

# ALM Accelerator for Power Platform (AA4PP)

Overview, Pre-requisites, ALM Accelerator Lab Module

Hands-on Lab Step-by-Step

November 2022

V 0.94



# Lab Overview and Pre-requisites

## Abstract and Learning Objectives

This is a beginner level lab for you to get hands on experience with ALM accelerator for Microsoft Power Platform (AA4PP). The lab includes step-by-step instructions for someone new to these technologies. Technologies covered are:

**Power Apps:** A software as a service application platform that enables power users in line of business roles to easily build and deploy custom business apps. You will learn how to use the ALM Accelerator Canvas and Model-driven App for administration.

**Azure DevOps:** Azure DevOps supports a collaborative culture and set of processes that bring together developers, project managers, and contributors to develop software, and in the context of this lab, implement a proper CI/CD.

Make sure to follow all the pre-requisite steps listed in this document before starting the labs. Because the Power Platform is a cloud-based solution, you can complete all labs remotely.

For a list of additional learning resources and introductory videos, see [Learning Resources](#)

## Lab structure and Learning Objectives

The lab is divided into pre-setup and lab module.

The you can find the latest release under [this link](#). The labs listed here explain E2E how to configure and install AA4PP, import a demo solution and save it in Azure DevOps and deploy to downstream environments.

## Pre-requisites: Before starting the hands-on lab

### Task 1: Download the Lab Files you have the files if you are reading this

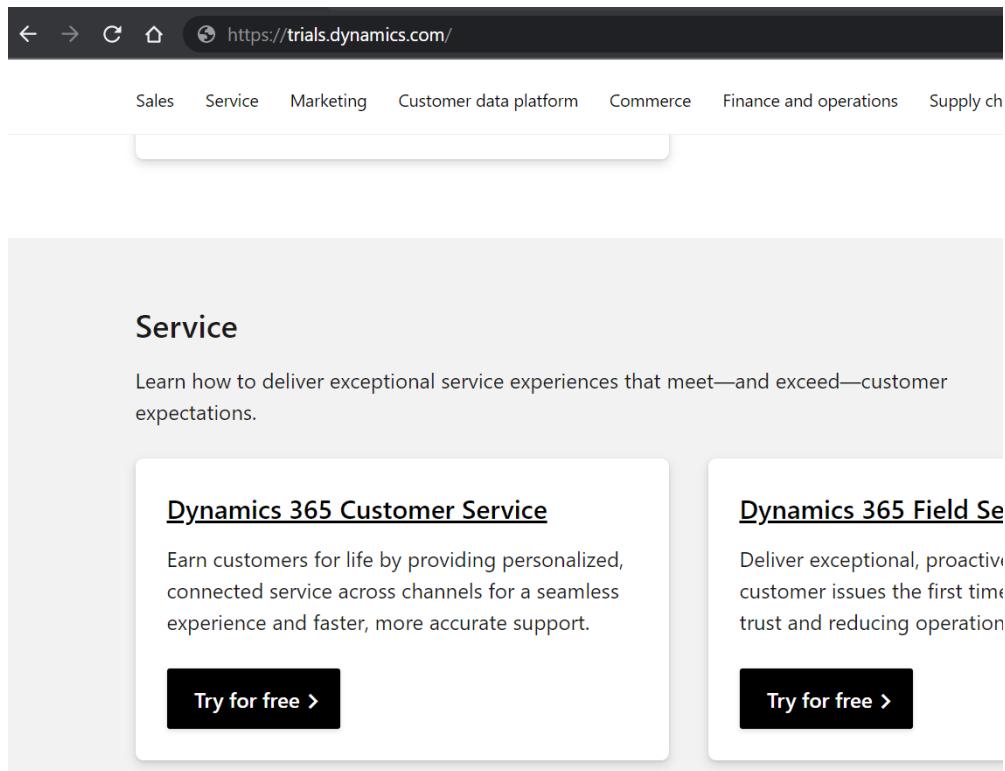
1. Download file Lab File (Zip file)
2. **Save a local copy of the lab contents:** Save it to a local folder, such as C:\AA4PP. Extract the ZIP package. This package contains the lab manual (what reading now) and zip file of a pre-built solution file for ALM Accelerator and the sample solution to test.

## Task 2: Sign-up for a new trial tenant

To simplify our lab and remove chances of discovering limitations or governance and control in your organization tenant, we are going to setup a brand-new trial tenant all for yourself for this lab.

After the following steps you will have a tenant and environments to use in the ALM Accelerator for Power Platform to test and learn.

1. Open the browser in incognito/inPrivate mode and go to <https://trials.dynamics.com/>, find the **Dynamics 365 Customer services** and select **Try for free**.



The screenshot shows a web browser window with the URL <https://trials.dynamics.com/> in the address bar. The page content is as follows:

Sales   Service   Marketing   Customer data platform   Commerce   Finance and operations   Supply ch

### Service

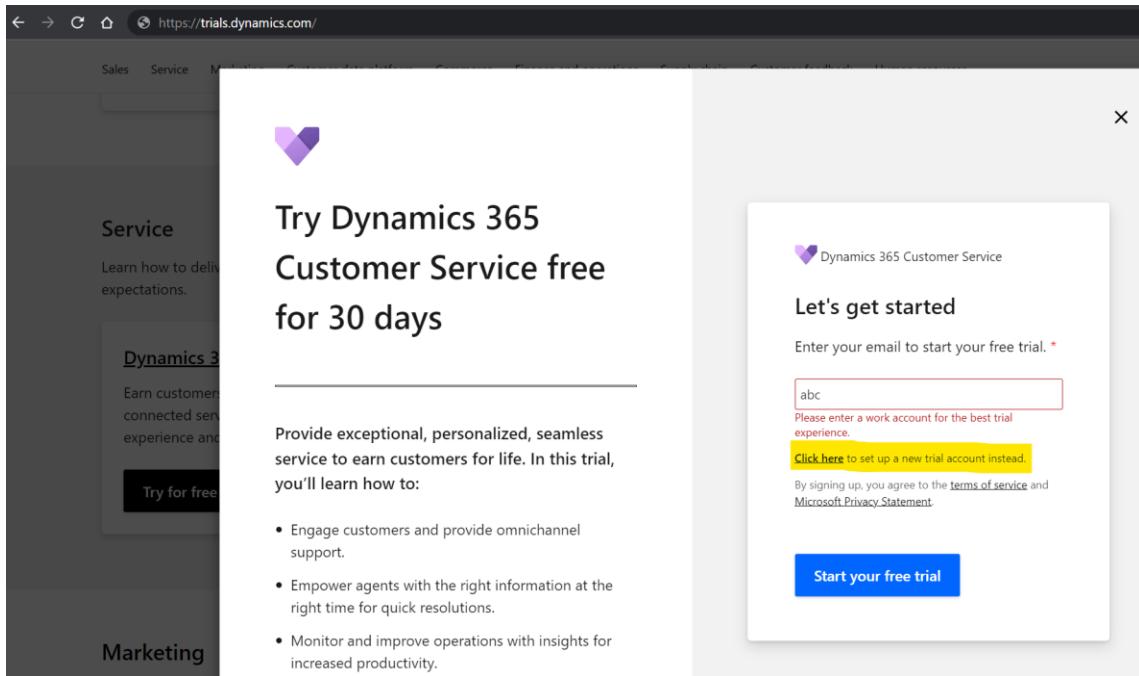
Learn how to deliver exceptional service experiences that meet—and exceed—customer expectations.

**Dynamics 365 Customer Service**  
Earn customers for life by providing personalized, connected service across channels for a seamless experience and faster, more accurate support.

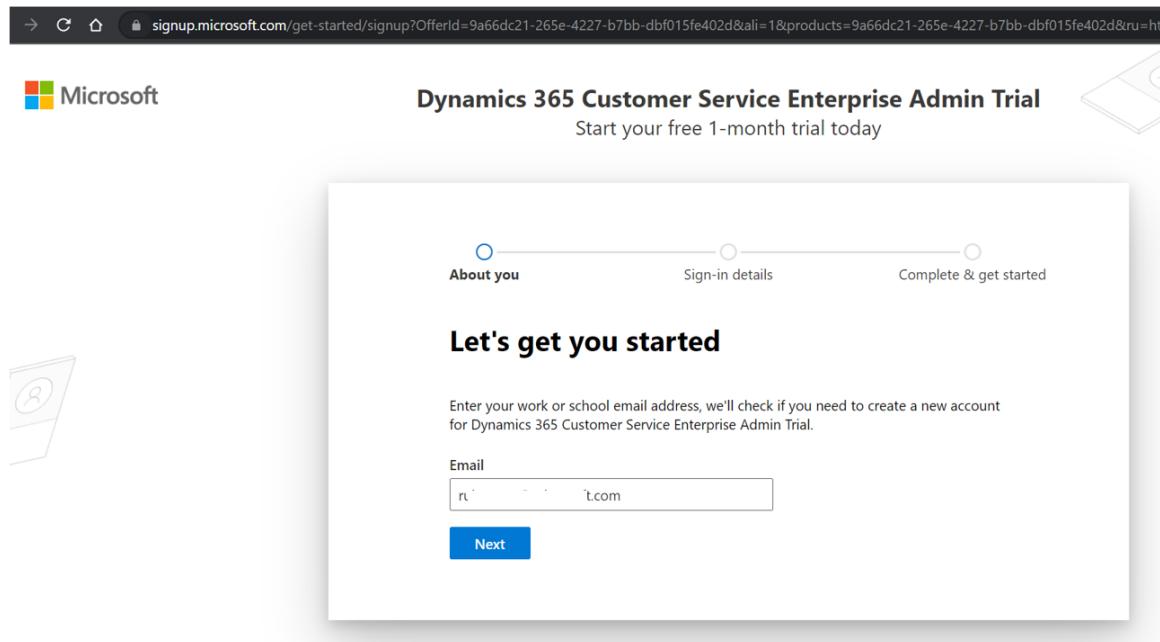
**Dynamics 365 Field Se**  
Deliver exceptional, proactive customer service the first time, building trust and reducing operation

