



**AdusumilliGopalakrishnaiah& Sugarcane Growers
Siddhartha Degree College of Arts and Science**
Autonomous College :: Aided College of Govt. of AP
NAAC 'A' Grade College
Vuyyuru, Krishna (Dt).,Andhra Pradesh-521165

VALUE ADDED COURSE

TITLE: AWS

VAC CODE: VACAWS-01

On 01-12-2020 to 11-01-2021

Duration of the Course: 30DAYS

Organized By

Department of Computer Science



A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)

An Autonomous College in the Jurisdiction of Krishna University

Accredited by NAAC with "A" Grade



DEPARTMENT OF COMPUTER SCIENCE

Value Added Course

Title: AWS

Name of the Lecturer	:	A.SRAVANI
Class	:	II MPCs, MCCs
Duration of the Course	:	30 HOURS
VAC Code	:	VACAWS-01

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: AWS

Objectives : 1) Established logging and monitoring
2) Discuss the terminology used
3) Use strong authentication

Methodology : Teacher - Centered method

Duration : 30 Hours

A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course Student Enrolment Sheet

Class : II MPCs, MCCs

S. No	Roll No.	Name of the Student	Signature
1	1951601	TumatiSuneel Kumar	T. Suneel Kumar
2	1951603	PuvvadaLikhitha Naga Sai VaraSiddhika	P.L.N.S Varasiddhika
3	1951604	GollaDeepthi	G. Deepthi
4	1951607	KunderuSupriya	K. Supriya
5	1951608	Osuri Anil Kumar	O. Anil Kumar
6	1951612	OlupalliSaichand	O. Saichand
7	1951615	YandamuriVijaya Lakshmi	Y. Vijaya Lakshmi
8	1951621	Bezawada Sai Krishna	B. Sai Krishna
9	19516622	KommineniVamsiNagendra	K.V. Nagendra
10	1951623	NalluriSundra Rao	N. Sundra Rao
11	1951628	GummadiPhani Kumar	G. Phani
12	1951631	Boddu Keerthi	B. Keerthi
13	1951632	DokkuSireesha	D. Sireesha
14	1951634	Vadlani Jhansi	V. Jhansi
15	1951636	MindiJyothi	M. Jyothi
16	1951639	KeerthiAswitha	K. Aswitha
17	1951640	AnnavarapuPavan Kumar	A. Pavan Kumar

18	1951641	DannanaDhana Lakshmi	D.D. Lakshmi
19	1951642	Abdul Rasheed	Abdul Rasheed
20	1951645	ChoppakatlaTanishka	C. Tanishka
21	1951646	PrakerlaGeetha Sri	P. Geetha Sri
22	1951647	Matha Krishna Sai	M. Krishna Sai
23	1951650	KarimijjiSrikanth	K. Srikanth
24	1951652	Chittimotu Naga Sai Krishna	Ch. N. Sai Krishna
25	1951653	AkulaEswara Rao	A. Eswara Rao
26	1951656	ShaikMakbulBasha	S. Makbul Rao
27	1951657	Pamu Soma Venkata Sai Duth	P. S. V. Sai
28	1951658	ValluruChandu	V. Chandu
29	1951660	EdupugantiSumanth	E. Sumanth
30	1953701	Abdul Kareem	Ab. Kareem
31	1953702	BotchaDurga Praveen	B. Durgapraveen
32	1953703	Abdul Rehana	A. Rehana
33	1953705	KoyyiVeera Praveen	K. Veera Praveen
34	1953706	Meddisetty Naga Jagadeesh	M. Naga Jagadeesh
35	1953707	PamarthiDeepika	P. Deepika
36	1953708	VempatiAkhila	V. Akhila
37	1953709	KumpatiBalasouri	Kumpati Balasouri
38	1953712	OlipilliNeeraja	O. Neeraja
39	1953714	PallapothuNithish	P. Nithish

40	1953715	Mohammad Noorbasha	Mohammad Noorbasha
41	1953716	Chillimuntha Mohanasai	Chillimuntha Mohanasai
42	1953717	Guttikonda Sujitha	Sujitha
43	1953719	Pandalaneni Raja Sri	Raja Sri
44	1953720	Pandalaneni Ravitha	Pandalaneni Ravitha
45	1953723	Kruttiventi Sushama Swaraj	K. Sushama Swaraj
46	1953725	Abdul Jaleel	Jaleel
47	1953729	Veeranki Ramyasri	Ramyasri
48	1953734	Dokku Vijay Kumar	D. Vijay Kumar
49	1953741	Thokala Jaya Varshitha	P.J. Varshitha
50	1953742	Vuyyuru Tanuja	Tanuja
51	1953745	Mohammad Fathimunnisa	Ms. Fathimunnisa
52	1953747	Shaik Imran	S. Imran
53	1953750	Kothagundla Supriya	Supriya
54	1953753	Puttanaveedi Syama	P. Syama
55	1953755	Kandru Charitha Sri	Charitha Sri
56	1953756	Veeranji Pavan Kumar	Pavan Kumar
57	1953757	Veeranki Sravanya	V. Sravanya
58	1953758	Kalapala Shalini	Shalini
59	1953759	Amreen Jahan	A. Jahan
60	1953760	Rompella Ranga Ramya	Ranga Ramya

A.G. & S.G. Siddhartha Degree College of Arts & Science
Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course

Title: AWS

Date From 01-12-2020 to 11-01-2021

Date	Content	Module No.
01-12-2020 to 10-12-2020	<u>AWS over-view</u> What is AWS? Overview of AWS, history of AWS, Features of AWS, Commonly used Services By AWS, AWS Storage Services, AWS DataBases, Services of AWS, Advantages of AWS.	I
11-12-2020 to 17-12-2020	<u>AWS EC2</u> WHAT IS AWS EC2, AND WHY ARE BUSINESSES CHOOSING IT? CHARACTERISTICS OF AWS, BENEFITS OF AMAZON EC2.	II
18-12-2020 to 29-12-2020	<u>Cloud Computing</u> WHAT IS CLOUD COMPUTING? HOW DOES CLOUD COMPUTING WORK? WHY IS IT CALLED CLOUD COMPUTING? BENEFITS OF CLOUD COMPUTING, TYPES OF CLOUD COMPUTING, TYPES OF CLOUD SERVICES Benefits of Cloud Computing, Features of Cloud Computing.	III
30-12-2020 to 11-01-2021	WHAT IS EC2? EC2 Pricing Options, WHAT IS IAM? WHAT IS S3? AWS Root Login, HOW TO SIGN UP ON AWS, Connecting the eRDS Instance How to Host your website! Uploading your website to this EC2 server	IV



AMAZON WEB SERVICES

MATERIAL



UNIT-1

INTRODUCTION OF AWS

What is AWS?

AWS means Amazon Web Services that is used by millions, and to get the answer to this question, we must know that AWS is a cloud provider. It is a safecloud services platform that offers almost all that a business requires to develop sophisticated applications with reliability, scalability, and flexibility. It is a model for billing generally referred to as “pay-as-you-go,” having no upfront or capital cost. Amazon offers almost 100 services based on-demand, and the list has been rising daily. Operation is almost immediately, and it’s accessible with reduced setup.

To master AWS is not all about the online building of sites. The service affords developers access to an interconnected set of attributes offering calculated database storage, power, content delivery, and an increasing portfolio of connected functionality. Organizations around the globe use AWS to develop and scale. Cloud computing has come to remain, and the available solutions from AWS are fast-tracking its development.



OVERVIEW OF AWS :

Cloud computing is now an essential part of all businesses in every industry. Amazon Web Services is a prevalent form that increases efficiency while assisting several business practices. Dating back to the 2000s, organizations depended absolutely on servers that are purchased servers. In contrast, such servers had functions that are limited with steep prices, including a server that is functioning requiring numerous validations.

The more business keeps experiencing growth, the more optimization practices and servers are needed. Getting such items showed unproductively and at times excessively costly.

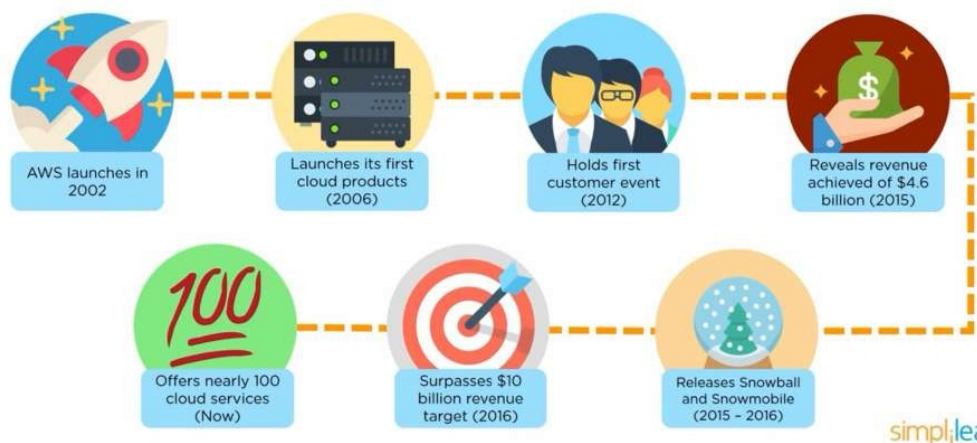
The benefits of Amazon Web Services have been the answer to many problems. Organizations that use AWS have instantly available servers; also, AWS offers various improved storage options, workloads, and enhanced security measures.

HISTORY OF AWS

Amazon Web Services was launched in 2002. The company intended to sell the infrastructure that is not in use as a service or offering it to customers, wherein the purpose was met enthusiastically.

Amazon had its first AWS product launched in the year 2006. After four years, in the year 2012, Amazon had a huge occasion to gather customer input concerning AWS. To date, the organization continues to hold similar events, like Reinvent, that lets customers share feedback concerning AWS. In 2015, Amazon publicized that the revenue of AWS has amounted to \$7.8 billion. From then and 2016, measures had been launched by AWS aiding customers to migrate their services to AWS. Such actions, including the growing and appreciating features of AWS, made further economic growth. In the year 2016, Amazon's revenue augmented to \$12.2 billion in 2016. Presently, AWS provides customers with 160 products and services. The number is liable to increase, owing to the rate at which Amazon builds upon and fine-tunes AWS.

A Brief History of AWS



WHO USES AWS?

The number of organizations under the umbrella of AWS via IT environments is more like assessing globally successful organizations.

