

## Cloud Computing using Amazon AWS

### Cloud Computing using Amazon AWS

#### 6 Weeks Online Course

6 Weeks / 90 Hrs. (3 Hrs. per day)

Batch Timing: 09:00 AM to 12:00 PM

Batch Size: 20 (Limited Seats)

Medium of Instruction: Bilingual (English & Hindi)

#### Objective

This course is designed with the aim to gain fundamental understanding of Amazon AWS cloud technologies and empower IT Professionals with hands-on experience to be able to develop and deploy highly scalable applications on AWS platform. This course will be the basis for specializing further in cloud computing and gaining higher levels of certifications.

B.E./B.Tech.\* (in Any Stream), MCA\*/BCA\*/B.Sc.\* (IT/CS)/ M.Sc.\* (IT/CS), Diploma\* (CS/IT), NIELIT A Level (\*pursuing candidate may also apply) OR Professional/Official with Graduation (in Any Stream) and working in relevant domain OR Graduate / 3 Years Diploma (in any stream) with working knowledge of OS and Computer Networking

#### Eligibility

#### Course Fees

Rs. 5600/- incl. GST & all other charges.

- ✓ Candidate must have latest computer/laptop with at least 4 GB RAM.
- ✓ Candidate must have valid Credit Card / Debit Card (RuPay Cards not accepted), e-mail id and Mobile No. (Required for Registration and Verification, by Amazon AWS service)
- ✓ Internet connection with good speed (*preferably 2 Mbps or higher*)

#### Prerequisite

#### Certificate

Certificate will be provided to the participants, based on minimum 75% attendance and on performance (minimum 50% marks) in the online test, conducted by NIELIT Gorakhpur, at the end of the course.

**Step-1:** Read the course structure & course requirements carefully.

**Step-2:** Visit the Registration portal and click on apply button.

**Step-3:** Create your login credentials and fill up all the details, see the preview and submit the form.

**Step-4:** Login with your credentials to verify the mobile number, email ID and then upload the documents, Lock the profile and Pay the Fees online, using ATM-Debit Card / Credit Card / Internet Banking / UPI etc.

#### How to Apply?

#### Salient Features

Instructor Led Online Training

E-Learning Contents

Hands on Lab

Self-Assessment

Real World Demo

Training by Industry Expert

### Course Content

Day	Topic	Day	Topic	Day	Topic
Day #01	Network Primer-I	Day #02	Network Primer-II	Day #03	Introduction to Virtualization
Day #04	Introduction to Linux-I	Day #05	Introduction to Linux-II	Day #06	Introduction to Cloud Computing and AWS-I
Day #07	Introduction to Cloud Computing and AWS-II	Day #08	AWS Identity and Access Management (IAM)	Day #09	AWS Elastic Compute Cloud (EC2) -III
Day #10	AWS Storage Services	Day #11	AWS Storage Services	Day #12	AWS Elastic Compute Cloud (EC2)-I
Day #13	AWS Elastic Compute Cloud (EC2)-II	Day #14	AWS Elastic Compute Cloud (EC2)-III	Day #15	Application Services, Notification Services (SNS)
Day #16	Load Balancer and Auto Scaling-I	Day #17	Load Balancer and Auto Scaling-II	Day #18	Route 53 functions, and working-I
Day #19	Route 53 functions, and working-II	Day #20	AWS Database Services -I	Day #21	AWS Database Services-II
Day #22	AWS Virtual Private Cloud (VPC)-I	Day #23	AWS Virtual Private Cloud (VPC)-II	Day #24	AWS Virtual Private Cloud (VPC)-III
Day #25	Business Application	Day #26	Best practices to secure AWS resources and Backup in AWS	Day #27	Project Work -I
Day #28	Project Work -II	Day #29	Project Work -III	Day #30	Project Work -IV

## COURSE COORDINATORS

### COURSE COORDINATOR

Abhinav Mishra  
Deputy Director (T)  
NIELIT Gorakhpur  
M.Tech. (CSE), 14+ Years' Experience  
Email: [abhinav@nielit.gov.in](mailto:abhinav@nielit.gov.in)  
Mobile Number: 8317093868

### COURSE CO-COORDINATOR

Arun Mani Tripathi  
Deputy Director (T)  
NIELIT Lucknow  
M.Tech. (CSE), 10+ Years' Experience  
Email: [arunmani@nielit.gov.in](mailto:arunmani@nielit.gov.in)  
Mobile Number: 7706009307

