



# Microsoft Azure: Cloud Platform for Application Service Deployment

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**Abstract:** Today Online services, application deployment, and infrastructure management all benefit from the cloud. The use of the internet and online services is fast increasing as a result of the COVID-19 epidemic. Most IT sectors face issues in storage, software licences, processing power, physical IT infrastructure, administration, and maintenance. Cloud computing enables IT professionals to develop and deploy web application services virtually from any location, allowing them to continue working on projects in a distributed environment. Cloud-based services are one of the most secure and accessible platforms for accelerating application deployment. Users are encouraged to choose a plan based on their needs and budget. This paper discusses Microsoft Azure's cloud-based application service deployment procedure, benefits, and plans.

**Keywords:** Microsoft Azure, Application Services, Cloud Services, Cloud Platform

## I. INTRODUCTION

The need for IT services has surged as a result of the COVID-19 crisis. Every company prioritises the safety and wellness of its employees. In the post-COVID era, information technology is the backbone for all sectors around the world.

The cloud industry will grow to \$7.4 billion by 2024, according to a report by International Data Corporation (IDC).

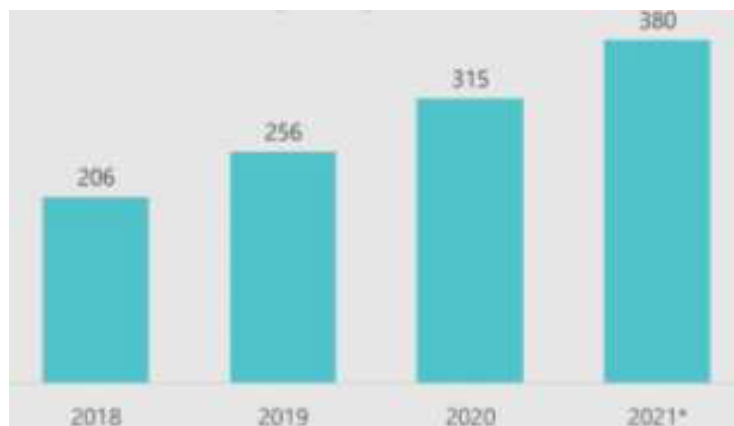


Fig.1 x Global 2018-2021 Number of Cloud Workloads in SaaS (in Millions)

Software development, automation, testing, and deployment duties are all made easier with cloud computing. Because IT personnel work from home, they require extra processing power, software licences, infrastructure, and frameworks for application development when working on projects. Cloud-based development enables them to continue working on their projects in a distributed setting. For collaborative application development independently, GitHub provides open source repositories such as freecodecamp, VS code, Flutter, Ansible, Kubernetes, TensorFlow, Azure Doc, and more. Cloud-based company management tools, software services, digital payment, online shopping, and streaming services are all predicted to grow in popularity in the coming years.

## II. RELATED WORK

Cloud computing is a promising yet challenging technology today. Pay-As-Go technology is an Internet-based solution for sharing data, resources, infrastructure, and platforms on demand. The visualisation technique of cloud computing SaaS (Software as a Service), PaaS (Platform as a Service), and IaaS (Infrastructure as a Service) are three (IaaS). End users can access programmes through thin client or web browser thanks to cloud providers such as Google, Amazon,



Microsoft Azure, Oracle, and Salesforce. Because cloud providers control the operating system, network, server, and storage, end users do not need to worry about these while utilising SaaS services. PaaS can be used by developers or programmes for application development, configuration, maintenance, and deployment. For application development, cloud providers enable many frameworks such as Android, PHP, Java, Python, Ruby, .Net, and others.. They offer high computational power, GPUs, CPUs, and storage through managed data centres with excellent scalability, dependability, load balancing, and multi-tenant support. Virtualization requirements determine how cloud services are configured. Organizations can use the IaaS service to get access to operating systems, virtual machines, storage, and computing power based on their needs and requirements, without having to install or configure anything on their own. The most common cloud deployment models are private, public, hybrid, and community. Organizations can utilise any model for cloud services depending on their budget, functionality needs, legal and security compliance.

### III. METHODOLOGY

The process of deploying an application to any device or server is known as application deployment. Planning, development, testing, deployment, and monitoring are all part of the process. End users can access the programme after it has been successfully deployed. A URL can be used to visit a hosted application (Uniform Resource Locator). IaaS and PaaS service models are supported in the Azure cloud environment for application deployment. IaaS (Infrastructure as a Service) can be used to deploy applications. The procedure is as follows:

1. Create a virtual machine server for Windows or Linux.
2. Manually enable IIS server.
3. Join the network security group to port 80.
4. Use the management service tool to add remote connection services.
5. Add another port for the remote server's inbound rules configuration.
6. Add framework-related packages or tools that are required for deployment.
7. Web deployment tool installation is required.
8. Billing charges based on virtual machine setup.

Application deployment through virtual machine is a time-consuming and complicated operation. To address all of these issues and streamline the deployment process, Microsoft Azure offers a web app service that automates the entire process.

Azure services are cloud-based managed services. Technology and infrastructure are not used in the development or hosting of app services. Cloud-based web application services allow you to create and host applications using any programming language's RESTful API without having to worry about infrastructure configuration and management. This includes elasticity, auto-scaling, load balancing, and automated deployments from open source repositories for both Linux and Windows operating systems. It can install applications both on-premise and in the cloud.

### IV. FEATURES OF AZURE WEB APP SERVICE

#### 4.1. Multiple languages and frameworks

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ASP.NET, ASP.NET Core, Java, Ruby, Node.js, PHP, and Python are all supported by App Service. You can also use background services to run PowerShell and other scripts or executable.

