

# Automating dependency management with Renovate in Azure DevOps

# Introduction

*Mend Renovate products help developers automate dependency updates by detecting newer package versions and providing updates directly to the application code.*

<https://www.mend.io/renovate/>

	Mend Renovate CLI	Mend Renovate Community		Mend Renovate Enterprise	
	<a href="#">Open source project</a>	<a href="#">Learn more</a>		<a href="#">Learn more</a>	
Deployment type	Self-hosted	Cloud	Self-hosted	<b>Coming Soon:</b> Cloud	Self-hosted
Documentation	<a href="#">Renovate docs</a>	<a href="#">Renovate docs</a>	<a href="#">GitHub</a>	<a href="#">GitHub</a>	<a href="#">GitHub</a>
Cost	Free	Free	Free	Paid	Paid

Why?

# Why?

- Reduce technical dept
  - update in small steps
  - can introduce automation
- Improve security
  - direct dependency

Key parts

# Platforms

*Renovate aims to be platform-neutral, while also taking advantage of good platform-specific features.*

<https://docs.renovatebot.com/modules/platform/>

1. detect packages: managers
2. get package info: data sources
3. check newer: versioning

- azure
- bitbucket
- codecommit
- gerrit
- gitea
- github
- gitlab
- local

# Managers

*Renovate is based around the concept of "package managers", or "managers" for short. These range from traditional package managers like npm, Bundler and Composer through to less traditional concepts like CircleCI or Travis config files.*

*The goal of Renovate is to detect and maintain all third-party dependencies in your repositories, through the use of managers.*

- cake
- nuget
- azure-pipelines
- docker-compose
- dockerfile
- bicep
- terraform
- npm/ nvm
- custom/ regex
- etc.

<https://docs.renovatebot.com/modules/manager/>

# Data sources

*After Renovates manager scanned the files and extracted the dependencies, it assigns a data source to each extracted package file or dependency. The data source tells Renovate how to search for new versions.*

<https://docs.renovatebot.com/modules/datasource/>

- azure-bicep-resource
- azure-pipelines-tasks
- docker
- dotnet-version
- nuget
- node-version
- npm
- terraform-module
- terraform-provider
- etc.



# Versioning

*Once Managers have extracted dependencies, and data sources have located available versions, then Renovate will use a "Versioning" scheme to perform sorting and filtering of results.*

*The "versioning" is different for each package manager, because different package managers use different versioning schemes. For example, npm uses 1.0.0-beta.1 while pip uses 1.0.0b1.*

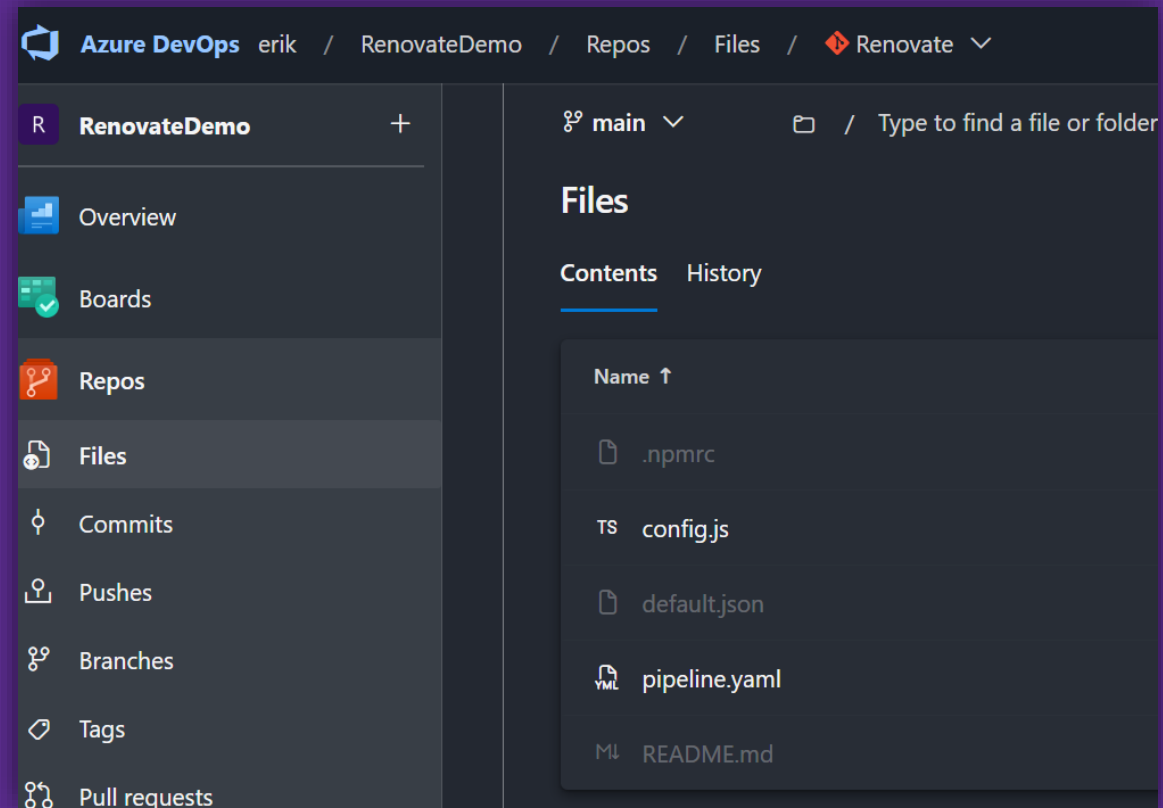
<https://docs.renovatebot.com/modules/versioning/>