**Try for free >**   **Try for free >**

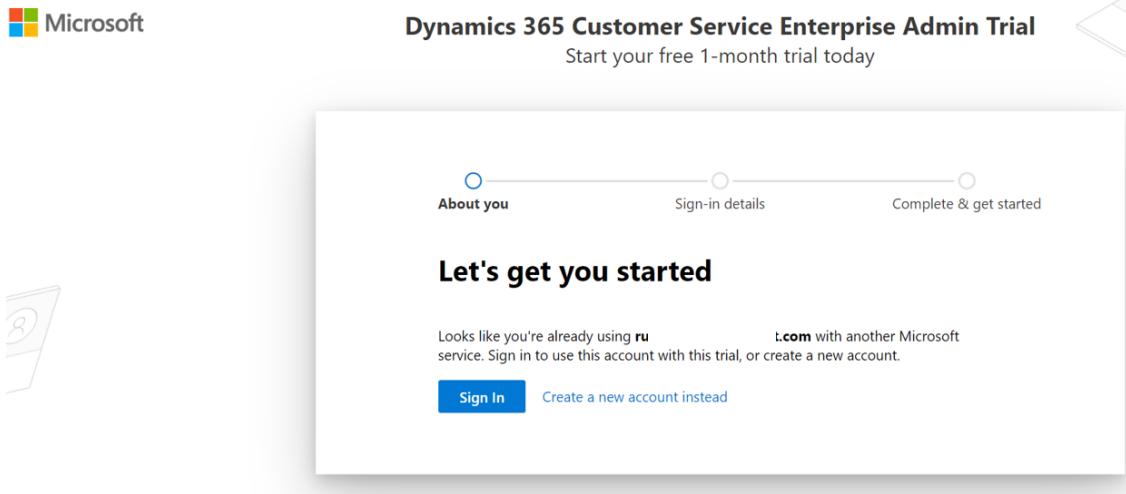
2. In the enter your email just write **abc** and select **Start your free trial**, afterwards you will be able to see **Select here to setup a new trial account**



3. Provide your school or work email and select **Next**



4. In case you have used your email in other trials you will need to select **Create a new account instead**



5. Fill out the form and select **Next**

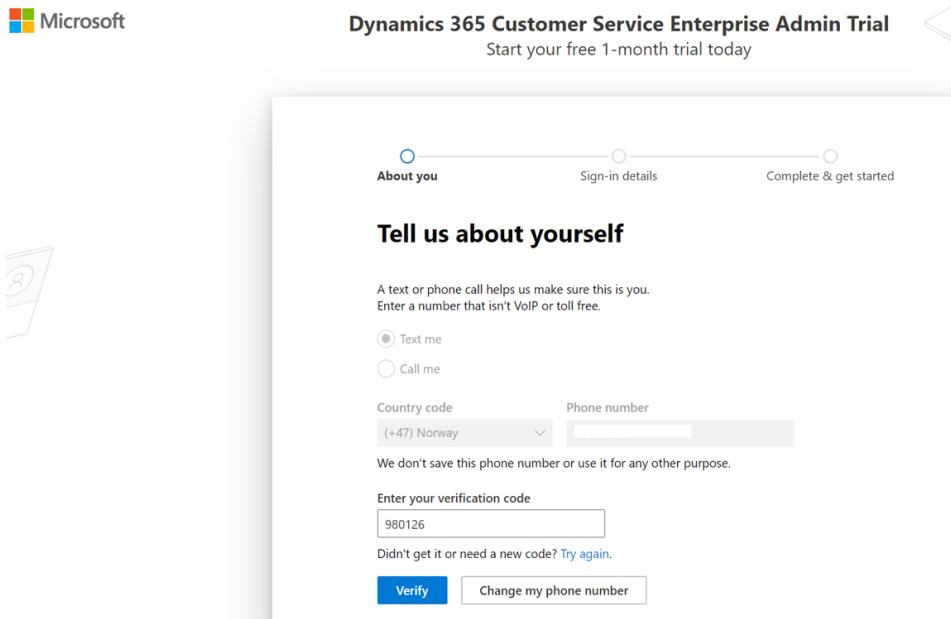
**Note:** The name of the company will be used to create the domain name, in this case you may want to name something like **ALM4PP** or similar

### Dynamics 365 Customer Service Enterprise Admin Trial

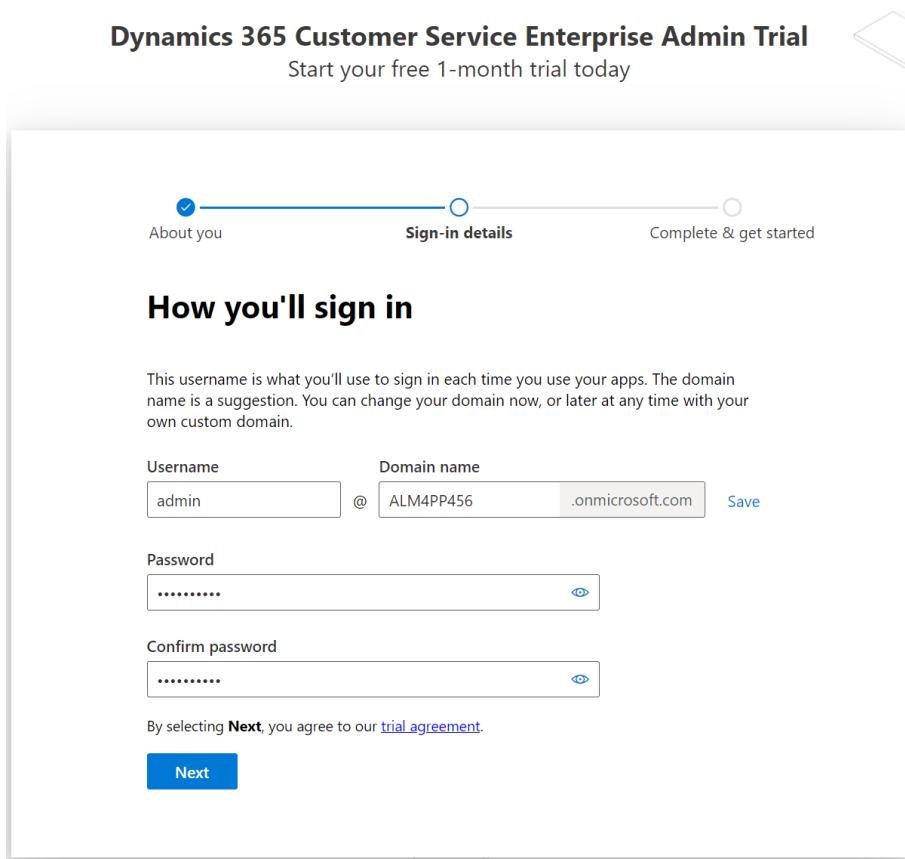
Start your free 1-month trial today

The screenshot shows the 'Tell us about yourself' form page. At the top, a navigation bar shows three steps: 'About you' (highlighted with a blue dot), 'Sign-in details', and 'Complete & get started'. The main heading is 'Tell us about yourself'. The form contains several input fields: 'First name' (red border, required), 'Middle name (Optional)', 'Last name' (red border, required), 'Business phone number' (red border), 'Company name' (red border), 'Company size' (dropdown menu 'Select one from below'), 'Country or Region' (dropdown menu 'United States'), and a 'Privacy Statement' checkbox. Below the form, there are two paragraphs of text and a checkbox for sharing information with partners. A 'Next' button is at the bottom.

