DATAPRO EMPOWERING SKILLS

Vizianagaram-535002



CERTIFICATE FROM INTERN ORGANIZATION

This is to certify that the Dissertation entitled "AWS Elastic Load Balancer with Four Services" that is submitted by Mr. CHUKKA KUMAR NAIDU (720139705138) in partial fulfilment of the requirement for the award of the Degree of Bachelor of Science in Computers to Andhra University, is a record of bonafied Work carried out by him/her under my guidance and it has been found suitable for acceptance according to requirement of the university during the academic year 2022-2023.

Authorized Signature with Date and Seal

ADITYA DEGREE COLLEGE

(Affiliated to A.U) Vizianagaram-535002



DEPARTMENT OF COMPUTER SCIENCE

CERTIFICATE

This is to certify that the Dissertation entitled "AWS Elastic Load Balancer with Four Services" that is submitted by Mr. CHUKKA KUMAR NAIDU (720139705138) in partial fulfilment of the requirement for the award of the Degree of Bachelor of Science in Computers to Andhra University, is a record of bonafied Work carried out by him/her under my guidance and it has been found suitable for acceptance according to requirement of the university during the academic year 2022-2023.

Internship Guide
(Mr.V. VASUDEVA RAO)

Faculty guide (Mr.D.S.SUDHEER)

Head of the Department (Mr. D. SRINIVAS)

External Examiner

DECLARATION

I hereby declare that the Dissertation which is being presented in this report entitled "AWS Elastic Load Balancer with Four Services" is a work done by myself in partial fulfilment of requirement for the award of the degree of Bachelor of Science in Computer science. It is being submitted to the department of Computer Science of Aditya Degree College, Vizianagaram under Andhra university. It is authentic record of my own work carried out during the Final year under the supervision of Mr. V. VASUDEVA RAO, this Internship have been successfully completed by following student to your Institute for the award of Bachelor of Science Degree

CHUKKA KUMAR NAIDU (720139705138)

ACKNOWLEDGEMENT

I express my deep sense of gratitude and thankful to my Internship Trainer, Mr. V. VASUDEVA RAO Trainer in DATAPRO EMPOWERING SKILLS for his valuable guidance during the course of this Internship. We are much indebted to him for suggesting a challenging and interactive work and his valuable advice and supervision without him which this internship work would not have been the light of the day at every state of this work. We are much thankful to him for his coordination in this regard.

I would like to express my sincere thanks to our Faculty **Mr.D.S. SUDHEER** Lecturer in Computers of Aditya degree college for his valuable guidance and support internally in completing my internship work.

I extended my gratefulness to our chairman sir **Mr. N. SESHAREDDY** for their support and heartfelt for completing the project.

I would like to express my sincere thanks to our principal Mr. B. DAMODARA RAO for forwarding me to the Internship and offering adequate duration in completing our internship.

I am also grateful to my Head of the Department Mr. D. SRINIVAS who rendered me to all the possible help towards the completion of the Internship.

I am also thankful to **FACULTY MEMBERS AND TECHNICIANS** of my DEPARTMENT who gave good support to me during this work.

I take this opportunity to express my deep sense of gratitude to my family members for their kind cooperation and all of my friends who have inspired, motivated and lent a helping hand during this work.

Project Associates

CHUKKA KUMAR NAIDU (720139705138)

ABSTRACT

Amazon Web Services offers a broad set of global cloud-based products including compute, storage, databases, analytics, networking, mobile, developer tools, management tools, IoT, security, and enterprise applications: on-demand, available in seconds, with pay-as-you-go pricing. From data warehousing to deployment tools, directories to content delivery, over 200 AWS services are available. New services can be provisioned quickly, without the upfront capital expense. This allows enterprises, start-ups, small and medium-sized businesses, and customers in the public sector to access the building blocks they need to respond quickly to changing business requirements. This whitepaper provides you with an overview of the benefits of the AWS Cloud and introduces you to the services that make up the platform

TABLE OF CONTENTS

CERTIFICATE FROM INTERN ORGANIZATION	I
CERTIFICATE	II
DECLARATION	III
ACKNOWLEDGEMENT	IV
ABSTRACT	V
TABLE OF CONTENTS	VI
LIST OF FIGURES	XI
1.0 Introduction to AWS	1
1.1 AWS Services	1
1.1.1 AWS IAM (Identity Access Management)	1
1.1.2 Amazon S3 (Simple Storage Service)	1
1.1.3 Amazon KMS (Key Management Service)	2
1.1.4 Amazon EC2 (Elastic Compute Cloud)	2
1.1.5 Amazon EBS (Elastic Block Storage)	2
1.1.6 Amazon VPC (Virtual Private Cloud)	2
1.1.7 Amazon RDS (Relational Database Service)	2
1.1.8 Amazon Lambda	3
2.0 Cloud Computing	4
2.1 Types of Cloud Computing	4
2.1.1 Infrastructure as a Service (IaaS)	5
2.1.2 Platform as a Service (PaaS)	5
2.1.3 Software as a Service (SaaS)	6
3.0 Cloud	7
3.1 Hybrid	7
3.2 On-Premises	7
3.3 AWS Users	8
3.1.1 Root User Credentials	8
3.1.2 IAM Credentials	9
4.0 Creating AWS Account	10

