



# Azure DevOps

Scott Kirkland  
CA&ES Dean's Office



# What is Azure DevOps

Kinda a full-service development and collaboration platform. Includes:

- Boards (Kanban, Work Item Tracking, Sprint planning, etc)
- Repos (Hosts Git repositories directly)
- Test Plans (Organize Manual Testing plans)
- Artifacts (Host your own packages, ex: NPM, NuGet, Python packages)
- Pipelines (CI/CD -- Build and deploy your code)



# What is Azure DevOps

Kinda a full-service development and collaboration platform. Includes:

- Boards (Kanban, Work Item Tracking, Sprint planning, etc)
- Repos (Hosts Git repositories directly)
- Test Plans (Organize Manual Testing plans)
- Artifacts (Host your own packages, ex: NPM, NuGet, Python packages)
- **Pipelines (CI/CD -- Build and deploy your code)**



## Azure Pipelines - Two things in one

- “Releases” - Automated deployments (CD)
- “Pipelines” - Automated builds (CI)




# Pipelines CI

Cloud-hosted pipeline agents for Linux, macOS, and Windows

# Pipelines CI - Integrations

Add more commits by pushing to the `srkirkland-patch-1` branch on `ucdavis/bigfix-api`.



✓

**Changes approved**  
1 approving review [Learn more.](#)


✓

**1 approval**

✓

**All checks have passed**  
1 successful check

✓

 **ucdavis.bigfix-api** Successful in 1m — Build #1.1.201910182 succeeded

✓

**This branch has no conflicts with the base branch**  
Merging can be performed automatically.

Merge pull request

▼

You can also [open this in GitHub Desktop](#) or view [command line](#)

**New service connection** ✕

Choose a service or connection type

☒

Azure Classic

☐

Azure Repos/Team Foundation Server

☐

Azure Resource Manager

☐

Azure Service Bus

☐

Bitbucket Cloud

☐

Chef

☐

Docker Host

☐

Docker Registry

☐

Generic

☐

GitHub

☐

GitHub Enterprise Server

☐

Incoming WebHook

☐

Jenkins

☐

Jira

☐

Kubernetes

☐

Maven

☐

NuGet

☐

Other Git

☐

Python package download

[Learn more](#)

**Next**



## Pipelines CI

Like most other tools, it's essentially a YAML file you store in your repository



## Pipelines CI

-steps:

-task: DEMO TIME





# Pipelines CI

```
6 trigger:
7   - master
8
9 pool:
10  - vmImage: 'windows-latest'
11
12 variables:
13   - solution: '**/*.sln'
14   - buildPlatform: 'Any CPU'
15   - buildConfiguration: 'Release'
16
17 steps:
18   Settings
19   - task: NuGetToolInstaller@1
20
21   Settings
22   - task: NuGetCommand@2
23     inputs:
24       restoreSolution: '$(solution)'
25
26   Settings
27   - task: VSBUILD@1
28     inputs:
29       solution: '$(solution)'
30       msbuildArgs: '/p:DeployOnBuild=true /p:WebPublishMethod=Package /p:PackageAsSingleFile=true /p:SkipInvalidConfigurations=true /p:WwwPath="/" /p:GeneratePackageManifestFile=false /p:IncludeSymbols=true /p:SymbolPackageFormat=snupkg /p:NoLogo /p:NoWarn:MSB3276'
31       platform: '$(buildPlatform)'
32       configuration: '$(buildConfiguration)'
33
34   Settings
35   - task: VSTest@2
36     inputs:
37       platform: '$(buildPlatform)'
38       configuration: '$(buildConfiguration)'
39
40   Settings
41   - task: PublishBuildArtifacts@1
42     inputs:
43       PathToPublish: '$(Build.ArtifactStagingDirectory)'
44       ArtifactName: 'drop'
45       publishLocation: 'Container'
```

# Pipelines CI

## ← Peaks - CI

[Edit](#)[Run pipeline](#)[Runs](#) [Branches](#) [Analytics](#)