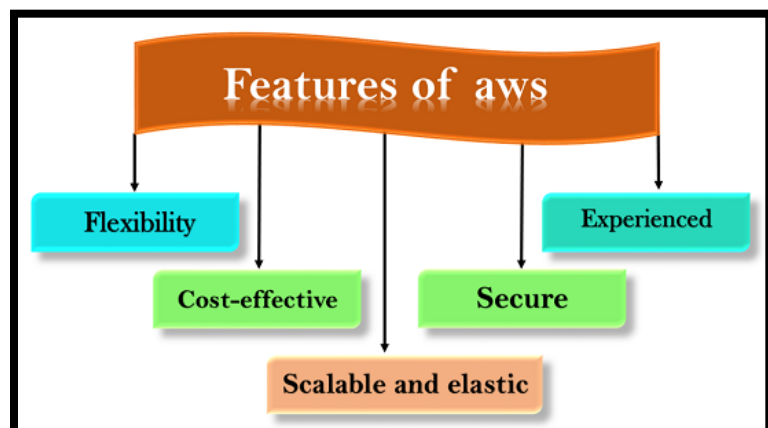
Using AWS, Adobe provides multi-terabyte working environments accessible by its customers by integrating the system using AWS Cloud. Adobe focuses on operating and organizing its software rather than putting effort to manage and deploy the infrastructure.

The list is endless, for example, McDonald's, Kellogg's, NASA, Howard Medical School, to mention but a few are profiting from AWS.

Features of AWS :

The following are the features of AWS:

- Flexibility
- Cost-effective
- Scalable and elastic
- Secure
- Experienced



1) Flexibility :

- ❖ The difference between AWS and traditional IT models is **flexibility**.
- ❖ The traditional models used to deliver IT solutions that require large investments in a new architecture, programming languages, and operating system. Although these investments are valuable, it takes time to adopt new technologies and can also slow down your business.
- ❖ The flexibility of AWS allows us to choose which programming models, languages, and operating systems are better suited for their project, so we do not have to learn new skills to adopt new technologies.
- ❖ Flexibility means that migrating legacy applications to the cloud is easy, and cost-effective. Instead of re-writing the applications to adopt new technologies, you just need to move the applications to the cloud and tap into advanced computing capabilities.

2) Cost-effective:

- ❖ Cost is one of the most important factors that need to be considered in delivering IT solutions.
- ❖ For example, developing and deploying an application can incur a low cost, but after successful deployment, there is a need for hardware and bandwidth. Owing our own infrastructure can incur considerable costs, such as power, cooling, real estate, and staff.
- ❖ The cloud provides on-demand IT infrastructure that lets you consume the resources what you actually need. In aws, you are not limited to a set amount of resources such as storage, bandwidth or computing resources as it is very difficult to predict the requirements of every resource. Therefore, we can say that the cloud provides flexibility by maintaining the right balance of resources.
- ❖ AWS provides no upfront investment, long-term commitment, or minimum spend.

3) Scalable and elastic:

- ❖ In a traditional IT organization, scalability and elasticity were calculated with investment and infrastructure while in a cloud, scalability and elasticity provide savings and improved ROI (Return On Investment).
- ❖ Scalability in aws has the ability to scale the computing resources up or down when demand increases or decreases respectively.
- ❖ Elasticity in aws is defined as the distribution of incoming application traffic across multiple targets such as Amazon EC2 instances, containers, IP addresses, and Lambda functions.

4) Secure :

- ❖ AWS provides a scalable cloud-computing platform that provides customers with end-to-end security and end-to-end privacy.

- ❖ AWS incorporates the security into its services, and documents to describe how to use the security features.
- ❖ AWS maintains confidentiality, integrity, and availability of your data which is the utmost importance of the aws.

Physical security: Amazon has many years of experience in designing, constructing, and operating large-scale data centers. An aws infrastructure is incorporated in AWS controlled data centers throughout the world. The data centers are physically secured to prevent unauthorized access.

Secure services: Each service provided by the AWS cloud is secure.

Data privacy: A personal and business data can be encrypted to maintain data privacy.

5) Experienced :

- ❖ The AWS cloud provides levels of scale, security, reliability, and privacy.
- ❖ AWS has built an infrastructure based on lessons learned from over sixteen years of experience managing the multi-billion dollar Amazon.com business.
- ❖ Amazon continues to benefit its customers by enhancing their infrastructure capabilities.
- ❖ Nowadays, Amazon has become a global web platform that serves millions of customers, and AWS has been evolved since 2006, serving hundreds of thousands of customers worldwide.

FEATURES OF AWS MARKETPLACE:

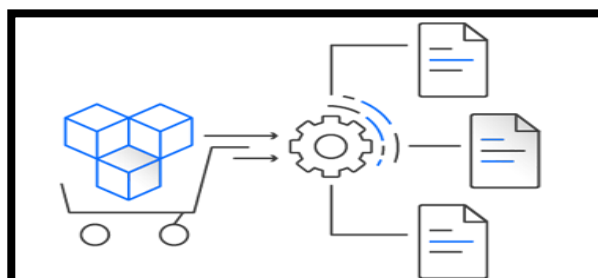
1. PROCUREMENT AT SPEED:

Unlock innovation with features that streamline procurement. With AWS Marketplace you can access a broad selection of software solutions from a variety of vendors that can be implemented quickly and with the controls you need – giving you the agility to keep up. The third-party software sellers in AWS Marketplace offer pricing options that give you the flexibility to step your way in to commitments, paying for what you need, when you need it. Decrease transaction friction with customized terms and flexible payment options.



Private Offers and Consulting Partner Private Offers enable you to receive custom software pricing and terms from a third-party that is not publicly available in AWS Marketplace. Meet your software procurement needs with custom terms, volume pricing, and flexible payment options negotiated privately with your preferred independent software vendor (ISV) or Consulting Partner.

2. Terms



Standardized License

Designed in collaboration with buyers and sellers, Standard Contract for AWS Marketplace and Enterprise Contract for AWS Marketplace give customers the ability to purchase software from participating sellers with standard terms that govern software usage and define obligations of each party. Standard terms allow organizations to alleviate lengthy negotiations, streamline software procurement and speed innovation for their business.



3. Vendor Insights :

Vendor Insights helps simplify third-party software risk assessments by compiling security and compliance information in a unified dashboard. It helps streamline the procurement process by granting buyers access to evidence made available by sellers related to data privacy and residency, application security, and access control. AWS Config and AWS Audit Manager provide automated evidence refreshing, helping buyers perform continual compliance monitoring.

4. Professional Services in AWS Marketplace :

Professional Services available in AWS Marketplace enable you to find and buy assessments, implementation, support, managed services, and training for your third-party software. AWS Marketplace helps you find the software and associated services you need to innovate all in one place, simplifying procurement.



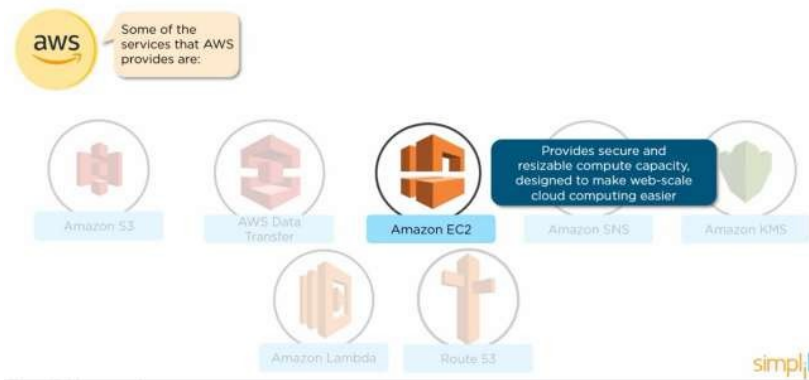
SERVICES THAT ARE COMMONLY USE AND PROVIDED BY

AMAZON WEB SERVICES:

Various services available on AWS cannot be overemphasized; they are security, tools development, migration, custom engagement, storage, and many more. Below are some of the services that are commonly used by Amazon WebServices:

1. **Amazon EC2** :- EC2 can be resettable due to the user's necessity, as long as a secured computing capacity is available in the cloud. For example, in situations whereby web traffic changes, this facility can increase its atmosphere, behind the scenes, to three occurrences when necessary and then contract to a single resource when weight reduces.

The Services AWS offers



2. **Amazon Elastic Beanstalk**:- It consists of several programming languages; such service enables scale and organizes web apps. Just upload the required code, and the Elastic Beanstalk would automatically handle the setting from the capacity provision to load balancing and auto-scaling to app health checking.

3. **Amazon Lightsail** - Easy to present and manage, Amazon Lightsail is essentially a confidential server and contains all required to launch a project without delay on a computer-generated machine, such as tools for transferring data, SSD-based storage, static IP, and DNS management.

4. **Amazon Lambda** :- It enables organizations for code running with no use for server management and provisioning. It automatically scales little requests for a day to so many for a second. Organizations pay for the time used for computing and no charges while code isn't running.

The Services AWS offers



AMAZON WEB SERVICES STORAGE SERVICES :

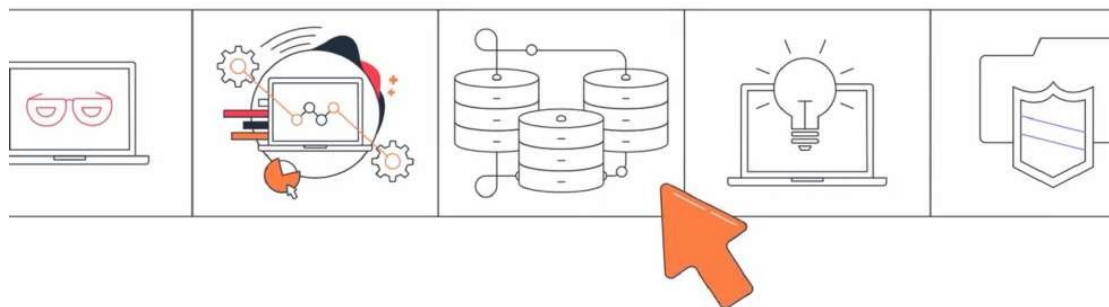
With the quantity of data organizations collect, storing the data seems to be high in demand. AWS, therefore, helps bring numerous solutions listed below:

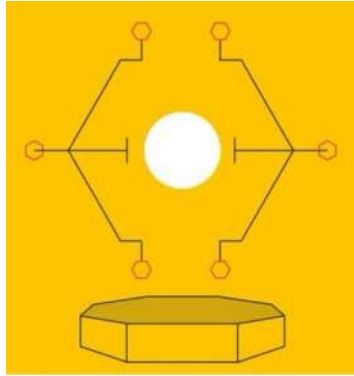
- **Amazon S3** – With S3, data can be stored and retrieved from anywhere, including IoT sensors, mobile apps, websites, and others. There's flexibility in data management, security, and durability for internet storage.
- **Amazon Glacier** – It's a service for cloud storage meant for storing data for future use, including long-term backups, highly secure options, and low-cost Glacier.
- **Amazon Elastic Block Store (EBS)** - EBS offers block store volumes for uses of EC2. It is a dependable storage volume attached to whichever running instance in a similar accessibility zone.
- **Amazon Elastic File System (EFS):** - EFS can be used with the Amazon Web Services Cloud resources and services. It's scalable and straightforward; it's flexible storing of files for on-premise resources. Containing an intuitive interface allows users to build and file configuring systems without troubling the app growth and automatic shrinking when files are being added or even removed.

