



Microsoft Azure Administrator Associate Training(AZ-103)

Module 1



Agenda

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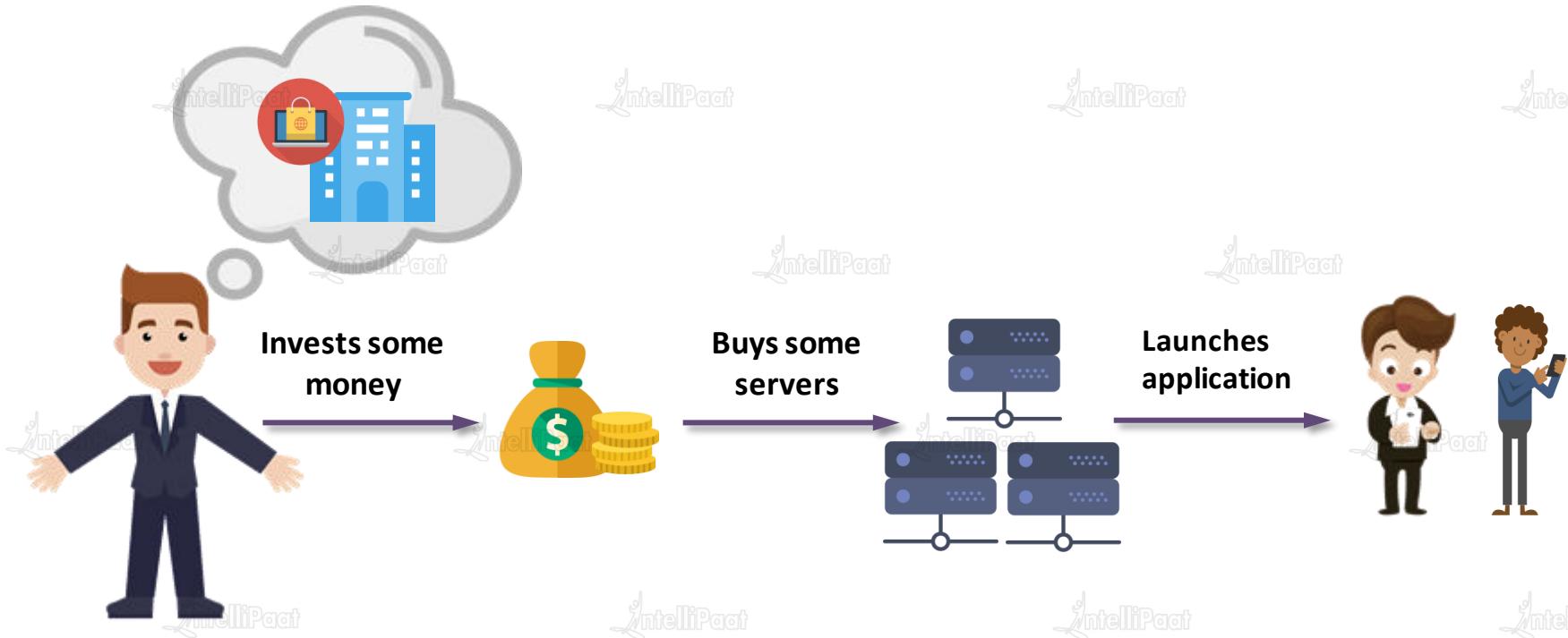


Introduction to Cloud Computing

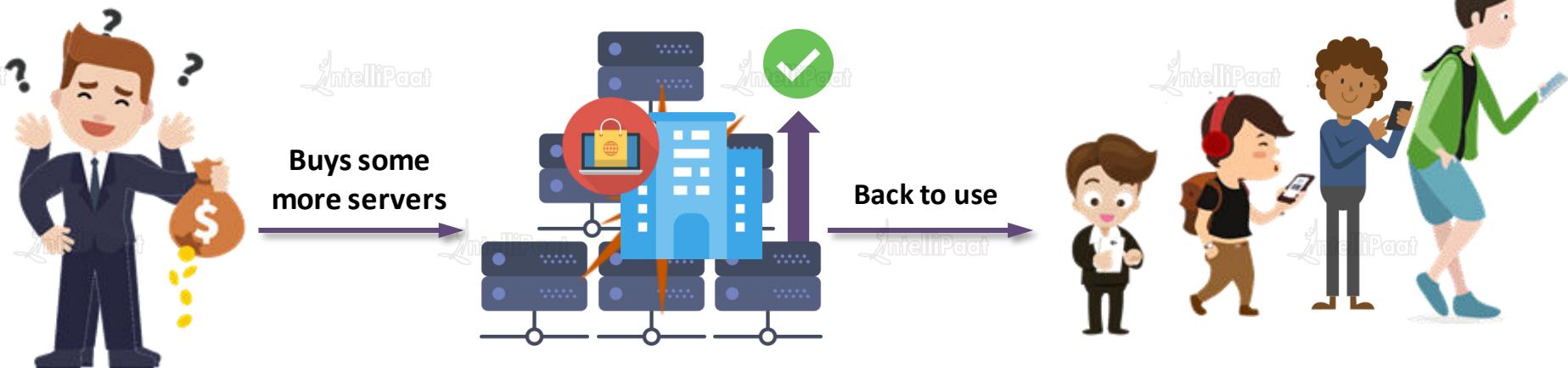


Why Cloud Computing?

