A Virtual Internship Report on

AWS CLOUD

Submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

In

ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted by

TATAVOLU SAI VISWANADH

(20MH1A04H9)

Under the Faculty Guideship of

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Assistant professor

ADITYA COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada, Accredited by NBA & NAAC

Recognized by UGC under sections 2(f) & 12(b) of UGC Act, 1956

Aditya Nagar, ADB road, Surampalem, Kakinada District, Andhra Pradesh - 533 437

2023-2024

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DEPARTMENT OF ELECTRONICS & COMMNICATION ENGINEERING

CERTIFICATE

This is to certify that the Internship work entitled **"AWS CLOUD"**, is abonafide work carried out by **TATAVOLU SAI VISWANADH (20MH1A04H9)** in partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology in Electronics and Communication Engineering** from Aditya **College of Engineering** during the academic year 2022-2023.

INTERNSHIP COORDINATOR

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Assistant Professor

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PROGRAM BOOK FOR SEMESTER INTERNSHIP

Name of the College: Aditya College of Engineering

Department: Electronics & Communication Engineering

Name of the Faculty Guide: Mr. M. Sudheer Kumar Reddy, MTech

Duration: 8-Weeks **From:** 15-05-2023 **To:** 08-07-2023

Name of the Student: TATAVOLU SAI VISWANADH

Register Number: 20MH1A04H9

Year of Study: 3rd YEAR

Semester: 2nd Semester.

Date of Submission:05-12-2023

Official Certification

This is to certify that **TATAVOLU SAI VISWANADH** Reg. No. **20MH1A04H9** has completed his/her Internship in **Technical Hub** on Aws Cloud Platform under my supervision as a part of partialfulfillment of the requirement for the Degree of **Bachelor Of Technology** in the Department of **Electronics & Communication Engineering**. This is accepted for evaluation.

Authorized Signatory with Date and Seal

Student Declaration

I, **TATAVOLU SAI VISWANADH** a student of **BACHELOR OF TECHNOLOGY** Program, Reg. No. **20MH1A04H9** of the Department of **ELECTRONICS & COMMUNICATION ENGINEERING** College do hereby declare that I have completed the mandatory internship from **15-05-2023** to **08-07-2023** in **TECHNICAL HUB** under the Faculty Guideship of **Mr. M. Sudheer Kumar Reddy**, in the **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**,**ADITYA COLLEGE OF ENGINEERING**.

Internship Associate

TATAVOLU SAI VISWANADH 20MH1A04H9

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Internship Associate

TATAVOLU SAI VISWANADH **20MH1A04H9**

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ABSTRACT

Cloud computing has come of age since Amazon's rollout of the first of its kind of cloud services in 2006. It is particularly relevant to Hong Kong because of the tremendous amounts of data that are being processed here daily in various sectors, and there are signs that subscription to cloud services by the local companies will soon be on a skyrocket course, despite a slow start in previous year.

Cloud computing is the revolutionary development of running computer applications and data savings over the Internet platform. Cloud computing combines distributed computing, parallelcomputing and grid computing together. In terms of the architecture of cloud computing, the concept of the 'cloud' means groups of computers. Each group of computers includes thousands and thousands of computers connected by the network. Each 'cloud' is a computing centre designed to provide cloud users with cloud applications and cloud data storage.

Cloud users can run cloud application interfaces, such as word processing and web searches, via web browsers. Data can be accessible from and storable in databases in the 'cloud'. Importantly, cloud computing has laid down a solid technological foundation for academic libraries to design and develop web-based course-reserved materials, digital libraries, dissertations and theses databases, tutorials, and other archived information repositories in the cloud computing environments.

CHAPTER 1: EXECUTIVE SUMMARY

1.1 INTRODUCTION

What is Aws Cloud?

AWS (Amazon Web Services) is a cloud computing platform.The first product (S3) was released in 2006.AWS has grown a lot since then in both size and product range.It is, to date, the largest cloud provider in the world.

Why Learn AWS?

- AWS is the largest of the cloud providers
- AWS competence is popular in the job market
- You can do most things in the Aws Cloud
- Big community/support.

The client-server model is an important concept in cloud computing.

What is the Client-Server Model?

The Client-Server model is about a client that interacts and makes requests to a computer server.A client is the way that the person interact with the server.

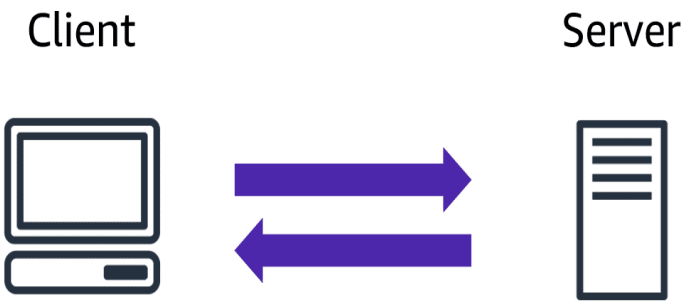

FIG 1.1 Client-Server Model

1.2 CLOUD COMPONENTS OVERVIEW

Introduction to Cloud Computing

Cloud Computing is the delivery of computing services such as servers, storage, databases, networking, software, analytics, intelligence, and more, over the Cloud (Internet).

Cloud Computing provides an alternative to the on-premises datacentre. With an on-premises datacentre, we have to manage everything, such as purchasing and installing hardware, virtualization, installing the operating system, and any other required applications, setting up the network, configuring the firewall, and setting up storage for data. After doing all the set-up, we become responsible for maintaining it through its entire lifecycle.

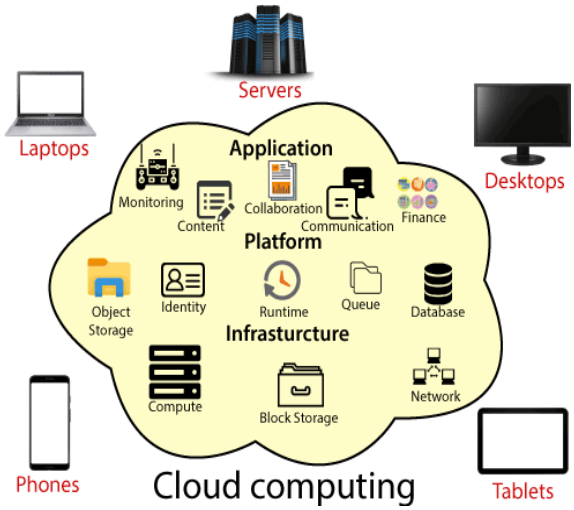

FIG 1.2.1 Cloud computing

Advantages of cloud computing

- **Cost:** It reduces the huge capital costs of buying hardware and software.
- **Speed:** Resources can be accessed in minutes, typically within a few clicks.
- **Scalability:** We can increase or decrease the requirement of resources according to the business requirements.

