Fiorano CI/CD

with Azure DevOps

Enabling change at the speed of thought®

Contents

What are we providing?

- Documentation of CI/CD with Azure DevOps.
- A YML pipeline file, named as ".azure-pipelines.yml".

  Note: Please ensure not to change the file name.
- A script (CI-CD_azure.sh) which is mentioned in the .azure-pipelines.yml file
  - This script is part of the pipeline which helps in executing the desired job

Azure Dev Ops flow

1. Detect any change in the GIT repository.
2. Clone the repository in the workspace path specified in the script.
3. Zip the directories (API Projects/ Event Processes) inside it.
4. Undeploy/stop the API Projects/ Event Processes, if running.
5. Import the zipped contents in Step 3.
6. Deploy/start the API Projects/ Event Processes.
7. If any API Project/ Event Process is deleted from the GIT repository, then after Step 4, invoke the delete call.

Build Script

1. The script CI-CD_azure.sh is present inside the following directory: <FIORANO_HOME>/esb/samples/scripts/AzureDevOps.
2. Provide WORKSPACE_PATH, REPO_NAME, CLONE_URL to be cloned till .git.
3. Sample CI/CD scripts are provided to automate deployment of Event Processes.
   Note: To do the same for APIProjects, simply provide the correct cURLs.

CI/CD with Azure pipelines

- Let us assume we have two environments D and P where the Enterprise/ Management server is running.
- The developer from the D environment will use eStudio to commit the flows or changes to the flows to a git repository.
- These flows will eventually be deployed to the P environment.
- For simplicity, we will assume the flows are Event Processes and the git provider is GitHub.

Requirements

- A git account
- An account on https://dev.azure.com/
- Creating a self-hosted runner on the P environment

Development Machine

Downloading certificate

Before getting started, download the certificate from the GitHub website by following these steps:

1. Provide the GitHub URL in a web browser (Firefox is used in this instance) and press Enter.
2. Click the icon on the left side of the URL.
3. Click the **Connection secure** option.
4. Click the **More information** option
5. In the dialogbox, click **View Certificate** button.
6. In the window that opens, scroll down and click the PEM cert link against Download under the **Miscellaneous** section to download the certificate in the PEM format.
7. Add the downloaded github-com.pem certificate file to jssecacerts properties (present at FIORANO_HOME/esb/server/profiles/certs) file using the keystore explorer Software.

Create a GitHub repo

Create a public GitHub repository.

Note: The repo should not empty. Hence, push the provided .azure-pipelines.yml file.

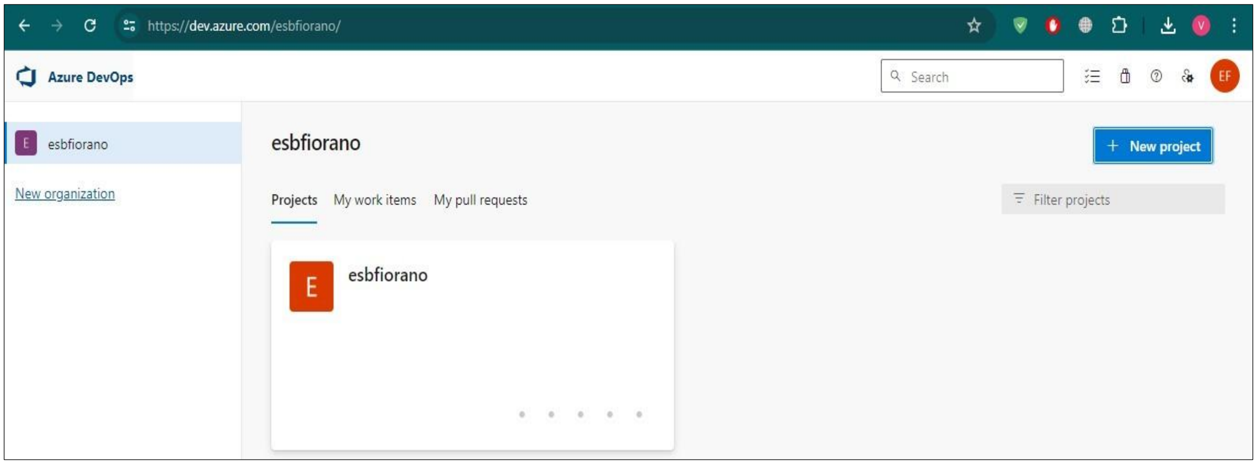
Configuring eStudio with GIT details

1. Open eStudio and login to the enterprise server.
2. Right-click on the Event Process Repository and go to **Version Control** > **Configuration**.
3. Enable the **Version Control** checkbox and provide the username and password (Personal Access Tokens for GitHub) and the URL where you want to push the flows or the changes.
4. Finally, click **Finish**.

