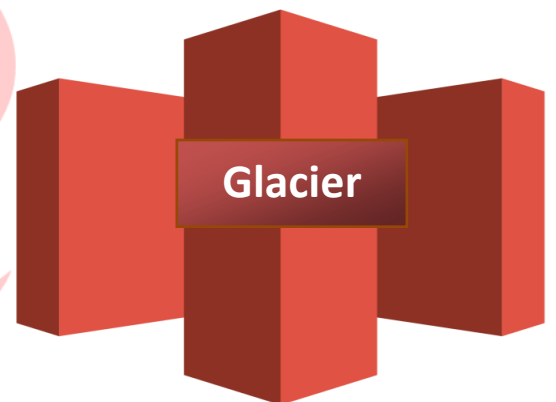




Amazon Virtual Private Cloud (VPC)



## New Batches Info

**START DATE :**

**TIMINGS :**

**DURATION :**

**TYPE OF BATCH :**

**FEE :**

**FACULTY NAME :**

**LAB TIMINGS :**

**Amazon Web Services**

- Account Basics
  - AWS Free tier
  - Create an AWS Account
  - Navigating AWS Console

**Networking (1)**

- Virtual Private Cloud (VPC)
  - AWS Global Infrastructure
  - VPC Basics
  - Internet Gateways(IGW)
  - Route Tables (RTs)
  - Network Access Control Lists (NACLs)
  - Subnets
  - Availability Zones
  - Introduction to VPC and AWS Networking
  - Building A VPC From Scratch
  - VPC Networking
  - VPC Security
  - Configuring a NAT Instance
  - DB Subnet Groups
  - Elastic IP Addresses and Elastic Network Interfaces
  - Configure a Web Application In VPC
  - Extending the VPC to On-Premise Networks
  - VPC Peering
  - Troubleshooting scenarios
  - Network and Data Security
  - Network Monitoring with Flow Logs
  - Extending On-Premise Networks with VPN
  - Using Directory Service to Connect Hybrid Architectures
  - Security Zones
  - Understanding AWS IP Subnet Reservations
  - Hybrid Cloud AWS
    - Overview
      - AWS Hybrid Cloud Scenario
    - Network Integration in to AWS VPC
      - Best Practices
      - AWS VPC Wizard Creation
      - Creating an OpenVPN Instance for Client Connections

- AWS SETUP - site-to-site VPN using OpenSwan IPSEC VPN overview
- AWS SETUP - site-to-site VPN using OpenSwan IPSEC VPN NAT SETUP
- AWS SETUP - site-to-site VPN using OpenSwan IPSEC VPN IPSEC INSTALL
- ON PREMISES - site-to-site VPN using OpenSwan IPSEC VPN Part1
- ON PREMISES - site-to-site VPN using OpenSwan IPSEC VPN Part2
- Troubleshooting OpenSwan and OpenVPN
- Extending Active Directory Into AWS
  - Adding a domain controller to AWS
- Zocalo
  - Setting up your First Zocalo Site
  - Using Zocalo
  - Zocalo Sync Client Setup
- AWS Direct Connect
  - Understanding AWS Direct Connect
  - Working with AWS Direct Connect Virtual Interfaces
  - Accessing Remote Regions
- Identify performance bottlenecks and implement remedies
  - Network Bottlenecks
- Cloud Formation
  - Cloud Formation Essentials
  - Creation and deployment of VPC Using Cloudformation
- Cloud Watch
  - Cloud Watch Basics
  - Monitoring Security Groups using CloudWatch
  - Creating SNS to communicate to Users
- Billing
  - Cost Optimizing
- AWS Command Line Interface
  - Creation of VPC From CLI
  - Managing VPC from CLI

**Messaging (1)**

- Simple Queue Service (SQS)
  - SQS Essentials
  - Using SQS to Build Decoupled architectures

- o SQS API Developer Requirements
- o Message Priority
- o Batch Processing Job Observer

