

dotnet, docker, microservices

<https://github.com/paulopez78/workshops>

[@paulopez78](#)

[Miro Board](#)

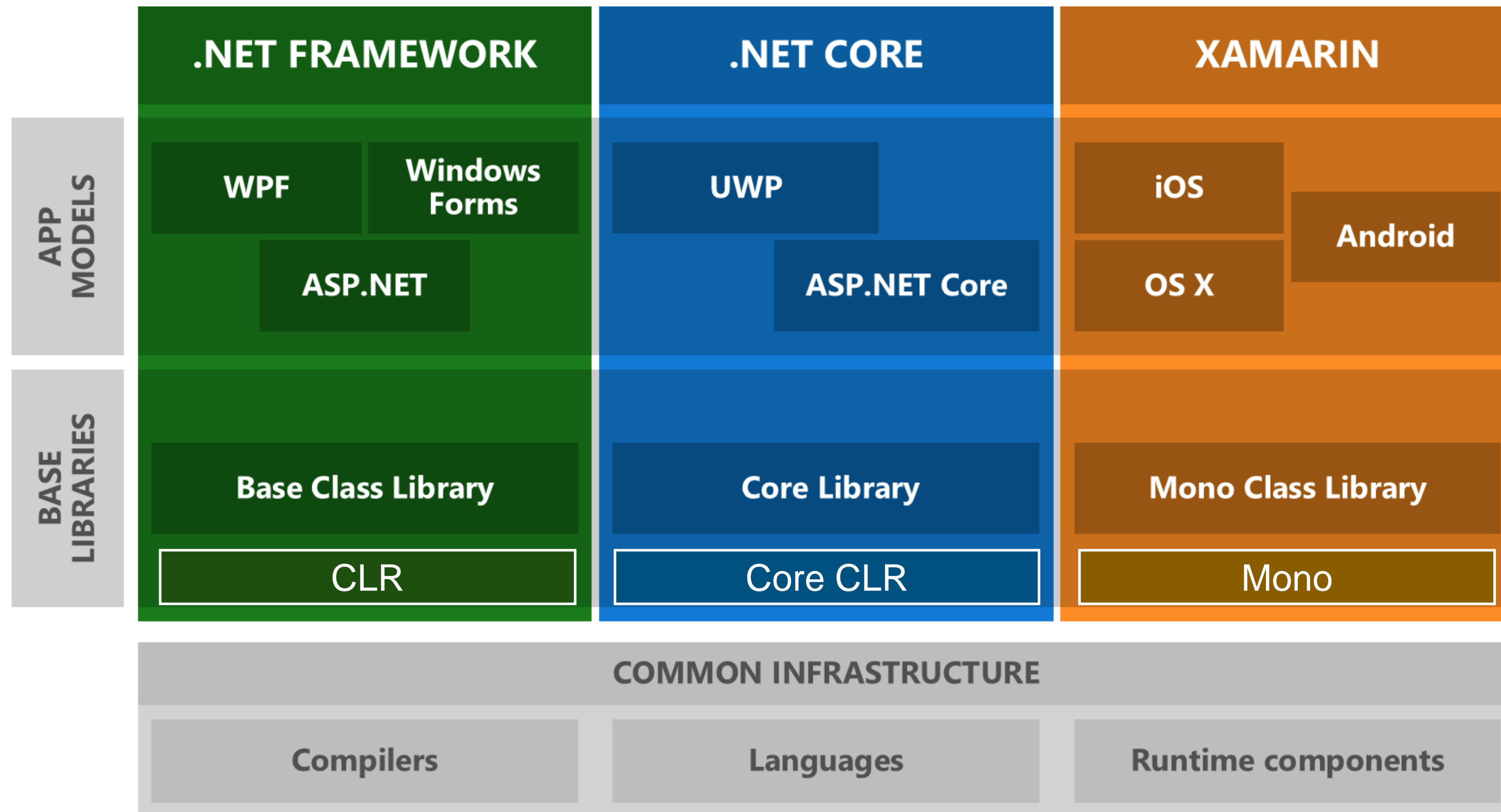
WORKSHOP AGENDA

- DAY 1: dotnet core/dotnet 5, dotnet sdk, aspnet core, microsoft extensions and publish
- DAY 2: containers, docker, docker networking and docker compose
- DAY 3: architecture overview, ddd tactical patterns, aggregates, value objects
- DAY 4: events, domain events, integration events, process managers
- DAY 5: microservices query patterns, distributed tracing, end to end testing.
- DAY 6: event sourcing and cqrs

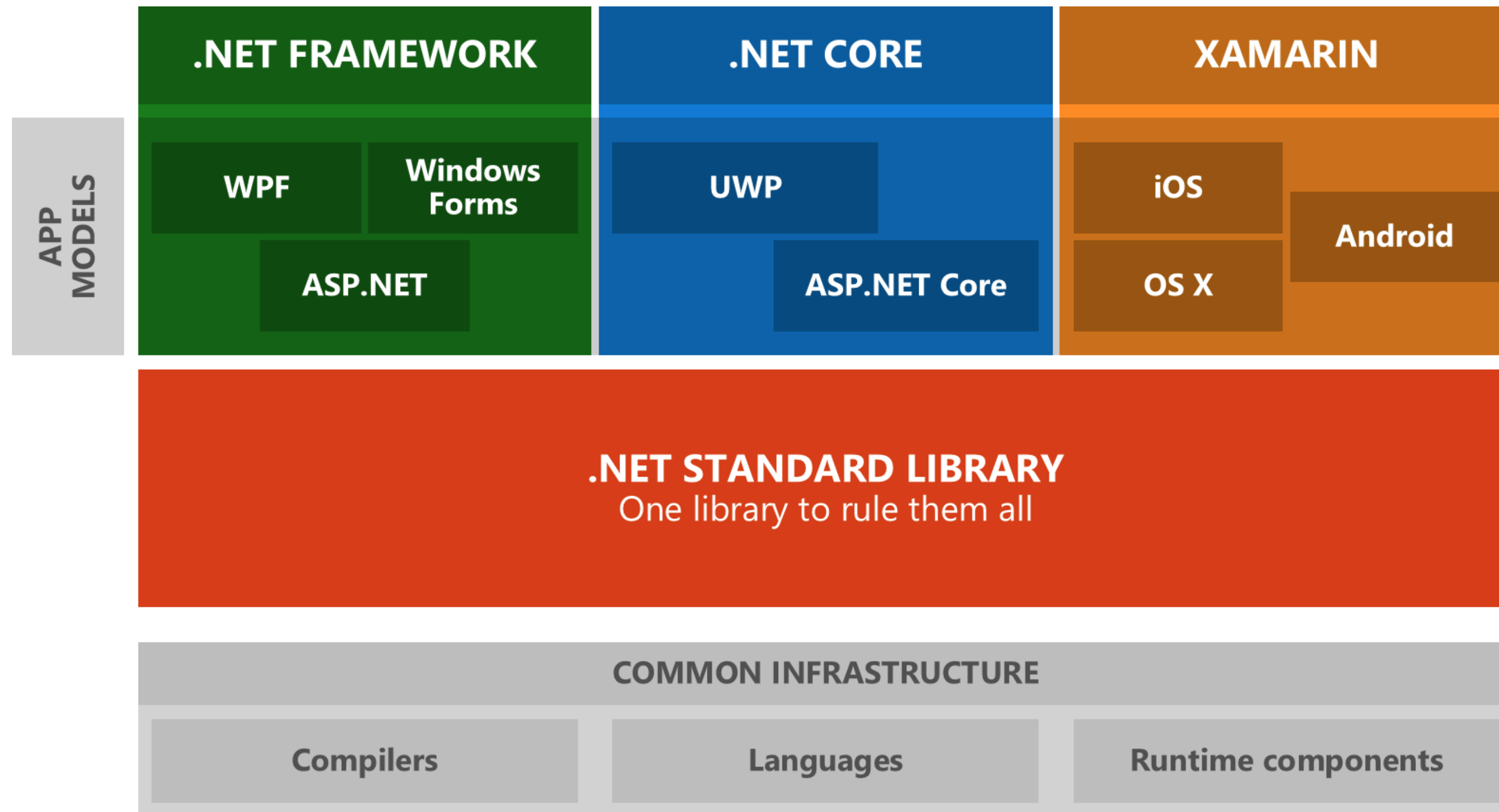
Agenda – Day 1

- .NET Framework, .NET Core, .NET Standard, .NET 5
- Tooling: Cross platform SDK (dotnet cli, csproj)
- AspNet core
- Microsoft Extensions (Configuration, Dependency Injection and Logging)
- Dotnet publish (runtimes, self contained)

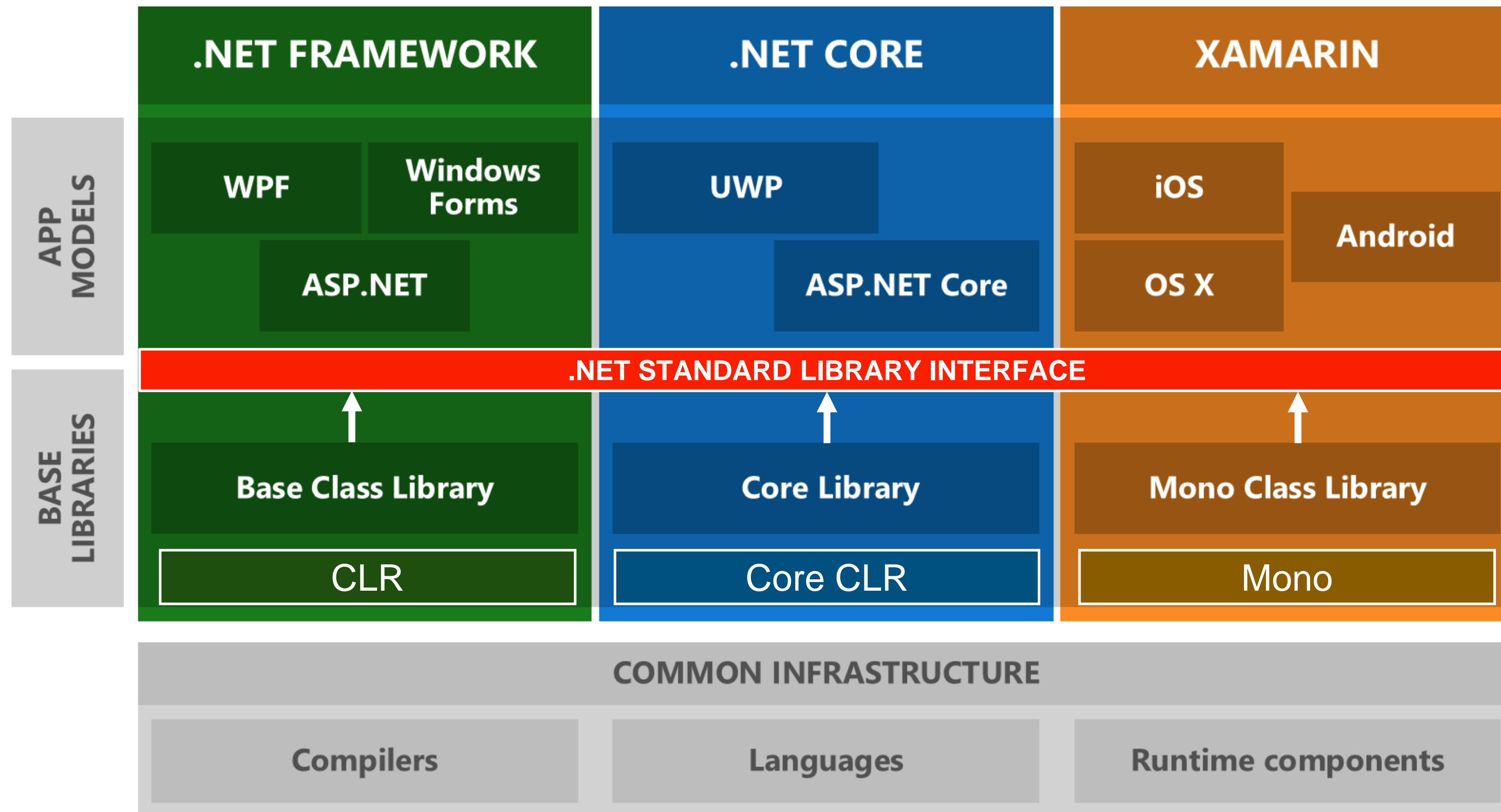
.NET Framework -> .NET Core -> .NET Standard -> .NET 5



