

## Q1 - SCENARIO

A car rental company called FastCarz has a .net Web Application and Web API which are recently migrated from on-premise system to Azure cloud using Azure Web App Service and Web API Service.

The on-premises system had 3 environments Dev, QA and Prod.

The code repository was maintained in TFS and moved to Azure GIT now. The TFS has daily builds which triggers every night which build the solution and copy the build package to drop folder.

deployments were done to the respective environment manually. The customer is planning to setup Azure DevOps Pipeline service for below requirements:

- 1) The build should trigger as soon as anyone in the dev team checks in code to master branch.
- 2) There will be test projects which will create and maintained in the solution along the Web and API. The trigger should build all the 3 projects - Web, API and test.

The build should not be successful if any test fails.

- 3) The deployment of code and artifacts should be automated to Dev environment.

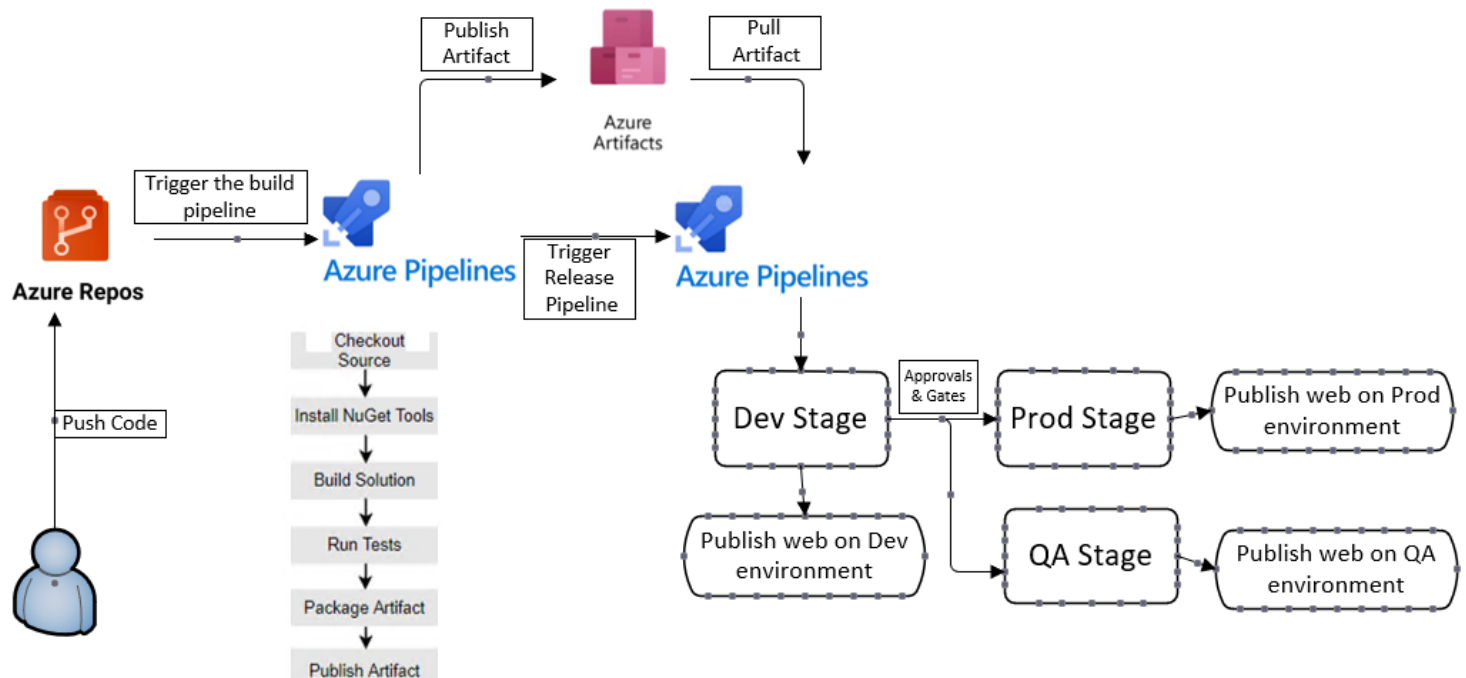
- 4) Upon successful deployment to the Dev environment, deployment should be easily promoted to QA and Prod through automated process.