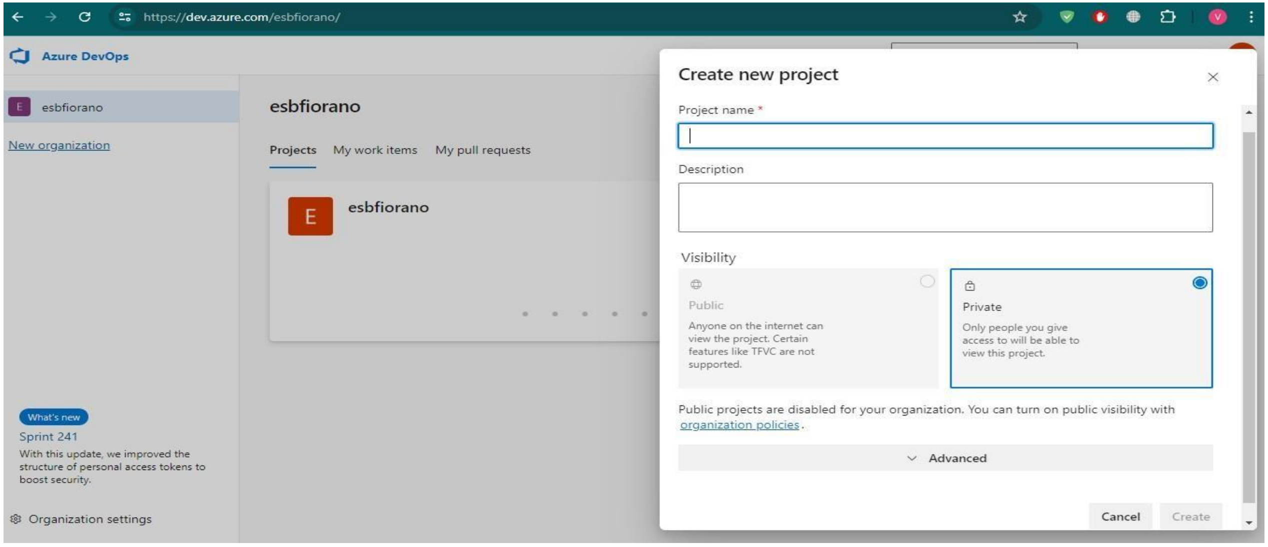
Creating a project on Azure Dev

Perform the following actions in the landing page:

1. Create a project by selecting the **New Project** button on the upper-right part of the page.



2. Provide a name to the project along with the description.



With this update, we improved the structure of personal access tokens to boost security.

Public: Anyone on the internet can view the project. Certain features like TFVC are not supported.

Private: Only people you give access to will be able to view this project.

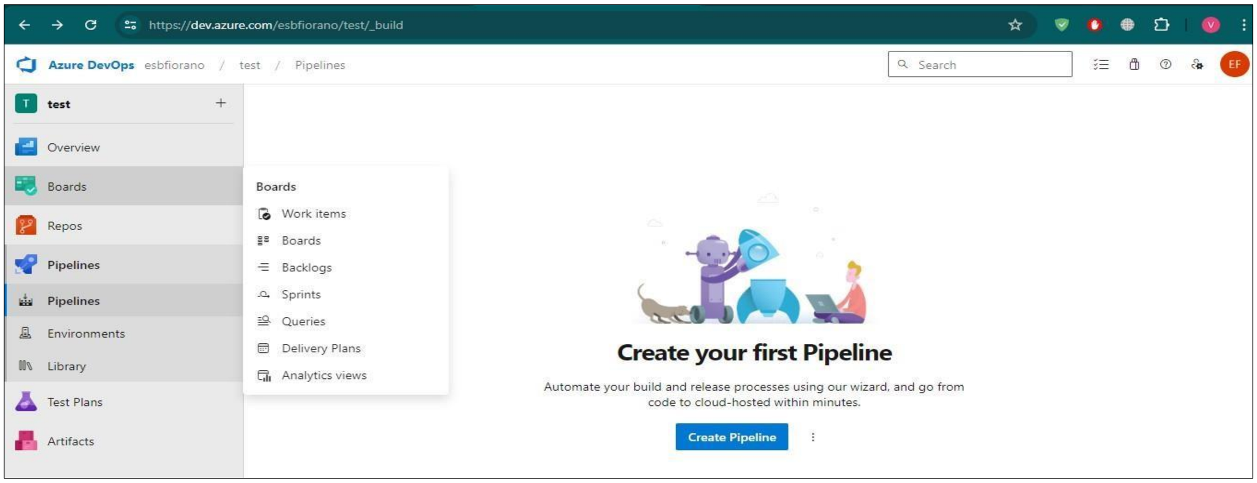
Public projects are disabled for your organization. You can turn on public visibility with organization policies.