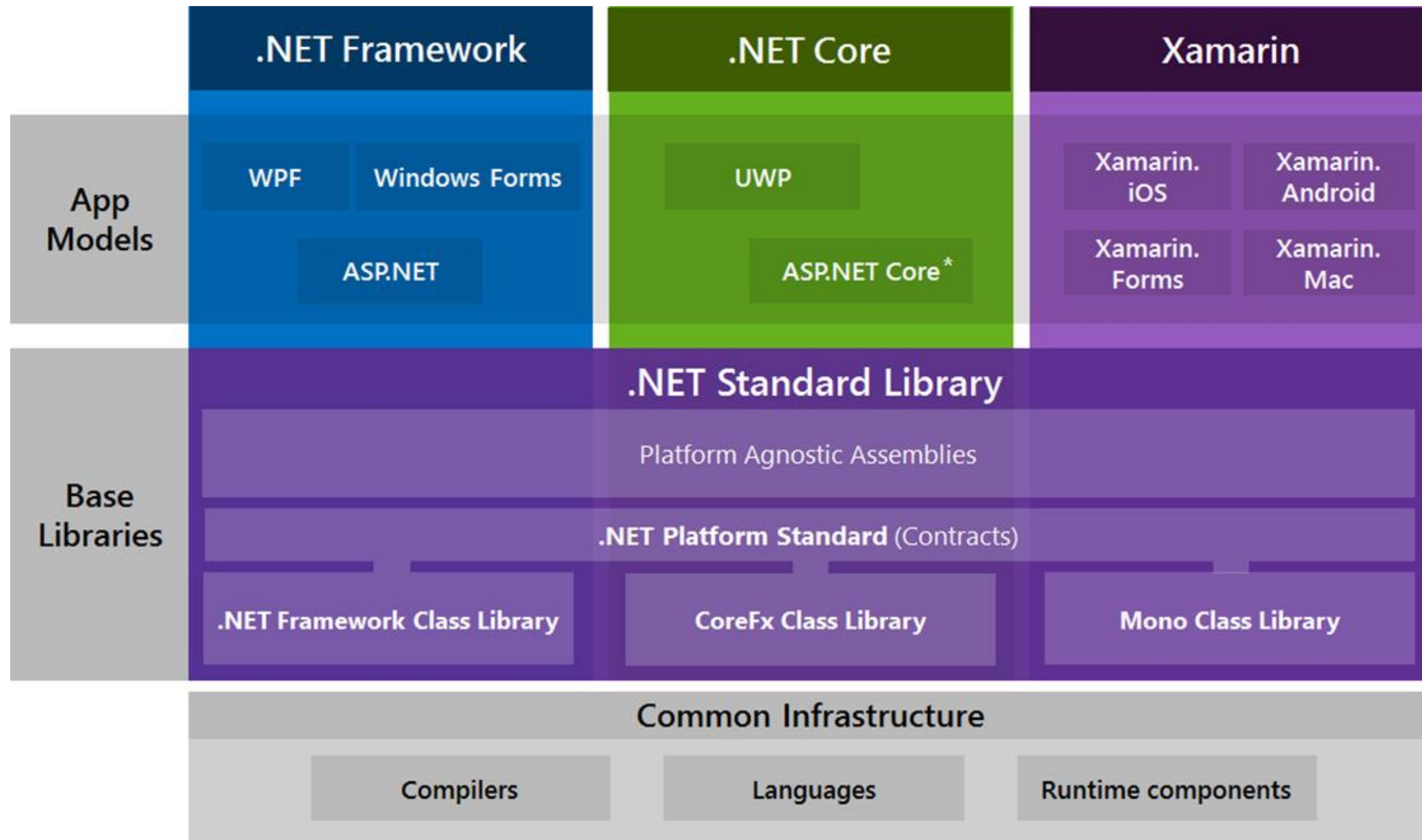
.NET Framework -> .NET Core -> .NET Standard -> .NET 5



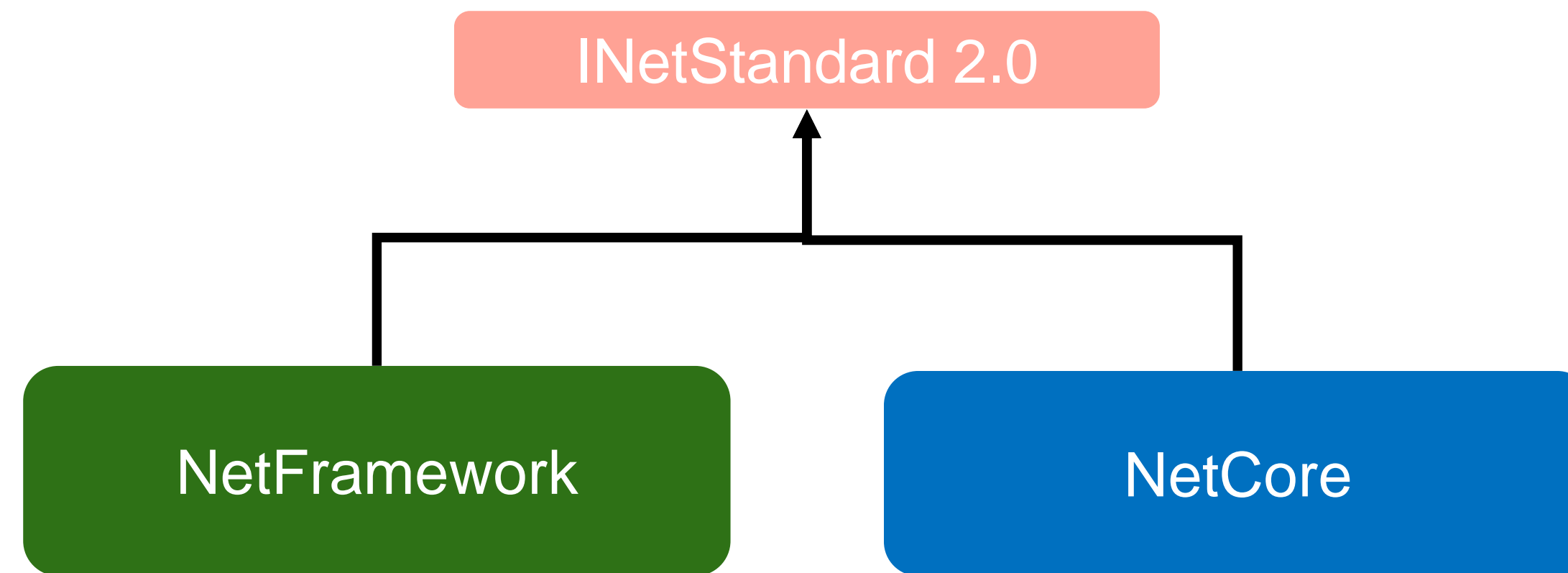
.NET Framework -> .NET Core -> .NET Standard -> .NET 5



.NET Framework -> .NET Core -> .NET Standard -> .NET 5



.NET Framework -> .NET Core -> .NET Standard -> .NET 5

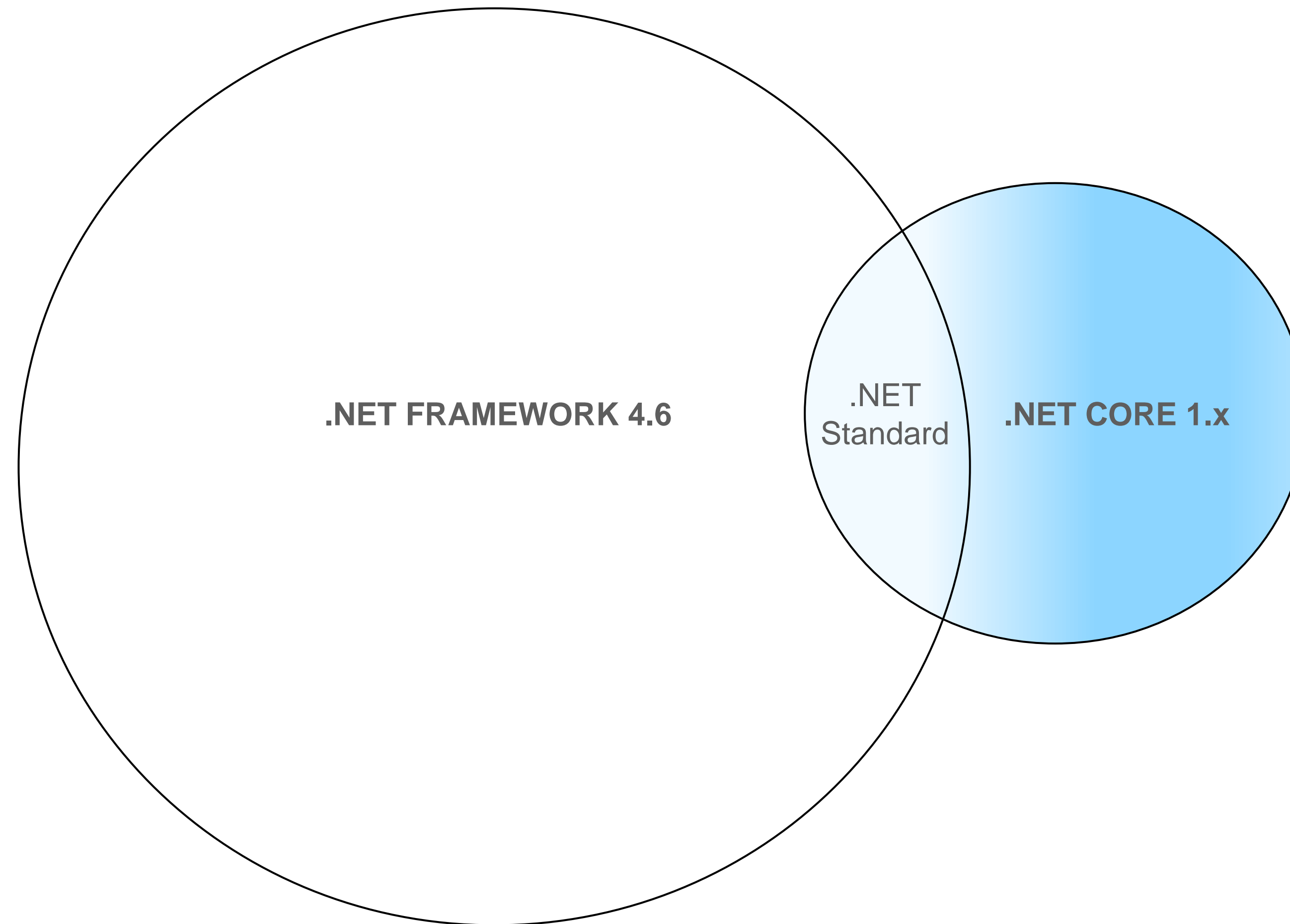


.NET Framework -> .NET Core -> .NET Standard -> .NET 5

.NET Standard	1.0	1.1	1.2	1.3	1.4	1.5	1.6	2.0	2.1
.NET Core	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	3.0
.NET Framework	4.5	4.5	4.5.1	4.6	4.6.1	4.6.1 ¹	4.6.1 ¹	4.6.1 ¹	N/A ²
Mono	4.6	4.6	4.6	4.6	4.6	4.6	4.6	5.4	6.4
Xamarin.iOS	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.14	12.16
Xamarin.Mac	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.8	5.16
Xamarin.Android	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	10.0
Unity	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	2018.1	TBD
Universal Windows Platform	8.0	8.0	8.1	10.0	10.0	10.0.16299	10.0.16299	10.0.16299	TBD

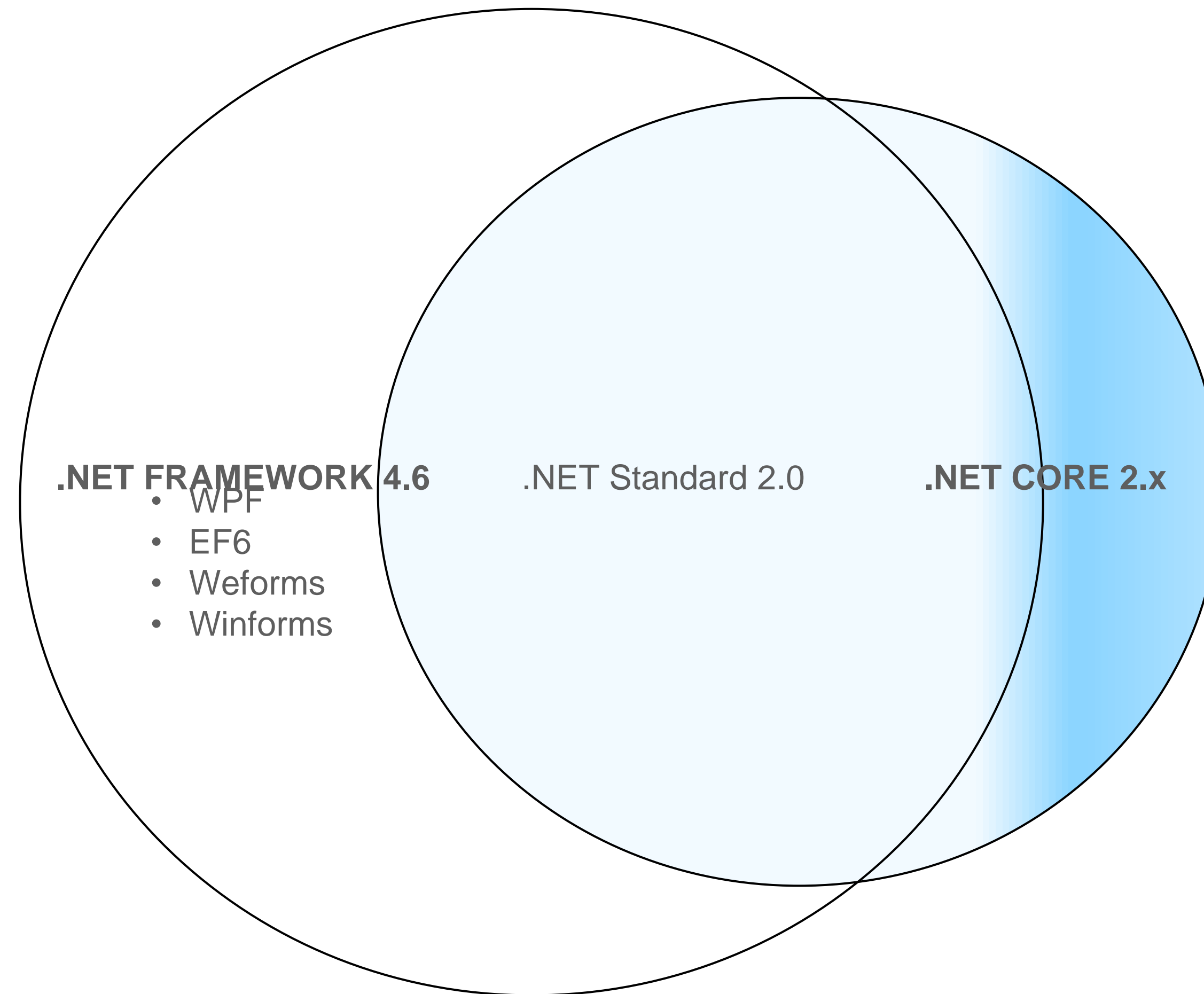
<https://dotnet.microsoft.com/platform/dotnet-standard>

