Lab: CI CD in Azure Synapse Analytics

Duration: 90 minutes

In this lab you will be going to complete the following exercise.

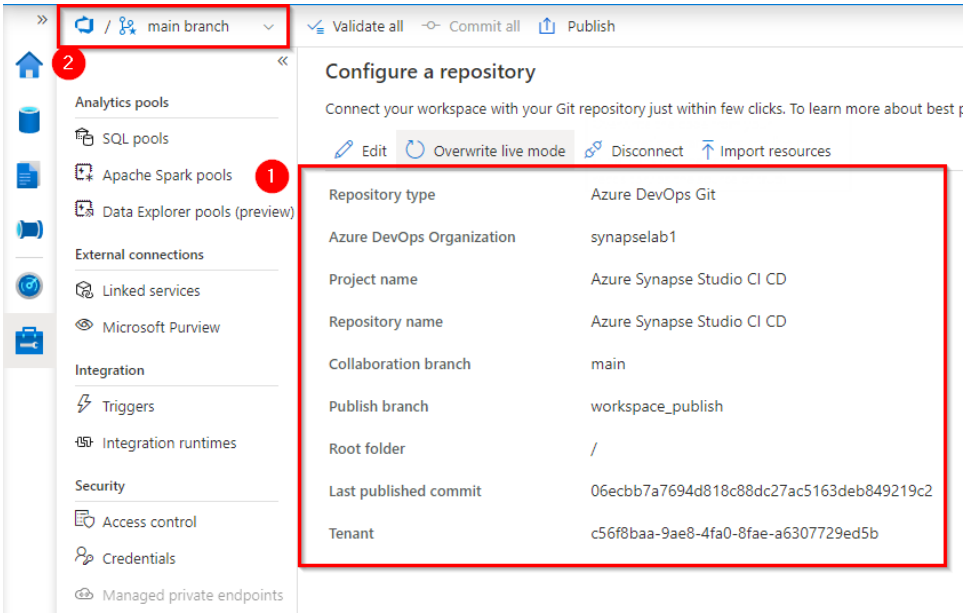
1. Azure DevOps or Git Configuration for Source Control
2. Create a new branch on our Repo, Pull & Merge.
3. Create an Artifact & the release pipeline.

Task 1: Azure DevOps or Git Configuration for Source Control

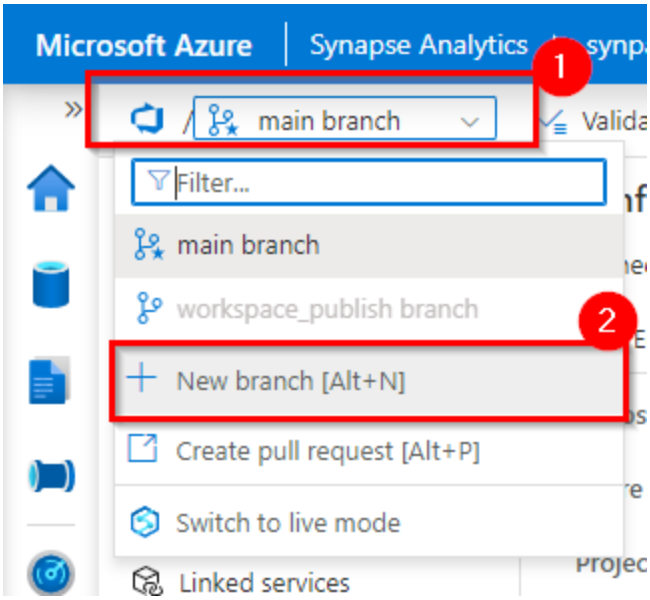
1. Open a browser and navigate to https://portal.azure.com, then search at the top of the Azure portal screen for **Azure DevOps**. In the resulting page, click **Azure DevOps organizations**.
2. Next, click on the link labelled **My Azure DevOps Organizations** or navigate directly to https://aex.dev.azure.com.
3. On the **We need a few more details** page, select **Continue**.
4. In the drop-down box on the left, choose **Default Directory**, instead of "Microsoft Account".
5. If prompted (*"We need a few more details"*), provide your name, e-mail address, and location and click **Continue**.
6. Back at https://aex.dev.azure.com with **Default Directory** selected click the blue button **Create new organization**.
7. Accept the *Terms of Service* by clicking **Continue**.
8. If prompted (*"Almost done"*), leave the name for the Azure DevOps organization at default (it needs to be a globally unique name) and pick a hosting location close to you from the list.
9. Once the newly created organization opens in **Azure DevOps**, click **Organization settings** in the bottom left corner.
10. At the **Organization settings** screen click **Billing** (opening this screen takes a few seconds).
11. Click **Setup billing** and on the right-hand side of the screen select the **Azure Pass - Sponsorship** subscription and click **Save** to link the subscription with the organization.
12. Once the screen shows the linked Azure Subscription ID at the top, change the number of **Paid parallel jobs** for **MS Hosted CI/CD** from 0 to **1**. Then click the **SAVE** button at the bottom.
13. Go back to the organization home and creating an Azure DevOps project with name as **Azure Synapse Studio CI CD**

