



TRAILHEAD
TECHNOLOGY PARTNERS

Old to Gold

How to Modernize Your Legacy
ASP.NET Apps Gradually



Jonathan "J." Tower

The Problem



ASP.NET



ASP.NET Core

Agenda



Migration
Approaches



Reverse
Proxies



YARP



.NET
Upgrade
Assistant



YARP
Migration



System.Web
Adapters

Agenda



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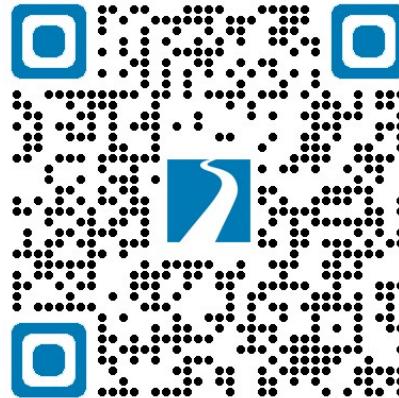
Jonathan "J." Tower

Principal Consultant & Partner



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- 🌐 trailheadtechnology.com/blog
- 𝕏 jtowermi
- .linkedin Jonathan "J." Tower
- 🎙️ Blue Blazes podcast

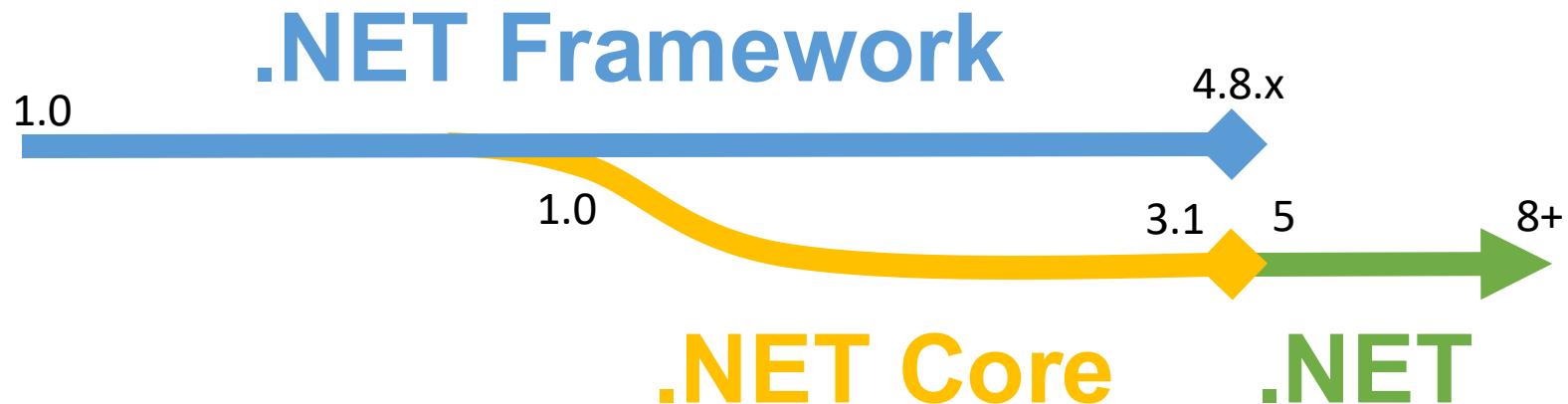
EXPERT CONSULTATION



bit.ly/th-offer

<https://github.com/trailheadtechnology/migrate-with-yarp>

Key Terms



Key Terms

ASP.NET

.NET Framework

ASP.NET Core
(v1.0 - 2.2)

.NET Framework

.NET Core

ASP.NET Core
(v3.0+)

.NET

Key Terms

ASP.NET

.NET Framework

ASP.NET Core
(v1.0 - 2.2)

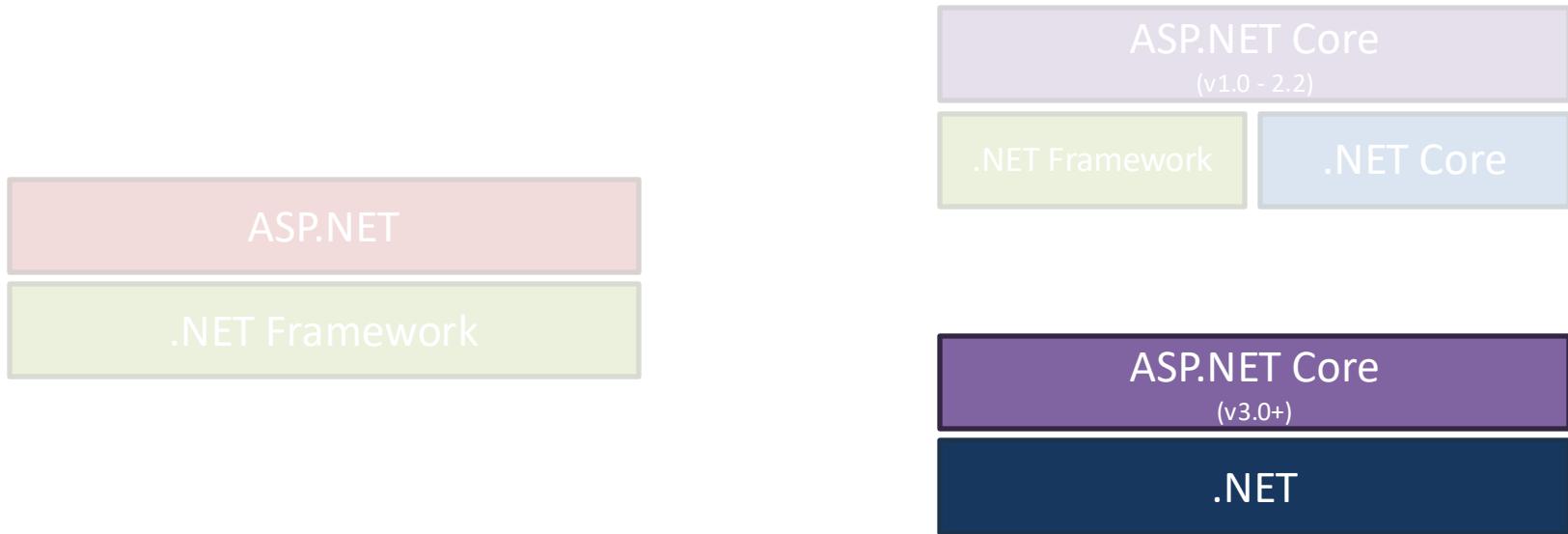
.NET Framework

.NET Core

ASP.NET Core
(v3.0+)