- 5) The deployments to QA and Prod should be enabled with Approvals from approvers only.

Explain how each of the above the requirements will be met using Azure DevOps configuration.

Explain the steps with configuration details.




## Solution



The above diagram would represent the DevOps configuration on high level.

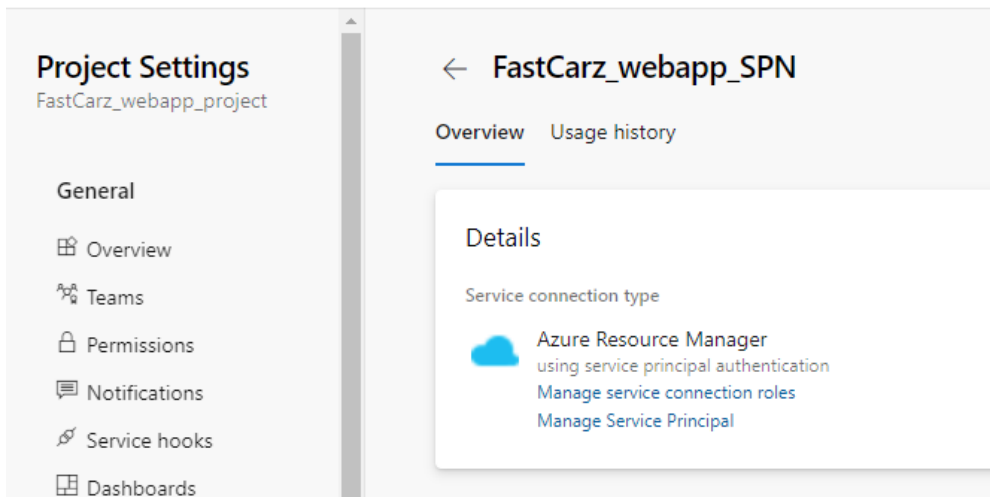
## Configuration

1. Deploy 3 webapps in for each environment. (we can also use single app with app service slots for each environment, for this demo I am going with individual webapps)

<input checked="" type="checkbox"/>	Name ↑↓	Status ↑↓	Resource group ↑↓	Location ↑↓
<input type="checkbox"/>	 FastCarzwebdev	Running	FastCarz_webapp_Dev	East US
<input type="checkbox"/>	 FastCarzwebprod	Running	FastCarz_webapp_prod	East US
<input type="checkbox"/>	 FastCarzwebqa	Running	FastCarz_webapp_QA	East US

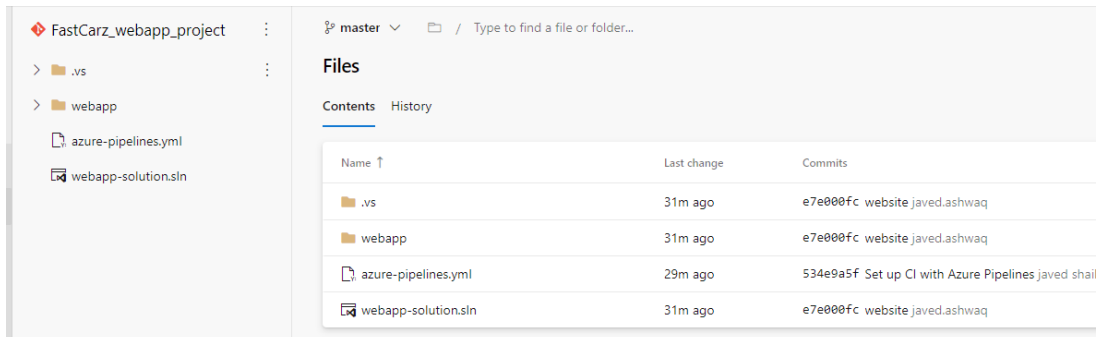
2. Azure DevOps service connection(SPN) with appropriate access on the azure resources.