Task 2: Set up code repository in Aure Synapse studio

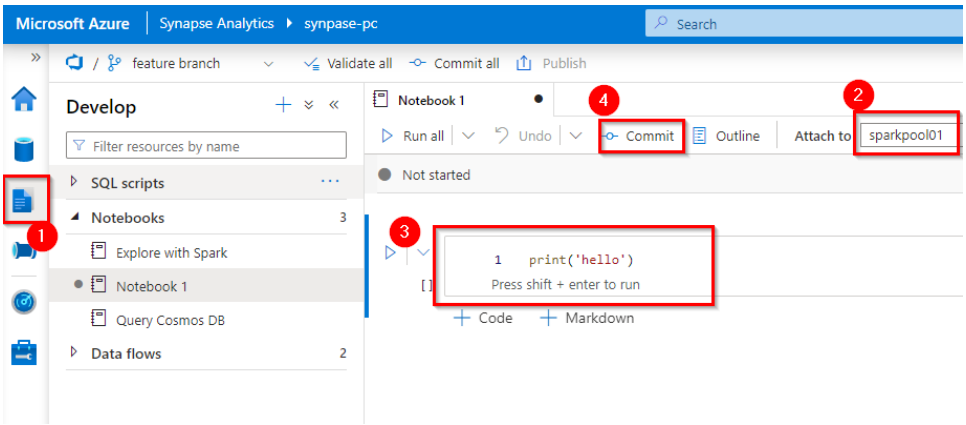
1. Open azure synapse studio. <https://web.azuresynapse.net>
2. In manage hub, Click **Git configuration** under **Source control** and click on configure.
3. In Configure a repository page provide the following:
    a. Repository type: **Azure DevOps Git**
    b. Azure Active Directory: **Default Directory**
    c. Click **continue**
    d. Select repository: checked
    e. Aure DevOps organization name: <enter your org name create in Azure DevOps>
    f. Project Name: **Azure Synapse Studio CI CD**
    g. Repository Name: **Azure Synapse Studio CI CD**
    h. Collaboration branch: Create New -> Branch name: **main**
    i. Publish branch: **workspace_publish**
    j. Root folder: /
    k. Import existing resources to repository: **checked**
    l. Import resource into this branch: **main**
    m. Click **Apply**
    n. Click **Save**.



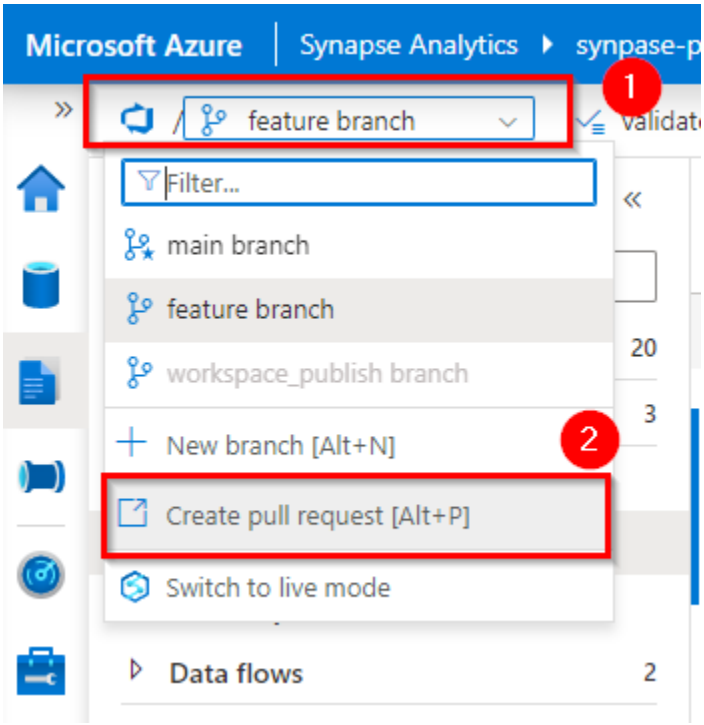
4. Verify the repository created in Azure DevOps Project Repos, you will see that it is populated with objects from our Azure Synapse Studio.
(https://dev.azure.com/{yourorganization})
5. Back in Azure Synapse Studio, create a new branch to ensure any changes you make will not be automatically deployed against your main version of Azure Synapse Studio.