- azure-rest-api
- docker
- npm
- nuget
- custom/ regex
- etc.

# Setup

# Setup in Azure DevOps

- Create repository
- Create & setup pipeline
- Create first config



✓ Connect

✓ Select

✓ Configure

Review

New pipeline

## Review your pipeline YAML

Variables

Run

Renovate / pipeline.yaml

Show assistant

```
1 | schedules:
2 |   - cron: '0 4 * * 1-5'
3 |     displayName: 'Every day at 4am (UTC) on workdays ma-fr'
4 |     branches:
5 |       - include: [main]
6 |       always: true
7 |
8 | trigger: none
9 |
10 | parameters:
11 |   - name: logLevel
12 |     displayName: 'The loglevel to use for renovate'
13 |     type: string
14 |     default: 'info'
15 |     values:
16 |       - info
17 |       - debug
18 |
19 | variables:
20 |   - logLevel: ${parameters.logLevel}
21 |   - renovateToken: $(System.AccessToken)
22 |
23 | pool:
24 |   vmImage: ubuntu-latest
25 |
26 | steps:
27 |   - checkout: self
28 |     fetchDepth: 1
29 |     clean: true
30 |     Settings
31 |     task: npmAuthenticate@0
32 |     inputs:
33 |       - workingFile: .npmrc
34 |       - bash: |
35 |           git config --global user.email 'bot@renovateapp.com'
36 |           git config --global user.name 'Renovate Bot'
37 |           npx --userconfig .npmrc renovate
38 |       - env:
39 |         - RENOVATE_PLATFORM: "azure"
40 |         - RENOVATE_ENDPOINT: $(System.CollectionUri)
41 |         - TOKEN: $(renovateToken)
42 |         - RENOVATE_TOKEN: $(renovateToken)
43 |         - GITHUB_TOKEN: $(githubToken)
44 |         - LOG_LEVEL: $(logLevel)
```

## ← New variable

Name

githubToken

Value

.....

- ☒ Keep this value secret
- ☐ Let users override this value when running this pipeline

To reference a variable in YAML, prefix it with a dollar sign and enclose it in parentheses. For example: `$(githubToken)`