Before Cloud Computing



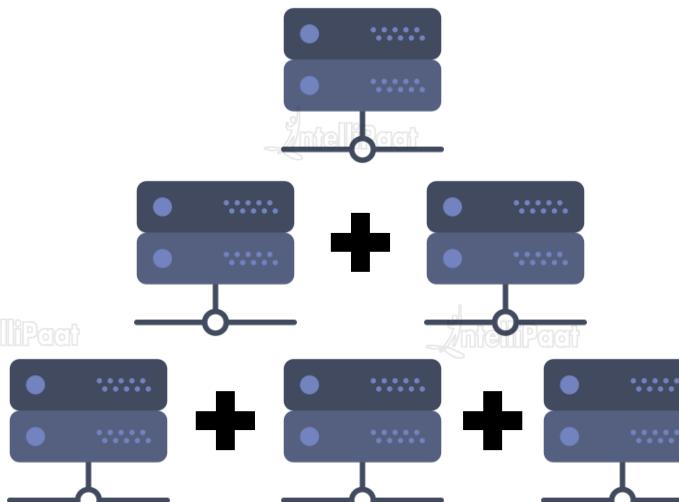
Before Cloud Computing



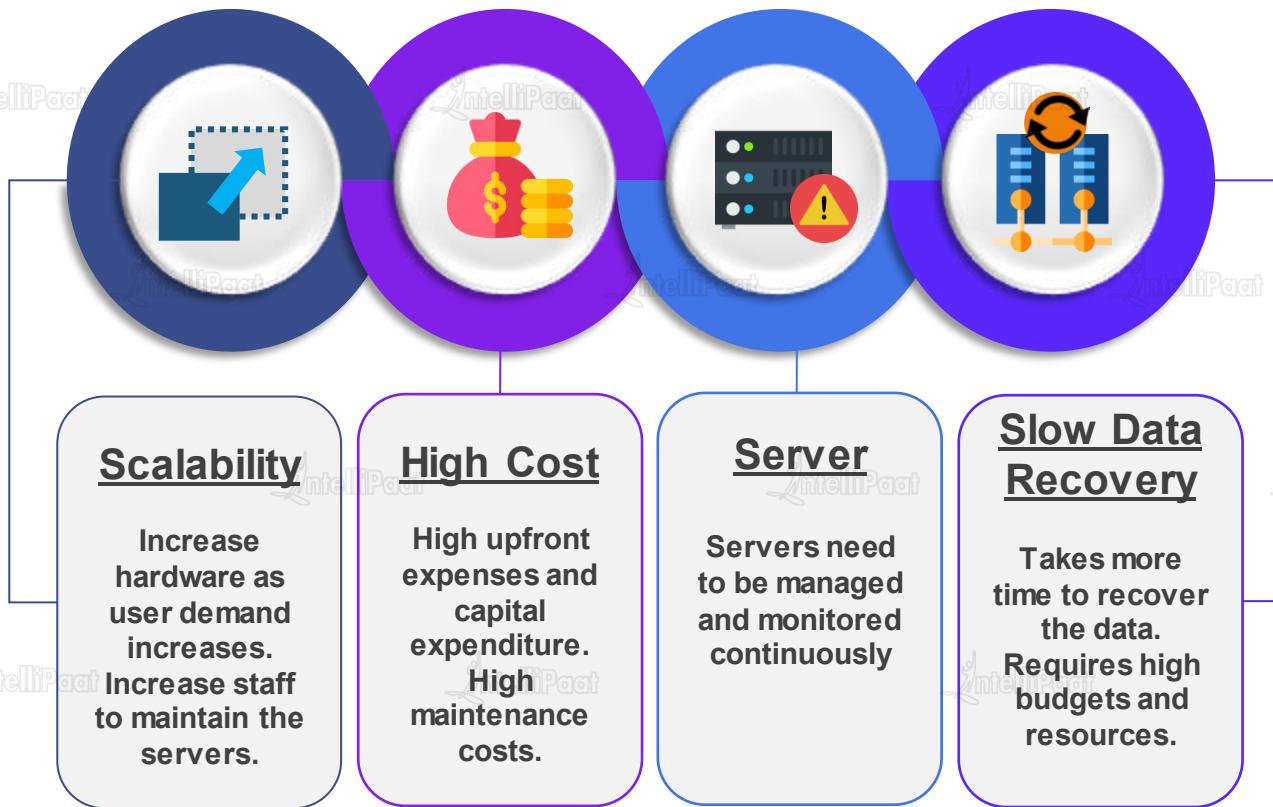
Before Cloud Computing



Before Cloud Computing



Before Cloud Computing

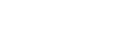


After Cloud Computing





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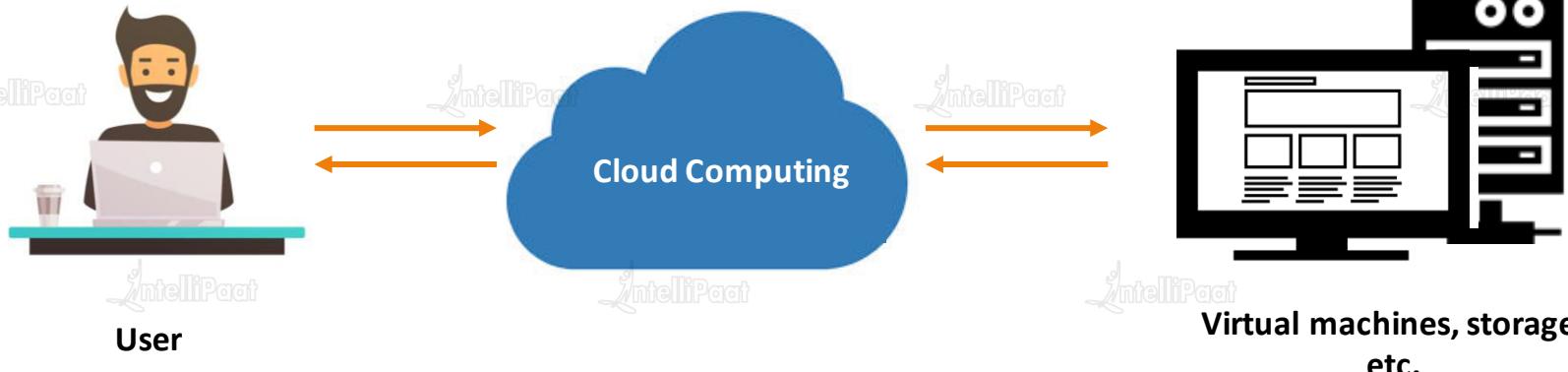
What is Cloud Computing?

