides and best practices
- Able to design and implement for elasticity and scalability
- Network technologies as they relate to AWS networking, including: DNS and load balancing, Amazon Virtual Private Cloud (VPC), and AWS Direct Connect
- Storage and archival options
- State management
- Database and replication methodologies
- Self-healing techniques and fault-tolerant services
- Disaster Recovery and fail-over strategies
- Application migration plans to AWS
- Network connectivity options
- Deployment and management

## General IT Knowledge

- Large-scale distributed systems architecture
- Eventual consistency
- Relational and non-relational databases
- Multi-tier architectures: load balancers, caching, web servers, application servers, networking and databases
- Loose coupling and stateless systems
- Content Delivery Networks
- System performance tuning
- Networking concepts including routing tables, access control lists, firewalls, NAT, HTTP, DNS, TCP/IP, OSI model
- RESTful Web Services, XML, JSON
- One or more software development models
- Information and application security concepts including public key encryption, remote access, access credentials, and certificate-based authentication

# Course Outline

## 0. Introduction to Cloud Computing

- 0.1 Cloud computing
- 0.2 Comparison of leading cloud platforms
- 0.3 Cloud applications
- 0.4 The role of Cloud Computing Architect Professional

## 1 Domain 1.0: High Availability and Business Continuity

- 1.1 Demonstrate ability to architect the appropriate level of availability based on stakeholder requirements
- 1.2 Demonstrate ability to implement DR for systems based on RPO and RTO
- 1.3 Determine appropriate use of multi-Availability Zones vs. multi-Region architectures
- 1.4 Demonstrate ability to implement self-healing capabilities

## 2 Domain 2.0: Costing

- 2.1 Demonstrate ability to make architectural decisions that minimize and optimize infrastructure cost
- 2.2 Apply the appropriate AWS account and billing set-up options based on scenario
- 2.3 Ability to compare and contrast the cost implications of different architectures

## 3 Domain 3.0: Deployment Management

- 3.1 Ability to manage the lifecycle of an application on AWS
- 3.2 Demonstrate ability to implement the right architecture for development, testing, and staging environments
- 3.3 Position and select most appropriate AWS deployment mechanism based on scenario

## 4 Domain 4.0: Network Design for a complex large scale deployment

- 4.1 Demonstrate ability to design and implement networking features of AWS
- 4.2 Demonstrate ability to design and implement connectivity features of AWS

**5 Domain 5.0: Data Storage** for a complex large scale deployment

- 5.1 Demonstrate ability to make architectural trade off decisions involving storage options
- 5.2 Demonstrate ability to make architectural trade off decisions involving database options
- 5.3 Demonstrate ability to implement the most appropriate data storage architecture
- 5.4 Determine use of synchronous versus asynchronous replication

**6 Domain 6.0: Security**

- 6.1 Design information security management systems and compliance controls
- 6.2 Design security controls with the AWS shared responsibility model and global infrastructure
- 6.3 Design identity and access management controls
- 6.4 Design protection of Data at Rest controls
- 6.5 Design protection of Data in Flight and Network Perimeter controls

**7 Domain 7.0: Scalability and Elasticity**

- 7.1 Demonstrate the ability to design a loosely coupled system
- 7.2 Demonstrate ability to implement the most appropriate front-end scaling architecture
- 7.3 Demonstrate ability to implement the most appropriate middle-tier scaling architecture
- 7.4 Demonstrate ability to implement the most appropriate data storage scaling architecture
- 7.5 Determine trade-offs between vertical and horizontal scaling

**8 Domain 8.0: Cloud Migration and Hybrid Architecture**

- 8.1 Plan and execute for applications migrations
- 8.2 Demonstrate ability to design hybrid cloud architectures