Note: It is advised to leave the visibility of the project as "Private".

Creating pipelines

After the project that is created,

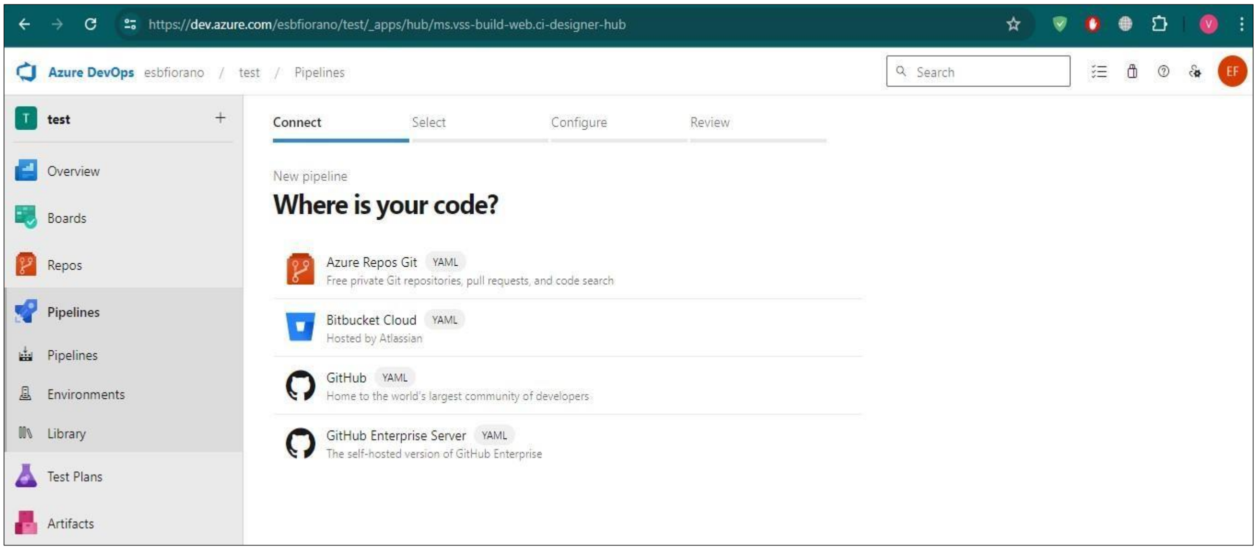
1. Click the **Pipelines** option on the left navigation panel. The page gives the option to create the first pipeline.



Create your first Pipeline

Automate your build and release processes using our wizard, and go from code to cloud-hosted within minutes.

2. Click the **Create Pipeline** button and select **GitHub** as the type of repository.



New pipeline

Where is your code?

Azure Repos Git YAML
Free private Git repositories, pull requests, and code search

