Microsoft Azure

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About the Tutorial

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 datacenters. This tutorial explains various features of this flexible platform and provides a step-by-step description of how to use the same.

Audience

This tutorial has been designed for software developers who are keen on developing best-in-class applications using this open and advanced platform of Windows Azure.

Prerequisites

To learn Windows Azure, you need to be familiar with the Windows environment and have a basic knowledge of cloud computing.

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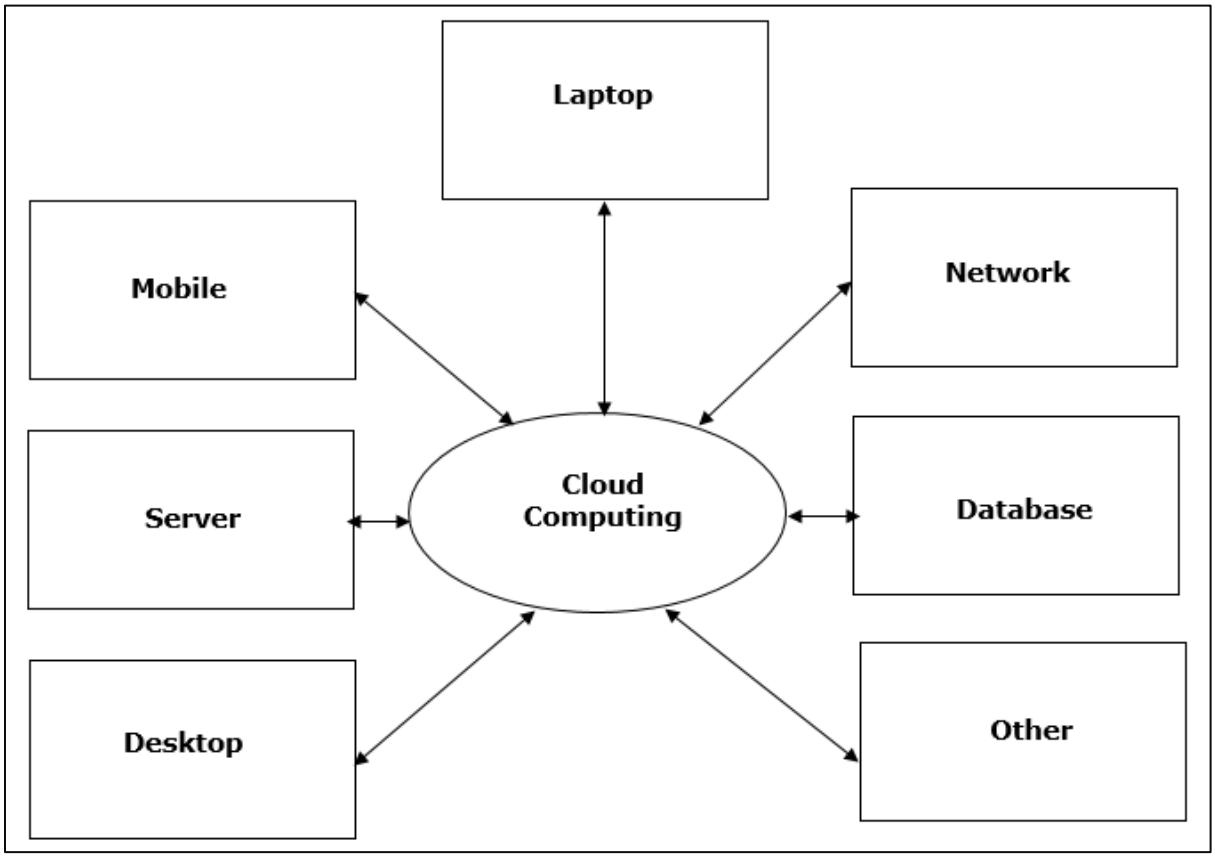
Part 1 – Azure Basics

1. Cloud Computing – Overview

The popular trend in today's technology driven world is 'Cloud Computing'. Cloud computing can be referred to as the storing and accessing of data over the internet rather than your computer's hard drive. This means you don't access the data from either your computer's hard drive or over a dedicated computer network (home or office network). Cloud computing means data is stored at a remote place and is synchronized with other web information.