Cloud computing is the delivery of computing services like servers, storage, databases, networking, software, analytics, intelligence and more—over the Internet to offer faster innovation, flexible resources and economies of scale.



What is Cloud Computing?

Cloud computing is basically accessing and using various computing services and resources via the internet



Types of Cloud Computing

Types of Cloud Computing



Service Models



IaaS

PaaS

SaaS

Deployment Models



Public
cloud

Private
cloud

Hybrid
cloud



Types of Cloud Computing - Service Models

Service Models



Infrastructure as a Service

Infrastructure as a Service means delivering the whole infrastructure of a general computer as a service. In IaaS, you get complete access to server's OS, processing power and more.

Platform as a Service

Software as a Service



Service Models

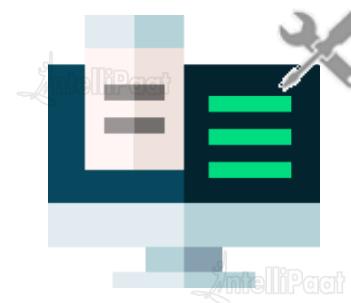


Infrastructure as a Service

As opposed to IaaS, in PaaS you do not get access to the whole OS. You are given the access to an already set up environment where you can run or develop applications.

Platform as a Service

Software as a Service



Service Models



Infrastructure as a Service

Platform as a Service

Software as a Service

SaaS means delivering a whole software to the customer as a service, so the customer can directly access and use the software without installing anything or updating anything.



Types of Cloud Computing - Deployment Models

Deployment Models

Public Cloud

Public cloud refers to the standard cloud computing, which means that the cloud provider offers resources such as virtual machines, storage, applications, to the general public over the internet.

Private Cloud

Hybrid Cloud



Public cloud

Deployment Models

Public Cloud

Private cloud is a pool of resources meant exclusively for a single organization.

Private Cloud

Hybrid Cloud



Private cloud

Deployment Models

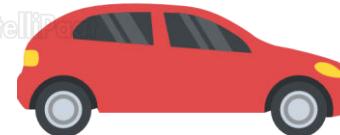
Accessible to anyone.
Meant for general public.

Owned by a single
person. Not meant for
general public.

Bus



Car



Deployment Models



Public cloud



Private cloud

Bus



Car



Deployment Models

Public Cloud

Hybrid cloud refers to a cloud computing environment that uses the combination of both, private as well as public cloud.

Private Cloud

Hybrid Cloud



Hybrid cloud



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What is Microsoft Azure?



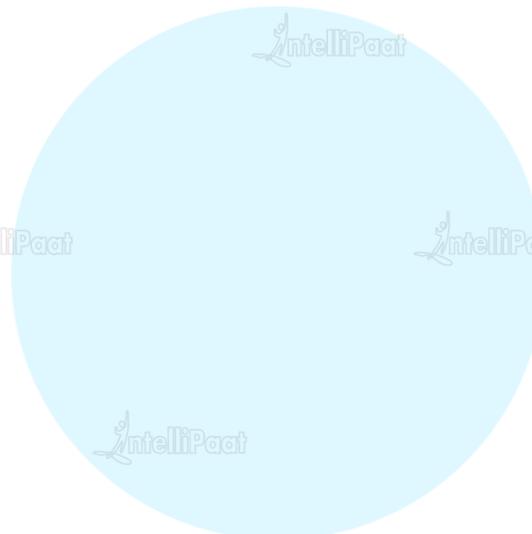
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What Is Microsoft Azure?



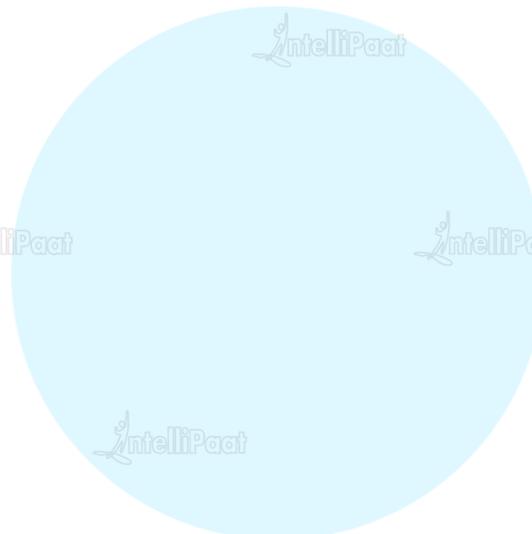
Microsoft Azure is a cloud computing platform offered by Microsoft.
Microsoft azure offers various web scale cloud services.



What Is Microsoft Azure?



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What Is Microsoft Azure?



Establishment

launched on
February 1st,
2010



Widely Recognized

Used by more
than 90 % of
Fortune 500
companies



Cost Effective

Free to get
started. Offers
pay per use
pricing model.



Language Support

Supports multiple
languages such
as C#, Node.js,
Java and more.

