Hybrid Multicloud Session 1

Summary 05-04-2024

- In today's digital world, whatever idea we have and we want to launch it into the market. For that we have to create an app and to create or launch an app, we need an operating system.

- To run an Operating System, we need the compute units or the servers for that. Now its up to us whether we pay the upfront amount for the compute units or we can use it over the cloud.

- There are a lot of cloud service providers such as AWS, Azure etc, all these are public clouds.

- AWS is the leading provider of the cloud service and it provides a lot of services ranging from different use cases.

- Azure is the second largest provider of the cloud services and there might be some chances that azure will surpass the AWS cloud.

- Both the clouds provides almost same services but their names are different. For example, in the AWS we have the EC2 service and in the azure it is named as the virtual machine.

- Now which cloud to use, completely depends on the particular use cases.

- Example of the use case is suppose we have an application written in the .net framework and for running that application we need a windows server. Now both the AWS and Azure clouds provide the windows server but the difference is of the pricing of that server.

- For windows servers, the AWS pricings are higher than the Azure cloud but it is opposite for the Linux Servers. So accordingly we can choose any of the clouds.

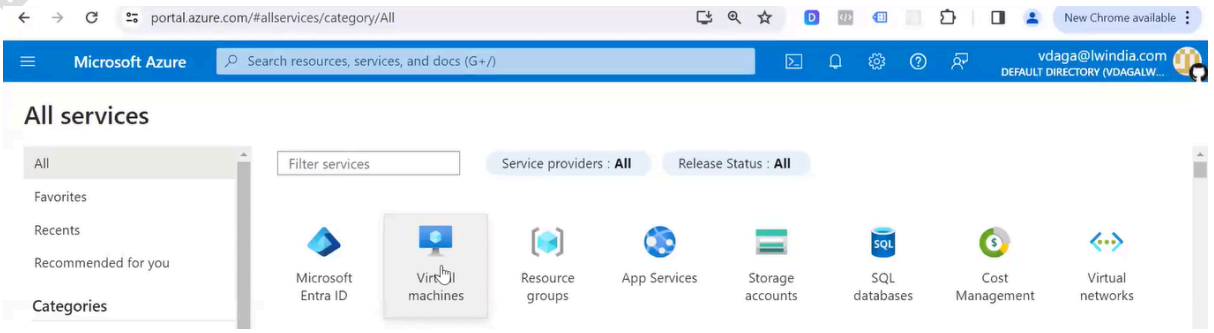
- Another use case can be of the latency, we can choose any of the cloud which have a higher number of data centres or regions which will help in providing the lower latency.

- Currently Azure has more Data centres across the world as compared to the AWS cloud.

- multicloud strategy is using multiple clouds according to the requirements that can result in the cost optimisation.

- let's understand the multiple services of AWS and Azure using the architecture of any application(Netflix).
  - ➢ Netflix as an app needs a server to run, and a server consists of multiple components like hard disk, RAM, Os etc.

  - ➢ now both the clouds provide the service for servers namely EC2 and the Virtual machine.



- For the storage purpose, again both the cloud provides this service named as AWS EBS and Azure Disk Storage.

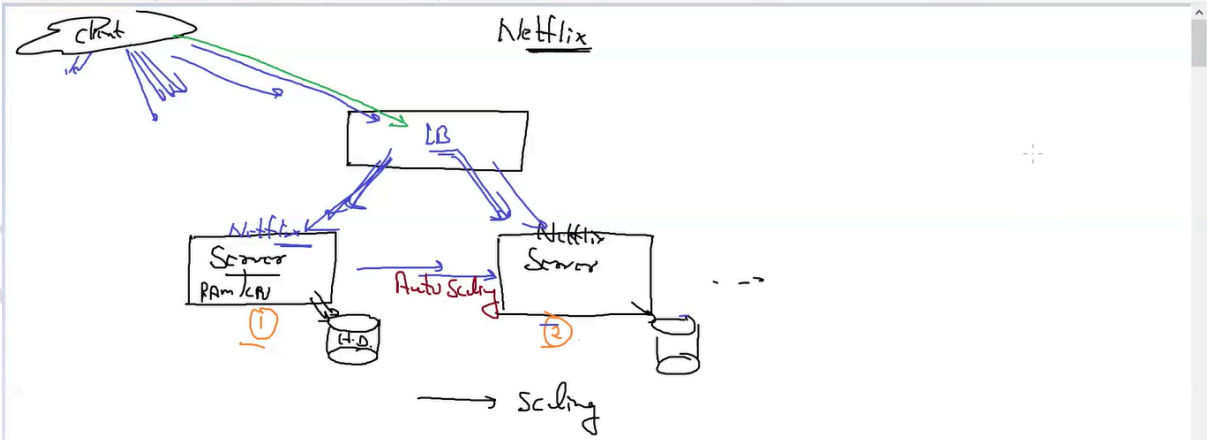
- Now suppose that the traffic on the server increases as the number of user increases then we need to plan a solution in such a way that as the load increases one more server to be launched automatically.