## config.js

```
module.exports = {
  platform: "azure",
  endpoint: process.env.RENOVATE_ENDPOINT,
  onboarding: true,
  onboardingConfig: {
    extends: ["config:best-practices"],
    azureWorkItemId: 419
  },
  requireConfig: false,
  autodiscover: true,
  autodiscoverFilter: [
    "RenovateDemo/*"
  ],
  token: process.env.RENOVATE_TOKEN,
  extends: [
    "config:best-practices"
  ],
  hostRules: [
    {
      hostType: "github",
      domainName: "api.github.com",
      token: process.env.GITHUB_TOKEN
    },
    {
      hostType: "azure",
      domainName: "dev.azure.com",
      token: process.env.RENOVATE_TOKEN,
    },
    {
      matchHost: "pkgs.dev.azure.com",
      token: process.env.RENOVATE_TOKEN,
    }
  ],
  timezone: "Europe/Amsterdam",
```

```
    timezone: "Europe/Amsterdam",
    packageRules: [
      {
        "groupName": "Azure SDK Libraries",
        "matchPackagePatterns": ["^Azure\\.\\.\"", "^Microsoft\\.\\.Azure\\.\\."]
      },
      {
        "groupName": ".NET Core Libraries",
        "matchPackagePatterns": ["^System\\.\\.\"", "^Microsoft\\.\\.Extensions\\.\\."]
      },
      {
        "groupName": "Testing Libraries",
        "matchPackagePatterns": ["xunit", "FluentAssertions"]
      },
      {
        "groupName": "Azure Functions Libraries",
        "matchPackagePatterns": [
          "Microsoft.Azure.WebJobs",
          "Microsoft.NET.Sdk.Functions",
          "Microsoft.Azure.Functions.Worker.Extensions"
        ]
      },
      {
        "matchPackageNames": ["Microsoft.Resources", "Microsoft.Storage"],
        "allowedVersions": ">=2022-01-01"
      }
    ]
  };
```

# Repo onboarding

## config.js

```
module.exports = {  
  platform: "azure",  
  endpoint: process.env.RENOVATE_ENDPOINT,  
  onboarding: true,  
  onboardingConfig: {  
    extends: ["config:best-practices"],  
    azureWorkItemId: 419  
  },  
  requireConfig: false,  
  autodiscover: true,  
  autodiscoverFilter: [  
    "RenovateDemo/*"  
  ],  
}
```

## config.js

```
module.exports = {  
  platform: "azure",  
  endpoint: process.env.RENOVATE_ENDPOINT,  
  onboarding: true,  
  onboardingConfig: {  
    extends: ["config:best-practices"],  
    azureWorkItemId: 419  
  },  
  requireConfig: false,  
  repositories: [  
    'RenovateDemo/projectA',  
    'RenovateDemo/projectB',  
  ]  
}
```



## chore: Configure Renovate

Active

!148



Erik Lieben proposes to merge `renovate/configure` into `main`

Overview

Files

Updates

Commits



No merge conflicts

Last checked Just now

### Description

Welcome to [Renovate](#) ! This is an onboarding PR to help you understand and configure settings before regular Pull Requests begin.

Renovate will begin keeping your dependencies up-to-date only once you merge or close this Pull Request.

### Detected Package Files

- `global.json` (nuget)

### Configuration Summary

Based on the default config's presets, Renovate will:

- Start dependency updates only once this onboarding PR is merged
- Enable Renovate Dependency Dashboard creation.
- Use semantic commit type `fix` for dependencies and `chore` for all others if semantic commits are in use.
- Ignore `node_modules`, `bower_components`, `vendor` and various test/tests directories.
- Group known monorepo packages together.
- Use curated list of recommended non-monorepo package groupings.
- Apply crowd-sourced package replacement rules

### What to Expect

With your current configuration, Renovate will create 2 Pull Requests:

- ▶ chore(deps): update dependency dotnet-sdk to v8.0.404
- ▶ chore(deps): update dependency dotnet-sdk to v9

Got questions? Check out Renovate's [Docs](#) , particularly the Getting Started section.

If you need any further assistance then you can also [request help here](#) .

This PR has been generated by [Renovate Bot](#) .

chore(deps): update dependency system.text.json to v6.0.11



Active !147 Erik Lieben proposes to merge [renovate/dotnet-monorepo](#) into [main](#)

Overview Files Updates Commits

No merge conflicts  
Last checked 3h ago

Description


This PR contains the following updates:


Package	Type	Update	Change
<a href="#">System.Text.Json</a>  <a href="#">(source)</a> 	nuget	patch	<code>6.0.6</code> -> <code>6.0.11</code>


Release Notes


▶ dotnet/runtime (System.Text.Json)


Configuration

 **Schedule:** Branch creation - At any time (no schedule defined), Automerge - At any time (no schedule defined).

 **Automerge:** Disabled by config. Please merge this manually once you are satisfied.

 **Rebasing:** Whenever PR becomes conflicted, or rename PR to start with "rebase!".

 **Ignore:** Close this PR and you won't be reminded about this update again.

This PR has been generated by [Renovate Bot](#) .

