**Summary**

This Instructor led comprehensive course **(AWS Solutions Architect – Associate & SysOps Administrator)** designed to show how to setup and run Cloud services in Amazon Web Services all the way through to IaaS with hands-on experience on AWS Public cloud.

This course provides a strong foundation for implementing and designing cloud services. This course designed to show how to setup and run Cloud services in Amazon Web Services all the way through to IaaS with hands-on experience on AWS Public cloud.

**Objectives**

Objectives of the course

* Compute (EC2, Systems Manager)
* Storage (S3, EBS, EFS and FSx)
* Database (RDS, DMS and Redshift)
* Network and Content Delivery (Route53, VPC and CloudFront)
* Management Tools (CloudWatch and AWS Directory Services)
* Security & Identity Compliance (IAM, CloudTrail Trusted Advisor, Config and Inspector)
* Application Services (SNS, SQS and SES)
* Migration Tools (Database Migration Service, Server Migration Service and AWS Storage gateway)
* DevOps tools (Code Commit, Code Build, Code Deploy, Code Pipeline, Cloud Formation and lambda)

**Prerequisites**

* Absolute Beginners. No prior AWS experience is necessary.
* Previous System Administration/ Development knowledge would be added advantage.
* System Administrators Interested in Deploying Applications on AWS
* Cloud Computing enthusiasts

**Setup requirements**

* Need to set up an AWS Account

(Most of the Services comes with AWS free tier eligibility)

* **Windows:** Putty and Web Browser with Internet connectivity.
* **Linux/Mac:** DefaultTerminal

**AWS Course Content**

**Day: 1**

**Introduction to Cloud Computing**

* Introduction to cloud computing
* Essential Characteristics of Cloud Computing
* Service Models in Cloud computing
  + Public Cloud
  + Private Cloud
  + Hybrid Cloud
  + Community Cloud

**Day: 2**

* Deployment models in Cloud Computing
  + SaaS (Software as a Service)
  + PaaS (Platform as a Service)
  + IaaS (Infrastructure as a Service)

**Day: 3**

* Introduction to AWS
* AWS Global Infrastructure
* AWS Account creation
* AWS Free tier overview
* Creating Billing Alarm.

**Day: 4** (**Identity and Access Management)**

* Root User
* IAM user
* Multi Factor Authentication for Users
* IAM Password Policies
* Access Key ID and Secret Access Key rotations
* AWS Managed Policies
* Customer Managed Policies.
* AWS Policy Simulator

**Day: 5 (Storage)**

* Object based storage Vs File System Storage
* S3 Introduction
* Storage Classes
  + S3 – Standard
  + S3 – IA / OneZone – IA
  + Reduced Redundancy Storage
  + Intelligent Tier
  + Glacier
* Versioning
* Access Control Lists

**Day: 6**

* Cross-region replication
* S3 storage automation with Life Cycle Management
* Security and Encryption using KMS
* KMS Key management Service
* S3 Static Website hosting
* Events configuration on S3 buckets using SNS

**Day: 7**

* S3 Data management using 3rd Party applications.
* S3 Cross Account Access
* AWS S3 Glacier and Data Retrievals
* Object Lock

**Day: 8**

* AWS Pre-Sign URLs
* Transfer Acceleration
* Custom bucket Policies
* S3 Metrics
* AWS Import / Export
* Snowball Vs Snowball Edge Vs Snow Mobile

**Day: 9 (Compute)**

* EC2 Introduction
* EC2 Vs Traditional Computing
* EC2 Instance Types
  + On-Demand Instances
  + Reserved Instances
  + Spot Instance
* Dedicated tenancy Vs Shared tenancy

**Day: 10**

* EC2 Instance isolation architecture
* EC2 Instance Life-Cycle
* Launching a Windows Instance

**Day: 11**

* Launching a Linux Instance
* Elastic IP Address
* Elastic Network Interfaces
* Security Groups

**Day: 12**

* Instance Store Volumes
* EBS Volumes
  + GP2, iO1, Magnetic, ST1 and SC1
* Creating Encrypted Volumes
* Snapshots
* Snapshot Lifecycle Manager
* Automating Snapshots using Cloudwatch Events

**Day: 13**

* EC2 Instance Images
* Golden AMI
* Creating customized Amazon Machine Images

**Day: 14 (Linux Session: 1)**

* Linux Installation
* Basic Commands.
* File Folder Permissions
* User Management

**Day: 15 (Linux Session: 2)**

* Apache & Nginix Installation
* Creating custom user for logon
* Volumes on Linux
* Images on Linux

**Day: 16**

* User Data
* Metadata
* Generating custom Public Key and Private keys
* EC2 Vertical Scaling & Horizontal Scaling.