- **Productivity:** While using cloud computing, we put less operational effort. We do not need to apply patching, as well as no need to maintain hardware and software. So, in this way, the IT team can be more productive and focus on achieving business goals.
- **Reliability:** Backup and recovery of data are less expensive and very fast for business continuity.
- **Security:** Many cloud vendors offer a broad set of policies, technologies, and controls that strengthen our data security.

Types of Cloud Computing

- Public Cloud
- Private Cloud
- Hybrid Cloud

Types of Cloud Services

1. Infrastructure as a Service (IAAS)
2. Platform as a Service (PAAS)
3. Software as a Service (SAAS)

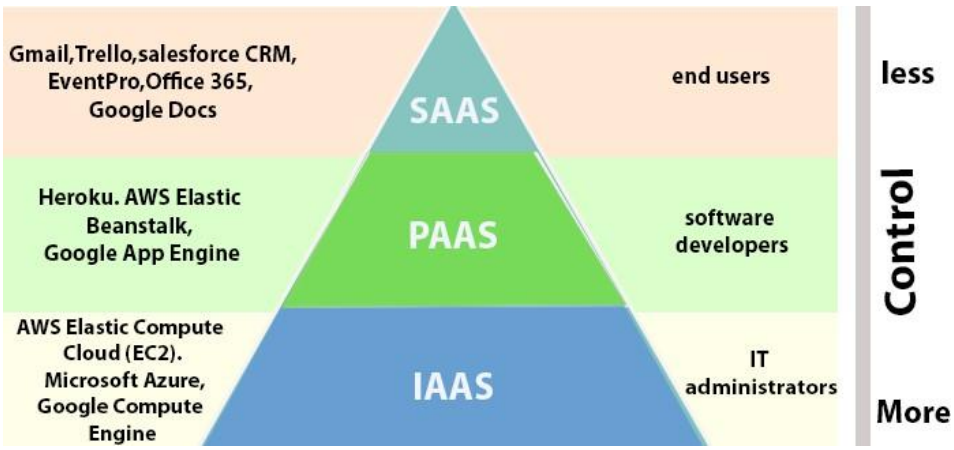

FIG 1.2.2 ***Cloud Services***

Introduction To Amazon Web Services (AWS)

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform, offering over 200 fully featured services from data centers globally. Millions of customers – including the fastest- growing startups, largest enterprises, and leading

government agencies – are using AWS to lower costs, become more agile , and innovate faster.

AWS FEATURES

1. Most functionality.

2. Largest community of customers and partners

3. Most secure.

4. Fastest pace of innovation.

5. most proven operational expertise.

HISTORY OF AWS

1. Founding (2000-2005)
2. S3, EC2, and other first generation services (2006-2010)
3. Growth (2010-2015)
4. Market leadership (2016- Present)

AWS CLOUD ADOPTATION FRAMEWORK (AWS CAF)

The Aws Cloud Adoption Framework (AWS CAF) leverages AWS experience and best practices to help you digitally transform and accelerate your business outcomes through innovative use of AWS. AWS CAF identifies specific organizational capabilities that underpin successful cloud transformations. These capabilities provide best practice guidance that helps you improve your cloud readiness. AWS CAF groups its capabilities in six perspectives: Business, People, Governance, Platform, Security, and Operations. Each perspective comprises a set of capabilities that functionally related stakeholders own or manage in the cloud transformation journey. Use the AWS CAF to identify and prioritize transformation opportunities, evaluate and improve your cloud readiness, and iteratively evolve your transformation roadmap.

BENEFITS

Reduce business risk.

Lower your risk profile through improved reliability, increased performance, and enhanced security.

Improve environmental, social, and governance performance.

Leverage insights to improve sustainability and corporate transparency.

Grow revenue.

Create new products and services, reach new customers, and enter new market segments.

Increase operational efficiency.

Reduce operating costs, increase productivity, and improve employee and customer experience.

How it works

Envision

Identify and prioritize transformation opportunities in line with your strategic objectives.

Align

Identify capability gaps and cross-organizational dependencies. Doing so will help you create strategies for improving your cloud readiness, ensure stakeholder alignment, and facilitate relevant organizational change management activities.

Launch

Deliver pilots in production and demonstrate incremental business value.

Scale

Expand pilots and business value to desired scale and ensure that the business benefits associated with your cloud investments are realized and sustained.

Capabilities and perspectives

AWS CAF capabilities provide best practice guidance that helps you improve your cloud readiness. AWS CAF perspectives comprise capabilities that functionally related stakeholders own or manage in your cloud transformation journey.

Business

The Business perspective helps ensure that your cloud investments accelerate your digital transformation ambitions and business outcomes.

People

The People perspective serves as a bridge between technology and business, accelerating the cloud journey to help organizations more rapidly evolve to a culture of continuous growth, learning, and where change becomes business-as-normal, with focus on culture, organizational structure, leadership, and workforce.

Governance

The Governance perspective helps you orchestrate your cloud initiatives while maximizing organizational benefits and minimizing transformation-related risks.

Platform

The Platform perspective helps you build an enterprise-grade, scalable, hybrid cloud platform, modernize existing workloads, and implement new cloud-native solutions.

Security

The Security perspective helps you achieve the confidentiality, integrity, and availability of your data and cloud workloads

Operations

The Operations perspective helps ensure that your cloud services are delivered at a level that meets the needs of your business.

1.3 AWS CLOUD SECURITY

AWS SHARED RESPONSIBILITY MODEL

Security and Compliance is a shared responsibility between AWS and the customer. This shared model can help relieve the customer's operational burden as AWS operates, manages and controls the components from the host operating system and virtualization layer down to the physical security of the facilities in which the service operates. The customer assumes responsibility and management of the guest operating system (including updates and security patches), other associated application software as well as the configuration of the AWS provided security group firewall.