ClassLibraryNET8.csproj -1+1  
/ClassLibraryNET8/ClassLibraryNET8.csproj




```
7      </PropertyGroup>
8
9      <ItemGroup>
10 -    <PackageReference Include="System.Text.Json" Version="6.0.6" />
11      </ItemGroup>
12
13    </Project>
```


```
7      </PropertyGroup>
8
9      <ItemGroup>
10 +    <PackageReference Include="System.Text.Json" Version="6.0.11" />
11      </ItemGroup>
12
13    </Project>
```


R


RenovateDemo


+


 Overview


 Boards


 Repos


 Files


 Commits


 Pushes


 Branches


 Tags

 Pull requests

 Advanced Security

 Pipelines


 Test Plans

 Artifacts

## chore(deps): update dependency system.text.json to 6.0.11

Abandoned

!132


 Erik Lieben proposes to merge [renovate/dotnet-monorepo](#) into [main](#) 0/1 comments resolved

Overview

Files



Updates

Commits

 The pull request was abandoned 2h ago

### Description


This PR contains the following updates:


Package	Type	Update	Change
<a href="#">System.Text.Json</a>  (source  )	nuget	patch	<code>6.0.6</code> -> <code>6.0.11</code>


### Release Notes


► dotnet/runtime (System.Text.Json)


### Configuration

 **Schedule:** Branch creation - "before 09:00,after 22:00" in timezone Europe/Amsterdam, Automerge - At any time (no schedule defined).

 **Automerge:** Disabled by config. Please merge this manually once you are satisfied.

 **Rebasing:** Whenever PR becomes conflicted, or PR is renamed to start with "rebase!".

 **Ignore:** Close this PR and you won't be reminded about this update again.

This PR has been generated by [Renovate Bot](#) .



Erik Lieben

2h ago

#### Renovate Ignore Notification

Because you closed this PR without merging, Renovate will ignore this update (`6.0.11`). You will get a PR once a newer version is released. To ignore this dependency forever, add it to the `ignoreDeps` array of your Renovate config.

If you accidentally closed this PR, or if you changed your mind: rename this PR to get a fresh replacement PR.

# Configuration





```
packageRules:[
  {
    "groupName": "Azure SDK Libraries",
    "matchPackagePatterns": [
      "^Azure\\.\"",
      "^Microsoft\\.Azure\\.\"",
    ],
    "semanticCommitType": "fix",
    "allowedVersion": "<=9.0"
  },
  {
    "groupName": "Unit testing",
    "matchPackagePatterns": [
      "^XUnit",
    ],
    "autoApprove": true,
    "autoMerge": true,
    "autoMergeStrategy": "squash",
    "semanticCommitType": "chore"
  },
]
```

Test/debug



## `npx renovate-config-validator`

```
... npx renovate-config-validator
WARN: config.js needs migrating
  "originalConfig": {
    "platform": "azure",
    "endpoint": "https://dev.azure.com/erik/",
    "onboarding": true,
    "onboardingConfig": {
      "extends": ["config:best-practices"],
      "azureWorkItemId": 419
    },
    "requireConfig": false,
    "autodiscover": true,
```

```
    "matchPackageNames": ["Microsoft.Resources", "Microsoft.Storage"],
    "allowedVersions": "≥2022-01-01"
  }
]
}
```