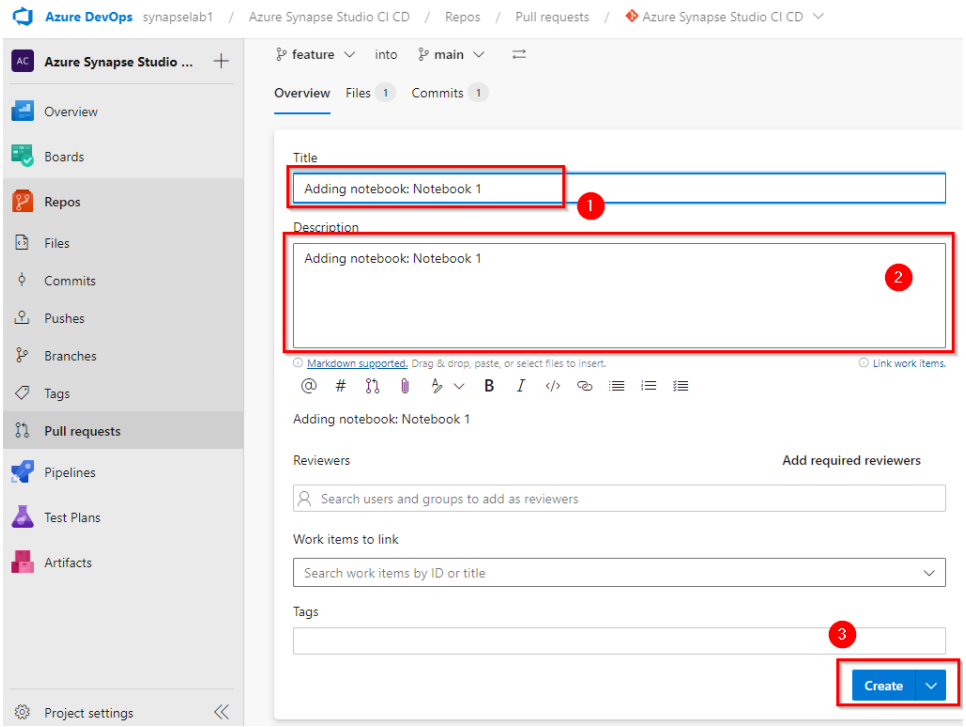
6. Enter branch with name as **feature** based on **main** branch and create it.
7. In develop hub create a new Notebook attach with our spark pool. In the cell enter the print('hello') and then commit changes to your feature branch.



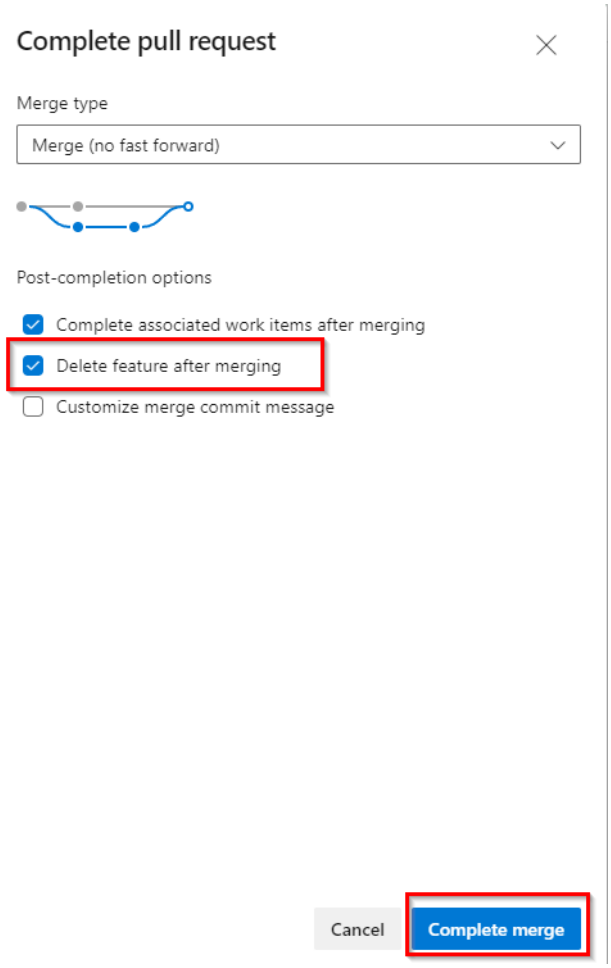
8. Now go to the feature branch click the drop-down button then click Create pull request.



9. A new Azure DevOps tab in the browser will open and show a Pull request page where you give the title and description to the request and create a pull request.



10. Once you click create pull request this will merge the feature branch with the main branch.
11. Approve the pull request, once approved then click on complete and the Complete merge. This also delete the feature branch when selected. (do not uncheck Delete feature after merging).



12. Navigate back to our Azure Synapse Analytics environment and reload the page under develop hub new notebook created in the previous step is now there in main branch.

Set up a blank synapse workspace:

1. Create a new resource group **synapse-rg-prod** location near to you.
2. Create a new Azure Synapse workspace **synapse-xx-prd** (xx your initials) in resource group created in previous step.

   Note: Use the existing ADLSGen2 storage account and create a new File System name **tempdata**.

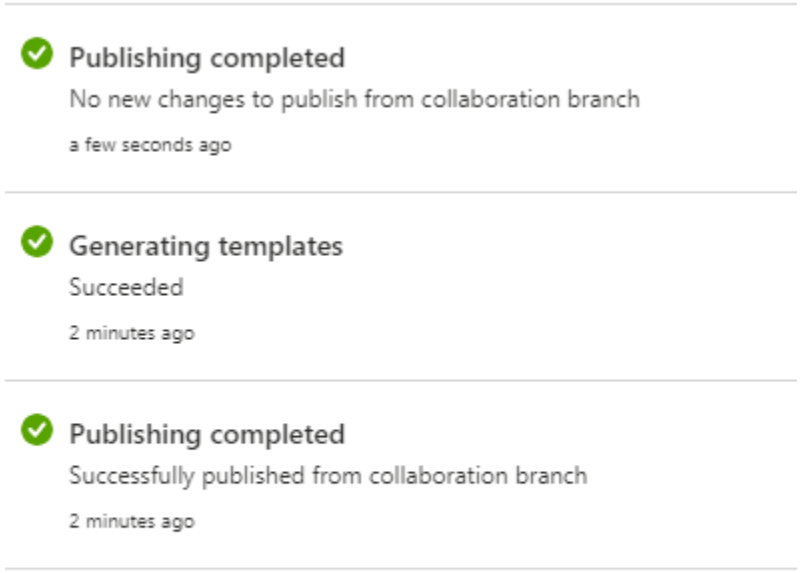
3. When deployment completed, Click on **Go to resource** and open synapse studio.
4. Create a **spark pool** and **serverless SQL pool** with same name as in your development environment.
5. In the Azure Synapse workspace, go to Studio > Manage > Access Control. Add the Azure the service principal to the workspace admin group. (Synapse Administrator)
6. Create a key vault in the support subscription, and ensure that both the existing workspace and the new workspace have at least GET and LIST permissions to the vault.

