

VERSION

25

**TESBO COURSE**

**SR. CODE**

EAPL/TESBO/TSTC08

**COURSE CODE**

EATCA

**SUB CATEGORY**

CLOUD COMPUTING

  
TOTAL DURATION  
**180**  
HOURS

  
THEORY TAKEN  
**130**  
HOURS

  
PRACTICAL TAKEN  
**50**  
HOURS

ELYSIUM  
ACADEMY  
ELYSIUM  
CERTIFIED  
CLOUD  
ARCHITECT  
**ELYSIUM  
ACADEMY  
ELYSIUM  
CERTIFIED  
CLOUD  
ARCHITECT**  
ELYSIUM  
ACADEMY  
ELYSIUM



## COURSE DESCRIPTION



The fundamental applications of cloud computing, specifically choosing AWS services, are covered in the course. The following services are covered by the course. As a major contender in the world of cloud computing, AWS is something that every IT professional should become familiar with. The audience for this training was novices.

## COURSE GOALS



- Identify Use Cases for AWS
- AWS such as EC2, S3, Cloud IAM and More
- Monitoring and Management of your cloud resources
- Certification Options
- Additional Resources to learn more.

## FUTURE SCOPE



The world is moving toward the cloud, and the demand for AWS Solutions Architects will only increase. The up scaling of cloud computing has led to a paradigm shift in how companies do business. It's now possible for any company to have its own data center, but with a lot more security, scalability, and cost-effectiveness.



# 01

## CHAPTER

### GET STARTED WITH AWS

- a. What is Cloud?
- b. Types of Cloud Deployment models
- c. Cloud Services
- d. Public cloud types
- e. AWS overview
- f. AWS Regions & Zones
- g. Introduction to Aws management console
- h. AWS services



# 02

## CHAPTER

### INITIATED AMAZON WEB SERVICES

- a. Assistance Global utilities
- b. Get work with service quotas
- c. Hands on in Comparing Savings Plans & a Quick look at Aws.Compile Optimizer Dashboard
- d. Budget billing dashboard
- e. Budget categories
- f. Security Credentials
- g. Access management console
- h. Work protocol IAM
- i. Hands on Cost Explorer
- j. Aws Purchasing option
- k. Cost management Introduction
- l. Service quotas & Throttling in Axis





# 03

## CHAPTER

### **ELASTIC COMPUTE CLOUD (EC2)**

- a. What is EC2?
- b. Define AMI
- c. Launch Amazon Ec2 instance
- d. Configure Security groups
- e. PEM & PPK
- f. Commit Linux terminal commands
- g. Add volume in EC2 Linux
- h. Deploy Windows server instance
- i. Scenario based architecture
- j. connect to an Ec2 Instance by Using RDP
- k. managing licensing & cost in Ec2
- l. migrating AWS with snowball and outposts
- m. Advanced EC2 networking & connectivity options



**02**  
HRS



**04**  
HRS

# 04

## CHAPTER

### **AMAZON ELASTIC BLOCK STORE**

- a. Managing data retention and classification in AWS
- b. Data Recovery options on AWS
- c. Features of Amazon EBS
- d. Modify EBS volumes
- e. Encrypting EBS volumes for security
- f. Take Snapshots
- g. Restore Snapshots
- h. Convert into AMI
- i. Deploy cross region instance from AMI
- j. Managing AMI



**02**  
HRS



**05**  
HRS



- k. Protecting your data with AWS backups
- l. Working with Instance stores in AWS
- m. Amazon fully managed file system service
- n. Understanding EFS: Amazon's Elastic file system

# 05

## CHAPTER

### INSTANCE CATEGORIES

- a. Distinguish between reboot, stop and terminate
- b. Define spot instances
- c. Brief about saving plans
- d. What are reserved instances
- e. Detail about capacity reservation
- f. Instance types