.NET Framework -> .NET Core -> .NET Standard -> .NET 5



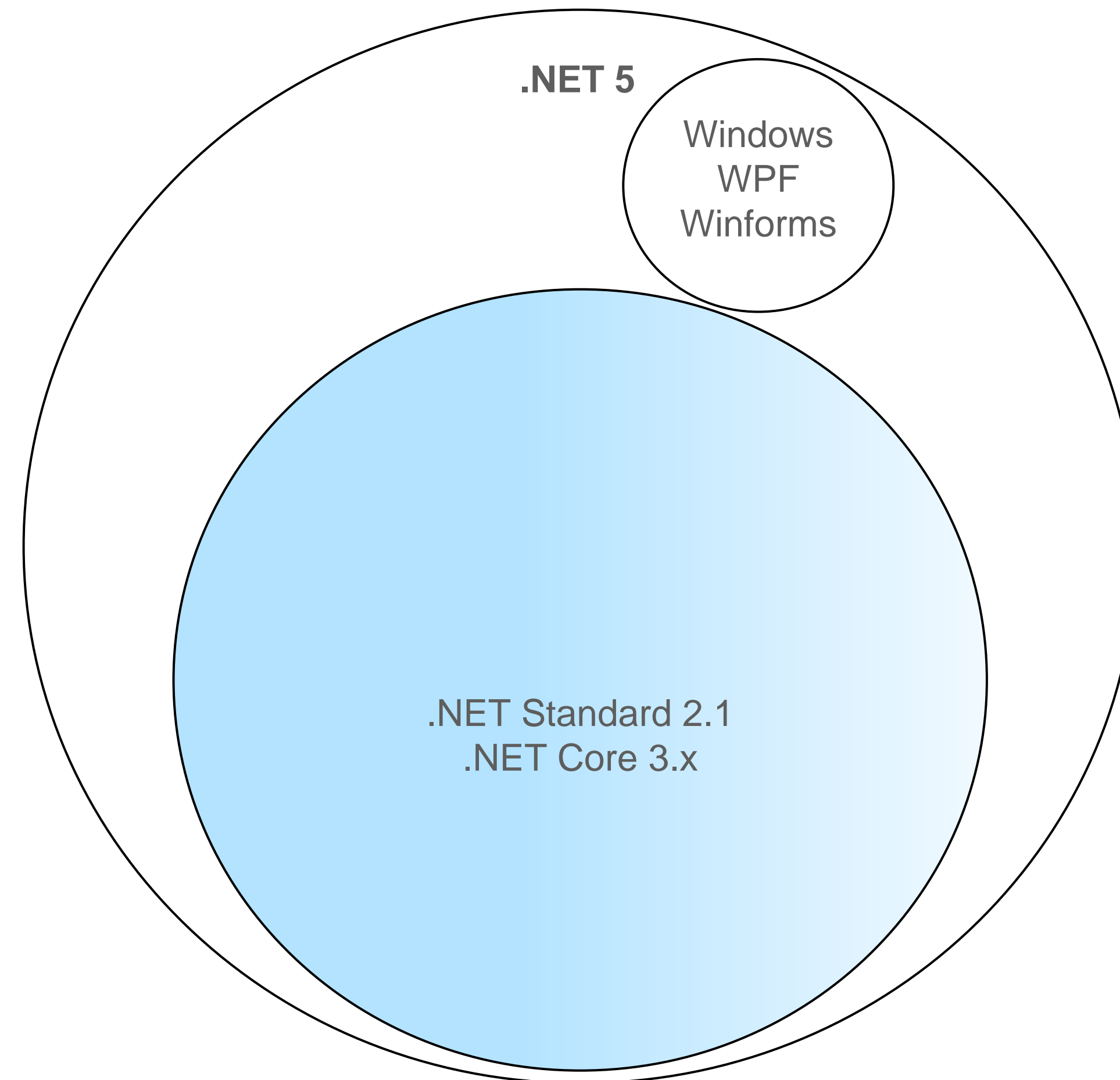
<https://dotnet.microsoft.com/platform/dotnet-standard>

.NET Framework -> .NET Core -> .NET Standard -> .NET 5



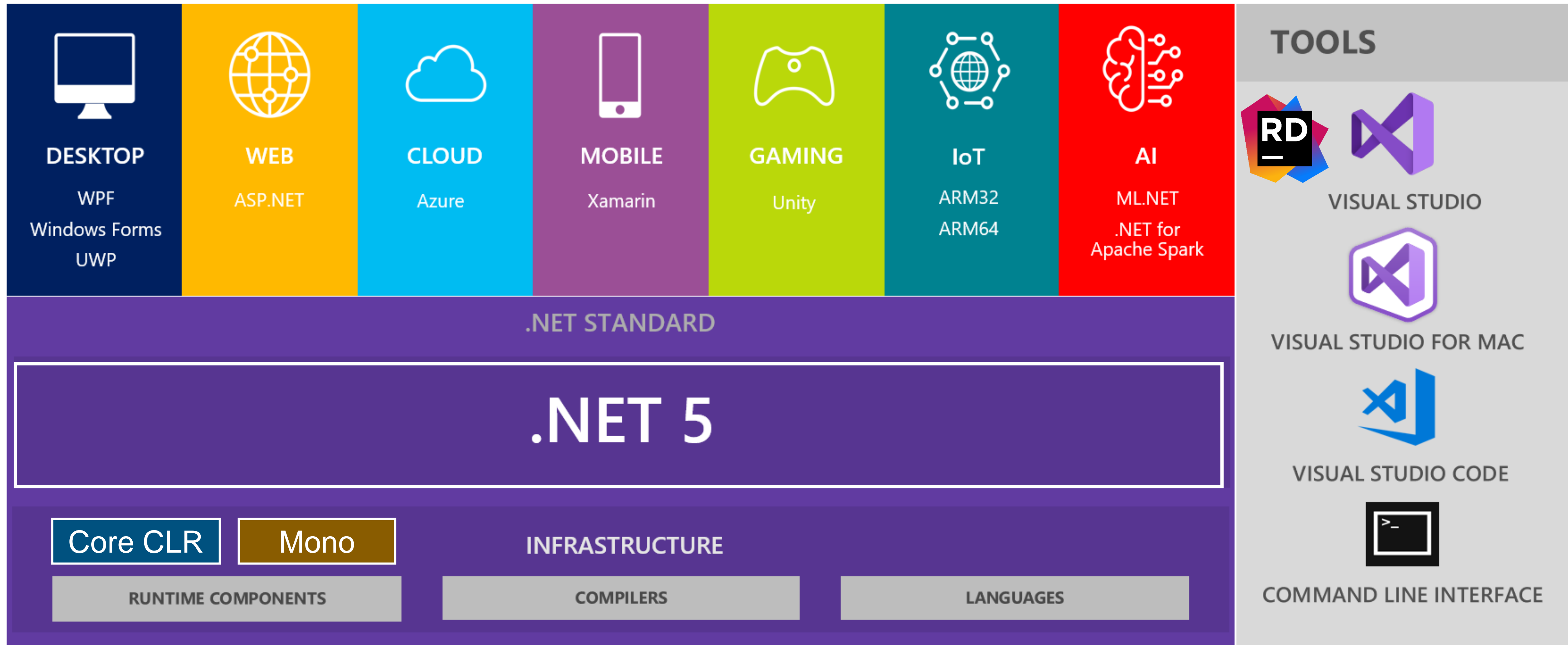
<https://dotnet.microsoft.com/platform/dotnet-standard>

.NET Framework -> .NET Core -> .NET Standard -> .NET 5

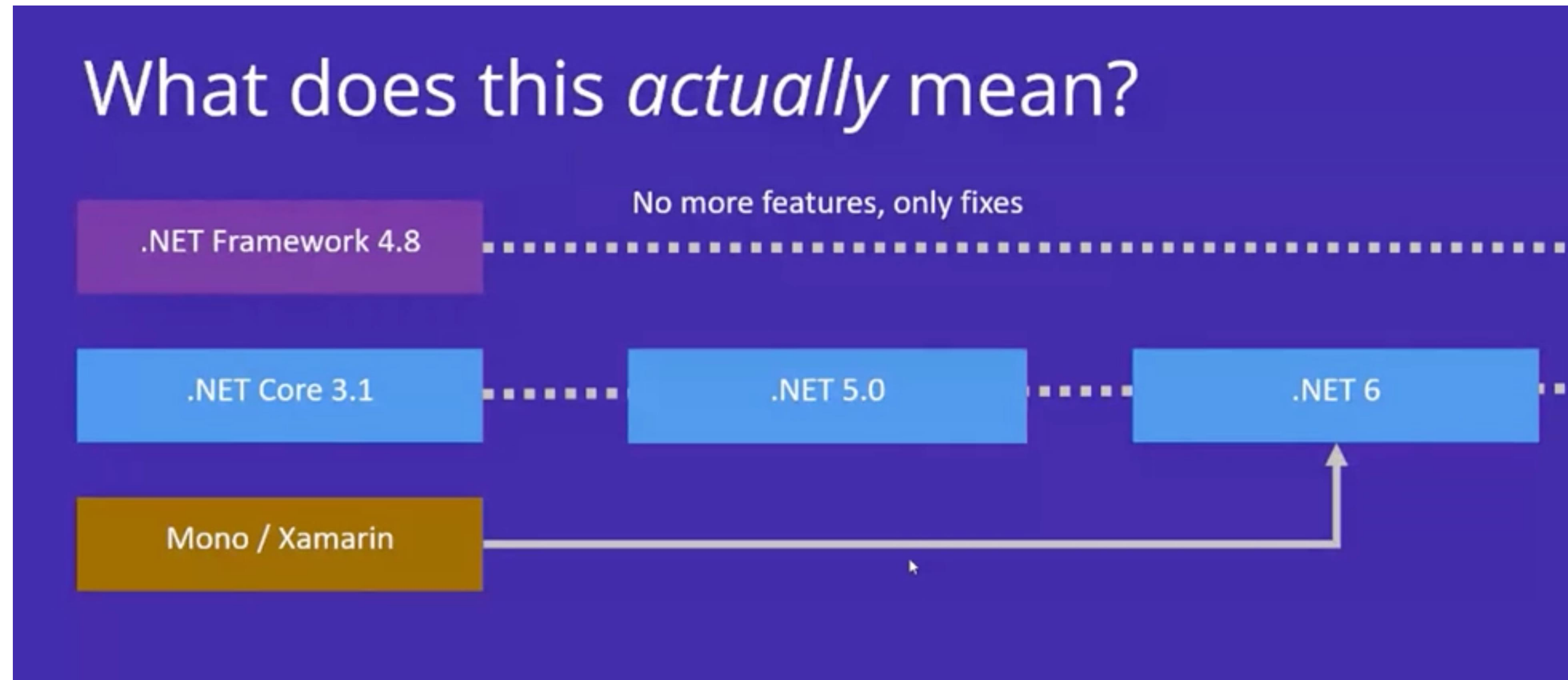


<https://dotnet.microsoft.com/platform/dotnet-standard>

.NET Framework -> .NET Core -> .NET Standard -> .NET 5



.NET Framework -> .NET Core -> .NET Standard -> .NET 5



.NET 5 Framework names (TFM)

Simplified framework names in .NET 5

- **net5.0**. This is for code that runs everywhere. It combines and replaces the **netcoreapp** and **netstandard** names.
- **net5.0-windows** (and later **net6.0-android** and **net6.0-ios**). These TFMs represent OS-specific flavors of .NET 5 that include net5.0 plus OS-specific functionality.