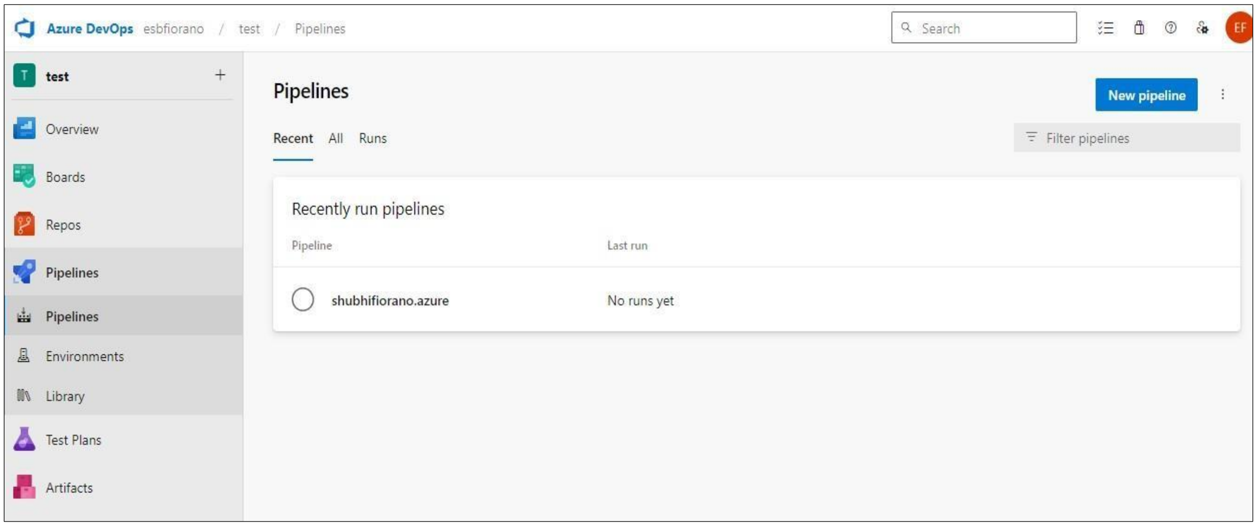
Bitbucket Cloud YAML
Hosted by Atlassian

GitHub YAML
Home to the world's largest community of developers

GitHub Enterprise Server YAML
The self-hosted version of GitHub Enterprise

3. Then select your repository name. It will automatically fetch the contents of the .azure-pipelines.yml file.

4. From the **Run** drop-down button, select **Save**; it will list the pipeline.



Recently run pipelines

Pipeline	Last run
○ shubhifiorano.azure	No runs yet

Production Machine

Creating Self hosted agent

On the P environment, we need to setup and run a self-hosted agent by following the steps below:

1. Create a directory named "AzureCICD".
2. Download the agent inside this directory and install it.

Follow the Microsoft guide for Linux; follow the URL below:

https://learn.microsoft.com/en-us/azure/devops/pipelines/agents/linux-agent?view=azure-devops#download-and-configure-the-agent

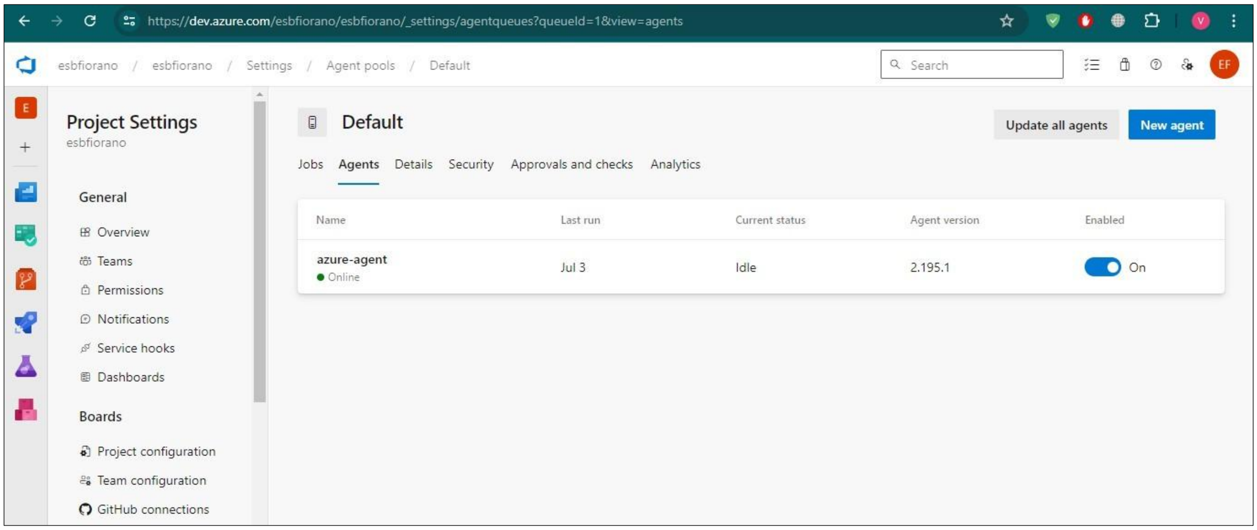
Points to remember while setting up the agent

- Server URL= https://dev.azure.com/{your-organization}
- Get azure devops Personal Access Tokens from the following page:

  https://learn.microsoft.com/en-us/azure/devops/pipelines/agents/personal-access-token-agent-registration?view=azure-devops
- When prompted for the Agent pool name, leave it as Default and press Enter.
- Create a directory named "workingDir" inside the **AzureCICD** directory.
  - Place the provided shell script "CI-CD_azure.sh" inside this directory.