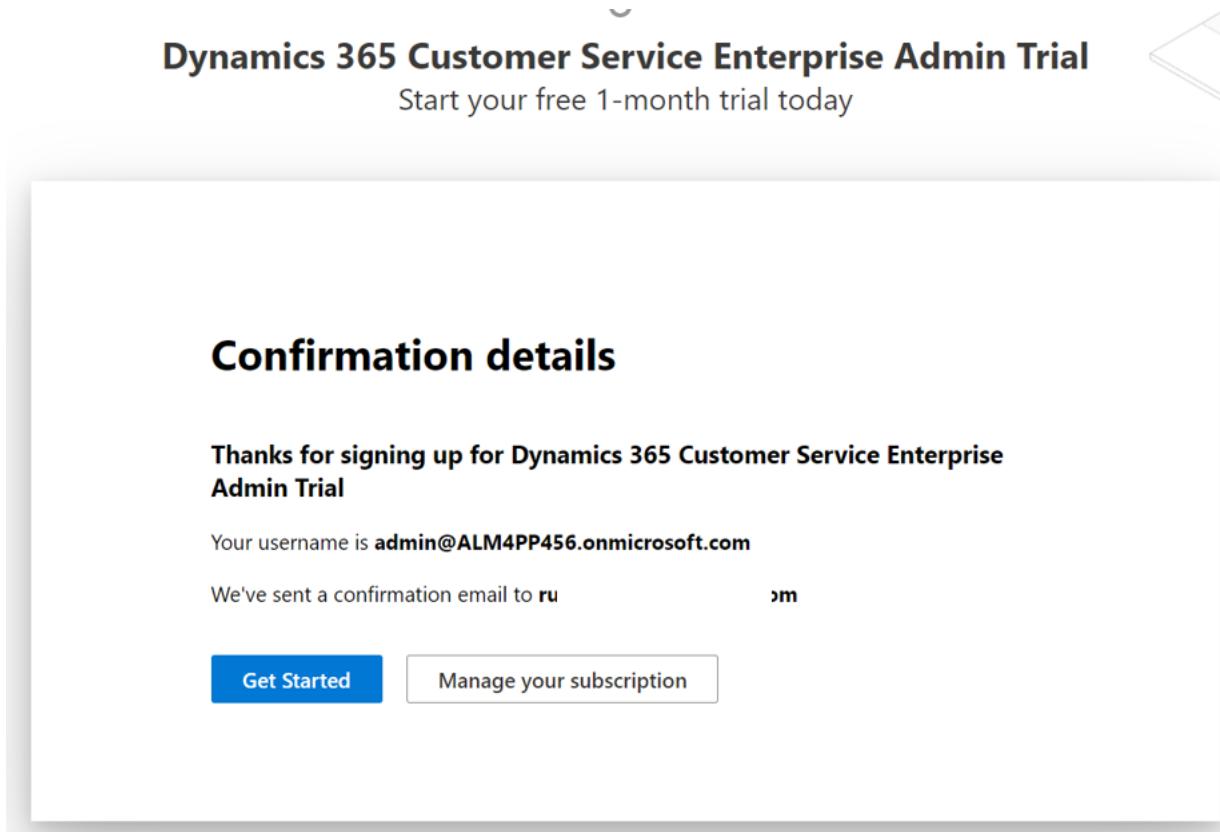
6. Validate your phone number select **Verify**



7. Rename the user to be **admin** and provide a password. If you would like to rename the domain of your tenant this would be the last opportunity, for simplicity we will keep the suggested name and select **Next**.



8. Select **Get Started**



- Now we will create 3 environments with name **ALM-Dev**, **ALM-Validation**, **ALM-Test**, we will keep the default type as **Trial (Subscription-based)**.

**Note:** Please repeat the following steps to create the 3 environments

- Select **New** from the top right corner

Environment	Type	State
ALM4PP (default)	Default	Ready

- Fill **Name** of the environment and keep the **Trial(Subscription-based)** and select **Next**. In The URL of the environment, since needs to be unique, add some suffix, for instance your name.

**New environment**

This operation is subject to [capacity constraints](#)

**Name \***  
ALM-Dev

**Region \***  
Norway - Default

A local region can provide quicker data access

**Type ⓘ \***  
Trial (subscription-based)

**Purpose**  
Describe the environment's purpose

**Create a database for this environment? ⓘ**  
 Yes

A database must always be created for the selected type: Trial (subscription-based)

**Add database**

This operation is subject to [capacity constraints](#)

**Language \***  
English

Default language for user interfaces in this environment

**URL**  
If you don't enter a domain name, we will pick one for you

ALM-Dev-rui

**Currency \***  
NOK (kr)

Reports will use this currency

**Enable Dynamics 365 apps?**  
In addition to Power Apps. [Learn more](#)

No

**Deploy sample apps and data?**  
 No

**Security group**  
Restrict environment access to people in this security group. Otherwise, everyone can access. [Learn more](#)

[Select](#)

**Add database**

This operation is subject to [capacity constraints](#)

**Language \***  
English

Default language for user interfaces in this environment

**URL**  
If you don't enter a domain name, we will pick one for you

ALM-Dev-rui

**Currency \***  
NOK (kr)

Reports will use this currency

**Enable Dynamics 365 apps?**  
In addition to Power Apps. [Learn more](#)

No

**Deploy sample apps and data?**  
 No

**Security group**  
Restrict environment access to people in this security group. Otherwise, everyone can access. [Learn more](#)

[Select](#)

**Note:** Define the url based on the name of the environment you are creating, by select **here** in the Url

### URL

A unique domain name will be generated.

Click [here](#) to enter a custom domain

- After you have completed the 3 environments, we will need to create an additional one that will represent our Production environment for that repeat the previous steps but select **Trial** as the environment **Type**

**New environment**

ⓘ This operation is subject to [capacity constraints](#)

**Name \***  
ALM-Prod

**Region \***  
Norway - Default

A local region can provide quicker data access

**Type ⓘ \***  
Trial

**Purpose**  
Describe the environment's purpose

**Create a database for this environment? ⓘ**  
 Yes

**Add database**

ⓘ This operation is subject to [capacity constraints](#)

**Language \***  
English

Default language for user interfaces in this environment

**URL**  
If you don't enter a domain name, we will pick one for you  
ALM-Prod-rui

**Currency \***  
NOK (kr)

Reports will use this currency

**Enable Dynamics 365 apps?**  
In addition to Power Apps. [Learn more](#)  
 No

Dynamics 365 apps can only be enabled for Production or Sandbox environments. You can start a trial [here](#)

**Deploy sample apps and data?**  
 No

**Security group**  
Restrict environment access to people in this security group. Otherwise, everyone can access. [Learn more](#)

10. After you have completed you should have a similar list

**Power Platform admin center**

☰

Home

**Environments**

- ↳ Analytics
- ↳ Resources
- ↳ Help + support
- ↳ Data integration
- ↳ Data (preview)
- ↳ Policies
- ↳ Admin centers

+ New ⏪ Refresh ⏴ Recover deleted environments

ⓘ New environment [ALM-Prod](#) has been successfully created

**Environments**

Environment	Type	State
ALM-Prod	...	Trial (29 days remaining)
ALM-Test	...	Trial (subscription-based)
ALM-Validation	...	Trial (subscription-based)
ALM-Dev	...	Trial (subscription-based)
ALM4PP (default)	...	Default

## Task 3: Create an organization in Azure DevOps

Please follow the steps below to create an account in Azure DevOps using the admin user.

1. Navigate to [Azure DevOps](https://azure.microsoft.com/en-us/services/devops/#overview) and select "Start free".

The screenshot shows the Azure DevOps overview page. At the top, there are navigation links for Home, Services, and Azure DevOps. Below that, a large "Azure DevOps" heading is followed by a sub-headline: "Plan smarter, collaborate better, and ship faster with a set of modern dev services." Two prominent buttons are visible: a blue "Start free" button and a white "Start free with GitHub" button. A sub-section titled "Already have an account?" includes a "Sign in to Azure DevOps" link. To the right, there is a colorful illustration of people working on a rocket launching from a stack of boxes, with clouds and a checkmark icon. Below the illustration, three service cards are shown: "Azure Boards" (green icon), "Azure Pipelines" (blue icon), and "Azure Repos" (red icon). Each card has a brief description and a "Learn more" link.

2. Select the Country/region, and **Continue**

The screenshot shows the "Get started with Azure DevOps" setup page. It features the Azure DevOps logo and the email address "admin@ALM4PP456.onmicrosoft.com". The main heading is "Get started with Azure DevOps". Below it, a note states: "Choosing **Continue** means that you agree to our [Terms of Service](#), [Privacy Statement](#), and [Code of Conduct](#)". A message indicates that the user will receive information, tips, and offers about Azure DevOps and other Microsoft products and services, with a link to the "Privacy Statement". A "Country/region" dropdown is set to "United States". A large blue "Continue" button is at the bottom right.

