**Hosting Models:**

Azure offers several ways to host web sites: Azure App Service, Virtual Machines, Service Fabric, and Cloud Services.

Each one provides a different set of services, so which one you choose depends on exactly what you're trying to do.

|  |  |
| --- | --- |
| **Compute Options** | **Audience** |
| App Services | Scalable Web Apps, Mobile Apps, API Apps, and Logic Apps for any device |
| Cloud Services | Highly available, scalable n-tier cloud apps with more control of the OS |
| Virtual Machines | Customized Windows and Linux VMs with complete control of the OS |
| Service Fabric | Azure clusters with VMs set |

**App Service :**

Azure App Service is a Platform-as-a-service (PaaS) offered by Microsoft Azure.

It is used to create web and mobile apps for any platform or device.

App Service lets you compose various components – websites, mobile app back ends, RESTful APIs and business processes into a single unit.

**Why to use App Service :**

* App Service has first-class support for ASP.NET, Node.js, Java, PHP, and Python.
* Set up continuous integration and deployment with Visual Studio Team Services, GitHub, or BitBucket.
* Scale up or out manually or automatically.
* Access on-premises data using Hybrid Connections and Azure Virtual Networks.

**App types in App Service :**

* Web Apps - for hosting websites and web applications.
* Mobile Apps – for hosting mobile app backends.
* API Apps – for hosting RESTful APIs
* Logic Apps - For automating business processes and integrating systems and data across clouds without writing code.

**App Service Plans :**

An App Service plan specifies the location, size, and features of the web server farm that hosts your app.

All applications assigned to an App Service plan share the resources defined by it allowing you to save cost when hosting multiple apps.

**App Service plans define:**

* Region (for example: North Europe, East US, or Southeast Asia)
* Instance size (small, medium, or large)
* Scale count (1 to 20 instances)
* SKU (Free, Shared, Basic, Standard, or Premium)

**Best Choice in the following cases :**

* Deployment and management are integrated into the platform.
* sites can scale quickly to handle high traffic loads.
* The built-in load balancing and traffic manager provide high availability.

**How to migrate existing application into App Service :**

* You can move existing sites to Azure App Service easily with an [online migration tool](https://www.migratetoazure.net/).
* Use an open-source app from the Web Application Gallery or create a new site using the framework and tools of your choice.

**Create apps using app service :**

* [Create a web app](https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started)
* [Create a mobile app](https://docs.microsoft.com/en-us/azure/app-service-mobile/app-service-mobile-android-get-started)
* [Create an API app](https://docs.microsoft.com/en-us/azure/app-service-api/app-service-api-dotnet-get-started)
* [Create a logic app](https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-create-a-logic-app)

**Cloud Service :**

Cloud Services is an example of Platform-as-a-Service (PaaS).

Like App Service, this technology is designed to support applications that are scalable, reliable, and cheap to operate.

Just like an App Service is hosted on VMs, so too are Cloud Services, however, you have more control over the VMs. You can install your own software on Cloud Service VMs and you can remote into them.

There are two types of Cloud Service roles. The only difference between the two is how your role is hosted on the virtual machine.

* **Web role**

Automatically deploys and hosts your app through IIS.

* **Worker role**

Does not use IIS and runs your app standalone.

For example, a simple application might use just a single web role, serving a website. A more complex application might use a web role to handle incoming requests from users, then pass those requests on to a worker role for processing. (This communication could use [Service Bus](https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-fundamentals-hybrid-solutions) or [Azure Queues](https://docs.microsoft.com/en-us/azure/storage/storage-introduction).)

**Create Cloud Service App :**

[cloud service app in .NET](https://docs.microsoft.com/en-us/azure/cloud-services/cloud-services-dotnet-get-started)

**Migrate application into Azure using Cloud Service :**

* <https://blogs.msdn.microsoft.com/jnak/2010/02/08/migrating-an-existing-asp-net-app-to-run-on-windows-azure/>
* <https://docs.microsoft.com/en-us/azure/vs-azure-tools-migrate-publish-web-app-to-cloud-service>
* <http://itproguru.com/expert/2015/03/migrating-web-application-from-on-premises-to-azure-step-by-step/>

**Virtual Machines (VM) :**

Azure Virtual Machines is Infrastructure-as-a-Service (IaaS),

Azure Virtual Machines (VM) is one of several types of on-demand, scalable computing resources that Azure offers.

Typically, you choose a VM when you need more control over the computing environment than the other choices offer.

An Azure VM gives you the flexibility of virtualization without having to buy and maintain the physical hardware that runs it. However, you still need to maintain the VM by performing tasks, such as configuring, patching, and installing the software that runs on it.