AMAZON WEB SERVICES DATABASES :

Amazon Web Services offers databases in dual primary flavors:

- **Amazon RDS** - Easing the process of setting up, operating, and scaling a relational database in the cloud, Amazon RDS provides cost-efficient and resizable capacity while automating time-consuming administrative tasks such as database hardware setup, repairing, and backups. The enhanced service is for memory performance and output/input processes. Amazon RDS gives you the freedom to use your relational database of choice including the most popular open source and commercial agents and Amazon relational database built for the cloud, Amazon Aurora, which offers the performance and availability of traditional commercial databases and fraction of the cost. RDS enables you to scale across a global footprint of data with enterprise high availability and disaster recovery no matter the size, it automates many previous cumbersome tasks, automatic failover, backups at point in time are restored, disaster recovery, access management, encryption, secure networking, monitoring and performance optimization. All these and more can be enabled with a few clicks or API codes. Even, highly regulated industries can leverage RDS which means a broad range of compliance certifications.
- **Amazon Redshift** is a data warehousing service allowing users to examine data with SQL and other intelligence business instruments. It can be used in running multifaceted queries compared to terabytes of organized data and obtain results in seconds.





THE FUTURE OF AWS

SERVICES OF AWS :

Since its existence, AWS has developed into vital technological cloud computing. Below are some essential services offered by a AWS:

1. AMAZON S3 :

It is a tool used for backing up the internet and less costly for storage options in the category of object-storage. The central part of this option is that data stored can be retrieved from virtually anywhere they are needed.

2. AWS DATA TRANSFER PRODUCTS :

As the term suggests, they are collecting data, transferring data products, and migration that aids the collection of data seamlessly. They can also allow the monitoring and analysis of data in actual time.

3. AMAZON EC2 (ELASTIC COMPUTE CLOUD) :

It provides a resizable and secured capacity for computing, depending on your requirements. The service, therefore, is designed to enable web-scale cloudcomputing more reachable.

4. AMAZON SNS (SIMPLE NOTIFICATION SERVICES) :

It is a tool for delivering notification messages to a significant number of subscribers via SMS or email. Alarms can be sent, including servicenotifications and other messages proposed to call attention to important information.

5. AMAZON KMS (KEY MANAGEMENT SYSTEM) :

It is a security instrument using 256-bit encryption for data. Also safeguarding it from cybercrime/attacks and hackers.

6. AMAZON LAMBDA

It's for code running depending on a particular event and manages reliant resources. You do not need either provisioning servers or operating, and how much is paid depending on the length of time, it takes in executing your code. It's cost-effective, unlike services that their charges are according to hourly rates.

7. ROUTE 53 :

It is a DNS service in the cloud that doesn't need you to keep a separate DNS account. The aim is to provide a cost-effective and reliable method to route usersfor businesses to internet apps.

How does AWS make lives easier?



Here's the problem Unilever faced:

A need for faster time-to-market and a standardized environment

How does AWS make lives easier?



Here's how AWS makes lives easier:



Here's the problem Kellogg's faced:

Attempting to improve trade spend and to move from their usual infrastructure



Here's how AWS makes lives easier:



ADVANTAGES OF AMAZON WEB SERVICES

Unilever, a well-known organization in the world of consumer goods, would be used as an illustration.

Unilever had an issue: It required a quicker time-to-market and a consistent environment, and its spread across 190 countries and uses digital marketing for its products. Its prevailing legacy in the local climate proved unworkable, incapable of catering to altering IT demands.

It then moved a portion of its business to Amazon Web Services, and ever since, rollouts have been smooth, provisioning apps have become dependable, and even infrastructure provisioning has increased.

The company can also do everything in scaling push-button and Amazon Web Service's backups that are secured to ensure that all company's data is accessible continuously and secured.

Unilever is currently developing with Amazon Web Services, kudos to characteristics like rapid rollouts deployment, capacity to produce current reports and securing backups.

WHY USE WAS?

Below are the distinctive features that make Amazon's AWS a leader in the cloud market worldwide.

1. IMPROVED SECURITY

AWS creates a technological platform that is secured and long-lasting. To ensure that your data is secured and reliable, Amazon's data services and centers have different operational and physical security layers. Amazon Web Services also carry out audits regularly to make sure of the security of the infrastructure.

They're also best practices implemented in security and certification offers on ways to deploy AWS security features. There's the assurance of confidentiality, availability, and integrity of your data while providing end-to-end security and privacy.

In terms of cloud security provided by Amazon's AWS, they are earnest about it. Their recent addition to security services is called the Amazon Detective, making data investigations more efficient and even faster.

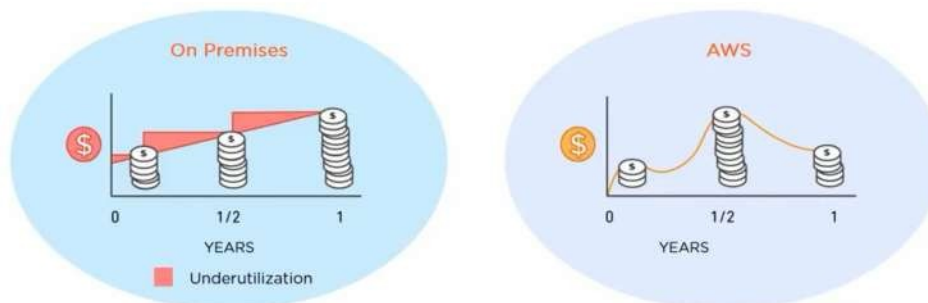
2. COST-EFFECTIVENESS

A very distinguished advantage of AWS that is promising is the pay-as-you-go pricing model. It means that you pay only for a particular service you subscribed to, and it's only for that specific time you need it. It is a step ahead towards a smart-driven product for organizational development.

Amazon Web Services pricing is related to means through which you pay for utilities such as electricity and water. Therefore, you can pay only for consumed services and immediately discontinue their use, and termination fees or extra costs will not be included.

AWS has pay-as-you-go approach when it comes to pricing

In addition, data transfer into AWS is always free of charge

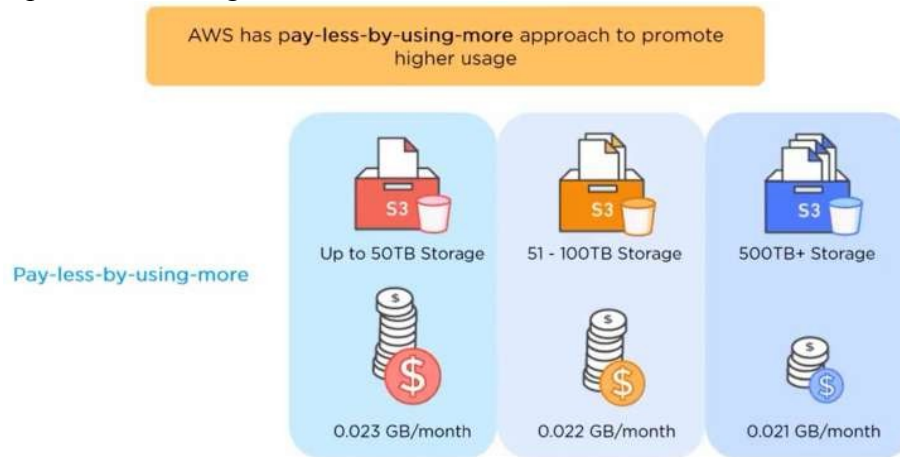


– Amazon AWS

There are other policies available that are valid for a particular Amazon Web Services. Here is some indication to enable you to comprehend which Amazon cloud computing cost plan will be paramount for your company.

Save when you Reserve : The suggestion holds specific good services, including Amazon RDS and Amazon EC2. At this point, the real cost is rightly related to the discount accumulated, i.e., if you choose the pay, the total price up-front, then you'll get the extreme discount and vice-versa.

Pay Less by Using More : For particular AWS services like S3 or data transfer OUT from EC2, the more the usage, the less you pay per Gigabyte (GB). These are volume-based discounts that enable you to profit in the long run.



AWS Free Tier : Upon creating a new account, over 60 AWS services can be accessed and freely offered. Nevertheless, these free offers are subdivided into three offers depending on the form of product an organization intends to use.

3. FLEXIBILITY AND OPENNESS

AWS is an agnostic-platform for operating languages and systems. You can choose the development platform or programming model that can be more favorable to your business. Businesses are entitled to a potential environment that allows them to access services and software required by a specific application. Hence, no limitations or strict protocols while subscribing to Amazon cloud services that aid migration and enable the building of new solutions. Furthermore, programming languages can be used, including databases, architectures, and programming languages you are accustomed to. In like manner, there won't be any requirement for your IT personnel to pick up a set of new skills, and the total time to market and productivity will considerably increase.

4. SCALABILITY AND ELASTICITY

Amazon Web Services allows you to experiment, innovate and iterate speedily via a huge cloud global infrastructure. Therefore, in leveraging scalability, Amazon Web Service can effortlessly manage the increase of workload by assigning the resources as a result of the demand, that also within minutes. New applications can as well be used instead of waiting for months for hardware while avoiding resource provisioning upfront for projects with lifetimes that are short and variable rates consumption.

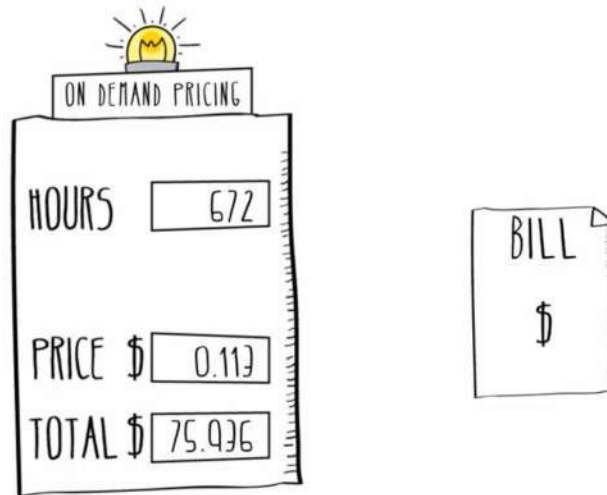


UNIT-2

AWS EC2

What is AWS EC2, and why are Businesses Choosing it?

Amazon Elastic Compute Cloud (Amazon EC2) gives scalable computing capacity in the AWS cloud. Through Amazon, your requirements are eradicated to participate in upfront hardware, so faster apps can be developed and deployed. Whatever applications you run, you definitely would require services, sometimes you might need more while sometimes you may not, whatever your requirements, it would be great to obtain services quickly and inexpensively. Traditionally, obtaining services could be stressful, EC2 therefore makes it easy to obtain a virtual service quickly and inexpensively by choosing the exact type you want and the template you prefer to use. This could be done with a few clicks. EC2 also offers a flexible pricing option by paying for only what you use, when you stop your instances, you stop paying (on-demand pricing).