INFO: Validating config.js

INFO: Config validated successfully

Repository: \RenovateDemo\Renovate ← main ≡ ?1 2.26s General 22.11.0

# npx renovate -dry-run

```
... npx renovate --dry-run
```

```
WARN: config.js needs migrating
```

```
  "originalConfig": {
    "platform": "azure",
    "endpoint": "https://dev.azure.com/erik/",
    "onboarding": true,
    "onboardingConfig": {
      "extends": ["config:best-practices"],
      "azureWorkItemId": 419
    },
    "requireConfig": false,
    "autodiscover": true,
    "autodiscoverFilter": ["RenovateDemo/*"],
    "token": "*****",
    "extends": ["config:best-practices"],
    "hostRules": [
      {
        "hostType": "github",
        "domainName": "api.github.com",
        "token": "*****"
      },
      {
        "hostType": "azure",
        "domainName": "dev.azure.com",
        "token": "*****"
      },
      { "matchHost": "pkgs.dev.azure.com" }
    ]
  },
```

```
INFO: Repository started (repository=RenovateDemo/dotnetRepoGlobal)
```

```
  "renovateVersion": "39.19.1"
```

```
INFO: Dependency extraction complete (repository=RenovateDemo/dotnetRepoGlobal, baseBranch=main)
```

```
  "stats": {
    "managers": {"nuget": {"fileCount": 2, "depCount": 2}},
    "total": {"fileCount": 2, "depCount": 2}
  }
```

```
INFO: DRY-RUN: Would update PR #158 (repository=RenovateDemo/dotnetRepoGlobal, branch=renovate/dotnet-monorepo)
```

```
INFO: DRY-RUN: Would update PR #159 (repository=RenovateDemo/dotnetRepoGlobal, branch=renovate/major-dotnet-monorepo)
```

```
INFO: DRY-RUN: Would update PR #160 (repository=RenovateDemo/dotnetRepoGlobal, branch=renovate/dotnetsay-2.x)
```

```
INFO: DRY-RUN: Would ensure Dependency Dashboard (repository=RenovateDemo/dotnetRepoGlobal)
```

```
  "title": "Dependency Dashboard"
```

```
INFO: DRY-RUN: Would save repository cache. (repository=RenovateDemo/dotnetRepoGlobal)
```

```
INFO: Repository finished (repository=RenovateDemo/dotnetRepoGlobal)
```

```
  "cloned": true,
```

```
  "durationMs": 23040
```

# Use cases

for dotnet development

## NuGet.config

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>

  <config>
    <add key="globalPackagesFolder" value=".nuget-packages" />
  </config>

  <packageSources>
    <clear />
    <add key="nuget.org" value="https://api.nuget.org/v3/index.json" protocolVersion="3" />
    <add key="private" value="https://pkgs.dev.azure.com/erik/.../nuget/v3/index.json" />
  </packageSources>

  <packageSourceMapping>
    <packageSource key="nuget.org">
      <package pattern="*" />
    </packageSource>
    <packageSource key="private">
      <package pattern="mypackages.*" />
    </packageSource>
  </packageSourceMapping>

</configuration>
```

## \*.csproj

```
<PropertyGroup>
  << RestorePackagesWithLockFile>true</RestorePackagesWithLockFile>
</PropertyGroup>
```

```
packageRules:[
  {
    "groupName": ".NET Core Libraries",
    "matchPackagePatterns": ["^System\\.\\.\"", "^Microsoft\\.\\.Extensions\\.\\.\""]
  },
  {
    "groupName": "Testing Libraries",
    "matchPackagePatterns": ["xunit", "FluentAssertions"]
  }
]
```

```
packageRules:[
  {
    "groupName": "Azure SDK Libraries",
    "matchPackagePatterns": ["^Azure\\.\\.\"", "^Microsoft\\.\\.Azure\\.\\.\""]
  },
]
```

# .NET SDK

global.json

```
{
  "sdk": {
    "version": "8.0.307",
    "rollForward": "disabled",
    "allowPrerelease": false
  }
}
```

*The roll-forward policy to use when selecting an SDK version, either as a fallback when a specific SDK version is missing or as a directive to use a later version.*

[global.json overview - .NET CLI | Microsoft Learn](#)





```
... cat .\global.json
{
  "sdk": {
    "version": "8.0.404",
    "rollForward": "latestPatch",
    "allowPrerelease": false
  }
}
```

```
... dotnet --version
The command could not be loaded, possibly because:
* You intended to execute a .NET application:
  The application '--version' does not exist.
* You intended to execute a .NET SDK command:
  A compatible .NET SDK was not found.
```

```
Requested SDK version: 8.0.404
global.json file: D:\RenovateDemo\dotnetRepoGlobal\global.json
```

Installed SDKs:

```
8.0.307 [C:\Program Files\dotnet\sdk]
9.0.101 [C:\Program Files\dotnet\sdk]
```

Install the [8.0.404] .NET SDK or update [D:\RenovateDemo\dotnetRepoGlobal\global.json] to match an installed SDK.

Learn about SDK resolution:

<https://aka.ms/dotnet/sdk-not-found>

Repository: \RenovateDemo\dotnetRepoGlobal ← main ?6 ~4 → General ~ 8.0.404








# azure-pipeline.yaml