AWS Responsibilities

AWS responsibility "Security of the Cloud" - AWS is responsible for protecting the infrastructure that runs all of the services offered in the Aws Cloud. This infrastructure is composed of the hardware, software, networking, and facilities that run Aws Cloud services.

Customer responsibilities

Customer responsibility "Security in the Cloud" – Customer responsibility will be determined by the Aws Cloud services that a customer selects. This determines the amount of configuration work the customer must perform as part of their security responsibilities. For example, a service such as Amazon Elastic Compute Cloud (Amazon EC2) is categorized as Infrastructure as a Service (IaaS) and, as such, requires the customer to perform all of the necessary security configuration and management tasks. Customers that deploy an Amazon EC2 instance are responsible for management of the guest operating system (including updates and security patches), any application software or utilities installed by the customer on the instances, and the configuration of the AWS-provided firewall (called a security group) on eachinstance

AWS identity and Access Management (IAM)

AWS Identity and Access Management (IAM) is a web service that helps you securely control access to AWS resources. You use IAM to control who is authenticated (signed in) and authorized (has permissions) to use resources.

1.4 NETWORKING AND CONTENT DELIVERY

Amazon Virtual Private Cloud (Amazon VPC), Amazon Route 53, and Amazon Cloud-front. You will have the opportunity to label a virtual private cloud (VPC)network architecture diagram, design a VPC, watch how a VPC is built, and finally build a VPC yourself.

NETWORKING BASICS

A Network is basically connecting two or more devices though a wired or wireless channel to share & exchange the information electronically.

Cloud Network

Cloud networking is a type of IT infrastructure in which some or all of an organization's network capabilities and resources are hosted in a public or private cloud platform, managed in-house or by a service provider, and available on demand.

Subnet

Virtual private cloud networks(VPC) are global resources. Each VPC network consists of one or more IP address range called subnets. Subnets are regional resources, and have IP address ranges associated with them.

IPv4 subnet ranges

Each subnet has a primary IPv4 address range. The primary internal addresses for the following resources come from the subnet's primary range.

IPv6 subnet ranges

When you enable IPv6 on a subnet in a VPC network, you choose an IPv6 access type for the subnet. The IPv6 access type determines whether the subnet is configured with internal IPv6 addresses or external IPv6 addresses.

- Internal IPv6 addresses are used for VM to VM communication within VPC networks. They can only be routed within the scope of VPC networks and cannot be routed to the internet.

- External IPv6 addresses can be used for VM to VM communication within VPC networks, and are also routable on the internet.

Classless Inter-Domain Routing

Classless Inter-Domain Routing (CIDR or supernetting) is a way to combine several class-C address ranges into a single network or route. This method of routing adds class-C Internet Protocol (IP) addresses. These addresses are given out by Internet Service Providers (ISPs) for use by their customers. CIDR addresses can reduce the size of your routing tables and make more IP addresses available within your business.

AMAZON VPC

Amazon Virtual Private Cloud (Amazon VPC) enables you to launch AWS resources into a virtual network that you've defined. This virtual network closely resembles a traditional network that you'd operate in your own data center, with the benefits of using the scalable infrastructure of AWS

FEATURES

Virtual private clouds (VPC)

A VPC is a virtual network that closely resembles a traditional network that you'd operate in your own data center. After you create a VPC, you can add subnets.

Subnets

A subnet is a range of IP addresses in your VPC. A subnet must reside in a single Availability Zone.

IP addressing

You can assign IPv4 addresses and IPv6 addresses to your VPCs and subnets.

Routing

Use route tables to determine where network traffic from your subnet or gateway is directed.

Gateways and endpoints, Peering connections

1.5 COMPUTE

Compute service overview

AWS compute is an Infrastructure As A Service(IAAS). Put simply, AWS compute is the means to provision and manage infrastructure(virtual machines/containers) for your use case. This infrastructure can be considered as the processing power required by your applications, to host application so run computation-intensive tasks. These compute resources are closely related to regular server components like CPU and RAM. However, for regular server components, you need to manage and buy the infrastructure, provide for backups and emergency recovery, ensure enough server capacity to handle traffic-intensive times. With AWS compute all this headache is handed over to the AWS team. They manage the infrastructure and ensure the recovery of your application in case of any system failures. As a user you only pay for the services you provide for as long as you provision them.

AWS Compute was one of the first services to be provided by AWS back in 2006 providing only a single EC-2 instance type.

Features of AWS Compute

Scalability: This is one of the most beneficial features of using cloud infrastructures. Scalability means that your application server can scale up vertically.

Multi-Utility services: AWS Compute provides resources that can be provisioned and run for years and years, as long as the users make their payments.

Wide scope of categories: Compute resources can be provisioned from a range of categories,with each being utilized for different lengths of time. Providing full flexibility to the user for their use case.

Ethernet speed: Compute resources can utilize Ethernet speeds of up to 100 Gpbs.

Multiple locations: Compute can be used across a range of 22 Regions and 69 Availability zones spread across the globe as needed by the you

AMAZON EC2

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

AMAZON EC2 COST OPTIMIZATION

With AWS cost and capacity optimization services and tools, you can spend more time building and less time managing compute costs. AWS has the services and tools you need to cost optimize your EC2 usage to do more in the cloud within your existing budget.

There are three important ways to optimize compute costs, and AWS has the tools to help you with all of them. It starts with choosing the right EC2 purchase model for your workloads, then selecting the right instance to fine tune price-performance, and finally mapping usage to actual demand. Whether you're running steady-state or spiky workloads, purchasing EC2 through AWS Savings Plans and Amazon EC2 Spot Instances can help you significantly save over On-Demand Instance pricing. Once you've selected the right EC2 purchase model and instance use for your workload, services like AWS Compute Optimizer and Cost Explorer can help you select the right instance to balance cost and performance and rightsize your EC2 environment. EC2 Auto Scaling can then help you scale your compute capacity up and down based on observed demand. Cost optimization allows you to respond quickly to changing customer needs and invest savings back into your organization, resulting in faster innovation.