Announced in 2006, EC2 (Elastic Compute Cloud) allows you to use Amazon's computing environment and control your complete computing resources. You can speedily scale capability based on the computing requirements as Amazon EC2 enables you to acquire and boot new server instances in a few minutes.

It safeguards against common occurrences of failure and offers developers the equipment to advance mobile apps that are tough. A good example is GE Appliances, which has consistently been increasing with these EC2 cases' aid.

NOTICEABLE CHARACTERISTICS OF AMAZON WEB SERVICES EC2?

AWS EC2 has different attributes that aid the development of scalable applications and enterprise-class, that are tough to failure. Below are some of them:

1. AMAZON ELASTIC BLOCK STORE (EBS)

EBS offers consistent storage for cases of Amazon EC2. Amazon EBS volumes are committed to the network and even without being dependent on a case's life. They can be attached as a standard block device to running an Amazon EC2 case or used as the boot division of an Amazon EC2 case and are incredibly dependable.

While using Amazon EC2 as a boot division, AWS EC2 instances can stop and restart as needed. In a

particular availability zone, Amazon EBS volumes are duplicated automatically.

2. EBS-OPTIMIZED CASES

A few selected Amazon EC2 types of cases can be launched as EBS-optimized cases for a reduced hourly fee. EBS-

You can launch a few chosen Amazon EC2 instance types as EBS-optimized instances for a low hourly price. EBS-enhanced cases make it possible for EC2 cases to utilize the IOPS provisioned on an EBS volume. Depending on the type of illustration used, throughput anywhere between 425 Mbps and 14,000 Mbps can be provided by EBS-optimized instances between Amazon EC2 and Amazon EBS.

3. ELASTIC IP ADDRESSES

Static IP addresses which can be used for active cloud computing are known as flexible IP address. A flexible IP address isn't related to a particular instance, but with your account and till you let go of it, the address can be controlled.

Through the remapping of your public IP addresses programmatically to whichever case in your account, flexible IP addresses allow you to mask availability zone failures or issues.

Amazon EC2 allows you to work around matters with software or cases where you don't rapidly map your flexible IP address to the point of replacement. Therefore, you don't have to delay DNS to spread to all customers or hold on for a data technician to reconfigure or substitute your host.

4. AMAZON VIRTUAL PRIVATE CLOUD

A virtual network can be defined whereby you can launch AWS cloud resources that can be performed via a section of the AWS cloud separate from the aid of Amazon VPC. Route tables, network gateways, and creating subnets, and choosing your IP address variety can be configured. This is because the virtual networking environment can be controlled entirely via Amazon VPC.

A hardware virtual private network (VPN) can also be created, which connects your corporate data center and VPC in using AWS cloud as an expansion of the corporate data center.

5. AMAZON CLOUDWATCH

. Beginning with Amazon EC2, Amazon CloudWatch observes Amazon cloud resources and apps. Writes, network traffic and disk reads, and CPU operation are amongst the metrics provided by Amazon CloudWatch for reflectiveness into general patterns of demand, resource utilization, and functioning performance.

Alarms can be set, statistics can be gotten, and graphs can be viewed for your metric data. All you've to do is select the Amazon EC2 cases you wish to be monitored to use Amazon CloudWatch. Also, you can provide your app or data for a business metric. Amazon CloudWatch will gather and store data easily accessed using command line equipment and AWS APIs

6. AUTO SCALING

In agreement with the situations outlined, auto-scaling allows you to measure the capacity of your Amazon EC2 both up and down. There is cost reduction for the duration of lulls or spikes in demand via auto-scaling that scales up automatically or scales down the instances of the Amazon EC2 you are using.

For applications undergoing hourly, daily, or weekly usage variability, automatic scaling is very appropriate. Amazon CloudWatch allows automatic scaling and will enable you to pay only for what you use.

7. ELASTIC LOAD BALANCING

It automatically assigns incoming app traffic to numerous Amazon EC2 cases. Replying to incoming app traffic, elastic load balance offers the load balancing ability needed to aid you in getting better

tolerance for errors in your applications.

Elastic load balancing notifies traffic to strong cases until the cases that are not solid are repaired. For mobile applications' routine, elastic load balancing can be allowed within single or more accessibility zones.

Request inactivity and count are the functioning metrics that can be captured with Amazon CloudWatch. Furthermore, you don't need to pay for anything other than the fees charged for elastic load balancing.

Airbnb uses Elastic Load Balancing that automatically distributes inward traffic among multiple Amazon EC2 cases

8. AUTO RECOVERY

Automatic retrieval is an Amazon CloudFront EC2 characteristic that regains automatically every supported case. If case system damage is identified, it is a stress-free task enabling the automatic feature by constructing an AWS CloudWatch alarm. An additional perk of this characteristic is that it streamlines its capability to preserve a case running when the case gets improved on the new hardware. Therefore, instant migration is no longer needed.

9. IMPROVED NETWORKING

The characteristic of the EC2 improves the packet for a second performance, alongside the provision of lower latencies and network jitter. Improved networking exploits a new network virtualization stack holding power to give effective I/O implementation and reduced CPU deployment. All you have to do is to launch an HVM AMI in VPC while installing a well-matched driver.

10. VM IMPORT/EXPORT

These particular EC2 characteristics ease the import of simulated machine images from the cases of EC2 source and export to a similar source at any agreed time. Also, you can export any case of EC2 import previously imported each time the need arises. Nevertheless, there is a standard usage threshold further that there are extra charges to use the service.

11. HIGH-PERFORMANCE COMPUTING (HPC) CLUSTERS

Organizations using the computational amount of work like app sensitive to network effects can be managed to accomplish the needed top performance with the aid of these AWS EC2 characteristics. C5 cases are constructed to achieve network-intensive functions. They can be shared into clusters, thus giving a low-latency network function that is advanced required for tightly-coupled, node-to-node communication.

12. OPTIMIZED CPU CONFIGURATIONS

Benefits can be gotten from cost advantages, elasticity, and flexibility of Amazon EC2, also obtain the type of high computing performance and increased network obtained via custom-constructed infrastructure even with multifaceted computational workloads like applications sensitive to network. Applications can get reduced-latency network effectiveness required for node-to-node, firmly coupled communication by programmatically launching cluster compute cases, cluster GPU, and maximum memory into groups.

Maximum memory, cluster compute cases, and cluster GPU have been considered to offer top-performance network ability. Cluster cases are appropriate for customer apps essential in performing network-intensive processes and considerably provide improved throughput.

BENEFITS OF AMAZON EC2

After maneuvering over the plethora of characteristics that EC2 offers, here are some add-on profits to note.

1. SIMPLE TO BEGIN WITH

Getting on track with EC2 is quick and straightforward. All that is required is to choose pre-configured software on Amazon Machine Images (AMIs) by visiting the Amazon Web Services marketplace and begin immediately with Amazon EC2. Use the EC2 AWS support or via a one-click launch in installing the software.

2. WEB-SCALE COMPUTING WITH ELASTICITY

Your app can automatically scale to-and-fro because Amazon EC2 is controlled through web service application programming interfaces (APIs). You can commission any number of server instances at the same time to increase or decrease capacity in a few minutes through Amazon EC2, which, in turn, makes it a good AWS service.

3. LOW COSTING

The financial aids of Amazon's scale are delivered to customers. The capacity for computing that you've used is what you pay for, and it's at a reduced rate. Though EC2 is cost-free to try, there're also some cases where you can choose to pay. Regardless, you can only pay for what you've selected to pay for, without any unexpected or concealed expenses.

4. COMPLETE CONTROL

You can interrelate with the cases as you can interact with whichever machine you have origin access for every one of them. So you regulate your AWS cases. Data can be saved on your boot partition while you stop a case and later restart it with the web service APIs. Through instances of rebooting remotely by web service APIs, your instance's console output can be accessed.

5. SECURITY

Your computing resources are protected, and the networking functionality made robust by Amazon EC2 functioning with Amazon Virtual Private Cloud (Amazon VPC).

You choose the IP variety for the VPC through which your compute cases are positioned. You identify the cases that stay private and those visible to the internet.

Standardized industry encrypted IPsec VPN connections can be used to connect resources in your VPC with an existing IT infrastructure.

In leveraging private subnets, VPN connections, network ACLs, and outbound safety filtering collection, amongst other progressive networking characteristics, VPC can be created and introduced into it if you do not have an automatic VPC.

6. FLEXIBLE SERVICES FOR CLOUD HOSTING

There are several software development packages and functioning system instance forms that you can choose via Amazon EC2. You can select a boot partition size appropriate for the functioning system and application you have in accumulation to case storage, memory configuration, and CPU via AWS EC2.

7. DEPENDABILITY

Dependability aids in the speed and foreseeable replacement of cases via the environmental flexibility provided by AWS EC2. The service leverages Amazon's data centers and network infrastructure to offer 99.95% obtainability in all Amazon EC2 regions (in agreement with the Amazon EC2 service equal agreement).

8. WORKS IN COMBINATION WITH OTHER AWS COMPONENTS

For selecting applications, Amazon EC2 affords computing solutions, query processing and provides storage through working in association with Amazon Simple Queue Service, Amazon Relational Database Service, Amazon Simple DB, and Amazon Simple Storage Service.

UNIT-3

CLOUD COMPUTING

What is cloud computing?

Cloud computing is an internet-based computing service in which large groups of remote servers are networked to allow centralized data storage, and online access to computer services or resources.

Using cloud computing, organizations can use shared computing and storage resources rather than building, operating, and improving infrastructure on their own.

Cloud computing is a model that enables the following features.

- Users can provision and release resources on-demand.
- Resources can be scaled up or down automatically, depending on the load.
- Resources are accessible over a network with proper security.
- Cloud service providers can enable a pay-as-you-go model, where customers are charged based on the type of resources and per usage.



HOW DOES CLOUD COMPUTING WORK?

Instead of maintaining a personal computing structure or data centers, an organization can access anything from apps to storage from a provider of cloud service.

An advantage of using cloud computing services is that companies may dodge the cost ahead and difficulty owning and sustaining their own IT infrastructure, but instead pay for whatever they use, anytime they use it.

Sequentially, cloud computing services providers can gain from vital economies of scale by distributing similar services to more customers.



EXAMPLES OF CLOUD COMPUTING?

Cloud computing supports a wide range of services. It includes customer service such as Gmail or the cloud back-up of photos from your mobile phone, still to the services that enable large enterprises in hosting all their data while running apps in the cloud. Netflix depends on cloud computing services in running its video streaming service and its other business systems and having a total number of other companies.

Cloud computing is suitable for the original selection for several applications: software vendors are progressively giving their apps as services through the web instead of different products as they attempt to move to a subscription model. Nevertheless, there is still a possible downside to cloud computing, being that it can also bring in new risks and costs for firms using it.

WHY IS IT CALLED CLOUD COMPUTING?