Task 3: Publish an artifact that can use to deploy to another environment.

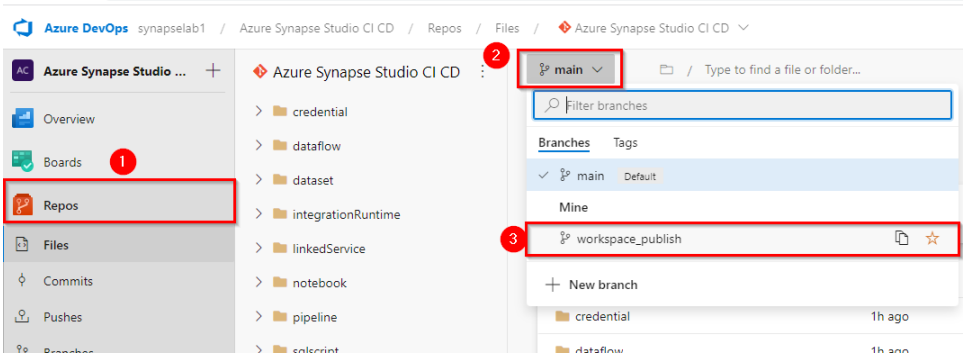
1. In azure synapse studio, click on **Publish**. This will show the artifacts that will get published to **workspace_publish** branch. Click ok.

   This publish will save the templates that we will use to deploy our environment to another Azure Synapse Analytics workspace.

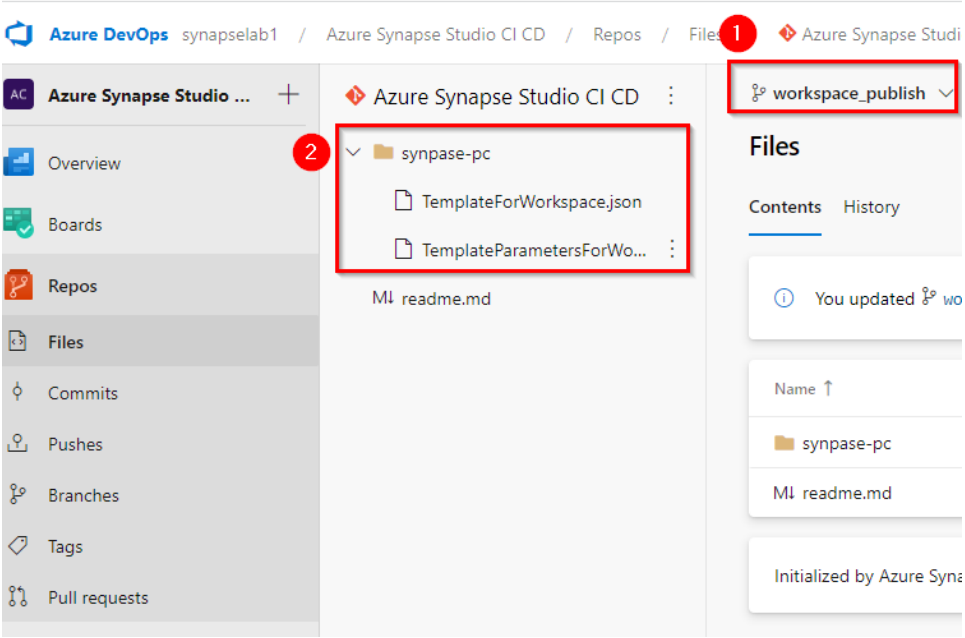
   Note: When you click to publish a few messages will appear. Publishing In progress, Publishing completed, Generating templates, and Generating templates completed.



