

# MICROSOFT AZURE

**tutorialspoint**

SIMPLY EASY LEARNING

[www.tutorialspoint.com](http://www.tutorialspoint.com)



<https://www.facebook.com/tutorialspointindia>



<https://twitter.com/tutorialspoint>

## 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.

## Disclaimer & Copyright

---

© Copyright 2015 by Tutorials Point (I) Pvt. Ltd.

All the content and graphics published in this e-book are the property of Tutorials Point (I) Pvt. Ltd. The user of this e-book is prohibited to reuse, retain, copy, distribute or republish any contents or a part of contents of this e-book in any manner without written consent of the publisher.

We strive to update the contents of our website and tutorials as timely and as precisely as possible, however, the contents may contain inaccuracies or errors. Tutorials Point (I) Pvt. Ltd. provides no guarantee regarding the accuracy, timeliness or completeness of our website or its contents including this tutorial. If you discover any errors on our website or in this tutorial, please notify us at [contact@tutorialspoint.com](mailto:contact@tutorialspoint.com).

## Table of Contents

---

About the Tutorial .....	i
Audience.....	i
Prerequisites.....	i
Disclaimer & Copyright.....	i
Table of Contents .....	ii
<b>PART 1 – AZURE BASICS .....</b>	<b>1</b>
<b>1. Cloud Computing – Overview.....</b>	<b>2</b>
Architecture of Cloud Computing.....	2
Types of Cloud .....	3
Benefits of Cloud .....	4
SPI.....	4
<b>2. Windows Azure.....</b>	<b>6</b>
Azure as PaaS (Platform as a Service).....	6
Azure as IaaS (Infrastructure as a Service) .....	6
Azure Management Portal .....	7
<b>3. Azure – Components.....</b>	<b>9</b>
Compute / Execution Models.....	9
Data Management.....	9
Networking .....	10
Big Data and Big Compute .....	11
Messaging.....	11
Caching .....	12
Identity and Access.....	12
Mobile Service .....	13
Backup .....	14
Media.....	14
Commerce .....	14
Software Development Kit (SDK).....	14
<b>4. Compute Module .....</b>	<b>15</b>
Create a Web App .....	15
Create a Virtual Machine.....	18
Creating a Mobile Service.....	22
Creating Batch Service.....	22
<b>5. Fabric Controller .....</b>	<b>24</b>
<b>6. Storage .....</b>	<b>26</b>
Creating Azure Storage Account.....	26
Storage Account Endpoints .....	28
Generating an Access Key.....	28
Managing Data to Azure Storage.....	29

<b>7. Blobs</b> .....	<b>31</b>
Create a Container.....	31
Upload a Blob using PowerShell.....	32
Download a Blob.....	33
Manage Blobs using Azure Storage Explorer.....	33
<b>8. Queues</b> .....	<b>34</b>
Managing Queues using PowerShell.....	34
Managing Queues using Azure Storage Explorer.....	37
<b>9. Tables</b> .....	<b>39</b>
How to Manage Tables Using PowerShell.....	39
How to Manage Table using Azure Storage Explorer.....	44
<b>10. CDN</b> .....	<b>48</b>
Create a CDN.....	48
Create CDN for Custom Origin Links.....	49
Manage CDN.....	50
Map a Custom Domain Name.....	53
<b>11. Applications</b> .....	<b>55</b>
<b>12. Security</b> .....	<b>56</b>
Creating an Active Directory.....	56
Mapping a Custom Domain.....	58
Creating Users.....	59
Integrating with Azure Active Directory.....	61
Integrating On-Premise Active Directory.....	63
Reports.....	64
<b>13. Datacenters</b> .....	<b>65</b>
How to Choose the Right Data Center for Your Application.....	66
<b>14. Scenarios</b> .....	<b>67</b>
Software Development.....	67
Enterprise Process Offloading.....	67
Enterprise Application Integration.....	67
<b>PART 2: AZURE ADVANCED</b> .....	<b>69</b>
<b>15. Management Portal</b> .....	<b>70</b>
Create a New Application.....	71
Check Credit and Subscriptions.....	72
Add a New Subscription.....	74
Azure Preview Portal.....	76
<b>16. Create Virtual Network</b> .....	<b>78</b>
Creating a Virtual Network in Clouds Only.....	78
Creating a Virtual Network in Cloud Only (Advanced Settings).....	79

