THE SPARKS FOUNDATION

WEB DEVELOPMENT INTERNSHIP REPORT

Comparison between Different Cloud Initiatives

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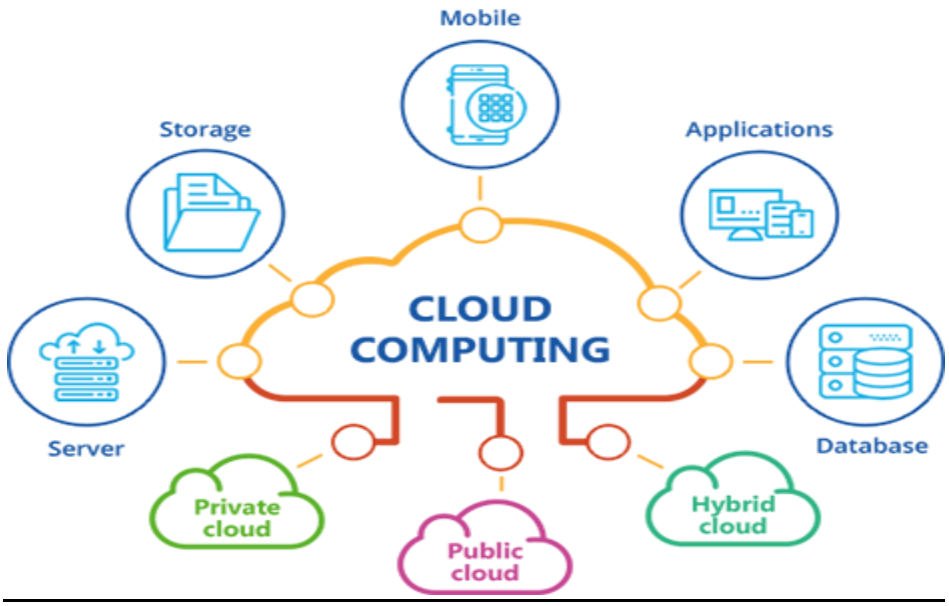

Introduction

This report will help you understand different Cloud platforms with respect to their

1. Availability Zone
2. Market Share
3. Speed
4. Pricing
5. Services
6. Storage
7. Popularity

Amazon Web Services, Microsoft Azure, and Google Cloud Platform stand out as the top three cloud providers

1) What is Cloud Computing

Cloud computing is the delivery of different services through the Internet. These resources include tools and applications like data storage, servers, databases, networking, and software. Cloud computing is named as such because the information being accessed is found remotely in the cloud or a virtual space.

Cloud computing is a term which is used for storing and accessing data over the internet. It doesn't store any data on the hard disk of your PC. Cloud computing helps you to access your data from a remote server.

Instead of buying, owning, and maintaining physical data centres and servers, we can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS). It is helpful in different online services like online banking, social media networking, online shopping portals, Google drive, etc.

2) Applications of Cloud Computing

- Cloud computing offers various art applications for quickly and easily design **attractive cards, booklets,** and **images**.

- Today, every business organization requires the cloud business application to grow their business. It also ensures that business applications are 24*7 available to users.

- Now a day's many organizations of every type, size, and industry are using the cloud for a wide variety of use cases, such as data backup, disaster recovery, email, virtual desktops, software development and testing, big data analytics, and customer-facing web applications

- Healthcare companies are using the cloud to develop more personalized treatments for patients.

- Financial services companies are using the cloud to power real-time fraud detection and prevention.

Cloud services are far different from hard drives or memory sticks, you can access cloud services independent of device platform but for using hard drives you have to carry them everywhere which is in fact not possible so Cloud services play a major role here for accessing data from anywhere in the world, just you need internet connectivity and a device to access it.

Types of Cloud Services

- Email
- Storage, backup, and data retrieval
- Creating and testing apps
- Analyzing data
- Audio and video streaming

3) Types of Cloud Computing

a)Software-as-a-service (SaaS): This involves the licensure of a software application to customers. Licenses are typically provided through a pay-as-you-go model or on-demand. This type of platform could be found in Microsoft Office 365

b)Infrastructure-as-a-service (IaaS) : involves a method for delivering everything from operating systems to servers and storage through IP-based connectivity as part of an on-demand service.
Popular examples of the IaaS system include IBM Cloud and Microsoft Azure.

c) **Platform-as-a-service (PaaS):** PaaS shares similarities with SaaS, the primary difference being that instead of delivering software online, it is actually a platform for creating software that is delivered via the Internet.

4)**Benefits of Cloud Computing**

- Reduced IT Cost
- Scalability
- Business Continuity
- Collaboration Efficiency
- Flexibility of work practices

We would be mainly discussing here three cloud services in detail and try to understand them

- AWS(Amazon Web Services)
- Microsoft Azure
- GCP(Google Cloud Platform)

1. Amazon Web Services(AWS)

What is AWS ?