```
steps:
- checkout: self
  fetchDepth: 1
  clean: true
- task: UseDotNet@2
  displayName: "Install .NET SDK from global.json"
  inputs:
    packageType: "sdk"
    useGlobalJson: true
```

# Visual Studio


Error List

Entire Solution |  1 Error |  0 of 1 Warning |  0 Messages |  Build + IntelliSense | Search Error List




	Code	Description	Project	File
	NETSDK1141	Unable to resolve the .NET SDK version as specified in the global.json located at D:\RenovateDemo\dotnetRepoGlobal\global.json.	dotnetRepoGlobal	Microsoft.NET.Sdk.DefaultItems.targets

# Jetbrains Rider

.NET SDK 8.0.404 installed successfully

 Microsoft Defender may affect IDE  
To avoid performance issues, exclude the IDE and the project folders from the...

Exclude folders | More ▾

.NET SDK 8.0.404 installed success.. (moments ago) | Loading projects... |  7:3 |  CRLF | UTF-8 | 2 spaces | JSON: global.json |  NORMAL

# dotnet (local) tools

```
dotnet new tool-manifest
```

```
dotnet tool install dotnetsay --version 2.1.7
```

```
dotnet tool run dotnetsay
```

`.config\dotnet-tools.json`

```
{  
  "version": 1,  
  "isRoot": true,  
  "tools": {  
    "dotnetsay": {  
      "version": "2.1.7",  
      "commands": [  
        "dotnetsay"  
      ],  
      "rollForward": false  
    }  
  }  
}
```

- RenovateDemo
- Overview
- Boards
- Repos
- Files
- Commits
- Pushes
- Branches
- Tags
- Pull requests**
- Advanced Security
- Pipelines
- Test Plans
- Artifacts

chore(deps): update dependency dotnetsay to v2

Approve Complete

Active !160

Project Collection Build Service (erik) proposes to merge renovate/dotnetsay-2.x into main

- Overview
- Files
- Updates
- Commits

No merge conflicts

Last checked 43m ago

Description

This PR contains the following updates:

Package	Type	Update	Change
dotnetsay	nuget	major	1.0.0 -> 2.1.7

- Release Notes
- ▼ dotnet/core (dotnetsay)
- v2.1.7 : .NET Core 2.1.7

Release Notes

Download and Install

- Repos
- CoreCLR

CoreFX

Core-Setup

CLI

ASP
- v2.1.6 : .NET Core 2.1.6

Release Notes

Download and Install

Reviewers

Add

Required

No required reviewers

Optional

No optional reviewers

Tags

+

No tags

Work items

+

User Story 419: automatic maintenanc

dotnet-tools.json -1+1

/config/dotnet-tools.json

View

```
--
3      "isRoot": true,
4      "tools": {
5        "dotnetsay": {
6 -       "version": "1.0.0",
7         "commands": [
8           "dotnetsay"
9         ],
--
```

```
--
3      "isRoot": true,
4      "tools": {
5        "dotnetsay": {
6 +       "version": "2.1.7",
7         "commands": [
8           "dotnetsay"
9         ],
--
```

```
... dotnet tool run dotnetsay
Run "dotnet tool restore" to make the "dotnetsay" command available.
```

```
... dotnet tool restore
Tool 'dotnetsay' (version '2.1.7') was restored. Available commands: dotnetsay

Restore was successful.
```

Repository:\RenovateDemo\dotnetRepoGlobal

main ~1

595ms

General ~ 9.0.101

# Custom regex/ test containers

*Test containers is an open-source library for providing throwaway, lightweight instances of databases, message brokers, web browsers, or just about anything that can run in a Docker container.*

<https://testcontainers.com>

Azure DevOps erik / RenovateDemo / Repos / Pull requests / TestContainers

R RenovateDemo +

Overview

Boards

Repos

Files

Commits

Pushes

Branches

Tags

Pull requests

Advanced Security

Pipelines

Test Plans

# chore(deps): update testcontainers/helloworld docker tag to v1.2.0

Active !144 Erik Lieben proposes to merge [renovate/testcontainers-helloworld-1.x](#) into [main](#)

Overview Files Updates Commits

✓ No merge conflicts  
Last checked 2m ago

## Description

This PR contains the following updates:

Package	Update	Change
testcontainers/helloworld	minor	1.0.0 -> 1.2.0

## Configuration

**Schedule:** Branch creation - At any time (no schedule defined), Automerge - At any time (no schedule defined).

**Automerge:** Disabled by config. Please merge this manually once you are satisfied.

testhttp.cs -1+1

C#

/src/WeatherForecast/testhttp.cs

11 public HttpTest()  
12 {  
13 container = new ContainerBuilder()  
14 - .WithImage("testcontainers/helloworld:1.0.0")  
15 .WithPortBinding(8080, true)  
16 // Wait until the HTTP endpoint of the container is available.  
17 .WithWaitStrategy(Wait.ForUnixContainer().UntilHttpRequestIsSucceeded(r => r.ForPort(8080)))

11 public HttpTest()  
12 {  
13 container = new ContainerBuilder()  
14 + .WithImage("testcontainers/helloworld:1.2.0")  
15 .WithPortBinding(8080, true)  
16 // Wait until the HTTP endpoint of the container is availa  
17 .WithWaitStrategy(Wait.ForUnixContainer().UntilHttpRequest

config.json