A vital model backing up cloud computing is that where the service is located and other details like the operating system or hardware in which it is running, it is considered unnecessary to the user. With this in mind, the symbol of the cloud was hired from ancient telecoms network plans. The public telephone network (and advanced to the internet) was frequently symbolized as a cloud to signify that it doesn't matter – it was only a cloud of stuff.

This is, of course, an excessive simplification; for a lot of customers, locating their services and data is still a primary issue.

BENEFITS OF CLOUD COMPUTING

Cloud computing is an excellent change from the outdated system business thinking about IT resources. Below are collective reasons motive firms are switching to cloud computing services:

1. Cost

Cloud computing removes the capital cost of purchasing software and hardware while setting up and running on-site datacenters—the stands of servers, the round-the-clock energy for power and chilling, and the IT specialists for handling the infrastructure. It improves quickly.

2. Speed

Many cloud computing services are given self-service and based on demand. Therefore, even vast sums of computing resources can be provided in no time, generally with only a limited mouse click, giving organizations room for elasticity and taking the burden off capability.

3. Global scale

An advantage of cloud computing services is the capacity to measure elasticity. In cloud speak, it has to do with distributing the exact amount of IT resources – for instance, additional or fewer computing power, bandwidth, storage right where required, and from the same geographical location.

4. Productivity

Typically, on-site data centers need a lot of “stacking and racking” – software patching, hardware setup, and other time-consuming IT management chores. Cloud computing eradicates the necessity for many such tasks, so IT teams would spend time getting more important business goals.

5. Performance

The most extensive cloud computing services work on a worldwide network of protected data centers that are often improved to the newest quick and effective computing hardware. It gives numerous advantages over a particular corporate data center and limited network inactivity for apps, and better economies of scale.

6. Reliability

Cloud computing enables backing up of your data, tragedy retrieval, and business stability easier and at a reduced amount because data can be reflected at several redundant sites on the cloud provider’s network.

7. Security

A lot of cloud providers give a wide range of controls, technologies, and policies that supports your safety position

Many cloud providers offer a broad set of guidelines, technologies, and rules that strengthen your security posture overall, helping protect your data, apps, and infrastructure from potential threats.

TYPES OF CLOUD COMPUTING

Not all clouds are the same, and not a kind of cloud computing is right for everyone. Several different models, classes, and services have evolved to offer the right solution for your needs.

First, you need to determine the type of cloud deployment, or cloud computing architecture, that your cloud services will implement. There are three different ways to deploy cloud services: on a public cloud, private cloud, or hybrid cloud. Learn more about public, private, and hybrid clouds.

1. PUBLIC CLOUD

Public clouds are owned and operated by third-party cloud service providers, which deliver their computing resources, like servers and storage, over the Internet. Microsoft Azure is an example of a public cloud. With a public cloud, all hardware, software, and other supporting infrastructure is owned and managed by the cloud provider. You access these services and manage your account using a web browser. Learn more about the public cloud.

2. PRIVATE CLOUD

A private cloud is a cloud computing resource used by one firm or business organization. It can be situated on a firm’s on-site datacenter. Several firms also pay third-party service providers to host their private cloud. A private cloud is one that such infrastructure and services are preserved on a reserved network.

3. HYBRID CLOUD

Hybrid clouds bring together private and public clouds, putting together technology that enables apps and data to be divided among them. By allowing apps and data to move amidst public and private clouds, a hybrid cloud offers your business the opportunity for flexibility, additional options for deployment and enables the enhancement of your current infrastructure, compliance,

and security.

TYPES OF CLOUD SERVICES: PAAS, IAAS, SAAS, AND SERVERLESS

Many cloud computing services can be found in four extensive groups: platform as a service (PaaS), infrastructure as a service (IaaS), software as a service, and serverless. They are normally called the cloud computing “stack” since they construct above each other. Knowing what they signify and how different they are shows how easier to achieve your organization’s goals.

1. SOFTWARE AS A SERVICE (SAAS)

It’s a technique for distributing software apps through the web, on-demand, and characteristically based on subscription. With SaaS, cloud providers manage and host the software app and fundamental infrastructure, handling all maintenance such as safety fixing and software upgrades. Users connect to an app through the internet, regularly with an internet browser on their tablet, PC, or phone and doesn’t have to be downloaded on your PC.

The infographic is divided into two main sections. The top section, titled "1 SAAS SOFTWARE AS A SERVICE", lists several key characteristics of SaaS: On-Demand Service, Pay Per Use Of Application Software To Users, Independent Platform, Don't Need To Install The Software On Your PC, Runs A Single Instance Of The Software, Available For Multiple End Users, Cloud Computing Cheap, Computing Resources Managed By Vendor, and Accessible Via A Web Browser Or Lightweight Client Applications. It includes a small illustration of a person pointing at a stack of blue cubes labeled "SAAS". The bottom section, titled "SaaS Products & Services", features logos for Salesforce, Google, and Microsoft Office 365, along with various mobile app icons. At the bottom, it says "Popular SaaS Providers".

2. PLATFORM AS A SERVICE (PAAS)

This has to do with a cloud computing service supplying an on-demand atmosphere for managing software apps, developing, delivering, and testing. PaaS is planned to enable developers to have a more comfortable and quick way to make mobile applications or web, and not minding managing or setting up the fundamental infrastructure of network, databases, servers, and storage required for the development.

2 PAAS PLATFORM AS A SERVICE

This Service Is Made Up Of A Programming Language Execution Environment, An Operating System, A Web Server & A Database.

Encapsulate The environment Where Users Can Build, Compile & Run Their Programs Without Worrying Of The Underlying Infrastructure.

In This Model, You Manage Data & The Application Resources; All Other Resources Are Managed By The Vendor.



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WHAT IS PAAS?

2:59 / 6:42



3. INFRASTRUCTURE AS A SERVICE (IAAS)

The most fundamental group of cloud computing services. With IaaS, you can rent IT infrastructure, virtual machines (VMs), and servers, including operating systems, networks, storage – from a cloud provider based on pay-as-you-go.

3 IAAS **INFRASTRUCTURE AS A SERVICE**

This Services Offers The Computing Architecture & Infrastructure, All Computing Resources But In A Virtual Environment So That Multiple Users Can Access Them. Resources Include; Data Storage, Virtualization, Servers & Networking.

Most Vendors Are Responsible For Managing The Above Four resources.
User Will Be Responsible For Handling Other Resources Such As Applications, Data, Runtime & Middleware.

WHAT IS IAAS?



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Press **Esc** to exit full screen

iaas Products & Services

GOGRID **amazon web services** **EC2**

Popular IaaS Providers

rackspace
the open cloud company

EcourseReview.com



4. SERVERLESS COMPUTING

Intersecting with PaaS, serverless computing concentrates on creating a working application without consistently managing the infrastructure and servers needed to do so. The cloud provider collects the capacity planning, setup, and server management for you. Serverless architectures are incredibly accessible and event-driven, only with resources while a particular function or trigger arises.

USES OF CLOUD COMPUTING

You may not consciously know that you're using cloud computing right now, even if you're not conscious of it.

Peradventure, you use an online service to edit documents, send an email, play games, watch movies or TV, or save photos and other files. It's probably that cloud computing is causing all to be possible behind the scenes. The primary cloud computing services are hardly a decade old. Still, previously a diversity of organizations – from little startups to worldwide corporations, government agencies to nonprofits – are taking up the developing tools for various reasons. Below are uncommon instances of what's likely possible today with cloud services from a cloud provider.

Benefits of Cloud Computing

Below is vital importance for using Cloud computing in your company:

1. Cost Savings

Cost-saving is the main advantage of cloud computing. It enables you to save a significant capital cost as it doesn't require any physical hardware investments. Additionally, it doesn't require any skilled personnel to maintain the hardware. The cloud service provider does both acquiring and managing the tool.

2. Strategic edge

It gives you a competitive advantage over your competitors. It creates an avenue to access the most recent apps without spending money or time on installations.

3. High Speed

Cloud computing enables you to organize your service faster with limited clicks. This faster arrangement gives you access to needed resources for your system in fewer minutes.

4. Back-up and restore data

As soon as the data is saved in the cloud, it is faster to acquire back-up and retrieval, a time-consuming process on-premise.

5. Automatic Software Integration

In the cloud, software incorporation is something that happens automatically. Thus, you don't require extra effort to customize and integrate your apps regarding your preferences.

6. Reliability

Reliability is among the highest advantages of cloud computing. Updates can always be gotten instantly about changes.

7. Mobility

Employees working in the background or at a secluded location can effortlessly access all cloud services. All they require is web connectivity.

8. Unlimited storage capacity

It gives a nearly unlimited capacity of storage. At whichever time, your capacity of storage can be expanded as fast as possible with very minimal monthly charges.

9. Collaboration

Cloud computing's platform enables employees located in various geographical areas to cooperate in an incredibly convenient and safe manner.

10. Quick Deployment

Last but not least, cloud computing offers you an advantage for fast development. Therefore, if you choose to use the Cloud, your total system can be entirely efficient in minimal minutes. Even if the amount of time used depends on the type of technologies used in your firm.

Features of Cloud Computing

Below are the characteristics of Cloud Computing:

1. Resources Pooling

It stipulates that the Cloud provider drawn to the computing resources creates services to numerous customers with a multi-tenant model. There are various virtual and physical resources allocated and reallocated depending on the customer's demand. Usually, the customer has no regulation or data of the location of the resources provided but can stipulate location at an advanced level of abstraction.

2. On-Demand Self-Service

It's among the vital and valued characteristics of Cloud Computing as the user can endlessly observe the capabilities, server uptime, and selected storage network. With these

characteristics, the user can as well follow computingabilities.

3. Easy Maintenance

Regularly, the servers are maintained, and the loss time is minimal, and even in some instances, there is no loss time. Cloud Computing originates all the time by continually enhancing it. The updates are mostly well-suited with the devices and speedily perform than previous ones with fixed bugs.

4. Large Network Access

Users can access the Cloud data or upload the data to the Cloud from wherever you are with the aid of a device and a web connection. Such abilities are accessible all through the network and obtainable with the assistance of the internet.

5. Availability

The capabilities of the Cloud can be adjusted as its use can be significantly prolonged. It scrutinizes the storage usage and allows the user to get extra Cloudstorage as needed for a low cost.

6. Automatic System

Cloud computing spontaneously analyzes data required and aids a metering ability at a particular stage of services. Usage can be controlled, reported, and monitored. It offers transparency for the host and the customers.

7. Economical

It is a one-time asset as the organization (host) is to purchase the storage with a small portion of it to be made available to various companies that save the host from monthly or yearly costs. Just the amount spent is on the necessary maintenance and a reduced expense that is significantly less.

8. Security

One of the significant characteristics of cloud computing is "Cloud Security." It makes a snapshot of the saved data so as the data wouldn't get missing even though one of the servers is damaged. The data is inside the storage devices that cannot be hacked or exploited by someone else. The storage service is fast and dependable.