# 06

## CHAPTER

### SCALABLE STORAGE SERVICE (S3)

- a. Configure S3 Bucket & website upload option with S3
- b. Amazon S3
- c. Sharing & Accessing S3 objects with presigned URLs & Access point
- d. What is object storage?
- e. Managing object life cycle & versioning in S3
- f. Define Scalable Storage in the cloud
- g. Characteristic Versioning & encryption
- h. Deploy buckets using S3
- i. Analyse your storage
- j. Cross-region replications process
- k. Hosting static website with Amazon S3
- l. Enhancing security & Access control in S3





- m. Understanding different storage classes in S3
- n. Storing log files into S3 buckets

# 07

## CHAPTER

### **IAM (IDENTITY ACCESS MANAGEMENT)**

- a. What is IAM?
- b. Building a secure IAM strategy
- c. Create users & groups
- d. User access key id & secret access key id
- e. Deploy default policies
- f. IAM policies , IAM Roles
- g. Configure Customized policies
- h. Organize bucket policies
- i. Best practises for Root and IAM users
- j. Managing access across multiple AWS accounts
- k. Acceskey,secreat acceskey CLI



**02**  
HRS



**06**  
HRS

# 08

## CHAPTER

### **AWS NETWORK & SECURITY**

- a. What is Elastic IP address?
- b. what is public IP, Private IP
- c. CIDR value monitoring with VPC flow logs
- d. Subnetting
- e. Deploy new VPC
- f. Create Subnets
- g. Deploy Route tables
- h. Configure Internet gateways
- i. What is VPC Peering?
- j. Define NAT



**02**  
HRS



**05**  
HRS



- k. private communication with VPC Endpoint
- l. create 2time Architecture
- m . Create 3time architecture using Upc

# 09

## CHAPTER

### DESIGN SECURE WORKLOADS & APPLICATIONS

- a. Designing VPC Architectures with Security components (for Example - Security groups, Route tables, network ACLs, NAT Gateways)
- b. Determining Network segmentation strategies (for example, using public subnets & Private Subnets)
- c. Configure Internet Gateways
- d. Configure NAT gateway for Internet Access



**02**  
HRS



**03**  
HRS

# 10

## CHAPTER

### AWS HIGH-AVAILABILITY

- a. Define Load balancer
- b. What is Auto scaling?
- c. Autoscaling polices
- d. Deploy Application load balancer
- e. Configure Target groups
- f. Taken AMI
- g. Create Autoscaling configuration
- h. Configure Auto scaling groups
- i. Creating a lunch template
- j. Horizontal vs vertical scalling



**02**  
HRS



**04**  
HRS



# 11

## CHAPTER

### **AWS DATABASES**

- a. Define RDS?
- b. Connect database for -time architecture.
- c. What is Dynamo?
- d. Understanding Dynamo DB
- e. Create MYSQL Database instance
- f. Access through client machine
- g. Create Dynamo Db
- h. Backup Dynamo Db
- i. What is Amazon Aurora?
- j. Implementing read replicas with RDS
- k. Selecting the best DB engine for your need



**02**  
HRS



**03**  
HRS

# 12

## CHAPTER

### **AWS MONITORING & SNS**

- a. Sending notification with Amazon SNS
- b. Create Events & Schedule works
- c. Monitoring memory & disk metrics
- d. Collect and Track metrics
- e. Configure Alarm & assign SNS
- f. Define Cloud Trail
- g. Ordering message with amazon sqs
- h. Handling failed message with dead-letter quoesin SQS
- i. Message queiny with Amazon SQZ



**02**  
HRS



**04**  
HRS



# 13

## CHAPTER

### AMAZON ROUTE 53

- a. Define Route 53
- b. What is DNS?
- c. Define Traffic flow
- d. Create hosted zone
- e. Purchasing domain names
- f. Mapping IP address to domain name
- g. Hosting application using domain name

  
**02**  
HRS

  
**03**  
HRS

# 14

## CHAPTER

### AWS APPLICATION SERVICES

- a. Define LAMDA
- b. What is Elastic bean stalk?