3. Define your DevOps organization, in my case I used "RuiAA4PP" but you can name it what you want.

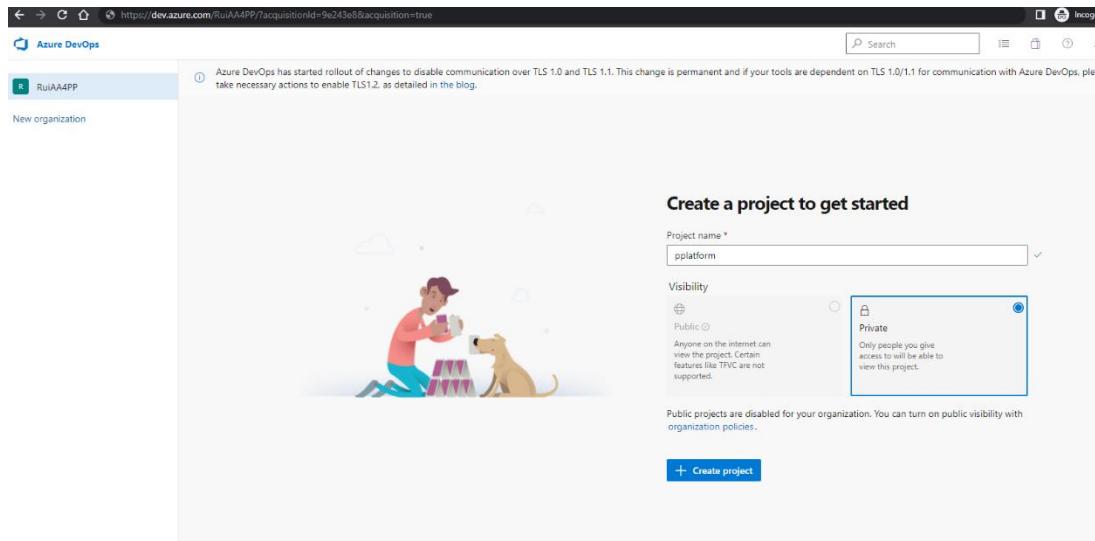


4. Sometimes it might take 1 or 2 minutes in the loading state

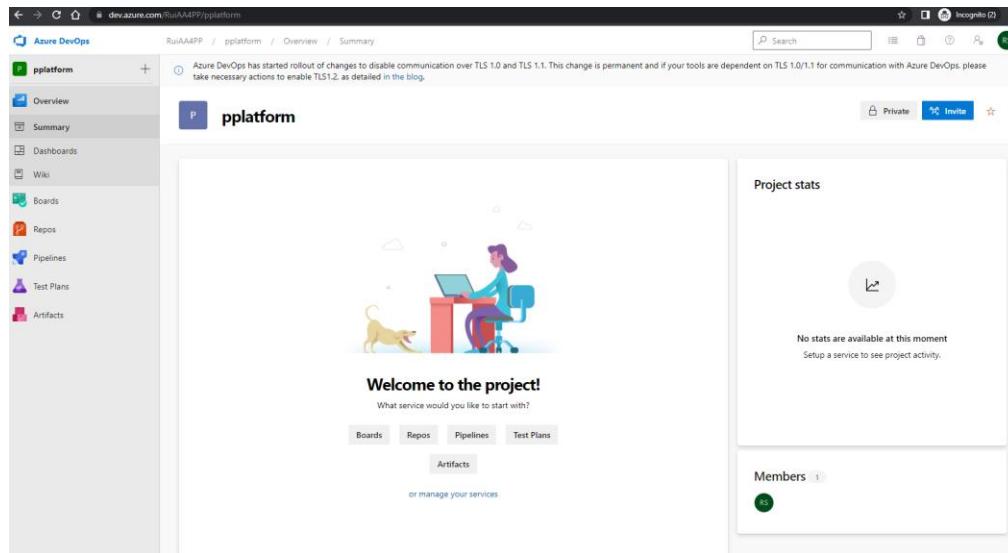


5. After the DevOps organization is created you should be able to create a new project. Let's name the project "pplatform" and select the **Private** visibility and select **Create project**.

## AA4PP Lab



6. Congratulations, you have created the Azure DevOps project, this is how looks like the success.



7. Later we will need parallelism grant, so go to this website <https://aka.ms/azpipelines-parallelism-request> and fill out the form, only after you are granted you will be able to run pipelines configured later. This process might take some hours or days, it is important you do it asap.

**Azure DevOps Parallelism Request**

This form is for users to request increased parallelism in Azure DevOps.

Please consider that it could take 2-3 business days to proceed the request. We are working on improving this process at the moment. Sorry for the inconvenience.

\* Required

1. What is your name? \*

You Name

2. What is your email address? \*

your\_real@email.com

3. What is the name of your Azure DevOps Organization? \*

(E.g. for <https://myorganization.visualstudio.com> or <https://dev.azure.com/myorganization> link formats - organization name would be 'myorganization')

RuiAA4PP

4. Are you requesting a parallelism increase for Public or Private projects? \*

Private

Public

**Submit**

Never give out your password. [Report abuse](#)

After the process has been completed you should receive an email like this

Free tier request was completed

AT Ari  
To Cc

Hi Rui Santos,

We've received your request to increase free parallelism in Azure DevOps.

**Please note that your request was Completed**

**Request Details:**

Name	R
Email	<a href="mailto:rui.santos@contoso.com">rui.santos@contoso.com</a>
Organization Name	RuiAA4PP
Parallelism Type	Private

Request Free Parallelism for your organization: [Azure DevOps Parallelism Request Form](#)

Useful information:

- Azure DevOps Documentation: [Configure and pay for parallel jobs](#)
- Azure DevOps Blog post [Change in Azure Pipelines Grant for Private Projects](#)
- Azure DevOps Blog post [Change in Azure Pipelines Grant for Public Projects](#)

# Configurations in your tenant

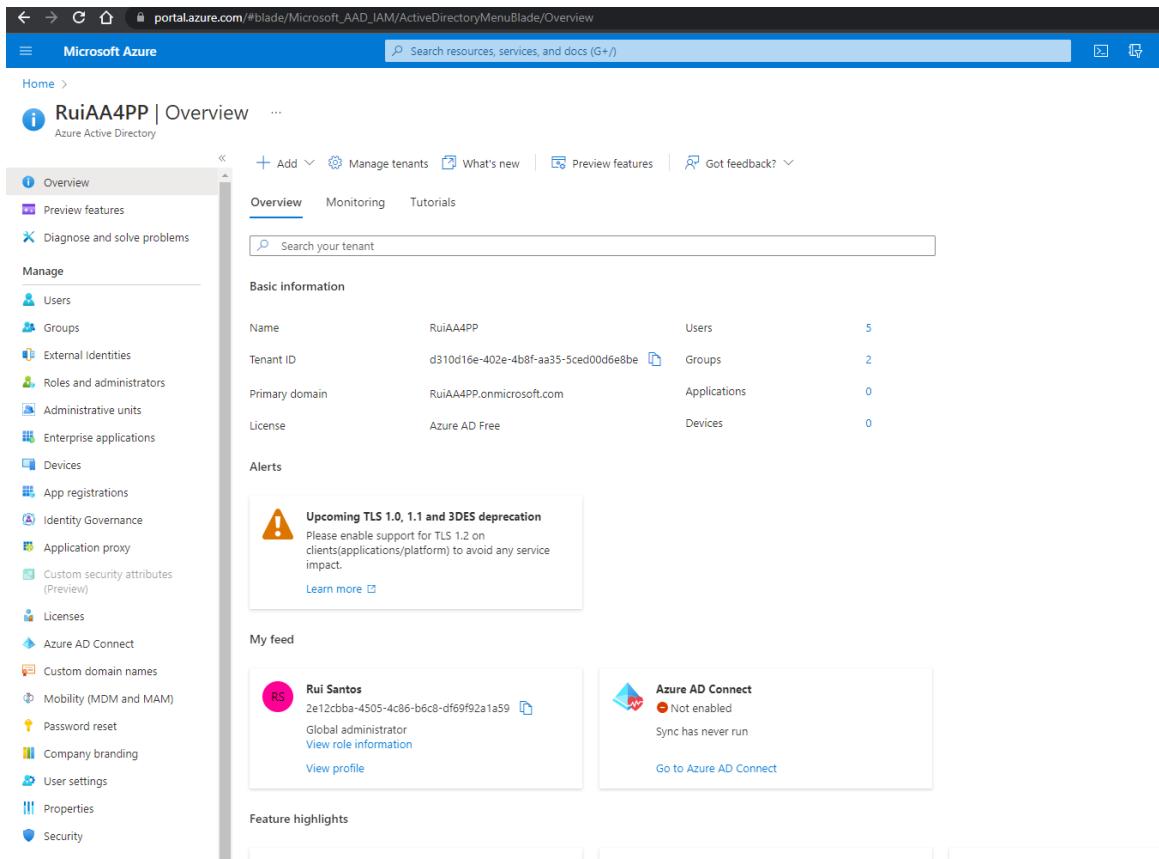
In this module you will configure different parts of the ALM process. The environment strategy is important to have in mind, and in case you want more details you can read this [documentation](#).

Another important aspect related to strategy and vision, are the roles and responsibilities when establishing a Center of Excellence. In your organization, this might be different, or you might start with only a few roles and grow to more as your adoption journey continues, you can read this [documentation](#).

## Task 4: Configurations – Azure<-> Power Platform <-> Azure DevOps

Next, we need to make sure our Environments in Power Platform are able to be accessed by Azure DevOps, please remember, is the Azure DevOps pipelines that will access the different environments to retrieve and deploy the solutions, for that to be possible we need to create an app registration in azure following by some configurations in Azure DevOps and Dataverse. The next steps will illustrate what you need to do.

1. Sign in to the [Azure portal](#).
2. Go to **Azure Active Directory**

3. Find on the left bar **App registrations**.

RuiAA4PP | Overview

Overview

Basic information

Name	RuiAA4PP	Users	5
Tenant ID	d310d16e-402e-4b8f-aa35-5ced00d6e8be	Groups	2
Primary domain	RuiAA4PP.onmicrosoft.com	Applications	0
License	Azure AD Free	Devices	0

Alerts

Upcoming TLS 1.0, 1.1 and 3DES deprecation

My feed

Rui Santos

Azure AD Connect

Feature highlights

4. Select **New registration**, and then give the registration a name, such as **ALMAcceleratorServicePrincipal**. Leave all other options as default, and then select **Register**.
5. Select **API permissions > + Add a permission**.
6. Select **Dynamics CRM**,

Microsoft Azure

Home > RuiAA4PP > ALMAcceleratorServicePrincipal

ALMAcceleratorServicePrincipal | API permissions

Configured permissions

API / Permissions name	Type	Description
Microsoft Graph (1)	Delegated	Sign in and read user profile

To view and manage permissions and user consent, try [Enterprise applications](#).

Request API permissions

Select an API

Microsoft APIs   APIs my organization uses   My APIs

Commonly used Microsoft APIs

Microsoft Graph
Take advantage of the tremendous amount of data in Office 365, Enterprise Mobility + Security, and Windows 10. Access Azure AD, Excel, Intune, Outlook/Exchange, OneDrive, OneNote, SharePoint, Planner, and more through a single endpoint.