<b>17. Deploying Virtual Machines</b> .....	<b>81</b>
Quick Create .....	81
Create Virtual Machine with Advanced Settings .....	82
Connecting with a Virtual Network .....	86
Accessing the Virtual Machine .....	87
<b>18. Endpoint Configuration</b> .....	<b>88</b>
Access Control of Endpoint .....	90
<b>19. Point-to-Site Connectivity</b> .....	<b>93</b>
Enabling Point-to-Site Connectivity on Existing Virtual Network .....	93
Create a New Virtual Network with Point-to-site Connectivity .....	95
Generate Certificates.....	98
<b>20. Site-to-Site Connectivity</b> .....	<b>105</b>
Creating a Site-to-Site Connectivity Network .....	105
<b>21. Traffic Manager</b> .....	<b>109</b>
Create Traffic Manager.....	109
Create Endpoints to be Monitored via Traffic Manager.....	110
Configure the Policy .....	112
<b>22. PowerShell</b> .....	<b>114</b>
Installing Azure PowerShell .....	114
Connecting to Your Subscription .....	115
Connect to Your Azure Account .....	117
Remove Azure Account .....	118
Get Help.....	119
<b>23. Monitoring Virtual Machines</b> .....	<b>120</b>
Monitor VM in Azure Management Portal.....	120
Enable Diagnostics.....	123
<b>24. Setting Up Alert Rules</b> .....	<b>126</b>
<b>25. Application Deployment</b> .....	<b>130</b>
Deploying a Web App from PowerShell .....	130
Create a Deployment Package.....	130
Create a Website in Azure using PowerShell.....	132
Deploy Website using Deployment Package .....	133
<b>26. Backup &amp; Recovery</b> .....	<b>135</b>
Create Backup Vault .....	135
Schedule a Backup.....	138
<b>27. Self-Service Capabilities</b> .....	<b>141</b>
Group Management .....	141
Password Management.....	141

<b>28. Multi-Factor Authentication .....</b>	<b>142</b>
Create a Multi-Factor Authentication Provider .....	142
Enable the Multi-Factor Authentication for Existing Directory .....	146
Enable Multi-Factor Authentication for On-premises Applications .....	147
<b>29. Forefront Identity Manager .....</b>	<b>149</b>
<b>30. Data Import and Export Job .....</b>	<b>152</b>
Data Export Job .....	152
Create an Export Job .....	152
Create Import job .....	156
<b>31. Websites .....</b>	<b>159</b>
Create a Website in Azure Management Portal .....	159
Deploying Azure Website from Visual Studio .....	160
Monitoring the Website .....	167
Staged Publishing .....	168
<b>32. Scalability .....</b>	<b>170</b>
<b>33. Disk Configuration .....</b>	<b>174</b>
Virtual Machine and Disks .....	174
Create/Attach a Disk in Virtual Machine .....	174
Configure the Disk in Virtual Machine.....	176
Delete the Disk .....	179
Image Disks.....	180
<b>34. Disk Caching.....</b>	<b>184</b>
<b>35. Personalize Azure Access .....</b>	<b>186</b>
<b>36. Personalize Company Branding.....</b>	<b>192</b>
Active Free Trial of Azure Active Directory (ADD) Premium Edition .....	192
Customize Branding.....	193
Login with Customized Sign-in Page .....	197
<b>37. Self-Service Password Reset.....</b>	<b>199</b>
<b>38. Self-Service Group Management .....</b>	<b>202</b>
Policy Setup for Self-service Group Management.....	202
<b>39. Create a Group.....</b>	<b>204</b>
<b>40. Security Reports and Alerts.....</b>	<b>208</b>
Anomalies Reports .....	208
Activity Reports .....	208
Integrated Application.....	209
Search Activity of a Particular User .....	210