Description	Stages
<b>#1.1.2011.2566 Merge pull request #1053 from ucdavis/JCS/FixReportColumn20201102</b> Individual CI for  master  9248f9b	-   Monday  15m 13s
<b>#1.1.2011.2565 Fix column header</b> PR automated for  1053  6bbedf1	-   Monday  6m 16s
<b>#1.1.2010.2564 Merge pull request #1052 from ucdavis/JCS/FixNonbreakingSpaceInReportList</b> Individual CI for  master  54a03a4	-   Friday  14m 7s
<b>#1.1.2010.2563 Non breaking styled span</b> PR automated for  1052  355f7ae	-   Friday  7m 42s
<b>#1.1.2010.2562 Merge pull request #1049 from ucdavis/JCS/PeopleLeavingReport</b> Individual CI for  master  9f680b3	-   Friday  13m 16s
<b>#1.1.2010.2561 People leaving who have assets report</b> PR automated for  1049  317e0e7	-   Friday  9m 23s
<b>#1.1.2010.2560 Merge pull request #1051 from ucdavis/cyd/design3</b> Individual CI for  master  ad78ec0	-   Friday  12m 12s
<b>#1.1.2010.2559 People leaving who have assets report</b> PR automated for  1049  8370093	-   Friday  6m 9s
<b>#1.1.2010.2558 People leaving who have assets report</b> PR automated for  1049  d9a3396	-   Friday  9m 47s
<b>#1.1.2010.2557 info circle &amp; report nbsp</b> PR automated for  1051  3d50990	-   Friday  6m 55s
<b>#1.1.2010.2555 People leaving who have assets report</b> PR automated for  1049  68ca708	-   Friday  6m 34s



## Releases

Deploy to any cloud, including Azure, AWS, and GCP. Deploy to Kubernetes, VMs, and even on-premise. Use stages, gates, and approvals to create a deployment strategy that's right for you and ensures quality at every step. Even deploy from other CI systems, like Jenkins.



Releases

PLEASE WAIT...

DEPLOYING DEMO

# Releases




























## Peaks - CD

Releases Deployments Analytics

Releases

Created

Stages

 <b>Release-207</b>  1.1.2011....  master	11/2/2020, 10:30:43 AM	<input checked="" type="checkbox"/> Deploy T...	<input checked="" type="checkbox"/> Deploy P...
 <b>Release-206</b>  1.1.2010....  master	10/30/2020, 3:20:02 PM	<input checked="" type="checkbox"/> Deploy T...	<input checked="" type="checkbox"/> Deploy P...
 <b>Release-205</b>  1.1.2010....  master	10/30/2020, 1:44:17 PM	<input checked="" type="checkbox"/> Deploy T...	<input checked="" type="checkbox"/> Deploy P...
 <b>Release-204</b>  1.1.2010....  master	10/30/2020, 12:51:42 PM	<input checked="" type="checkbox"/> Deploy T...	<input type="checkbox"/> Deploy P...
 <b>Release-203</b>  1.1.2010....  master	10/22/2020, 10:12:05 AM	<input checked="" type="checkbox"/> Deploy T...	<input checked="" type="checkbox"/> Deploy P...
 <b>Release-202</b>  1.1.2010....  master	10/16/2020, 2:15:51 PM	<input checked="" type="checkbox"/> Deploy T...	<input checked="" type="checkbox"/> Deploy P...
 <b>Release-201</b>  1.1.2010....  master	10/14/2020, 9:30:11 AM	<input checked="" type="checkbox"/> Deploy T...	<input type="checkbox"/> Deploy P...
 <b>Release-200</b>  1.1.2010....  master	10/12/2020, 10:01:02 AM	<input checked="" type="checkbox"/> Deploy T...	<input type="checkbox"/> Deploy P...
 <b>Release-199</b>  1.1.2010....  master	10/2/2020, 9:20:10 AM	<input checked="" type="checkbox"/> Deploy T...	<input type="checkbox"/> Deploy P...


# Releases

↑ Peaks - CD > Release-207 ▾



Pipeline Variables History + Deploy ▾ ⏏ Cancel ↺ Refresh ✎ Edit ▾ ...