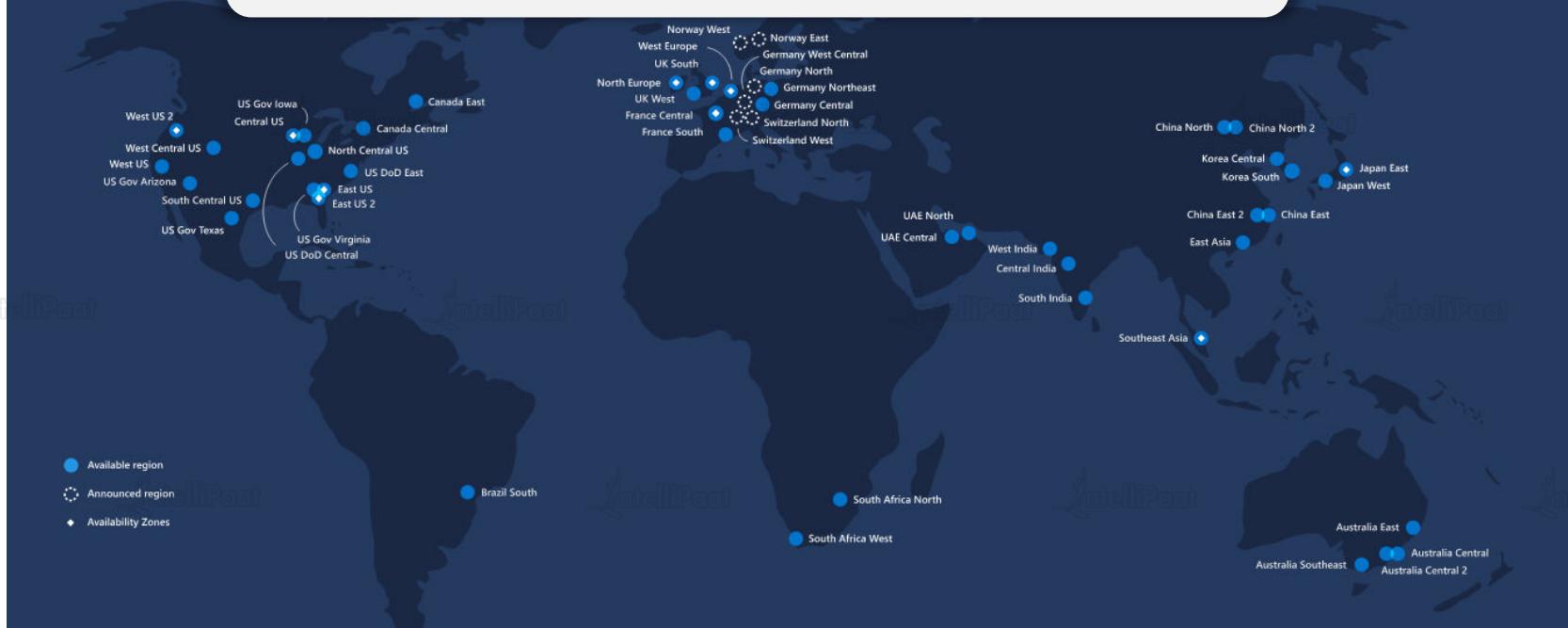


Availability Zones

Datacenters in
54 regions
around the world

Azure Regions & Availability Zones

Azure has more global regions than any other cloud provider. In total, there are 54 regions worldwide and Azure is available in 140 countries.





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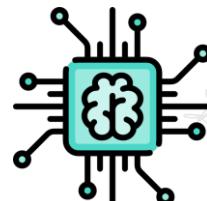
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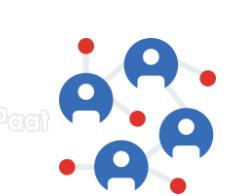
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Microsoft Azure Services

Microsoft azure offers various web scale cloud services which are grouped together on the basis of different business usage. These groups are called domains. Some of the main domains are listed below.



Compute



Networking



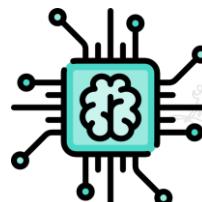
Storage



Database

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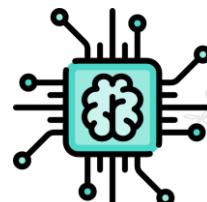
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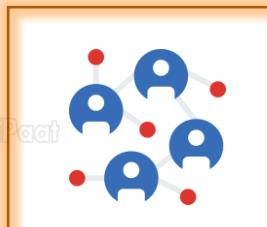
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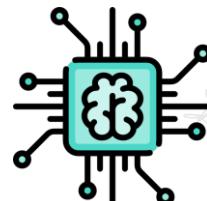
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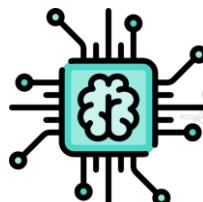
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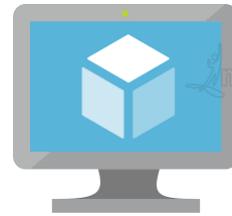


Storage



Database

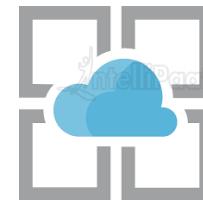
Azure Services – Compute



Virtual Machine



Function App



App Service



Azure Kubernetes
Service

Microsoft Azure Services - Compute



Virtual Machine

Virtual Machines are IaaS offerings from Azure. It allows users to launch Windows and Linux virtual machines of their own choice configuration.



App Service

App Service is a Platform as a Service offering by Azure. This service provides already set up environments for developers for hosting and managing their applications



Function App

This service lets users run code or functions in cloud without having to manage underlying resource services.