<b>Azure Communication Services</b> Rich communication experiences with the same secure CPaaS platform used by Microsoft Teams	<b>Azure DevOps</b> Integrate with Azure DevOps and Azure DevOps server	<b>Azure Rights Management Services</b> Allow validated users to read and write protected content
<b>Azure Service Management</b> Programmatic access to much of the functionality available through the Azure portal	<b>Data Export Service for Microsoft Dynamics 365</b> Export data from Microsoft Dynamics CRM organization to an external destination	<b>Dynamics 365 Business Central</b> Programmatic access to data and functionality in Dynamics 365 Business Central
<b>Dynamics CRM</b> Access the capabilities of CRM business software and ERP systems	<b>Flow Service</b> Embed flow templates and manage flows	<b>Intune</b> Programmatic access to Intune data
<b>Office 365 Management APIs</b> Retrieve information about user, admin, system, and policy actions and events from Office 365 and Azure AD activity logs	<b>Power BI Service</b> Programmatic access to Dashboard resources such as Datasets, Tables, and Rows in Power BI	<b>SharePoint</b> Interact remotely with SharePoint data
<b>Skype for Business</b> Integrate real-time presence, secure messaging, calling, and conference capabilities	<b>Yammer</b> Access resources in the Yammer web interface (e.g. messages, users, groups etc.)	

7. and configure permissions as follows:

- Select **Delegated permissions**.
- Select **user\_impersonation**.

Microsoft Azure

Home > RuiAA4PP > ALMAcceleratorServicePrincipal

ALMAcceleratorServicePrincipal | API permissions

Configured permissions

API / Permissions name	Type	Description
Microsoft Graph (1)	Delegated	Sign in and read user profile

To view and manage permissions and user consent, try [Enterprise applications](#).

Request API permissions

What type of permissions does your application require?

Delegated permissions  
Your application needs to access the API as the signed-in user.

Select permissions  
Start typing a permission to filter these results

Permissions (1)

Permission	Admin consent required
user_impersonation	No

8. Select **Add permissions**.

9. Repeat the preceding steps for the following permissions:

- PowerApps-Advisor.** This is required for running static analysis via the [app checker](#). This permission can be found under **APIs my organization uses**.

## Request API permissions

Select an API

Microsoft APIs APIs my organization uses My APIs

Apps in your directory that expose APIs are shown below

Name	Application (client) ID
PowerApps-Advisor	c9299480-c13a-49db-a7ae-cdfe54fe0313

- b. Select the permission illustrated in the following image and select **Add permissions**

Request API permissions

◀ All APIs

PowerApps-Advisor  
https://dev.api.advisor.powerapps.com

What type of permissions does your application require?

Delegated permissions

Your application needs to access the API as the signed-in user.

Application permissions

Your application runs as a background service or daemon without a signed-in user.

Select permissions

expand all

Start typing a permission to filter these results

The "Admin consent required" column shows the default value for an organization. However, user consent can be customized per permission, user, or app. This column may not reflect the value in your organization, or in organizations where this app will be used. [Learn more](#)

Permission	Admin consent required
Analysis (2)	
Analysis.All	Yes
Analysis.All	No

- c. **DevOps.** This is required for connecting to Azure DevOps via the custom connector in the ALM accelerator app. This permission can either be found under Microsoft APIs or under **APIs my organization uses**.

## Request API permissions

Select an API

Microsoft APIs APIs my organization uses My APIs

Apps in your directory that expose APIs are shown below

Name	Application (client) ID
Azure DevOps	499b84ac-1321-427f-aa17-267ca6975798

Request API permissions

◀ All APIs

Azure DevOps  
https://app.vssps.visualstudio.com/ Docs

What type of permissions does your application require?

Delegated permissions  
Your application needs to access the API as the signed-in user.

Application permissions  
Your application runs as a background service or daemon without a signed-in user.

Select permissions expand all

Start typing a permission to filter these results

ⓘ The "Admin consent required" column shows the default value for an organization. However, user consent can be customized per permission, user, or app. This column may not reflect the value in your organization, or in organizations where this app will be used. [Learn more](#)

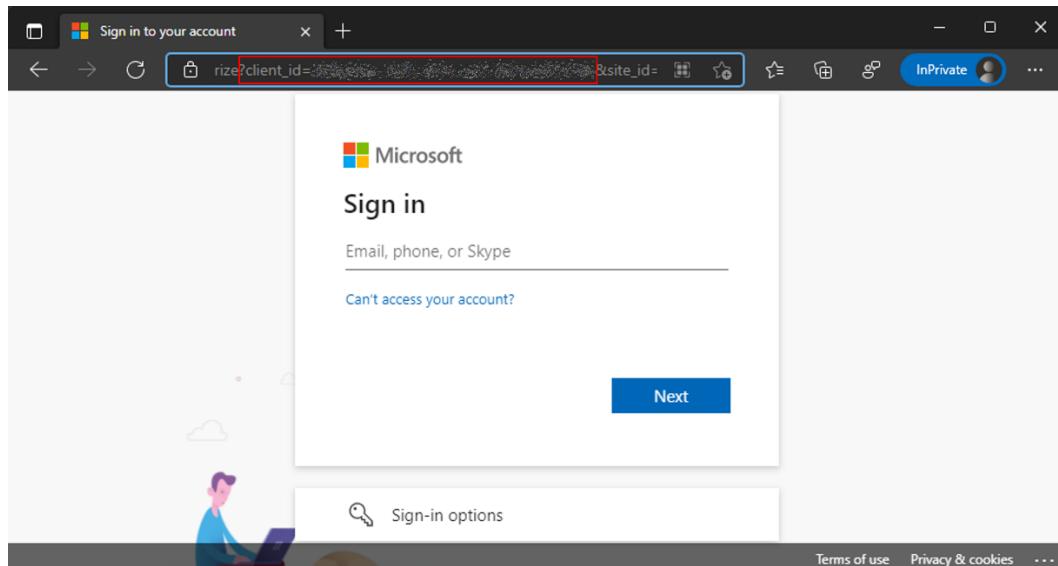
Permission	Admin consent required
Permissions (1)	
<input checked="" type="checkbox"/> user_impersonation	No
Have full access to Visual Studio Team Services REST APIs	

- d. If adding the Azure DevOps permissions from the **APIs my organization uses** list, you should copy the **Application (client) ID** for later use.

**Note:** You'll use this value later and specifically call it out as the **DevOps Application (client) ID**, which is different from the **Application (client) ID** you'll copy in step 12 of this procedure.

If you cannot find the Azure DevOps permissions in the **APIs my organization uses** you can get the **DevOps Application (client) ID** by following these steps:

1. Open a private browser session and go to [https://dev.azure.com/\[your devops organization\]/\\_apis](https://dev.azure.com/[your devops organization]/_apis)
2. After being redirected to the login page, copy the value of the **client\_id** parameter in the url on the login page



After adding permissions in your app registration, select **Grant Admin consent for (your tenant)**.

#### Configured permissions

Applications are authorized to call APIs when they are granted permissions by users/admins as part of the consent process. The list of configured permissions should include all the permissions the application needs. [Learn more about permissions and consent](#)

[+ Add a permission](#) [Grant admin consent for RuiAA4PP](#)

API / Permissions name	Type	Description	Admin consent requ...	Status
✓ <a href="#">Azure DevOps (1)</a>				...
<a href="#">user_impersonation</a>	Delegated	Have full access to Visual Studio Team Services REST APIs	No	...
✓ <a href="#">Dynamics CRM (1)</a>				...
<a href="#">user_impersonation</a>	Delegated	Access Common Data Service as organization users	No	...
✓ <a href="#">Microsoft Graph (1)</a>				...
<a href="#">User.Read</a>	Delegated	Sign in and read user profile	No	...
✓ <a href="#">PowerApps-Advisor (2)</a>				...
<a href="#">Analysis.All</a>	Delegated	Analysis.All	Yes	Not granted for RuiAA4...
<a href="#">Analysis.All</a>	Delegated	Analysis.All	No	...

To view and manage permissions and user consent, try [Enterprise applications](#).

You should have a similar status:

API / Permissions name	Type	Description	Admin consent requ...	Status
✓ <a href="#">Azure DevOps (1)</a>				...
<a href="#">user_impersonation</a>	Delegated	Have full access to Visual Studio Team Services REST APIs	No	Granted for RuiAA4PP
✓ <a href="#">Dynamics CRM (1)</a>				...
<a href="#">user_impersonation</a>	Delegated	Access Common Data Service as organization users	No	Granted for RuiAA4PP
✓ <a href="#">Microsoft Graph (1)</a>				...
<a href="#">User.Read</a>	Delegated	Sign in and read user profile	No	Granted for RuiAA4PP
✓ <a href="#">PowerApps-Advisor (2)</a>				...
<a href="#">Analysis.All</a>	Delegated	Analysis.All	Yes	Granted for RuiAA4PP
<a href="#">Analysis.All</a>	Delegated	Analysis.All	No	Granted for RuiAA4PP

3. Select **Certificates & Secrets**, and then select **New client secret**.
4. Set the **Description** to "AA4PP" and the **Expiration** to 24 months, and then select **Add**.
5. After adding the secret, copy the value and store it for safekeeping to be used later.

ALMAcceleratorServicePrincipal | Certificates & secrets

Credentials enable confidential applications to identify themselves to the authentication service when receiving tokens at a web addressable location (using an HTTPS scheme). For a higher level of assurance, we recommend using a certificate (instead of a client secret) as a credential.

**Client secrets (1)**

A secret string that the application uses to prove its identity when requesting a token. Also can be referred to as application password.

Description	Expires	Value	Secret ID
ALM Acc	4/19/2024	7tv*****	

6. Return to the **Overview** section of your app registration, and copy the **Application (client) ID** and **Directory (tenant) ID**.