CONTAINER SERVICES

In order to help you to realize these benefits, we are announcing a preview of our new container management service, EC2 Container Service (or ECS for short). This service will make it easy for you to run any number of Docker containers across a managed cluster of Amazon elastic compute cloud instances using powerful APIs and other tools. You do not have to install cluster management software, purchase and maintain the cluster hardware, or match your hardware inventory to your software needs when you use ECS.

1.6 STORAGE

Millions of customers use AWS storage services to transform their business, increase agility, reduce costs, and accelerate innovation. Choose from a broad portfolio of storage solutions with deep functionality for storing, accessing, protecting, and analyzing your data.

Amazon Elastic Block Store (Amazon EBS)

Amazon Elastic Block Store (Amazon EBS) is an easy-to-use, scalable, high-performance block-storage service designed for Amazon Elastic Compute Cloud (Amazon EC2).Amazon Elastic Block Store (Amazon EBS) provides block level storage volumes for use with EC2 instances. EBS volumes behave like raw, unformatted block devices. You can mount these volumes as devices on your instances. EBS volumes that are attached to an instance are exposed as storage volumes that persist independently from the life of the instance. You can create a file system on top of these volumes, or use them in any way you would use a block device (such as a hard drive). You can dynamically change the configuration of a volume attached to an instance.

OBJECT STORAGE VS BLOCK STORAGE

	OBJECT STORAGE	BLOCK STORAGE
PERFORMANCE	Performs best for big content and high stream throughput	Strong performance with database and transactional data
GEOGRAPHY	Data can be stored across multiple regions	The greater the distance between storage and application, the higher the latency
SCALABILITY	Can scale infinitely to petabytes and beyond	Addressing requirements limit scalability

AMAZON SIMPLE STORAGE SERVICE (AMAZON S3)

Amazon S3 is object storage built to store and retrieve any amount of data from anywhere. It's a simple storage service that offers industry leading durability, availability, performance, security, and virtually unlimited scalability at very low costs.

Benefits of Redundancy in Cloud Computing

Each type of redundancy in cloud computing offers several benefits for companies looking for an alternative to on-premises equipment reliance.

High Availability

High availability refers to keeping your main systems on one cloud platform and your backups and secondary systems on another.

Data Redundancy

Cloud providers usually have multiple data centers to mirror your data and apps.

Business Continuity/Disaster Recovery

Your business must be able to function whatever issues arrive.

Security

It is essential to maintain redundancy for cybersecurity.

Amazon S3 Pricing

Pay only for what you use. There is no minimum charge.

Amazon Elastic File Store (Amazon EFS)

AES Elastic File System (EFS) is the AWS implementation of NFS (Network File System) v4**.** It is a managed file storage, which can be mounted on only Linux-based operating systems.

With its elastic storage capacity, it can grow and shrink automatically as you add and remove files from it providing read-after-write consistency.

You can access your Amazon EFS file system by connecting multiple compute instances (EC2, ECS, Lambda) running in multiple AZs within a VPC in an AWS Region. Within the region, It can be connected to multiple VPCs as well via VPC Peering connections. If there is a need to access the EFS from an on-premise location, that also could be done via VPN or Direct Connect connections.

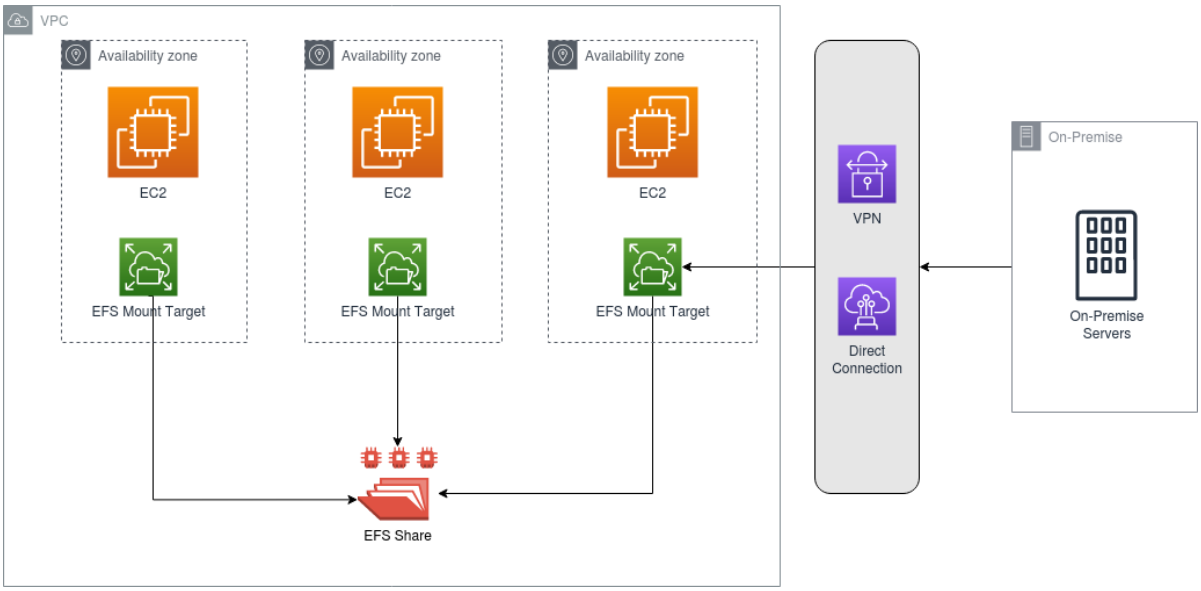

Figure 1.6 — EFS Architecture

Amazon Simple Storage Service Glacier

Here are the steps for setting up lifecycle rules on your S3 bucket.

1. Sign in to the AWS Management Console and access the Amazon console S3. Choose the name of the bucket that you want to create a lifecycle rule for.

2. Select the Management tab, and choose Create lifecycle rule.

3. In Lifecycle rule name, enter a name for your rule.

4. Choose the scope of the lifecycle rule. In this example, we apply the lifecycle rule to all objects in the bucket

1.7 DATABASES

Amazon RDS is available on several database instance types - optimized for memory, performance or I/O - and provides you with six familiar database engines to choose from, including Amazon Aurora, PostgreSQL, MySQL, MariaDB , Oracle Database , and Microsoft SQL Server .

What is Amazon RDS?