Verifying if the self-hosted runner is connected

1. In **Project Settings**, under the **Agent pools** option, click **Default**.
2. Click the **Agents** tab; this lists the runner along with its running status.



Name	Last run	Current status	Agent version	Enabled
azure-agent ● Online	Jul 3	Idle	2.195.1	On

Now that the runner is online, you may trigger a job as follows.

3. Go to eStudio on the D environment and push some flows.

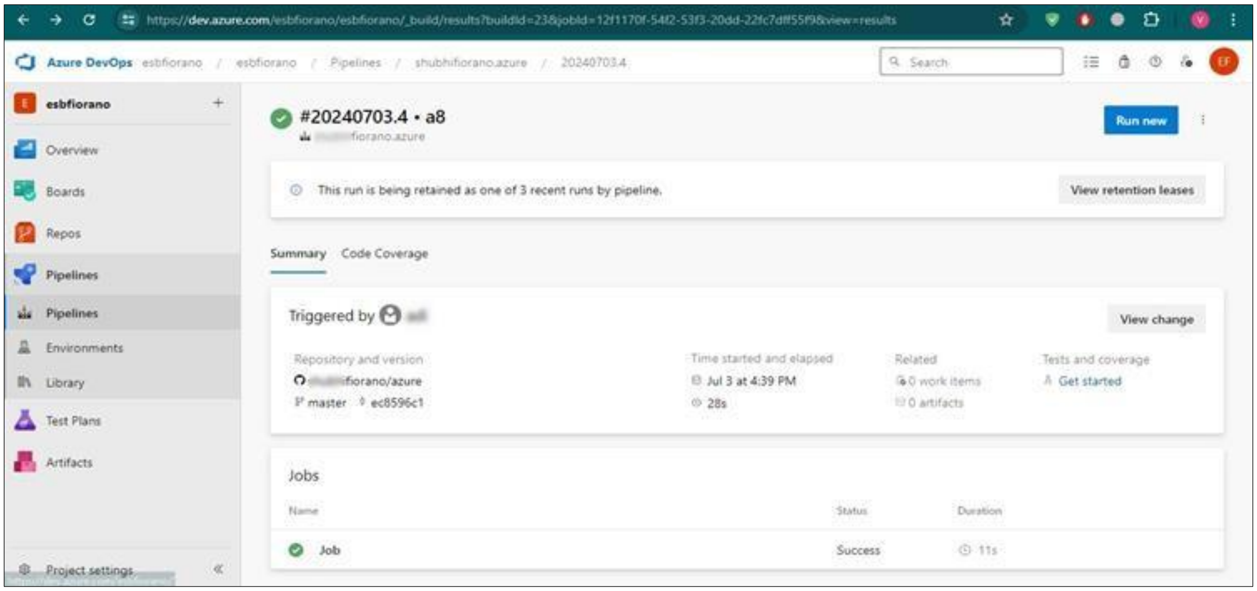
   a. Pushing from the D machine triggers a CI/CD job which causes the server to queue the job. The agent, during its next poll, picks up the job and executes it on the P machine.
   b. The results, logs, and status are then sent back to the Azure DevOps server by the agent.
   c. As the runner is constantly polling the server, whenever there is a commit from D machine to GitHub, pipeline will be triggered automatically by the agent.

Managing Logs and Notifications

Viewing Logs of the executed job

To view the job logs,

1. Go to the Pipelines tab and then select All pipelines.
2. Choose the name of the pipeline; this lists all the runs.
3. Select the run for which you want to see the logs.


https://dev.azure.com/esbfiorano/esbfiorano/_build/results?buildId=23&jobId=12f1170f-54f2-53f3-20dd-22fc7dff55f9&view=results
Azure DevOps esbfiorano / esbfiorano / Pipelines / shubhifiorano.azure / 20240703.4
Search
esbfiorano
Overview
Boards
Repos
Pipelines
Pipelines
Environments
Library
Test Plans
Artifacts
Project settings
Run new
View retention leases
Summary
Code Coverage
View change

#20240703.4 • a8
[redacted]fiorano.azure

This run is being retained as one of 3 recent runs by pipeline.

