

# **Case Study**

## **Microsoft Azure**

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### **Problem Statement:**

Case study on Microsoft Azure. To learn about Microsoft Azure as a cloud computing platform and infrastructure created by Microsoft, for building, deploying, managing applications and services through a global network of Microsoft managed data centres.

### **What is Azure?**

Windows Azure, which was later renamed as Microsoft Azure in 2014, is a cloud computing platform, designed by Microsoft to successfully build, deploy, and manage applications and services through a global network of datacentres. The services provided by Microsoft Azure are PaaS (**Product as a Service**) and IaaS (**Infrastructure as a Service**). Many programming languages and frameworks are supported by it.

### **Azure as PaaS:**

As the name suggests, a platform is provided to clients to develop and deploy software. The clients can focus on the application development rather than having to worry about hardware and infrastructure. It also takes care of most of the operating systems, servers and networking issues.

### **Advantages:**

- The overall cost is low as the resources are allocated on demand and servers are automatically updated.
- It is less vulnerable as servers are automatically updated and being checked for all known security issues. The whole process is not visible to developer and thus does not pose a risk of data breach.
- Since new versions of development tools are tested by the Azure team, it becomes easy for developers to move on to new tools. This also helps the developers to meet the customer's demand by quickly adapting to new versions.

### Disadvantages:

- There are portability issues with using PaaS. There can be a different environment at Azure, thus the application might have to be adapted accordingly.

### **Azure as IaaS:**

It is a managed compute service that gives complete control of the operating systems and the application platform stack to the application developers. It lets the user to access, manage and monitor the data centres by themselves.

### Advantages:

- This is ideal for the application where complete control is required. The virtual machine can be completely adapted to the requirements of the organization or business.
- IaaS facilitates very efficient design time portability. This means application can be migrated to Windows Azure without rework. All the application dependencies such as database can also be migrated to Azure.
- IaaS allows quick transition of services to clouds, which helps the vendors to offer services to their clients easily. This also helps the vendors to expand their business by selling the existing software or services in new markets.

### Disadvantages:

- Since users are given complete control, they are tempted to stick to a particular version for the dependencies of applications. It might become difficult for them to migrate the application to future versions.
- There are many factors which increase the cost of its operation. For example, higher server maintenance for patching and upgrading software.
- There are lots of security risks from unpatched servers. Some companies have well defined processes for testing and updating on-premise servers for security vulnerabilities.

### **Azure management portal:**

Azure Management Portal is an interface to manage the services and infrastructure launched in 2012. All the services and applications are displayed in it and it lets the user manage them.

**Storage:**

The Storage component of Windows Azure represents a durable store in the cloud. Windows Azure allows developers to store tables, blobs, and message queues. The storage can be accessed through HTTP. You can also create our own client; although Windows Azure SDK provides a client library for accessing the Storage.

**Applications:**

- Azure platform is developed in such a way that developers need to concentrate on only the development part and need not worry about other technical stuff outside their domain. Thus, most of the administrative work is done by Azure itself.
- Web applications support .net, java, python, php and node.js. Tasks such as scaling and backups can be easily automated. A new feature called 'webjobs' is available, which is a kind of batch processing service. Webjobs can also be scaled and scheduled. The mobile application platforms supported are Xamarin iOS, Xamarin Android and IOS.
- It provides a platform to develop applications using a range of available technologies and programming languages. It offers to create and deploy applications using .net platform, which is Microsoft's own application development technology. In addition to .net, there are many more technologies and languages supported. For example, Java, PHP, Ruby, Oracle, Linux, MySQL, Python.
- Windows Azure applications are scaled by creating multiple instances of the application. The number of instances needed by the application is specified by the developer while hosting the applications. If traffic is increased or decreased on the website or web application it can be managed easily by logging in to Windows Azure management portal and specifying the instances.

**Security:**

Security is about managing the access of users to the organization's applications, platforms and portals. Active directory is used to manage the database of users in a protected manner. The same kind of service is provided by Windows Azure to keep the users and their password safe. Active directory is a feature that lets you create users, manage their roles, grant access and delete them.

**Datacentres:**

When we think of cloud, we imagine a place with large number of machines in big rooms. There must be a place where all the data is stored. Microsoft has datacentres all over the world from where Windows Azure services are managed. Datacentres are divided in regions.

The exact location of these datacentres is not revealed by Microsoft for obvious security reasons.

Following are the 20 listed regions as can also be seen in the image.

- Central US
- East US
- East US 2
- US Gov Iowa
- US Gov Virginia
- North Central US
- South Central US
- West US
- North Europe
- West Europe
- East Asia
- Southeast Asia
- Japan East
- Japan West
- Brazil South
- Australia East
- Australia Southeast
- Central India
- South India

### **Conclusion:**

Hence, we have learned about Microsoft Azure as a cloud computing platform. We were able to understand how Azure provides its services to manage and deploy applications.