  
**01**  
HRS

  
**02**  
HRS

# 15

## CHAPTER

### DATA SECURITY OPTIONS

- a. Monitoring metrics with amazon managed service
- b. Cloud Watch Monitoring
- c. Auditing AWS activities with AWS cloud trail
- d. Cloud watch Alarms/Alerts
- e. Security Hub
- f. NACLs or Security Groups

  
**02**  
HRS

  
**03**  
HRS



# 16

## CHAPTER

### **SERVERLESS**

- a. When to use containers
- b. How to migrat applications into container
- c. Building graphql APIs with AWSApp sync
- d. Scaling database with amazon aurora serverless
- e. Running containers anywhere with amazon Ecs & Eks anywhere
- f. Storing & deploying container images with amazon ECR



**04**  
HRS



**04**  
HRS



# 17

## CHAPTER

### SETTING UP CLOUD PROJECTS AND ACCOUNTS

- Creating a resource hierarchy.
- Applying organizational policies to the resource hierarchy.
- Granting members IAM roles within a project.
- Managing users and groups in Cloud Identity (manually and automated).
- Enabling APIs within projects.
- Provisioning and setting up products in Google Cloud's operations suite



**30**  
MINS



**01**  
HRS

# 18

## CHAPTER

### MANAGING BILLING CONFIGURATION

- Creating one or more billing accounts.
- Linking projects to a billing account.
- Establishing billing budgets and alerts.
- Setting up billing exports.
- Installing and configuring the command line interface (CLI) specifically the cloud SDK log setting the default project.



**30**  
MINS



**01**  
HRS



# 19

## CHAPTER

### **PLANNING AND CONFIGURING COMPUTE RESOURCES**

- a. Promising and estimating google cloud product using the price calculator.
- b. Selecting appropriate compute choices for a given workload (e.g., Compute Engine, Google Kubernetes Engine, Cloud Run, Cloud Functions).
- c. Using pre-emptible VMs and custom machine types as appropriate.



**30**  
MINS



**02**  
HRS

# 20

## CHAPTER

### **PLANNING AND CONFIGURING DATA STORAGE OPTIONS**

- a. Product choice  
(e.g., Cloud SQL, Big Query, Fire store, Cloud Spanner, Cloud Bigtable)
- b. Choosing storage options  
(e.g., Zonal persistent disk, Regional balanced persistent disk, Standard, Nearline, Coldline, Archive).



**30**  
MINS



**03**  
HRS



# 21

## CHAPTER

### **PLANNING AND CONFIGURING NETWORK RESOURCES**

- a. Differentiating load balancing options
- b. Identifying resource locations in a network for availability
- c. Configuring Cloud DNS



**15**  
MINS



**02**  
HRS

# 22

## CHAPTER

### **DEPLOYING AND IMPLEMENTING COMPUTE ENGINE RESOURCES**

- a. Launching a compute instance using the Google Cloud console and Cloud SDK (gcloud) (e.g., assign disks, availability policy, SSH keys).
- b. Creating an autoscaled managed instance group using an instance template.
- c. Generating/uploading a custom SSH key for instances.
- d. Installing and configuring the Cloud Monitoring and Logging Agent.
- e. Assessing compute quotas and requesting increases.



**30**  
MINS



**02**  
HRS



# 23

## CHAPTER

### DEPLOYING AND IMPLEMENTING GOOGLE KUBERNETES ENGINE RESOURCES

- a. Installing and configuring the command line interface (CLI) for Kubernetes (kubectl).
- b. Deploying a Google Kubernetes Engine cluster with different configurations including AutoPilot, regional clusters, private clusters, etc.
- c. Deploying a containerized application to Google Kubernetes Engine
- d. Configuring Google Kubernetes Engine monitoring and logging.