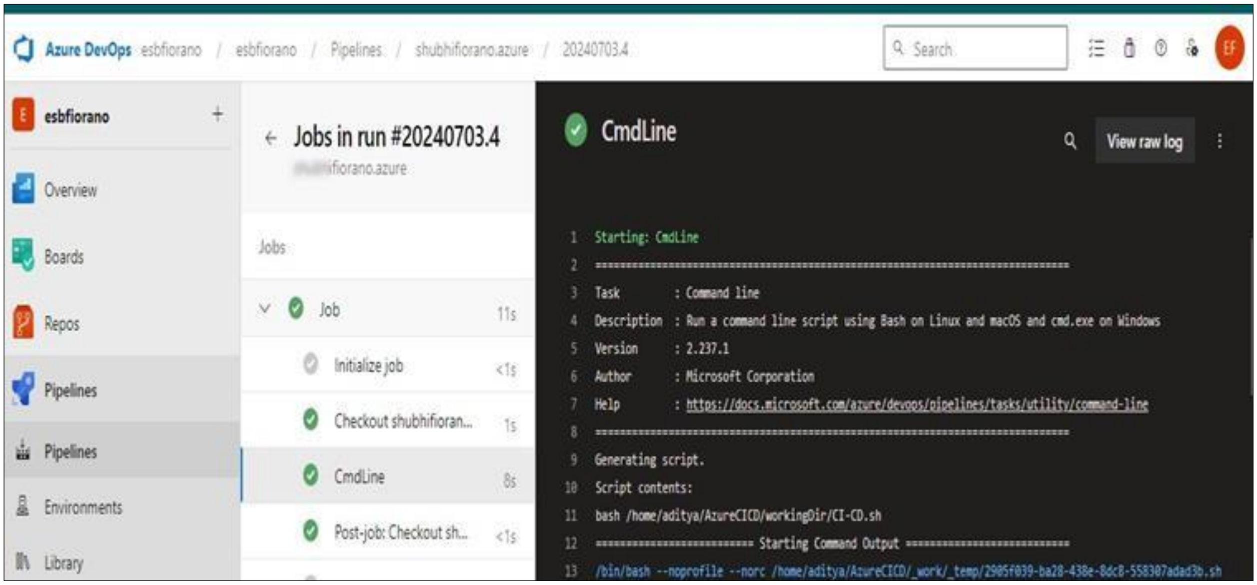
Triggered by [redacted]

Repository and version: [redacted]fiorano/azure, master, ec8596c1
Time started and elapsed: Jul 3 at 4:39 PM, 28s
Related: 0 work items, 0 artifacts
Tests and coverage: Get started

Jobs

Name	Status	Duration
Job	Success	11s

4. Select the job from the Jobs section.



Jobs in run #20240703.4
[redacted]fiorano.azure

Jobs

Job	11s
Initialize job	<1s
Checkout shubhifioran...	1s
CmdLine	8s
Post-job: Checkout sh...	<1s