Area	Target Framework
Cross Platform Libraries ASP.NET Core, EF, virtually all System.* packages, most libraries	net5.0
Windows Controls WinForms-, WPF-, and (managed) UWP controls	net5.0-windows
Cross Platform Abstractions Xamarin Essentials, Xamarin Forms, MAUI, or any other cross-platform abstraction	net5.0 And each OS-specific framework that it provides implementations for
Cross Platform Libraries for .NET Framework Azure SDK, Microsoft.Data.SqlClient and other packages that need to support .NET Framework	netstandard2.0

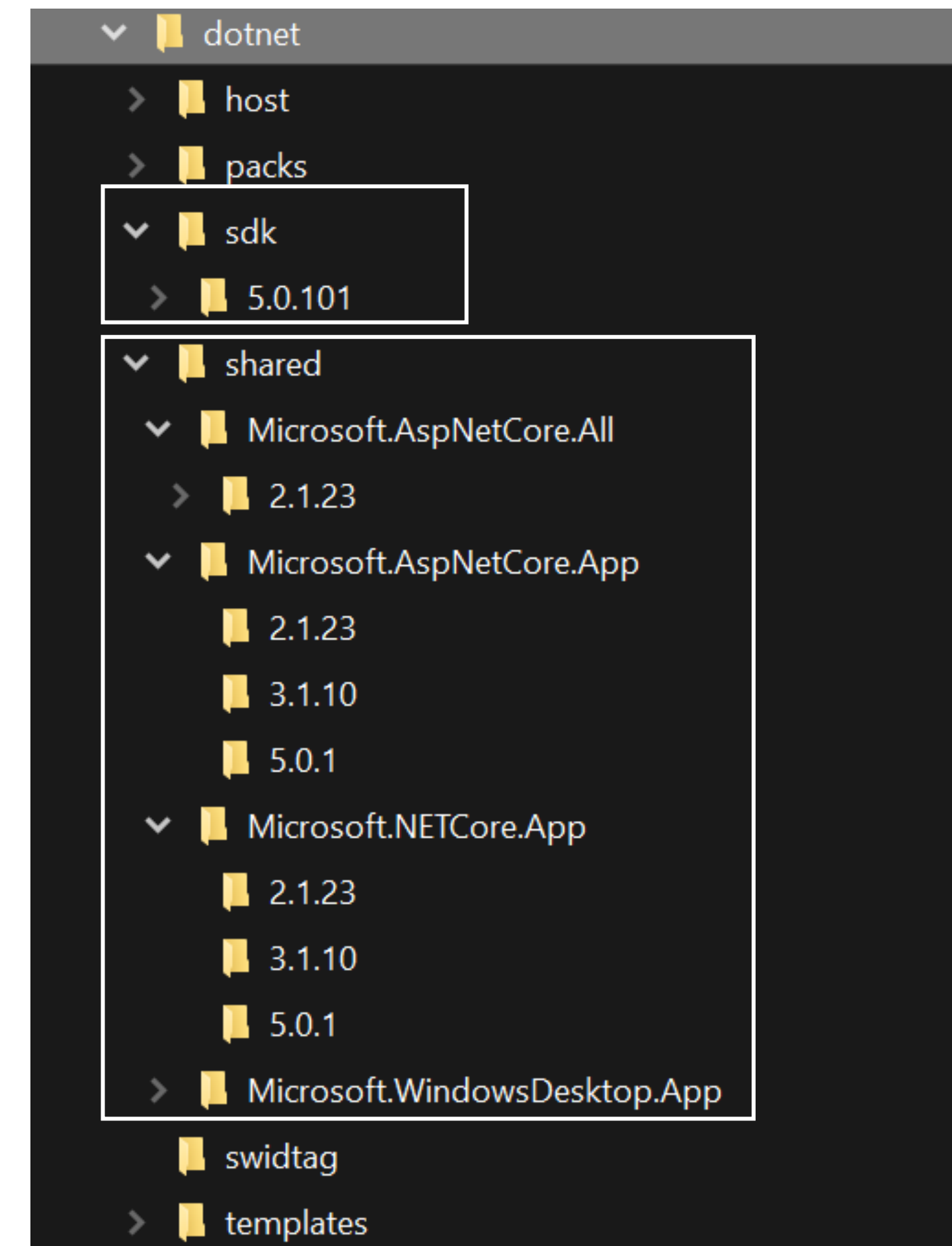
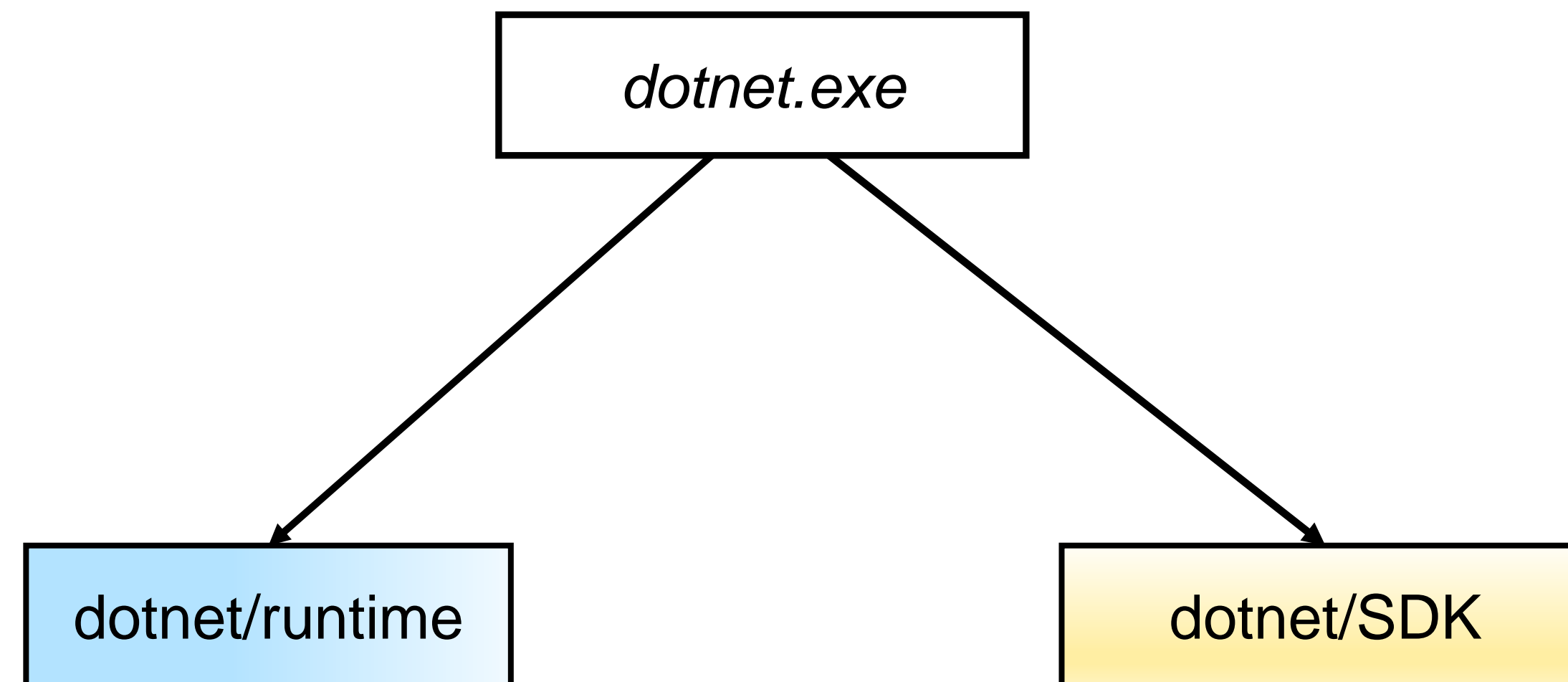
.NET Framework -> .NET Core -> .NET Standard -> .NET 5

- <https://devblogs.microsoft.com/dotnet/announcing-net-5-0/>
- <https://github.com/dotnet/announcements/issues/130>
- <https://devblogs.microsoft.com/dotnet/introducing-net-standard/>
- <https://devblogs.microsoft.com/dotnet/announcing-net-standard-2-1/>
- <https://devblogs.microsoft.com/dotnet/the-future-of-net-standard/>
- <https://docs.microsoft.com/en-us/dotnet/standard/net-standard#net-5-and-net-standard>
- <https://github.com/dotnet/designs/blob/main/accepted/2020/net5/net5.md>
- <https://devblogs.microsoft.com/dotnet/announcing-the-windows-compatibility-pack-for-net-core/>
- <https://channel9.msdn.com/Events/dotnetConf/2020/Porting-Projects-to-NET-5>

Install .NET 5 (SDK and Runtime)

<https://dotnet.microsoft.com/download>

<https://docs.microsoft.com/en-us/dotnet/core/install/linux-ubuntu>



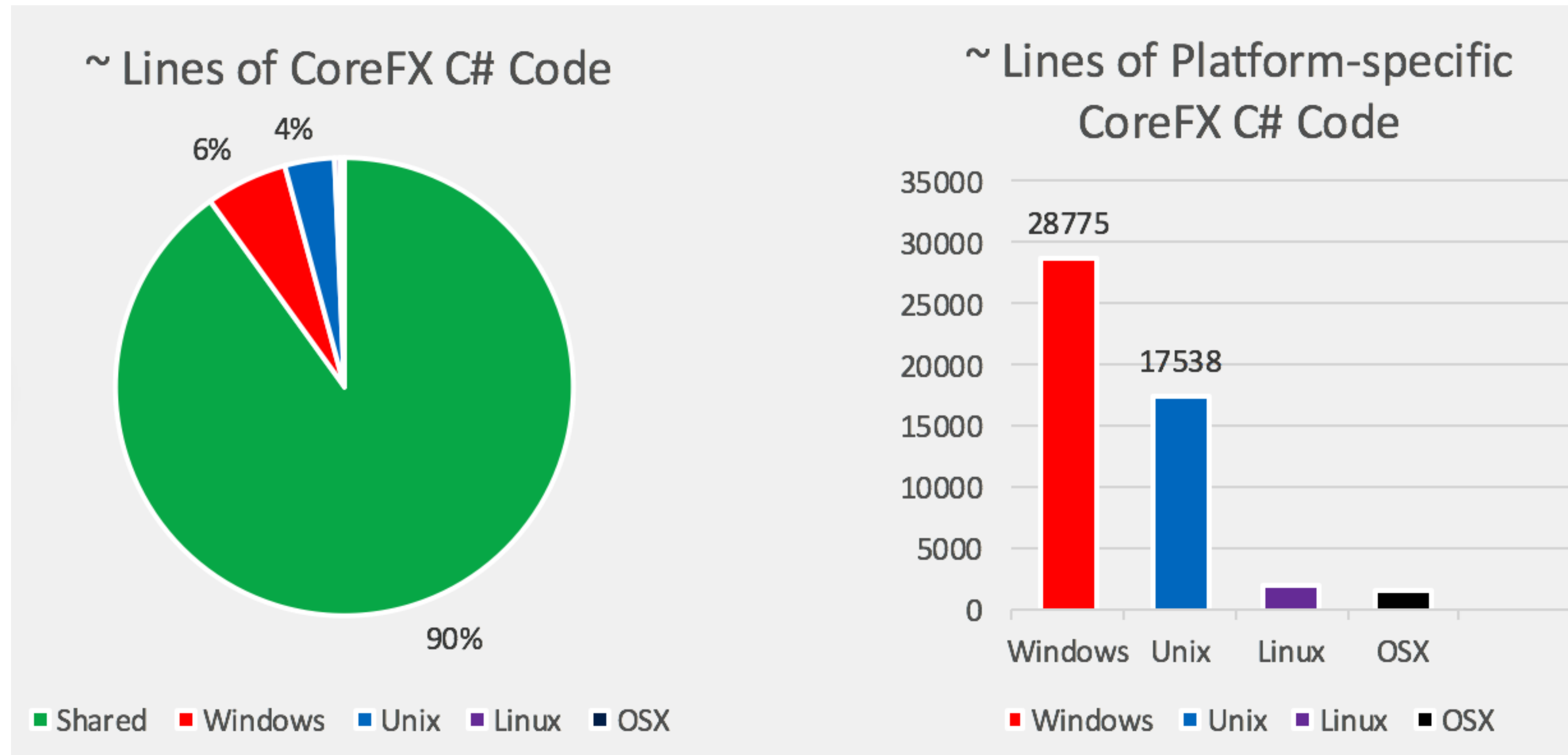
Install .NET 5 (SDK and Runtime)