#### 4.2. Managed production environment

The OS and language frameworks are automatically patched and maintained via App Service. Spend your time creating outstanding apps and leave the platform to Azure.

#### 4.3. Containerization and Docker

Dockerize your programme and use App Service to host a bespoke Windows or Linux container. Docker Compose allows you to run multi-container programmes. Directly migrate your Docker skills to App Service.

#### 4.4. DevOps optimization

Using Azure DevOps, GitHub, BitBucket, Docker Hub, or Azure Container Registry, set up continuous integration and deployment. Updates should be promoted through test and staging environments. Use Azure PowerShell or the cross-platform command-line interface to manage your apps in App Service (CLI).

#### 4.5. Global scale with high availability

Manually or automatically scale up or down. Your apps can be hosted anywhere in Microsoft's worldwide datacenter infrastructure, and the App Service SLA ensures that they are always available..

#### 4.6. Connections to SaaS platforms and on-premises data

Over 50 connectors for corporate systems (such as SAP), SaaS services (such as Salesforce), and internet applications are available (such as Facebook). Hybrid Connections and Azure Virtual Networks provide access to on-premises data.



#### 4.7. Security and compliance

App Service complies with ISO, SOC, and PCI standards. Users can be authenticated using Azure Active Directory, Google, Facebook, Twitter, or a Microsoft account. Manage service IDs and set IP address constraints.

#### 4.8. Azure Web App Service Plan

It is collection of physical resources and other features like custom domain which are used for App Services. You can create multiple web app services under one service plan. Payment or billing is charge as per your service plan and it is independent of number of app services created or run under the plan. We can customize which service we need to run at which time, how many instances etc. So it will help to save cost and resources.

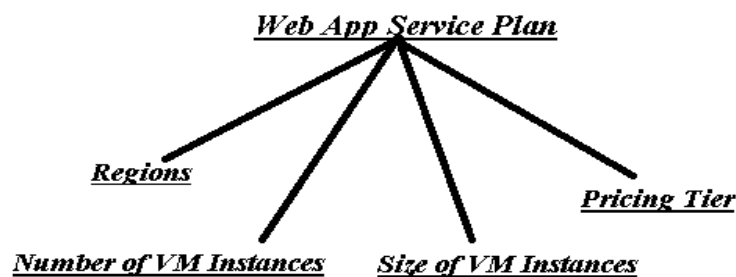


Fig2. Web App Service Plans: Microsoft Azure

While configuration of cloud web service selection of service plan as per our requirement and budget is essential for using web app services remotely. Service plan are varies from region, total number of virtual machine (VM) instances, Size of VM instances and Pricing tier. Performance of web application service is depends on pricing plan. Premium plans provide faster processing and high amount of security as compare to other plans.

## V. RESULT AND DISCUSSIONS

To install any application on Azure cloud, enterprises must first create an Azure account using a valid ID and debit/credit card information. Through the Azure Management Portal, users can subscribe to Azure packages and configuration files. Staging and production are the two stages of cloud application deployment. The application is tested for bugs during the staging phase. Following successful execution, the application is made public and accessible via URL. Create a programme in any framework, such as .NET, PHP, or Python. Using the methods below, install Node Js.

## VI. STEPS FOR WEB APPLICATION DEVELOPMENT

### Step 1: Open your Microsoft Azure Account

Sign in to the Microsoft Azure Account. After that, you have to open your Azure portal.

### Step 2: Create a new App Service

Go to the navigation panel on the left side of your Dashboard and select App Services.

Click on the Add button. This will open the panel to create a new App Service.

### Step 3: Setting up the properties of our App Service

We have to set certain properties of our App Service.

- Select your Azure subscription.
- Select the resource group.
- Enter the name for your web app. This name will become the name of your website.
- Runtime Stack: Select the platform or framework you used to create and run your web app.
- Select the operating system as per your wish.
- Region: Cloud servers are placed at different locations. Choose the region closest to your current location.

Left rest of the details as it is. Click on Review + Create button.

### Step 4: Validation and Creation of App Service

After clicking on Review + Create button, Azure will validate the settings and will return error if found.

Click on Create and wait for some time, your App Service will be created. Now we have to connect it with our GitHub profile to deploy our web app.

**Step 5:** Checking out our newly created App Service

This is the control panel for practiceGfGs, a freshly developed App Service. This panel allows you to modify the characteristics of our App Service, test our Web App, do analysis, and execute a variety of other operations.

Select the Browse tab. It turns your present App Service into a website.

**Step 6:** Setting Up Deployment Centre

Click on Deployment Centre on the left panel. Azure provides different sources to deploy your web app some of them are:

- Docker
- GitHub
- Bitbucket
- OneDrive

Click on GitHub because we want to launch our We App from our GitHub profile. It will prompt you to log in to your GitHub account.

Select App Service as the build service provider. This functionality allows us to make updates to our Azure Web App.

- Select your Organization from which you want to deploy.
- Select the Repository which you want to deploy. Make sure that the home page of your website is named index.html.
- Select the Branch.

Click on Continue button to verify the summary. If everything is alright, then click on Finish button and wait for some time.

**Step 7:** Checking out our Web App

Click Browse after a successful deployment and voila! Your Web App will be ready to use. Now that your Web App is live, you can share it with others using the URL.

## VII. CONCLUSION

Microsoft Azure makes developing and deploying web services simple. Web services applications are in high demand since they can be used with any application and follow a service-oriented model. For high-performance services, IT firms can choose between premium and standard subscriptions. In a dispersed setting, cloud-based web service application deployment enables remote access to storage, IT infrastructure, development framework, computing power, administration, and maintenance. Interface, automation, auto-scaling, and autonomous service usage, pay-as-you-go, and security are all essential advantages of the cloud environment.

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