Azure Kubernetes Service

This is a managed container orchestration service based on Kubernetes system. This service is used for micro service - based architecture applications.

Microsoft Azure Services - Compute



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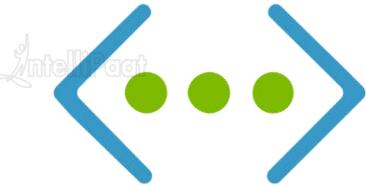
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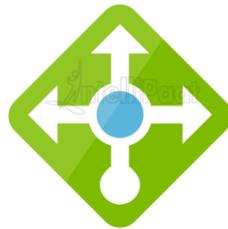
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Azure Services – Networking



Virtual Networks



Load Balancers



Application Gateway



DNS Zones



CDN Profiles

Microsoft Azure Services -Networking



Virtual network or Vnet is a logically isolated network in the whole Azure cloud dedicated to your subscription.

Virtual Networks



This service is used to distribute the incoming traffic among multiple healthy virtual machines.

Load Balancers



Application gateway is a web traffic load balancer that lets user manage the traffic to their web applications.

Application Gateway



This is a hosting service for domains in Azure. you can manage your DNS records by hosting your domain in Azure.

DNS Zones



CDN Profiles

Azure content delivery network is a CDN solution by Azure. It is used to store cached version of applications or storage in different regions.

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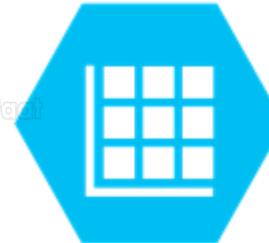
Azure Services – Storage



Blob



File Storage



Tables



Queues



Data Lake
Storage



Data Box

Microsoft Azure Services - Storage



Blob

Azure blob is an object type storage in Azure. It is used for storing large amounts of unstructured data.



Tables

Azure tables are used to store large amount of structured data. It is a NoSQL database so it can store non - relational data.



File Storage

Microsoft Azure Services - Storage



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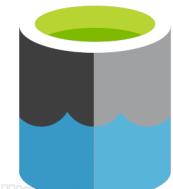
Queues

This service is used for storing large number of messages that can be accessed from anywhere in the world using authenticated HTTP or HTTPS calls.



Data Box

This service can be used to move data to Azure quickly. Data Box offline devices easily move data to Azure when busy networks are not an option. Data Box online appliances transfer data to and from Azure over the network.



Data Lake Storage

Microsoft Azure Services - Storage



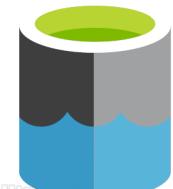
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Azure Data Lake Storage is an enterprise-wide hyper-scale repository for big data analytics workloads. Azure Data Lake enables you to capture data of any size, type, and ingestion speed in one single place for operational and exploratory analytics.



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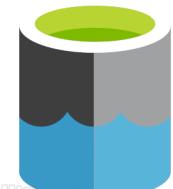
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Data Lake Storage

Azure Services – Database



SQL Database



CosmosDB



Data Factory



Data Lake Analytics

Microsoft Azure Services -Database



SQL Database

It's basically a SQL server but on cloud. It works to create, scale and extend applications into the cloud using MS SQL Server technology.



CosmosDB

Cosmos DB is a NoSQL database service that implements a subset of the SQL SELECT statement on JSON documents.



Data Factory

This service is a fully managed service for composing data storage, processing, and movement services into streamlined, scalable, and reliable data production pipelines.



Data Lake Analytics

Azure Data Lake is a scalable data storage and analytic service for big data analytics workloads that require developers to run massively parallel queries.

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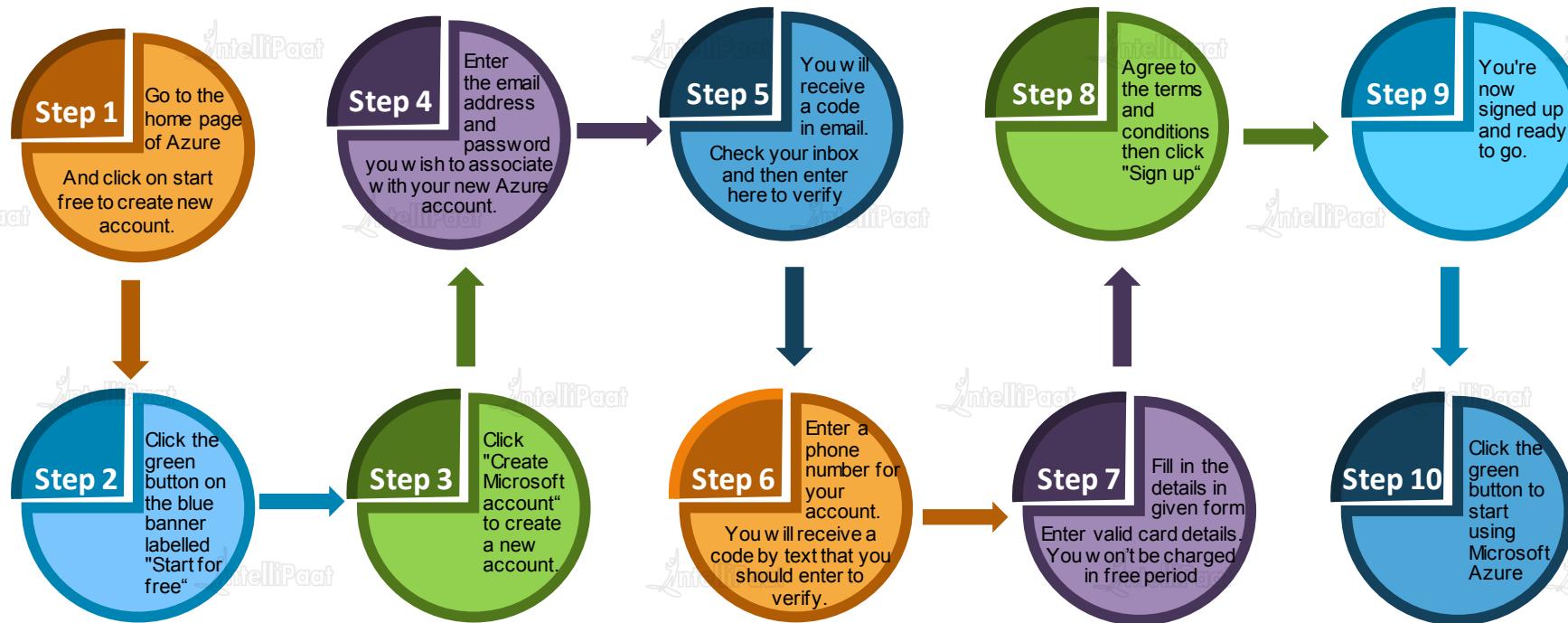
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Creating a Microsoft Azure Account