<b>41. Orchestrated Recovery .....</b>	<b>213</b>
Create a Site Recovery Vault .....	213
Between On-premises VMM Site and Azure .....	214
Between On-premises Hyper-V Site and Azure .....	215
Between On-premises Site with VMWare / Physical Server and Azure .....	216
Between Two On-premises VMWare Sites .....	217
Between Two On-premises VMM Sites and SAN Array Application .....	218
Create a Recovery Plan .....	219
<b>42. Health Monitoring .....</b>	<b>220</b>
<b>43. Upgrades .....</b>	<b>221</b>
Update a Cloud Service .....	221
VIP (Virtual IP) Swap .....	222

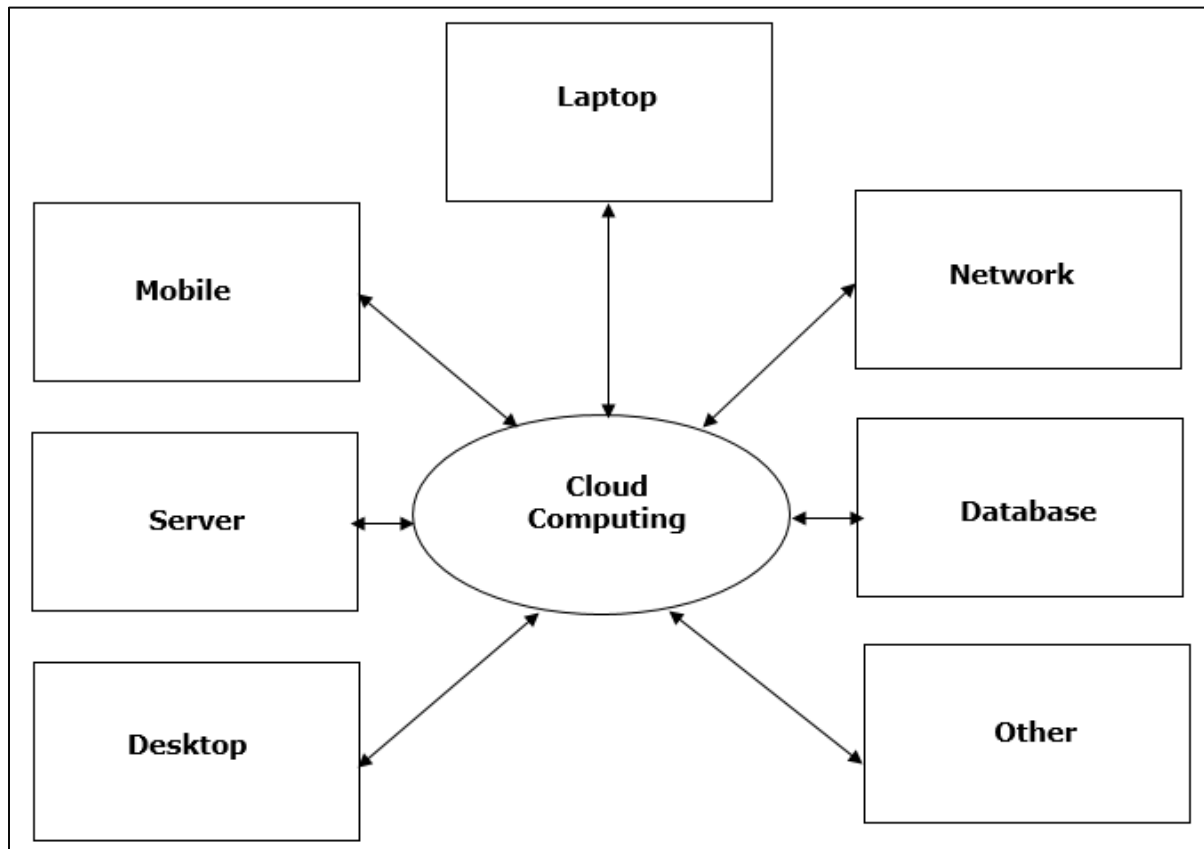
# Part 1 – Azure Basics



# 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.

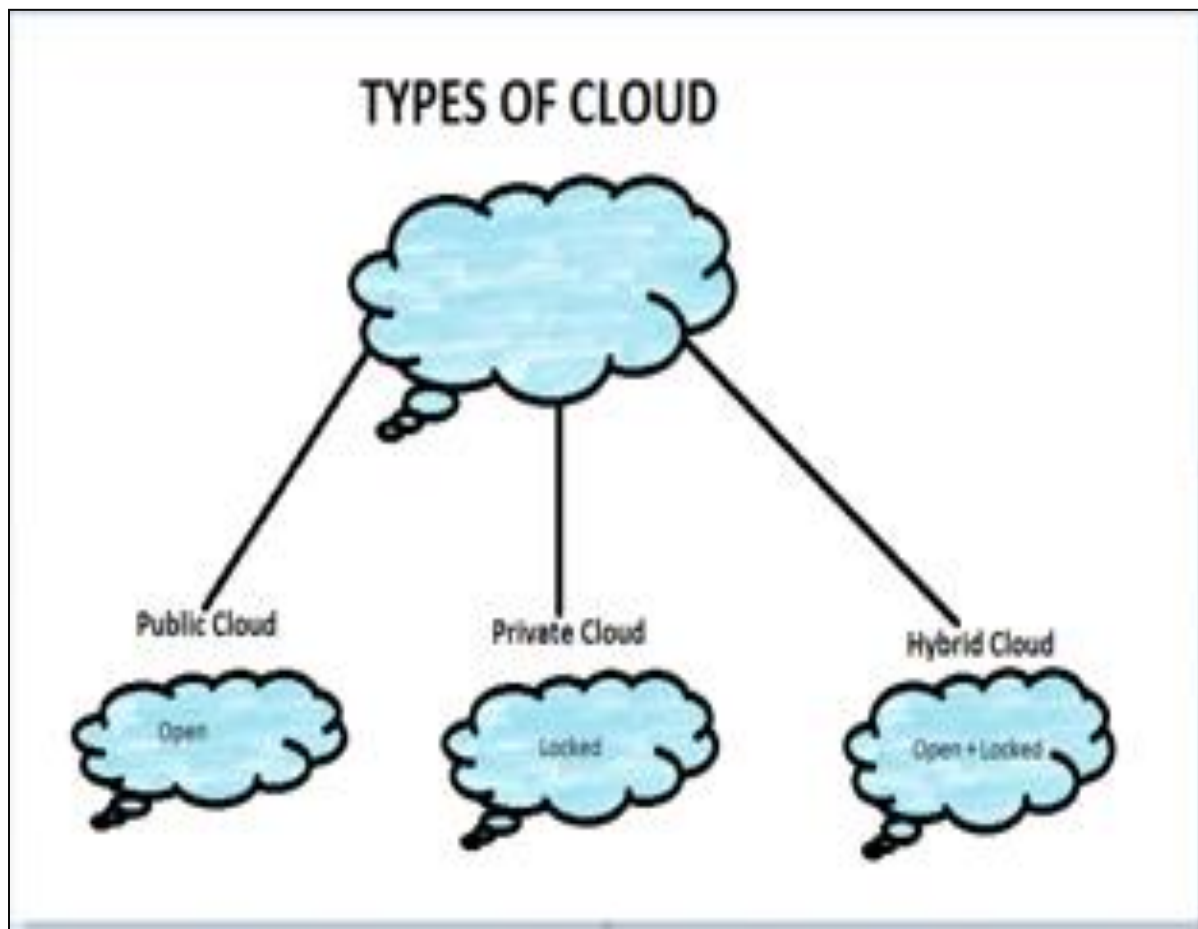
**Back-end Platform:** There are various computers, servers, virtual machines, etc. that combine to become a back-end platform.

