Practical No: 9

Aim: Case Study on Microsoft Azure

Cloud computing is an emerging paradigm that provides a promise to revolutionize the way the software development industry operates. Microsoft Azure is one of the leading cloud service providers and a strong competitor of Amazon Web Services. Microsoft Azure has plenty of features that make it one of the crowd's favourites. Microsoft Azure, formerly known as Windows Azure, is Microsoft's public cloud computing platform. It provides a broad range of cloud services, including compute, analytics, storage and networking. Users can pick and choose from these services to develop and scale new applications or run existing applications in the public cloud.

Working of Microsoft Azure

Once customers subscribe to Azure, they have access to all the services included in the Azure portal. Subscribers can use these services to create cloud-based resources, such as VMs and databases. Azure resources and services can then be assembled into running environments used to host workloads and store data. In addition to the services that Microsoft offers through the Azure portal, a number of third-party vendors also make software directly available through Azure. The cost billed for third-party applications varies widely but may involve paying a subscription fee for the application, plus a usage fee for the infrastructure used to host the application.

Microsoft provides the following five different customer support options for Azure:

•Basic

•Developer

•Standard

•Professional Direct

•Enterprise (Premier).

Benefits of Microsoft Azure

1.**Scalability on Demand:**

Microsoft Azure is able to easily adapt to the ever-changing circumstances of your business. Its flexible features can work both on a manual and auto scaling basis, in line with the demands of application usage. Unlike traditional hosting, scaling in Azure is much easier because you can change to different service plans depending on your needs.7You get a competitive advantage right from the get-go, as you still benefit from the same application performance regardless of the user influx and without having to worry about underutilised on-premise solutions.

2. **Cost-efficiency**: Microsoft's pay-as-you-go model enables businesses to only spend for what they use. Essentially, Azure allows you to access more resources as and when you need them, loading them as a cluster. This means that when you experience the sought-after periods of high volume transactions, you won't need to spend money on additional hardware

and IT maintenance. With Microsoft Azure, you can get a server configured to your exact specifications in less than 20 minutes, so you will always have plenty of server capacity.

3. **Data Backup and Disaster Recovery**

With over 50 world-class compliance certifications and 99 years of retention, Azure can protect your data like no other cloud computing platform. It offers single click backup support for SQL database and virtual machines running in Azure.
In the event of service disruption or data loss, Microsoft Azure can recover your data 66% quicker than an on-premise IT solution.

4. **Bespoke Industry Applications**

High-risk industries like healthcare, financial services and government often require a specific set of applications with unique compliance and security features. With Microsoft Azure, you can address individual challenges from implementing remote access and modernising your financial systems, to optimising customer relationships and enhancing engagement.

5**. Improved IT Infrastructure**

Through IaaS and PaaS, enterprises can outsource their IT infrastructure and create web applications without having to spend money on infrastructure maintenance. You can partner with a Microsoft Cloud service provider to leverage IaaS and PaaS and build custom enterprise apps on Azure to scale up your business faster.7Ideally, you should always use a reputable Microsoft partner with the exclusive Gold accolade for priority access to Microsoft's own IT support team.

6. **Secure Identity & Access Management (IAM)**

You can considerably reduce hacking risks with Azure Active Directory and its IAM capabilities. Identity and Access Management solutions protect your resources and applications with additional features including Multi-Factor Authentication, Application Proxy and Conditional Access policies.7IAM also removes the downtime for your IT staff to set up accounts and passwords in SaaS applications - users can simply login and access data or apps using just their organisational credentials.

Azure products and services

Mobile. These products help developers build cloud applications for mobile devices, providing notification services, support for back-end tasks, tools for building application program interfaces (APIs) and the ability to couple geospatial context with data.

Web. These services support the development and deployment of web applications. They also offer features for search, content delivery, API management, notification and reporting.

Media and content delivery network (CDN). These CDN services include on-demand streaming, digital rights protection, encoding, and media playback and indexing.Integration. These are services for server backup, site recovery and connecting private and public clouds.

Practical No: 10

Aim: Case Study on Amazon EC2

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

Amazon EC2 is a central part of AWS:

Amazon Elastic Compute Cloud (EC2) forms a central part of Amazon. com's cloud-computing platform, Amazon Web Services (AWS) by allowing users to rent virtual computers on which to run their own computer applications. EC2 encourages scalable deployment of applications by providing a web service through which a user can boot an Amazon Machine Image (AMI) to configure a virtual machine, which Amazon calls an "instance", containing any software desired. A user can create, launch, and terminate server-instances as needed, paying by the second for active servers – hence the term "elastic". EC2 provides users with control over the geographical location of instances that allows for latency optimization andhigh levels of redundancy.

In November 2010, Amazon switched its own retail website to use EC2 and AWS.

Features of EC2:

Amazon EC2 provides the following features:

- Virtual computing environments, known as instances
- Preconfigured templates for your instances, known as Amazon Machine Images (AMIs), that package the bits you need for your server (including the operating system and additional software)
- Various configurations of CPU, memory, storage, and networking capacity for your instances, known as instance types
- Secure login information for your instances using key pairs (AWS stores the public key, and you store the private key in a secure place)
- Storage volumes for temporary data that's deleted when you stop or terminate your instance, known as instance store volumes
- Persistent storage volumes for your data using Amazon Elastic Block Store (Amazon EBS), known as Amazon EBS volumes
- Multiple physical locations for your resources, such as instances and Amazon EBS volumes, known as Regions and Availability Zones
- A firewall that enables you to specify the protocols, ports, and source IP ranges that can reach your instances using security groups
- Static IPv4 addresses for dynamic cloud computing, known as Elastic IP addresses