```
regexManagers: [  
  {  
    fileMatch: [  
      ".*/*.cs$"   
    ],  
    matchStrings: [  
      "WithImage\\(\\\"(?<depName>[a-zA-Z0-9/_.-]+):( ?<currentValue>[0-9.]+)\\\"\\)"   
    ],  
    datasourceTemplate: "docker"  
  }  
],
```

# Questions?



Erik Lieben

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Next in-person event in Amsterdam

Wednesday, January 8, 2025

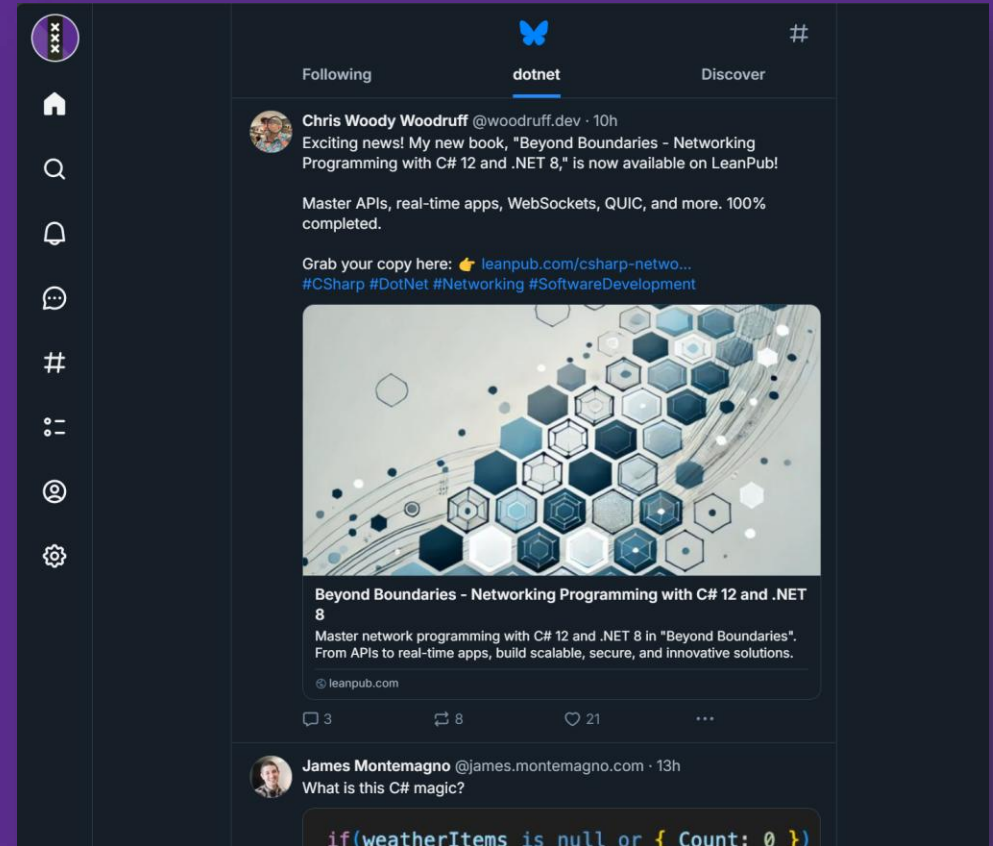


WED, JAN 8 · 6:00 PM CET

Dapr introduction & creating a distributed local dev env with .NET Aspire  
.NET & Azure / dotnet Amsterdam meetup • Amsterdam, NL

71 attendees · 9 spots left

Event host



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