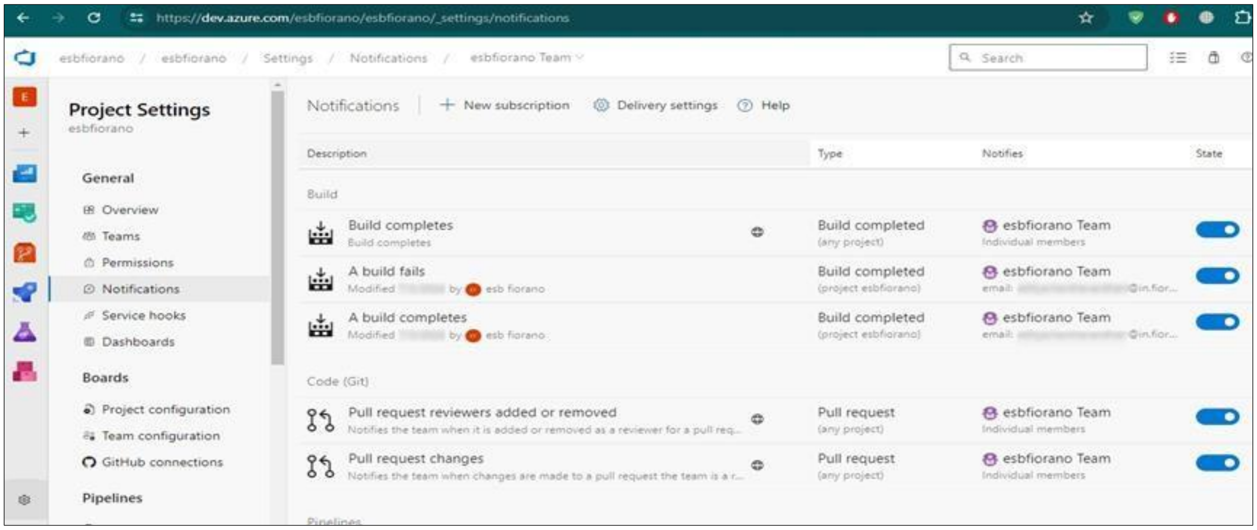
CmdLine

```
Starting: CmdLine
==============================================================================
Task         : Command line
Description  : Run a command line script using Bash on Linux and macOS and cmd.exe on Windows
Version      : 2.237.1
Author       : Microsoft Corporation
Help         : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/command-line
==============================================================================
Generating script.
Script contents:
bash /home/aditya/AzureCICD/workingDir/CI-CD.sh
========================== Starting Command Output ===========================
/bin/bash --noprofile --norc /home/aditya/AzureCICD/_work/_temp/2905f039-ba28-438e-8dc8-558307adad3b.sh
```

Triggering Notifications/Emails

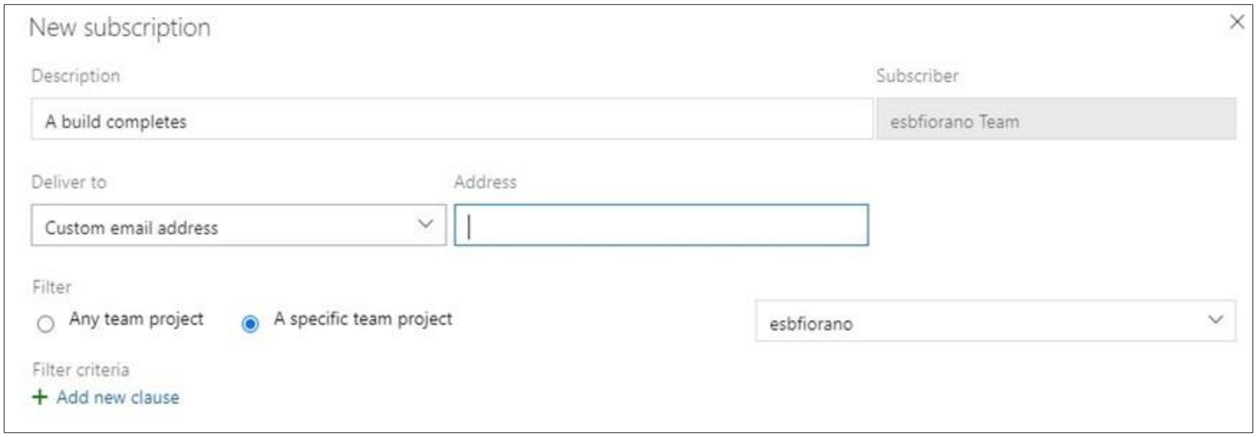
To get email notifications on build success and failure,

1. Go to **Project Settings** > **Notifications** > **New subscription**.



Description	Type	Notifies	State
Build			
Build completes Build completes	Build completed (any project)	esbfiorano Team Individual members	
A build fails Modified [redacted] by esb fiorano	Build completed (project esbfiorano)	esbfiorano Team email: [redacted]@in.fior...	
A build completes Modified [redacted] by esb fiorano	Build completed (project esbfiorano)	esbfiorano Team email: [redacted]@in.fior...	
Code (Git)			
Pull request reviewers added or removed Notifies the team when it is added or removed as a reviewer for a pull req...	Pull request (any project)	esbfiorano Team Individual members	
Pull request changes Notifies the team when changes are made to a pull request the team is a r...	Pull request (any project)	esbfiorano Team Individual members	
Pipelines			

2. Choose the template.
3. Click the **Deliver to** option and choose "Custom email address"; provide the email address.



New subscription

Description	Subscriber
A build completes	esbfiorano Team

Deliver to	Address
Custom email address	

Filter

○ Any team project ● A specific team project esbfiorano

Filter criteria

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