9. Pay as you go

With cloud computing, users have to pay for services or space utilized. There isn't any additional charge or hidden charge that is to be paid. It then means that the Service is cost-effective, and usually, some space is given for free.

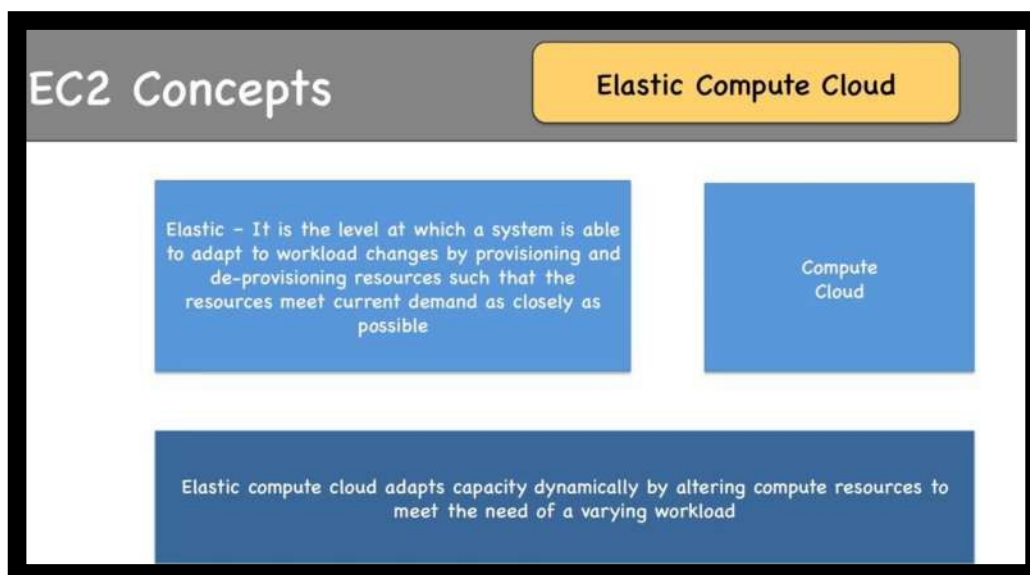
10. Measured Service

Cloud Computing resources are used in monitoring, and the company can use them for recording. The resource deployment is analyzed through supporting charges-per-use abilities. It signifies that the useful resources that can either be virtual server cases running in the Cloud are being observed and reported by the service provider.

UNIT-4

WHAT IS EC2?

- EC2 stands for Amazon Elastic Compute Cloud.
- Amazon EC2 is a web service that provides resizable compute capacity in the cloud.
- Amazon EC2 reduces the time required to obtain and boot new user instances to minutes rather than in older days, if you need a server then you had to put a purchase order, and cabling is done to get a new server which is a very time-consuming process. Now, Amazon has provided an EC2 which is a virtual machine in the cloud that completely changes the industry.
- You can scale the compute capacity up and down as per the computing requirement changes.
- Amazon EC2 changes the economics of computing by allowing you to pay only for the resources that you actually use. Rather than you previously buy physical servers, you would look for a server that has more CPU capacity, RAM capacity and you buy a server over 5 year term, so you have to plan for 5 years in advance. People spend a lot of capital in such investments. EC2 allows you to pay for the capacity that you actually use.
- Amazon EC2 provides the developers with the tools to build resilient applications that isolate themselves from some common scenarios.



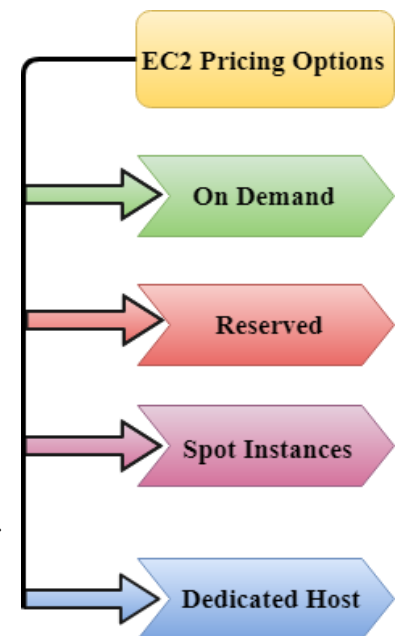
EC2 Pricing Options

ON DEMAND

- ❖ It allows you to pay a fixed rate by the hour or even by the second with no commitment.
- ❖ Linux instance is by the second and windows instance is by the hour.
- ❖ On Demand is perfect for the users who want low cost and flexibility of Amazon EC2 without any up-front investment or long-term commitment.
- ❖ It is suitable for the applications with short term, spiky or unpredictable workloads that cannot be interrupted.
- ❖ It is useful for the applications that have been developed or tested on Amazon EC2 for the first time.
- ❖ On Demand instance is recommended when you are not sure which instance type is required for your performance needs.

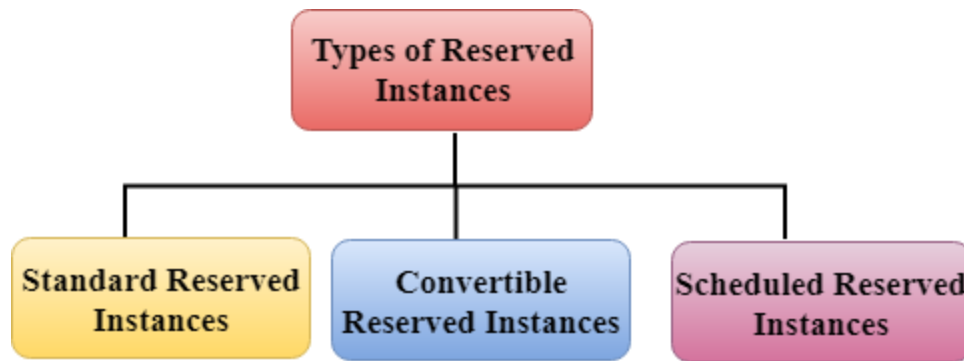
RESERVED

- ❖ It is a way of making a reservation with Amazon or we can say that we make a contract with Amazon. The contract can be for 1 or 3 years in length.
- ❖ In a Reserved instance, you are making a contract means you are paying some upfront, so it gives you a significant discount on the hourly charge for an instance.
- ❖ It is useful for applications with steady state or predictable usage.
- ❖ It is used for those applications that require reserved capacity.
- ❖ Users can make up-front payments to reduce their total computing costs. For example, if you pay all your upfronts and you do 3 years contract, then only you can get a maximum discount, and if you do not pay all upfronts and do one year contract then you will not be able to get as much discount as you can get If you do 3 year contract and pay all the upfronts.



Types of Reserved Instances:

- Standard Reserved Instances
- Convertible Reserved Instances
- Scheduled Reserved Instances



Standard Reserved Instances

- It provides a discount of up to 75% off on demand. For example, you are paying all up-fronts for 3 year contract.
- It is useful when your Application is at the steady-state.

Convertible Reserved Instances

- ❖ It provides a discount of up to 54% off on demand.
- ❖ It provides the feature that has the capability to change the attributes of RI as long as the exchange results in the creation of Reserved Instances of equal or greater value.
- ❖ Like Standard Reserved Instances, it is also useful for the steady state applications.

Scheduled Reserved Instances

- ❖ Scheduled Reserved Instances are available to launch within the specified time window you reserve.
- ❖ It allows you to match your capacity reservation to a predictable recurring schedule that only requires a fraction of a day, a week, or a month.

SPOT INSTANCES

- ❖ It allows you to bid for a price whatever price that you want for instance capacity, and providing better savings if your applications have flexible start and end times.
- ❖ Spot Instances are useful for those applications that have flexible start and end times.
- ❖ It is useful for those applications that are feasible at very low compute prices.
- ❖ It is useful for those users who have an urgent need for large amounts of additional computing capacity.
- ❖ EC2 Spot Instances provide less discounts as compared to On Demand prices.
- ❖ Spot Instances are used to optimize your costs on the AWS cloud and scale your application's throughput up to 10X.

- ❖ EC2 Spot Instances will continue to exist until you terminate these instances.

DEDICATED HOSTS

- ❖ A dedicated host is a physical server with EC2 instance capacity which is fully dedicated to your use.
- ❖ The physical EC2 server is the dedicated host that can help you to reduce costs by allowing you to use your existing server-bound software licenses. For example, Vmware, Oracle, SQL Server depending on the licenses that you can bring over to AWS and then they can use the Dedicated host.
- ❖ Dedicated hosts are used to address compliance requirements and reduces host by allowing to use your existing server-bound server licenses.
- ❖ It can be purchased as a Reservation for up to 70% off On-Demand price.

WHAT IS IAM?

AWS IAM is the way you manage authorizations and accessibility in AWS. To launch your EC2 case from the previous one, you require having a user having the right access to do so. And to get such access, you need to use AWS IAM. Though sometimes, IAM can appear complicated or deceptive. IAM is not just how users can access things in AWS; it's also how you allow machines to interact with each other. For example, if we look at EC2 once more, an EC2 machine can be responsible. And such responsibility governing what the EC2 can or cannot do. I hope you now understand what IAM means when it comes to core service?

Therefore, let's say that we start talking about IAM; what would you hope to learn? The answer then is: learning the various IAM relationships and objects. Between IAM, there're roles and policies, groups, users that are somehow related. Let's see an illustration.

A particular user can be in one group, and such a group can access policies that are granted to such users. Though, a user can as well have direct policies. Both approaches have advantages and disadvantages. For example, they are directly ascribing a policy to a user that has to be updated for many users if you want to grant them similar permissions. Understanding these nuances is crucial to setting your head about IAM.

WHAT IS S3?

Using AWS for zip files

S3 is an alternatively flexible service that is deceptive that enables you to save files in a flexible manager. S3 could be in hosting websites, keep assets like images, including logging files for your app. If you ever require simple resolution for files, possibly, S3 can be the answer.

Why S3 is a core service is as a result of its adaptability nature. Recall that we emphasized services being made on another or around others; few instances would be given now where S3 is the foundation for other AWS services.

For example, if you intend to use AWS Redshift (that is, a querying instrument), you'll have to place your data in an S3. Wish to gain access logs for the AWS account? The data will be in S3. Require a backup of your RDS database? S3 once more. Need for hosting a fixed website? S3 again. Need for turning on logs for a load balancer? Yep, your guess is as good as mine: use S3.

Now the point is so exact. But summarily, various services in AWS are created within S3. It then

makes more sense to study S3; else, employing other AWS services will appear more challenging once you realize how important it is to comprehend how S3 works to be useful. I guess the above discussion, as per S3, concludes this entire section about core services. Nevertheless, before we can move on, let's briefly discuss some other services at an elevated level.

WHAT OTHER AWS SERVICES SHOULD YOU KEEP AN EYE ON?