**30**  
MINS



**02**  
HRS

# 24

## CHAPTER

### DEPLOYING AND IMPLEMENTING CLOUD RUN AND CLOUD FUNCTIONS RESOURCES

- a. Deploying an application and updating scaling configuration, versions, and traffic splitting.
- b. Deploying an application that receives Google Cloud events (e.g., Pub/Sub events, Cloud Storage object change notification events).



**30**  
MINS



**01**  
HRS



# 25

CHAPTER

## 29. DEPLOYING AND IMPLEMENTING DATA SOLUTIONS

- a. Initializing data systems with products (e.g., Cloud SQL, Firestore, BigQuery, Cloud Spanner, Pub/Sub, Cloud Bigtable, Dataproc, Dataflow, Cloud Storage).
- b. Loading data (e.g., command line upload, API transfer, import/export, load data from Cloud Storage, streaming data to Pub/Sub).



**30**  
MINS



**01**  
HRS

# 26

CHAPTER

## 30. DEPLOYING AND IMPLEMENTING NETWORKING RESOURCES

- a. Creating a VPC with subnets (e.g., custom-mode VPC, shared VPC).
- b. Launching a Compute Engine instance with custom network configuration (e.g., internal-only IP address, Google private access, static external and private IP address, network tags).



**01**  
HRS



**02**  
HRS



- c. Creating ingress and egress firewall rules for a VPC (e.g., IP subnets, network tags, service accounts).
- d. Creating a VPN between a Google VPC and an external network using Cloud VPN.
- e. Creating a load balancer to distribute application network traffic to an application (e.g., Global HTTP(S) load balancer, Global SSL Proxy load balancer, Global TCP Proxy load balancer, regional network load balancer, regional internal load balancer).

# 27

## CHAPTER

### **DEPLOYING A SOLUTION USING CLOUD MARKETPLACE**

- a. Browsing the Cloud Marketplace catalog and viewing solution details.
- b. Deploying a Cloud Marketplace solution.



**30**  
MINS



**01**  
HRS



# 28

## CHAPTER

### **IMPLEMENTING RESOURCES VIA INFRASTRUCTURE AS CODE**

- a. Building infrastructure via Cloud Foundation Toolkit templates and implementing best practices.
- b. Installing and configuring Config Connector in Google Kubernetes Engine to create, update, delete, and secure resources.



**30**  
MINS



**01**  
HRS

# 29

## CHAPTER

### **MANAGING COMPUTE ENGINE RESOURCES**

- a. Managing a single VM instance (e.g., start, stop, edit the configuration, or delete an instance).
- b. Remotely connecting to the instance
- c. Attaching a GPU to a new instance and installing necessary dependencies.
- d. Viewing current running VM inventory (instance IDs, details).



**30**  
MINS



**02**  
HRS



- e. Working with snapshots  
(e.g., create a snapshot from a VM, view snapshots, delete a snapshot).
- f. Working with images  
(e.g., create an image from a VM or a snapshot, view images, delete an image).
- g. Working with instance groups  
(e.g., set autoscaling parameters, assign instance template, create an instance template, remove instance group).
- h. Working with management interfaces  
(e.g., Google Cloud console, Cloud Shell, Cloud SDK).

# 30

## CHAPTER

### **MANAGING GOOGLE KUBERNETES ENGINE RESOURCES**

- a. Viewing current running cluster inventory (nodes, pods, services).
- b. Browsing Docker images and viewing their details in the Artifact Registry.
- c. Working with node pools  
(e.g., add, edit, or remove a node pool).



**01**  
HRS



**03**  
HRS



- d. Working with pods  
(e.g., add, edit, or remove pods).
- e. Working with services  
(e.g., add, edit, or remove a service).
- f. Working with stateful applications  
(e.g. persistent volumes, stateful sets).
- g. Managing Horizontal and Vertical  
autoscaling configurations.
- h. Working with management interfaces  
(e.g., Google Cloud console, Cloud Shell,  
Cloud SDK, kubectl).