**Object Storage and Content Delivery (2)**

- Simple Storage Service (S3)
  - o S3 Basics
  - o Buckets and objects
  - o Storage Classes
  - o Object Lifecycles
  - o Permissions
  - o Object Versioning
  - o S3 Essentials
  - o S3 Bucket/Object Versioning and Policies
  - o Website Hosting with S3
  - o AWS Command Line Interface
    - Working with S3 using CLI
  - o Introduction To S3 Developer Requirements
  - o Creating a static hosting Website with S3
  - o Enabling CORS configuration
  - o S3 IAM & Bucket Policies
  - o Logging S3 API Calls
  - o S3 Encryption
- Amazon CloudFront
  - o CloudFront Essentials
  - o Key Concepts and Overview
  - o Architecting Applications with CloudFront
  - o Dynamic Content with CloudFront
  - o CloudFront Reporting
  - o CloudFront Security
  - o Performance Considerations with CloudFront
  - o Streaming Media with CloudFront
  - o Forcing HTTPS to the origin
  - o Creating Multi-Region CloudFront Solution
- Glacier
  - o Overview
  - o Introduction to Glacier
  - o Creating a Glacier Vault
  - o Storing Archives in Glacier
  - o Understanding Glacier's Retrieval Pricing

- Restoring Archives from Glacier
- Amazon Cloud Formation
  - Creation and deployment of S3 buckets from Cloud formation
  - Creation of Bucket policies using Cloud Formation
  - Creating SNS to communicate to Users
- Billing
  - Cost Optimizing
- Amazon Elastic Transcoder
  - Overview
  - Streaming media with S3, Cloudfront and Elastic Transcoder

## **Identity and Security (2)**

- Identity Access and Management
  - What is IAM
  - IAM initial Setup and Configuration
  - IAM Users and Policies
  - IAM Groups and Policies
  - IAM Roles
  - IAM Essentials
  - IAM Best Practices for new accounts
  - API Keys and Roles
  - IAM Policies
  - Logging IAM Events with cloud trail
- Implement and manage security policies
  - S3 IAM and Bucket Policies Concepts
  - S3 Bucket Policies
  - Building IAM Policies
  - Network Access Control Lists (NACLs) and Security Groups
  - Using IAM Roles with EC2
- Demonstrate ability to prepare for security assessment use of AWS
  - AWS and IT Audits
- Ensure data integrity and access controls when using the AWS platform
  - MFA on Amazon Web Services (Multifactor Authentication)
  - Security Token Service
- Security
  - Security Architecture with AWS
    - Shared Security Responsibility Model And Attributes
    - AWS Platform Compliance And Security Services
    - Incorporating Common Conventional Security Products
    - DDoS Mitigation

- Encryption solutions
- Complex Access Controls
- Amazon CloudWatch For The Security Architect
- Cloud HSM
- AWS Security Token Service
  - Security Token Service
- Amazon Cloud Formation
  - Creation of IAM Policy, user and role

**EC2, Auto Scaling and Storage (3)**

- Elastic Compute Cloud (EC2)
  - EC2 Basics
  - Amazon Machine Images (AMIs)
  - Instance types
  - Elastic Block Store (EBS)
  - Security Groups
  - IP Addressing
  - Launching and using an EC2 instance
  - EC2 Essentials
  - Understanding Reserved Instances
  - Selecting and Building EC2 Instances
  - Working with public and private IP Addresses
  - Cloud-init Userdata and Metadata
  - CloudWatch and EC2
  - EC2 Placement Groups
  - Serving Traffic to Private Web Servers
  - Working with Elastic Block Storage
    - Understanding AWS Storage Types
    - Increasing IOPS Performance
    - Configuring Optimized Instances
  - EBS Volumes And Snapshots
  - EBS Snapshots and Replication
    - EBS Snapshots Characteristics
    - Working with Snapshots in the AWS Management Console
  - AWS Command Line Interface
    - Working with EC2 using CLI
  - EC2 Troubleshooting Scenarios
  - Monitoring and Metrics
    - Understanding AWS Instance types, Utilization and Performance
    - EC2 Instance and System Status Checks