## 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

---

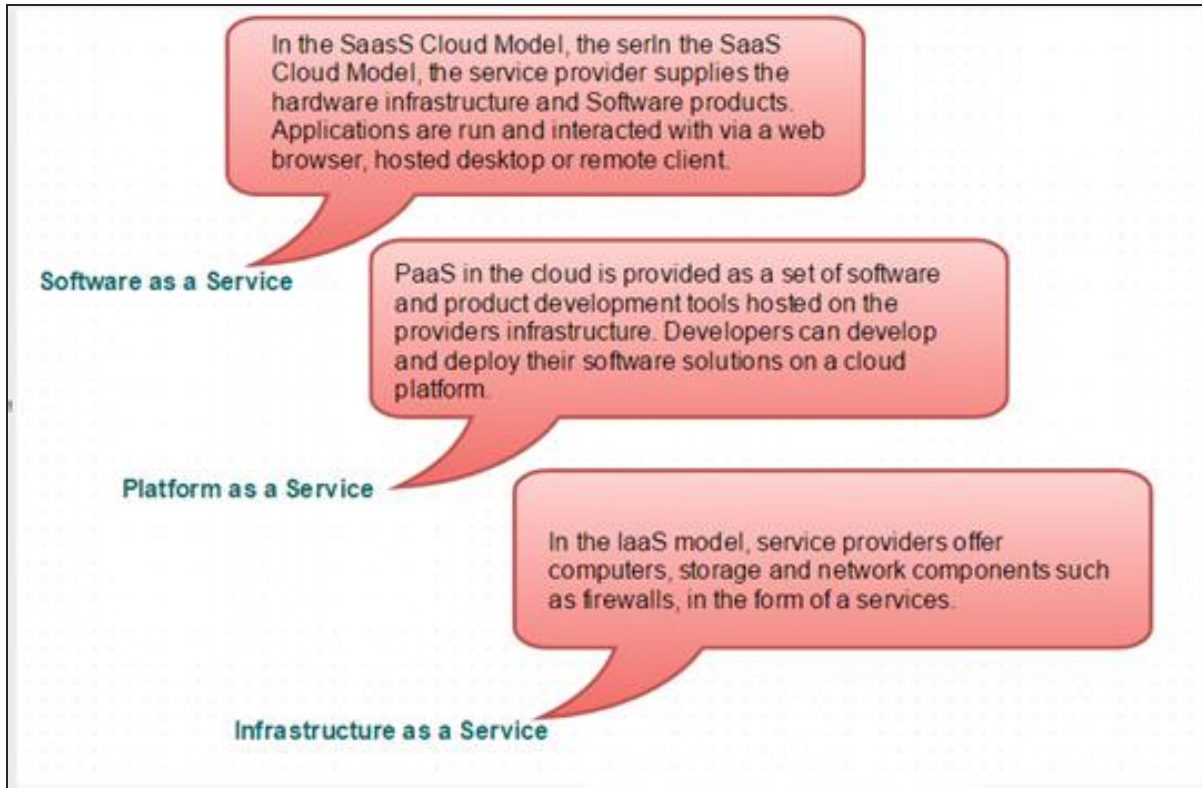
There are many benefits of clouds. Some of them are listed below.

