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Introduction to Cloud Computing and AWS

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ABSTRACT: Cloud computing has become a driving innovation, it has become so popular and successful that everyone is stepping ahead towards Cloud. Today Cloud computing is the foremost demand of companies as it benefits their growth. With Cloud computing, new businesses witnessed immense success by locating their services and data on the internet without depending on any physical operations. This independence and trend have inspired many eminent companies such as Netflix, Salesforce, and Amazon to move towards Cloud-based infrastructure. Cloud computing also refers to a set of policies, technologies and controls used to protect data, applications, and infrastructure. There is a wide range of Cloud service providing companies and platforms in which Amazon Web Services (AWS) and Microsoft Azure are regarded as the leading Infrastructure as a Service (laaS) Cloud. In this paper, AWS and Microsoft Azure are compared and points why AWS is at peak or better than others are highlighted. The aim of this paper is to present an insightful description of Cloud computing, its characteristics, and Cloud computing models. This paper also describes various AWS services and shows its uniqueness by comparing it with other Clouds. It also explores certain benefits of Cloud computing using AWS over traditional IT service environments including how it is helping the education industry to evolve and how it is transforming our lifestyle for better and easy access to things. This article gives an overview of the benefits of AWS.

KEYWORDS: Amazon AWS, AWS services, Azure, characteristics of cloud computing, cloud computing model, e-Learning

I. INTRODUCTION

Today we are at the sting of a fourth technological revolution that may fundamentally change the way we live, work, and relate to atleast one another, and these changes are going to be those which we humans have not experienced before. The number of individuals connected by mobile devices, with processing power, storage capacity, and access to knowledge, are unlimited and these numbers keep increasing because technology keeps changing in fields like computer science, Internet of Things, 3-D printing, cloud computing and plenty more. This paper aims to place forward Cloud computing technology and one amongst the cloud platform A WS, how we are using it for further development and changes.

Nowadays, Cloudpowered entertainment is emerging on the internet. It is a powerful weapon of entrepreneurs of today's generation to start their start-ups. Gone are the days when one had to be available for watching one's favourite shows. Cloud technology has given you control of how, where and when you watch T. V., and due to streaming services and portable devices like laptops, tablets, and smartphones, it is possible to look at any T. V. show anywhere within the world as long as you are connected to the internet, for example, on Netflix. Same is the case with other entertainment options like music streaming apps and games. These things are on the Cloud and are not costly.

The pioneer within the Infrastructure as a Service (IaaS) market - Amazon Web Services (AWS), its innovation has helped companies create new possibilities to create your lives easier in this connected world. Before the introduction of AWS within the market, there had been some issues in Cloud computing which were resolved with the evolution of AWS.

II. DEFINING CLOUD COMPUTING

Cloud computing originated in late 2007 and it is an important and hot topic of dialogue nowadays. Cloud computing is the on-demand delivery of computing power, database storage, applications, and other IT resources through a Cloud services platform via the internet with a system of meeting costs as they arise. National Institute of Science and Technology defined Cloud Computing as "A model for enabling ubiquitous, convenient, on-demand network access to

a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) which will be rapidly provisioned and released with minimal management effort or service provider interaction".

Cloud computing is gaining attention and popularity within the computing industry. Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources which is rapidly provisioned and released with minimal effort. This is the definition of cloud computing as per the National Institute of Standards and Technology (NIST) taxonomy. There are five essential characteristics, three service models, and four deployment models in the cloud computing platform provided by AWS, MS Azure and GCP.

During the last few years' tremendous growth has been seen in the field of cloud computing, according to gartner public cloud is expected $411 million till end of 2020. As more and more organizations are orientated towards cloud services, it is becoming difficult to select appropriate service providers among a large pool of CSPs for long terms of suitability. Nowadays a large number of cloud providers have emerged, but there is no universal standard and development of these providers in parallel directions many providers focus on computational capability and provide CPU, storage, Database and networking services to end users. Some of the service providers focus on reducing the cost of the service, while others focus on un- interrupted service delivery and scalability factor for service delivery. These diversified dimensions have made it very difficult to choose a suitable service provider based on the requirements of the individual user or organization. This paper presents a comparative feature study of top three cloud service providers-AWS, MS Azure & Google's cloud computing platform to resolve the above dimensions. The next section in this paper will explain the fundamentals of cloud computing and cloud computing architecture.

III. SERVICE MODELS

SaaS
- Use: It is a licensed Software on Demand
- Used by: End Users Services: E-Mail, Google Doc, Finance, Games, Virtual Desktop, CRM, Communication-Facebook

PaaS
- This software can be developed and deployed.
- Users: Application Developers Services: Execution, Messaging, App Development, Integration, Database-MySQL, Oracle, Web Server- Tomcat development tools, RedHat

IaaS
- Use: It is collection Computer Resources & Network's
- Users: Infra and Network architect Services: VMs, Storage, Servers, Networking, Load Balancers, System Management

Overview of AWS

Amazon Web Services (A WS) is a public Cloud service provider. It has over 50 services, greater than other cloud providing companies. A WS provides all three service models : SaaS (Software as a Service), IaaS (Infrastructure as a Service), and PaaS (Platform as a Service). AWS encompasses a broad range of computing, storage, database, analytics, application, and deployment services delivered as a utility: on-demand, available in seconds, helping organisations move faster to lower IT costs and enabling them to scale applications [3]. Amazon Web Services (AWS) can be a global public Cloud provider, it must have a world network of infrastructure to run and manage its many growing Cloud services that support customers around the world. Amazon Web Services (AWS) is incredibly useful because it saves time, flexible, reliable, secure, and costeffective. AWS can be a technology which resolves all computing-related issues. Using AWS, you need not worry about maintaining data centres because here everything is managed by AWS.

Amazon is one of the pioneer and oldest cloud service providing companies, which started its cloud based services in 2006. It has allowed cloud users to perform and manage the server's instances on data centers from its inception. It is the one of top CSPs in IaaS (market share: 47.8%) and PaaS (market share: 34%) till the end of 2019. It is offering cloud based storage, computation and other functionalities which can be accessed by cloud users to set up applications and services on demand through the REST and SOAP protocol over the HTTP.

IV. CONCLUSION

The selections of vendors depend on business needs and technical requirements of the particular company. During the study it is observed certain organizations need a specific cloud service provider while others need the guidance to choose the most appropriate vendor for business or to provide the services to customers.

Therefore AWS is best when you are looking for a platform with broadest reliable and stable services and pricing is not a major challenge when business servers are running on windows then Azure is best because it offers windows platform integrated services. If you are a start-up and medium-sized company and rapidly scaling up with a large volume of user data, innovations and resources then GCP is ideal.

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