- Creating Cloud Watch Alarms
  - Installing and Configuring Monitoring Scripts for EC2 Instances
  - Dedicated an instance to monitoring
  - Monitoring EBS for performance and availability
- High Availability And Fault Tolerant Tools with EC2
  - Working with AMI's
  - ELB with High Availability Hands On
  - Troubleshooting Connectivity Issues
  - Applying Auto Scaling and ELB To Create High Availability and Fault Tolerance
- Auto Scaling
  - Basics
  - Using Auto Scaling
  - Auto Scaling Troubleshooting scenarios
  - Auto Scaling Features
  - How Auto Scaling Works
  - Configuring Auto Scaling
  - Troubleshooting Auto Scaling Issues
- Elastic File Storage
- Demonstrate ability to create backups for different services
  - Overview of Backup Services on AWS and Services that Include Backups
  - Creating and Scripting Automation for EC2 Snapshots
- Elastic Load Balancer
  - ELB Basics
  - Creating an ELB
  - Monitoring ELB for performance and availability
  - ELB Troubleshooting scenarios
  - Maintaining Session State on ELB applications
- Route 53
  - Route 53 Basics
  - Using Route 53
  - Route 53 and DNS Failover
  - Latency Based Routing
  - Weighted Routing Policies In Route 53
  - Configuring DNS with Route 53
    - Where we are in the reference architecture
    - The role of DNS in a distributed cloud system
    - Using Route 53 with ELB, CloudFront, S3
    - How is failure handled?
    - Configuring Route 53

- Route 53 Best Practices
- Billing
  - AWS Billing and linking AWS Accounts
  - AWS Billing Dimensions and metrics for Cloud Watch
  - Cost Optimizing
  - Using the AWS Price List API and Cost Explorer
- Cloudwatch
  - Creating Cloud Watch Alarms for EC2 Monitoring
  - Creating custom cloudwatch metrics
  - Configuring Alarms
- Cloud Formation
  - Creation and Deploying EC2 Resources with Cloudformation
  - Creation of SSH Bastion Host
- CLI
  - Creation and management of EC2 resources using CLI
- Implement scalability and elasticity based on scenario
  - Scalability and Elasticity Essentials
  - Determining Reserved Instance Purchases Based on Business Needs
  - AutoScaling vs. Resizing
  - Elastic Load Balancer Sticky Sessions
- Optimize the environment to ensure maximum performance
  - Offloading Database Workload
  - Initializing (Pre-warming) EBS Volumes
  - Pre-warming The Elastic Load Balancer
- Identify potential issues on a given application deployment
  - EBS Root Devices on Terminated Instances - Ensuring Data Durability
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- Identify performance bottlenecks and implement remedies
  - Resizing or Changing EBS Root Volume
  - SSL on Elastic Load Balancer
- Billing
  - Cost Optimizing

**Database (4)**

- RDS
  - Overview
  - Essentials
  - Working with RDS
  - Subnet Groups



- o Security Options
  - o RDS Security Groups and Connecting to RDS from EC2
  - o Monitoring RDS for performance and availability
  - o MySQL and Maria DB on RDS
  - o Oracle DB on RDS
  - o MSSQL on RDS
- Amazon Dynamo DB
  - o Getting Started with Dynamo DB
  - o Local and Global Secondary Indexes
  - o Dynamo DB overview and Limits
  - o Provisioned Throughput
  - o Query vs Scan API Calls
  - o Conditional Writes And Atomic Counters
  - o Connect to Dynamo DB from APP using Identity Providers
  - o Dynamo DB Multi-Region Replication
  - o AWS Data Pipeline
    - Introduction To Data Pipeline
    - Using Data Pipeline To Replicate DynamoDB Data Across Regions
    - Using Data Pipeline to Copy DynamoDB Data to S3
- Amazon Elastic Cache
  - o Overview
  - o MemCache
  - o Redis
  - o Monitoring Elastic Cache For Performance and Availability
- RedShift
  - o Overview
- Managing Backup And Disaster Recovery Processes
  - o Read Replicas with MySQL RDS Across Regions
  - o Quickly Recovering from Disasters
  - o Storing Log Files and Backups
- Cloud Formation
  - o Creation of Databases using CF
  - o Configuring Database specific events
- Cloud watch:
  - o Monitoring DB using Cloud Watch
  - o Configuring SNS Topics
- Billing
  - o AWS Billing and linking AWS Accounts
  - o AWS Billing Dimensions and metrics for Cloud Watch
  - o Cost Optimizing

- Using the AWS Price List API and Cost Explorer
- CLI
  - Creation and Management of DB Services using CLI

