DotNet 2021
ONLINE TECH CONFERENCE
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Future of Modern Development with .NET

www.dotnet2021.com
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I joined Microsoft in 2007 working on ASP.NET, in 2010 I moved to Azure to work on making .NET work great in Azure and then in 2016 I moved into DevDiv to work on all of .NET.

Today my team works on .NET, C#, F#, VB.NET and .NET Tooling. My team also works on Microsoft Open JDK and C++.

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.NET
Your platform for building anything

Desktop  Web  Cloud  Mobile  Gaming  IoT  AI
.NET ecosystem momentum

>5M
.NET developers
In Visual Studio family

#1
Most Loved Framework (2019 & 2020)
.NET Core

Top 30
Highest velocity OSS project
github.com/dotnet

Top 5
Language on GitHub
C#

>10X
Faster than Node.js
ASP.NET Core

40%
New to .NET are students
dot.net download survey

.NET 5 Performance

> 10X faster than Node.js
ASP.NET Core web framework

Faster than Go, C++ and Java
gRPC server performance

Sources:
https://www.techempower.com/benchmarks/#section=data-r20&hw=ph&test=plaintext
https://github.com/LesnyRumcajs/grpc_bench/wiki/2020-08-11-bench-results
.NET adoption

Downloads in first 6 months of release

.NET 5
3.6M

3M
Why .NET 5?

- Flexible deployment
- Unparalleled performance
- Reduced infrastructure & hosting costs
- Modern, innovative languages and APIs
.NET Upgrade Assistant

Reduce time and difficulty modernizing older .NET codebases

Guided, step-by-step experience

Multiple project types supported

Learn more | aka.ms/dotnet-upgrade-assistant
One .NET - .NET 6

Single SDK, one BCL, unified toolchain
Cross-platform native UI
Cross-platform web UI
Cloud native investments
Performance & productivity improvements

.NET has the best of breed solutions for all modern workloads in a single, unified development platform
.NET 6 main features

- Simplify and write less code with C# 10
- .NET Multi-platform App UI for native mobile & desktop apps
- Blazor desktop web apps with native device capabilities
- Minimal web APIs for cloud native apps
- More device targets including Apple M1
- Windows Forms and WPF on ARM64 & Single file EXE deployment
- Developer productivity enhancements like hot reload
- Continued performance improvements in runtime and build time
Many optimizations within EF Core
70% faster with .NET 6
31% faster query performance
Up to 43% reduced memory allocation

Tests done in-house on the same hardware as TechEmpower Fortunes benchmark.
Many syntactic simplifications, less boilerplate

Record structs

Improvements to lambdas and auto-properties

General availability in .NET 6

Simplify your code with C# 10

global using System;

namespace Model;

public record struct Person
{
    public required string Name
    {
        get;
        init => field = value.Trim();
    }
}
Minimal web APIs for cloud native apps

```csharp
var app = WebApplication.Create(args);
app.MapGet("/", () => "Hello World!");
app.Run();
```

- Lightweight, single-file, cloud native APIs
- Low ceremony, top-level C# programs
- Path to MVC
- General availability in .NET 6

Minimal code for minimal apps
Demo – minimal web APIs
```csharp
using Microsoft.AspNetCore.Builder;

var app = WebApplication.Create(args);

app.MapGet("/", () => "Hello World!");

app.Run();
```
.NET Multi-platform App UI

Cross-platform, native UI

Single project system, single codebase

Deploy to multiple devices, mobile & desktop

General availability in .NET 6

WinUI
Mac Catalyst
iOS
Android

github.com/dotnet/maui
Demo – .NET Multi-platform App UI
Blazor desktop apps

Reuse UI components across native and web

Built on top of .NET Multi-platform App UI

Native app container & embedded controls

General availability in .NET 6
Demo – ASP.NET Core & Blazor
Developer productivity improvements ("inner loop")

- Build time perf improvements in CLI & Visual Studio
- Hot reload everywhere, all project types
- No process restart, maintains state
- Optionally attach the debugger
- Evolution of "Edit & Continue"
Demo – Hot reload
return v * PERCENTAGE_TO_MOVE_TOWARDS_INBOUNDS;

/// <summary>Encourage a boid to stay close to its home.</summary>
/// <param name="boid">The boid.</param>
/// <returns>The velocity vector encouraging a boid to stay close to its home.</returns>
private Vector3D Rule5_TendencyTowardsHome(Boid boid)
{
    return (m_home - boid.PreviousPosition) * PERCENTAGE_TOWARDS_HOME;
}

/// <summary>Bound a velocity to the max speed limit.</summary>
/// <param name="velocity">The velocity to bound.</param>
/// <returns>The bounded velocity.</returns>
private static Vector3D BoundVelocity(Vector3D velocity)
{
    return (velocity.Length > speedLimit) ?
    (velocity / velocity.Length) * speedLimit :
    velocity;

    #endregion
.NET 6 Preview 4

.NET MAUI now supported in Visual Studio

ASP.NET Blazor hybrid desktop apps

Minimal web APIs and smaller, faster microservices

More device targets, more flexible deployment

Performance and productivity improvements

Download | dot.net/get-dotnet6
NEW CAPABILITIES

ML.NET

Now supports ARM64 and Apple M1

Config-based training enables saved training state

Model builder perf improvements

Improved AutoML

Learn more | dot.net/ml
ANNOUNCING

.NET Conf 2021

November 9 – 11

.NET 6 launch

Free, three-day, virtual event

Save the date!

www.dotnetconf.net
Take Aways

Download .NET 6 Preview 4

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.NET 6 Preview 4 blog post

aka.ms/dotnet6-preview4
Thanks and ...  
See you soon!

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