Amazon Relational Database Service (RDS) is a managed SQL database service provided by Amazon Web Services (AWS). Amazon RDS supports an array of database engines to store and organize data. It also helps with relational database management tasks, such as data migration, backup, recovery and patching.

What Is Unmanaged Cloud Computing?

Unmanaged cloud computing has a 'do it yourself' model where organizations pay for the resources they use. This is generally a public cloud where the customer rents the infrastructure and has administrative access to manage their cloud computing services directly. This approach gives businesses two key things – control and freedom to customize and deploy software as per their need. Unmanaged cloud computing is also a cheaper option than managed cloud services. Hence businesses that are comfortable managing their resources prefer to use this option.

What Is Managed Cloud Computing?

A managed cloud is a custom-built, organizations specific private cloud solution where the organization can harness the power of the private cloud without worrying about the cost, stress, or time it takes to manage it. An organization seeks the services of managed cloud hosting service providers for solutions and resources. The managed cloud provider offers hands-on availability, redundancy, 24x7support, guidance, monitoring, management, troubleshooting, and more.

AMAZON DYNAMODB

Amazon DynamoDB is a fully managed, serverless, key-value NoSQL database designed to run high-performance applications at any scale. DynamoDB offers built-in security, continuous backups, automated multi-Region replication, in-memory caching, and data import and export tools.

1.8 AUTOMATIC SCALING AND MONITORING

ELASTIC LOAD BALANCING

Elastic Load Balancing automatically distributes your incoming traffic across multiple targets, such as EC2 instances, containers, and IP addresses, in one or more Availability Zones. It monitors the health of its registered targets, and routes traffic only to the healthy targets. Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Elastic Load Balancing works with the following services to improve the availability and scalability of your applications.

- **Amazon EC2** — Virtual servers that run your applications in the cloud. You can configure your load balancer to route traffic to your EC2 instances.
- **Amazon EC2 Auto Scaling** — Ensures that you are running your desired number of instances, even if an instance fails. Amazon EC2 Auto Scaling also enables you to automatically increase or decrease the number of instances as the demand on your instances changes. If you enable Auto Scaling with Elastic Load Balancing, instances that are launched by Auto Scaling are automatically registered with the load balancer. Likewise, instances that are terminated by Auto Scaling are automatically de-registered from the load balancer.
- **AWS Certificate Manager** — When you create an HTTPS listener, you can specify certificates provided by ACM. The load balancer uses certificates to terminate connections and decrypt requests from clients.
- **Amazon CloudWatch** — Enables you to monitor your load balancer and to take action as needed.
- **Amazon ECS** — Enables you to run, stop, and manage Docker containers on a cluster of EC2 instances. You can configure your load balancer to route traffic to your containers.
- **AWS Global Accelerator** — Improves the availability and performance of your application. Use an accelerator to distribute traffic across multiple load balancers in one or more AWS Regions.
- **Route 53** — Provides a reliable and cost-effective way to route visitors to websites by translating domain names into the numeric IP addresses that computers use to connect

to each other. For example, it would translate www.example.com into the numeric IP address 192.0.2.1. AWS assigns URLs to your resources, such as load balancers. However, you might want a URL that is easy for users to remember. For example, you can map your domain name to a load balancer.

- **AWS WAF** — You can use AWS WAF with your Application Load Balancer to allow or block requests based on the rules in a web access control list.

AMAZON CLOUD WATCH

Amazon CloudWatch is a service used for monitoring and observing resources in real-time, built for DevOps engineers, developers, site reliability engineers (SREs), and IT managers. CloudWatch provides users with data and actionable insights to monitor their respective applications, stimulate system-wide performance changes, and optimize resource utilization. CloudWatch collects monitoring and operational data in the form of logs, metrics, and events, providing its users with an aggregated view of AWS resources, applications, and services that run on AWS. The CloudWatch can also be used to detect anomalous behavior in the environments, set warnings and alarms, visualize logs and metrics side by side, take automated actions and troubleshoot issues.

AMAZON EC2 AUTO SCALING

AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, it's easy to setup application scaling for multiple resources across multiple services in minutes. The service provides a simple, powerful user interface that lets you build scaling plans for resources including Amazon EC2 instances and Spot Fleets, Amazon ECS tasks, Amazon Dynamo DB tables and indexes, and Amazon Aurora Replicas. AWS Auto Scaling makes scaling simple with recommendations that allow you to optimize performance, costs, or balance between them. If you're already using Amazon EC2 Auto Scaling to dynamically scale your Amazon EC2 instances, you can now combine it with AWS Auto Scaling to scale additional resources for other AWS services. With AWS Auto Scaling, your applications always have the right resources at the right time.

CHAPTER 2: OVERVIEW OF THE ORGANIZATION

About

TECHNICAL – HUB

The demand-supply gap scenario, exponential opportunities, and dynamic challenges in the21st century call for a change in our thinking on engineering practice and education. A transformation on the current engineering education is the need of the hour. Growth of new knowledge together with rapidly evolving technological skills, the skill to communicate across disciplines, the ability to lead team-centered projects, contextualized problem formulation, and hands-on experience are the present demands of the global industry. On contrary to the present demands, students churned out from engineering colleges are not equipped to meet the current industry needs due to the growing gap between engineering practice, education and research which requires a lot of concern. As a timely response, it is this concern for the student that has ledAditya to initiate T-Hub: a perfect launch pad to the job world. T-Hub trains students in various disciplines beyond technological labels besides equipping them with skills and creativity requiredfor advancement in their careers. Through its various programs t-hub provides adequate opportunities for an unmatched knowledge base by imparting all necessary skills to students and makes them job ready

Improving the knowledge base with rapidly evolving technological skills, the skill to communicate across discipline, the ability to lead team-centered projects, contextualized problemformulation and hand-on experience is the present demand of the global industry. To meet this demand, Aditya initiated t-Hub: a perfect launch pad to the job world. T-Hub trains students in various disciplines beyond technological labels.