.NET

Key Terms



Migration Approaches



BIG BANG



STRANGLER FIG

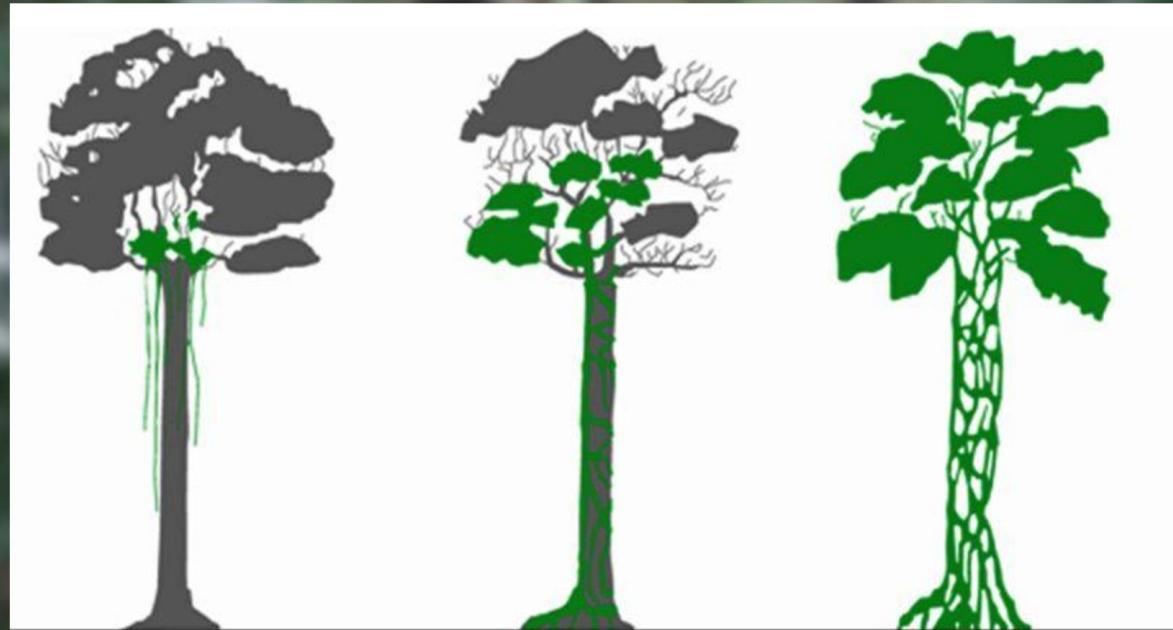
Big Bang Approach



Strangler Fig Approach

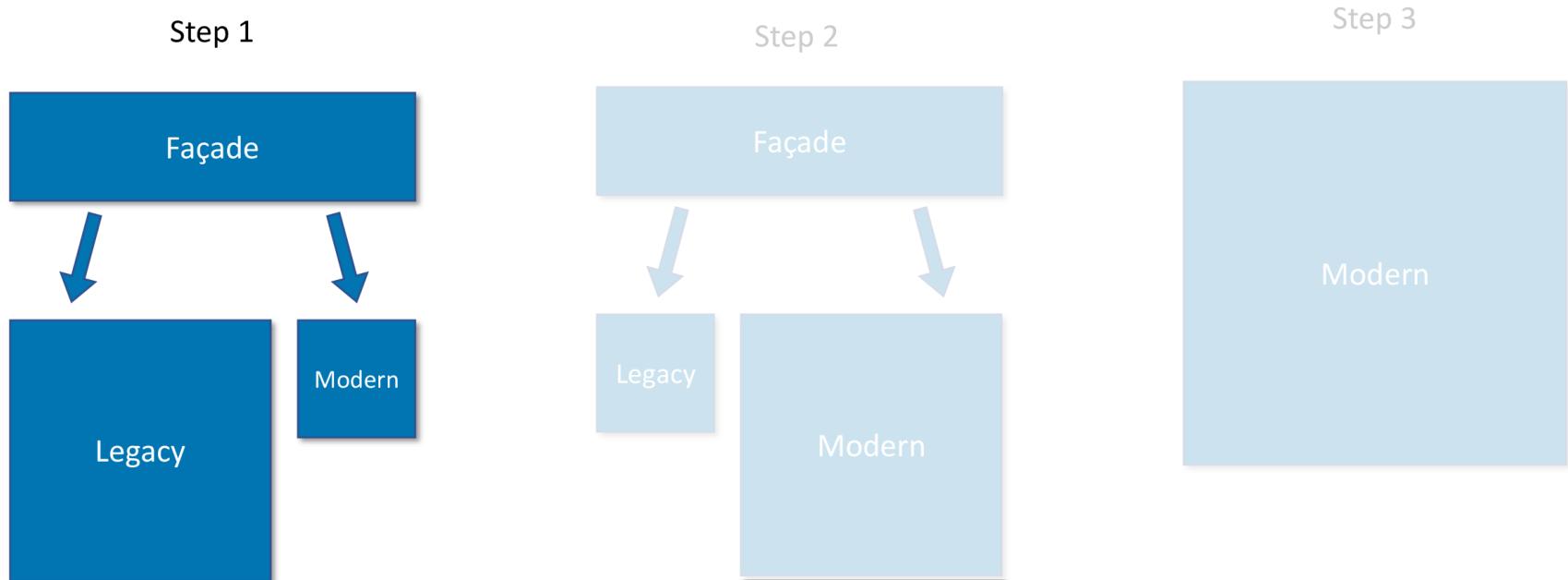


Strangler Fig

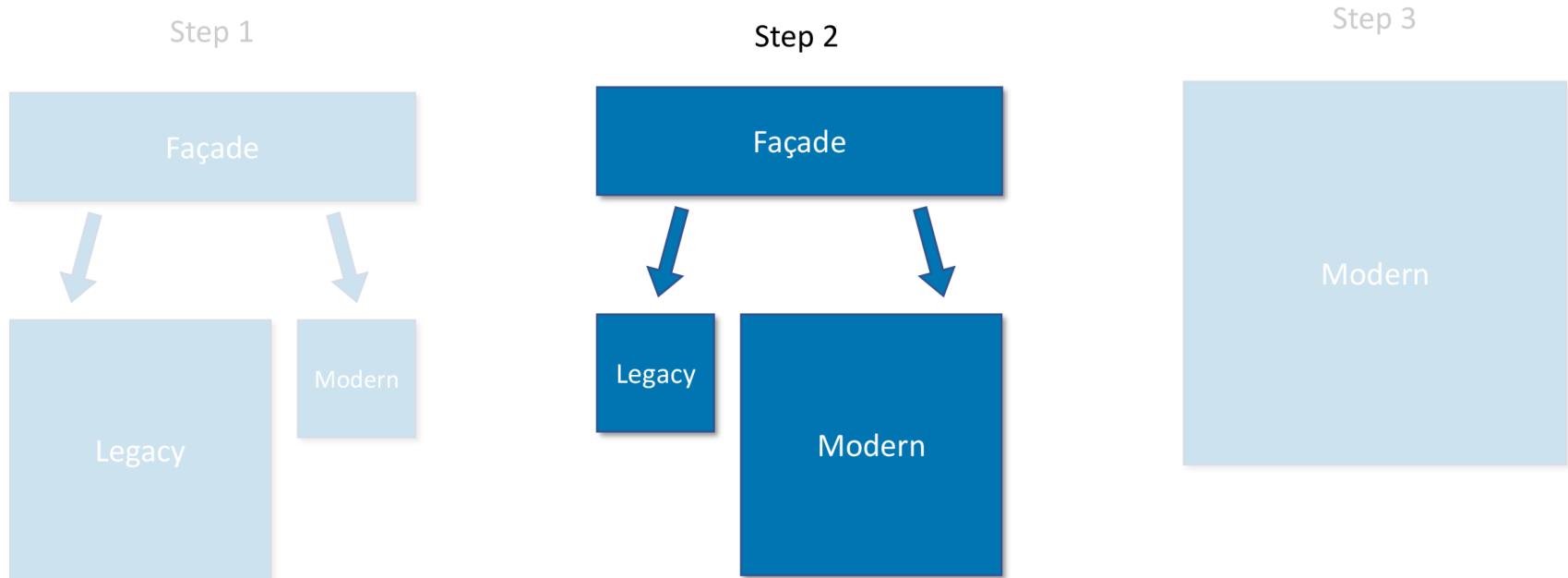


Source: Encyclopedia Britannica

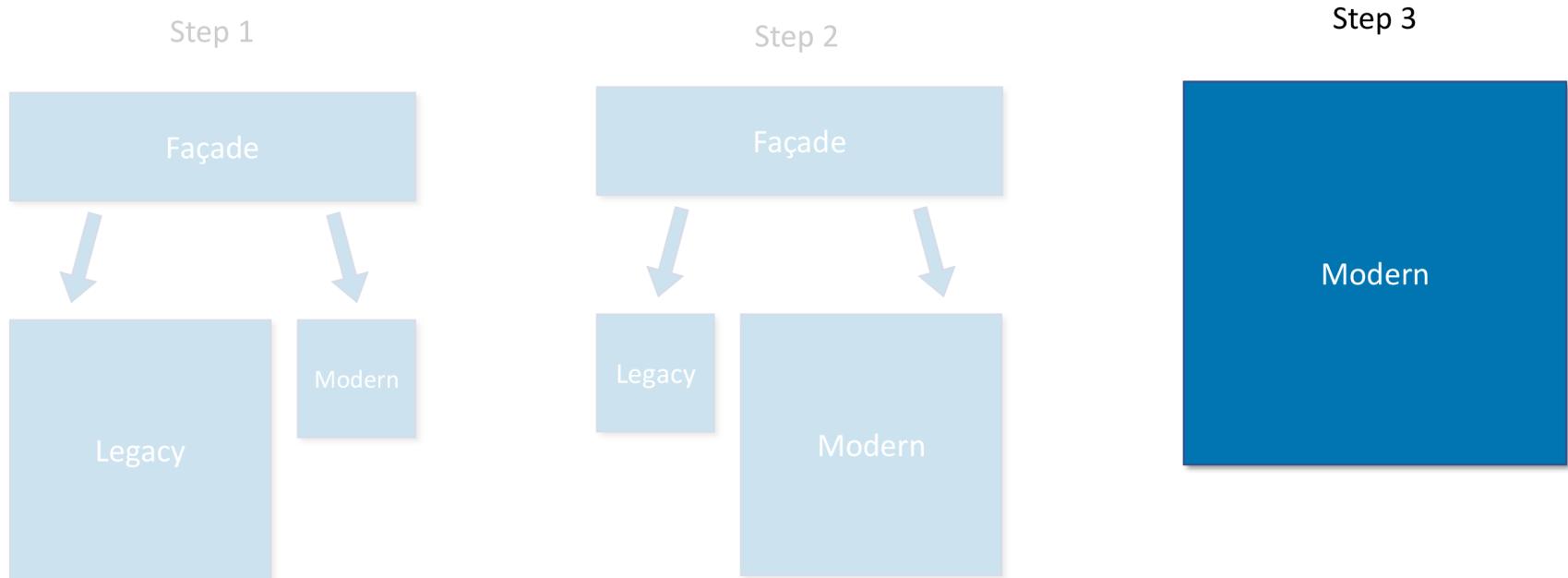
Strangler Fig Pattern