- This concept is known as the scaling or the horizontal scaling.

- This scaling is done with the help of Auto scaling and both the cloud provides this service, for AWS it is ASG service and in Azure it is Scale set.

- As now we have multiple servers running so we need one more centralised computer or the server that will help the client to connect with the main server.

- This is the load distribution and it is done by the Load balancers. In AWS it is provide by the ELB and in Azure it is ALB.

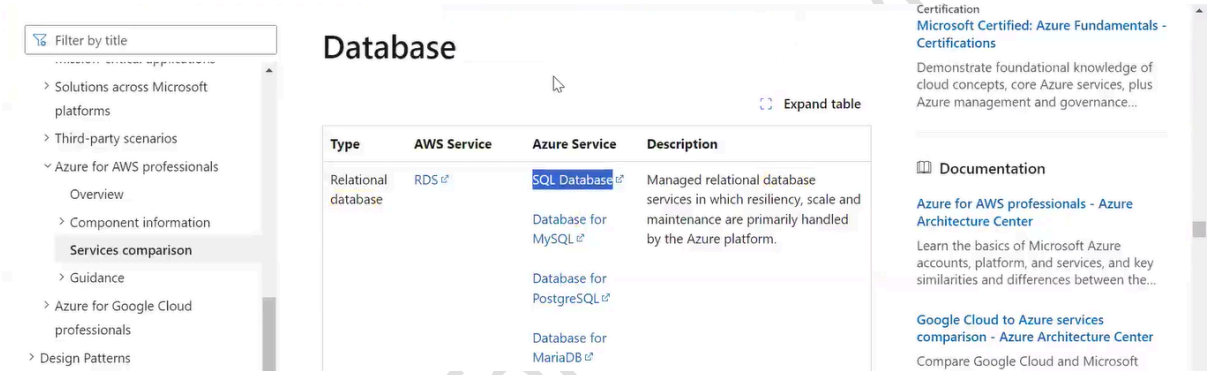


- Each of the servers are assigned with some IP's and it is difficult to remember those IP's so we assign a domain name to these IP's.

➢ We need a service that help us to connect to the IP whenever we hit to the domain name. This service is the domain name service (DNS).

➢ In AWS dns service is provided by the Route53 and in Azure it is known as Azure DNS.

➢ Now netflix needs some databases to store the data like login information. So in AWS the database service is known as the AWS **RDS** and in Azure it is **SQL DB**.



➢ Azure Databases are cheaper as compared to the AWS RDS.

➢ NOSQL is kind of database which is popular for its optimised searching and this service is known as the **DynamoDB** in the AWS and in Azure it is known as the **Cosmos DB**.

➢ For storing the objects like images, videos, movies etc, netflix need a different storage known as the Object storage.

➢ In the AWS object storage service is known as the **S3** and in azure it is known as the **Blob storage**.

➢ Based on the different internet speed, different resolution of the videos are streamed by the netflix, we need some automation for this to first store the videos in different format(HD, SD, UHD) as soon as it is uploaded and then stream it accordingly. For doing the

same we need to write some code and we generally put this code into the function.

➢ This function service in AWS is known as the **Lambda** and in Azure is the **Azure Funtions**.

➢ For detecting the upload event or any other event we use the Event detector.

➢ In AWS the Event detector service is provided by the **Event Bridge** and in Azure it is known as the **Event Grid**.

➢ For the AI services we have the **AWS Rekognition** service and the **Azure Cognitive** services.

➢ Similarly, both the clouds have almost the same services for every use case and it is up to us whichever we want to use.

➢ For the analytics purpose we have the **EMR** service in the AWS and in Azure we have **HDInsights**.

➢ For Business intelligence tools we have the AWS **Quicksight** service and the Azure **synapse** service.

Use Cases	AWS	AZure
server:	EC2	Azure Virtual Machine
Disk Storage:	EBS	Azure Disk Storage
Auto Scaling:	ASG	auto scaling sets
LB:	ELB	Azure Load Balancer
DNS:	Route53	Azure DNS
RDBMS:	RDS	Azure SQL DB
NoSQL:	DynamoDB	CosmosDB
Object Store:	S3	Azure Blob Storage
function:	Lambda	Function
Event:	Event Bridge	Event Grid
Analysis:	EMR	HDInsight
BI:	QuickSight	Synapse

➢ We can choose any of the services from any of the cloud that can help us in the optimisation, this is exactly what the multi cloud strategy is.

➢ Now we need a tool that will help to connect all the best pieces from here and there. One of the most popular tools is the **Terraform**.

- A **multi-cloud** strategy involves using multiple cloud computing services from different cloud providers, rather than relying on a single provider for all services. This approach can offer greater flexibility, resilience, and cost-effectiveness by leveraging the unique strengths of different cloud platforms.

- On the other hand, a **hybrid-multicloud** strategy involves using a combination of both on-premises(Private cloud) and cloud-based infrastructure to support business operations. This can allow for greater control and security over sensitive data while still taking advantage of the scalability and flexibility of cloud computing.