5.0 Steps to Create User	14
6.0 Creating a User Group	16
7.0 Creating Policy	17
7.1 Creating an Inline Policy	18
7.2 Copy Permissions	19
7.3 Permission Boundaries	19
8.0 Creating Roles	21
8.1 Creating Switch Role	22
8.2 Flowchart for IAM	23
9.0 Simple Storage Service(S3) Introduction	24
9.1 Storage Classes	24
9.2 Amazon S3 Storage Classes	25
9.2.1 Amazon S3 Standard	26
9.2.2 Amazon S3 Intelligent-Tiering	26
9.2.3 Amazon S3 Standard-Infrequent Access	26
9.2.4 Amazon S3 One Zone-Infrequent Access	26
9.2.5 Amazon S3 Glacier Instant Retrieval	26
9.2.6 Amazon S3 Glacier Flexible Retrieval	27
9.2.7 Amazon S3 Glacier Deep Archive	27
9.3 Creating an S3 Bucket	27
9.3.1 Uploading Data into Buckets	29
9.3.2 Downloading an Object	30
9.3.3 Deleting Object and Bucket	31
9.4 S3 List All	33
9.5 S3 List Specific Bucket	34
9.6 To Make Object URL Public	35
9.7 Public Access to the Downloaded Template in Bucket	36
10.0 How to Download CLI (Command Line Interface)	39
10.1 Login to IAM User in CLI	40
10.2 To Create and Upload Single File into the Bucket Through CMD	41
10.3 To Upload Multiple Files in a Bucket	42
10.4 To Download Single and Multiple Files in CMD	42

10.5 To Copy and Move Files from One Bucket to Another	43
10.6 To Delete Objects and Bucket	43
10.7 To Create a Pre-Sign URL to Open File	44
11.0 S3 Versioning	45
11.1 Steps to Enable Bucket Versioning	45
12.0 Key Management Service (KMS)	46
12.1 Creating a KMS	47
12.2 S3 with KMS	50
13.0 Replication Rule	51
14.0 Inventory Configuration	52
15.0 Server Access Logs	54
16.0 Life Cycle Rules	56
17.0 Elastic Compute Cloud (EC2)	60
17.1 Features of Amazon EC2	60
17.1.1 Instance Types	61
17.1.2 Key Pairs	61
17.1.3 Instance Store Volumes	61
17.1.4 Amazon EBS Volume	61
17.1.5 Security Groups	61
17.1.6 Elastic IP address	61
17.1.7 Tags	61
17.1.8 Virtual Private Cloud (VPCs)	61
17.2 To Launch EC2 Instance in Windows	62
17.2.1 Connect Your Instance	63
17.2.2 Connect Your Windows Instance Using RDP Client	63
17.2.3 To Terminate Instance	65
17.3 To Launch EC2 Instance Through Linux	66
17.3.1 How to Install MobaXterm	67
17.3.2 To Connect EC2 Instance to MobaXterm	68
18.0 Elastic Block Storage (EBS)	70
18.1 Features of EBS	70
19 0 Virtual Private Cloud (VPC)	73

19.1 Features	73
19.1.1 Virtual Private Cloud (VPC)	74
19.1.2 Subnets	74
19.1.3 IP Addressing	74
19.1.4 Routing	74
19.1.5 Gateways and Endpoints	74
19.1.6 Peering Connections	74
19.1.7 VPC Flow Logs	74
19.1.8 VPN Connections	75
19.2 Creating a VPC	75
19.2.1 Creating Subnets	76
19.2.2 Creating Internet Gateway	77
19.2.3 Creating Route Tables	78
19.2.4 Creating Connections for VPC	79
19.3 Creating EC2 With VPC Connection	80
19.4 Creating Nat-Gateway	81
19.4.1 Connecting Nat-gateway With VPC	82
19.5 Peering Connections	83
19.5.1 Connecting Peering With Route Tables	84
19.6 VPC Endpoints	84
19.6.1 Create an IAM Role	86
19.6.2 Launch an EC2 Instance	86
20.0 RDS (Relational Database Service)	89
20.1 To Create a DB Instance	89
20.2 Installing Workbench	93
20.3 Constraints in MySQL	94
20.3.1 Primary Key	94
20.3.2 Foreign Key	94
20.3.3 Unique Key	95
20.3.4 Default Key	95
20.3.5 Check Key	95
20.3.6 Not Null Key	95