2. Next, open Azure DevOps Repo. You will see another branch name workspace_publish select it.



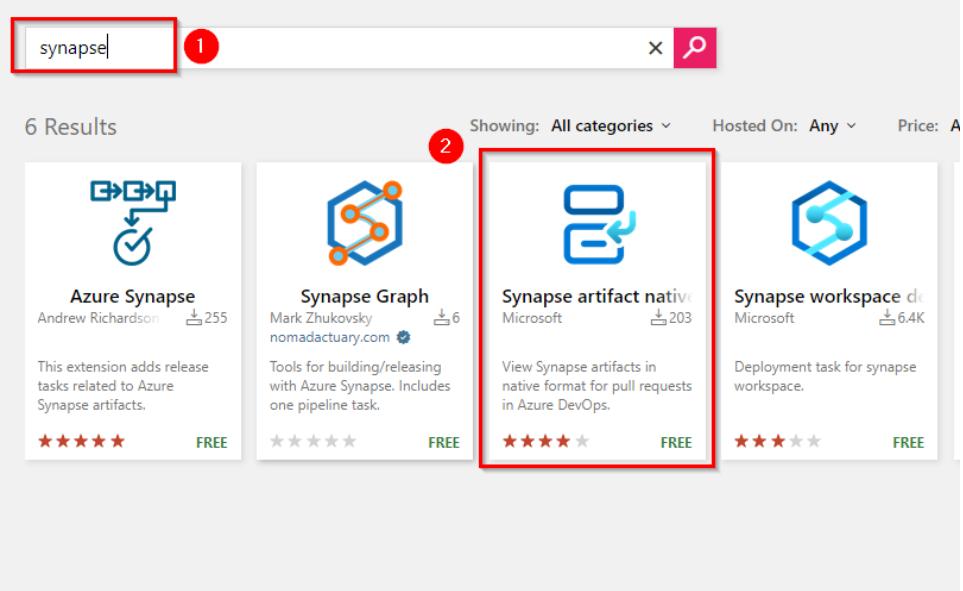
3. In workspace_publish branch you will find a folder with the same name as your Azure Synapse Analytics workspace. Under that folder you will find two files, TemplateForWorkspace.json & TemplateParametersForWorkspace.json.



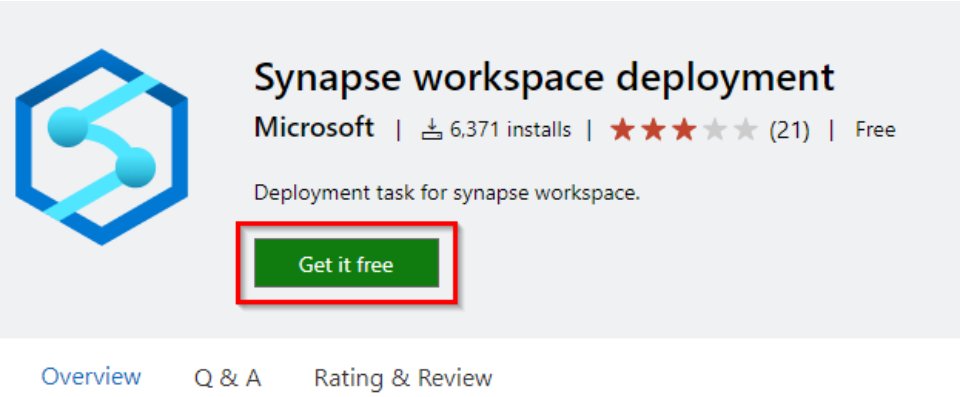
NOTE - these templates are not the same templates you would use to deploy a new environment. These are only for deploying the artifacts from one environment to another.

Create The Release Pipeline

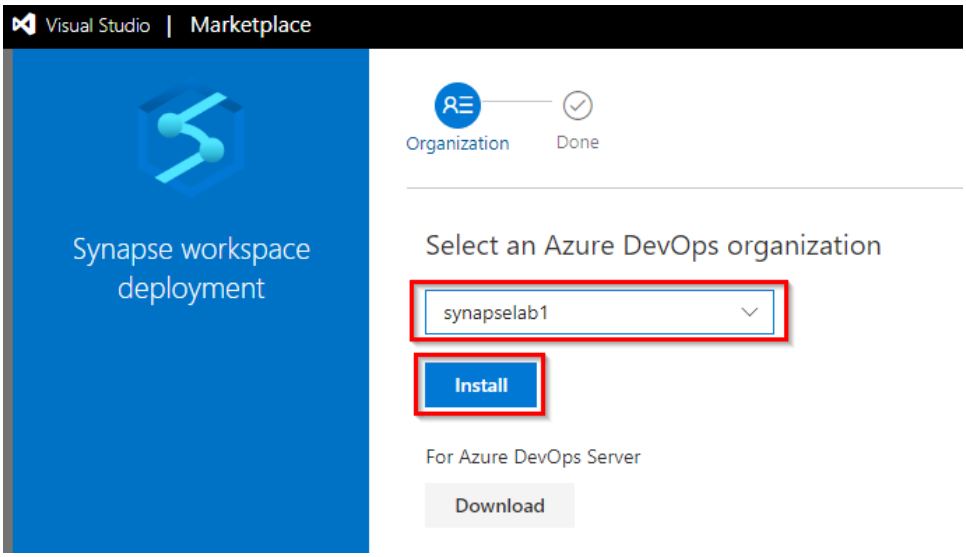
1. In Azure DevOps. (https://dev.azure.com/{yourorganization}).
2. Select the shopping bag icon, and then select Browse Marketplace.
3. Find the extension Synapse workspace deployment and select it.