One prominent example of cloud computing is Office 365 which allows users to store, access, edit their MS Office documents online (in browser) without installing the actual program on their device.



Architecture of Cloud Computing

The architecture of cloud computing comprises of the following components:

- Front-end device

- Back-end platform
- Cloud-based delivery
- Network

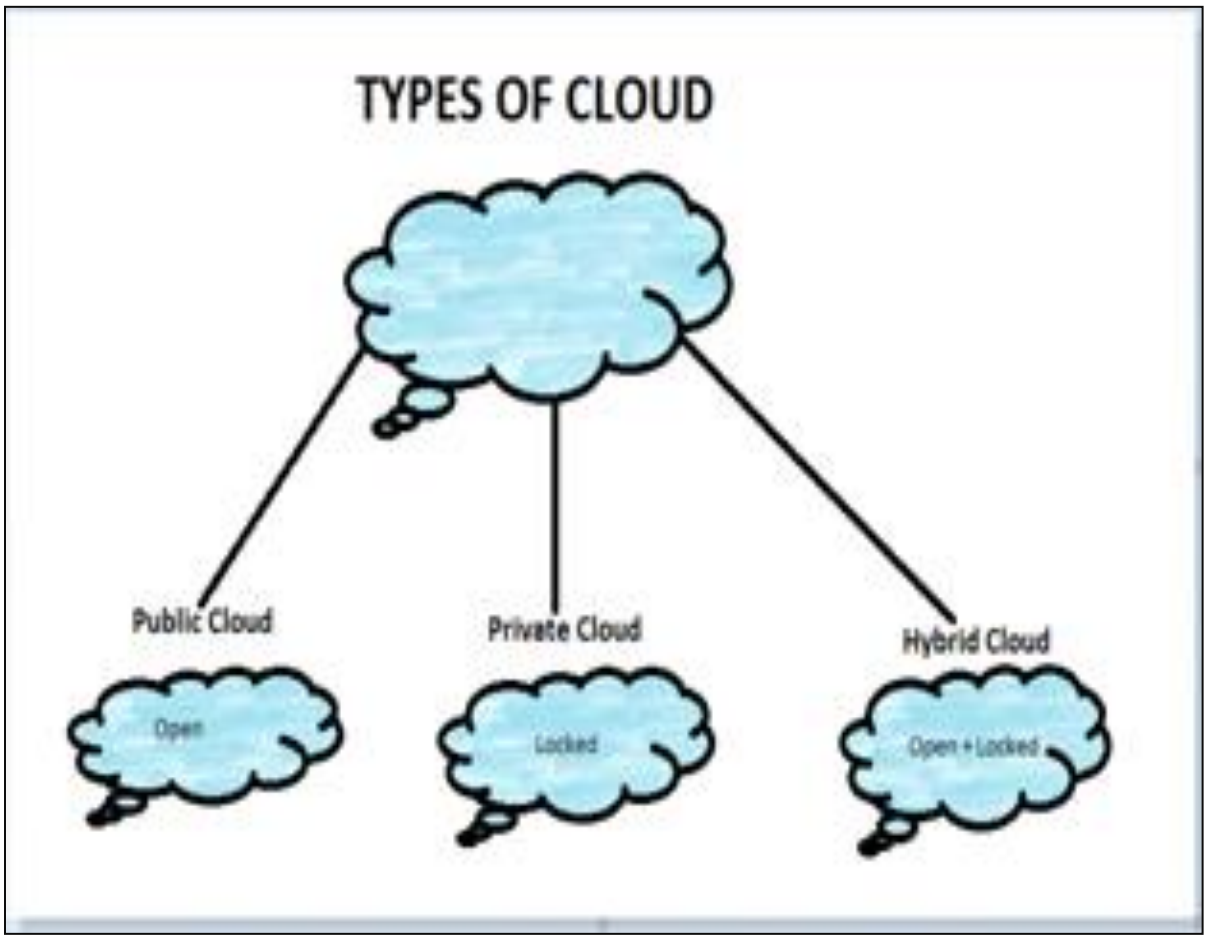
Front-end Devices: These are basically the devices that are used by clients to access the data or program using the browser or special applications.

Back-end Platform: There are various computers, servers, virtual machines, etc. that combine to become a back-end platform.