javeedtest1test1 / FastCarz\_webapp\_project / Settings / Service connections



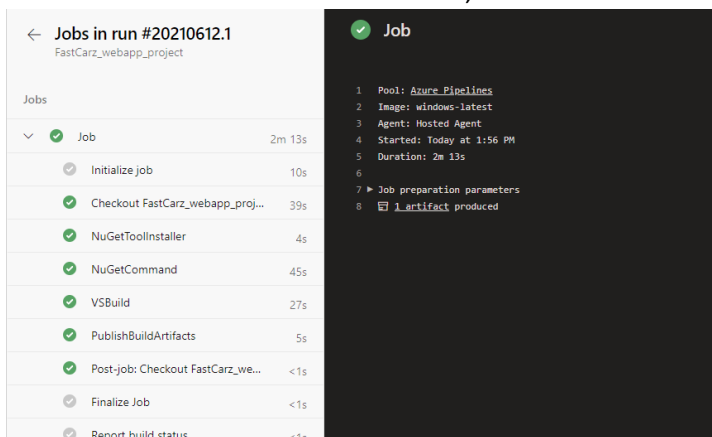
3. Create a Azure repo with webapp .net core build files.

javeedtest1test1 / FastCarz\_webapp\_project / Repos / Files / FastCarz\_webapp\_project



Name ↑	Last change	Commits
.vs	31m ago	e7e000fc website.javed.ashwaq
webapp	31m ago	e7e000fc website.javed.ashwaq
azure-pipelines.yml	29m ago	534e9a5f Set up CI with Azure Pipelines javed shaik
webapp-solution.sln	31m ago	e7e000fc website.javed.ashwaq

4. Build Pipeline (YAML or classic, for this demo I am going with YAML) , with appropriate setting, required tasks for builds are like NuGet installer, VS build etc. Final step is to drop the files to artifacts.



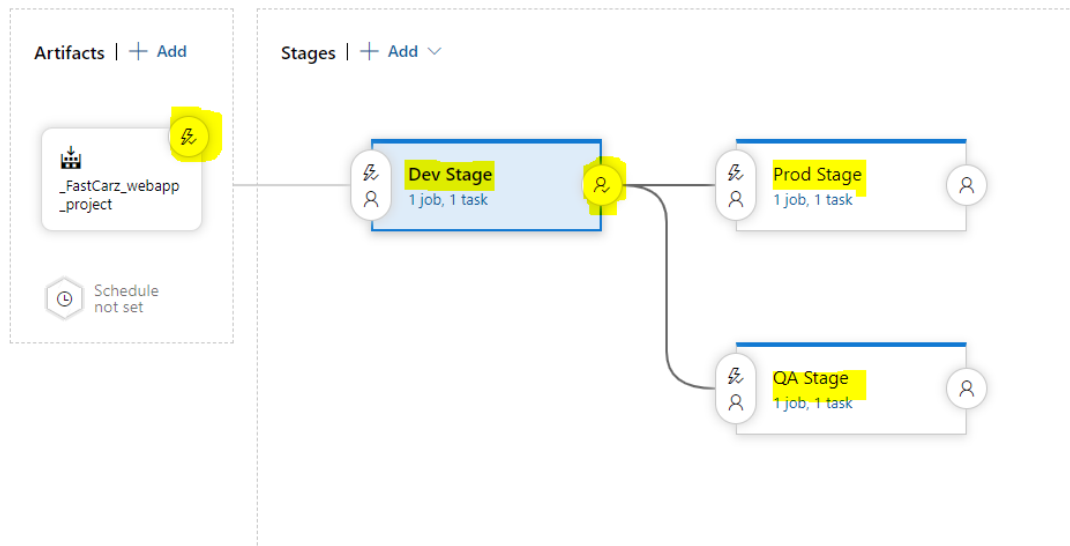
Jobs	Status	Duration
Job	✓	2m 13s
Initialize job	✓	10s
Checkout FastCarz_webapp_proj...	✓	39s
NuGetToolInstaller	✓	4s
NuGetCommand	✓	45s
VSBuild	✓	27s
PublishBuildArtifacts	✓	5s
Post-job: Checkout FastCarz_we...	✓	<1s
Finalize Job	✓	<1s
Report build status	✓	<1s

```
1 Pool: Azure Pipelines
2 Image: windows-latest
3 Agent: Hosted Agent
4 Started: Today at 1:56 PM
5 Duration: 2m 13s
6
7 Job preparation parameters
8 1 artifact produced
```