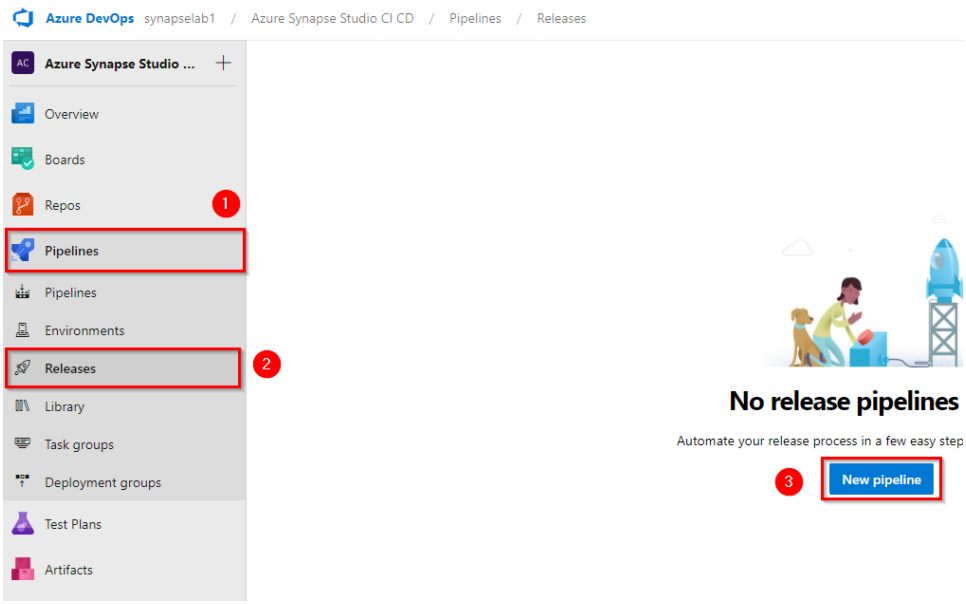
4. Click on **Get it free**.



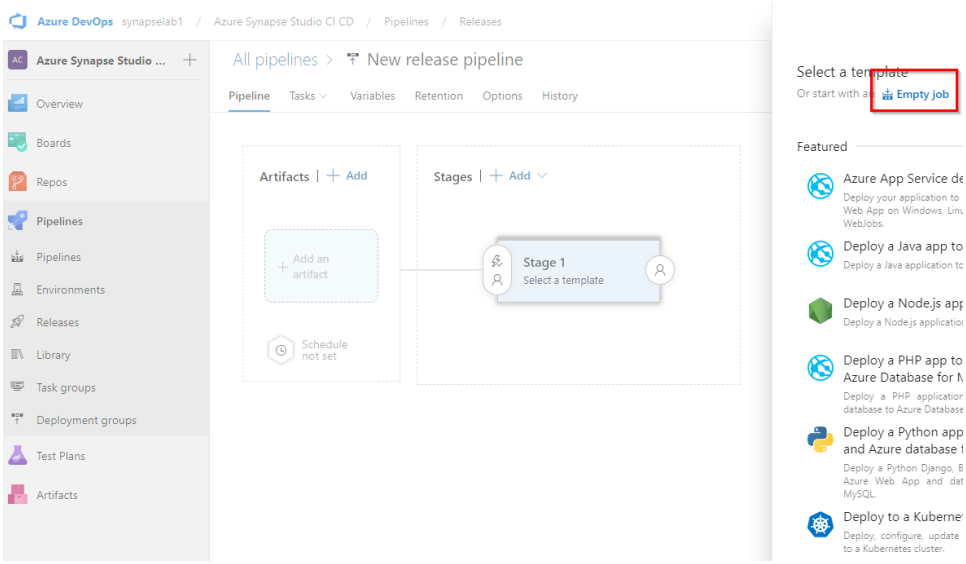
5. Select your organization from the dropdown menu, and then select Install to install the extension.



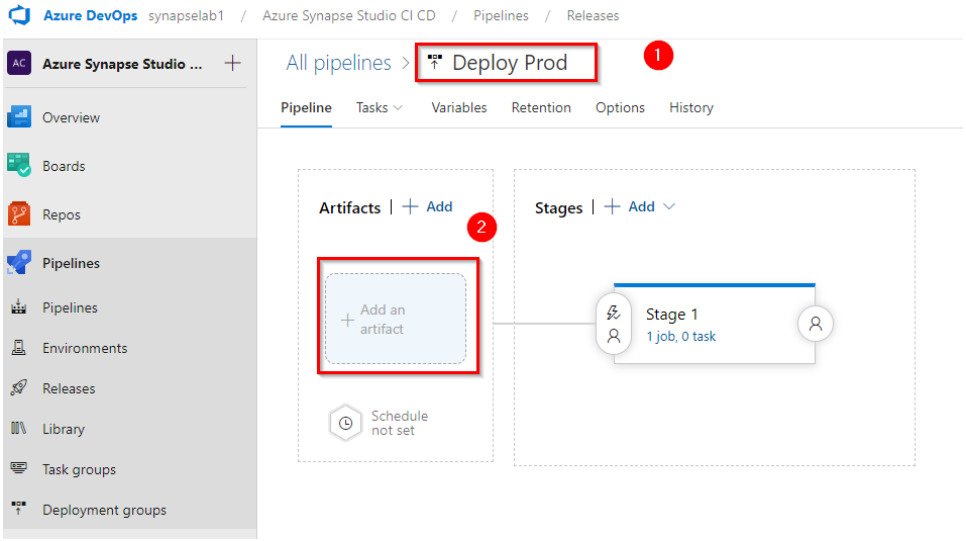
6. In Azure DevOps, go to Pipeline and click on **Releases** and then click on **New Pipeline**.