Strangler Fig Pattern



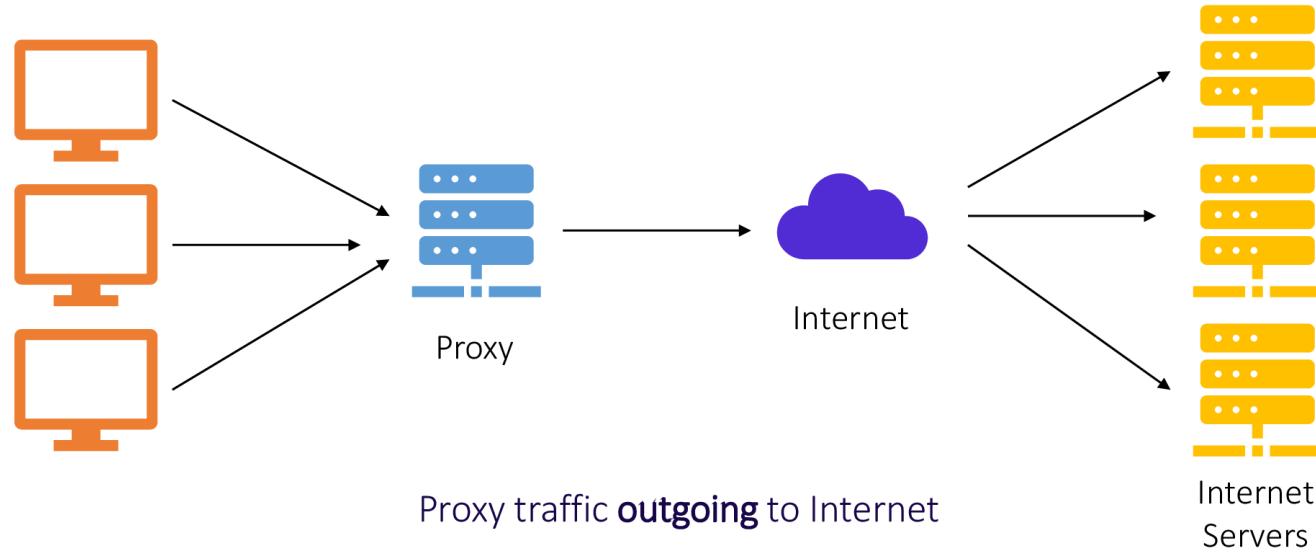
Strangler Fig Pattern



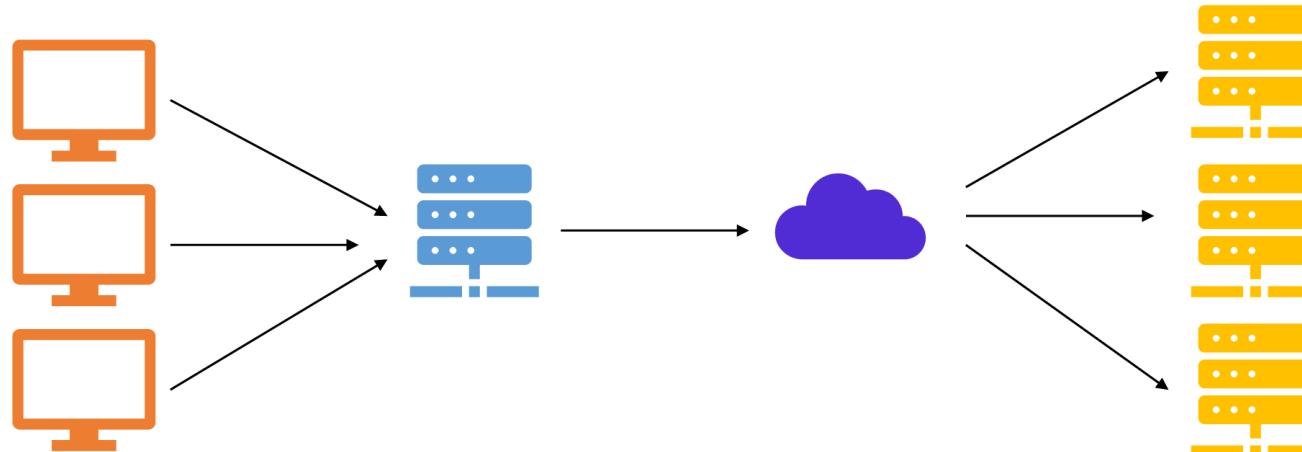


What is A Reverse Proxy?

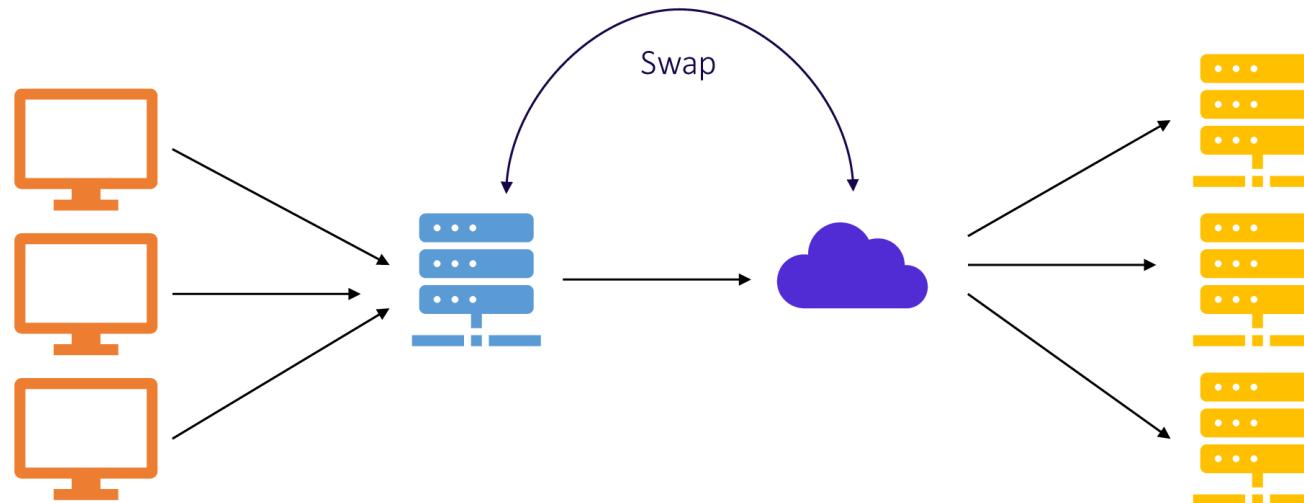
What is a Regular (Forward) Proxy?



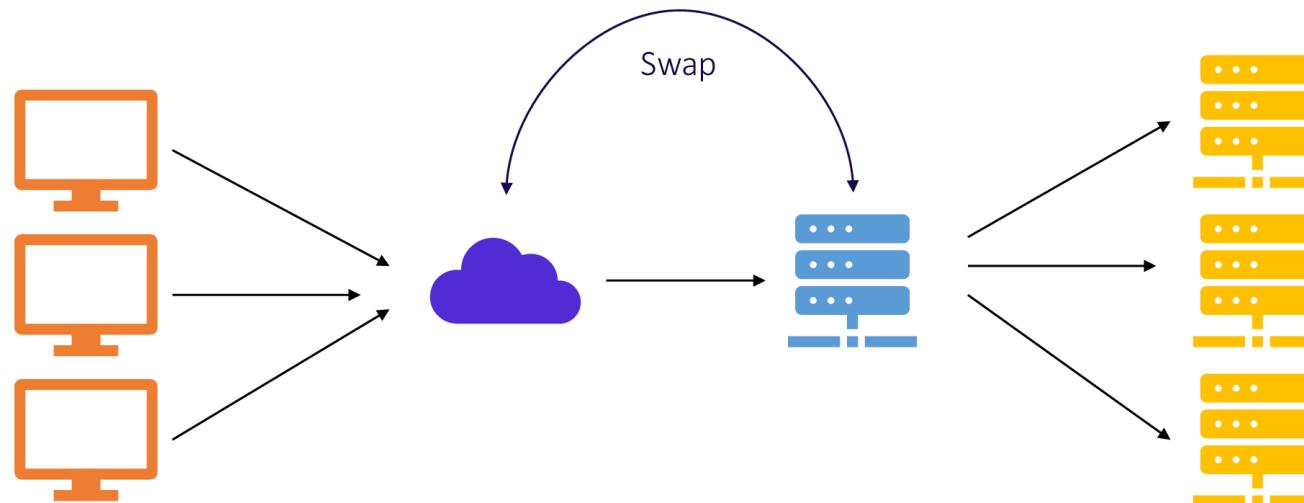
What is a REVERSE Proxy?



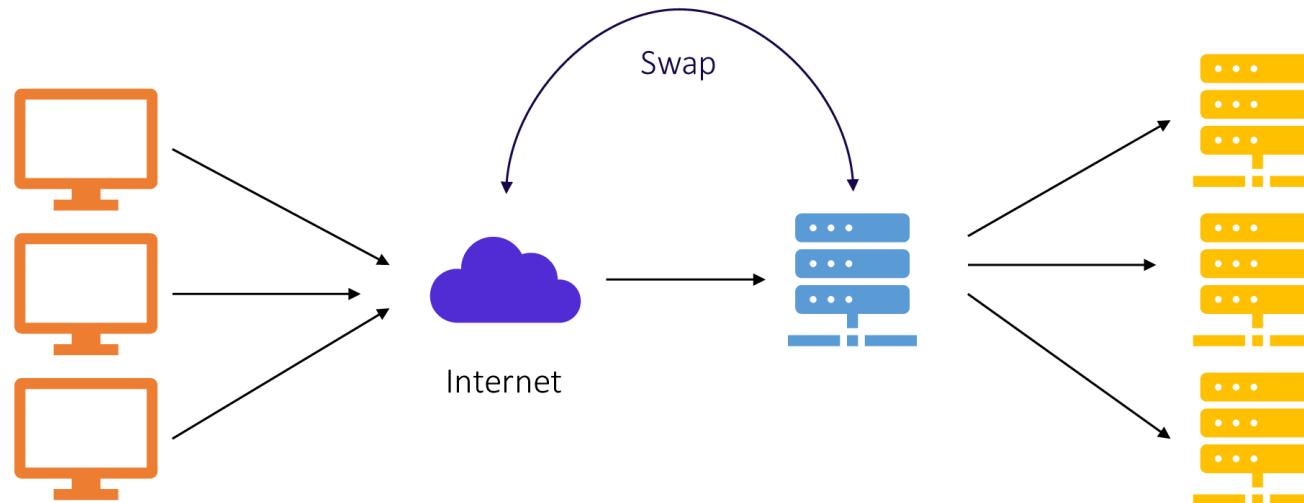
What is a REVERSE Proxy?



