

## Description

Students planning to enroll in the AWS Academy *Cloud Computing Architecture* curriculum should have technical knowledge and skills in the following topics:

### Data Center Concepts

Basic concepts of data center design philosophies, architecture, and operation of modern data centers, including:

- Hardware (servers, racks, storage, and networking devices)
- Software (virtualization)
- Connectivity (backbones and peering)
- Offsite backup services

### Networking

- Understand typical networking devices (e.g., switches, routers), protocols (e.g., Ethernet, IPv4 protocol stack, HTTP), and services (e.g., DNS, DHCP)
- Know how to configure IP settings on common operating systems and devices
- Understand networking subnetting
- Describe common network appliances (e.g., firewall, load balancer, and proxy) and their functions

### Servers and Systems Administration

- Install and manage Windows or Linux operating systems, manually or unattended
- Install applications, manually and via packaged deployments (e.g., RPM, MSI or yum)
- Manage system security by administering users and groups, assigning permissions to resources, and configuring personal firewalls
- Preferred: Understand distributed systems concepts including fault tolerance, high availability, configuration management, and automation

### Storage

- Understand common storage architecture and concepts related to servers and application environments (e.g., RAID, clustering)
- Differences between types of storage (e.g., file, block)
- Preferred: How file systems work (e.g., NTFS or ext4)

**Security**

Understand common methods used to secure data centers, including:

- Access control and identity management
- Securing data in transit (e.g., SSH, SSL or TLS) and at rest (e.g., AES or SHA)

**Databases**

Conceptual understanding of common database technologies and solutions, including:

- Relational (e.g., MySQL, Microsoft SQL Server or Oracle SQL)
- NoSQL (e.g., Cassandra or MongoDB)
- Preferred: Distributed frameworks (e.g., Apache Hadoop, Apache Spark or Presto)

**Preferred: Scripting and Configuration Management**

- Comfortable reading scripts in one or more scripting languages (e.g., Bash, Python, Java, C#, Ruby or PowerShell)
- Conceptual knowledge of configuration management solutions (e.g., Puppet or Chef)

**Preferred: Application Development**

Conceptual understanding on how applications are built, and the tools and methods used to manage development, such as:

- Version control solutions (e.g., Git, Perforce or BitBucket)
- Development tools (e.g., code review solutions and development collaboration solutions)