ALMAcceleratorServicePrincipal

Overview

Display name : ALMAcceleratorServicePrincipal

Application (client) ID : ff5ad711-509d-4b4b-b680-2f3b82587027

Object ID : ee71e821-3d7a-4ce7-a31e-7b540681b29f

Directory (tenant) ID : d310d16e-402e-4b8f-aa35-5ced00d6e0be

Supported account types : My organization only

Client credentials : 0\_certificate\_1 secret

Redirect URIs : Add a Redirect URI

Application ID URI : Add an Application ID URI

Managed application in L... : ALMAcceleratorServicePrincipal

Get Started Documentation

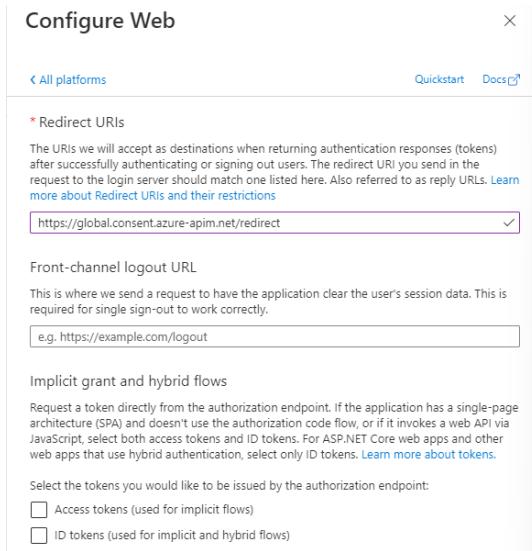
Build your application with the Microsoft identity platform

**Note:** You'll use this value later and call it out as the **Application (client) ID**, which is different from the **DevOps Application (client) ID** you copied earlier in step 7.

At this moment you should have saved the following information

Azure DevOps Id:	499b84ac-1321-427f-aa17-267ca6975798
Secret:	jXPxxxxxxxxxxxxxxxxxxxxxxxxxxxxaMb
Application (client) ID:	ff5axxxx-xxxx-xxxx-xxxx-xxxxxx7027
Directory (tenant) ID:	d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxe8be

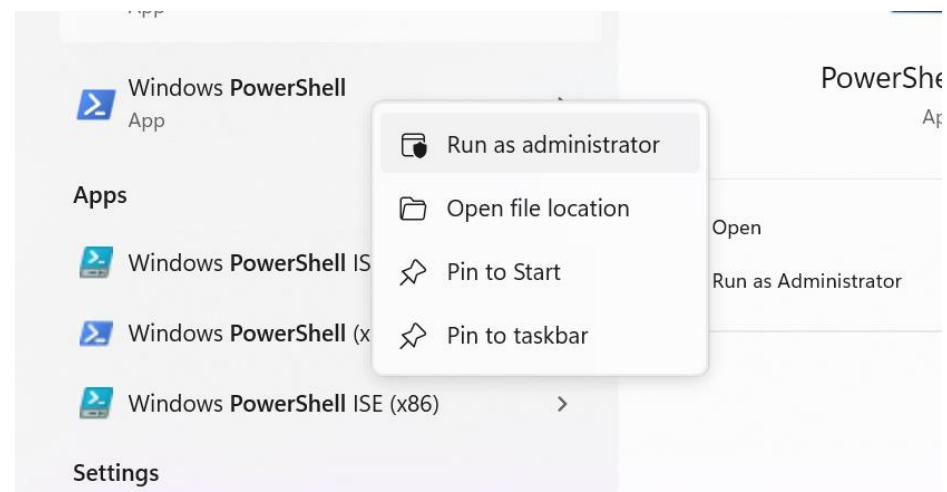
7. Select **Add a Redirect URI** > **Add a Platform** > **Web**.
8. Set the **Redirect URI** to <https://global.consent.azure-apim.net/redirect>.



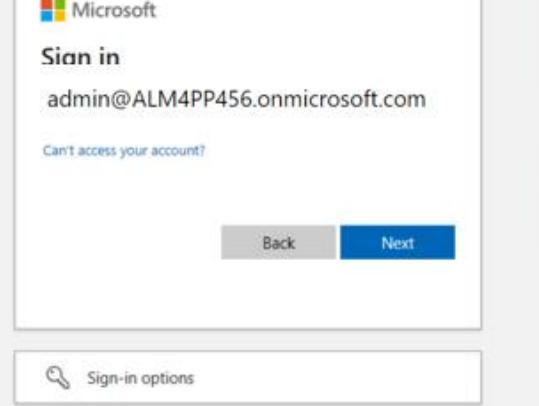
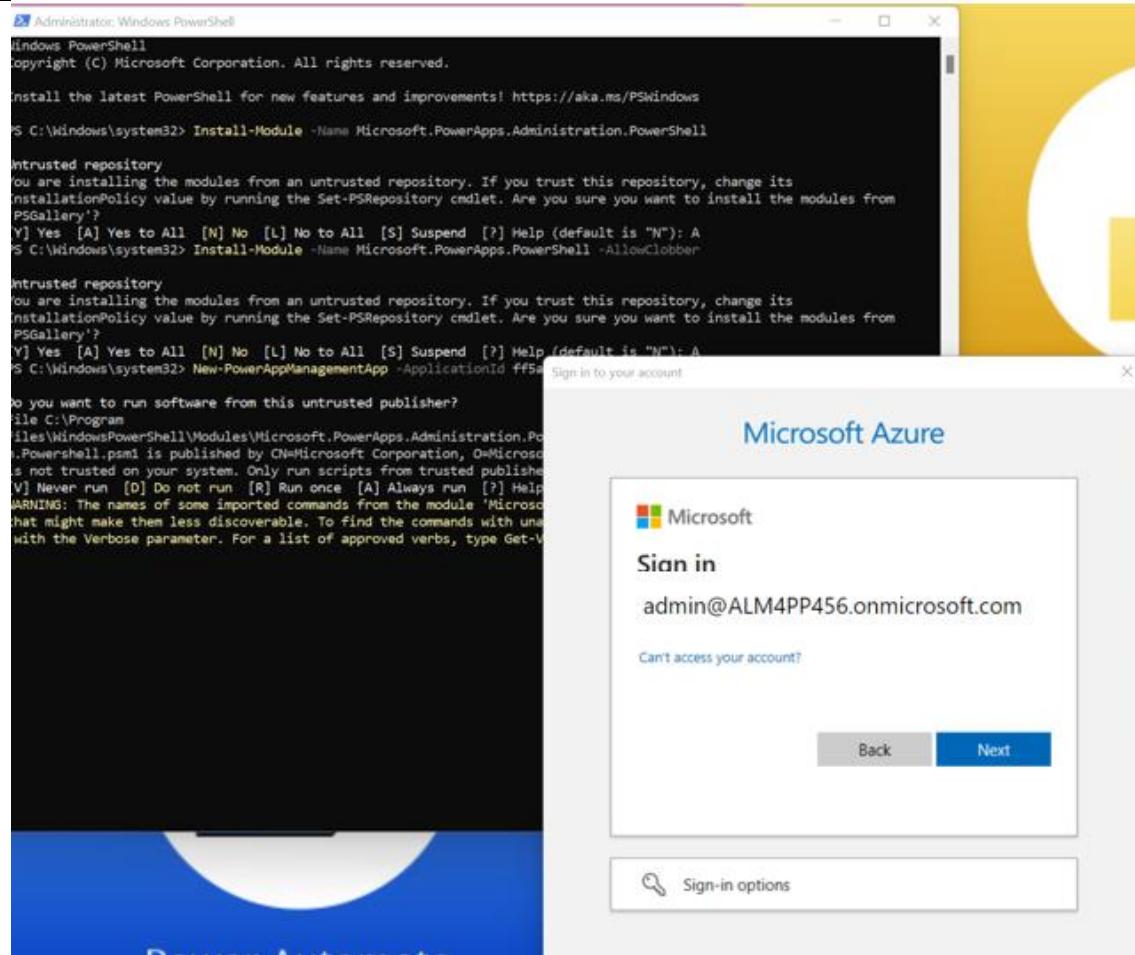
9. Select **Configure**.
10. You should be able to see the Redirect URIs

In order for the pipelines in Azure DevOps, perform certain actions against the environments (for example, Sharing Apps and setting component ownership) in your Power Platform tenant you will need to grant Power App Management

permissions to your App registration. To do so you will need to run the following PowerShell (with administrative rights) cmdlet:



```
Set-ExecutionPolicy -ExecutionPolicy RemoteSigned
Install-Module -Name Microsoft.PowerApps.Administration.PowerShell
Install-Module -Name Microsoft.PowerApps.PowerShell -AllowClobber
New-PowerAppManagementApp -ApplicationId ff5axxxx-xxxx-xxxxx-xxxxx-xxxxxxxx7027 [the Application (client) ID you
copied when creating your app registration]
```

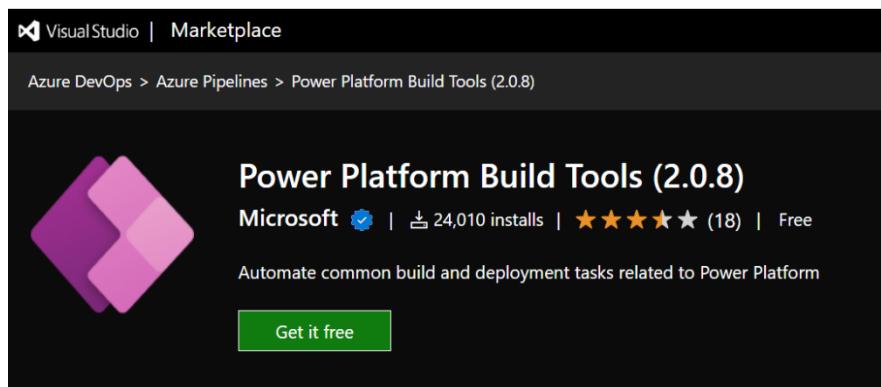


The result of the last command should be the applicationId you have introduced.

