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# Microsoft Azure Tutorial for Beginners

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## Microsoft Azure Tutorial for Beginners

We can use a wide range of services from Microsoft Azure, a cloud computing platform, without having to buy and organize our hardware. You will learn how to get started with it through this Microsoft Azure tutorial designed for beginners.

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## Introduction to Azure

We can focus on creating amazing solutions rather than bother about putting together the physical infrastructure due to Azure services like computing, storage, network, and application services. We will cover the following in this Microsoft Azure tutorial:

- Overview of Microsoft Azure
- Azure Infrastructure
- Azure Resource Group
- Azure Management Group
- Applications of Azure
- Advantages of Azure

## Overview of Microsoft Azure

Microsoft Azure is an expanding suite of cloud computing services that the company developed. It

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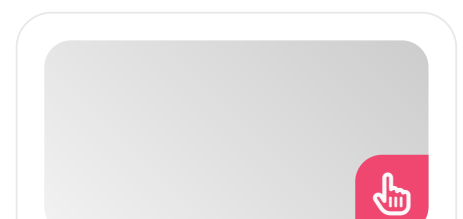
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can be used to host your current apps, speed up the creation of new ones, and improve on-premises apps.

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### Popular Azure Services

Here are the popular Azure services:

#### Compute services

These comprise Azure Cloud Services, Azure Virtual Machines, Azure Websites, and Azure Mobile Services from Microsoft. These services use strong processors to process data on the cloud.

- **Virtual Machine:** With the help of this service, you may quickly construct a virtual machine with Windows, Linux, or any other configuration.
- **Cloud-Based Services:** With the help of this service, you can develop scalable cloud apps. Azure handles all aspects of provisioning, load balancing, and health monitoring after the application is installed.
- **Service Fabric:** Service fabric greatly simplifies the process of creating a microservice. A microservice is a larger application that is packaged with smaller ones.
- **Functions:** Any programming language can be used to construct apps using functions. The best thing about this service is that Azure takes care of the hardware requirements, so you don't have to worry about them when designing applications. Providing the code is all that is required.

#### Data Services

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- **Azure Synapse Analytics:** A cloud-based analytics solution that offers a single platform for big data and data warehousing. For business intelligence and machine learning, it enables users to prepare, manage, and serve data.
- **Azure Health Information Services:** An upgraded Azure API for the FHIR version with more features and technology. Users can test the software for free with a monthly allotment thanks to its pricing strategy.
- **Azure Information Store:** A group of data services that lets companies handle, evaluate, and store data in various formats and sizes. Access to features like Spark, Storm, H-Base, and U-SQL is made possible via it.
- **Azure Data Factory:** A cloud service that permits the integration of data from numerous sources. Building extract-load-transform (ELT) and hybrid extract-transform-load (ETL) pipelines is a good use for it.
- **HDInsight on Azure:** A managed, open-source, cloud-based analytics solution with expanded big data analytics capabilities. It facilitates the processing of massive amounts of streaming or historical data by organizations.
- **Azure Key Vault:** A cloud service that offers keys and secrets safe storage. To prevent unwanted access to secrets and keys, it employs encryption and other security measures.

## Application Services

These comprise services such as Azure Active Directory, Azure Scheduler, HDInsight for big data processing, Service Bus for tying disparate systems together, and Azure Media Services that assist us in developing and managing our applications.

- **App Service:** A platform for creating and executing cloud applications. With it, users may create and host RESTful APIs, mobile backends, and web applications using their favorite programming language.
- **App Service Environment:** A function that offers a specific setting for using App Service applications. Due to the computing being allocated to a single customer, it enables enhanced security and large scalability.
- **Azure Managed Applications:** A service catalog that lets businesses compile a list of authorized Azure solutions. Customers may quickly obtain new solutions and dedicate more time to their organization as a result.

## Network Services

These include Azure Content Delivery Network, Azure Traffic Manager, virtual networks, and on-premises infrastructure connections.

- **Azure CDN:** The purpose of Azure CDN, or content delivery network, is to provide users with material. Content can be sent to everybody on the planet, but it consumes a lot of bandwidth. To provide quick user access to the data, the content delivery network (CDN) makes use of a network of servers that are positioned strategically throughout the world.
- **Express Route:** With the help of this service, you can establish a private connection between your on-premise network and the Microsoft Cloud or any other services you choose. Therefore, the company network and the desired service will be the only parties in communication during this process.
- **Virtual Network:** Any of the Azure services can safely and secretly communicate with one another across the virtual network.
- **Azure DNS:** You can use this service to host your system or DNS domains on Azure.