- Run an initial build to verify the build is working as expected.
- Create release pipeline as below.

[All pipelines](#) > [New release pipeline](#)

Pipeline Tasks Variables Retention Options History



- Use artifacts as input, enable continuous deployment trigger.

## Continuous deployment trigger

Build: `_FastCarz_webapp_project`

☒ Enabled

Creates a release every time a new build is available.

Build branch filters ⓘ

No filters added.

[+ Add](#) | [v](#)

- Create tasks in each stage(Dev, Prod & QA) to deploy files into appropriate web app(dev= FastCarzwebdev,Prod= FastCarzwebprod,QA= FastCarzwebQA).
- If you want to have individual approvers for both QA and Prod, add a pre-deployment conditions for approvals.(For this demo I Didn't add pre-approvals for Prod and QA stages)

Pre-deployment conditions

QA Stage

Triggers [v](#)

Define the trigger that will start deployment to this stage

[Pre-deployment approvals](#) [^](#)

Select the users who can approve or reject deployments to this stage

Approvers ⓘ

ⓘ Enter at least one approver.

Timeout ⓘ

[Days](#) [v](#)

Approval policies

☐ The user requesting a release or deployment should not approve it

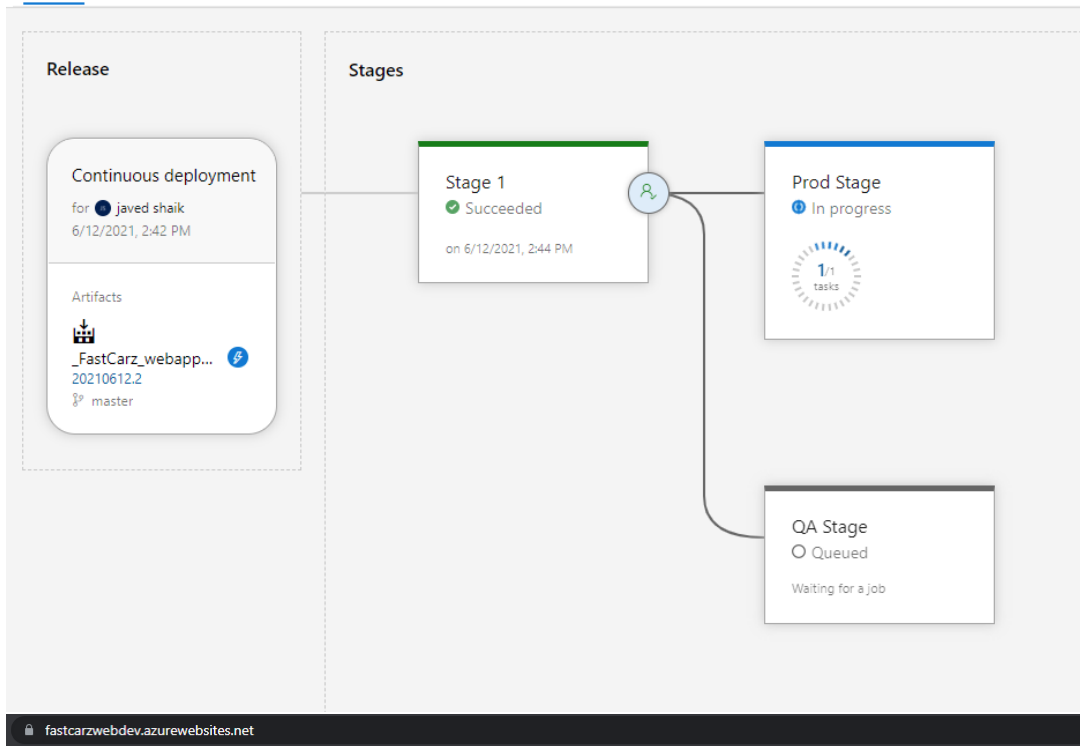
☐ Skip approval if the same approver approved the previous stage ⓘ