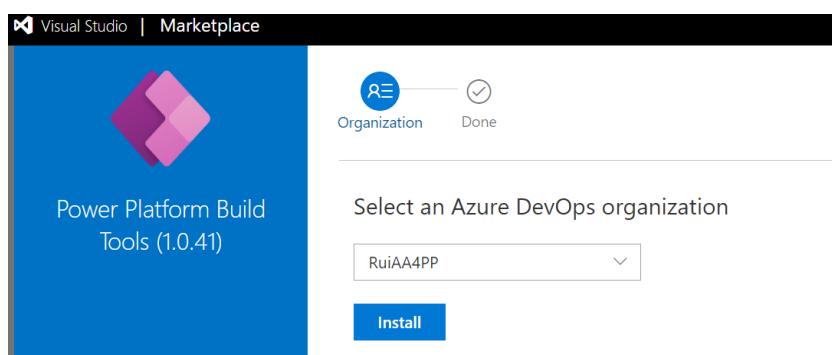
## Task 5: Install Azure DevOps extensions

The ALM accelerator uses several Azure DevOps extensions, including some third-party extensions that are available in the Azure DevOps marketplace. Under **Organization settings** in Azure DevOps, install the extensions described in the following procedure. For more information about Azure DevOps extensions from Microsoft and others, go to [Evaluate a Marketplace extension publisher](#). In addition, each of the third-party extension's webpages and the link to their source code are provided in the following list.

1. Go to <https://dev.azure.com>, and select **Organization settings**.
2. Select **General > Extension > Browse marketplace**.
3. Install the following extensions:
  - **Power Platform Build Tools (required)**: This extension contains the Microsoft build tasks for Microsoft Power Platform. At the time of writing was the version 2.0.8, but you should install the latest one available(<https://marketplace.visualstudio.com/items?itemName=microsoft-lsvExpTools.PowerPlatform-BuildTools>)



Select **Install**



- **Replace Tokens (required)**: This extension is used by the pipelines to replace tokens in configuration files to be able to store secure values in private variables configured for a pipeline.  
(<https://marketplace.visualstudio.com/items?itemName=qetza.replacetokens> | <https://github.com/qetza/vsts-replacetokens-task>)
- **SARIF SAST Scans Tab (optional)**: This extension can be used to visualize the SARIF files that are generated by the Solution Checker during a build. ([SARIF SAST Scans Tab - Visual Studio Marketplace](#))

## Task 6: Create an app user in your Dataverse environments

Each environment—development, validation, test, and production—needs an application user. For each of your environments, follow these steps to set up the application user.

1. Go to [Power Platform admin center](#).
2. Select your environment, and then select **Settings**.
3. Select **Users + permissions > Application users**.
4. Select **New app user** to add a new application user.
5. Select the Azure app registration you created,

6. **Business Unit**, and **Security Role** (System Administrator).

App *	ALMAcceleratorServicePrincipal	
Business unit *	alm-dev-rui	
Security roles(1)	System Administrator	

**Note:** Repeat the previous steps for each of your environments—development, validation, test, and production.

# ALM Accelerator for Power Platform

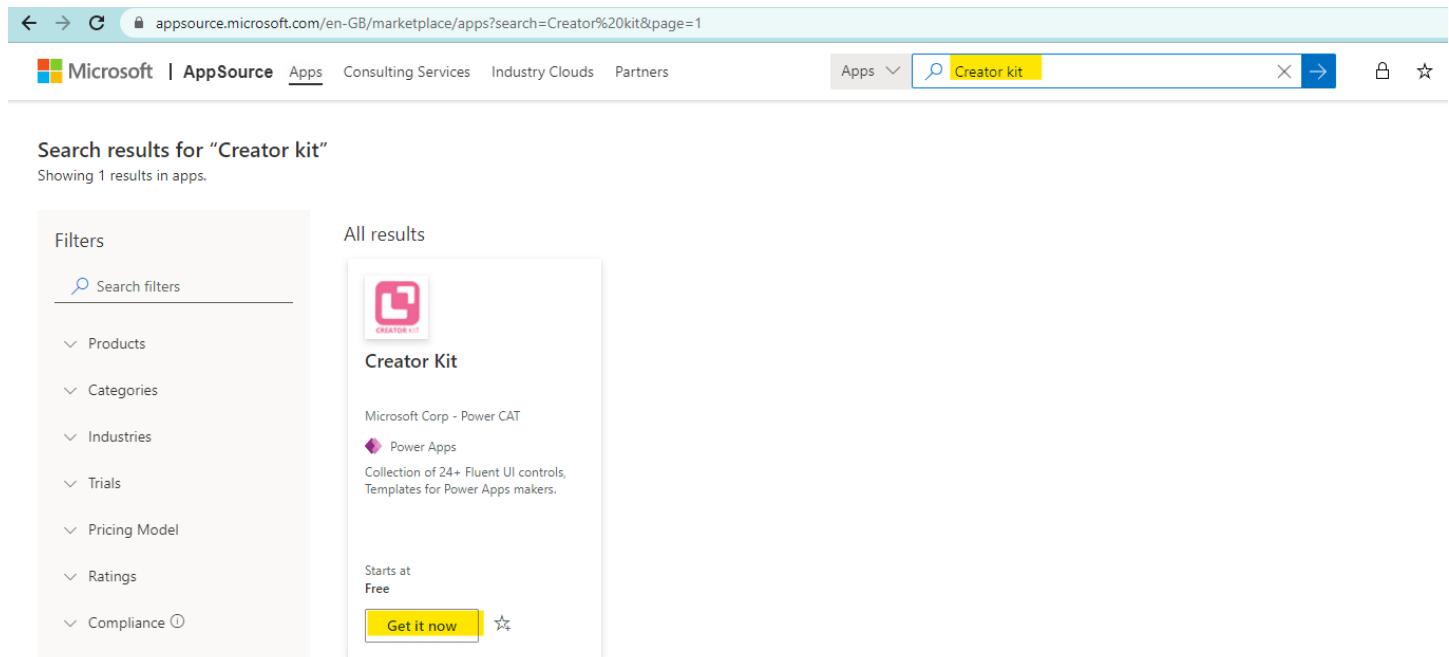
## Installation

In the files of this lab you should find a zip

CenterofExcellenceALMAccelerator\_1.0.20220503.1\_managed.zip, in case you want to download the latest version, please download the latest managed solution file from [GitHub](#).

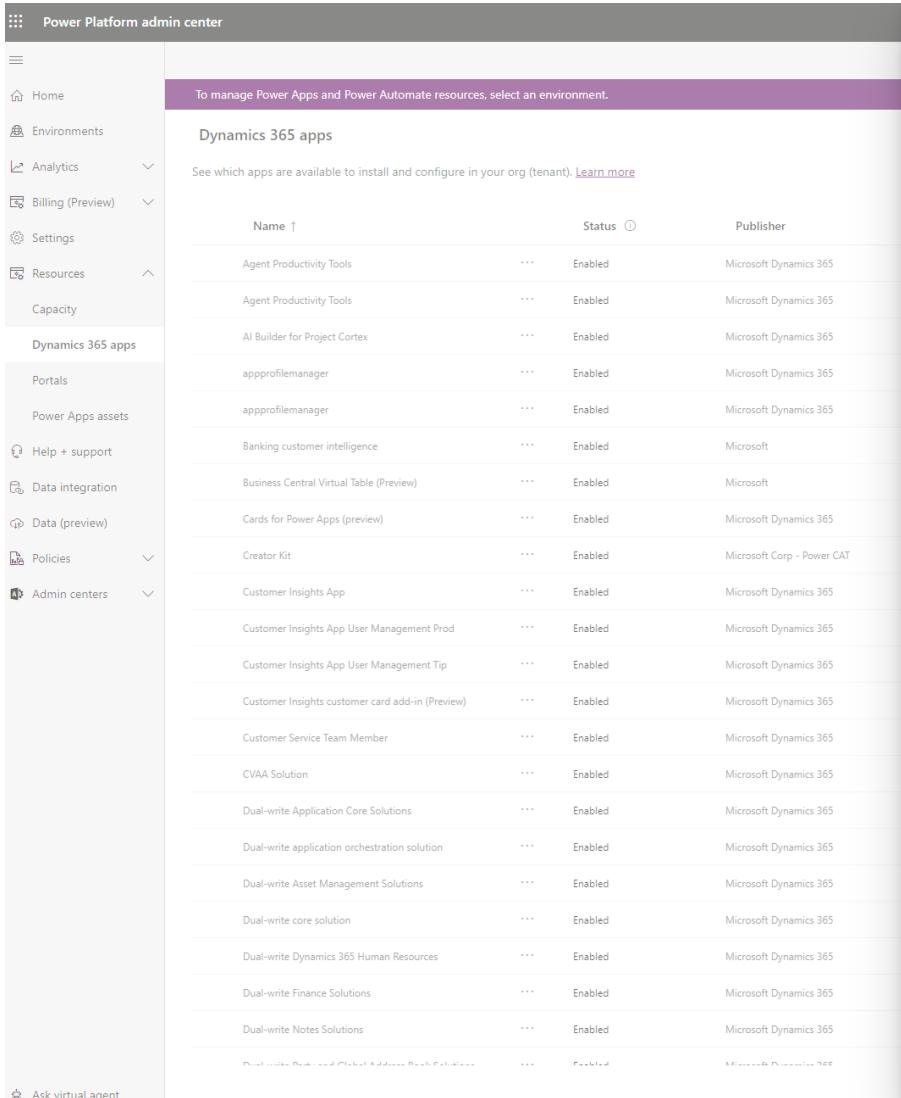
First, we need to install the Creator Kit since is a dependency for the AA4PP. To do that go to

<https://appsource.microsoft.com/> search by “Creator Kit” and select **Get It Now**.



