Get Comfortable with .NET Core and the CLI

Jeremy Clark
www.jeremybytes.com
@jeremybytes

What is .NET Core?

- The new face of .NET
- Quickly evolving & open source
- Cross-platform (Windows, macOS, Linux)

What I like about .NET Core

- .NET Core is easy to get installed and configured
- Self-hosted web applications with Kestrel
- Vastly simplified ASP.NET templates
- Built-in Dependency Injection works for many scenarios

What I like about .NET Core

- Command-line interface (CLI)
- Command-line help is actually helpful
- The same tool chain can be used across platforms (CLI, Visual Studio Code)
- Cross-platform actually works! (great for containers)

Why .NET Core?

- .NET Core is the future
- New C# 8 language features will *NOT* come to .NET Framework
- .NET Standard 2.1 does *NOT* support .NET Framework
- .NET Core 3.x supports WinForms & WPF (for real)
  Don't get too excited, this is not cross-platform, but it's still important for moving forward

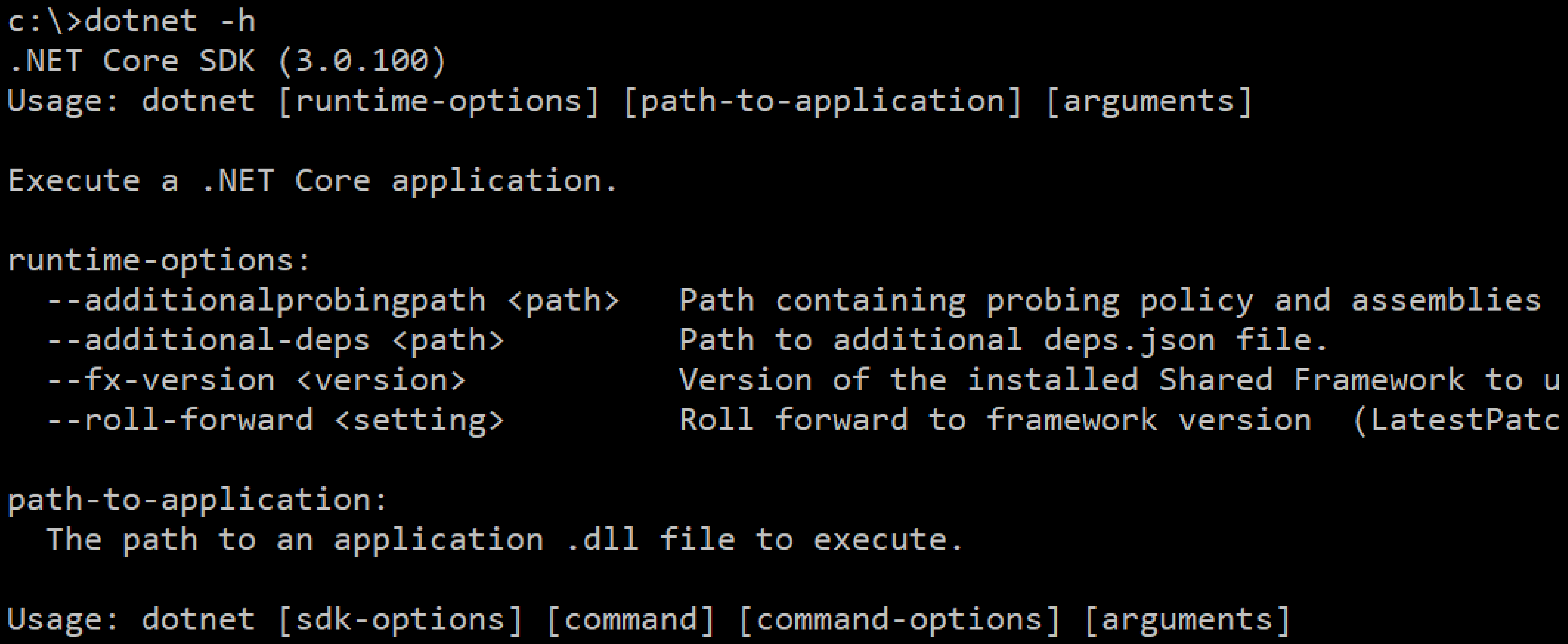
What you need to build applications with .NET Core

- .NET Core SDK
  https://dotnet.microsoft.com/download
- Visual Studio Code (or Visual Studio)
  https://code.visualstudio.com/download
- C# Extension for Visual Studio Code
  https://marketplace.visualstudio.com/items?itemName=ms-vscode.csharp

