Azure Services Platform

Ravina Nara[1], Rohini Nimbekar[2], Shruti Khairnar[3], Mithun Mhatre[4]

[1]*Student, Computer Engineering, Bharati Vidyapeeth Institute of Technology, Maharashtra, India*

[2]*Student, Computer Engineering, Bharati Vidyapeeth Institute of Technology, Maharashtra, India*

[3]*Student, Computer Engineering, Bharati Vidyapeeth Institute of Technology, Maharashtra, India*

[4]*Professor, Computer Engineering, Bharati Vidyapeeth Institute of Technology, Maharashtra, India*

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Abstract -*The main objective of this paper is to understand how to utilize different cloud computing services provided by the Microsoft Azure in the best possible way in order to get the best performance in a cost-effective manner. Microsoft Windows azure has proved to be a boon in terms of providing good cloud computing services hence is in high demand. This paper mainly focuses on three service platforms and also deals with their performance analysis and these services are Web & Mobile, Internet of things & Azure Storage. The paper provides an in-depth introduction about Microsoft Azure, its services, and developing and deploying applications on Azure Cloud Using Different Services offered by it.*

*Key Words***: Platform, Applications, Azure, Services, Internet Of Things, Storage, Web.**

1.INTRODUCTION

Application platform can be defined as something that supplies developers with a set of in hand services for creating applications. Applications can explore cloud services in a variety of different ways. Different cloud platforms are used in different scenarios as per the requirements. Azure provides different set of service platforms where every platform is responsible for providing a specific service to the application developers. The Azure Services Platform can be used by both the applications running on the cloud as well as the applications running or on in-house systems [1]. Azure is a cloud platform that hosts the infrastructure of your current application and also, provides compute based services that are needed for your application development needs. Azure provides a combination of all the cloud services that you require to develop, test and deploy your application [2].

1.1 Cloud Computing

By using cloud computing we can explore millions of Internet-accessible servers   that are offered in current scenarios. Both data and code can be kept in the cloud. For some applications where someone else is managing and monitoring the different systems they use. Today, it has become an emerging technology in which the research community and industries have recently evolved/adapted. There are different IT companies that provide a variety of platforms such as Amazon, App Engine from Google, Blue Cloud from IBM to make it easier for end-users to use cloud services [17].

1.2 Azure Storage Service

Azure Storage is the cloud storage solution for modern applications that depend on durability, availability, and extensibility to fulfil the requirements of their end users.Azure Storage is massively extensible, thus allowing you to store and deal with hundreds of terabytes of data in order to support the big data schemes required by scientific, financial analysis, and media applications and at the same time it allows you to store small volumes of data needed for small scale business websites. Tens of trillions of different customer objects are stored by azure storage in the current scenarios, and it handles millions of requests per second.

The storage capacity of Azure storage is virtually limitless. As the demands of your application increases, the Azure storage automatically provides the resources required to meet those demands through the auto-partitioning method of azure storage. The Azure storage is easily accessible from anywhere in the world and it supports all types of applications running on any cloud, different servers, mobiles or any tablet devices [4].

1.3 Types of Azure Storage:

1.3.1 Standard Storage:

The standard storage account helps users to access and store data in four types of storage formats that are Blob storage, file storage, queue storage and table storage.

Azure Blob Storage:

Blob storage is used for storing unstructured data which includes images, videos, documents, raw data along with their meta-data. [3] Blobs are stored in a structure called container, the term "blob" means "Binary Large Object" The Blob service allows the storage for files such as binary files and text files [5].

Azure File Storage

The Azure file storage service provides a persuasive option for Direct Attached Storage and Storage Area Network Solutions which are difficult to install, configure and use 9]. The Files stored in Azure File shares can be viewed and accessed through SMB protocol and REST APIs [4]. The Azure File Storage is mainly Used for the applications that have been inherited from languages, platforms and techniques that are outdated in terms of today's technology [3].

Azure Queue Storage

The Azure queue service is used to transfer messages between the independent components of an application either on cloud or on premise [3]. With Azure queue storage, we can handle transactions of 2000 messages per second where each message is having maximum time to live of 7 days [6]. The queuing service of queue storage is highly reliable and cheap and it is mainly used for large cloud networks and hybrid networks [7].

Azure Table Storage

Azure table storage is used for storing tabular data that is suitable for key-value NoSQL data storage. Table storage is extremely extensible and easy to use. Like other NoSQL data stores, it does not contain any scheme and can be easily accessed through REST API [3].

1.3.2 Premium Storage

The Azure Premium Storage is the latest storage offering from Microsoft where data is stored in Solid State Drives(SSDs) for the purpose of improved IO and throughput [3]. The Virtual Machine(VM) disks of your application can be migrated to Azure Premium Storage in order to increase and improve the performance of these disks. Number of Premium Storage Disks can be attached with Azure VM and this enables your application to have a storage of up to 64 TB per VM. The Premium Storage helps your application to complete 80,000 Input/output operations per second on a single virtual machine [10]. With Azure Premium Storage, Microsoft intends to help its customers to migrate on premise workloads having large sets of data to Azure Virtual Machines [8].

