TNGS Learning Solutions
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TNGS L.S. AWS Solution Architect Course MODULES

Introduction to Cloud Computing

1. **Introduction to Cloud Computing**
    a. Compute
    b. Database
    c. Storage
    d. Network
    e. DNS
    f. Security
    g. Automations
2. **Benefits of Cloud Computing - Why Cloud Computing?**
    a. **Pillars of AWS Well-Architected Framework**
        i. Cost-optimization
        ii. Performance
        iii. Security
        iv. Virtualization
        v. Reliability
        vi. Operational excellence
3. **Public Cloud, Private Cloud, Hybrid Cloud**
4. **Virtualization**
    a. Understanding Virtualization

Amazon Web Services (AWS)

Introduction to AWS

1. Elastic computing.
2. Introduction to the AWS products.

3. Regions and Availability Zones
4. Signing up for AWS.
5. AWS Free usage tier.
6. Introduction AWS management console.

EC2 Compute Services

1. EC2 Introduction
2. Spinning Windows/Linux servers in EC2
3. Connecting to Instances using RDP, MobaXTerm, Putty
4. EC2 Auto Scaling
5. Security Group Basics and Implementing Security for Real Time Environments.
6. Automating Backups for Instances using Snapshots
7. Elastic Block Storage
8. Understanding **Amazon Machine Image** and Its Features
9. Configuring INSTANCE-AMI-INSTANCE Lifecycle
10. Real time use case for Boot Strapping for EC2 Instances

Amazon Virtual Private Cloud (VPC)

1. Introduction to VPC
2. IPv4 Addressing Scheme
3. Public and Private IP's
4. Understanding Subnetting
5. Elastic IP's
6. Basic VPC configuration
7. Implementing Private/Public subnets in VPC
8. VPC security

9. Inbound and outbound ACL's
10. Deep Dive in to VPC core concepts (Route Tables, Subnets, Internet Gateway)
11. Building Custom VPC Network Topology for Real Time Environments
12. Implementing NAT (Network Address Translation) in VPC

Elastic Load Balancers (ELB)

1. Introduction to ELB.
2. Implementing HA and Reliability using Load Balancer for AWS applications
3. Understanding ELB Load Distribution using Round Robin Algorithm.
4. Understanding Health Checks.
5. Configuring Advanced VPC and Cross Zone Load Balancing
6. Adding and removing instances on ELB

Simple Notification Service (SNS)

1. Introduction to SNS.
2. Creating topics and Evaluating ARNs.
3. Subscribing using Various Protocols.
4. Publishing Notifications using SNS.
5. Integrating SNS Topics with CloudWatch and Autoscaling Services.

CloudWatch

1. Introduction of AWS Monitoring
2. CloudWatch Basic and Detailed Monitoring and Its Features.
3. Implementing Real Time monitoring by Integrating with SNS.
4. Understanding CloudWatch Logs and Metrics.
5. Creating Alarms and Its Actions.
6. Configuring Dashboards for Organization Architectures.

Relational Database Service (RDS)

1. Introduction to Relational Databases.
2. Creating Relational Databases in RDS.
3. Connecting to RDS Database Instances using SQLWorkbench.
4. Automating Backups and Patching for Various Database Engines.
5. Creating Redundant and Fault Tolerant Databases.
6. Implementing Read Replicas for Read Heave databases.
7. RDS Resilient Architecture using Point in Time Recovery.
8. Configuring Event Notifications for Database Instances.
9. Understanding Parameter, Option, and Subnet Groups

Auto Scaling Group

1. Introduction to ASG
2. Understanding Horizontal vs. Vertical scaling.
3. Understanding Auto Scaling.
4. Launch Configuration.
5. Launch Template
6. Understanding Various Scaling Types (Dynamic, Scheduled, Step, Target Tracking Scaling Policies).
7. Setting up an auto-scaled, load-balanced Application using Autoscaling.