Release

Continuous deploym...

for  Jason Sylvestre  
11/2/2020, 10:30 AM

Artifacts

 Peaks Web   
1.1.2011.2566  
🔗 master

Stages

Deploy Test

✓ Succeeded

on 11/2/2020, 10:33 AM

Deploy Production

✓ Succeeded

on 11/2/2020, 10:35 AM



# What is Azure DevOps

Kinda a full-service development and collaboration platform. Includes:

- Boards (Kanban, Work Item Tracking, Sprint planning, etc)
- Repos (Hosts Git repositories directly)
- Test Plans (Organize Manual Testing plans)
- **Artifacts (Host your own packages, ex: NPM, NuGet, Python packages)**
- Pipelines (CI/CD -- Build and deploy your code)

# Artifacts -

```
27 Settings
28 - task: DotNetCoreCLI@2
29   displayName: Package Nuget
30   inputs:
31     command: 'pack'
32     packagesToPack: '**/*.csproj'
33     includesymbols: true
34     versioningScheme: 'byBuildNumber'
35     buildProperties: 'SymbolPackageFormat=snpkg'
36
37 Settings
38 - task: DotNetCoreCLI@2
39   displayName: Push Nuget to Feed
40   inputs:
41     command: 'push'
42     packagesToPush: '$(Build.ArtifactStagingDirectory)/*.nupkg'
43     nuGetFeedType: 'internal'
44     publishVstsFeed: $(vstsFeed)
45
46 Settings
47 - task: PublishSymbols@2
48   displayName: Push symbols package to server
49   inputs:
50     SearchPattern: '**/bin/**/*.pdb'
51     SymbolServerType: 'TeamServices'
```



# Artifacts -










uNuget

+ Create Feed

🔗 Connect to feed

🗑️ Recycle Bin

🔍 Filter by keywords

Package	Views	Source	Last pushed	Description	Downloads	Users
 <b>Adfs-Status</b> Version 1.0.20200707.1		This feed	Jul 7	adfs status script	↓ 38	👤 2
 <b>Get-Hello</b> Version 1.0.0		This feed	May 13	The module says hello to the user	↓ 2	👤 1
 <b>let.Core.ActiveDirectory.Reader</b> Version 1.0.20201030.2		This feed	Oct 30	Package Description	↓ 295	👤 2
 <b>let.Core.ActiveDirectory.Writer</b> Version 1.0.20201022.6		This feed	Oct 22	Package Description	↓ 139	👤 2
 <b>let.Core.ApiKeys</b> Version 1.0.20200608.1		This feed	Jun 8	Package Description	↓ 114	👤 2
 <b>let.Core.CommandQueue</b> Version 1.0.20201103.5		This feed	Tuesday	Package Description	↓ 14	👤 2
 <b>let.Core.Mothra.Reader</b> Version 1.0.20200917.1		This feed	Sep 17	Package Description	↓ 65	👤 2
 <b>let.Core.PpsRequests</b> Version 1.0.20201105.7		This feed	Yesterday	Package Description	↓ 9	👤 2
 <b>let.Core.Requests</b> Version 1.0.20201021.1		This feed	Oct 21	Package Description	↓ 273	👤 3



Price -- Not too complicated for Microsoft

OPTION 1: Small team

First 5 users free, then \$6 per user per month



Price -- Not too complicated for Microsoft

## OPTION 2: Visual Studio Subscriptions

Subscribers get access to any number of organizations and don't count against your 5 free users



Price -- Not too complicated for Microsoft

OPTION 3: Open Source

10 Free parallel jobs with unlimited minutes per month



# Price -- Not too complicated for Microsoft

## BASICS

- 1 Microsoft-hosted job with 1,800 minutes per month for CI/CD
- \$40 per extra Microsoft-hosted CI/CD parallel job
- You can always self-host a build agent yourself as well, and that's included for the first one



## In Conclusion

- Azure DevOps does way more than I've shown, including project Wikis, Work tracking, Sprint planning, and more.
- GitHub Actions is really a front-end for Azure DevOps and another cool option.
- The price is right for smaller teams or those producing mostly open source code.
- Has worked well for me for the last few years.



Thanks for watching!

Scott Kirkland  
CA&ES Dean's Office



# Good Examples

- Broken build: <https://dev.azure.com/ucdavis/Peaks/build?definitionId=12>
- Successful build with artifacts:  
<https://dev.azure.com/ucdavis/Peaks/build/results?buildId=2566&view=results>
- Deployment with approval:  
<https://dev.azure.com/ucdavis/Peaks/apps/hub/ms.vss-releaseManagement-web.cd-release-progress?a=release-pipeline-progress&releaseId=207>
-