**Course Details**

S.No	Topic to be Covered
1	<b>Network Primer -I</b> What is Networking, Benefits of Network, Basic Components needed for Network Communication, Client/Server Model, Types of Servers, Role of A Network Administrator, Network segmentation, LAN traffic congestion, Ethernet, CSMA/CD, Internetworking Basics, Broadcast domain, Collision Domain, Hub, Switch & Router , Repeaters, Ethernet Cabling: - Straight-Through Cable, Crossover Cable, Rolled Cable, Internet Protocols: - TCP/IP Model, OSI Reference Model, Port Numbers, TCP/IP, TCP/UDP, MAC Address, IP Addressing, IP Terminology, IP Addressing Scheme. Sub netting Basics, How to Create Subnets, Subnet Masks, Classless Inter-Domain Routing (CIDR), Sub netting Class C Addresses, Sub netting Class B Addresses, Physical Vs Logical Address, Public & Private IP Addresses
2	<b>Network Primer -II</b> TCP/IP Troubleshooting utilities, Troubleshooting IP Addressing, hostname, Arp, Ping, tracert / traceroute, Netstat, getmac, Nslookup. IANA, IANA Root Zone Database, IANA Number Resources, local Internet registry (LIR), National Internet Registry (NIR), AfriNIC, APNIC, ARIN, LACNIC, RIPE NCC, Regional Internet Registry (RIR), Internet, Who Controls the Internet?, Network Registrar for .EDU.IN, .RES.IN, .AC.IN, .GOV.IN in INDIA, List of Root Servers, Applications of Internet, ERNET, National Informatics Centre (NIC).
3	<b>Introduction to Virtualization</b> What is virtualization Its advantages. Virtualization types & levels i.e. hardware, network, OS, Storage Virtualization, Server, Installation of VMware, Hyper-V, Hypervisor, What is Grid computing, utility computing, SOA (Service Oriented architecture), Comparison between Cloud Computing and Grid Computing, Relation between Cloud Computing and Utility Computing Types of utility cloud services
4	<b>Introduction to Linux-I</b> The CentOS Linux File system, The CentOS Shell, Command Line Utilities, working as root, working with the Shell, Using Bash to Best Effect, Performing Basic File System Management Tasks, Working with Directories, Working with Files, Working with Vi Editor
5	<b>Introduction to Linux-II</b> Managing Users And Groups ACL, Setting Up User Accounts, Commands For User Management, Managing Passwords, Modifying And Deleting User Accounts, Configuration Files, Creating Groups, Commands For Group Management, / etc /group, Using Group Passwords, Managing The User's Shell Environment, Configuring Permissions, Read, Write, And Execute: The Three Basic Linux Permissions, Permissions And The Concept Of Ownership, Working With Advanced Linux Permissions, Setting Permissions, Using Unmask To Set Default Permissions For New Files, Working With Access Control Lists, Preparing The File System For ACLs, ACL Limitations, Applying File Attributes, Apply Quota To Allow A Maximum Amount of Files, Installing The Quota Software, Preparing The File System For Quota, Initializing Quota, Setting Quota For Users and Groups, Configuring Administrator Tasks With Sudo Configuring Network Interface, Configuring The Network Card, Using Ifup, Ifdown, And Related Tools, Using Ifconfig, Using The Ip Tool, Configuring The DNS Resolver, Software Package Management, Software Management, Software Repositories And Package Databases, Package Management Utilities
6	<b>Introduction to Cloud Computing and AWS</b> Cloud Computing, Advantages and Benefits, Major Cloud Services Providers, Types of Cloud Computing: IaaS, PaaS, SaaS, Cloud service providers and their comparison. What is AWS, Overview of AWS, AWS Certifications, • AWS Certified Solutions Architect Associate: Scope and Relevance, • AWS Product and Services, Global infrastructure of AWS ,Understanding AWS regions ,Availability Zones (AZs), AWS edge locations, edge Cache, How to select a best region, Sign up for AWS Services, AWS control Panel, AWS services and Terminology, AWS Hypervisors, AWS Shared Responsibility Model, AWS Free tier, Launch your first EC2 Instance on Windows OS, Keypair, Putty, Puttygen. AWS free tier, launch your first EC2 instance Linux OS. About AWS free tier resources after sign up for twelve months.
7	<b>AWS Identity and Access Management (IAM):</b> AWS account (root), Securing AWS account, • AWS Organizations and use cases, IAM Users and IAM Roles, IAM Policies, IAM Groups, IAM Account Settings, Credential Reports, AWS Billing Dashboard, Cost Explorer. Billing Alerts, Budgets, Consolidated Billing, Requirements:, AWS free tier account, Hands On/Demo:, Enable MFA, User creation and permission assignment, Creating administrative user, Configure and validate account policies, Role assignments