- Amazon web service is a platform that offers flexible, reliable, scalable, easy-to-use and cost-effective cloud computing solutions.
- AWS is a comprehensive, easy to use computing platform offered Amazon. The platform is developed with a combination of infrastructure as a service (IaaS), platform as a service (PaaS) and packaged software as a service (SaaS) offerings.

Applications and Features of AWS?

- One of AWS services is Amazon Elastic Compute Cloud (EC2), which allows users to have at their disposal a virtual cluster of computers, available all the time, through the Internet. It also provides storage with ec2 instances.

- Storage service S3 of AWS in which we can store objects like files, folders, images, documents, songs, etc. It cannot be used to install software, games or Operating System.

- AWS includes various tools and services designed to help users migrate applications, databases, servers and data onto its public cloud. AWS also provides you with developer tools, Management and monitoring, Security and governance, analytics, AI, app development and many more services.

2.Microsoft Azure

What is Azure?

- Azure is Microsoft's cloud platform, through which we can use Microsoft's resource. Microsoft Azure provides us with virtual machines, fast processing of data, analytical and monitoring tools and so on to make our work simpler. Azure can be described as the managed data centers that are used to build, deploy, manage the applications and provide services through a global network. The services provided by Microsoft Azure are PaaS and IaaS. Many programming languages and frameworks are supported by it.

- For example, to set up a huge server, we will require huge investment, effort, physical space and so on. In such situations, Microsoft Azure comes to our rescue. It will provide us with virtual machines, fast processing of data, analytical and monitoring tools and so on to make our work simpler. The pricing of Azure is also simpler and cost-effective. Popularly termed as "Pay As You Go", which means how much you use, pay only for that.

- Azure, like other cloud platforms, relies on a technology known as virtualization. Most computer hardware can be emulated in software, because most computer hardware is simply a set of instructions permanently or semi-permanently encoded in silicon. Using an emulation layer that maps software instructions to hardware instructions, virtualized hardware can execute in software as if it were the actual hardware itself.

3.GCP (Google Cloud Platform)

- Google Cloud Platform (GCP), offered by Google, is a suite of cloud computing services that runs on the same infrastructure that Google uses internally for its end-user products, such as Google Search, Gmail and YouTube.

- Google Cloud has been one of the top cloud providers in the IT industry. The services they offer can be accessed by software developers, as it provides a reliable and highly scalable infrastructure to build, test, and deploy their applications.

  How does GCP work?

- Google Cloud Platform is essentially a public cloud-based machine whose services are delivered to customers on an as-you-go basis, by way of service components. Public cloud lets you leverage its resources to empower the applications you build, as well as to reach a broader base of customers.

- Google uses Platform as a Service to deploy Java, PHP, and other applications. It provides an online file storage web service for storing and accessing data.

- It uses VPC(Virtual Private Cloud) ,CLB(Cloud Load Balancing) and CDN(Content Delivery Network for IP allocation , routing, distributing workloads on different users,etc.

  Applications of GCP

  GCP provides a numerous features like other cloud services like :

  - Compute Services, Storage Services, Networking, Big Data Services, Security and Identity Management, Management Tools, Cloud AI

	AWS	Google Cloud	Azure
Technology	EC2 (Elastic Compute Cloud)	Google Compute Engine (GCE)	VHD (Virtual Hard Disk)
Databases Supported	AWS fully supports relational and NoSQL databases and Big Data.	Technologies pioneered by Google, like Big Query, Big Table, and Hadoop, supported.	Supports both relational and NoSQL databases, and Big Data
Compute Service	Instances(EC2)	VM'S Instances(GCE)	VM'S
Pricing	Per hour — rounded up	Per minute — rounded up (minimum 10	Per minute — rounded up commitments (pre-paid or monthly)
Processor	In AWS 128 can be maximum processor in VM'S	Google cloud it is 96	In Azure it can be 128
Models	On demand, reserved, spot	On demand — sustained use	On demand — short term commitments (pre-paid or monthly)
Integrate Support	AWS does not have any platform or tools of its own and renders services from other platforms	GCP integrates with Gmail, YouTube, and other Google services to provide users with the seamless experience of google along with cloud services.	Azure integrates well with other Microsoft tools and software and the platform. Users find it easy to operate within the tools.
Difficulties	Many enterprises find it difficult to understand the company's cost structure	Fewer features and services.	Less "enterprise-ready"

Storage Services	Simple Storage Service (S3) Elastic Block Storage (EBS) Elastic Block Storage (EBS)	Blob Storage Queue Storage File Storage Disk Storage Data Lake Store	Cloud Storage Persistent Disk Transfer Appliance
Management Tools	Management tools are very effective in AWS. The services offered are very vast	All the tools are managed well in GCP. But the services offered are very limited in GCP	Management tools are not as proper and efficient in Azure