CHAPTER 3: INTERNSHIP PART

- Learning the subject of AWS Cloud Platform
- Implementation of the skills on different environments
- Trainer Sessions
- Query sessions
- Completion of the tasks assigned
- Soft skills Training and communication skills
- Certification

Objectives:

- High availability
- High performance
- Ensures the security of the user

Scalability:

- The user can pay for what he uses
- Backup and disaster recover

CHAPTER 4: ACTIVITY LOG BOOK

4.1. ACTIVITY LOG FOR THE WEEK -1

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Intro to Operating Systems	Acknowledged with the introduction of operating system and its parts	
Day - 2	Operating System Types	Learnt the types of operating systems and their benefits	
Day – 3	Client-Server architecture	Grasped the knowledge on basic of Client server Architecture and uses of it	
Day – 4	Intro to Virtualization	Learnt about the basics of Virtualization and its uses	
Day – 5	Applications of Virtualization	Acknowledged with the applications of the virtualization with practical knowledge in VMware workstation	
Day –6	Assessment Test of the week on Code Mind Platform	Evaluated my knowledge	

WEEKLY REPORT

Week -1 (From Date 15/05/2023 to 20/05/2023)

Objective of the Activity Done : To know the about introduction and basic of operating
system , Client-Server architecture, Virtualization.
Detailed Report:
In first weak in first day, I learnt about introduction of operating system and its parts. In
second day, I learnt the types of operating systems and their benefits from these two days I
learnt basics on operating system. In third day, I grasped the knowledge on basic of client server
architecture and uses of it. In fourth day, I learnt about the basics of virtualization and its uses.
In fifth day, I acknowledged with the applications of the virtualization with practical
knowledge in VMware workstation. In sixth day, I wrote an assessment which is test of the
week on code mind platform to check our knowledge on these concepts which we learnt in
previous days in this week.

4.2. ACTIVITY LOG FOR THE WEEK - 2

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Intro to Networking	Acknowledged with basics of networking and the types of networks	
Day - 2	Applications of Networking	Learnt the classes, IP addressing of networking along with protocols	
Day – 3	Basics of Storage technologies	Grasped the knowledge on basic of Storage systems and types	
Day – 4	Applications of Storage technologies	Acknowledged with applications of Storage technologies	
Day – 5	Cloud Service Providers	Acknowledged with the basics of cloud services and providers and overview	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated on my knowledge	

WEEKLY REPORT

Week -2 (From Date 22/05/2023 to 27/05/2023)

Objective of the Activity Done: To know the about the introduction and applications of
Networking, Storage technologies. Basics of cloud services and providers.
Detailed Report:
In second weak in first day, I learnt about basics of networking and the types of networks. In
second day, I learnt applications of networking in more about that the learnt the classes, IP
addressing of networking along with protocols from these two days I learnt more on
networking. In third day, I grasped the knowledge on basic of Storage systems and types. In
fourth day, I learnt applications of storage technologies from this the basics was completed. In
fifth day, I started the learning on cloud concepts with the basics of cloud services and
providers and overview. In sixth day, I wrote an assessment which is test of the week on code
mind platform to check our knowledge on these concepts which we learnt in previous days in
this week.

4.3. ACTIVITY LOG FOR THE WEEK - 3

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Cloud Infrastructure	Acknowledged with intro and basics of Cloud Infrastructure	
Day - 2	Cloud Infrastructure	Learnt with the applications of the cloud Infrastructure	
Day – 3	Benefits of Cloud Computing	Grasped with the knowledge of the cloud computing and its benefits	
Day – 4	Benefits of Cloud Computing	Grasped with the knowledge of the cloud computing and its benefits	
Day – 5	Cloud Characteristics as per NIST	Learnt the characteristics of the cloud as per the NIST	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated my knowledge	

WEEKLY REPORT

Week -3 (From Date 029/05/2023 to 03/06/2023)

Objective of the Activity Done: To know the about the introduction and basic of
Cloud Infrastructure and Benefits of Cloud Computing. Cloud Characteristics as per NIST
Detailed Report:
In third weak in first day, I learnt about introduction and basics of cloud infrastructure. In
second day, I learnt with the applications of the cloud Infrastructure from these two days I
learnt more on cloud. In third day, I grasped with the knowledge of the cloud computing and
its benefits. In fourth day, I continued the same topic of the cloud computing and its benefits
from these two days I completed the concept of could computing. In fifth day, I learnt the
characteristics of the cloud as per the NIST. In sixth day, I wrote an assessment which is test
of the week on code mind platform to check our knowledge on these concepts which we learnt
in previous days in this week.

4.4. ACTIVITY LOG FOR THE WEEK - 4

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Cloud Services	Learnt about the brief on the cloud services	
Day - 2	Cloud Services	Acknowledged with the types of cloud services and its applications	
Day – 3	Intro to Aws Cloud	Grasped the knowledge on the basics of Aws Cloud	
Day – 4	Global Infrastructure	Acknowledged with the knowledge on the infrastructure of Google	
Day – 5	Aws Cloud hierarchy	Acknowledged with the hierarchy of the Aws Cloud and its categories	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated on my skills	

WEEKLY REPORT

Week -4 (From Date 05/06/2023 to 10/06/2023)

Objective of the Activity Done: To know the about the brief on the cloud services.
Introduction of Aws Cloud and Aws Cloud hierarchy.
Detailed Report:
In fourth weak in first day, I learnt about the brief on the cloud services. In second day, I learnt
with the types of cloud services and its applications from these two days I learnt more on cloud
services. In third day, I grasped with the knowledge of the basics of Aws Cloud. In fourth
day, I acknowledged with the knowledge on the infrastructure of google. In fifth day, I
acknowledged with the hierarchy of the Aws Cloud and its categories from these days we
learnt more on the Aws Cloud. In sixth day, I wrote an assessment which is test of the week
on code mind platform to check our knowledge on these concepts which we learnt in previous
days in this week.

4.5. ACTIVITY LOG FOR THE WEEK - 5

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Pricing and Billing options	Learnt the concepts of billing and pricing of the service	
Day - 2	Accessing Aws Cloud services	Acknowledged with the concept of Accessing the cloud services by google	
Day – 3	Creating & Accessing resources	Learnt about the basics of creation and accessing of the resources in the Aws Cloud	
Day – 4	Creating & Accessing resources	Acknowledged with the practical knowledge on creating and accessing resources	
Day – 5	Creating & Accessing resources	Acknowledged with the practical knowledge on creating and accessing resources	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated on my skills	

WEEKLY REPORT

Week -5 (From Date 12/06/2023 to 17/06/2023)

Objective of the Activity Done: To know the about the Pricing and Billing options in
Aws Cloud and its Creating & Accessing resources.
Detailed Report:
In fifth weak in first day, I learnt the concepts of billing and pricing of the service. In second
day, I acknowledged with the concept of Accessing the cloud services by google. In third
day, I learnt about the basics of creation and accessing of the resources in the Aws Cloud.
In fourth day, I acknowledged with the practical knowledge on creating and accessing
resources. In fifth day, I continued the previous day to learn the knowledge on creating and
accessing resources. In sixth day, I wrote an assessment which is test of the week on code
mind platform to check our knowledge on these concepts which we learnt in previous days in
this week.