**Developer Tools (4)**

- AWS Code Commit
  - Introduction
    - What is CodeCommit?
    - Setup & Configuration
    - Configure IAM Users, Access Keys & Policies
    - Windows: GIT & AWS CLI Installation
    - Windows: Configure SSH Credentials (SSH)
    - Windows: Configure the Credential Helper (HTTPS)
    - Linux: GIT Installation
    - Linux: AWS CLI Installation
  - CodeCommit Basics
    - Create, View, Edit, and Delete a Repository
    - Cloning Repositories, Commits, Push, and Pulls
    - Merging Basic Conflicts
    - Branches (local)
    - Tags
  - Using CodeCommit with other AWS Services
    - Introduction to Triggers
    - CodeCommit Trigger for SNS
    - CodeCommit Cross-Account SNS Trigger
    - CodeCommit Trigger for Lambda Functions
    - CodeCommit & AWS KMS (encryption)
- AWS CodeDeploy
  - CodeDeploy Introduction
  - Setup & Configuration
  - CodeDeploy Basics
    - Configuring an EC2 Instance for Use with CodeDeploy
    - Creating an Application, Deployment Group & Deployment Configuration
    - Editing and Deleting an Application
    - Adding, Editing, and Deleting Application Elements (Deployment Groups & Configurations)
    - Creating, Viewing, and Deleting a Custom Deployment Configuration
    - Creating and Configuring the AppSpec File
    - Creating and Uploading a Revision to S3

- Deploying a Revision from S3
- Monitoring Deployments via SNS Triggers
- Viewing Deployment Details and Error Logs
- Stopping Deployments, Roll-Backs, and Redeployments
- Automating Deployments from S3 Using Lambda
- AWS CodePipeline
  - CodePipeline Introduction
  - Setup & Configuration
  - CodePipeline Basics
    - Creating a Simple Pipeline
    - Managing a Pipeline from the AWS Console
    - Managing a Pipeline from the AWS CLI
  - CodePipeline Advanced Features
    - Creating a Pipeline with GitHub (source) & Jenkins (build)
    - Creating Approval Actions
    - Creating Custom Actions

**Analytics (5)**

- AWS Kinesis
  - Understanding Kinesis
- Amazon EMR ( Elastic Map Reduce)
  - EMR Essentials
- Amazon CloudSearch
  - Overview

**Application Services (5)**

- Amazon SWF ( Simple Workflow Service)
  - SWF Essentials
  - SWF Service Concepts and Overview
  - SWF Examples

**Containers and Clustering in AWS (5)**

- EC2 Container Service
  - Introduction
    - What is a Container?
    - Container Architecture
    - Amazon Web Services - EC2 Container Service Introduction
  - Setup and Configuration
    - Creating an ECS User and Group
    - Logging Into the Console: Aliases and IAM Accounts

- Creating Instance Key Pairs
- Creating a Cluster Virtual Private Cloud
- Security Groups and ECS Clusters
- Install and Configure the AWS CLI
- AWS CLI - Installing Docker for ECS Container Management
- Components and Usage
  - AWS ECS - Using the Wizard for Sample Cluster Creation
  - AWS ECS - Exploring the Sample Container Cluster
  - Customizing the ECS Cluster
  - Cluster Security Group Customization
  - Container Instance Scaling
  - Elastic Load Balancer - Container Registration and Configuration
  - Container Repositories: The DockerHub
  - Containers: Docker Basics
  - ECS: Creating a Custom Container
  - ECS: Creating a Custom Task Definition for our Containers
  - ECS: Running Multiple Container Types in the Cluster
- Troubleshooting
- Performance Metrics
- Service Limits
- Lambda
  - AWS Lambda Core Concepts
    - Lambda Essentials
    - Event-driven Fundamentals
    - Understanding Lambda Limits
  - Understanding Serverless Functions
    - Contextualizing Serverless
    - Key Elements of Serverless Functions
    - Looking at Serverless Function Providers
    - Demo Overviews - What Are You Building
  - Starting with Lambda Functions
    - Considerations and Limitations for Lambda Functions
    - Lambda Prerequisites
    - Creating and Configuring Your First Lambda Function
    - Monitoring and Alerting for Your First Lambda Function

**DevOps (5)**

- Continuous Delivery and Automation
  - Introduction
  - Implementing Continuous Integration and Continuous Delivery

- Understanding the DevOps Mindset
- Continuous Integration, Delivery, and Deployment
- Infrastructure as Code
- Automation and Configuration Management
- Deploying Applications with Elastic Beanstalk
- Creating Stacks and Managing Configuration with OpsWorks
  - Introduction
  - OpsWorks Key Concepts
  - Working with Stacks and Layers
  - Understanding Lifecycle Events
  - Working with Cookbooks and Recipes
  - Replacing Failed Instances with Auto Healing
- Scripting and Automating Operational Tasks
- Monitoring Metrics and Logging