Types of Cloud

The storage options on cloud is in 3 forms:

- Public
- Private
- Hybrid



Public Cloud: A service provider makes the clouds available to the general public which is termed as a public cloud. These clouds are accessed through internet by users. These are open to public and their infrastructure is owned and operated by service providers as in case of Google and Microsoft.

Private Cloud: These clouds are dedicated to a particular organization. That particular organization can use the cloud for storing the company's data, hosting business application, etc. The data stored on public cloud can't be shared with other organizations. The cloud is managed either by the organization itself or by the third party.

Hybrid Cloud: When two or more clouds are bound together to offer the advantage of both public and private clouds, they are termed as Hybrid Cloud. Organizations can use private clouds for sensitive application, while public clouds for non-sensitive applications. The hybrid clouds provide flexible, scalable and cost-effective solutions to the organizations.

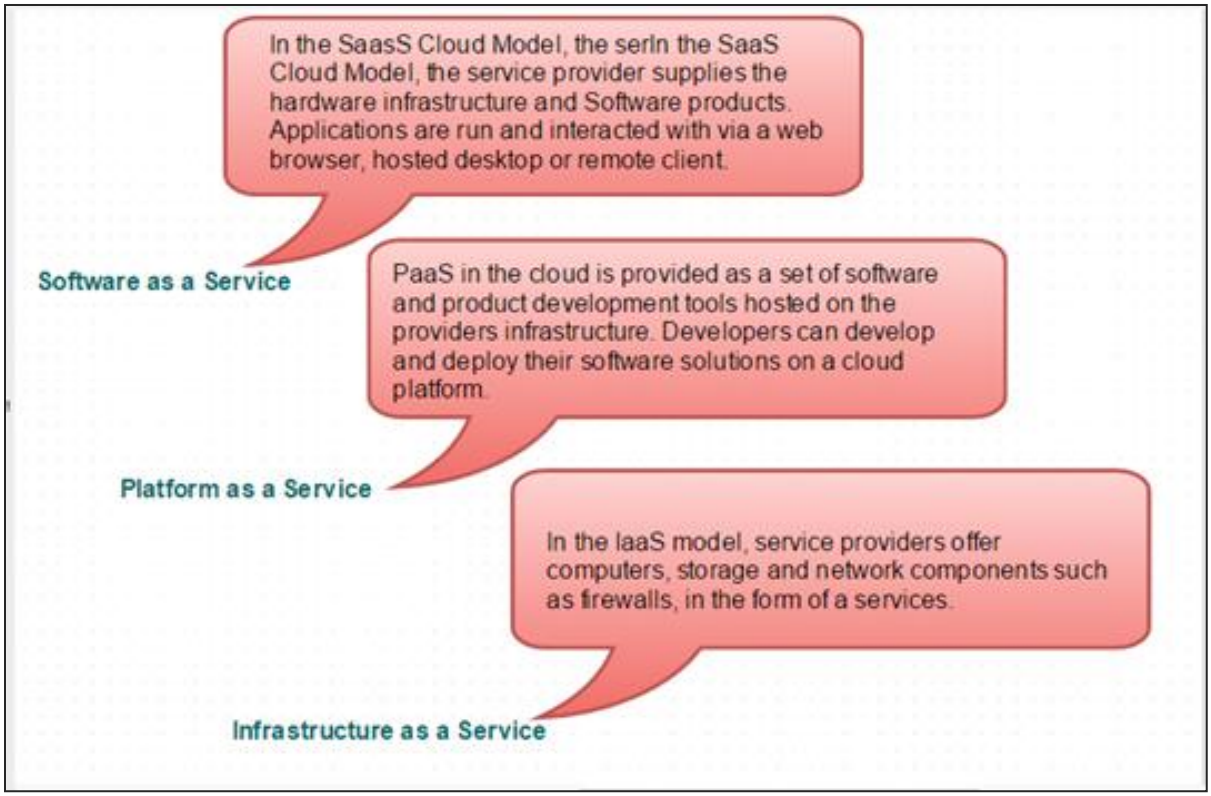
Benefits of Cloud

There are many benefits of clouds. Some of them are listed below.