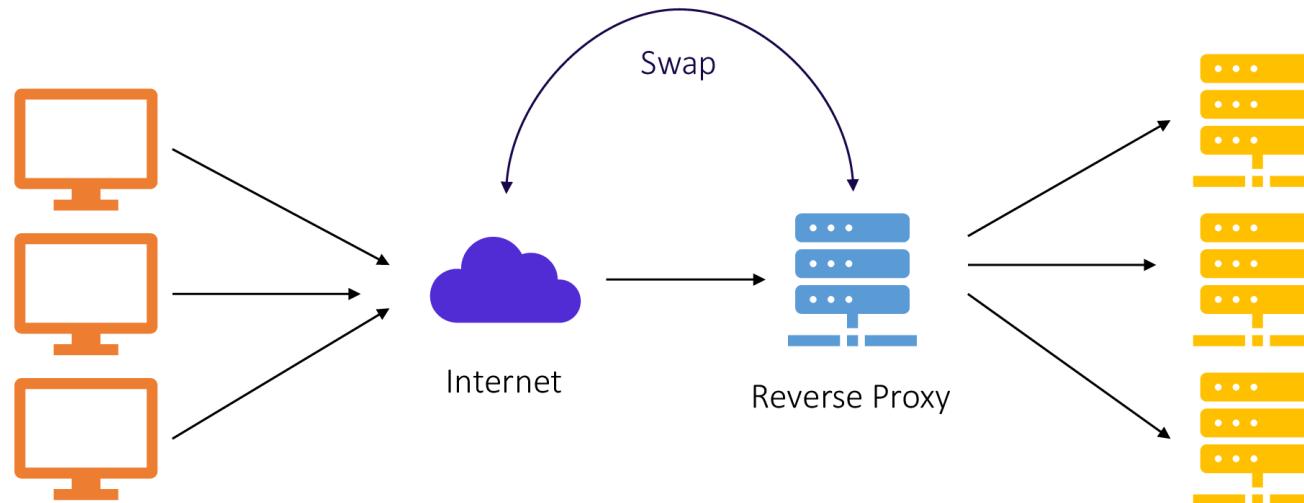
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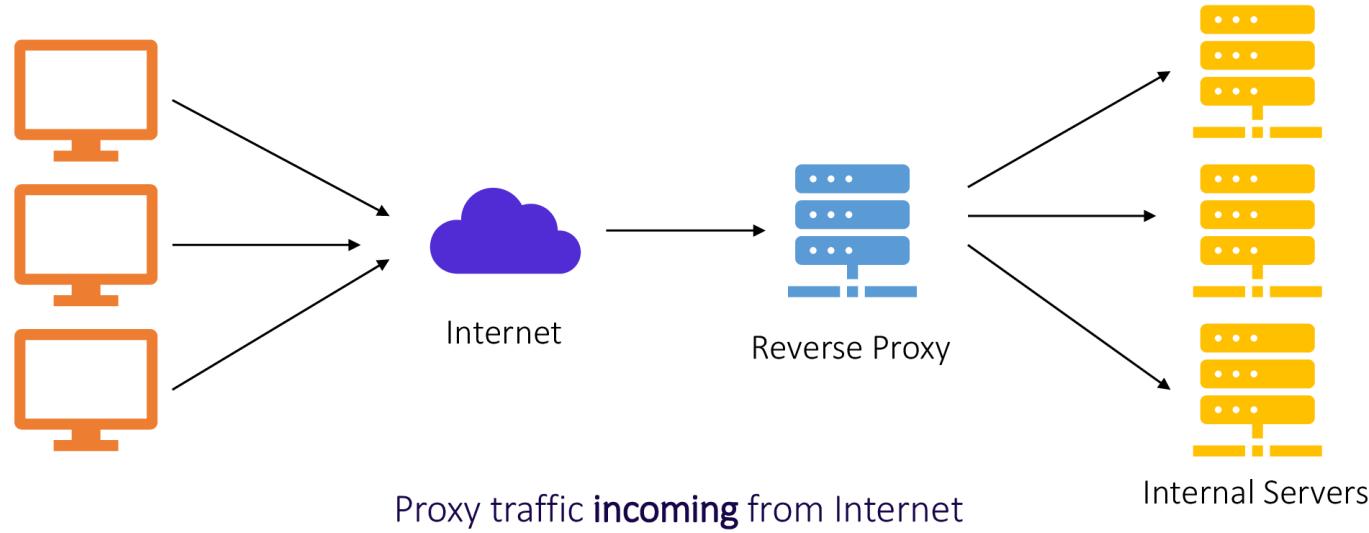
What is a REVERSE Proxy?



What is a REVERSE Proxy?



What is a REVERSE Proxy?



Use Cases



A/B TESTING



URL REWRITING



SECURITY



MICROSERVICES
API GATEWAY



FEATURE FLAGS



INCREMENTAL
MIGRATIONS

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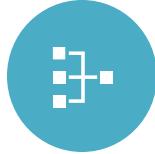
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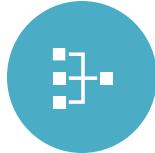
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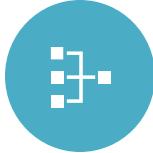
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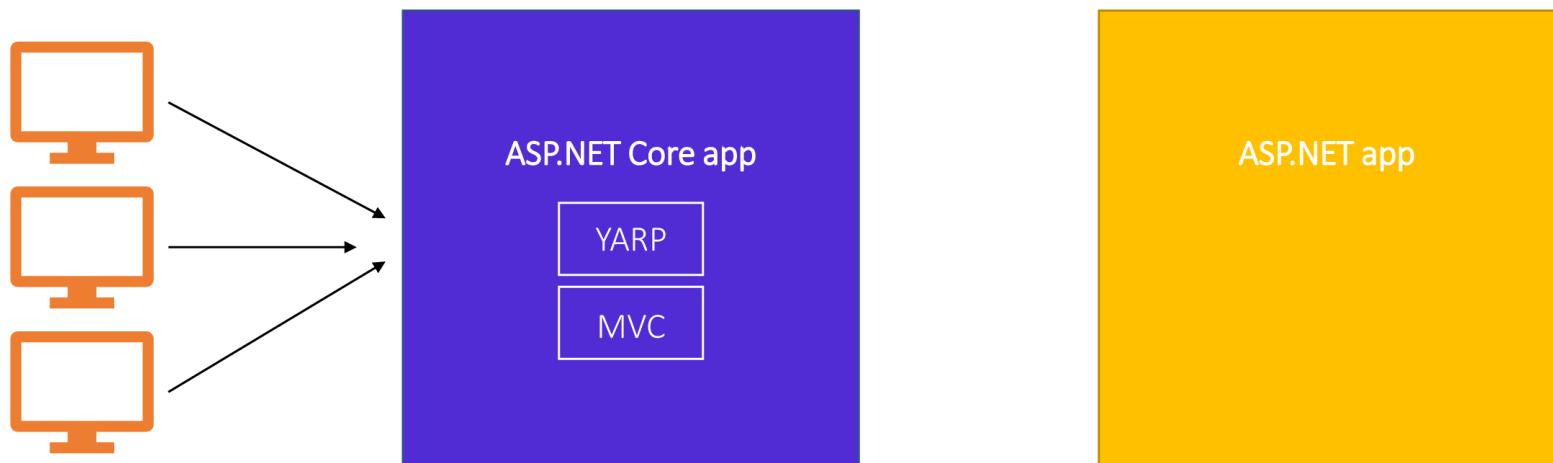