It was challenging to choose the “core” services since it will be determined by your firm or business organization's services used. But be rest assured that EC2, IAM, and S3 would be used at various points. Though they aren't the only services, therefore quickly, let's have an insight into these other services that would be next on your hit list after the three, and they are as follows:

- **CloudWatch:** It is a built-in AWS checking tool.
 - Route 53 — Domain purchasing as well as DNS routing. Enables you to assign your server or website to a domain name.
 - RDS — The AWS introduced database solutions. Has a collection of databases from SQL to document-based.
 - CloudFormation — AWS in-built Structure as Code. Generate resource through writing your infrastructure as a JSON template and allow AWS to form it.
- For you to comprehend CloudFormation, you have to know what infrastructure is as a code.

TIP 2: GET HANDS-ON WITH AWS

Put: the paramount way of getting set up while learning AWS is by Put: the best way to get setup and learning AWS is by having hands-on.

However, to get hands-on, you'll have to make sure everything in your AWS account is appropriately set up. Many users have made similar mistakes on their first time, typically leading them to get a huge bill or having their accounts hacked as a result of the fact that they had no idea about the little preventive measure they could have taken to safeguard their account.

But then, before going into the details, let's get a highlight of what we are going to deliberate on:

- The root account and why you aren't supposed to use them.
- Access keys and the reason you've to be mindful of where they are saved.
- MFA and how it safeguards your account from being hacked.
- Infrastructure as a Code, and exactly how it enables your faster hands-on learning.

AWS Root Login

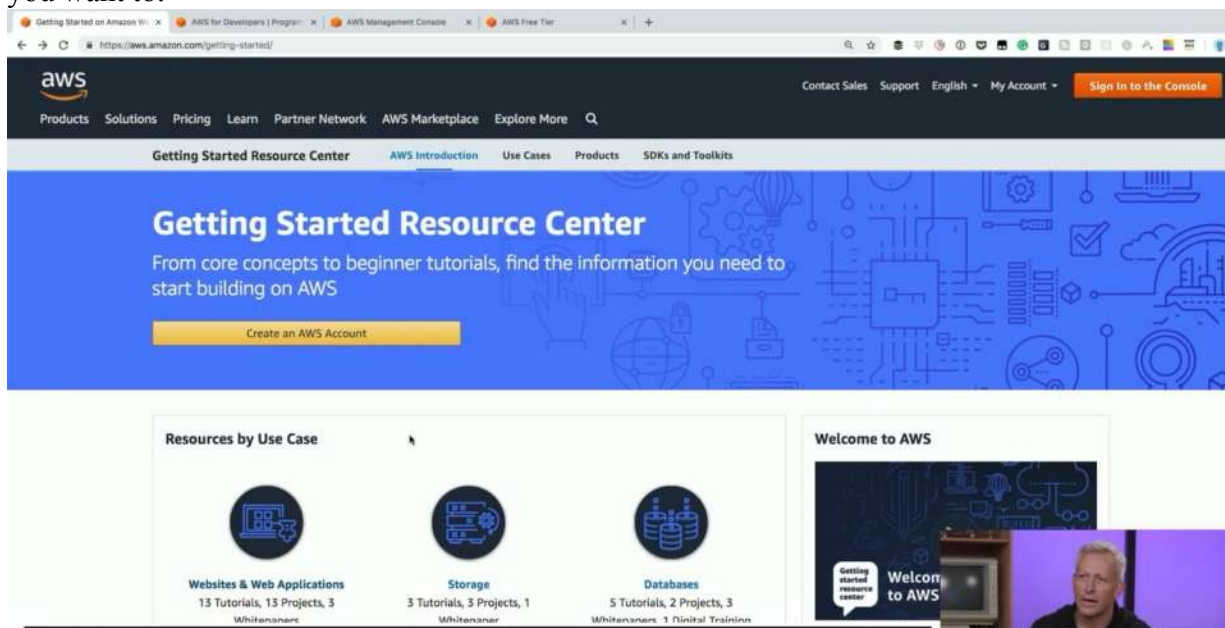
The root account is an account you sign up with to AWS. Why your root account is essential is that it has better access to everything. Therefore, if such an account is carelessly handled, the hacker can do a lot as they wish.

To stop the issue of having your root account hacked, firstly, after setting up your AWS account is to create a new user and limit its access. You can then use the newly created user account in accessing AWS and not your root account.

GETTING STARTED

Step 1: Sign up for AWS

When you sign up for AWS, you can access Amazon's cloud computing services. Note: The sign-up procedure needs a credit card not to be charged until you begin to use the services. There's no prolonged dedication for you to continue using AWS; instead, you can stop using it at any time you want to.



STEP 2: LAUNCH AN APPLICATION

For you to begin the use of AWS for internet hosting, use the point-and-click AWS Management Console to launch and manage your cloud resources.

STEP 3: GET HELP

Need help? Get support from AWS practical support engineers with AWS Support or find an AWS Solution Provider from the ecosystem of Systems Integrators and Independent Software Vendors (ISVs), or get your questions answered by the AWS community on the AWS Community Forum.

HOW TO SIGN UP ON AWS

Step 1: Launch into aws.amazon.com and tap on 'Create an AWS Account.'

Step 2: Tap on the option that states 'I am a new customer,' and input your email address, and at last tap on Sign In.

Step 3: The next page is to fill in all the applicable information and tap on Create Account.

Step 4: The next page is to enter your details and tap on 'Create Account.'

Step 5: Then, you'll be asked to input the details of your credit or debit card on this page; immediately you're done with that, continue by tapping on 'continue.'

Step 6: The next Stage would be verifying your phone number, input the details, and tap on 'Call me Now.'

Step 7: You will then get a call from AWS, and you'll be requested to input a pin, following by choosing your plan for AWS, but before that, tap on 'Next.'

Step 8: You will now choose a plan suitable for you; we'll use a basic plan because this account would be done for personal use.

Step 9: Congratulations! Your AWS Account has been created and ready for use! Go sign in and play!

Since you now have an AWS account at your beck and call, why don't we do some hands-on? What do you think?

Let's launch a PHP website on EC2 while backing it up with an RDS MySQL database. You may not be used to such services; it's not a big deal; allow me to clarify you:

Elastic Compute Cloud is a compute service accessible by AWS that offers resizable compute ability in the cloud.

Therefore, simply put, you can get a server with custom to compute capacity; such capacity can be amended according to your requirement. Sounds cool, doesn't it?

Furthermore, let's now discuss what RDS is all about; thus, RDS is a Relational Database type of Service that adds various databases such as MongoDB, MySQL, etc.

Therefore, RDS mainly helps you to manage these databases.

| AWS HANDS-ON

We would create a small app on EC2 – RDS infrastructure in this "What is AWS blog." After which, you will have a PHP app on EC2 supported by a wholly managed MySQL server.

Let's begin with organizing an EC2 illustration.

Step 1 : Launch AWS Management Console and log in.

Step 2 : Choose a region from the displayed dropdown.

Step 3 : Tap EC2 beneath the Compute section. You'll then proceed to the EC2 dashboard.

Step 4 : Choose 'Launch Instance' and hereafter choose an AMI; for our illustration, we will be selecting a 'Windows 2016 Server Instance' that falls below the free tier.

Step 5 : Once you select your desired AMI, choose your kind of design, this is

basically where you indicate the required computing power level to start; for the moment, ours is a slight app, we will suffice with the free tier.

Step 6 : Configure all required details and tap on 'add storage.'

Step 7 : At this point, you will be arranging your storing devices; as soon as you are done, tap on 'tag instance.'

Step 8 : Now, you will be classifying your illustration because that is how your example would be recognized.

Step 9 : At this moment, you will be configuring your safety group.

Step 10 : View all the settings, immediately it's confirmed, launch your instance!

Step 11 : The next stage would prompt a key pair, generate one, and download in an accessible location.

Step 12 : Choose your illustration and tap on 'Connect.'

Step 13 : As soon as you tap to connect, the following screen would be prompted. Duplicate the public IP by copying it and then tap on 'Get Password.'

Step 14 : Choose the key-pair you've downloaded, and tap 'decrypt the password.'

STEP 15 :

Duplicate the password and the public IP. Ensure it's safe.

Be accessible because it would be required in the next step.

Step 16 : Now that we have the password and the Public IP available, let's link it to our example! Open up the isolated desktop manager. Input the public IP address and tap on 'Connect.'

Step 17 : Input the secure password now and tap on 'OK.'

Step 18 : At this stage, it would display Congratulations! Windows Server on EC2 at your service!

The next step to take is to create an RDS illustration for MySQL.

Step 1 : Choose the RDS service from your AWS Management Console.

Step 2 : As we will be launching an illustration on MySQL, choose the MySQL illustration from the list of DBs.

Step 3 : As we are making this illustration for demo purposes, we will be choosing the option of 'Dev/Test' and tap on 'Next Step.'

Step 4 : The next stage is to fill in the following details:

- You can choose your preferred Db illustration here.
- You can choose if you want to enable Multi-AZ in your MySQL Db.
- You can choose how much space you wish to assign to your Db illustration; it varies from 5GB to 6TB.
- In the long run, you will have to set your username and password for your Db Illustration.

Step 5 : The next stage is to configure Advanced Settings for your DB

Here, you will have to choose the VPC; if you do not want to launch your illustration in a VPC, you can ignore the default settings and move on.

The next stage is to choose the version of the Db you intend to use; for instance, we are using MySQL 5.6

The next action is to set your backup preferences, as the retention period, etc.

After which, we will set the maintenance window, which is the time lag during which the Db instance is updated.

As soon as you're done entering all the necessary details, you will be initiating the Db instance!

Step 6 : After all is said and done, you would receive a notification tagged Congratulations! On your first RDS Instance!!

Let us now configure the RDS instance to link your EC2 server.

Step 1 : On the RDS Dashboard, choose the RDS instance.

Step 2 : The next stage is to edit the 'Security Group,' Why? This is because you need your EC2 instance to connect to the RDS Instance. That means you'll have to include the IP address of the EC2 model at this point.

Step 3 : Choose the 'Security' group, and choose the Inbound guidelines, then tap 'Edit.'

Step 4 : Choose the MySQL/Aurora while you input the Public IP address of the EC2 instance in the other field. Note: Whichever IP address you input here must be accompanied by a '/32' to change it to CIDR notation. At the end, tap 'Save.' There you go! Your RDS instance is now ready to accept commands from your EC2 model.

Connecting the RDS Instance Now!

Step 1 : Launch the prompt command and navigate to the bin file of your MySQL.

Step 2 : The next stage is copying the endpoint from the RDS dashboard; it would then be required of you on the next stage to connect to the RDS instance. The endpoint is how your RDS can be easily identified. The endpoint is a port number '3306' that you would also require in the next phase.

Step 3 : Go back to the prompt command and input the following command, the password would then be required, input the password you used while creating

your RDS instance, then you're good to go!

How to Host your website!

Step 1 : Tap 'begin' and Server Manager on the EC2 instance.