4.6. ACTIVITY LOG FOR THE WEEK - 6

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Compute, Storage & Network services	Learnt the concepts of compute, storage and network services in the Aws Cloud in the console	
Day - 2	Compute, Storage & Network services	Acknowledged with the practical knowledge on Accessing the compute, storage& network services by Aws Cloud	
Day – 3	Virtual Private Cloud	Grasped about the basics of Virtual Private Cloud (VPC) in the Aws Cloud	
Day – 4	Virtual Private Cloud	Acknowledged with the practical knowledge on creating and accessing of VPC.	
Day – 5	Virtual Private Cloud	Acknowledged with the practical knowledge on creating and accessing of VPC	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated on my skills	

WEEKLY REPORT

Week -6 (From Date 19/06/2023 to 24/06/2023)

Objective of the Activity Done : To know the about introduction Compute, Storage &
Network services and basic of Virtual Private Cloud.
Detailed Report:
In sixth weak in first day, I learnt the concepts of compute, storage and network services in
the Aws Cloud in the console. In second day, I practical knowledge on Accessing the
compute, storage& network services by Aws Cloud. In third day, I grasped about the
basics of Virtual Private Cloud (VPC) in the Aws Cloud. In fourth day, I acknowledged
with the practical knowledge on creating and accessing of VPC. In fifth day, I .
acknowledged with the practical knowledge on creating and accessing of VPC. In sixth day,
I wrote an assessment which is test of the week on code mind platform to check our
knowledge on these concepts which we learnt in previous days in this week.

4.7. ACTIVITY LOG FOR THE WEEK - 7

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Working with Bastion Host	Learnt the concepts of Bastion Host	
Day - 2	Working with Bastion Host	Acknowledged with the practical knowledge on implementation of Bastion Host in VPC	
Day – 3	NAT in Aws Cloud	Learnt about the basics of NAT in the Aws Cloud	
Day – 4	Aws Cloud Storage tiers	Acknowledged with the basics of storage tiers in Aws Cloud	
Day – 5	Aws Cloud Storage tiers	Acknowledged with the practical knowledge on storage tiers and billing of them	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated on my skills	

WEEKLY REPORT

Week -7 (From Date 26/06/2023 to 01/07/2023)

Objective of the Activity Done : To know about the Working with Bastion Host and basic of
NAT in the Aws Cloud, Aws Cloud Storage tiers.
Detailed Report:
In seventh weak in first day, I learnt concepts of bastion host. In second day, I acknowledged with
the practical knowledge on implementation of bastion host in VPC. In second day, I Learnt about
the basics of NAT in the Aws Cloud. In third day, I learnt about the basics of NAT in the google
cloud In fourth day, I acknowledged with the basics of storage tiers in Aws Cloud. In fifth day,
I acknowledged with the practical knowledge on storage tiers and billing of them. In sixth day, I
wrote an assessment which is test of the week on code mind platform to check our knowledge on
these concepts which we learnt in previous days in this week.

4.8. ACTIVITY LOG FOR THE WEEK - 8

Day	Brief description of the daily activity	Learning Outcome	Person In-Charge Signature
Day – 1	Identity & Access Management (1AM)	Learnt the concepts of Identity & Access Management (1AM) in AWS Cloud	
Day - 2	Load Balancing & Auto Scaling	Learnt about the basics of Load balancing and Auto scaling of the resources in the AWS cloud	
Day – 3	Load Balancing & Auto Scaling	Acknowledged with the practical knowledge on creation and accessing of Load Balancers and policies	
Day – 4	Working with containers in cloud	Acknowledged with the concepts of containers in cloud	
Day – 5	Intro to DevOps in cloud	Learnt the introduction of DevOps and its tools and advantages	
Day –6	Assessment Test on this week on Code Mind platform	Evaluated on my skills	

WEEKLY REPORT

Week -8 (From Dt 03/07/2023 to 8/07/2023)

Objective of the Activity Done : To know about the concepts of Identity & Access
Management (1AM) in AWS CLOUD. Basics of Load balancing and Auto scaling.
Detailed Report:
In eight weak in first day, I learnt concepts of Identity & Access Management (1AM) in AWS
cloud. In second day, I learnt about the basics of Load balancing and auto scaling of the resources
in the Aws Cloud. In third day, I acknowledged with the practical knowledge on creation and
accessing of Load Balancers and policies. In fourth day, I acknowledged with the concepts of
containers in cloud.in fifth day, I learnt the introduction of DevOps and its tools and advantages
In sixth day, I wrote an assessment which is test of the week on code mind platform to check our
knowledge on these concepts which we learnt in previous days in this week.

Internship Reflection

My internship experience was great. I took part in the "**AWS supported virtual internship**" program through Amazon Web Services and learned about the Aws Cloud Computing. I nowcan understand programs written in this language and structure logic for a professional**.**

We experienced a great deal of self-directed learning during the course of the 60-day internship. Because of our mentor, who everyday discussed the learning objectives and assistedus in achieving them, learning was a very simple process for us. We had weekly mentor and doubt sessions to get our questions about the course and internship answered.

During the internship, I assigned a few problems. I encountered several difficulties because I am new for cloud computing.

However, our mentors and support staff were incredibly attentive and helpful.

In order for us to connect with one another and support one another during the process, all of the intern applicants were added to a telegram group.

In conclusion I can say that this internship exposed me to a lot of the Industry.I developed my problem-solving skills and my ability to deal with a variety of issues and people. It was a significant life-changing event for me. I'm confident that this will allow me totake a step closer to achieving my objective.