INCREMENTAL
MIGRATIONS

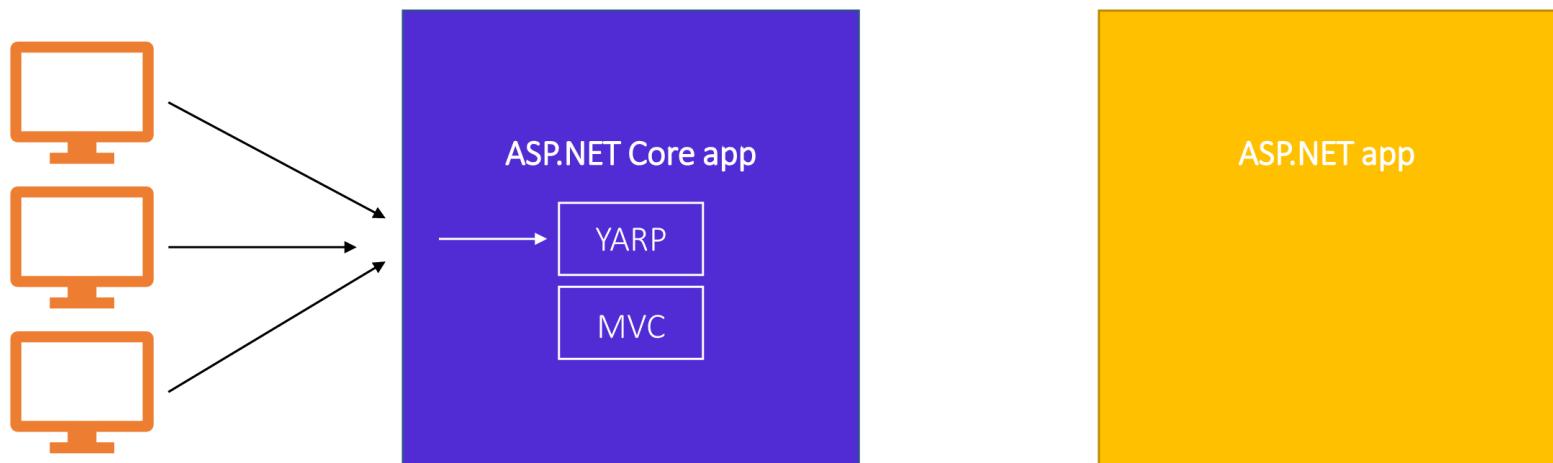


How YARP Works

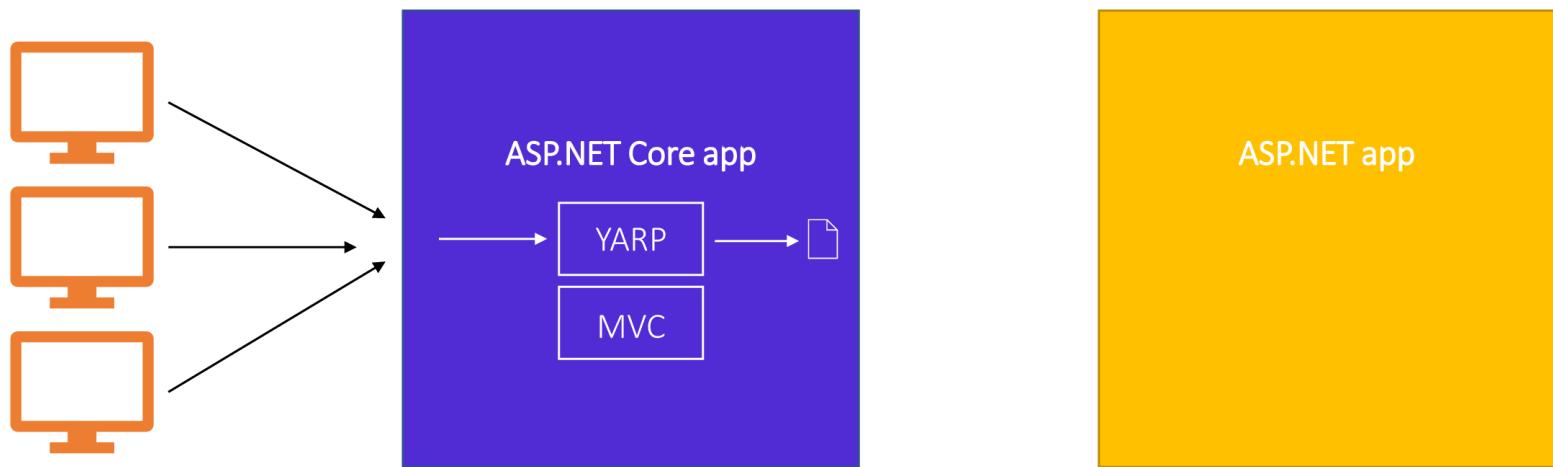
How YARP Works



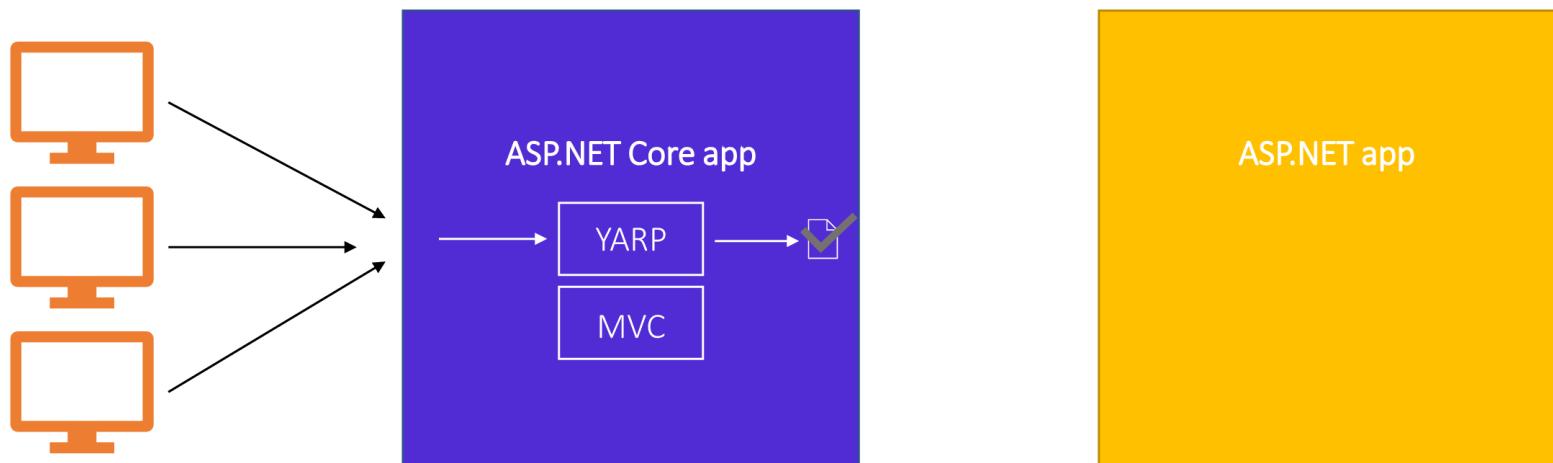
How YARP Works



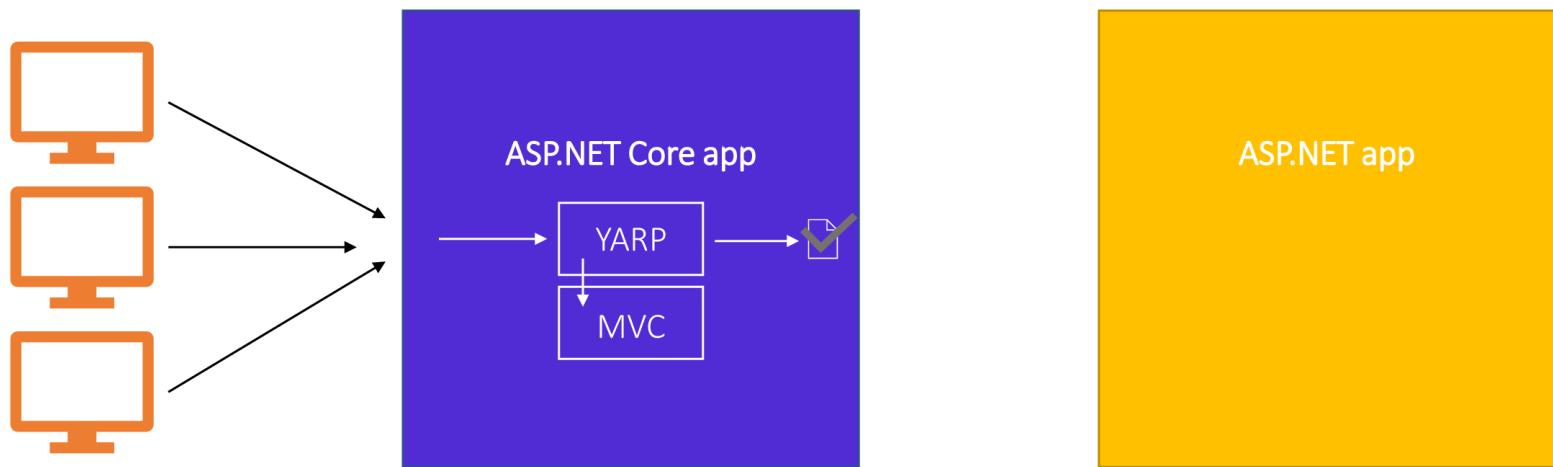
How YARP Works



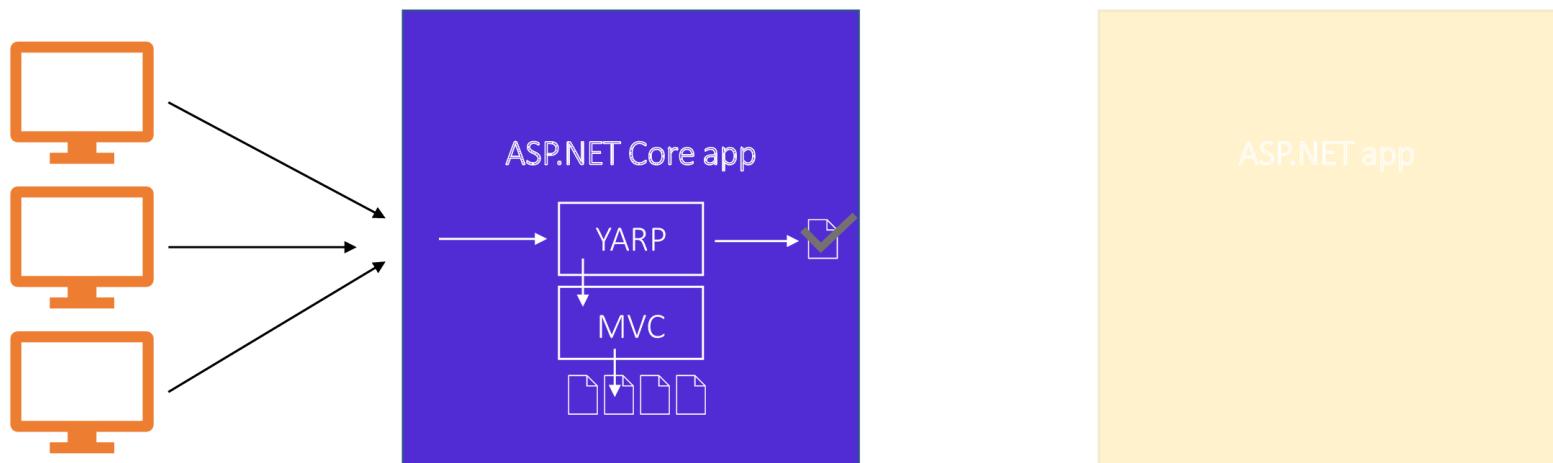
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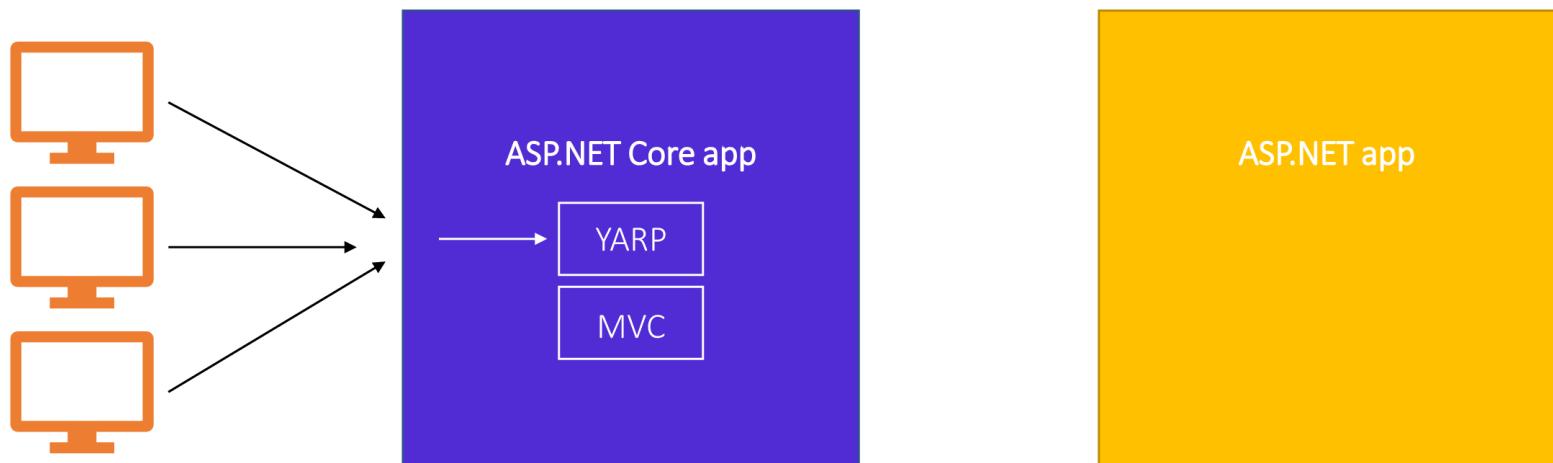
How YARP Works