- Cloud service offers scalability. Allocation and de-allocation of resources is dynamically as per demand.
- It saves on cost by reducing capital infrastructure.
- It allows the user to access the application independent of their location and hardware configuration.
- It simplifies the network and lets the client access the application without buying license for individual machine.
- Storing data on clouds is more reliable as it is not lost easily.

SPI

Next comes how cloud services are categorized. S stand for Software, P stands for Platform and I for Infrastructure in SPI. SaaS is Software as a service; PaaS is Platform as a service and IaaS is Infrastructure as a Service.



Following are the live examples of these models.

- **SAAS Model:** E-mail (Gmail, Yahoo, etc.)
- **PASS Model:** Microsoft Azure
- **IAAS Model:** Amazon S3

2. Windows Azure

There are many cloud computing platforms offered by different organizations. Windows Azure is one of them, which is provided by Microsoft. Azure can be described as the managed data centers that are used to build, deploy, manage the applications and provide services through a global network. The services provided by Microsoft Azure are PaaS and IaaS. Many programming languages and frameworks are supported by it.

Azure as PaaS (Platform as a Service)

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.

Pros

- 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.

Cons

- 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 (Infrastructure as a Service)

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 centers by themselves.

Pros

- 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.

Cons

- 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 increases 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. These processes need to be extended to the cloud-hosted IaaS VMs to mitigate hacking risks.

- The unpatched servers pose a great security risk. Unlike PaaS, there is no provision of automatic server patching in IaaS. An unpatched server with sensitive information can be very vulnerable affecting the entire business of an organization.

- It is difficult to maintain legacy apps in Iaas. It can be stuck with the older version of the operating systems and application stacks. Thus, resulting in applications that are difficult to maintain and add new functionality over the period of time.

It becomes necessary to understand the pros and cons of both services in order to choose the right one according your requirements. In conclusion it can be said that, PaaS has definite economic advantages for operations over IaaS for commodity applications. In PaaS, the cost of operations breaks the business model. Whereas, IaaS gives complete control of the OS and application platform stack.