2. Internet of Things

The Internet of Things is the third trend of information technology after mobile network and internet, which is categorized by more inclusive interoperability and intelligence [11]. The Internet of Things provides a new intuition in which the Internet leads into real world embracing daily things [12].

In today's world infrastructure systems, such as smart grid, smart homes, smart water networks, and intelligent transportation is connected to our world in a way which is beyond our imagination. Here, with the help of sensors the whole physical organization is coupled with communication and information technologies. Any change in environment is been detected by a sensor to transmit the data to the computer which then tells the actuator to give the corresponding output. The conversion of real world data into data that a computer can understand is done by sensor [13]. The Internet of Things has become an important part of business sectors in order to help organizations assets, processes and data. Now days, this type of connection is enabling the enterprises to uncover new opportunities, create new business models and transform their operations. In this era of Internet of Things Microsoft's vision is supporting many companies and organizations in terms of providing scalable platform, services where universal enterprises can start up to establish new value in market. The investments made in Windows 10 IOT are equally made with the Azure IOT suite which brought various Azure service in order to help their clients accelerate their transformation to digital businesses. The Azure IOT suite provides the capabilities of asset management, remote monitoring, and predictive maintenance, as well as the capability to grow and scale solutions to millions of things [14].

Azure IOT is a cloud service that enables safe and reliable bidirectional communication between cloud to device and device to cloud that provides measures for a wide range of devices [15]. Azure IOT Hub provides interaction which includes file transfer, request reply method, provides routing to other Azure services, provides storage for meta data and synchronized information of devices [16].

2.1 Why Use Azure IOT Hub

In count to a rich set of devices Azure challenges in following ways:

1. Per device authentication and secure connectivity:

To connect to IOT hub you can provide every device with its own security and complete access control over devices.

2.Device twins:

Storing, synchronizing, query device meta data and information is provided to the devices using device twins.

3.An extensive set of device libraries:

The Azure IOT devices supports different languages and platforms for many Windows, Linux distributions and real-time operating systems such as Java, c#, and JavaScript.

3. Scalable:

Azure IOT Hub is extensible to millions of parallelly connected devices and millions of events per second.

4. Azure App Services

Microsoft Azure has evolved significantly in the most recent release, where Microsoft's objective is to improve its services in its best possible way to provide the better solutions for its clients. [18] The Azure App Service, a service **provided** by Windows Azure helps the developers to rapidly construct, deploy, and deal with powerful websites and web apps. These apps are quite familiar and faster and enables to utilize your existing skills to code in your desired language and IDE to construct APIs and apps quicker than ever [19].

Web Apps

Web App is the computing resources that Azure offers for hosting a website or web application in App Service. These computing resources can be on shared or dedicated virtual machines (VMs), depending upon what type of pricing tier you have chosen. Your application code is executed in a managed VM that is separated from other customers. App service provides a platform that supports Built-in auto scale and load balancing, High availability with auto-patching. It also supports multiple languages such as: Node.js, Java, PHP, and Python. You can also run Power Shell and other scripts or executable languages on App Service VMs. [18]

API Apps

API Apps in Azure App Service offers a rich platform that makes it simpler for constructing, hosting, and sharing APIs in the cloud and on-premises.
The API app helps you to use any language or framework supported by App Service, including the Official Microsoft ASP. NET Site and PHP, Java, Node.js, C#, and Python [20].

Logic Apps

Logic apps enable us to apply scalable integrations and work-flows in the cloud [21]. This service provides the facility to every client (technical or not) to automate process completion across consumer and commercial services, as well as custom APIs on-premises [18]. Features such as the ease of use of the designer, variety of available triggers and actions, and powerful management tools make your APIs centralized and simpler than ever [21].

Mobile App

Mobile App provided by Azure App Service offers a highly scalable, vast mobile application development platform for different Developers and System Integrators. With the help of Mobile Apps, you can make your app work offline and sync, it also supports social integration with Facebook, Twitter, Google, and even you can connect to your enterprise or cloud resources [21].

4. CONCLUSION

This paper evaluates the service platforms provided By Microsoft azure. The truth is evident: Cloud computing is here. For developers, taking advantage of the cloud means using cloud platforms in some way With the Azure Services Platform, Microsoft presents a range of platform styles addressing a variety of needs. Microsoft Azure provides the necessary cloud platform to reduce not only the time to discovery, but also the cost of discovery. Now is the time to try Microsoft Azure for you and discover first-hand how easy it is to set up and go live. The   advantages of using the Azure cloud platform relate to the   fact that Microsoft has tried to minimize the changes involved in migrating applications to the cloud. Effort required from developers already familiar with Microsoft's technologies to utilize the Azure is minimal. In addition to this, upcoming releases of Azure are going to support applications written in languages such as Python and PHP. Another advantage in Microsoft's solution is that the services provided can be used in a very flexible fashion. Not only are Azure services available to cloud applications, but also traditional on-premises applications are free to exploit them. What's even better, Microsoft seems to be improving in terms of interoperability. Because all of the services are accessible via industry standard protocols, it is guaranteed exploiting them doesn't force customers to use Microsoft's operating systems on-premises.

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