Route53

1. Introduction of Domain Name System.
2. Buying Domain names at Domain Registrars.
3. Creating Zones on Route53.
4. Creating Route53 Records (Address, CNAME, Alias).
5. Creating Health Checks in Route53.
6. Understanding routing policies provided by AWS.
7. Route53 Routing Policies

S3 (Simple Storage Service)

1. Introduction to AWS Object Storage.
2. Creating S3 Buckets and Uploading Data into it.
3. S3 durability and redundancy.
4. Various S3 Storage Types (Standard, Infrequent, One Zone)
5. Configuring S3 Versioning, Logging, Encryption
6. Hosting a Static Website on S3.
7. Implementing Lifecycle and replication for S3 Buckets.
8. Understanding S3 Analytics, Metrics, and Inventory.

CloudFront

1. Introduction to Content Delivery Network (CDNs).
2. Understanding AWS EDGE Network Locations.
3. Understanding CloudFront Distributions and Origins.
4. Implementing CDN for Websites using CloudFront.
5. Going through CloudFront Reports and Analytics.
6. CloudFront Security for S3 buckets using OAI (Origin Access Identity).
7. Configuring origins and behaviors.

Identity access management (IAM)

1. Introduction of IAM Service.
2. Creating Users and Groups.
3. Grant Least Privilege.
4. Configuring a Strong Password Policy for your Users.
5. Enabling MFA for Privileged Users.
6. Granting permissions using IAM Policies.
7. Creating Custom Policies and Associating to Users and Groups.
8. Understanding Roles.

9. IAM Access Credentials and its usages.
10. AWS CLI.

Elastic Beanstalk

1. Understanding DevOps tools of AWS.
2. Automation by Elastic Beanstalk.
3. Creating an Application Environment using EB.
4. Application versioning and deploying.
5. Clean up of EB Environment.

Cloud Formation

1. Introduction to Cloud Formation
2. Automating a Ruby on Rails Application using Cloud Formation.
3. Clean up of Cloud formation Environment.
4. CloudFormation Designer

Glacier

1. Introduction to Glacier Storage.
2. Creating Vaults.
3. Uploading data to Vaults.
4. Key differences between S3 and Glacier.

CloudTrail

1. Introduction to Audit logging by CloudTrail.
2. Creating Trials.
3. Storing Trial logs in S3 Buckets.

Trusted Advisor

1. Introduction to Trusted Advisor.
2. Understanding Cost Optimization Tab.

3. Understanding Performance Tab.
4. Understanding Security Tab.
5. Understanding Fault Tolerance Tab.
6. Understanding Service Limits Tab.

Elastic File System

1. Introduction to EFS.
2. Creating EFS and mounting on Linux Servers.

AWS Cost Controlling Strategies

1. Introduction to AWS Pricing.
2. Understanding AWS Pricing Models (On Demand, Reserved, Spot).
3. Best Practices for Cost Optimization.

AWS Well Architect Framework

1. Introduction to Well Architected Framework.
2. Security Pillar.
3. Reliability Pillar.
4. Performance Efficiency Pillar.
5. Cost Optimization Pillar.
6. Operational Excellence Pillar.

AWS Certifications

1. List of AWS Certifications.
2. Enrolling for AWS Certification.
3. AWS Practice Exam.
4. Tips and Tricks for Cracking the Exams.
5. Going through the sample questions and implementing tricks on live session.

Cloud DevOps/Automation

1. Introduction to DevOps
2. SDLC
3. Continuous Integration
4. Continuous Delivery/Deployment
5. DevOps Tools and process
6. CICD pipeline

Dynamo DB

1. Understanding NOSQL Databases.
2. Creating a DynamoDB table with Sample Data.
3. Understanding RCU and WCU of DynamoDB Tables.
4. Understanding Throttling in DynamoDB.
5. Creating Alarms in DynamoDB.

Additional Extension Material

1. SQS Overview and implementing polling messages.
2. SWF Overview.
3. Introduction to Elastic Transcoder.
4. Introduction API Gateway.
5. Introduction to Kinesis and Various types of Kinesis Streams.
6. Introduction of Lambda.
7. Implementing a sample script and executing by Lambda.
8. AWS Direct Connect.
9. AWS Snowmobile.

Course Revision and Interview preparations.