Creating A Microsoft Azure Account



Different ways of accessing Microsoft Azure

- Portal, PowerShell and
CLI

Ways of accessing Microsoft Azure

Microsoft provides various ways to access Microsoft Azure platform. For those who prefer GUI, there is Azure Classic Portal. For those who prefer command line tools can use Azure PowerShell or Azure CLI.



Azure Portal



Azure CLI



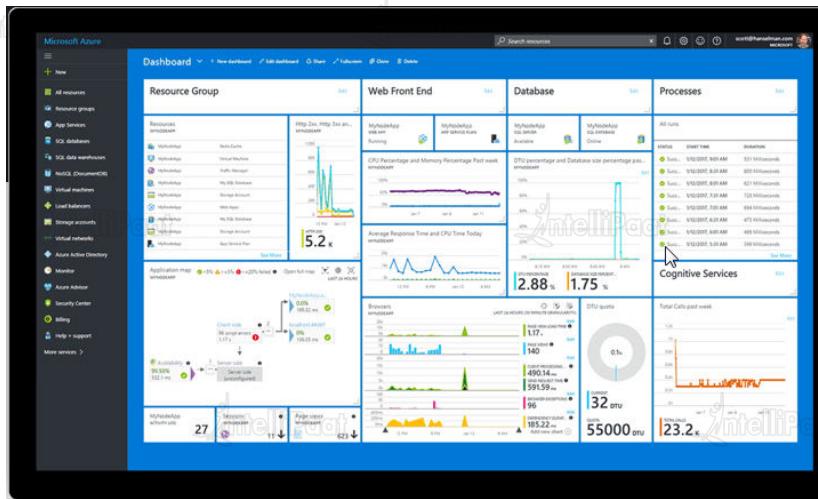
Windows PowerShell

Azure Portals



Azure Portal

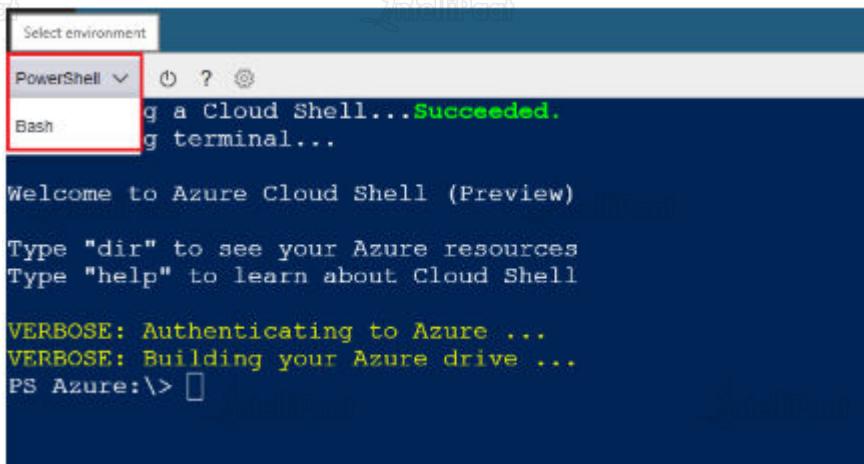
Azure Portal is a web based, unified console that lets users access and manage Azure services. Using Azure Portal, users can build, monitor and manage their applications on Azure Cloud. To sign into the portal, users need to have an Azure account.





Azure PowerShell

Azure PowerShell is a task based command line shell. It is built on .NET Framework and lets users control Azure's robust functionality, from a command line.



The screenshot shows the Azure Cloud Shell interface. At the top, there is a dropdown menu labeled "Select environment" with "PowerShell" and "Bash" options. The "PowerShell" option is highlighted with a red box. Below the menu, the text "g a Cloud Shell...Succeeded." is displayed in green. The main area of the shell shows the following text:

```
Welcome to Azure Cloud Shell (Preview)

Type "dir" to see your Azure resources
Type "help" to learn about Cloud Shell

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS Azure:\> 
```

Azure CLI



Azure CLI

Azure CLI is a cross -platform command line tool, that is used to manage and monitor Microsoft Azure platform and services. It provides an alternative for PowerShell.