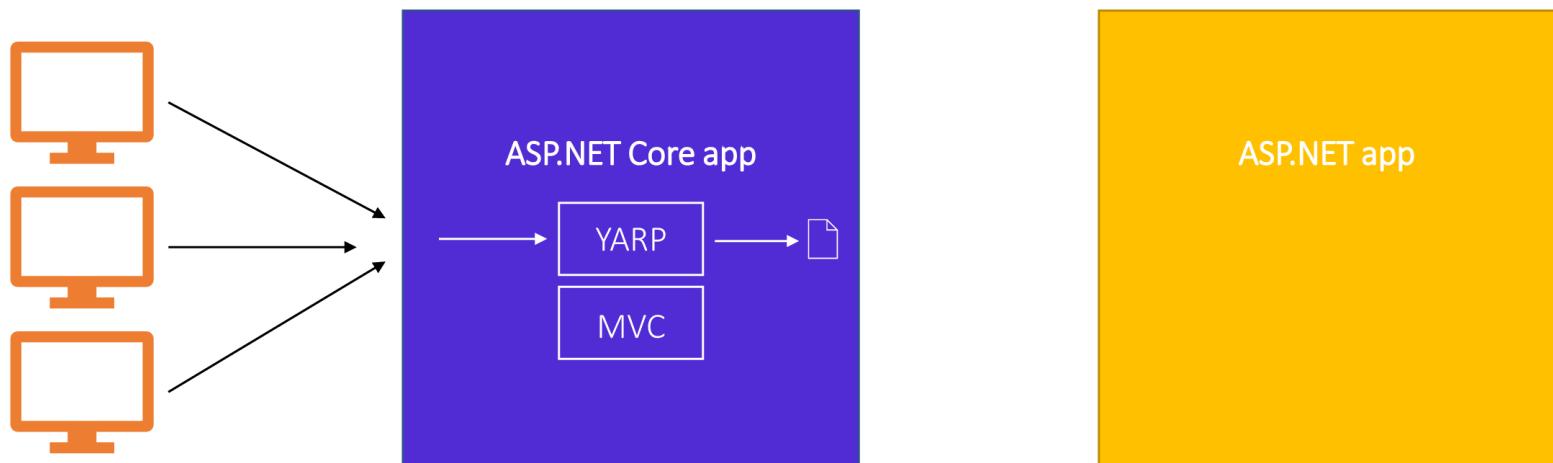
How YARP Works



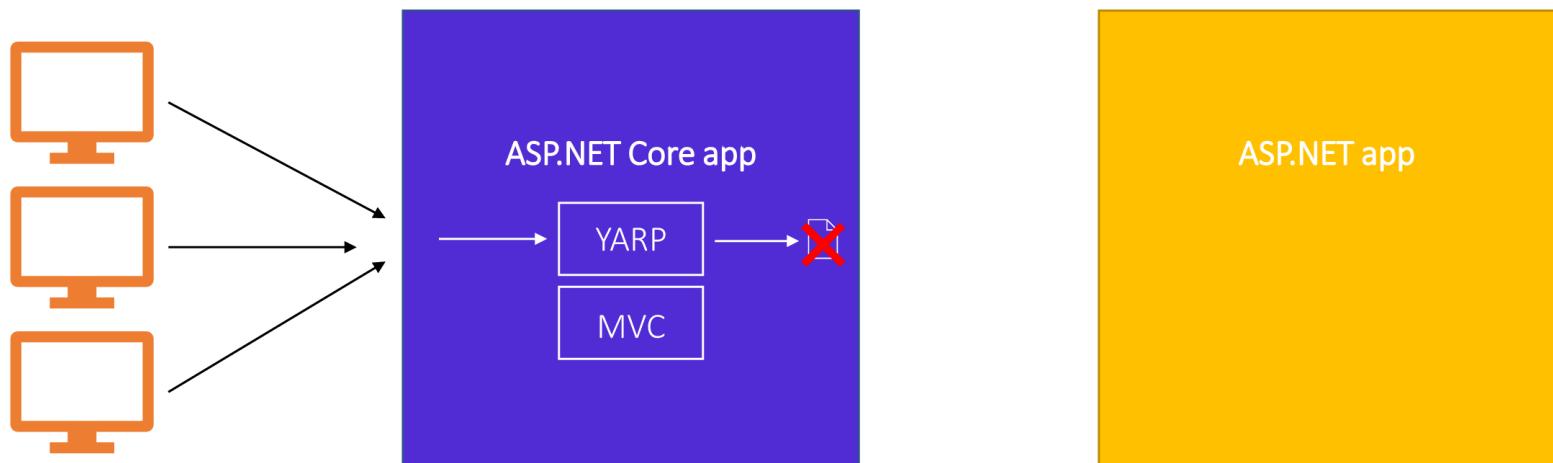
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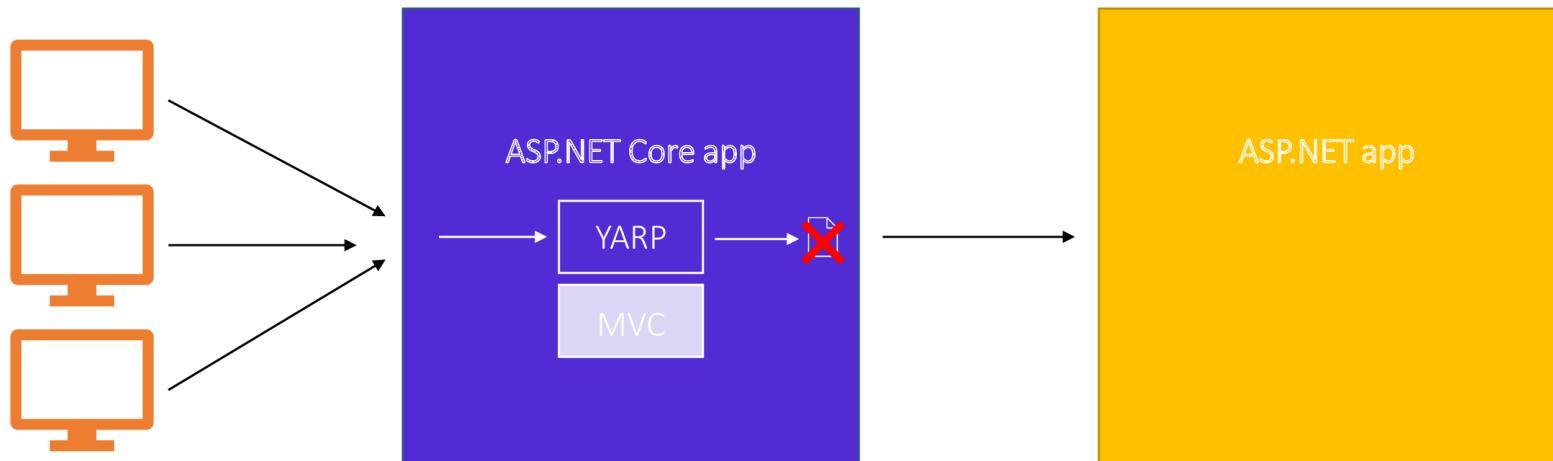
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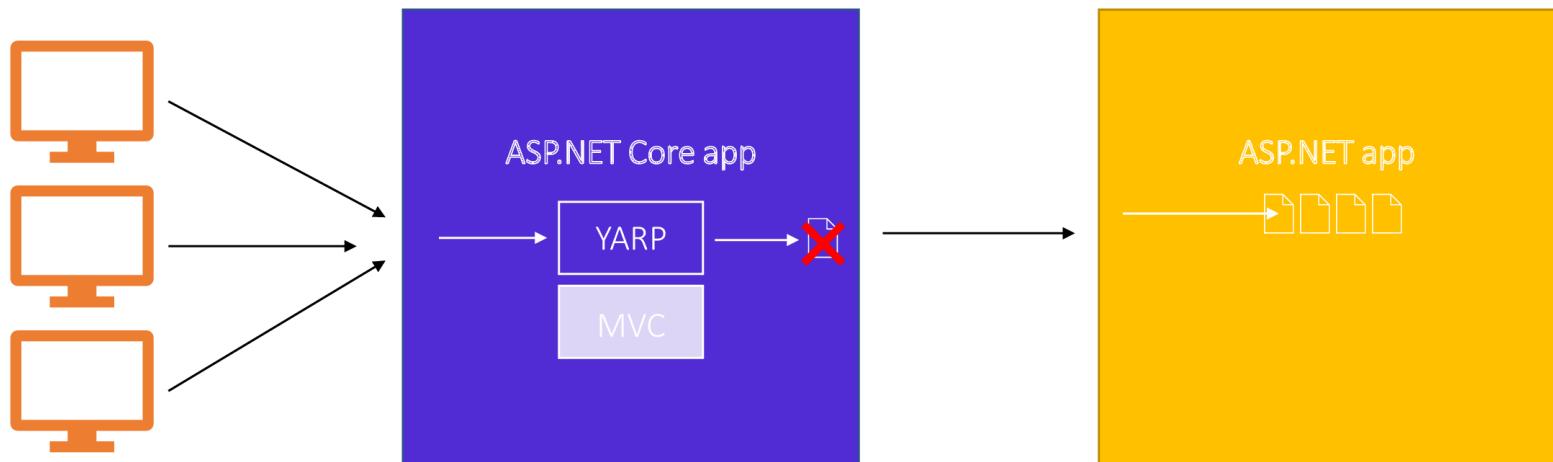
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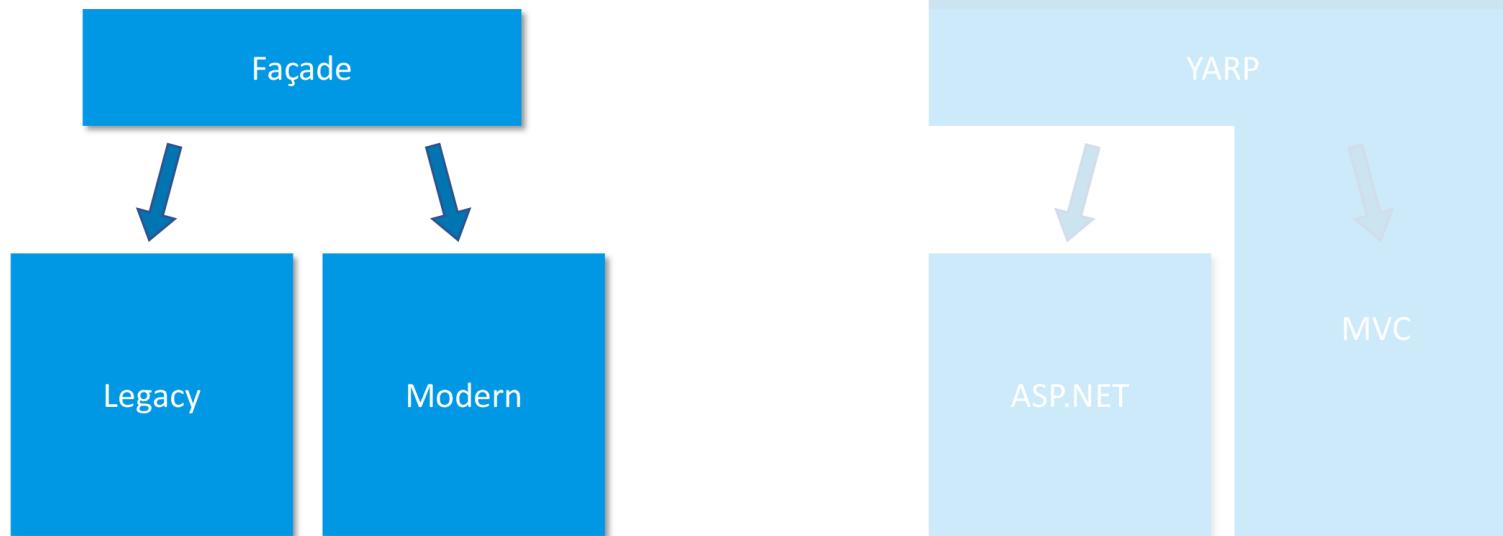
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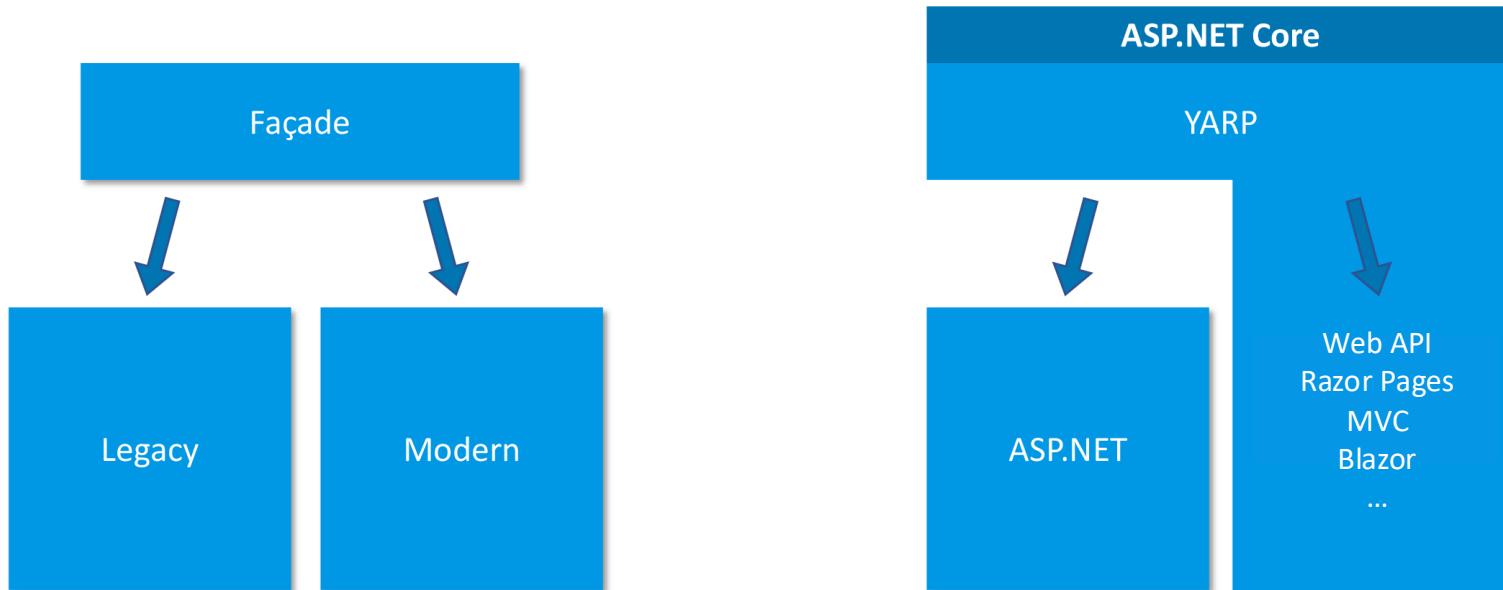
How YARP Works



