Experiment No: 11

Title: Case Study on Microsoft Azure

Aim: To perform case study on Microsoft Azure

Case Study:

What is Cloud Computing?

'Cloud Computing is nothing but a practice of providing Cloud Services (Storage, Computation, Databases, Security, etc) on rent and also through a network that can be accessed over the internet'

In the early two thousand, in order to host an application, we needed to buy stack servers and have skilled professionals to set the infrastructure up. The process looked simple, but there were drawbacks,

- Servers were costly back then, and they still are

- It was difficult to find skilled professionals

- A lot of efforts went into planning

What this meant was the owner had to pay money in buying servers. Then invest more money in people who could set it up. The evening after a lot of planning, there was never certainty on how many resources were enough and how many were too much? As an owner, one would always worry about money resources, planning and scalability. Hence there was very less time one could devote to actually focus on business. Also, this meant setting up such business was becoming limited to ones who could afford it.

This is where Cloud Computing came to save the day. There were service providers in the market that started providing Compute, Storage, Networking, and other application hosting services on 'pay as you go model'. This meant people could rent these services and pay for only those services they used and only for the time duration they used those for. Also, these services providers managed the configuration, scalability and management part. In simple terms, this solved all the issues we listed above. This process we just discussed, evolved and started to be known as Cloud Computing.

What Is Microsoft Azure?

Microsoft Azure is a Microsoft cloud service provider that provides cloud computing services like computation, storage, security and many other domains. Microsoft is one of the global leaders when it comes to Cloud solutions and global cloud infrastructure. Microsoft Azure provides services in 60+ global regions and serves in 140 counties. It provides services in the form of Infrastructure as a service, Platform as a Service and Software as a service. It even provides serverless computing meaning, you just put your code and all your backend activities as managed by Microsoft Azure.

It easily integrates with Microsoft Products making it very popular using Microsoft products. This platform is now 10 years old and it picked up to compete with the best of the best.

Benefits of Microsoft Azure

Microsoft Azure may be considered second to Amazon Web Services in few features, but it has quite a few that make it stand tall on its own. Let us take a look at them, one by one

On-Demand Scalability

When we talk of Application Hosting, we can never be sure of how many resources are enough and how many are too much. This is the nature of

businesses that rely on varying traffics. What is does is forces businesses to plan a lot and invest a lot of money doing it. Microsoft Azure helps you save all this effort.

Microsoft Azure ensures your applications and data is distributed well enough that means you never run short of Server space. It also means your applications do not run on a single server making them available even in dire situations. Since these resources are properly clustered out and they can scale at will and in no time, your applications function very differently then they would in an on-premise architecture.

Cost Effective

One of the major benefits with cloud service providers is the cut down of upfront costs. Since you can configure and scale at will, you are not required to invest heavily here. Microsoft Azure ensures small scale investment does not require upfront costs. Also when it comes to people who have signed up contracts, they get heavy discounts. It also offers to Pay as go, model, meaning you get cost-cutting in the right sense.

Hybrid Environments

They say cloud is not a one fit solution for all. It is true indeed because every business will have its own set of problems. And not all businesses will always be in a state where they can migrate to the cloud entirely. While other platforms suffer here, as people either have to migrate to those platforms or call it off totally, Microsoft Azure benefits with its Hybrid approach. Meaning, with Microsoft Azure you can build Hybrid infrastructures, where your resources can partially reside on the cloud and can partially operate from an on-premise infrastructure. Hence you are safe from costly workaround.

Big data Applications

Hadoop and Big data are the need of the hour. With data increasing exponentially we need applications that can help process this data. Microsoft Azure brings this capability of processing large volumes of data on top of its cloud platform. Azure HDinsight ensures you can use Apache Hadoop as a cloud solution. This is a power-packed service that lets you deal with large data volumes. That means your data crunching becomes easier.

It also readily integrates with data visualization tools and also lets you move your data to excel. This means your data visualization concerns are resolved quickly. With excel you can create visualizations and with PowerBI integrating with Microsoft Azure your data be converted into any visual that you require.

Integration Capabilities

Microsoft has been in the software industry for decades. It has wide reach in the software market and not many can compete with it when it comes to customer base and stack of products it offers. The advantage for Microsoft Azure here is that it readily integrates with most of these products. Be it, connecting to SaaS, PaaS, IaaS applications or even something like Visual Studio or Active Directory, Microsoft Azure has you covered. Hence you can now leverage ERPs and CRMs to enhance your business capacity to a greater level.

So should you be worrying if you do not use Microsoft Products. The answer is 'NO'. You can even connect to or integrate many third-party applications and services to widen your business reach.

Storage and Security

Storage is very critical to any application. It is no different for applications running on cloud. As already discussed, the volume of data we handle these days is huge. It also comes in different formats and from different sources. Your Storage resources have to adept enough to handle this data. Microsoft Azure has you covered here as well It lets you store data in form of files, objects, structured and unstructured data and a lot more. This happens reliable and securely.

Talking of security Microsoft Azure ensures high level of security for your applications. It ensures all the resources in Azure cloud are guarded with firewalls and data is moved over the network with encryption. You have access to authentication and access management meaning you data and application are secure to the core.