# 31

CHAPTER

## MANAGING CLOUD RUN RESOURCES

- a. Adjusting application traffic-  
splitting parameters.
- b. Setting scaling parameters for  
autoscaling instances.
- c. Determining whether to run Cloud  
Run (fully managed) or Cloud  
Run for Anthos.



**15**  
MINS



**01**  
HRS



# 32

## CHAPTER

### MANAGING STORAGE AND DATABASE SOLUTIONS

- a. Managing and securing objects in and between Cloud Storage buckets.
- b. Setting object life cycle management policies for Cloud Storage buckets.
- c. Executing queries to retrieve data from data instances (e.g., Cloud SQL, BigQuery, Cloud Spanner, Datastore, CloudBigtable).
- d. Estimating costs of data storage resources.
- e. Backing up and restoring database instances (e.g., Cloud SQL, Datastore).
- f. Reviewing job status in Dataproc, Dataflow, or BigQuery.



**30**  
MINS



**02**  
HRS

# 33

## CHAPTER

### MANAGING NETWORK RESOURCES

- a. Adding a subnet to an existing VPC.
- b. Expanding a subnet to have more IP addresses.
- c. Reserving static external or internal IP addresses.
- d. Working with CloudDNS, CloudNAT, Load Balancers, and firewall rules.



**30**  
MINS



**02**  
HRS



# 34

## CHAPTER

### MONITORING AND LOGGING

- a. Creating Cloud Monitoring alerts based on resource metrics.
- b. Creating and ingesting Cloud Monitoring custom metrics (e.g., from applications or logs).
- c. Configuring log sinks to export logs to external systems (e.g., on-premises or BigQuery)
- d. Configuring log routers.
- e. Viewing and filtering logs in Cloud Logging.
- f. Viewing specific log message details in Cloud Logging. Using cloud diagnostics to research an application issue (e.g., viewing Cloud Trace data, using Cloud Debug to view an application point-in-time).
- g. Viewing Google Cloud status.



01  
HRS



01  
HRS



# 35

## CHAPTER

### **MANAGING IDENTITY AND ACCESS MANAGEMENT (IAM)**

- a. Viewing IAM policies.
- b. Creating IAM policies.
- c. Managing the various role types and defining custom IAM roles (e.g., primitive, predefined, and custom).



**30**  
MINS



**02**  
HRS

# 36

## CHAPTER

### **MANAGING SERVICE ACCOUNTS**

- a. Creating service accounts.
- b. Using service accounts in IAM policies with minimum permissions.
- c. Assigning service accounts to resources.
- d. Viewing audit logs
- e. Managing IAM of a service account.
- f. Managing service account impersonation.
- g. Creating and managing short-lived service account credentials.



**30**  
MINS



**02**  
HRS



# 37

## CHAPTER

### **MANAGE AZURE IDENTITIES AND GOVERNANCE**

#### **1. Azure Ad Objects**

1. Create users and groups
2. Manage licenses in Azure AD
3. Create administrative units
4. Manage user and group properties

#### **2. Azure Identity**

1. Manage device settings and device identity
2. Perform bulk updates
3. Manage guest accounts
4. Configure self-service password reset

#### **3. Access Control**

1. Create custom role-based access control (RBAC) and Azure AD roles
2. Provide access to Azure resources by assigning roles at different scopes
3. Interpret access assignments



**02**  
HRS



**05**  
HRS

# 38

## CHAPTER

### **MANAGE AZURE SUBSCRIPTIONS AND GOVERNANCE**

#### **1. Azure Subscriptions And Governance**

1. Configure and manage



**02**  
HRS



**05**  
HRS



2. Configure resource locks
3. Apply and manage tags on resources
4. Manage resource groups
5. Manage subscriptions
6. Manage costs by using alerts, budgets, and recommendations
7. Configure management groups