CHAPTER 5: OUTCOMES DESCRIPTION

This course is for anyone who wants to demonstrate their knowledge of cloud computing basics and how AWS products and services can be used to achieve an organization's goals.

This course is for candidates who have a solid understanding of AWS fundamentals and experience deploying cloud applications, monitoring operations, and managing cloud enterprise solutions. AWS is ideal for candidates with in-depth experience working hands-on setting up cloud environments for organizations based on their business needs and have experience deploying services and solutions.

You grant access to a resource by setting an Identity and Access Management (IAM) policy. The policy binds one or more members, such as a user or a service account, to one or more roles. Each role contains a list of permissions that let the member interact with the resource.

Services in AWS:

- Compute
- Networking
- Storage and Databases
- Big Data
- Machine Learning

CHAPTER 6: CONCLUSION

Recognize the purpose of the AWS Academy Cloud Foundations Course

Equipping students with industry-recognized cloud skills and preparing them for in-demand cloud careers through a free, ready-to-teach curriculum. This bridges the gap between academic learning and industry needs.

The demand for cloud skills is soaring as businesses leverage cloud technologies to innovate and grow. LinkedIn data highlights this trend, ranking cloud computing as the top hard skill companies seek.

AWS Academy provides higher education institutions with a free, ready-to-teach cloud computing curriculum that prepares students to pursue industry-recognized certifications and in-demand cloud jobs. Our curriculum helps educators stay at the forefront of Aws Cloud innovation so that they can equip students with the skills they need to get hired in one of the fastest-growing industries.

Recognize the course structure:

- Land a well-paid job in one of the fastest-growing industries
- Gain skills hiring managers value.
- Receive 50% discount on AWS Certification exams.

Recognize the AWS certification process:

AWS Certification validates cloud expertise to help professionals highlight un – demand skills and organizations build effectiveness, innovative teams for cloud initiatives using AWS. Choose from diverse certification exams by role and specially designed to empower individuals and teams to meet their unique goal

CERTIFICATE OF INTERNSHIP

Date: 08/07/2023

This is to certify that **Mr. SAI VISWANADH TATAVOLU,** of the **Electrical and Communication Engineering** department with Roll No: **20MH1A04H9** of **Aditya College of Engineering** has successfully completed a summer internship with **Technical Hub Pvt Ltd** from **15-05-2023 to 08-07-2023**.

During this tenure, the trainee worked with "**AWS CLOUD"** completing the **"AWS Certified Cloud Practitioner"**, certification also excelling in major concepts.

- AWS EC2, VPC, S3, and Database Services
- Identity and Access Management in AWS
- Load balancing and Autoscaling
- Monitoring and Management

The trainee has a great amount of responsibility, sincerity, and a genuine willingness to learn new things.

We found the trainee's performance and conduct were satisfactory.

We wish you all the best and success in your future endeavour.

Intern ID – THSI230112
https://verify.technicalhub.io/

Babji Neelam
Chief Executive Officer
Technical Hub Pvt Ltd

Student Self Evaluation of The Short-Term Internship

Student Name : TATAVOLU SAI VISWANADH

Registration No : 20MH1A04H9

Term of Internship : **From : 15/05/2023** **To : 08/07/2023**

Date of Evaluation :

Organization Name & Address :

Please rate your performance in the following areas:

Rating Scale: **Letter grade of CGPA calculation to be provided**

1	Oral communication	1	2	3	4	5
2	Written communication	1	2	3	4	5
3	Proactiveness	1	2	3	4	5
4	Interaction ability with community	1	2	3	4	5
5	Positive Attitude	1	2	3	4	5
6	Self-confidence	1	2	3	4	5
7	Ability to learn	1	2	3	4	5
8	Work Plan and organization	1	2	3	4	5
9	Professionalism	1	2	3	4	5
10	Creativity	1	2	3	4	5
11	Quality of work done	1	2	3	4	5
12	Time Management	1	2	3	4	5
13	Understanding the Community	1	2	3	4	5
14	Achievement of Desired Outcomes	1	2	3	4	5
15	**OVERALL PERFORMANCE**	**1**	**2**	**3**	**4**	**5**

Date: **Signature of the Student**

Evaluation by the Supervisor of the Intern Organization

Student Name : TATAVOLU SAI VISWANADH

Registration No : 20MH1A04H9

Term of Internship : **From : 15/05/2023** **To : 08/07/2023**

Date of Evaluation :

Organization Name & Address :

Please rate your performance in the following areas:

Rating Scale: 1 is lowest and 5 is highest rank

Rating Scale: **Letter grade of CGPA calculation to be provided**

1	Oral communication	1	2	3	4	5
2	Written communication	1	2	3	4	5
3	Proactiveness	1	2	3	4	5
4	Interaction ability with community	1	2	3	4	5
5	Positive Attitude	1	2	3	4	5
6	Self-confidence	1	2	3	4	5
7	Ability to learn	1	2	3	4	5
8	Work Plan and organization	1	2	3	4	5
9	Professionalism	1	2	3	4	5
10	Creativity	1	2	3	4	5
11	Quality of work done	1	2	3	4	5
12	Time Management	1	2	3	4	5
13	Understanding the Community	1	2	3	4	5
14	Achievement of Desired Outcomes	1	2	3	4	5
15	**OVERALLPERFORMANCE**	**1**	**2**	**3**	**4**	**5**

Date: **Signature of the Student**

INTERNAL ASSESSMENT STATEMENT

Name Of the Student:

Programme of Study:

Year of Study:

Group:

Register No/H.T. No:

Name of the College:

University:

Sl. No	Evaluation Criterion	Maximum Marks	Marks Awarded
1.	Activity Log		
2.	Internship Evaluation		
3.	Oral Presentation		
4.	GRAND TOTAL		

Date: **Signature of the Faculty Guide**

EXTERNAL ASSESSMENT STATEMENT

Name Of the Student:

Programme of Study:

Year of Study:

Group:

Register No/H.T. No:

Name of the College:

University:

Sl. No	Evaluation Criterion	Maximum Marks	Marks Awarded
1.	Internship Evaluation		
2.	For the grading giving by the Supervisor of the Intern Organization		
3.	Viva-Voce		
4.	TOTAL		
GRAND TOTAL (EXT. 50 M + INT. 100M)			

Signature of the faculty guide

Signature of the internal expert

Signature of the external expert