Azure features

# *Azure Active Directory (Azure AD)*

Azure Active Directory (Azure AD) is a cloud-based identity and access management solution from Microsoft that allows your employees to sign in and access resources in the following locations:

* **Microsoft 365**, the Azure portal, and dozens of other SaaS services are examples of external resources.
* **Internal resources**, such as apps on your company's intranet and network, as well as any cloud apps built by your company.

Features that work in Azure AD:

* **Application management** - (Manage your cloud and on-premises apps using Application Proxy, single sign-on, the My Apps portal (also known as the Access panel), and Software as a Service (SaaS) apps.
* **Authentication** - (Manage self-service password reset, Multi-Factor Authentication, a custom banned password list, and smart lockout in Azure Active Directory.)

# *Azure Functions*

Azure Functions is an on-demand cloud solution that provides all of the constantly updated infrastructure and resources required to run your apps. You concentrate on the code that matters most to you, while Functions takes care of the rest. For Azure, Functions delivers server less compute. Build web APIs, respond to database changes, parse IoT feeds, manage message queues, and more with Functions.

Scenarios:

* **Build a web API (Using the HTTP trigger, create an endpoint for your web apps.) ;**
* **Process file uploads (When a file is uploaded or updated in blob storage, run code.) ;**
* **Build a serverless workflow (Chain a series of functions together using durable functions);**

Languages: C#, Java, JavaScript, Python, PowerShell

# *Virtual Machines*

Azure Virtual Machines (VM) are one of several forms of scalable, on-demand computing resources offered by Azure. VMs are typically used when you require more control over the computing environment than the other options provide.

An Azure VM gives you virtualization flexibility without the need to purchase and maintain the physical hardware that runs it. You must still maintain the VM by configuring, patching, and installing the software that runs on it.

Azure virtual machines can be used in various ways. Some examples are:

* Development and test – Azure VMs offer a quick and easy way to create a computer with specific configurations required to code and test an application;
* Applications in the cloud – Because demand for your application can fluctuate, it might make economic sense to run it on a VM in Azure. You pay for extra VMs when you need them and shut them down when you don’t ;
* Extended datacenter – Virtual machines in an Azure virtual network can easily be connected to your organization’s network;

# *Azure Blob Storage*

Azure Blob storage is Microsoft's cloud object storage service. Blob storage is designed to accommodate large amounts of unstructured data. Unstructured data, such as text or binary data, does not correspond to a certain data model or description.

Blob storage is intended for the following purposes:

* Directly serving pictures or documents to a browser ;
* Keeping files in a shared location so that they can be accessed by multiple people ;
* Video and audio are streamed ;
* Creating log files ;
* Backing up and restoring data, as well as catastrophe recovery and archiving ;
* Using an on-premises or Azure-hosted service to store data for analysis ;

# *Azure Kubernete Service*

By transferring the operational overhead to Azure, Azure Kubernetes Service (AKS) makes it easier to install a managed Kubernetes cluster on Azure. Azure provides important functions like health monitoring and maintenance as a hosted Kubernetes service. You solely manage and maintain the agent nodes because the Kubernetes masters are controlled by Azure. As a result, AKS is completely free; you only have to pay for the agent nodes in your clusters, not the masters.

AKS provides a variety of Kubernetes versions. You can upgrade your cluster using the Azure portal or Azure CLI as new versions of AKS become available. To minimize disturbance to running applications, nodes are carefully cordoned and drained during the update process.

# *Azure App Service*

Azure App Service is an HTTP-based service that allows you to host web applications, REST APIs, and mobile backends. You can code in any language you like, including.NET,.NET Core, Java, Ruby, Node.js, PHP, or Python. Both Windows and Linux-based platforms make it easy for applications to run and scale.

App Service not only adds the security, load balancing, autoscaling, and automated management features of Microsoft Azure to your application. It also has DevOps features including continuous deployment via Azure DevOps, GitHub, Docker Hub, and other sources, package management, staging environments, custom domains, and TLS/SSL certificates.

You pay for the Azure compute resources you utilize with App Service. The App Service plan on which you run your apps determines the compute resources you consume.

Advantages:

* **Multiple languages and frameworks**
* **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.)**
* **Containerization and Docker** - Dockerize your program and use App Service to host a bespoke Windows or Linux container. Docker Compose allows you to run multi-container programs. Directly migrate your Docker skills to App Service.
* **DevOps optimization** - Use Azure DevOps, GitHub, BitBucket, Docker Hub, or Azure Container Registry to 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).

# ***SaaS***

Users can connect to and use cloud-based programs through the Internet using software as a service (SaaS). Email, calendaring, and office software are all common examples (such as Microsoft Office 365).

SaaS is a comprehensive software solution that you can rent from a cloud service provider on a pay-as-you-go basis. You rent the use of an app for your company, and your employees access it via the Internet, typically through a web browser. The service provider's data center houses all of the underlying infrastructure, middleware, app software, and app data. The service provider is in charge of the hardware and software, and with the right service agreement, they will ensure the app's availability and security, as well as the protection of your data. SaaS can help to swiftly get an app up and operating for a cheap initial investment.

Advantages of SaaS

* **Gain access to sophisticated applications.**
* **Pay only for what you use.**
* **Mobilize your workforce easily**
* **Access app data from anywhere.**

Disadvantages of SaaS

* **Lack of control**
* **Performance**
* **Limited Customization**