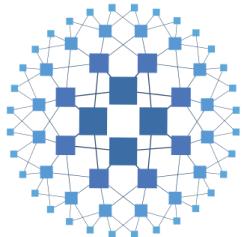
Strangler Fig with YARP



Strangler Fig with YARP



Why YARP?



HAProxy



NGINX



Why YARP?



HAProxy



NGINX



Why YARP?



Performance



Easy to use
(Nuget package)



Extensible,
configurable



Customizable
with C# / .NET



Hosted IN app
(less to deploy)

Why YARP?



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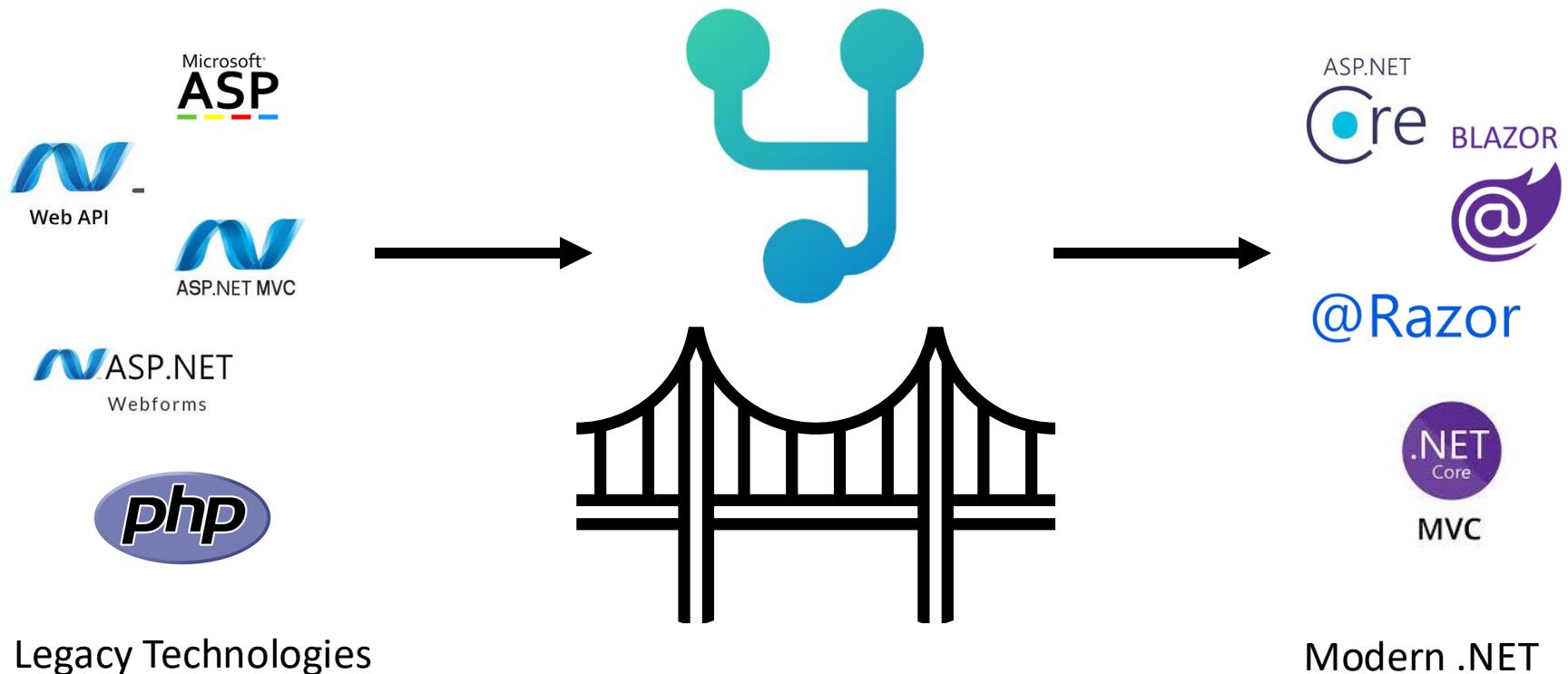


Customizable
with C# / .NET



Hosted IN app
(less to deploy)

Migration Use Case Examples



Specific Example



BLAZOR



ASP.NET



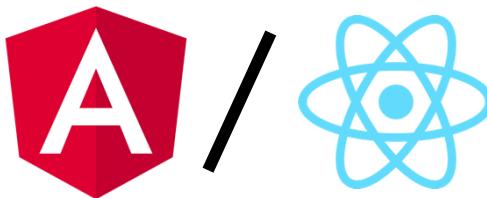
Specific Example



BLAZOR



Specific Example



ASP.NET
Core

Specific Example

 ASP.NET
Webforms



BLAZOR


<https://bit.ly/aspnet-blazor-migration>



.NET Upgrade Assistant

.NET Upgrade Assistant

Supported .NET Upgrades Include:

- .NET Framework to .NET 6+
- .NET Core to .NET 6
- Any .NET version to .NET 6+ higher than current version
- Azure Functions v1, v2, v3 to v4 isolated
- Xamarin.Forms to MAUI