CLI: Command-line Interface

- `dotnet`
- `dotnet new`
- `dotnet add package`
- `dotnet build`
- `dotnet run`

dotnet -h

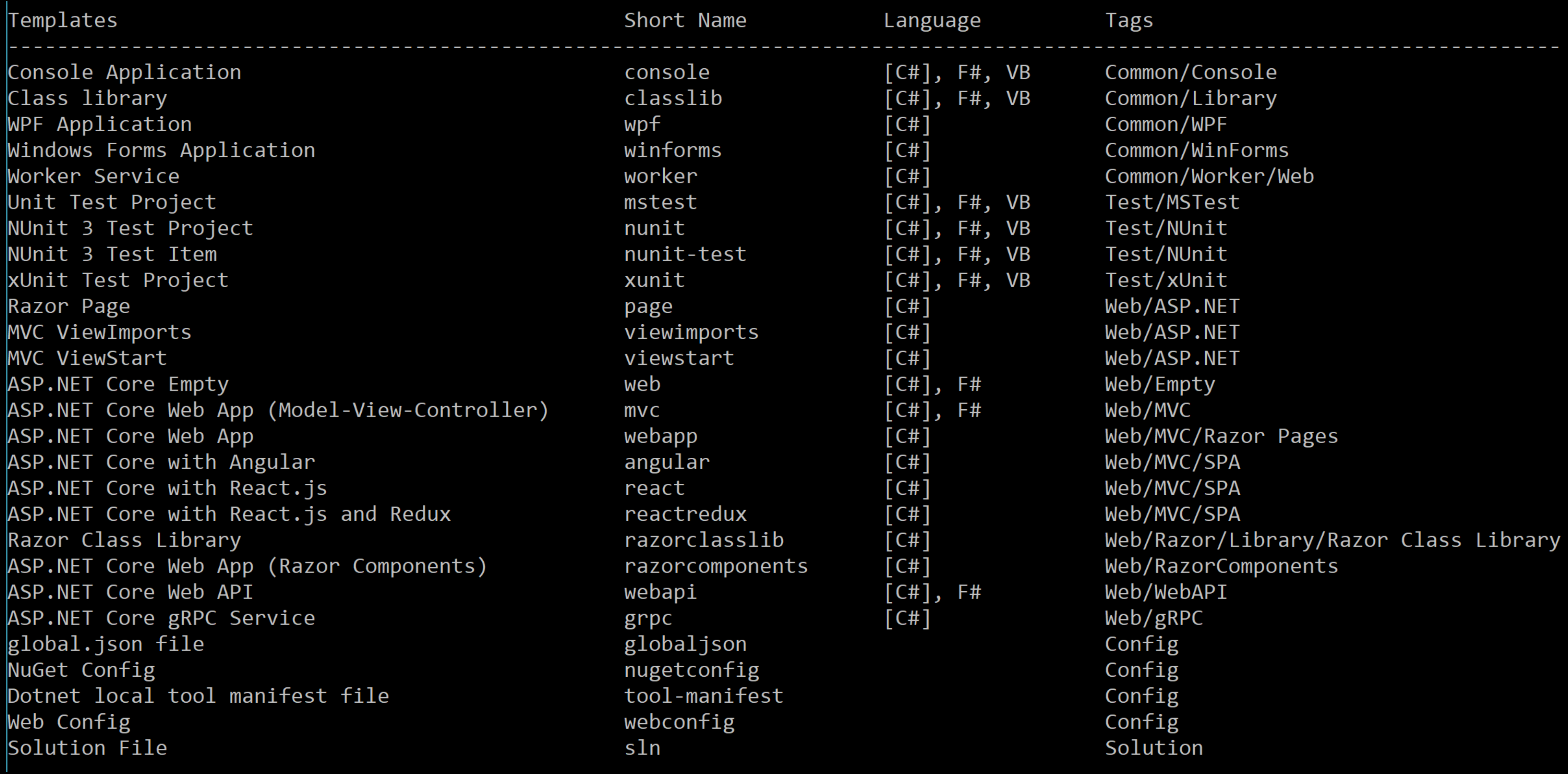


```
c:\>dotnet -h
.NET Core SDK (3.0.100)
Usage: dotnet [runtime-options] [path-to-application] [arguments]

Execute a .NET Core application.

runtime-options:
  --additionalprobingpath <path>   Path containing probing policy and assemblies
  --additional-deps <path>         Path to additional deps.json file.
  --fx-version <version>           Version of the installed Shared Framework to u
  --roll-forward <setting>         Roll forward to framework version  (LatestPatc

path-to-application:
  The path to an application .dll file to execute.

Usage: dotnet [sdk-options] [command] [command-options] [arguments]
```