Release information	Build apps - SDK ⓘ	Run apps - Runtime ⓘ																																																
<div>v5.0.2</div> <div><div>Security patch ⓘ</div></div> <div>Release notes</div> <div>Released</div> <div>2021-01-12</div>	<div>SDK 5.0.102</div> <div><div>Visual Studio support</div><div>Visual Studio 2019 (v16.8)</div><div>Visual Studio 2019 for Mac (v8.8)</div></div> <div><div>Included in</div><div>Visual Studio 16.8.4</div></div> <div><div>Included runtimes</div><div>.NET Runtime 5.0.2</div><div>ASP.NET Core Runtime 5.0.2</div><div>.NET Desktop Runtime 5.0.2</div></div> <div><div>Language support</div><div>C# 9.0</div><div>F# 5.0</div><div>Visual Basic 15.9</div></div> <table><tr><th>OS</th><th>Installers</th><th>Binaries</th></tr><tr><td>Linux</td><td>Package manager instructions</td><td>Arm32 Arm64 x64 x64 Alpine</td></tr><tr><td>macOS</td><td>x64</td><td>x64</td></tr><tr><td>Windows</td><td>Arm64 x64 x86</td><td>Arm64 x64 x86</td></tr><tr><td>All</td><td>dotnet-install scripts</td><td></td></tr></table> <div>Localized IntelliSense</div>	OS	Installers	Binaries	Linux	Package manager instructions	Arm32 Arm64 x64 x64 Alpine	macOS	x64	x64	Windows	Arm64 x64 x86	Arm64 x64 x86	All	dotnet-install scripts		<div>ASP.NET Core Runtime 5.0.2</div> <div>The ASP.NET Core Runtime enables you to run existing web/server applications. On Windows, we recommended installing the Hosting Bundle, which includes the .NET Runtime and IIS support.</div> <div><div>IIS runtime support (ASP.NET Core Module v2)</div><div>15.0.20336.1</div></div> <table><tr><th>OS</th><th>Installers</th><th>Binaries</th></tr><tr><td>Linux</td><td>Package manager instructions</td><td>Arm32 Arm64 Arm64 Alpine x64 x64 Alpine</td></tr><tr><td>macOS</td><td></td><td>x64</td></tr><tr><td>Windows</td><td>Hosting Bundle x64 x86</td><td>Arm64 x64 x86</td></tr></table> <div>.NET Desktop Runtime 5.0.2</div> <div>The .NET Desktop Runtime enables you to run existing Windows desktop applications. This release includes the .NET Runtime, you do not need to install it separately.</div> <table><tr><th>OS</th><th>Installers</th><th>Binaries</th></tr><tr><td>Windows</td><td>x64 x86</td><td></td></tr></table> <div>.NET Runtime 5.0.2</div> <div>The .NET Runtime contains just the components needed to run a console app. Typically, you'd also install either the ASP.NET Core Runtime or .NET Desktop Runtime.</div> <table><tr><th>OS</th><th>Installers</th><th>Binaries</th></tr><tr><td>Linux</td><td>Package manager instructions</td><td>Arm32 Arm64 Arm64 Alpine x64 x64 Alpine</td></tr><tr><td>macOS</td><td>x64</td><td>x64</td></tr><tr><td>Windows</td><td>Arm64 x64 x86</td><td>Arm64 x64 x86</td></tr><tr><td>All</td><td>dotnet-install scripts</td><td></td></tr></table>	OS	Installers	Binaries	Linux	Package manager instructions	Arm32 Arm64 Arm64 Alpine x64 x64 Alpine	macOS		x64	Windows	Hosting Bundle x64 x86	Arm64 x64 x86	OS	Installers	Binaries	Windows	x64 x86		OS	Installers	Binaries	Linux	Package manager instructions	Arm32 Arm64 Arm64 Alpine x64 x64 Alpine	macOS	x64	x64	Windows	Arm64 x64 x86	Arm64 x64 x86	All	dotnet-install scripts	
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All	dotnet-install scripts																																																	

.NET Github repositories

- <https://github.com/dotnet>
- <https://github.com/dotnet/runtime>
- <https://github.com/dotnet/sdk>
- <https://github.com/dotnet/aspnetcore>
- <https://github.com/dotnet/wpf>
- <https://github.com/dotnet/winforms>
- <https://github.com/dotnet/roslyn>
- <https://github.com/dotnet/csharplang>

Cross Platform



<https://github.com/dotnet/runtime/tree/master/src/libraries/System.Console/src/System>

<https://github.com/dotnet/runtime/blob/master/src/libraries/System.Console/src/System.Console.csproj>

<https://github.com/dotnet/runtime/blob/master/src/libraries/System.Console/src/System/Console.cs#L295>

Microsoft.Extensions

Hosting

Configuration

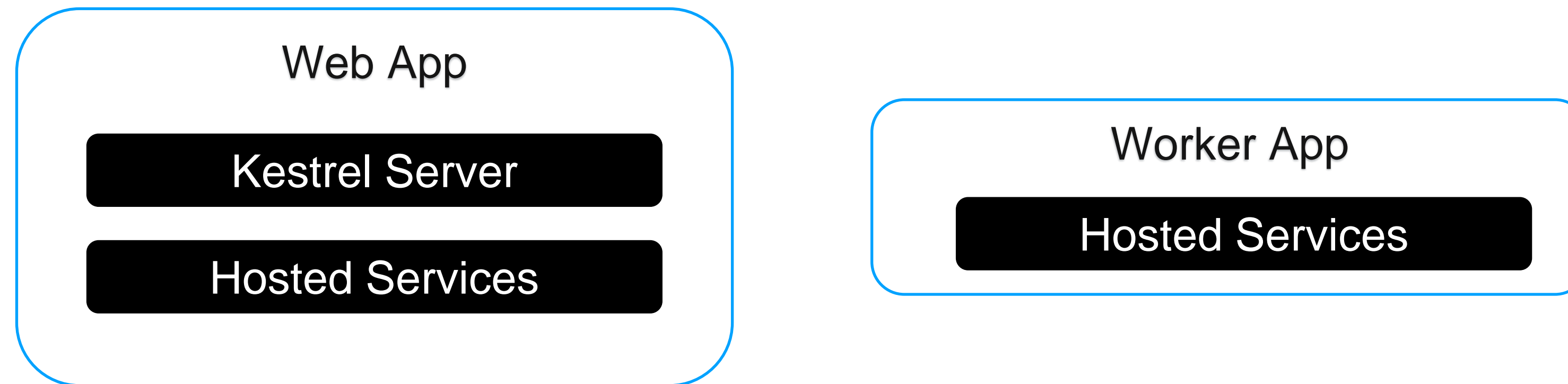
Logging

Dependency Injection

<https://github.com/dotnet/runtime/tree/master/src/libraries>

	Microsoft.Extensions.Caching.Abstractions	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Caching.Memory	Remove some allocations related to storing CacheEntry scopes (#45563)	8 days ago
	Microsoft.Extensions.Configuration.Abstractions	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Configuration.Binder	Remove unnecessary GetTypeInfo from Microsoft.Extensions. (#44891)	29 days ago
	Microsoft.Extensions.Configuration.CommandLine	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Configuration.EnvironmentVariables	Remove LINQ usage from EnvironmentVariablesConfigurationProvider (#44923)	27 days ago
	Microsoft.Extensions.Configuration.FileExtensions	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Configuration.Ini	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Configuration.Json	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Configuration.UserSecrets	Fix add user secrets (#44838)	27 days ago
	Microsoft.Extensions.Configuration.Xml	disable restore in vs for projects targeting platform specific old fr...	15 days ago
	Microsoft.Extensions.Configuration	disable restore in vs for projects targeting platform specific old fr...	15 days ago
	Microsoft.Extensions.DependencyInjection.Abstractions	Remove unnecessary IsStatic checks in ActivatorUtilities (#45439)	13 days ago
	Microsoft.Extensions.DependencyInjection	Remove unnecessary IsStatic checks in ActivatorUtilities (#45439)	13 days ago
	Microsoft.Extensions.DependencyModel	Remove more LINQ usage from various dotnet/runtime libraries (#44964)	27 days ago
	Microsoft.Extensions.FileProviders.Abstractions	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.FileProviders.Composite	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.FileProviders.Physical	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.FileSystemGlobbing	Create more informational assert collection log for FunctionalTests o... (3 days ago
	Microsoft.Extensions.HostFactoryResolver	use pack on csproj to build the packages (#45564)	yesterday
	Microsoft.Extensions.Hosting.Abstractions	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Hosting	PR: Add test code coverage for Host.StopAsync (#40875)	3 days ago
	Microsoft.Extensions.Http	Enable nullable annotations for M.E.L.Abstractions (#43892)	29 days ago
	Microsoft.Extensions.Logging.Abstractions	Enable nullable annotations for M.E.L.Abstractions (#43892)	29 days ago
	Microsoft.Extensions.Logging.Configuration	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Logging.Console	Use AsSpan/AsMemory (start, length) (#45310)	17 days ago
	Microsoft.Extensions.Logging.Debug	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Logging.EventLog	disable restore in vs for projects targeting platform specific old fr...	15 days ago
	Microsoft.Extensions.Logging.EventSource	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Logging.TraceSource	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Logging	adding null check on provider registration (#46002)	2 days ago
	Microsoft.Extensions.Options.ConfigurationExtensions	Add workflow to update solution files with SlnGen and update them ini...	last month
	Microsoft.Extensions.Options.DataAnnotations	Remove more LINQ usage from various dotnet/runtime libraries (#44964)	27 days ago
	Microsoft.Extensions.Options	Reduce allocation in OptionsManager (#45231)	22 days ago
	Microsoft.Extensions.Primitives	Add workflow to update solution files with SlnGen and update them ini...	last month