Scheduling and Automation

Everyone hates doing repetitive tasks. What if we could automate mundane tasks or recurring tasks be it fetching some data, setting up triggers or scaling your resources when needed? Microsoft Azure does that for you ensuring you can utilise your workforce for more productive outcomes and get rid of stagnancy or repetition of work.

Data Backup and Recovery

Data Backup ensures you have a copy of your data maintained in case if your primary copy of data or resources is lost. With Microsoft Azure, you have an option of backing up your data in different Azure regions or data centres. You can maintain as many as six copies of your data. This signifies that the chance

of losing your data on Microsoft Azure is minimal. When it comes to reliability your data is available 99.9 percent.

Use Cases of Microsoft Azure

1)IoT Services

The Internet of Things has a very different infrastructure than the technologies being used today. In order to enable IoT, companies need cloud services that can intelligently analyze and use sensor data and bind actions based on this sensor data. The internet of things is built on sensors; automation means that the devices need to be able to sense when they should perform a particular task.

Azure has a specialized set of IoT services bundles together to provide everything needed to power an IoT network. This includes DocumentDB, Stream Analytics, HDInsight, and Event Hubs. These services provide data collection, ad-hoc networking and queering, data analysis, and much more. Any company looking to get serious about the Internet of Things will be well served by these services.

2) Disaster Recovery

Disaster recovery has always been a strong point of cloud services. Some of the first cloud customers were banks and financial institutions that needed to have access to their data no matter what disaster struck. Azure provides much better disaster recovery options than most of the alternatives. Azure keeps your data safe by making redundant copies in multiple locations. You can manually choose the locations of your database backups but even if you do not, Azure will manage the security by default. Companies can even extend their Active Directory to Azure backups for uninterrupted services even if your main data site goes down.

3) User Generated Content Hosting

These days, content is king. User generated content is also notoriously hard to manage; it needs to be categorized, optimized, and processed quickly without needing the user to do anything. User generated content doesn't just mean videos and pictures uploaded by the users, it also includes comments, reviews, shares, and anything else which users leave on websites. DocumentDB

automatically indexes all the data it receives which makes it perfect for storing user generated content of all types.

4) Feature Testing

Azure offers fantastic virtual machine solutions for testing out new features. Almost every respectable cloud service provider allows you to create virtual machines or instances in order to test out features, but Azure is very different when it comes to paying for these virtual machines. Most bill by the hour, so even if you use a VM for only a few minutes your organization will end up paying for an hour's worth of use. Azure bills you for exactly the time that you use the VMs for, which lowers costs substantially. Microsoft also has very powerful setups available for its virtual machines. You can set up Oracle, Windows, or Linux systems with a single click and choose if you want to run SQL server on it. This saves you time and saves your organization expensive licensing costs.

5) Product Databases and Catalogs

DocumentDB in Azure is a JSON store, which means it can easily and quickly work with several systems and store information and attributes easily. Azure is very powerful when it comes to complex databases. The more attributes and links there are between data, the more useful Azure will be for your organization. The database can be of products, IoT devices, or any object and Azure will be able to handle it with ease. Nested data and flexible schemas are built into DocumentDB which allows complex databases to work instantaneously.

Real Life Implementation of Microsoft Azure:

University Of Toronto

This is the largest Canadian university and leads the global front when it comes to research at an institutional fare. It made use of Microsoft Azure to avoid heavy hardware renewal costs. It migrated some of its activities to Microsoft Azure Cloud. With it, the university managed to transform IT processes, saving a lot of time

AkzoNobel

AkzoNobel is a popular Dutch Company that leads way in paint and coating business. It serves in more than 100 countries and always needs better

connectivity across the globe. It harnessed the power of Microsoft Azure IoT services to improve its performance and connectivity at a global level.

IHG (Intercontinental Hotel Group)

This is one of the largest and leading hotel groups in the world. It owns around 5200 properties across the globe and serves more than a hundred countries. The fact that you own 5200 properties tells you the group holds its values of service very truly and also must have experimented a lot to stay up to date with market needs as well. This fact is also supported by the fact that this group invests a lot of money in innovations to meet the experience quality the customers deserve.

The company has many of its tools that require Agile practices. It already was based on Azure Cloud platform. This is when they decided to use DevOps Services on Microsoft Azure. This not only helped them bring their software and data handling process on track, but also helped them fortify their security and processing principles. The fact that Microsoft Azure Supports Hybrid cloud meant big group like IHG did not have to move to Azure cloud altogether.

Ever since it has moved to Azure StorSimple, which is a hybrid storage service for enterprises. The group has achieved great results when it comes to storing data. It has helped them save more 70 percent in terms of cost. This is something that was initiated four years ago. It needed very little support in setting up and does require too much intervention when it comes to administrative attention.

Before they moved to the above-mentioned service, IHG group had to deal with multiple data and file services to gather and store data. Azure StorSimple ensured this data was consolidated and easy to manage overall. Data Backup issue was also resolved as Azure ensured that easy way to get a snapshot of data. That means data could be backed up easily and quickly.

Conclusion:

Thus, I have studied case study on Microsoft Azure.