20.4 Working on Workbench	95
20.4.1 Create Your First MySQL Database	96
20.4.2 Create Your Table	97
20.4.3 Insert Data into Tables	97
20.4.4 Update Table	98
20.4.5 Delete Data from The Table	99
21.0 Lambda	101
21.1 Key Features	101
21.1.1 Configuring Function Options	102
21.1.2 Environment Variables	102
21.1.3 Versions	102
21.1.4 Container Images	102
21.1.5 Layers	102
21.1.6 Lambda Extensions	102
21.1.7 Function URLs	102
21.1.8 Response Streaming	103
21.1.9 Code Signing	103
21.1.10 Private Networking	103
22.0 Conclusions	104
23 O References	105

LIST OF FIGURES

Fig 2.1 Cloud Service Model	5
Fig 3.1 Amazon Web Services	8
Fig 4.1 AWS Account Creation Step 1	10
Fig 4.2 AWS Creation Step 2	11
Fig 4.3 AWS Creation Step 3	11
Fig 4.4 AWS Creation Last step	12
Fig 4.5 AWS Creation Success	13
Fig 5.1 IAM Creation	15
Fig 5.2 IAM User Console Page	15
Fig 6.1 AWS User Group	16
Fig 7.1 AWS Policy	18
Fig 7.2 AWS Inline Policy	19
Fig 7.3 Representation of Permission Boundaries	20
Fig 7.4 Set Permission Boundaries	20
Fig 8.1 Role Created Successfully	21
Fig 8.2 Switch Role	23
Fig 8.3 Flowchart for IAM	23
Fig 9.1 S3 Bucket	24
Fig 9.2 Storage Classes	25
Fig 9.3 S3 Bucket Console Page	27
Fig 9.4 Bucket Created Successfully	29
Fig 9.5 File Uploaded	30
Fig 9.6 File Downloaded Successfully	31
Fig 9.7 File Deleted Successfully	32
Fig 9.8 Deleting Bucket	33
Fig 9.9 List Bucket	33
Fig 9.10 Permissions for Specific Bucket	34
Fig 9.11 Files Cannot be Accessed Without Permission	35
Fig 9.12 Object Opened in Public URL Successfully	36

Fig 9.13 HTML5 Template	
Fig 9.14 Enable Static Website Hosting	
Fig 9.15 Template Opened Successfully	
Fig 10.1 AWS CLI Installed	
Fig 10.2 Access Key Created Successfully40	
Fig 10.3 Login to IAM User40	
Fig 10.4 AWS Make Bucket and Directory41	
Fig 10.5 Upload Single File41	
Fig 10.6 Uploading Multiple Files	
Fig 10.7 Downloading Single and Multiple Files	
Fig 10.8 Copy and Move Files43	
Fig 10.9 Deleting Objects and Buckets	
Fig 10.10 Pre-Sign URL44	
Fig 10.11 Opened Pre-Sign URL44	
Fig 11.1 Bucket Versioning Enabled45	
Fig 12.1 Key Management Service (KMS)	
Fig 12.2 Step 1: KMS47	
Fig 12.3 Step 2: KMS	
Fig 12.4 Step 3: KMS48	
Fig 12.5 Step 4: KMS49	
Fig 12.6 Step 5: KMS49	
Fig 12.7 S3 with KMS Key50	
Fig 13.1 Replication Rule51	
Fig 14.1 Inventory Configuration53	
Fig 15.1 Server Access Login55	
Fig 16.1 Life Cycle Rules56	
Fig 16.2 Life Creating Life Cycle Rules59	
Fig 17.1 EC260	
Fig 17.2 EC2 Windows	
Fig 17.3 Remote Desktop for Windows Opened65	
Fig 17.4 EC2 Terminated66	
Fig 17.5 EC2 Linux67	

Fig 17.6 MobaXterm	68
Fig 17.7 Login to User	69
Fig 17.8 Start Server and Create a HTML File	69
Fig 18.1 Elastic Block Storage (EBS)	70
Fig 19.1 VPC	73
Fig 19.2 VPC Created Successfully	76
Fig 19.3 Subnets Created Successfully	77
Fig 19.4 Internet Gateway	78
Fig 19.5 Route Table	79
Fig 19.6 VPC Connections	80
Fig 19.7 EC2 with VPC	80
Fig 19.8 VPC Login with MobaXterm	81
Fig 19.9 Nat-Gateway	82
Fig 19.10 Connect to VPC	83
Fig 19.11 VPC Peering Connection	83
Fig 19.12 VPC Endpoints	85
Fig 19.13 VPC Endpoints	87
Fig 19.14 Access S3	87
Fig 20.1 Database Engine Selection	90
Fig 20.2 Selecting Templates	91
Fig 20.3 Allocating Instance Configuration	92
Fig 20.4 RDS Creation	92
Fig 20.5 Workbench Installation	94
Fig 20.6 DNS Endpoint Link	96
Fig 20.7 Database Created Successfully	96
Fig 20.8 Table Created Successfully	97
Fig 20.9 Inserting Values	98
Fig 20.10 Update Table	98
Fig 20.11 Deleting Data from Table	99
Fig 20.12 Primary Key	100
Fig 21 1 AWS Lambda	101