10. Add post-deployment approvals for dev stage, so once dev web app is tested and validated with manual approval it would be pushed to both QA and Prod stages.

The screenshot shows the configuration for a pipeline stage. On the left, a diagram shows three stages: 'Dev Stage' (1 job, 1 task), 'Prod Stage' (1 job, 1 task), and 'QA Stage' (1 job, 1 task). The 'Dev Stage' is highlighted with a yellow circle. On the right, the 'Post-deployment conditions' for 'Stage 1' are shown. The 'Post-deployment approvals' toggle is turned on (Enabled). Below it, the 'Approvers' section shows a search bar with 'javed shaik' entered. The 'Timeout' is set to 30 Days. Under 'Approval policies', the checkbox 'The user requesting a release or deployment should not approve it' is unchecked.

11. I made changed to git repo and pushed it. You can see in below screenshots. build has been completed, uploaded to artifacts, release pipeline deployed in Dev stage, waiting for approval post dev stage deployment, once approved, prod & QA deployments are in pogrress.

The top screenshot shows the 'Pipelines' page with tabs for 'Recent', 'All', and 'Runs'. Under 'All pipeline runs', a table lists a completed run: 'Merge branch 'master' of https://dev.azure.com/javeedtest1test1/FastCarz\_webapp\_project/\_git/FastCarz\_webapp\_project' with a green checkmark. The bottom screenshot shows the 'Release' pipeline configuration for 'Release-2'. It displays a 'Continuous deployment' artifact for 'javed shaik' dated 6/12/2021, 2:42 PM. The 'Stages' section shows 'Stage 1' with a 'Pending approval' status and a blue 'Approve' button. 'Prod Stage' and 'QA Stage' are both marked as 'Not deployed'.



fastcarzwebdev.azurewebsites.net

# Welcome to FastCarz Website

Learn about building Web apps with ASP.NET Core.

## Note on webapps:

1. If you also have individual database backend for each environment for web apps. Notify developers not to hard code database setting in web app config files. Use connection string in azure instead.

The screenshot displays the Azure portal interface. On the left, the 'Settings' menu is visible, with 'Configuration' highlighted. The main area shows the 'Configuration' settings for an application, listing various system and application settings. A 'Connection strings' section is also present, with a 'New connection string' button highlighted. On the right, a modal dialog titled 'Add/Edit connection string' is open, showing fields for 'Name', 'Value', and 'Type' (set to 'MySQL'). The 'Deployment slot setting' checkbox is also visible. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

**Add/Edit connection string**

Name: [Redacted]

Value: [Redacted]

Type: MySQL

☐ Deployment slot setting

**Configuration**

**Connection strings**

Connection strings are encrypted at rest and transmitted over an encrypted channel.

[+ New connection string](#) [Show values](#) [Advanced settings](#)

**Name**

OK Cancel