Microsoft.Extensions.Hosting

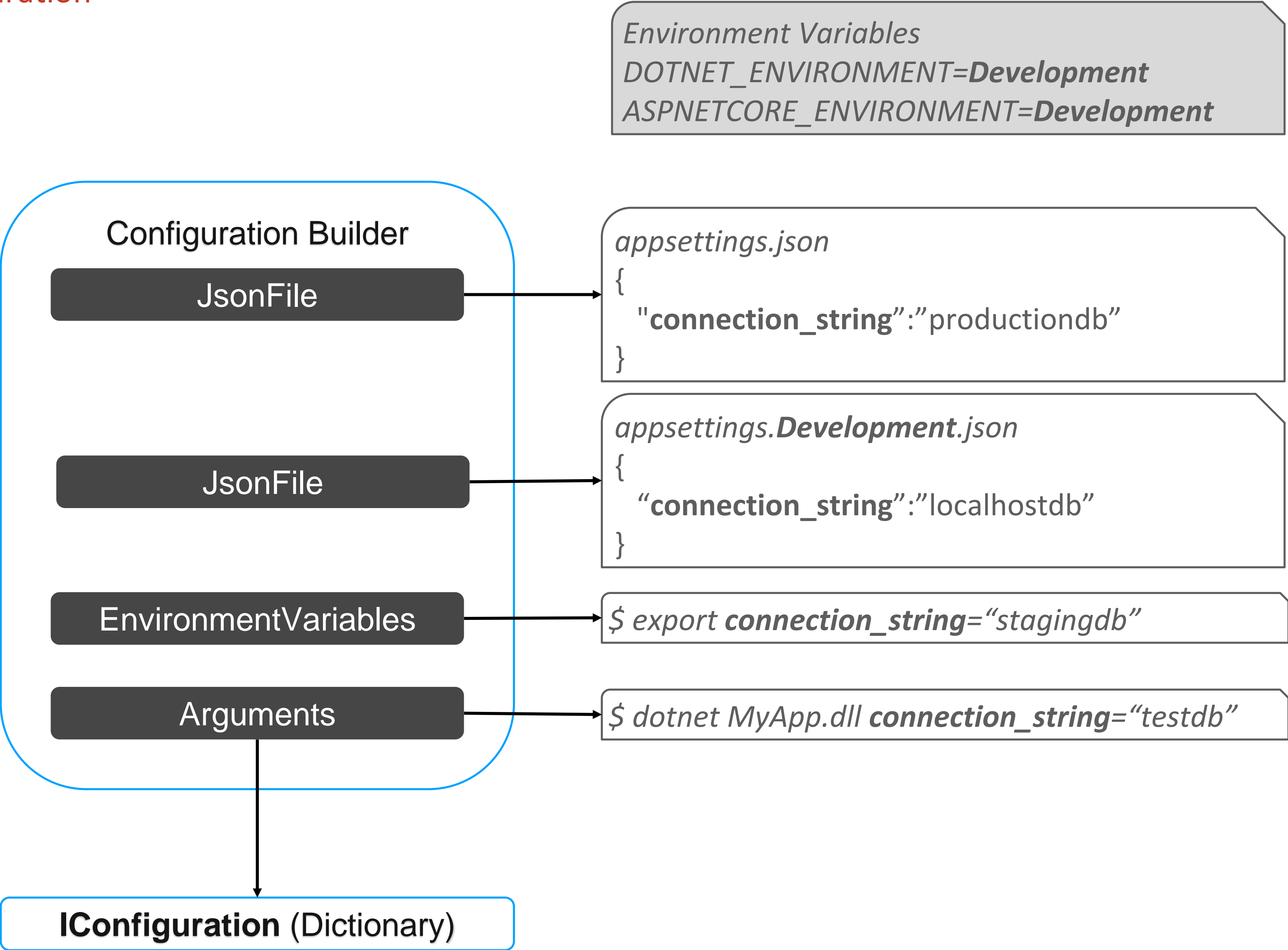


<https://docs.microsoft.com/en-us/aspnet/core/fundamentals/host/generic-host>

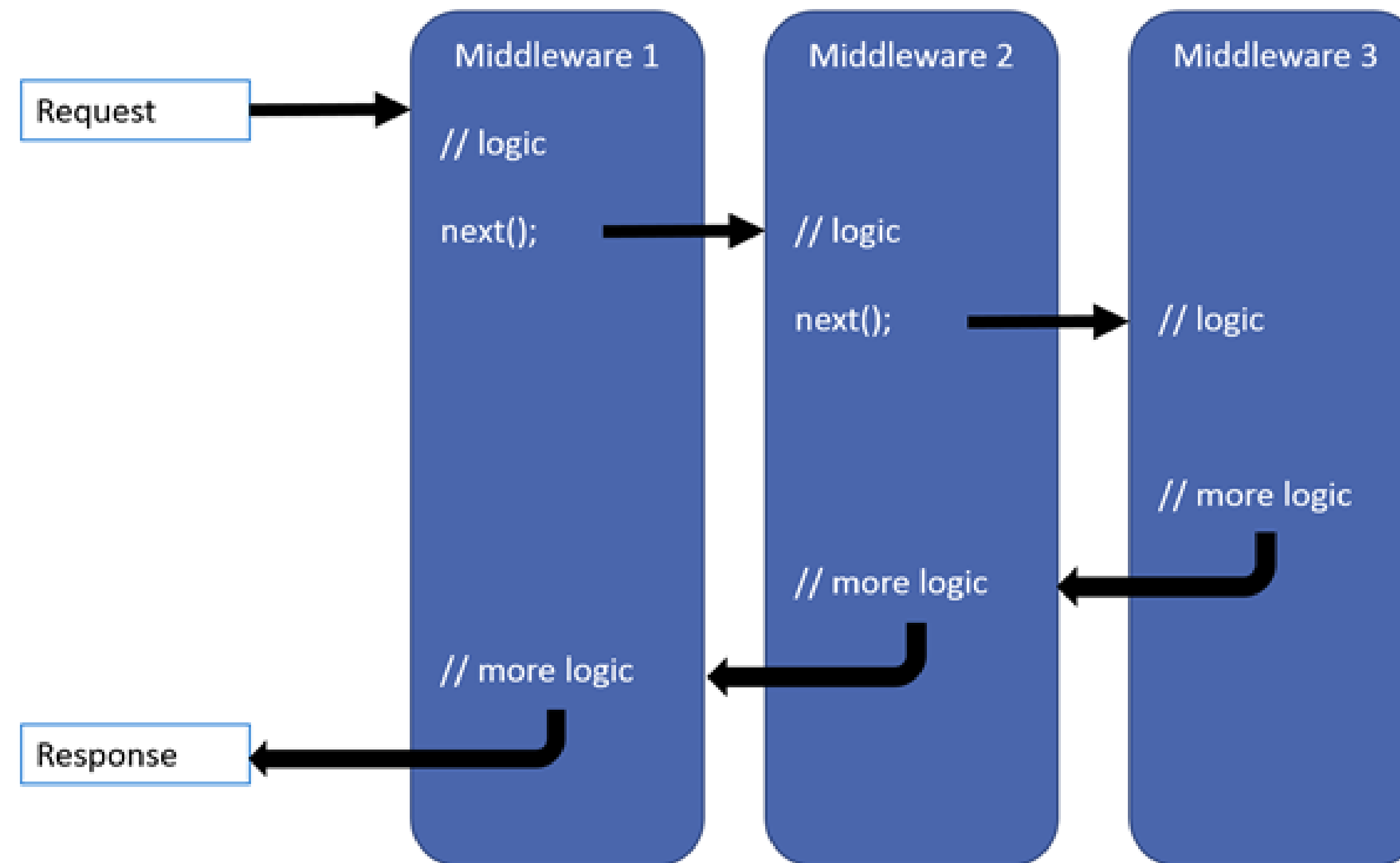
<https://docs.microsoft.com/en-us/dotnet/core/extensions/generic-host>

<https://docs.microsoft.com/en-us/aspnet/core/fundamentals/servers>

<https://docs.microsoft.com/en-us/dotnet/architecture/microservices/multi-container-microservice-net-applications/background-tasks-with-ihostedservice>

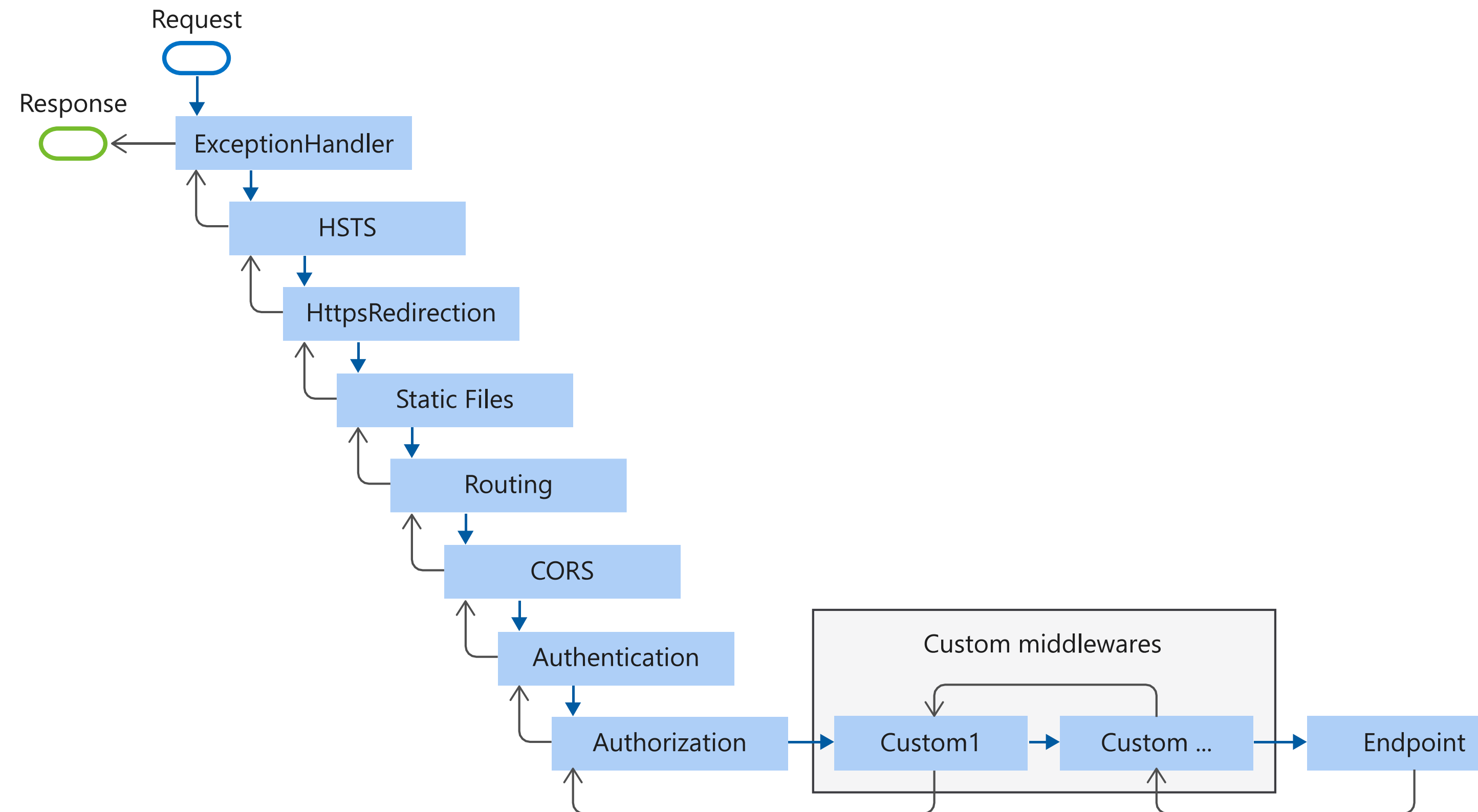


Microsoft.AspNetCore



<https://docs.microsoft.com/en-us/aspnet/core/fundamentals/middleware>
<https://docs.microsoft.com/en-us/aspnet/core/mvc/overview>
<https://docs.microsoft.com/en-us/aspnet/core/web-api/advanced/formatting>

Microsoft.AspNetCore

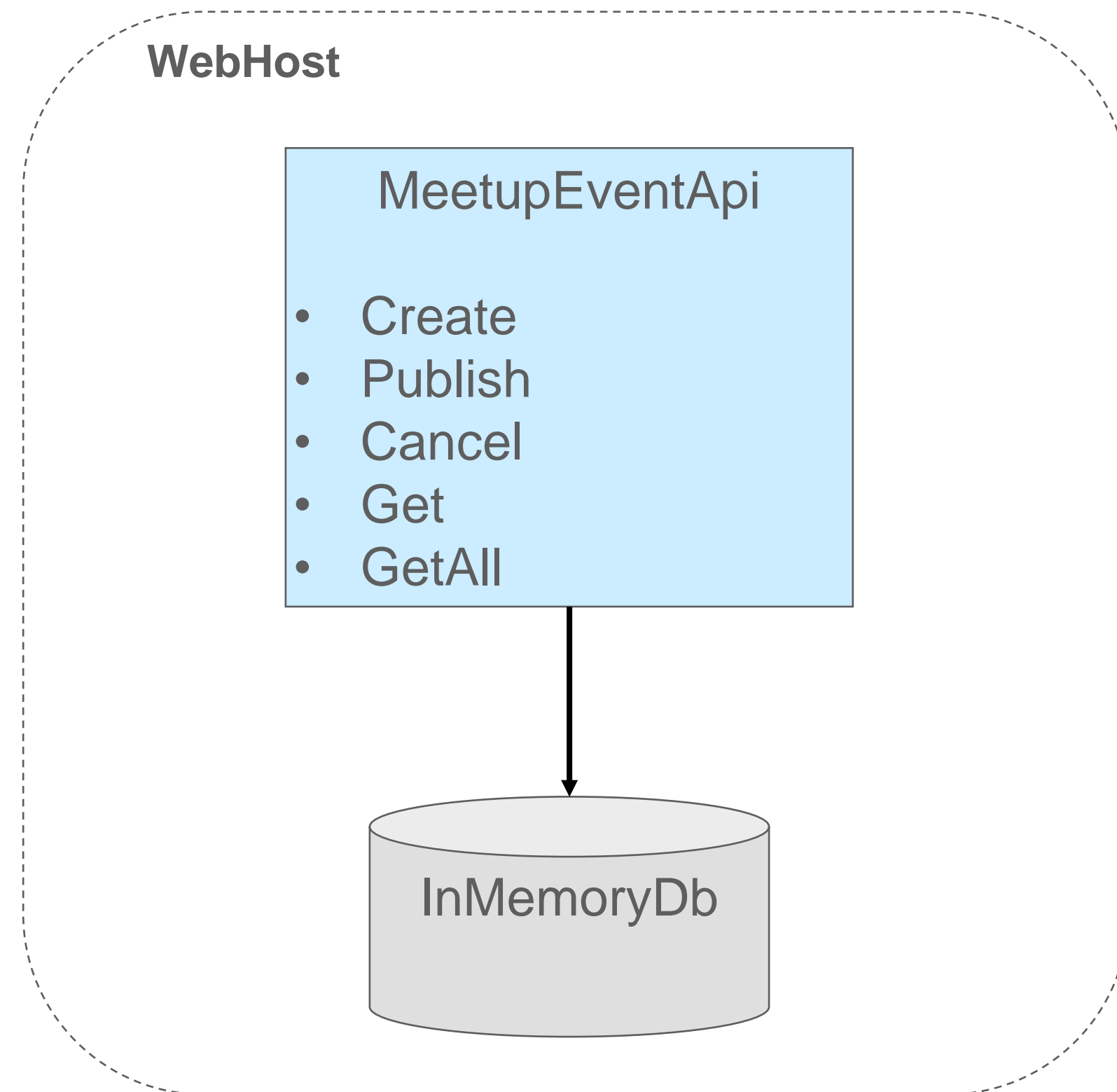


<https://docs.microsoft.com/en-us/aspnet/core/fundamentals/middleware>

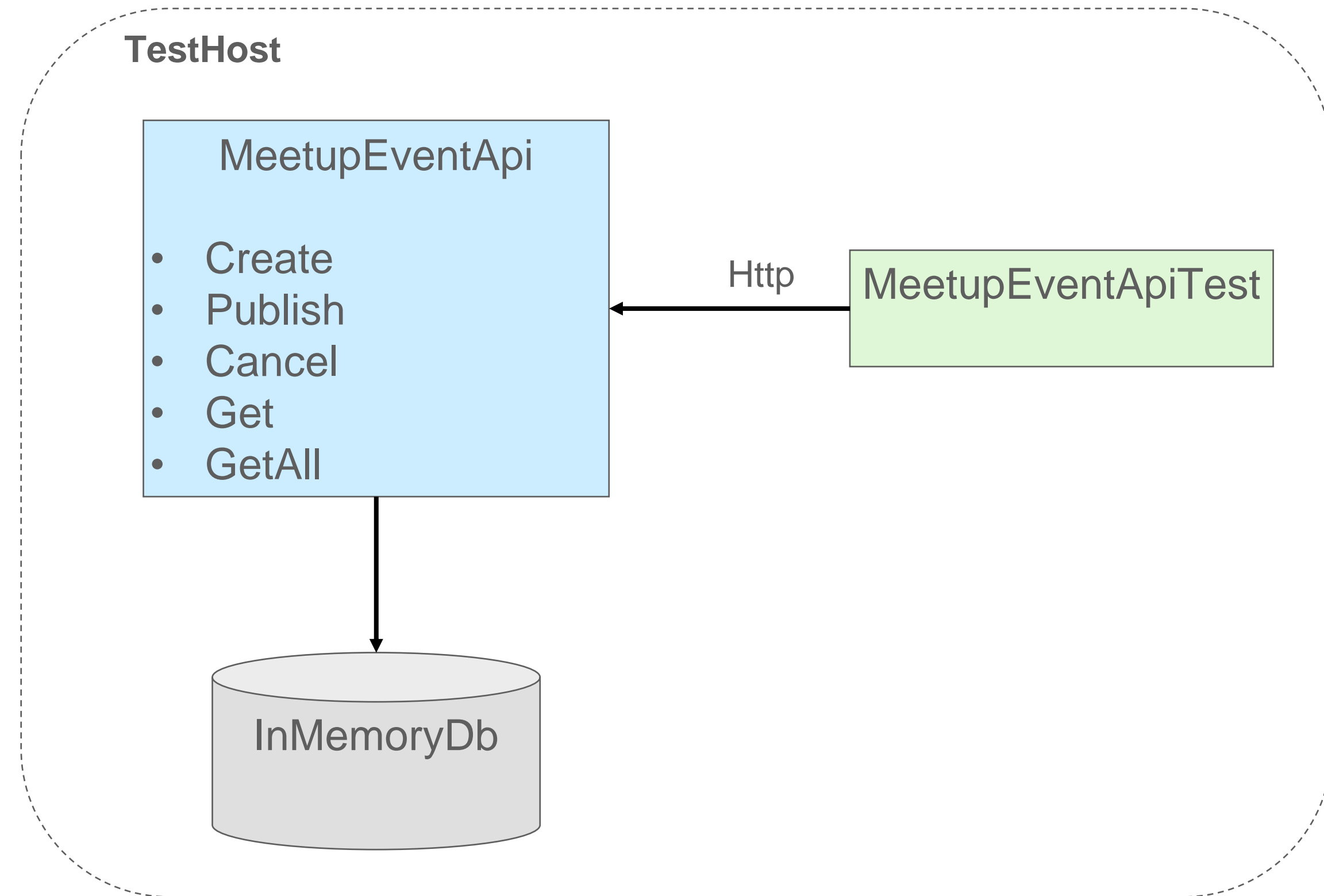
<https://docs.microsoft.com/en-us/aspnet/core/mvc/overview>