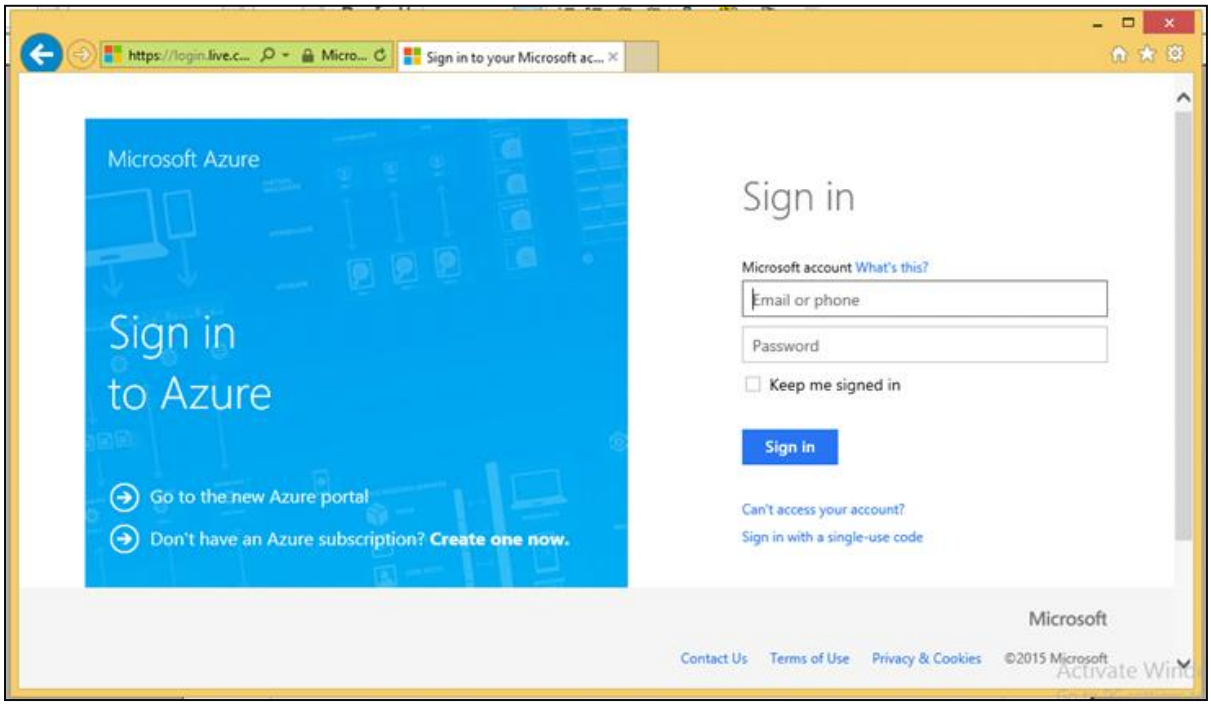
Azure Management Portal

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.

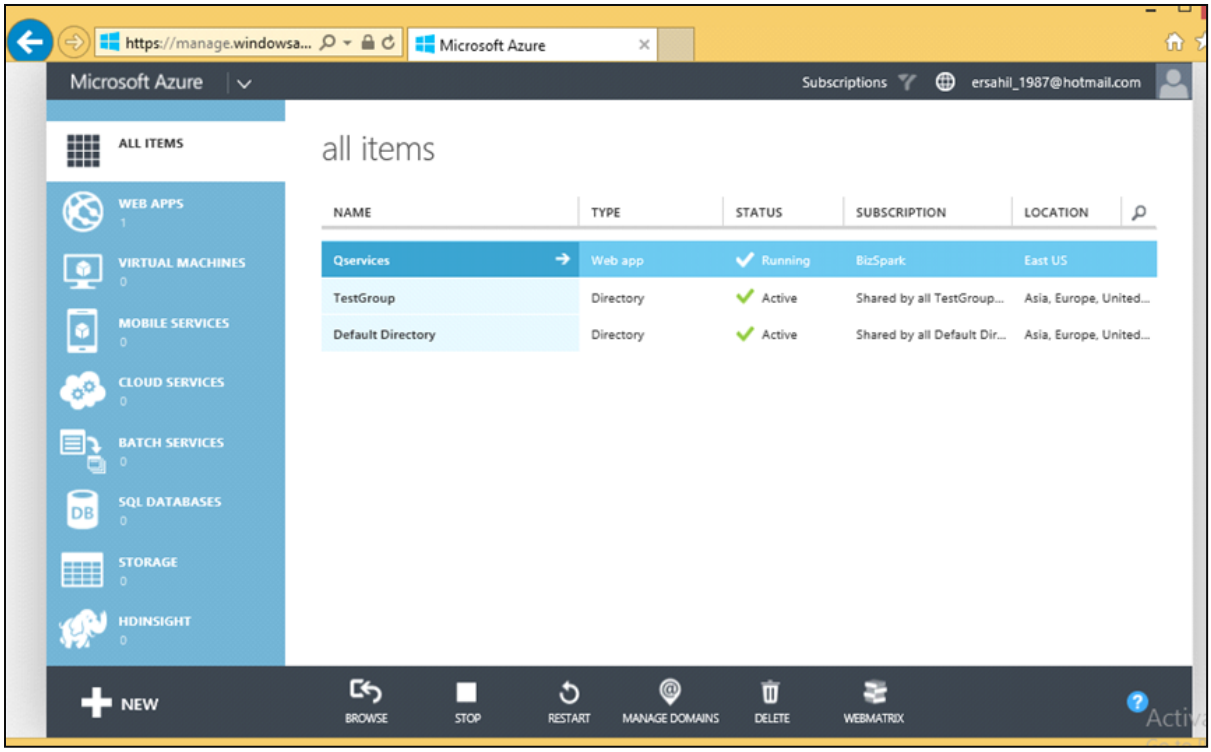
Getting started

A free trial account can be created on Azure management portal by visiting the following link - manage.windowsazure.com

The screen that pops up is as shown in the following image. The account can be created using our existing Gmail, Hotmail or Yahoo account.



Once logged in, you will be redirected to the following screen, where there is a list of services and applications on the left panel.



When you click on a category, its details are displayed on the screen. You can see the number of applications, virtual machine, mobile services and so on by clicking on the menu item.

The next chapter contains a detailed explanation of how to use this portal to manage Azure services.

End of ebook preview

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