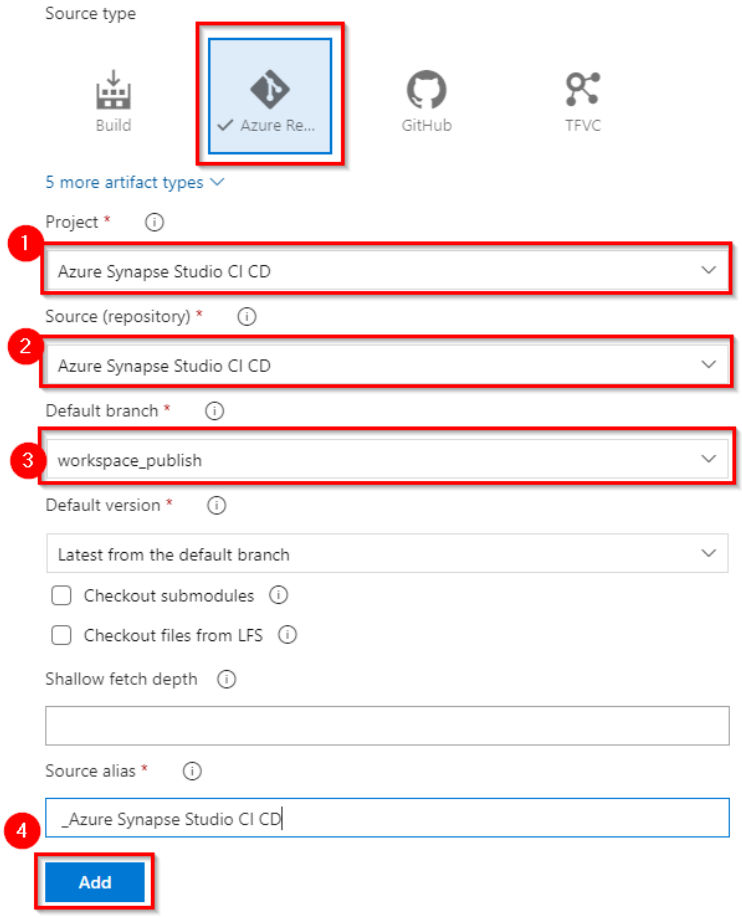
7. Click on empty job.



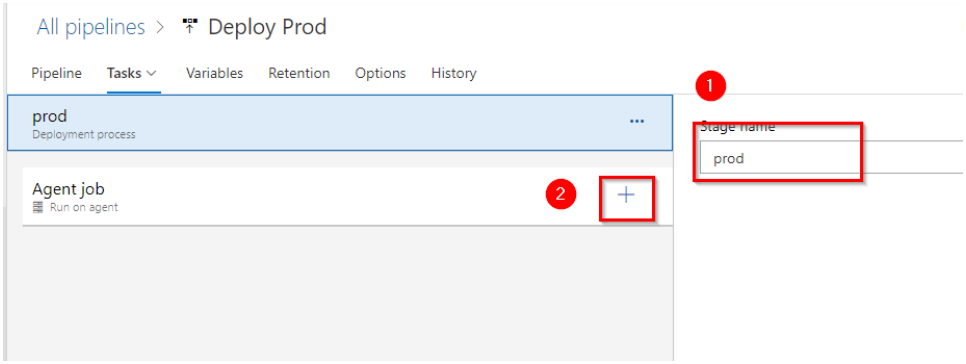
8. Give the name for the release pipeline **Deploy Prod** and click on Add an artifact.



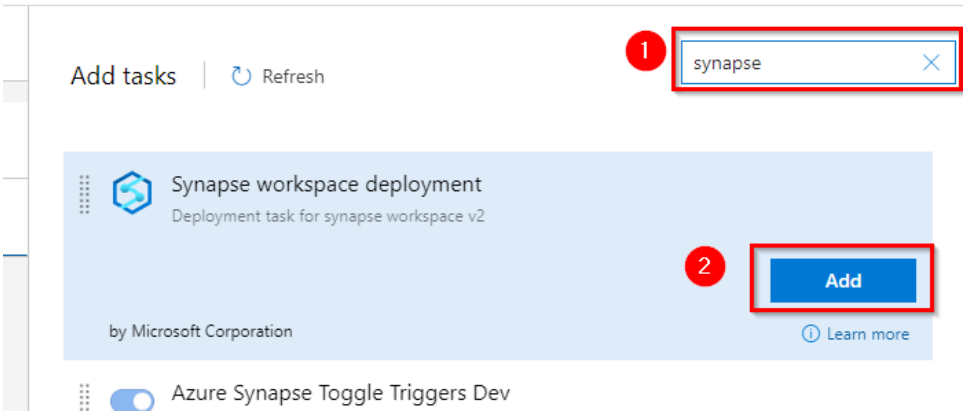
9. Select source type Azure Repo and provide the configuration as shown in the image below and then click on Add