## Storage Services

- **Disk Storage:** With this service, you can select to store your virtual computer on an SSD (solid state drive) or an HDD (hard disk drive).
- **Blob Storage:** This service is designed to hold enormous volumes of unstructured data, such as binary and text data.
- **File Storage:** The industry SMB (server message block) protocol can be used to access this controlled file storage service.
- **Queue Storage:** You can offer reliable message queuing for a sizable workload by using queue storage. This service is available to you from anywhere in the world.
- **Azure IoT:** A platform that enables businesses to link, track, and manage Internet of Things assets as well as store and process field device data.
- **Geo-redundant Storage:** Synchronously replicating storage accounts in the primary region and asynchronously replicating them to a secondary region is a feature that guarantees high availability.

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## Azure Infrastructure

Understanding Azure global infrastructure concepts such as these is necessary to gain a deeper understanding of Azure.

- Datacenters
- Regions
- Region Pairs
- Availability Zones
- Geographies

## Data Centers

A physical server area needs to be constructed to use these resources. All that a data center is is a structure housing the actual server.

- Not just one, but numerous physical servers connected by a network. It also has cooling and power of its own.
- Each physical server housed in an Azure data center is a separate physical structure with its own power, cooling, and networking infrastructure.
- These data centers are dispersed throughout the world.

## Regions

A collection of data centers connected by a specialized low-latency network is called an Azure Region. The number of data centers in a region.

- There are several sized regions. A region may consist of one data center or several data centers.
- It's important to remember that an Azure region consists of one or more Azure data centers.

## Region Pairs

The terms "Azure regional pair," "paired regions," and "region pair" are interchangeable and all refer to the same thing: two Azure regions. A regional pair is made up of two regions that are part of the same geography.

### Microsoft Azure Project Ideas

## Advantages of Paired Regions

**Physical distance between data centers:** Although it isn't feasible or viable in all regions, data centers in a regional pair should be at least 300 miles apart.

*The probability of natural disasters, civil unrest,*

*power outages, or physical network outages impacting both regions simultaneously is decreased when data centers are physically separated.*

**Region recovery:** Azure gives priority to recovering one region out of every pair in the event of an outage if many regions globally are unavailable for any reason. Deploy your applications and data in paired regions for high availability.

*With this configuration, Azure gives priority to restoring at least one of the two downed regions, ensuring that our apps and data go back online quickly.*

**Replication offered automatically by the platform:**

Certain services, like Geo-Redundant Storage, offer replication to the matched area automatically. You still have access to the data from the other region in the region pair in case one of the regions fails.

**Data residency, compliance, and regulatory requirements:**

Regions within a pair are from the same geography, with Brazil South being the exception. This helps in our adherence to legal compliance and data residency obligations.

**Sequential system updates:** Software updates and patches must occasionally be installed. No two regions within a region pair are ever updated simultaneously.

*They are always used in that order. This greatly minimizes the downtime. Only one region will be impacted if there are any bugs or logical mistakes in the scheduled upgrade.*

## **Availability Zones**

A distinct physical location inside an Azure region is known as an Azure Availability Zone. One or more data centers with separate power, cooling, and networking comprise an availability zone.

Availability zones will not be present in every region. To maintain resilience, regions that support availability zones have three distinct zones at minimum.

## Geographies

A region of the world with at least one Azure region is known as an Azure geography. India is one example of a geography. Geographical regions also include the United States and the United Kingdom.

**Example:** It might not be possible for regulated data, such as credit, health, or financial information, to leave the nation. It is legally necessary for your organization to keep such data in the nation where the operations are being conducted. Azure therefore guarantees that your data is not stored outside of India if you choose a geography, say India.

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## Azure Resource Group

A grouping of Azure resources, such as SQL databases, virtual machines, storage accounts, and application services. Putting pertinent Azure resources in this container makes it logical.

Suppose we are working on a web application. There are several ways to go about doing this. If we require the following 3 Azure resources to make this example.

- **Virtual Machine:** For hosting and managing our website
- **Storage Account:** Used to hold pictures, movies, and other materials required by our online application.
- **SQL Database:** For storing the data for our



application

Assume for this example that we have the following settings: These deployment settings are found in most organizations.

- Development
- Testing
- Staging
- PreProduction
- Production

The following four resource groupings, one for each habitat, might be formed:

*rg-pragimtech-development*

*rg-pragimtech-staging*

*rg-pragimtech-preproduction*

*rg-pragimtech-production*

Here, we have the following pattern of naming. The resource group prefix (rg) denotes this.