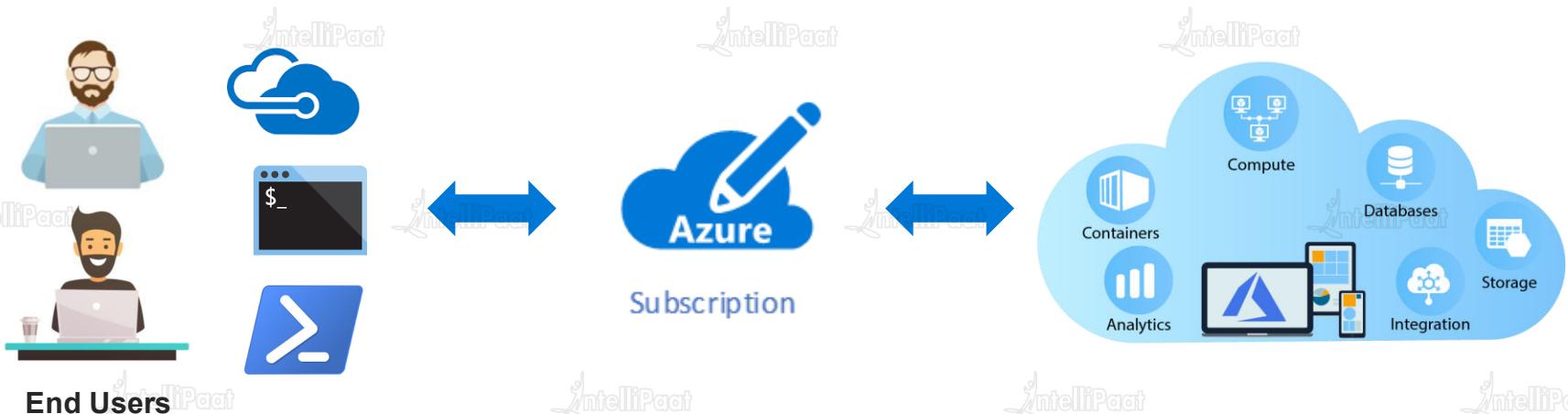
```
Bash ▾ ⌂ ? 😊  
Requesting a Cloud Shell...Succeeded.  
Connecting terminal...  
  
Welcome to Azure Cloud Shell (Preview)  
  
Type "help" to learn about Cloud Shell  
Type "az" to use Azure CLI 2.0
```



Azure Resources and Subscriptions

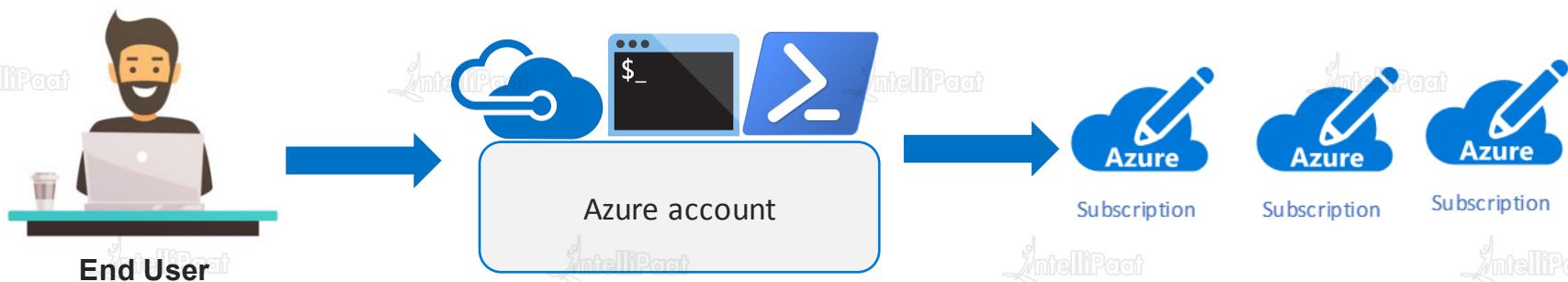
Azure Subscriptions

Azure subscription is an active agreement between the users and Microsoft. This agreement provides users the needed access to provision services and resources offered by Microsoft Azure.



Azure Subscriptions

Azure Subscriptions are associated with Azure Accounts. Azure accounts are where the user can track the usage and billing of their Azure services. Azure accounts are also used to access the tools that are used to access Azure services.



Azure Resource Groups



Resource group in Azure is simply a collection of related Azure assets or Azure services that belong to an application or workload together.

01

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For example, the following diagram shows that the user has created a resource group for LOB application, for all the Azure services that belong to this application.

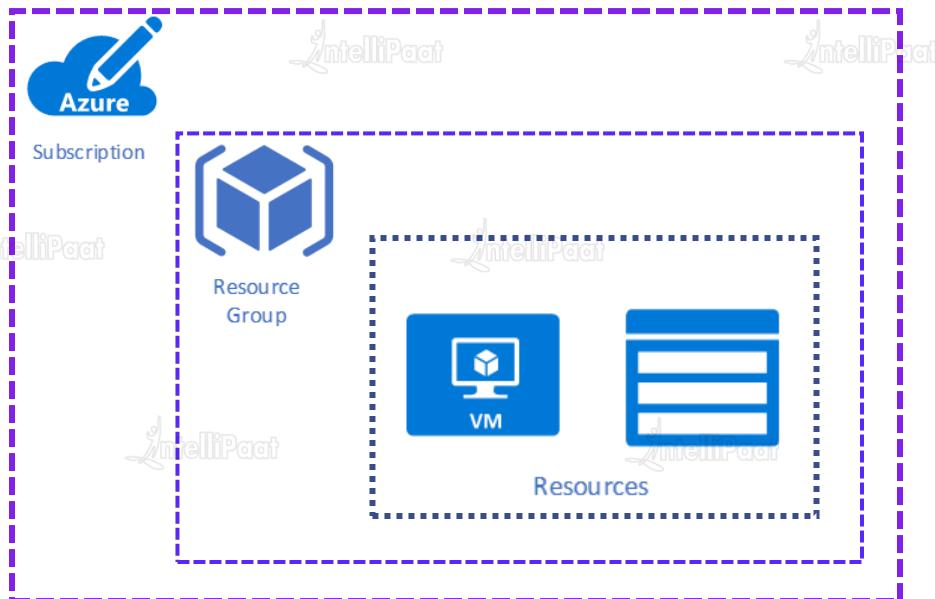
02

.