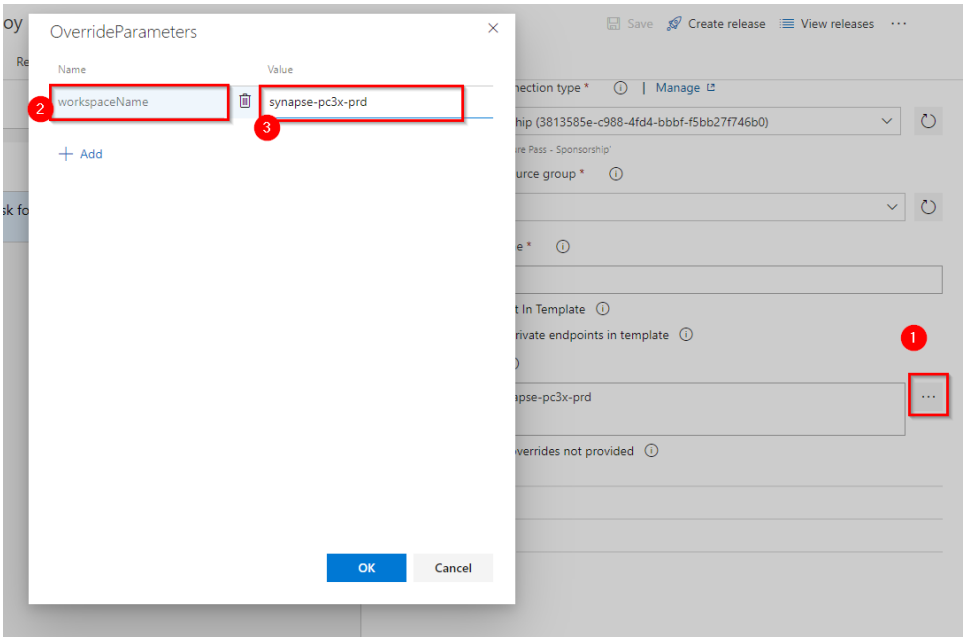
10. Click on 1 job, 0 task and the change the name from **Stage 1** to **prod**.
11. Next click on + icon in Agent job.



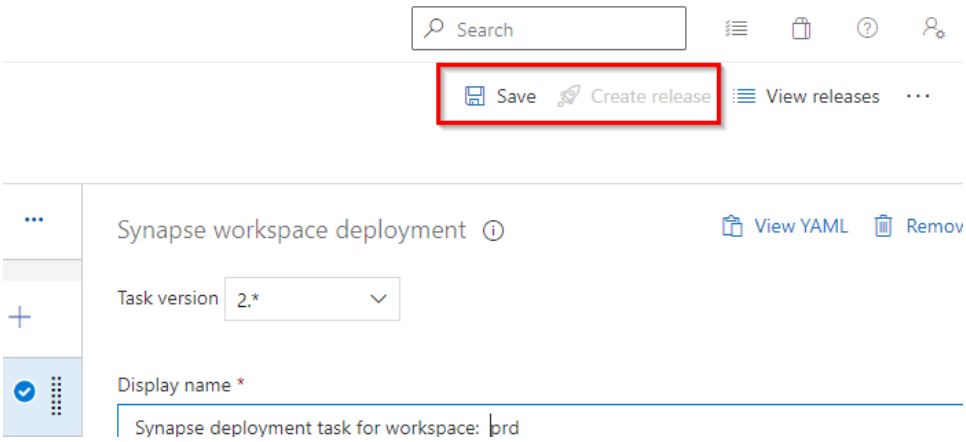
12. In the search text box type **Synapse**, the Synapse workspace deployment task will appear if you have installed it from the Marketplace.



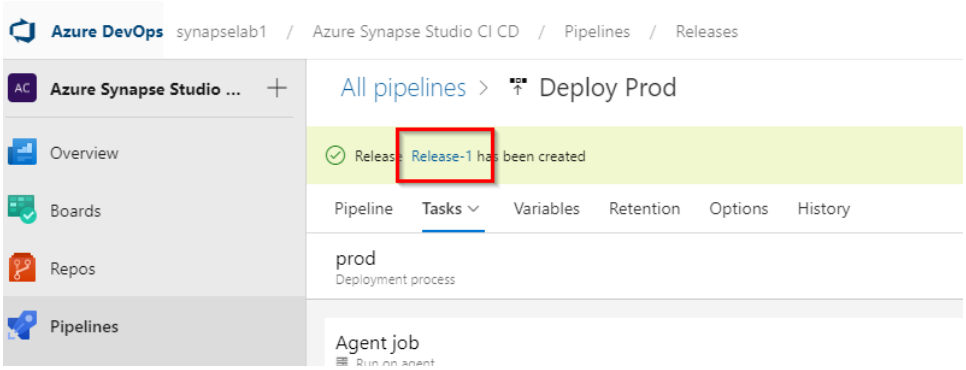
13. Once you have added the task, click on the Synapse workspace deployment task and provide the following details:
    a. Display name: Synapse deployment task for workspace: prd
    b. Operation Type: Deploy
    c. Template: Browse the path for **TemplateForWorkspace.json**
    d. Template parameters: Browse the path for **TemplateParametersForWorkspace.json**
    e. Synapse Workspace connection type: Azure Pass – Sponsorship
    f. Synapse workspace resource group: synapse-rg-prod
    g. Synapse Workspace name: synapse-xx-prd (xx you initials)
    h. OverrideParameters:
        i. Click on three dots
        ii. Name: workspaceName
        iii. Value: <Your workspace name>



14. Click on save and then create release.



15. Click on **Release 1**



16. Go to production synapse studio and verify all the artifact of development environment is created.