*rg-<applicationName>-<deploymentEnvironment>*

Deployment environment grouping is merely one method of grouping. You are free to arrange resources any way you see fit. In any case, that makes sense to your organization.

- By division,
- By nation,
- By application,
- By type of resource or
- A mix of these.

Resources that have the same deployment lifecycle are typically grouped, making it easier to provide them, create, deploy, update, and delete them all at once. The act of consolidating resources has various advantages.

## **Ways to Use Azure Resource Group**

- Any service instance you establish is an Azure resource. For instance, a storage account, virtual machine, and Azure SQL database.
- As the name suggests, a resource group is a collection of connected Azure resources.
- Because resources in a resource group typically have the same life cycle, creating, deploying, updating, and deleting them as a single unit is simple.
- You designate a region when you create a resource group. The meta-data on the resource group is kept in this area.
- The resources themselves, though, can be found in any blue area.
- Resources from different resource groups can communicate with one another.
- A resource can only be a part of one resource group. A resource cannot be in more than one resource group at once.
- A resource can be transferred across resource groups.
- A resource can be added or removed from a resource group at any moment.
- Resources can be grouped however you choose.

## **Benefits of Azure Resource Group**

**It is significantly simpler to administer:** Azure resource groups allow you to organize similar resources in whatever way you choose, including deployment environments and applications.

This grouping enables you to handle all the resources associated with a particular application and deployment environment as a single entity.

**It is simpler to manage costs:** You don't need to delete each resource separately after you have finished using a set of resources.

All of the resources within a resource group are also removed when the group is deleted.

This, of course, completely removes the chance that

orphaned resources (ghost resources) will continue to operate and incur expenses.

**Role-based access control (RBAC):** Resource groups are a possible level of application for role-based access control or RBAC.

This greatly simplifies the process of controlling user access to the group's resources.

According to user roles, administrators will still be able to provide users access control to specific resources inside the resource group.

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## Management Group in Azure

At the summit of the hierarchy is the management group. The terms of preferences stated at the management group level are automatically applied to all subscriptions within that management group.

Thus, you may think of a management group as a container for all of your subscriptions. Many management groups are possible within an organization, just as many subscriptions.

- At any level of management, configurations such as policies and role-based access control can be implemented.
- The extent to which the setting is applied depends on the level you choose.
- Higher levels leave settings for lower levels to inherit.

For example, when a policy is applied to a subscription, all resource groups and resources within that subscription are likewise subject to the policy. Applying key settings at higher levels and project-specific settings at lower ones makes sense

generally.

**Subscriptions:** They are managed by a management team. It links user accounts with the resources those accounts have produced.

- There are quotas or restrictions on how many resources you can generate and use with each subscription.
- Subscriptions are a useful tool for organizations to control expenses and the resources generated by individuals, groups, or initiatives.

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## Applications of Azure

Here are the reasons for the implementation of Azure:

- **Application development:** Azure allows you to create any kind of web application.
- **Testing:** You can test an application once it has been developed on the platform successfully.
- **Hosting of the application:** Azure may assist you with hosting the application after the testing is complete.
- **Build virtual machines:** With Azure, you may build virtual machines in any configuration you like.
- **Integrate and synchronize features:** Virtual devices and directories can be integrated and synchronized with Azure.
- **Collect and store metrics:** Measurement collection and archiving is made possible by Azure, which can assist you in determining what is effective.
- **Virtual hard drives:** They offer enormous amounts of data storage and are essentially extensions of virtual machines.

## Advantages of Azure

Microsoft Azure provides many benefits, such as:

- **Economical:** Azure provides a range of customizable price choices, such as subscription and pay-as-you-go plans. By making advance payments for certain services, you can also save money.
- **Scalability:** Without having to buy extra hardware, Azure lets you scale your resources to meet changing business needs.
- **Security:** Azure provides excellent data security and adherence to regulatory requirements. Azure facilitates worldwide teamwork and remote work.
- **Disaster recovery:** Azure's availability zones and regions lessen the effects of power outages, natural disasters, and other calamities.
- **Flexibility:** You can create, execute, and maintain apps on-site, across clouds, and at the edge with Azure.
- **Innovation:** A CI/CD pipeline built into Azure's DevOps offerings enables development teams to experiment, iterate, and deliver apps swiftly.
- **Support:** Microsoft offers a wealth of information and help for Azure.

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## Conclusion

Everything you require to begin using Microsoft Azure has been covered in this Microsoft Azure tutorial. Enroll in our [Azure training in Chennai](#) to learn with hands-on exposure.

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