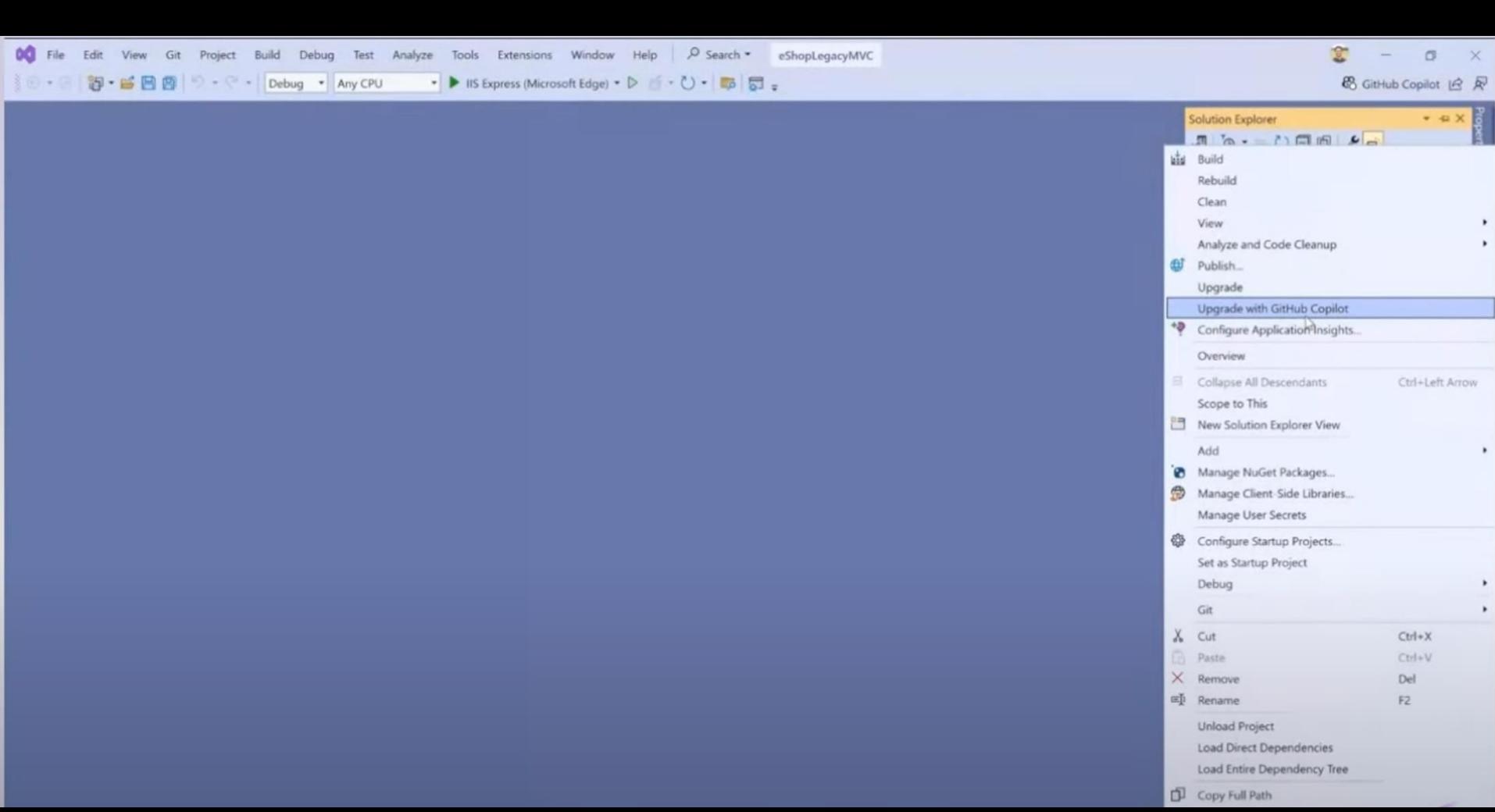
.NET Upgrade Assistant

Supported project types:

- ASP.NET
- Azure Functions
- WPF
- WinForms
- Class libraries
- Console
- Xamarin.Forms
- .NET MAUI
- UWP
- WCF to CoreWCF



Future Feature: Copilot AI



File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help | Search eShopLegacyMVC

Upgrade Assis...Github Copilot X

.NET Upgrade with Github Copilot

Select project

eShopLegacyMVC (C:\source\migration\eshop-dotnet-upgrade-ai\eshopLegacyMVC) ▾

Current target framework: .NET Framework 4.5.1

Select new target framework

Which target framework is right for you?

.NET 6.0
Supported until November, 2024

.NET 7.0 LTS
Supported until May, 2024

.NET 8.0 LTS
Supported until November, 2026

.NET 9.0 LTS
Supported until May, 2026

Repository

Local branch to track changes

Create upgrade plan

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search eShopLegacyMVC

GitHub Copilot Properties Solution Explorer Git Changes

.NET Upgrade with GitHub Copilot

Project: eShopLegacyMVC Upgrade to: .NET 8.0 Branch: upgrade-to-NET8

Back Start Upgrade

Upgrade Analysis Report

See more details

8 issues 299 incidents

● 50% mandatory ● 2% optional ● 47% potential ● 0% information

Upgrade Plan

GitHub Copilot will execute the plan to complete project upgrade. Click Start Upgrade to get started.

- Task 1: Use Upgrade Assistant to upgrade to net8.0
- Task 2: Fix any build errors in the project with net8.0

Please be advised that some of the code is generated by AI. While we strive for accuracy, AI-generated code may not always be 100% reliable. Please review and use at your own discretion. We highly recommend testing the code in a controlled environment before deploying into production environment.

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help | Search eShopLegacyMVC

GitHub Copilot

Upgrade Assis...Github Copilot

.NET Upgrade with Github Copilot

Project: eShopLegacyMVC Upgrade to: .NET 8.0 Branch: upgrade-to-NET8

Cancel

Upgrade project to net8.0

Fix any build errors in the project with net8.0

7/8 issues 226/299 incidents

51% mandatory 100% optional 100% potential

Use Upgrade Assistant to upgrade to net8.0

Fix any build errors in the project with net8.0

Building and retrieving errors (1 errors)

Fixed CS0617: HomeController.cs

Proposed changes:

- Change the Bind attribute in the Create action method from [Bind(Include = "Id,Name,Description,Price,PictureFileName,CatalogTypeId,CatalogBrandId,AvailableStock,RestockThreshold,MaxStockThreshold,OnReorder")] to [Bind("Id", "Name", "Description", "Price", "PictureFileName", "CatalogTypeId", "CatalogBrandId", "AvailableStock", "RestockThreshold", "MaxStockThreshold", "OnReorder")]

Errors:

- CS0617: 'Include' is not a valid named attribute argument. Named attribute arguments must be fields which are not readonly, static, or const, or read-write properties which are public and not static. [C:\source\migration\eshop-dotnet-upgrade-ai\eshopLegacyMVC\Controllers\HomeController.cs]

Building and retrieving errors (12 errors)

Fix errors: Analyzing errors for fixes

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search eShopLegacyMVC

Debug Any CPU eShopLegacyMVC GitHub Copilot Properties Solution Explorer

.NET Upgrade with Github Copilot

Project: eShopLegacyMVC Upgrade to: .NET 8.0 Branch: upgrade-to-NET8

Review

- ✓ Upgrade project to net8.0
- ✓ Use Upgrade Assistant to upgrade to net8.0
- ✓ Fix any build errors in the project with net8.0

Task	Review Changes	Git Changes
.NET Upgrade Assistant successfully addressed 108 issues.	Review Changes	Git Changes
GitHub Copilot successfully addressed 22 upgrade errors autonomously.	Review Changes	Git Changes
Developer intervention was needed for 1 upgrade error.	Review Changes	Git Changes
Developer guidance successfully contributed to fixes for an additional 10 upgrade errors.	Review Changes	Git Changes

Please be advised that some of the code is generated by AI. While we strive for accuracy, AI-generated code may not always be 100% reliable. Please review and use at your own discretion. We highly recommend testing the code in a controlled environment before deploying into production environment.

Commits:

054588f1
Task 1: Use Upgrade Assistant to upgrade to net8.0
af98ea1f
Task 2: Fix any build errors in the project with net8.0

Next Steps:

Draft Pull Request
Run Tests
Use GitHub to add test coverages



.NET Upgrade Assistant + YARP Demo



System.Web Adapters

System.Web Adapters

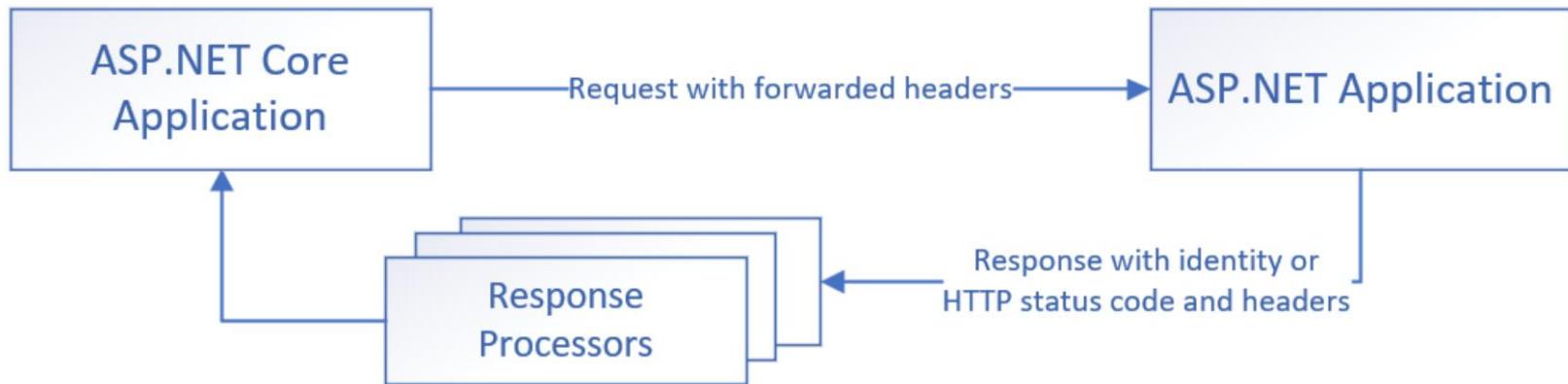
Major Features

1. Subset of `System.Web.dll` API shims
2. Shared **authentication** support
3. Shared **session** state

Usage

- `Microsoft.AspNetCore.SystemWebAdapters` in both apps
- `Microsoft.AspNetCore.SystemWebAdapters.CoreServices` in Core app
- `Microsoft.AspNetCore.SystemWebAdapters.FrameworkServices` in Framework app

System.Web Adapters



Source: <https://devblogs.microsoft.com/dotnet/incremental-asp-net-migration-tooling-preview-2/>

Current Status

Released

- YARP - v2.2.0
- System.Web Adapters – v1.4.0

Preview

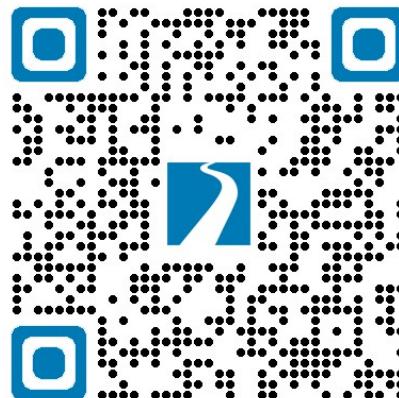
- .NET Upgrade Assistant - v0.5.*

Thank You! Questions?

Jonathan "J." Tower

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- 𝕏 jtowermi
- .linkedin Jonathan "J." Tower
- 🎙️ Blue Blazes podcast

EXPERT CONSULTATION



bit.ly/th-offer

<https://github.com/trailheadtechnology/migrate-with-yarp>