UNIVERSITI TEKNOLOGI MALAYSIA

Assignment-
Cloud Computing

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The Three Different Cloud Service Providers

Introduction

Cloud computing is the delivery of various demanding computing services which include data storage, databases, networking capabilities, servers for different applications etc. Cloud computing is growing at a very large rate and it has been predicted that the cloud service market will reach new heights in the coming years. Compared to the primitive way of using the IT and the latest cloud services used, cloud services have the upper hand. According to (Muller,2015) saving costs is a big factor is many companies and due to that reason, many of the companies switch to cloud computing. Shifting to cloud computing is a well-known scheme to alleviate upfront investments in expensive hardware and infrastructure for having a pay as you go nature which also takes money for the amount of cloud service the company uses. Cloud computing also offers newest applications any time without investing time and money on installing them. Other than that, cloud computing offers high speed, backup facility, lower impact failures and upgrades, simplified layout utility estimating, elasticity etc. (Abdalla,2015). Currently in the market, 3 of the cloud services providers are topping the charts and those are Amazon Web Services, Google Cloud and Microsoft Azure. But before choosing a cloud service it is always advisable to know what the company requirements are in context to IaaS, PaaS and SaaS (Abdalla,2015).

Figure 1

Comparative evaluation

There are generally 3 different cloud service models:

IaaS – The most flexible cloud service and it lets the user to configure and manage the hardware of user's applications.

PaaS – It is centered on the application development site and platform management is handled by the cloud provider.

SaaS- It is pay per use model and users only pay for the software they use on a subscription basis.

Both Amazon Web services and Microsoft Azure include a mixture of IaaS, PaaS and also SaaS, whereas Google cloud IaaS and PaaS, along with it is a serverless platform.

Amazon Web Services provides virtual servers and virtual machines instances. Microsoft Azure provides the virtual hard disks and Google cloud provides virtual machine instances (AWS vs Azure vs Google Cloud, 2020).

Comparison of storage services is as follows (Abdalla,2015):

Vendor	Storage Services	Database Services	Backup Services
AWS	• Simple Storage Service (S3) • Elastic Block Storage (EBS) • Elastic File System (EFS) • Storage Gateway • Snowball • Snowball Edge • Snowmobile	• Aurora • RDS • DynamoDB • ElastiCache • Redshift • Neptune • Database migration service	• Glacier
Azure	• Blob Storage • Queue Storage • File Storage • Disk Storage • Data Lake Store	• SQL Database • Database for MySQL • Database for PostgreSQL • Data Warehouse • Server Stretch Database • Cosmos DB • Table Storage • Redis Cache • Data Factory	• Archive Storage • Backup • Site Recovery
GCP	• Cloud Storage • Persistent Disk • Transfer Appliance • Transfer Service	• Cloud SQL • Cloud Bigtable • Cloud Spanner • Cloud Datastore	• None

Table 1

The Operating System Google Cloud uses is Debian based Linux operating system. Amazon Web Services use Amazon Linux and Microsoft Azure offers Linux, Microsoft Windows which is slightly modified windows OS so that it can run in the Azure Environment.

Now, coming to security, according to (Butola,nd), AWS's best way of providing security is isolation. Customers and the services they choose cannot access other services until they themselves would enable access. But Azure comes with less secure configurations as Azure leaves all protocols and ports open also Azure begins with 'allow' at initialization point when google and amazon uses 'deny' but it provides Azure active directory which is a much favored featured. Finally , Google cloud service has a centralized approached to cloud security with better management than Azure , it also has many built in tools.

Then we come to performance and scalability. 3 of the services are high performance , highly scalable and AWS and Microsoft Azure has auto scaling instances and google cloud platform has group instances.

According to (abdalla,2019) the pricing of the 3 services is as follows:

	Pricing	Model
Microsoft Azure	Per hour- rounded up	On demand, reserved spot
Google CloudPlatform	Per minute-rounded up	On demand – sustained use

Amazon Web Services	Per minute – rounded up commitments	On demand – short term commitments (pre-paid or monthly)

Table 2

The major services provided by the cloud service providers are compute services , storage services , database services , networking services , management services and security services. The comparison is as follows: (Petters , 2020), (Abdalla,2019).

	Microsoft Azure	Google Cloud Services	Amazon Web Services
Compute services	Virtual machines Virtual machine scale sets Contained service	Computer engine App engine standard environment Kubermetes engine	Elastic compute Elastic beanstalk EC2 container service
Storage services	Blob Storage Queue Storage File Storage Disk Storage Data Lake Storage	Cloud storage Persistent disk Transfer appliance Transfer service	Simple Storage Service (S3) Elastic Block Storage (EBS) Elastic File System (EFS) Storage Gateway Snowball Snowball Edge Snowmobile
Database services	SQL database Database for MySQL Database for PostgreSQL Data warehouse Server Stretch database Cosmos DB Table storage Redis cache Data Factory	Cloud SQL Cloud Bigtable Cloud Spanner Cloud Datastore	Aurora RDS DynamoDB Elasti Cache Redshift Neptune Database migration service
Networking services	Virtual network VPN gateway Azure DNS Traffic Manager	Virtual private cloud Cloud VPN Google cloud DNS Cloud interconnect	Virtual private cloud API gateway Route 53 Cloud front
Management services	Advisor Automation VM extensions	Cloud platform security Cloud deployment manager	Trusted advisor Ops works Cloud formation
Security services	Active directory key vault DDoS protection service	Cloud IAM Cloud identity aware proxy Cloud key Management service	Identity access management Organizations Cloud HSM Shield

Table 4

Opinions

Advantages of the cloud systems are: (Abdalla, 2019)

Amazon Web Services	Microsoft Azure	Google Cloud Service
Dominates cloud domains with many characteristics such as security, auto-scaling etc	More reliable with integrating with Microsoft tools	It has expertise in DevOps
Good offering	Better developing and testing tools	Flexible discounts and contracts
Better experience and friendly services	Provides hybrid cloud	Designed for cloud based business
Open source		
Global reach		

Disadvantages are:

Amazon Web Services	Microsoft Azure	Google Cloud Services
Price structure is a little complicated	It lacks DevOps	The service variety is lesser than other cloud services
No hybrid cloud solution	Support for other OS is limited	It is the newest of the three providers so it's the least mature.

If I set up a company, I would definitely go with Microsoft Azure because since I am a developer and am more suited into with in Windows OS and Azure exactly provides that. Also, it is the best option for me because I will be moving to cloud for the first time.

Conclusion

Even though I chose Microsoft Azure, the other 2 also has amazing features and some good enough to surpass Microsoft Azure. Exactly which cloud service to use solely depends on the kind of work it would be used for. There is no best cloud service provider, every service can be preferred over the other according to the work. We are extremely grateful for all the cloud features these companies are providing which made our lives way lot easier.

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