**Day: 17**

* Elastic Load Balancer
  + Classic ELB
  + Application ELB
  + Network ELB
* Listeners
* Configuring Load balancers
* Sticky sessions
* Access Log Creation

**Day: 18**

* CloudWatch Alarms
* Auto Scaling Groups
* Auto Scaling Scenarios
  + Dynamic Scaling
  + Manual Scaling
  + Scheduled Scaling
* ASG Components

**Day: 19**

* Elastic File System
* AWS FSx
* CloudWatch overview.

**Day: 20**

* AWS Command Line Interface.
* Configuring CLI on Windows and Linux instances.
* CLI with Visual Studio integration.
* CLI with Packer.
* CLI with WinScp and S3 browser.

**Day: 21**

* EC2 Roles
* AWS Systems Manager
* Run Command and AWS Automation with SSM

**Day: 22**

* AWS Lightsail
* Elastic Beanstalk
* RAID Overview and RAID Configurations
* Placement Groups

**Day: 23 (Route 53)**

* What is DNS
* How DNS works
* DNS Record types
* Hosted Zone Creation and NS configuration
* Domain Name Mapping to AWS Resources.
* Routing Policies
  + Simple Routing
  + Weighted Routing
  + Latency Routing
  + Failover Routing
  + Geolocation Routing
  + Multi Value Routing
* Hosting website using routing Policies.

**Day: 24 (Virtual Private Cloud)**

* Networking Basics.
  + IPv4 Classes
  + Public IP Vs Private IP
  + Subnets
  + NAT
* VPC Basics
  + Default VPC
  + Custom VPC

**Day: 25**

* Creating custom VPC with custom Subnets
* Route Table
* Internet gateway

**Day: 26**

* NAT Instance Vs NAT Gateway
* Configuring NAT Instance
* Configuring NAT gateway
* Network ACLs to Block traffic.

**Day: 27**

* VPC Peering
* S3 Endpoint for Private Subnets
* VPN Configuration using OpenVPN.
* Flowlog creation to S3

**Day: 28** (**Databases)**

* Databases introduction.
* Traditional DB Vs EC2 hosted Database Vs RDS
* Launching a MSSQL RDS Instances
* Database Backup and Recovery
* Point in time Recovery options.

**Day: 29**

* Launching a MySQL RDS Instances
* Multi-AZ Use cases and Configuration
* Read Replicas Use cases and Configuration

**Day: 30**

* Amazon Aurora Infrastructure
* DynamoDB table creation
* DynamoDB access policy creation
* DAX overview
* Redshift
* Elastichache
* Database Migration Service
* Schema conversion tool

**Day: 31 (Security Options)**

* CloudTrail
* AWS Config
* Key Management Services
* AWS Web Application Firewall
* AWS Shield

**Day: 32**

* AWS Certificate Manager
* AWS Inspector
* AWS Trusted Advisor
* CloudFront configuration
  + Origin as S3
  + Origin as ELB
  + Geo Restrictions
* Directory Services and Adding EC2 instance to Domain
* AD Connector with On-Premise Active Directory.

**Day: 33 (Application Services)**

* Simple Email Service
* Simple Queue Service
* Simple Notification Service
* AWS TCO Calculator and Simple Monthly calculator

**Day: 34 (DevOps Tools)**

* What is DevOps in Cloud
* CI/CD overview
* CI/CD Configuration
  + Code Pipeline
  + Code Commit
  + Code Build
  + Code Deploy
* Packer and Terraform
* Lambda
* Cloud Formation

**Day: 35 (Hybrid Cloud Scenarios)**

* Nagios
* SMS - Server Migration Service
* AWS DataSync
* AWS Backup
* AWS Storage Gateway

**Amazon White Papers review**

**Quiz and Scenario based questions discussion**

**Resume Key Points and AWS Certifications overview**

**AWS End-to-End infrastructure overview**