

**Web Development**

Cloud offers a lot of benefits to web development including flexibility, elasticity, resilience, automation and low capital cost. Web applications can be optimized using tactics such as horizontal and vertical scaling as well as having content distributed closer to users.

In this guide, you will learn how Microsoft Azure services enables components of web projects including persistence (Azure Storage), application deployment (Azure App Service), faster content delivery (Azure Content Delivery Network), resilience (Azure Load Balancer) and scalable event-driven serverless functions (Azure Functions).

* Deploying and Maintaining Applications
* Working with Databases
* Content Delivery
* Resiliency

**Deploying and Maintaining Applications**

Most developers would rather focus on creating web sites than setting up their production, staging and development environment. IT Operations can be a tricky and time-consuming task. Maintenance is an even larger problem for developers because un-patched distributions, outdated libraries with 0-day exploits can lead to attacks, underperformance, increased downtime and subpar user experience.

Azure App Service solves many if not all of these problems by providing software developers with an application ready environment for virtually all platforms including: Java, Node.js, PHP, Python and .NET. Azure App Services global datacenter network, security and compliance level are suitable for anything from student projects to enterprise applications. With a wide-range of options for pre-built apps, solutions, APIs and recipes from Azure Marketplace, some developers won't have to code anything at all, and when they need to code, they can use rich development tooling provided by Azure App Services including continuous integration, Visual Studio IDE, in-browser editor and live-site debugging.

[Learn More](https://docs.microsoft.com/en-us/azure/app-service-web/)

[Get Started](https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-tutorial-nodejs-mongodb-app)

**Working with Databases**

Microsoft Azure Databases will allow developers to use a managed databased (database-as-a-service) and pick from the most popular open source databases such as PostgreSQL, MySQL, Redis, Cosmos DB (superset of DocumentDB) or Azure SQL (Microsoft SQL Server).

**Cosmos DB**

Cosmos DB is globally distributed document-store NoSQL managed database service. Cosmos DB automatically replicates all data to any number of regions for faster data access by apps with a guaranteed availability of 99.99%, low latency of less than 10-ms on reads and less than 15ms writes at the 99th percentile. It supports multiple interfaces such as DocumentDB SQL which means developers can use familiar SQL query capabilities while reaping the low latency benefits of a schema-less data. Other API interfaces and models supported by Cosmos DB are Table API, MongoDB and Graph.

[Learn More](https://docs.microsoft.com/en-us/azure/cosmos-db/introduction)

[Get Started](https://docs.microsoft.com/en-us/azure/cosmos-db/documentdb-introduction)

**Azure SQL**

With Azure SQL database (powered by Microsoft SQL Server engine), developers get the full power, capability and performance of a SQL database with the added elasticity and hands-off maintenance of a cloud. Azure also offers a database-migration service, which moves data from traditional relational on-premises SQL Server and Oracle databases to the Azure SQL database.

[Learn More](https://docs.microsoft.com/en-us/azure/sql-database)

[Get Started](https://docs.microsoft.com/en-us/azure/sql-database/sql-database-get-started-portal)

**Azure Storage**

Azure Storage consists of four services:

1. Blob or Object Storage: Stores unstructured object data which could be text, or binary, e.g., files, movies, archives.
2. Table Storage: Offers NoSQL key-value database with fast access to unstructured data.
3. Queue Storage: Provides a reliable queue messaging for asynchronous and event-driven communications between cloud services
4. File Storage: Offers a cloud-based [Server Message Block (SMB)](https://msdn.microsoft.com/en-us/library/windows/desktop/aa365233.aspx) file shares

All Azure Storage services are accessible by the REST HTTP API. Azure Storage has SDKs for the most popular languages. By using the SDK, you do not require REST HTTP calls, developers can simply invoke methods on objects in the programming environment of their choice such as Java, Node​.js, PHP, Ruby, Python, C++, iOS or Android.

[Learn More](https://docs.microsoft.com/en-us/azure/storage/storage-introduction)

[Get Started](https://docs.microsoft.com/en-us/azure/storage/storage-create-storage-account)

**Web Content Delivery**

Content Delivery Network allows faster high-bandwidth content delivery to users, and saves costs by caching the static resources instead of serving it from apps and databases. CDNs help cope with traffic surges, for streaming video and improving user experience in general. Azure CDN offers global content delivery with high availability, robust security and rich developer APIs and tools, e.g., REST API, .NET, Node.js, or PowerShell.

Azure CDN allows you to pick between three products: Azure CDN Standard from Akamai, Azure CDN Standard from Verizon, and Azure CDN Premium from Verizon with the latter being the richest in features. All products offer integration with other Azure services such as Storage, Cloud Services, App Service, and Media Services.

[Learn More](https://docs.microsoft.com/en-us/azure/cdn/cdn-overview)

[Get Started](https://docs.microsoft.com/en-us/azure/cdn/cdn-create-new-endpoint)

**Building** **Resilient Web Apps**

Azure Load Balancer can help with resilience and deliver high availability, elasticity and improved network performance to web applications. Azure Load Balancer offers 5 tuple hash based distribution, health monitoring service, automatic reconfigurations among other features.

In addition to load balancer which is a layer 4 (Transport level) technology, Azure offers two additional ways to distribute network traffic:

* Application Gateway (layer 7, Application layer)
* Traffic Manager (DNS level)

Developers can use them in isolation or in combination.

[Learn More](https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-overview)

[Get Started](https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-internet-overview)