Step 2 : Tap on 'Add features and roles.'

Step 3 : Click 'Next' on the significant page, while on the next page, choose the following option and tap 'Next.'

Step 4 : Choose the option of server pool and tap on 'Next.'

Step 5 : Choose the IIS web server from your list and tap 'Next.'

Step 6 : Choose .NET Frameworks stated here, and tap 'next.'

Step 7 : This stage is the page for confirmation, scrutinize what is being installed, and tap on 'Install.'

As soon as you've installed IIS, you can now see it appearing on your server manager dashboard.

Afterward, you can install Microsoft Web Platform Installer.

Step 8 : Launch IIS now, double-tap the server, and tap on the web platform installer from the Management Section.

We will be organizing an app for PHP web. Thus we require an installed PHP on this server to need a Web Platform Installer.

Step 9 : Use your search bar of WPI in searching for PHP, install the following package.

Step 10 : As soon as it's installed, you can now view your PHP manager from IIS.

Uploading your website to this EC2 server

Step 1 : First and foremost, duplicate all your website files by copying them to this folder in "C:/inetpub/wwwroot" on the server.

Step 2 : Go back to IIS, tap on the server, and right-click 'Sites.'

Step 3 : On the name of the site, give an appropriate name to the website, and at the next stage, give the subsequent physical path, and at the end, tap 'OK.' Wow! Your website is now created and can be viewed live!

Step 4 : Input the public IP address of the EC2 instance, and there you are! Your website is up and running. Input the particulars and click on 'Add.'

Step 5 : It reveals that the RDS connection with the EC2 instance is functioning well. Therefore, whatever you input here is getting saved on your RDS instance, your website is also protected on your EC2 instance. Tap on 'Go Back.'

Step 6 : On the critical page, tap on 'View Results.' And this page would display. They are the records that are existing in your MySQL table.

There you go, guys! I guess you enjoyed this section. If you just read this,

Congratulations! You are no longer a novice in AWS! Keep practicing because practice makes perfect in learning.

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Vuyyuru-521165, Krishna District, Andhra Pradesh

Value Added Course
Title: AWS

Test Exercise:

- 1. What is the full form of AWS?**
- 2. How many types of cloud computing are there?**
- 3. Advantages of aws?**
- 4. Do traditional IT models provide flexibility?**
- 5. What is the reason in AWS?**
- 6. What is the availability zone in AWS?**
- 7. What are edge locations in AWS?**
- 8. Components of AWS infrastructure?**
- 9. What does IAM stands for in AWS?**
- 10. Is the IAM services in AWS free to use?**

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Title: AWS

Key:

- 1. Amazon web service**
- 2. 3**
- 3. Flexibility ,scalability ,security**
- 4. no**
- 5. a region is a geographical area**
- 6. An availability zone is an isolated logical data center in region**
- 7. The edge locations are the end points for AWS**
- 8. Edge location , regions , availability zone**
- 9. Identity access management**
- 10. yes**

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Department of COMPUTER SCIENCE

Value Added Course
Title: AWS

Feed Back Form

1. Is the programme interested to you (Yes/No) ✓
2. Have you attended all the session (Yes/No) ✓
3. Is the content of the program is adequate (Yes/No) ✓
4. Have the teacher covered the entire syllabus? (Yes/No) ✓
5. Is the number of hours adequate? (Yes/No) ✓
6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No) ✓
7. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No) ✓
8. Do you have any suggestions on the program? (Yes/No) ✓

V. Anshika
19-708.



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Value Added Course / Certificate Course - Attendance Register


Class / Section: II MPCs, MCCs Year : 2020-21 Department of: Computer Science Paper: ANS

Lecturer: A. Sravani

Sl.No	Roll No	Student Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	1951601	Tumati Suneel Kumar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	15
2	1951603	Puvvada Likhitha Naga Sai Vara Siddhika	P	P	a	P	P	a	P	P	P	P	P	P	P	P	P	13
3	1951604	Golla Deepthi	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	14
4	1951607	Kunderu Supriya	P	P	P	P	a	P	P	P	P	P	a	P	P	P	P	13
5	1951608	Osuri Anil Kumar	P	P	a	P	P	P	P	P	P	a	P	P	P	P	P	12
6	1951612	Olupalli Saichand	P	P	P	P	P	P	P	P	P	a	P	P	P	a	P	15
7	1951615	Yandamuri Vijaya Lakshmi	P	P	P	P	P	P	a	P	P	P	P	P	P	P	P	14
8	1951621	Bezawada Sai Krishna	a	P	P	P	P	P	P	a	P	P	P	P	P	P	P	13
9	1951622	Kommineni Vamsi Nagendra	P	P	P	a	P	P	P	P	P	P	a	P	P	P	P	13
10	1951623	Nalluri Sundra Rao	P	P	P	P	P	P	P	P	P	P	a	P	P	P	P	14
11	1951628	Gummadi Phani Kumar	P	P	a	P	P	P	P	P	P	P	P	P	a	P	P	14
12	1951631	Boddu Keerthi	a	P	P	P	P	P	P	P	P	a	P	P	P	P	P	13
13	1951632	Dokku Sireesha	P	P	P	a	P	P	P	P	P	P	a	P	P	P	P	13

48	1953734	Dokku Vijay Kumar	a	p	p	p	p	p	p	p	p	p	a	a	p	a	11
49	1953741	Thokala Jaya Varshitha	p	a	p	a	p	p	p	a	p	p	p	p	p	p	12
50	1953742	VuyyuruTanuja	p	p	p	p	p	p	p	p	a	p	p	p	p	14	
51	1953745	Mohammad Fathimunnisa	p	p	p	p	p	p	p	p	p	p	p	p	p	15	
52	1953747	Shaik Imran	p	p	p	p	a	p	p	a	a	p	p	p	a	10	
53	1953750	KothagundlaSupriya	p	p	p	p	p	p	p	p	p	p	p	p	p	15	
54	1953753	PuttanaveediSyama	p	p	a	p	p	a	p	p	p	p	a	p	p	11	
55	1953755	KandruCharitha Sri	p	a	a	p	p	p	p	p	p	p	a	p	p	12	
56	1953756	VeeranjiPavan Kumar	p	p	p	p	p	p	p	p	a	p	a	p	a	11	
57	1953757	VeerankiSravanya	p	p	p	p	p	p	p	p	p	p	a	p	a	13	
58	1953758	KalapalaShalini	p	p	a	a	p	p	a	p	p	p	p	a	p	10	
59	1953759	AmreenJahan	p	p	p	p	p	p	p	p	p	p	p	p	p	15	
60	1953760	RompellaRangaRamya	p	p	p	p	p	p	p	p	p	p	p	p	p	15	


Signature of
Lecturer


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PRINCIPAL
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13	1951632	DokkuSireesha	P P P P P P P P P P a P P P P P P	24
14	1951634	Vadlani Jhansi	P P P P a P a P P P P P P a P a	11
15	1951636	MindiJyothi	P P P P P P P P P P P P P P P P	15
16	1951639	KeerthiAswitha	P P P P P P P P P P P P P P P P	15
17	1951640	AnnavarapuPavan Kumar	P P P a P a P P P P P P a P P P	12
18	1951641	DannanaDhana Lakshmi	P P P P a P P P P P P P P a P P	13
19	1951642	Abdul Rasheed	P P P a P P a a P P P P P a P	11
20	1951645	ChoppakatlaTanishka	a P P P a P P P P P P a a P P	11
21	1951646	PrakerlaGeetha Sri	P P P P P P P P P P P P P P P P	15
22	1951647	Matha Krishna Sai	P P P P a P P P P P a P P P P	13
23	1951650	KarimijjiSrikanth	P a P P P P P a a a P P P P P	11
24	1951652		P P a P a P P P P P P P P P a	12
25	1951653	AkulaEswara Rao	P P P P P P P P P P P P P P P P	15
26	1951656	ShaikMakbulBasha	a P a P P P P P a a P P P P a	10
27	1951657	Pamu Soma Venkata Sai Duth	P P P P P P P P P P P P P P P P	15
28	1951658	ValluruChandu	P P P P a P P P a P P P P P a	13
29	1951660	EdupugantiSumanth	P P P P P P a P P a P P P P P P	13

30	1953701	Abdul Kareem	
31	1953702	BotchaDurga Praveen	P P P P P P P P P P P P P P 15
32	1953703	Abdul Rehana	P P P P P P P P P P P P P P 15
33	1953705	KoyyiVeera Praveen	P P P P P P P a P P P P P P a 13
34	1953706	Meddisetty Naga Jagadeesh	P a a P P P P P P a P P P P P 12
35	1953707	PamarthiDeepika	P P P P P P P P a a a P P a P 11
36	1953708	VempatiAkhila	P P P P P P P P P P P P P P 15
37	1953709	KumpatiBalasouri	P P P a P P P a P a P P P a P 11
38	1953712	OlipilliNeeraja	a P a P P P P P a a P a P P a 9
39	1953714	PallapothuNithish	P P P P P P P P P P P P a P 17
40	1953715	Mohammad Noorbasha	P a a P P P P a P P P P P P a 11
41	1953716	ChillimunthaMohanasai	P P P a P P P a P P P a P P P 12
42	1953717	GuttikondaSujitha	a P a P P P P P P a a P P P P 11
43	1953719	Pandalaneni Raja Sri	P P P P P P P P P P P P P P 15
44	1953720	PandalaneniRavitha	P P P P P P P P P P P P P P 15
45	1953723	KruttiventiSushamaSwaraj	P P P P P P P P P P a P P P 14
46	1953725	Abdul Jaleel	a P P P a P P P a P P P P a 11
			a P P a P P P P a P P P P P 11

47	1953729	VeerankiRamyasri	P	P	P	P	a	P	P	P	P	P	P	P	a	P	P	13
48	1953734	Dokku Vijay Kumar	P	P	P	P	a	P	P	a	P	a	P	P	P	P	P	12
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60	1953760	RompellaRangaRamya	P	P	P	P	P	P	P	P	P	P	P	P	a	P	P	14


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Department of COMPUTER SCIENCE

Value Added Course

Title: AWS

Marks List

Class: II MPCs, MCCs

S. No	Roll No.	Name of the Student	Marks
1	1951601	TumatiSuneel Kumar	18
2	1951603	PuvvadaLikhitha Naga Sai VaraSiddhika	20
3	1951604	GollaDeepthi	18
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15	1951636	MindiJyothi	15

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SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE**

Vuyyuru-521 165, Krishna District, Andhra Pradesh

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DEPARTMENT OF COMPUTER SCIENCE

VALUE ADDED COURSE: AWS

VAC CODE: VACAWS-01

CERTIFICATE

This is to certify _____
has successfully completed value added course in AWS conducted by the
Department of COMPUTER SCIENCE from 01-12-2020 to 11-01-2021. We wish
him/ her Bright Future

Co-ordinator

Head of Department

Principal