# 39

## CHAPTER

### **IMPLEMENT AND MANAGE STORAGE**

#### **1. Configure Access To Storage**

1. Configure network access to storage accounts
2. Create and configure storage accounts
3. Generate shared access signature tokens
4. Configure stored access policies
5. Manage access keys
6. Configure Azure AD authentication for a storage account
7. Configure storage encryption

#### **2. Manage Data In Azure Storage Accounts**

1. Create import and export jobs
2. Manage data by using Azure Storage Explorer and AZ Copy





3. Implement Azure Storage redundancy
4. Configure object replication

### **3. Configure Azure Files And Azure Blob Storage**

1. Create an Azure file share
2. Configure Azure Blob Storage
3. Configure storage tiers
4. Configure blob lifecycle management

# 40

## CHAPTER

### **DEPLOY AND MANAGE AZURE COMPUTER RESOURCES**

#### **1. Automate Deployment Of Resources By Using Templates**

1. Modify an ARM template
2. Deploy a template
3. Save a deployment as an ARM template
4. Deploy virtual machine (VM) extensions

#### **2. Create And Configure Vms**

1. Create a VM
2. Manage images by using the Azure Compute Gallery
3. Configure Azure Disk Encryption
4. Move VMs from one resource group to another
5. Manage VM sizes





6. Add data disks
7. Configure VM network settings
8. Configure VM availability options
9. Deploy and configure VM scale sets

# 41

## CHAPTER

### **CREATE AND CONFIGURE CONTAINERS**

#### **1. Configure Containers**

1. Configure sizing and scaling for Azure Container Instances
2. Configure container groups for Azure Container Instances
3. Create and configure Azure Container Apps
4. Configure storage for Azure Kubernetes Service (AKS)
5. Configure scaling for AKS
6. Configure network connections for AKS
7. Upgrade an AKS cluster

#### **2. Create And Configure An Azure App Service**

1. Create an App Service plan
2. Configure scaling settings in an App Service plan
3. Create an App Service
4. Secure an App Service
5. Configure custom domain names
6. Configure backup for an App Service





7. Configure networking settings
8. Configure deployment settings

# 42

## CHAPTER

### **CONFIGURE AND MANAGE VIRTUAL NETWORKING**

#### **1. Configure Virtual Networks**

1. Create and configure virtual networks and subnets
2. Create and configure virtual network peering
3. Configure private and public IP addresses
4. Configure user-defined network routes
5. Configure Azure DNS

#### **2. Configure Secure Access to Virtual Networks**

1. Create and configure network security groups (NSGs) and application security groups (ASGs)
2. Evaluate effective security rules
3. Implement Azure Bastion
4. Configure service endpoints
5. Configure private endpoints

#### **3. Configure Load Balancing**

1. Configure Azure Application Gateway
2. Configure an internal or public load balancer
3. Troubleshoot load balancing





## 4. Monitor Virtual Networking

1. Monitor on-premises connectivity
2. Configure And Use Azure Monitor For Networks
3. Use Azure Network Watcher
4. Troubleshoot external networking
5. Troubleshoot virtual network connectivity

# 43

## CHAPTER

## MONITOR AND MAINTAIN AZURE RESOURCES

### 1. Monitor Resources By Using Azure Monitor

1. Configure and interpret metrics
2. Configure Azure Monitor Logs
3. Query and analyze logs
4. Set up alerts and actions
5. Configure monitoring of VMs, storage accounts, and networks by using VM insights

### 2. Implement Backup And Recovery

1. Create an Azure Recovery Services vault
2. Create an Azure Backup vault
3. Create and configure backup policy
4. Perform backup and restore operations by using Azure Backup
5. Configure Azure Site Recovery for Azure resources
6. Perform failover to a secondary region by using Azure Site Recovery
7. Configure and review backup reports





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