To know more about VMs please [visit](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/overview)

**Best Choice in the following cases :**

* If you have an existing application that would require substantial modifications to run in App Service or Service Fabric, you could choose Virtual Machines in order to simplify migrating to the cloud. However, correctly configuring, securing, and maintaining VMs requires much more time and IT expertise compared to Azure App Service and Service Fabric. If you are considering Azure Virtual Machines, make sure you take into account the ongoing maintenance effort required to patch, update, and manage your VM environment.

**Migrate on-premise application into Azure using VMs:**

* <https://msdn.microsoft.com/en-in/magazine/jj991979.aspx>
* <http://itproguru.com/expert/2015/03/migrating-web-application-from-on-premises-to-azure-step-by-step/>
* <http://www.netenrich.com/migrating-physical-servers-to-azure/>

**Service Fabric :**

Azure Service Fabric is a distributed systems platform that makes it easy to package, deploy, and manage scalable and reliable microservices.

Apps, which run on a shared pool of machines, can start small and grow to massive scale with hundreds or thousands of machines as needed.

**Best choice in the following cases :**

Service Fabric is a good choice if you’re creating a new app or re-writing an existing app to use a microservice architecture.

**Migrate your application into Azure using Service Fabric:**

* <https://azure.microsoft.com/en-in/resources/videos/azurecon-2015-migrating-your-application-to-azure-service-fabric/>
* <https://docs.microsoft.com/en-us/azure/architecture/service-fabric/migrate-from-cloud-services>

|  |
| --- |
| [Azure App Service, Virtual Machines, Service Fabric, and Cloud Services comparison](https://docs.microsoft.com/en-us/azure/app-service-web/choose-web-site-cloud-service-vm) |

**Best replacement for our traditional windows services in Azure :**

In general, to run schedular tasks we use windows services in on-premises applications.

When it comes to Azure, if we want to perform schedular tasks we have multiple options available. They are

* Azure Functions
* Azure Service Fabric
* Windows service running on VM
* Web Job
* Cloud Service

Differences between Azure functions and WebJobs

|  |  |  |
| --- | --- | --- |
|  | **Functions** | **WebJobs** |
| Scaling | Configurationless scaling | scale with App Service plan |
| Pricing | Pay-per-use or part of App Service plan | Part of App Service plan |
| Run-type | triggered, scheduled (by timer trigger) | triggered, continuous, scheduled |
| Trigger events | [timer](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-timer), [Azure Cosmos DB](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-documentdb), [Azure Event Hubs](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-event-hubs), [HTTP/WebHook (GitHub, Slack)](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-http-webhook), [Azure App Service Mobile Apps](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-mobile-apps), [Azure Notification Hubs](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-notification-hubs), [Azure Service Bus](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-service-bus), [Azure Storage](https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage) | [Azure Storage](https://docs.microsoft.com/en-us/azure/app-service-web/websites-dotnet-webjobs-sdk-storage-blobs-how-to), [Azure Service Bus](https://docs.microsoft.com/en-us/azure/app-service-web/websites-dotnet-webjobs-sdk-service-bus) |
| In-browser development | x |  |
| Window scripting | experimental | x |
| PowerShell | experimental | x |
| C# | x | x |
| F# | x |  |
| Bash | experimental | x |
| PHP | experimental | x |
| Python | experimental | x |
| JavaScript | x | x |

For more information please visit below URLs.

* <https://docs.microsoft.com/en-us/azure/azure-functions/functions-compare-logic-apps-ms-flow-webjobs>
* <https://blog.falafel.com/scheduling-webjobs-batch-worker-roles/>

**Azure Service Bus :**

Please visit below URL to know about service bus.

* <https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-fundamentals-hybrid-solutions>

To know about Service bus queues visit below URL

* <https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-dotnet-get-started-with-queues>

Github URL : <https://github.com/Azure/azure-service-bus/tree/master/samples>

**Differences between Azure Storage Queue and Azure Service Bus Queue :**

* <https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted>

**Azure Active Directory :**

Azure Active Directory is a comprehensive identity and access management solution that provides a robust set of capabilities to manage users and groups.

It helps secure access to both on-premises and cloud applications, including services such as Office 365, Salesforce, Dropbox and many non-Microsoft SaaS applications.

Azure AD also includes a full suite of identity management capabilities including

multi-factor authentication,

device registration,

self-service password management,

self-service group management,

privileged account management,

role based access control,

application usage monitoring,

rich auditing and security monitoring and alerting.

The above capabilities can help secure cloud based applications, streamline IT processes, cut costs and help ensure that corporate compliance goals are met.