dotnet -h

```
SDK commands:
  add               Add a package or reference to a .NET project.
  build             Build a .NET project.
  build-server      Interact with servers started by a build.
  clean             Clean build outputs of a .NET project.
  help              Show command line help.
  list              List project references of a .NET project.
  migrate           Migrate a project.json project to an MSBuild project.
  msbuild           Run Microsoft Build Engine (MSBuild) commands.
  new               Create a new .NET project or file.
  nuget             Provides additional NuGet commands.
  pack              Create a NuGet package.
  publish           Publish a .NET project for deployment.
  remove            Remove a package or reference from a .NET project.
  restore           Restore dependencies specified in a .NET project.
  run               Build and run a .NET project output.
  sln               Modify Visual Studio solution files.
  store             Store the specified assemblies in the runtime package store.
  test              Run unit tests using the test runner specified in a .NET project.
  tool              Install or manage tools that extend the .NET experience.
  vstest            Run Microsoft Test Engine (VSTest) commands.
```

dotnet new



```
Templates                                         Short Name           Language          Tags
----------------------------------------------------------------------------------------------------------------------------------
Console Application                               console              [C#], F#, VB      Common/Console
Class library                                     classlib             [C#], F#, VB      Common/Library
WPF Application                                   wpf                  [C#]              Common/WPF
Windows Forms Application                         winforms             [C#]              Common/WinForms
Worker Service                                    worker               [C#]              Common/Worker/Web
Unit Test Project                                 mstest               [C#], F#, VB      Test/MSTest
NUnit 3 Test Project                              nunit                [C#], F#, VB      Test/NUnit
NUnit 3 Test Item                                 nunit-test           [C#], F#, VB      Test/NUnit
xUnit Test Project                                xunit                [C#], F#, VB      Test/xUnit
Razor Page                                        page                 [C#]              Web/ASP.NET
MVC ViewImports                                   viewimports          [C#]              Web/ASP.NET
MVC ViewStart                                     viewstart            [C#]              Web/ASP.NET
ASP.NET Core Empty                                web                  [C#], F#          Web/Empty
ASP.NET Core Web App (Model-View-Controller)       mvc                  [C#], F#          Web/MVC
ASP.NET Core Web App                              webapp               [C#]              Web/MVC/Razor Pages
ASP.NET Core with Angular                         angular              [C#]              Web/MVC/SPA
ASP.NET Core with React.js                        react                [C#]              Web/MVC/SPA
ASP.NET Core with React.js and Redux              reactredux           [C#]              Web/MVC/SPA
Razor Class Library                               razorclasslib        [C#]              Web/Razor/Library/Razor Class Library
ASP.NET Core Web App (Razor Components)           razorcomponents      [C#]              Web/RazorComponents
ASP.NET Core Web API                              webapi               [C#], F#          Web/WebAPI
ASP.NET Core gRPC Service                         grpc                 [C#]              Web/gRPC
global.json file                                  globaljson                             Config
NuGet Config                                      nugetconfig                            Config
Dotnet local tool manifest file                   tool-manifest                          Config
Web Config                                        webconfig                              Config
Solution File                                     sln                                    Solution
```

Creating & Running

- New Projects

```
dotnet new webapi

dotnet new console
```

- Build / Run

```
dotnet build

dotnet run
```

Adding Packages / References

- NuGet Packages

```
dotnet add package Newtonsoft.Json
```

- Add Reference

```
dotnet add reference ../folder/my-library.csproj
```

Solutions

- Solution Files

```
dotnet new sln

dotnet sln add ./folder1/my-console.csproj

dotnet sln add ./folder2/my-library.csproj
```

Async

- "async" Main in a console application
  - ~~Open . roj~~
  - ~~Add to Proper up section~~

    ~~`<LangVer >lates angVersion>`~~

No Longer Needed

ASP.NET Dependency Injection

- Auto-inject dependencies as parameters in Controller constructors

- In Startup.cs

```
services.AddSingleton<IPeopleProvider, StaticPeopleProvider>()
```

- Lifetimes: Singleton, Scoped, Transient

Thank You!

Jeremy Clark

- http://www.jeremybytes.com
- jeremy@jeremybytes.com
- @jeremybytes