<https://docs.microsoft.com/en-us/aspnet/core/web-api/advanced/formatting>

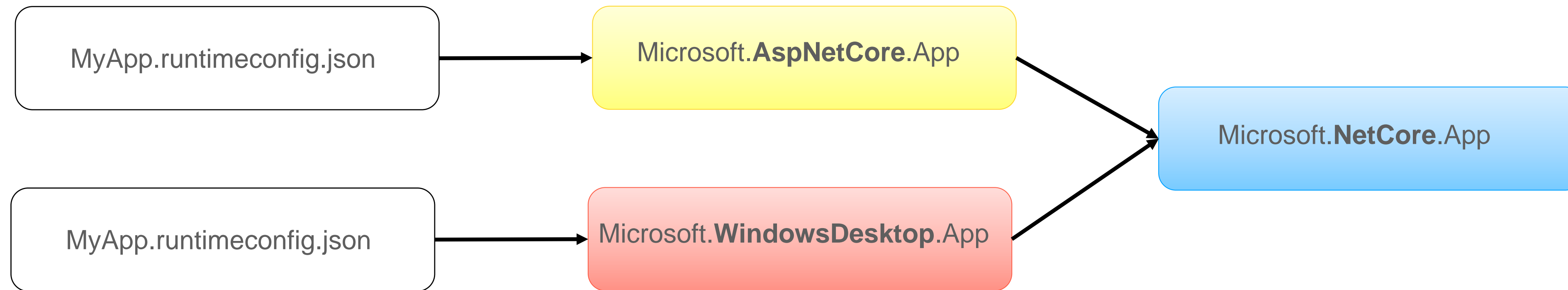
Meetup Events Application Api



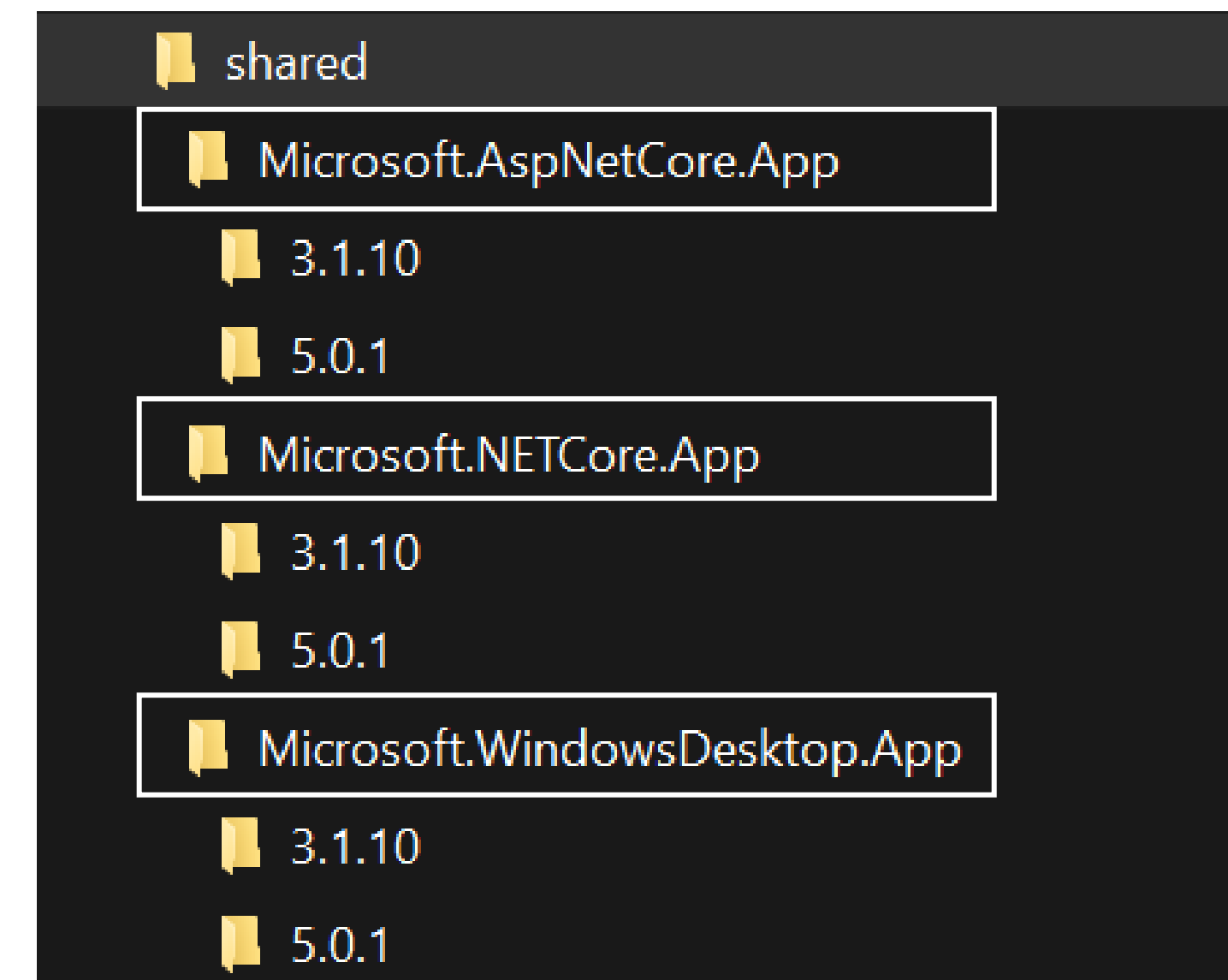
<https://www.meetup.com/>



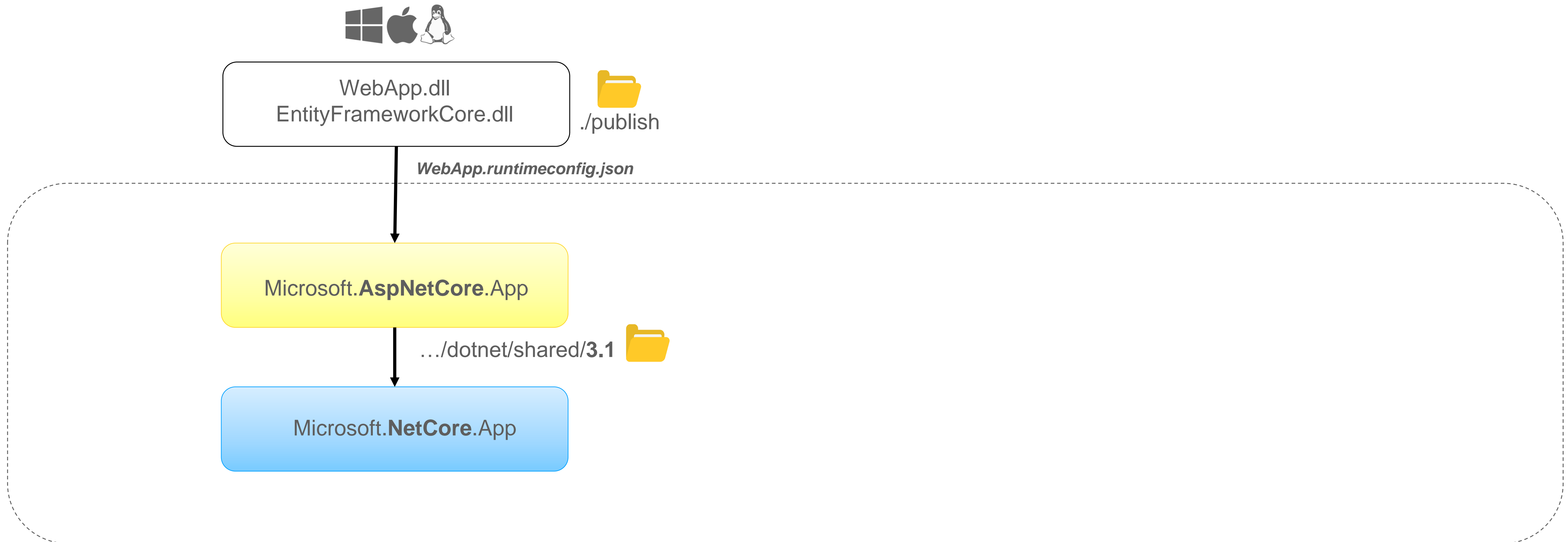
Dotnet publish: Shared frameworks



- <https://docs.microsoft.com/en-us/dotnet/core/deploying/>
- <https://docs.microsoft.com/en-us/dotnet/core/rid-catalog>
- <https://natemcmaster.com/blog/2017/12/21/netcore-primitives/>
- <https://natemcmaster.com/blog/2018/08/29/netcore-primitives-2/>
- <https://natemcmaster.com/blog/2019/01/09/netcore-primitives-3/>



