

.NET core

.NET Core is a cross-platform, open-source framework developed by Microsoft, designed for building modern, cloud-based, and Internet-connected applications. Introduced in 2016, it marked a significant evolution from the Windows-centric .NET Framework, emphasizing modularity, performance, and portability.

Key Features of .NET Core

1. **Cross-Platform Support:** .NET Core applications run seamlessly on Windows, macOS, and Linux, enabling developers to target multiple operating systems without rewriting code.
2. **High Performance:** Optimized for speed and scalability, .NET Core is often used for high-performance web services and applications. Benchmarks show superior performance compared to the .NET Framework.
3. **Open-Source:** Managed under the .NET Foundation, .NET Core has an active open-source community. Developers can contribute to its development via GitHub.
4. **Unified Development Model:** Combines features from different .NET platforms (e.g., .NET Framework and Xamarin), making it suitable for a wide range of application types, including web, mobile, desktop, IoT, and cloud.
5. **Lightweight and Modular:** Applications can include only the necessary libraries, resulting in smaller deployments.
6. **Flexible Deployment:**
 - **Framework-Dependent Deployment:** Uses a shared runtime installed on the host system.
 - **Self-Contained Deployment:** Packages the runtime with the application for independent deployment.
7. **Command-Line Interface (CLI):** .NET Core includes a CLI for development, making it easier to automate builds and integrate into CI/CD pipelines.

Key Versions and Their Features

1.0 (June 2016): Initial release with basic support for console and web applications via ASP.NET Core.

2.0 (August 2017):

- Broadened API compatibility with the .NET Framework.
- Added support for more platforms and improved tooling.

3.0/3.1 (September/December 2019):

- Introduced support for desktop applications (Windows Forms and WPF).
- Full support for Blazor for building interactive web UIs.
- .NET Core 3.1 became a Long-Term Support (LTS) version.

Advantages

1. **Platform Independence:** Ideal for businesses and developers targeting diverse operating systems.
2. **Cloud Integration:** Optimized for building and running cloud-native applications using tools like Docker and Kubernetes.
3. **Backward Compatibility:** .NET Core can coexist with the .NET Framework, easing migration.

Use Cases

1. **Web Applications:** Powered by ASP.NET Core for high-performance and scalable web apps.
2. **Microservices:** Lightweight and modular design makes it ideal for microservices architecture.
3. **IoT Applications:** Its flexibility and performance suit resource-constrained IoT devices.