Then there is IaaS workload resource group that contains pair of virtual machines contained in a virtual network with a MySQL database for data.

Azure Subscriptions and Resources

To utilize Azure Cloud platform or to use Azure services, the very first thing that is required is Azure Subscription.



Relationship between Azure Subscription and Resources

- ★ Every resource will be deployed within a resource group
- ★ Every resource group has to be associated with an Azure subscription
- ★ User can create multiple resource groups within one Azure subscription



Understanding Azure Resource Manager



Understanding Azure Resource Manager

Azure Resource Manager (ARM)



01

Azure resource manager (ARM) is the deployment and the management service for Azure resources.

02

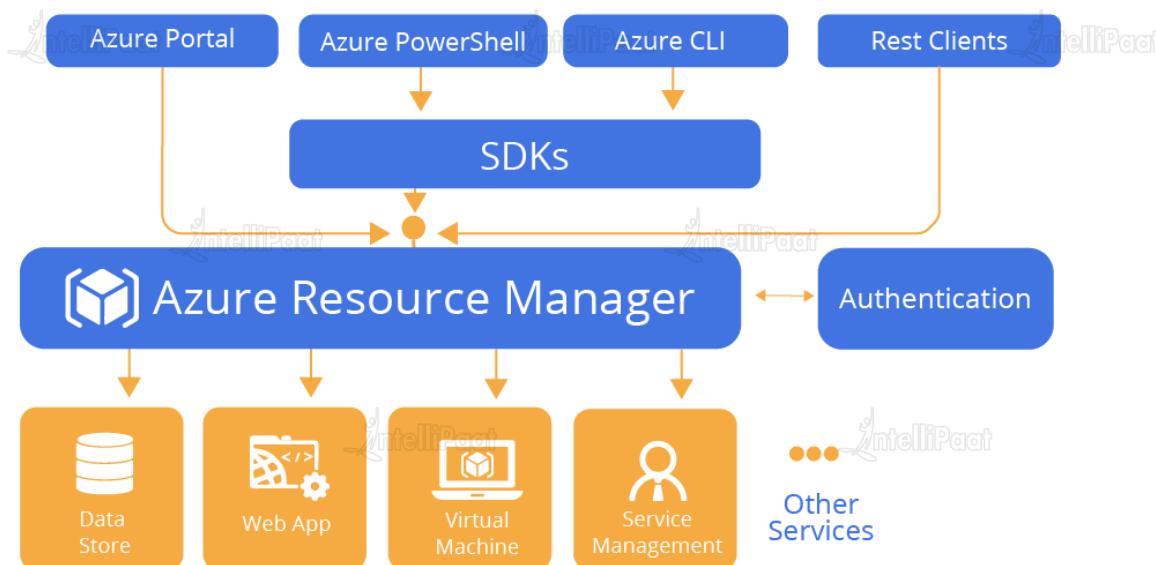
Using this service, users can create, update, and delete resources in their Azure subscription.

03

It offers features like access control, auditing and tagging to secure and organize resources after deployment.

Understanding Azure Resource Manager

When any tool is used to take actions on Azure resources, the Azure Resource Manager API handles that request. The API passes requests to the Resource Manager service, which authenticates and authorizes the requests. Resource Manager then routes the requests to the appropriate service.



Session in a nutshell



Introduction to Cloud Computing

01



Introduction to
Cloud Computing

Introduction to Microsoft Azure

02



Ways of accessing Azure Platform

03



Ways of accessing Microsoft Azure

Microsoft provides various ways to access Microsoft Azure platform. For those who prefer GUI, there is Azure Classic Portal. For those who prefer command-line tools can use Azure PowerShell or Azure CLI.

Azure Subscriptions and Resources

04



To utilize Azure Cloud platform or to use Azure services, the very first thing that is required is Azure Subscription.
Relationship between Azure Subscriptions and Resources:
Every resource will be deployed within a resource group.
Every resource group has to be associated with an Azure subscription.
User can create multiple resource groups within one Azure subscription.

Azure Resources & Subscriptions

05

Understanding Azure Resource Manager



ARM & Azure Architecture



Demo - Managing Resource Groups



Demo



1. Create an Azure resource group

a) Deploy Azure resource in the resource group that you just created

2. Manage the Azure resources.

a) Move Azure resource from one resource group to another

Quiz

1. Cloud Computing came as a solution to which of the following problems?

A. Costly Server Management

B. Slow Data Recovery

C. High Upfront Expenses and Maintenance Cost

D. All of the above



Quiz

2. Which of the following Service domain is not offered by Azure?

A. Compute

B. Storage

C. IOT

D. All Service Domains are offered by Azure



Quiz

3. What is Microsoft Azure Portal?

- A. Command line tool
- B. Azure Storage Service
- C. Azure Networking Service
- D. Azure Web Based Console



Quiz

4. What is Microsoft Azure PowerShell?

A. Command line tool

B. Azure Storage Service

C. Azure Networking Service

D. Azure Web Based Console



Quiz

5. User can only have one Azure Subscription associated with one Azure Account.

True or False ?

A. True

B. False





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