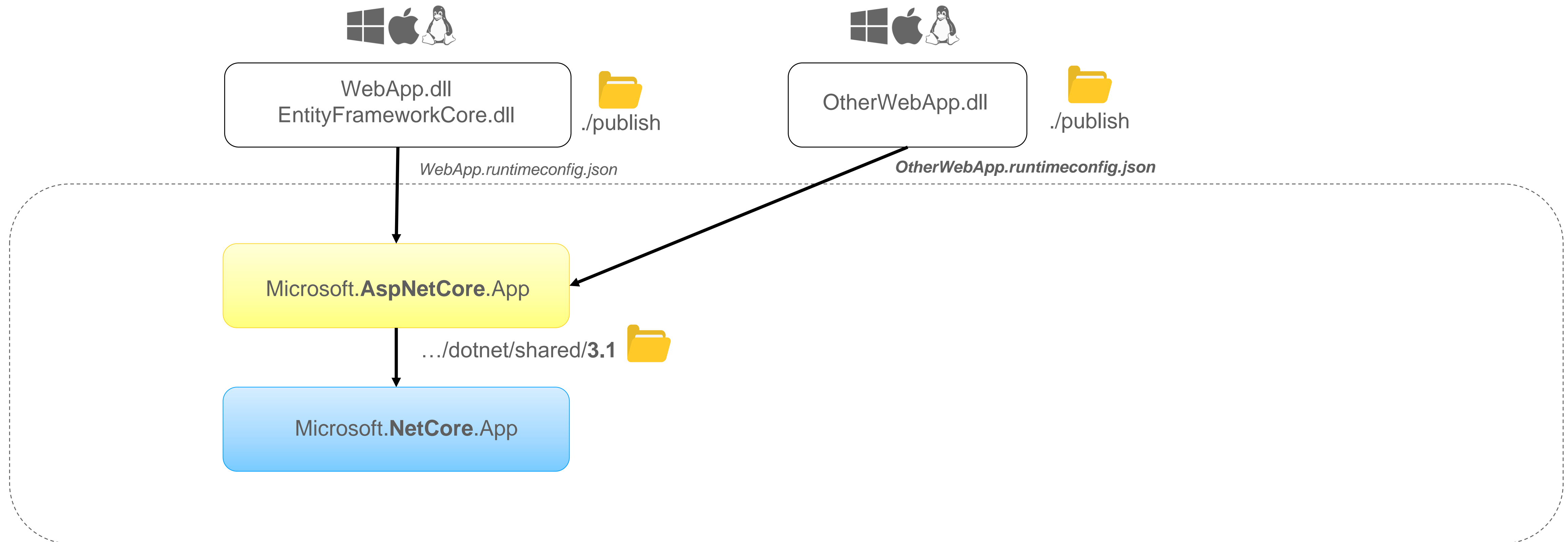
Dotnet publish: framework dependent



<https://docs.microsoft.com/en-us/dotnet/core/deploying/>

<https://docs.microsoft.com/en-us/dotnet/core/versions/selection>

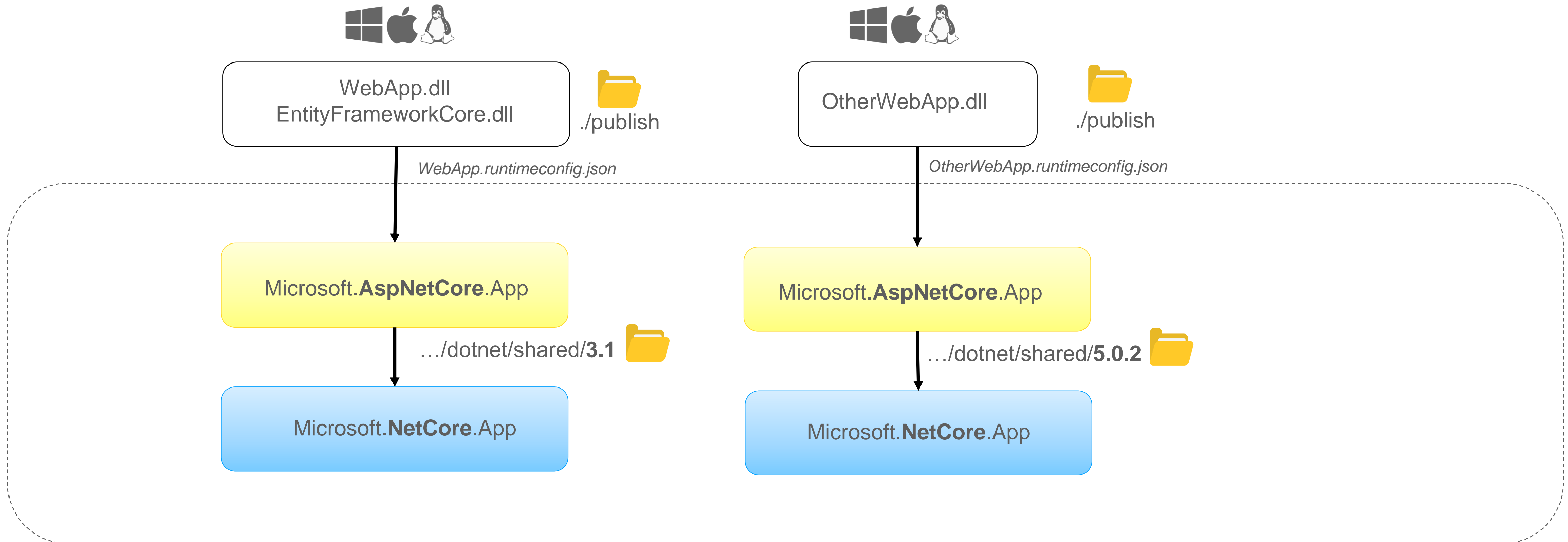
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<https://docs.microsoft.com/en-us/dotnet/core/deploying/>

<https://docs.microsoft.com/en-us/dotnet/core/versions/selection>

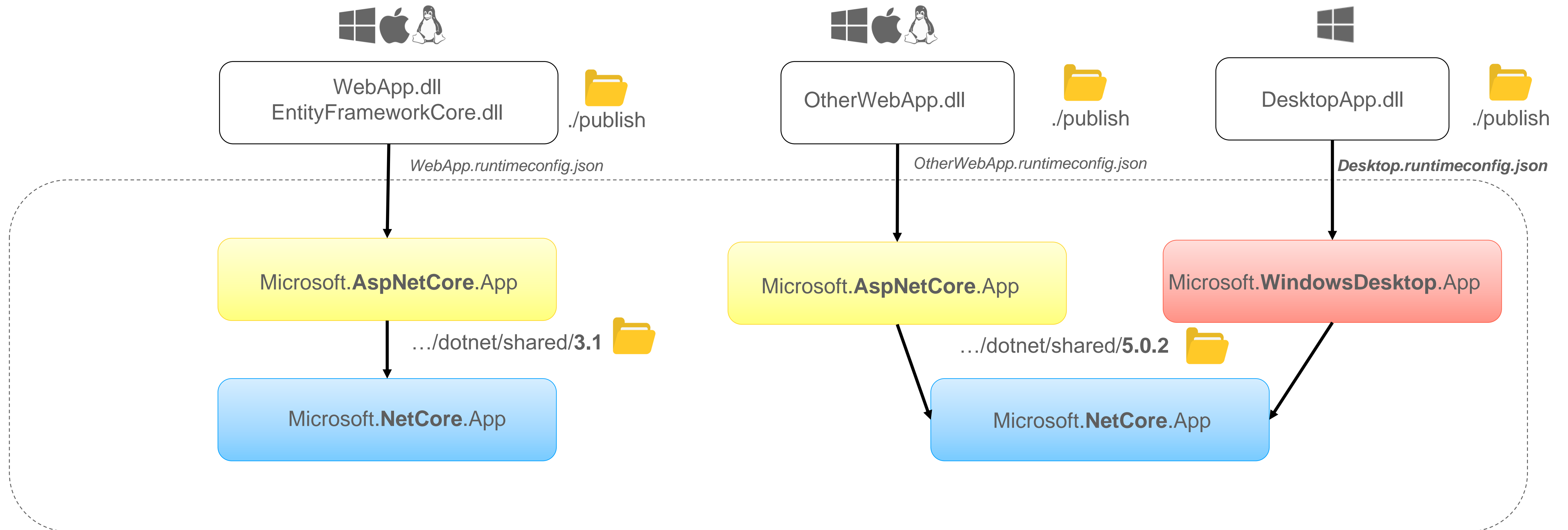
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<https://docs.microsoft.com/en-us/dotnet/core/versions/selection>

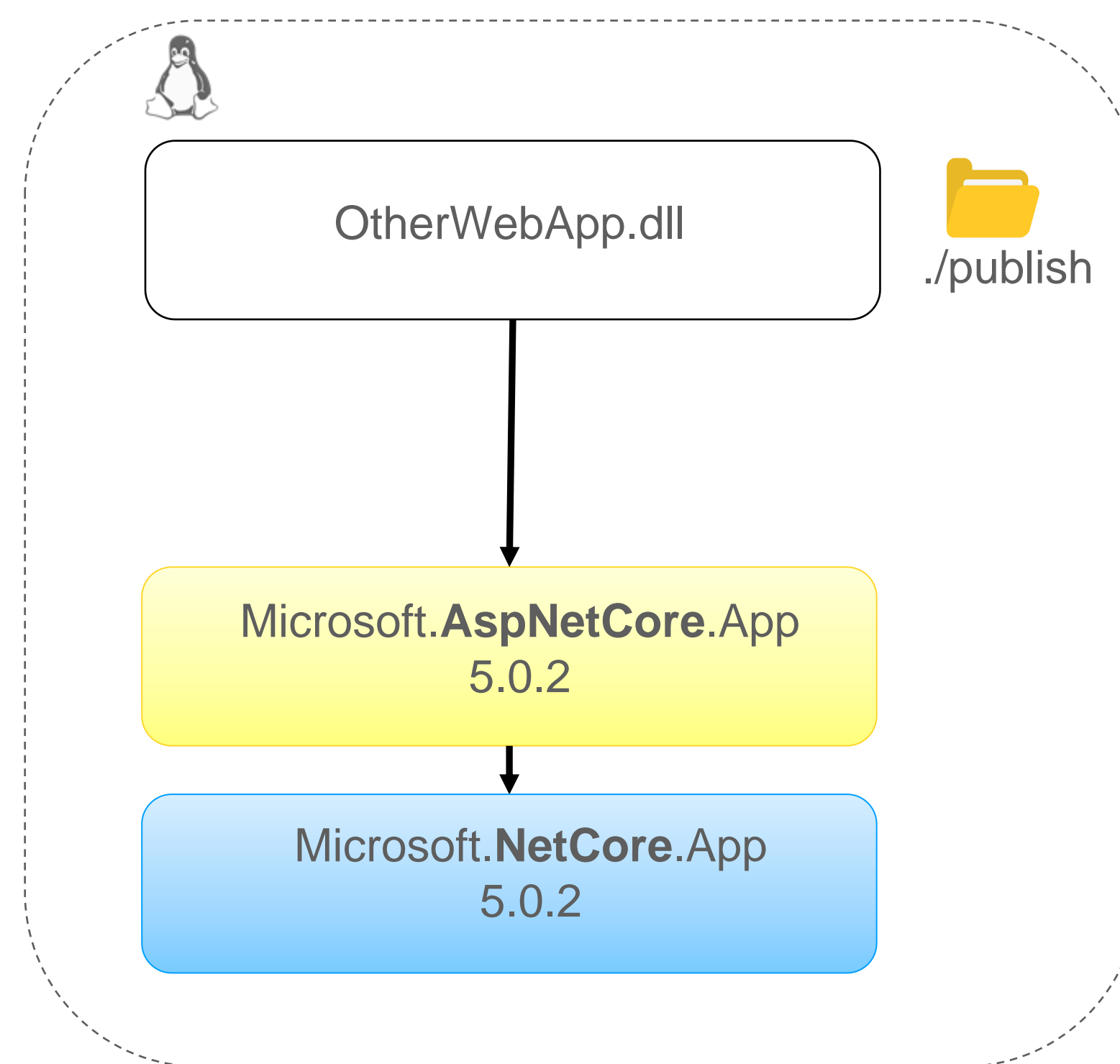
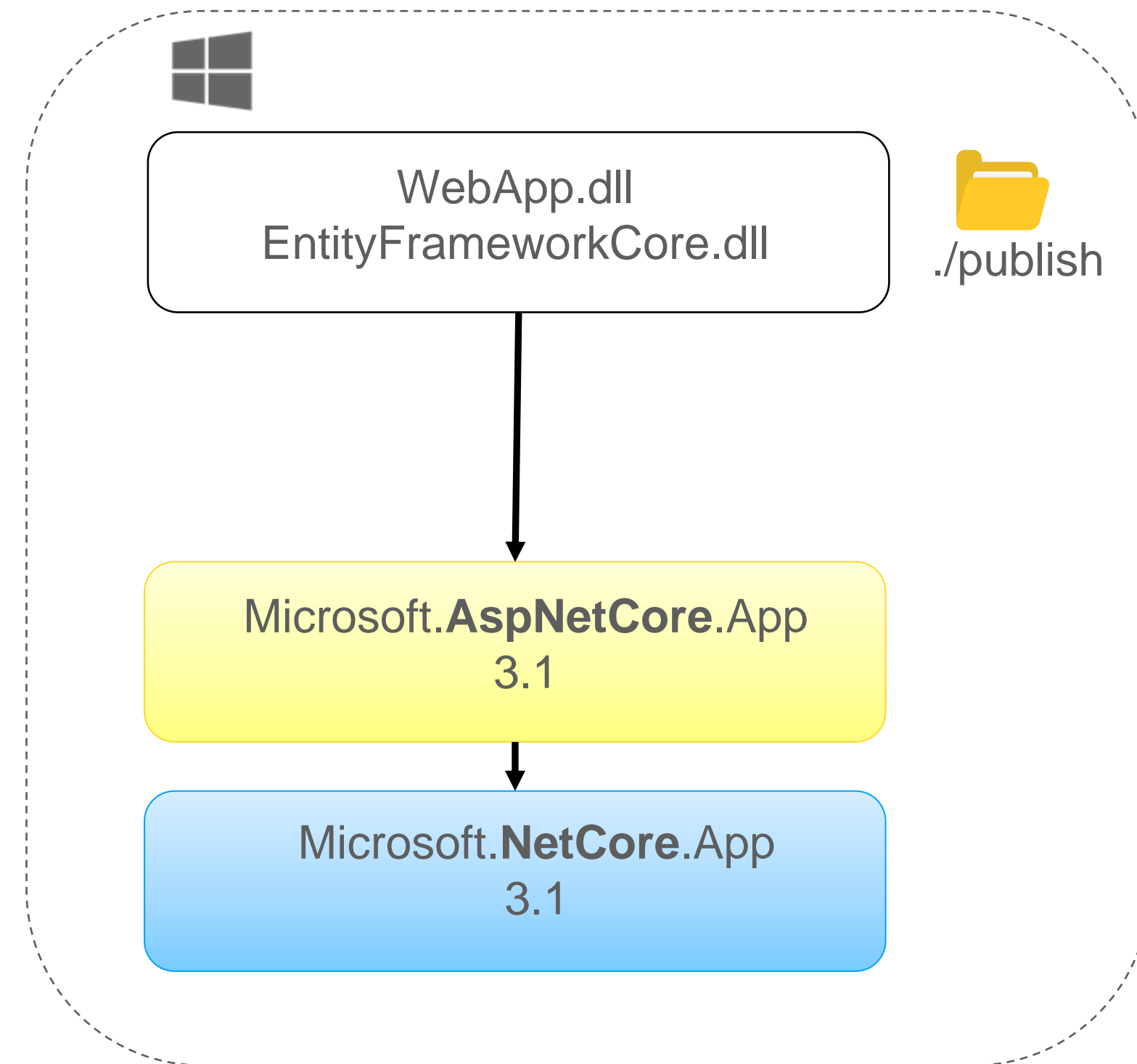
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<https://docs.microsoft.com/en-us/dotnet/core/versions/selection>

Dotnet publish: self contained



<https://docs.microsoft.com/en-us/dotnet/core/deploying/>