- 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

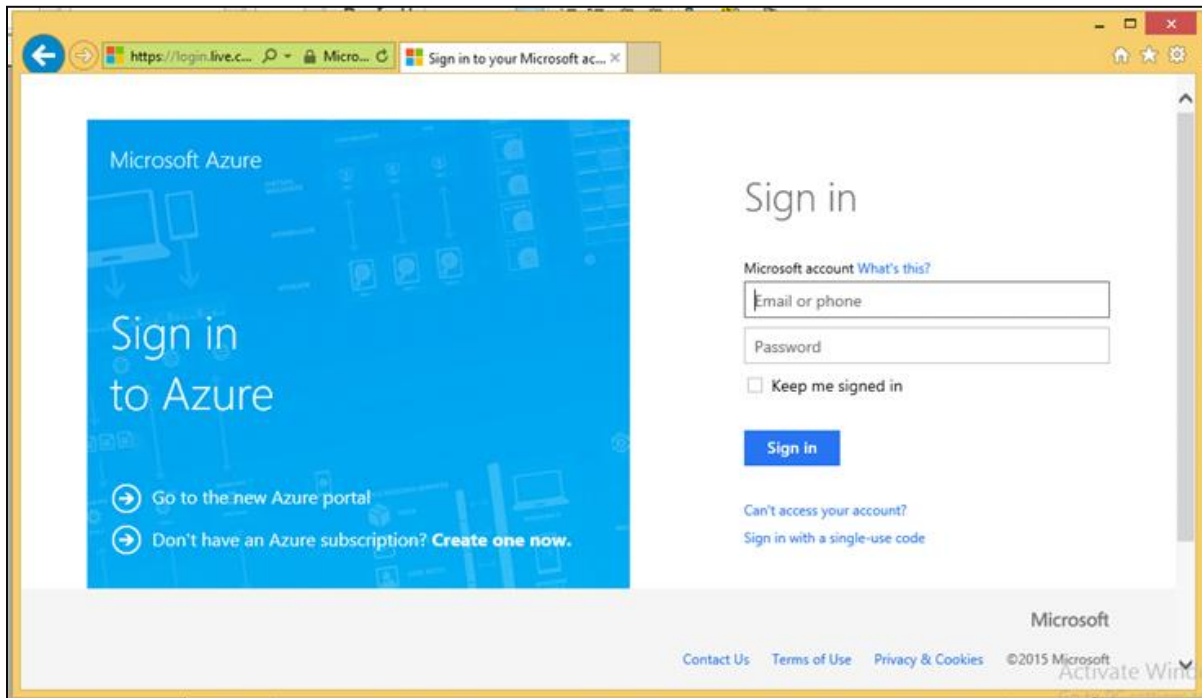
---

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.

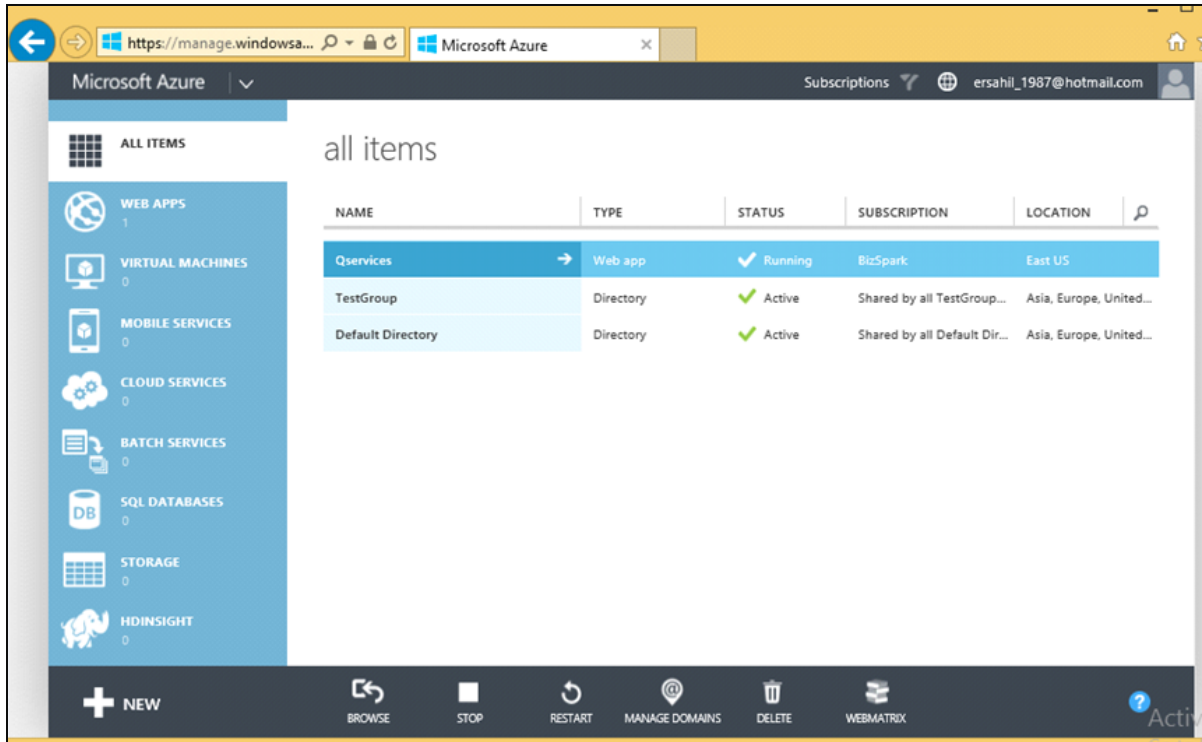
## Getting started

A free trial account can be created on Azure management portal by visiting the following link - [manage.windowsazure.com](https://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

If you liked what you saw...

Buy it from our store @ <https://store.tutorialspoint.com>