<b>8</b>	<b>AWS Storage Services</b> Traditional Storage Tiers, AWS Storage Devices: Magnetic and SSD, AWS Cloud Storage, AWS Storage Services (S3, EBS, Glacier, EFS), S3 (Simple Storage Service), AWS Glacier Service, AWS Storage Gateway, AWS Snowball Service, AWS Command Line Interface (CLI), Understanding Simple Storage Service(S3), Managing Configuring S3 Bucket, Accessing S3 service, Hosting and accessing a static Web Site on s3, Website redirection using S3 bucket, S3 bucket, Object versioning, S3 Events, Storage Class, objects life cycle., AWS Glacier Storage, Archive Data., AWS S3 to Glacier Transition, Retrieve Data from Glacier to S3 and Glacier vault. Reduce Redundancy storage class, TAG S3 bucket Requester Pay Transfer Acceleration, Cross Region Replication, S3 Pricing factors.
<b>9</b>	<b>AWS Elastic Compute Cloud (EC2):</b> AWS Market Place, • Amazon EC2 Instance Categories, On-demand Instances, Reserved Instances, Spot Instances, Amazon EC2 Instance Types, General purpose, Compute Optimized , Storage Optimized, EC2 Instance use cases, Amazon Machine Images (AMI), Public IP vs Elastic IP, Instance Metadata, Boot Scripts, EC2 Instance States, Instance Storage (ephemeral) vs EBS Volumes, Security Groups, Placement Groups. Launching EC2 Instance, Configure Security Groups (Host) Firewall, Accessing EC2 Instances (Linux and Windows), Associating Elastic IP to Instances, Creating AMI, Deploy EC2 Instance with AMI, Enable/Install services during instance launch (User data), Termination Protection of Instances, Upgrading EC2 EBS volumes, • Mounting EFS Volume in EC2, Terminating Instances, LightSail. Making Wordpress Server, LAMP/Xampp Server on Cloud. Apache Web Server on Cloud, Elastic Beanstalk.
<b>10</b>	<b>Application Services, Notification Services</b> Amazon Simple Email Service (SES), Amazon Simple Notification Service (SNS), Amazon Simple Queue Service (SQS), Amazon Simple Workflow (SWF), Elastic Transcoder, API Gateway, Kinesis, AWS Lambda
<b>11</b>	<b>Load Balancer and Auto Scaling</b> Elastic Load Balancing (ELB) & its types, Configuring ELB, Route traffic to a particular target group using Application ELB. SSL certificate use with ELB, How to manage ELB logs.
<b>12</b>	<b>Route 53 functions, and working</b> Introduction to Route 53, Route 53 - Register A Domain Name, Route 53 Simple Routing Policy, Route 53 Weighted Routing Policy, Route 53 Latency Routing, Route 53 Failover Routing Policy, Geolocation Routing Policy, Route 53 CNAME vs Alias Record.
<b>13</b>	<b>AWS Database Services</b> Amazon RDS, Benefits of RDS, Types of databases instances, RDS DB instance, DB security, DB instance Class, DB instance Storage, Amazon Aurora, Amazon DynamoDB, Amazon RedShift, ElastiCache, Use cases for AWS Database Services, Provisioning an RDS instance, MariaDB and connect over internet. RDS Multi AZ deployment, Read Replicas, Backup & Restore, DB instance modification, AWS SMTP Service Email relay- Simple Mail Service (SES).
<b>14</b>	<b>Virtual Private Cloud (VPC)</b> Introduction to VPC, Virtual Private Cloud(Use cases), Virtual private cloud (EC2 classic, EC2-VPC), NAT-gateway and internet gateway, Public subnet and private Subnet, Route table and managing routing table, Elastic IP address and its cost., Setup Virtual Data center in the cloud, Components of VPC, Direct Connect, Basics of IP addressing to practical approach including Subnetting & CIDR, CIDR Notations, Network Address Translation (NAT), Network Access Control Lists, Custom VPC, VPC Flow Logs, NATs vs Bastions, VPC End Points, Cloud Watch, Elastic Load Balancers, Auto scaling, Working with VPC Peering , VPN Concept with lab demo.
<b>15</b>	<b>Business Application</b> Setup Amazon Work Mail with a Custom Domain, Workdocs etc.
<b>16</b>	<b>Backups</b> Backing Up Static Files from EC2 Instances to S3 ,Rolling Backups with S3 and Glacier ,PostgreSQL and Other Databases ,pg_dump ,Snapshots and Continuous Archiving ,Off-Site Backups
<b>17</b>	<b>Best practices to secure AWS resources</b> Introduction, Specialized data classifications ,Data protection mechanisms, Data encryption mechanisms, AWS Security Services ,Logging and Monitoring, Security operations and risk
<b>18</b>	<b>Project Work</b> Deployment and configuration of Different case studies in Amazon AWS, Deploying and Securing Highly Available, Scalable and Resilient Multi-Tier Application in Amazon AWS Cloud etc.