The screenshot shows the Microsoft AppSource search results for "Creator kit". The search bar at the top contains the text "Creator kit". The results page displays a single item: "Creator Kit" by Microsoft Corp - Power CAT. The item is categorized under "Power Apps" and is described as a "Collection of 24+ Fluent UI controls, Templates for Power Apps makers." It is marked as "Free". A "Get it now" button is visible at the bottom of the listing.

After confirming your details select **“Get it now”** again. Select the environment where you want to install the AA4PP like described in the following picture and click Install.



To manage Power Apps and Power Automate resources, select an environment.

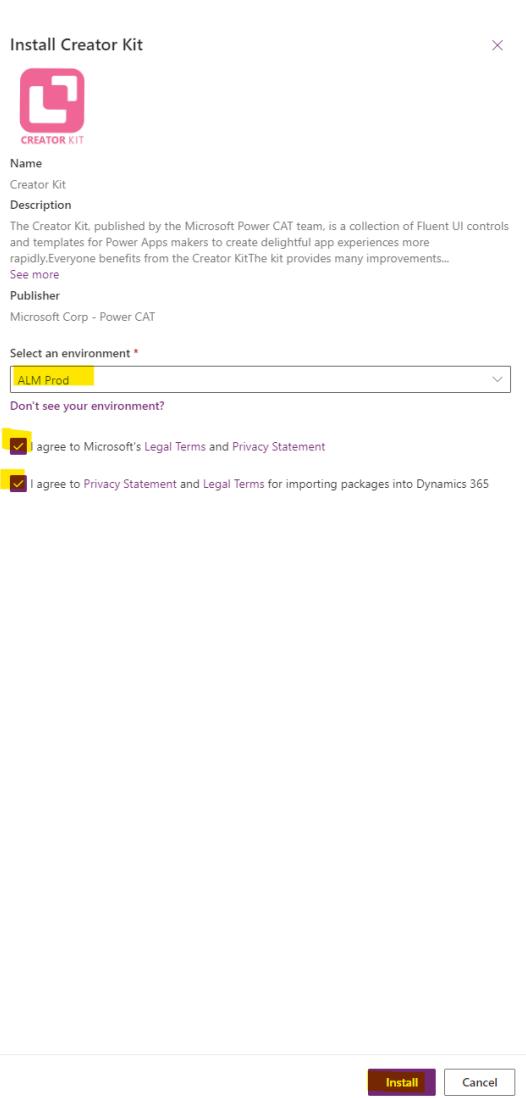
**Dynamics 365 apps**

See which apps are available to install and configure in your org (tenant). [Learn more](#)

Name ↑	Status ⓘ	Publisher
Agent Productivity Tools	Enabled	Microsoft Dynamics 365
Agent Productivity Tools	Enabled	Microsoft Dynamics 365
AI Builder for Project Cortex	Enabled	Microsoft Dynamics 365
appprofilemanager	Enabled	Microsoft Dynamics 365
appprofilemanager	Enabled	Microsoft Dynamics 365
Banking customer intelligence	Enabled	Microsoft
Business Central Virtual Table (Preview)	Enabled	Microsoft
Cards for Power Apps (preview)	Enabled	Microsoft Dynamics 365
Creator Kit	Enabled	Microsoft Corp - Power CAT
Customer Insights App	Enabled	Microsoft Dynamics 365
Customer Insights App User Management Prod	Enabled	Microsoft Dynamics 365
Customer Insights App User Management Tip	Enabled	Microsoft Dynamics 365
Customer Insights customer card add-in (Preview)	Enabled	Microsoft Dynamics 365
Customer Service Team Member	Enabled	Microsoft Dynamics 365
CVAA Solution	Enabled	Microsoft Dynamics 365
Dual-write Application Core Solutions	Enabled	Microsoft Dynamics 365
Dual-write application orchestration solution	Enabled	Microsoft Dynamics 365
Dual-write Asset Management Solutions	Enabled	Microsoft Dynamics 365
Dual-write core solution	Enabled	Microsoft Dynamics 365
Dual-write Dynamics 365 Human Resources	Enabled	Microsoft Dynamics 365
Dual-write Finance Solutions	Enabled	Microsoft Dynamics 365
Dual-write Notes Solutions	Enabled	Microsoft Dynamics 365
Dynamic Business Central Add-in for Microsoft 365	Enabled	Microsoft Dynamics 365

Ask virtual agent

**Install Creator Kit**



**CREATOR KIT**

**Name**  
Creator Kit

**Description**  
The Creator Kit, published by the Microsoft Power CAT team, is a collection of Fluent UI controls and templates for Power Apps makers to create delightful app experiences more rapidly. Everyone benefits from the Creator Kit! The kit provides many improvements... [See more](#)

**Publisher**  
Microsoft Corp - Power CAT

**Select an environment \***  
 ALM Prod

**Don't see your environment?**

I agree to Microsoft's [Legal Terms](#) and [Privacy Statement](#)

I agree to [Privacy Statement](#) and [Legal Terms](#) for importing packages into Dynamics 365

**Install** **Cancel**

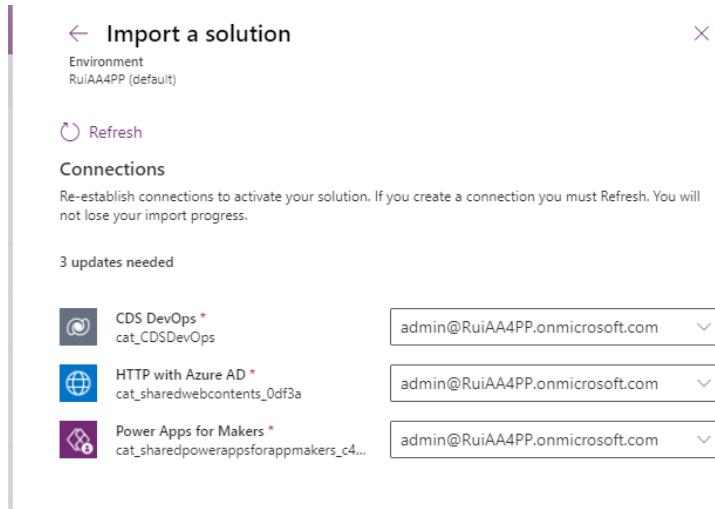
Now you are ready to install the AA4PP solution by following the next instructions, using the admin user.

1. Go to [Power Apps](#) and select the environment you want to use to host the ALM Accelerator for Power Platform app, in this case the **ALM-Prod** environment.

2. On the left pane, select **Solutions**.
3. Select **Import** and browse to the location of the managed solution you downloaded.
4. Select **Next**, and then select **Next** again.
5. On the **Connections** page, select or create a new connection to use to connect to Dataverse for the **CDS DevOps connection**.

**Note:** When creating a connection for **HTTP with Azure AD**, use <https://graph.microsoft.com/> for both parameters.

After configuring all the connections, you should see something like:



Select **Import** and wait for the platform to complete the import process.

## Configure the Azure DevOps custom connector

1. In [Power Apps](#), select your environment (**ALM-Prod**), and then select **Data > Custom Connectors > CustomAzureDevOps**.
2. Select **Edit**, go to the **Security** section, select **Edit**, and then set the following fields.

Name	Value
<b>Client ID</b>	The <b>Application (client) ID</b> you copied when creating the app registration
<b>Client secret</b>	The <b>Application (client) Secret</b> you copied when creating the app registration
<b>Tenant ID</b>	Leave as the default, <b>common</b>
<b>Resource URL</b>	The <b>DevOps Application (client) ID</b> you copied when adding permissions to your app registration

From the notes before

Azure DevOps Id:	499b84ac-1321-427f-aa17-267ca6975798
Secret:	jXPxxxxxxxxxxxxxxxxxxxxxxxxxxxxxMb
Application (client) ID:	ff5axxxx-xxxx-xxxxx-xxxxx-xxxxxxxx7027
Directory (tenant) ID:	d310 ff5axxxx-xxxx-xxxxx-xxxxx-xxxxxxxxe8be

**Change the values:**

Name	Value
<b>Client ID</b>	ff5axxxx-xxxx-xxxx-xxxx-xxxxxxxxx7027
<b>Client secret</b>	jXPxxxxxxxxxxxxxxxxxxxxxxxxxxxxaMb
<b>Tenant ID</b>	Leave as the default, <b>common</b>
<b>Resource URL</b>	499b84ac-1321-427f-aa17-267ca6975798

Power Apps

Connector Name: CustomAzureDevOps

1. General > 2. Security > 3. Definition > 4. Code (Preview) > 5. Test

Authentication type: OAuth 2.0

Identity Provider: Azure Active Directory

Client id: ff5ad1

Client secret: (redacted)

Login URL: https://login.windows.net

Tenant ID: common

Resource URL: 499b84ac-1321-427f-aa17-267ca6975798

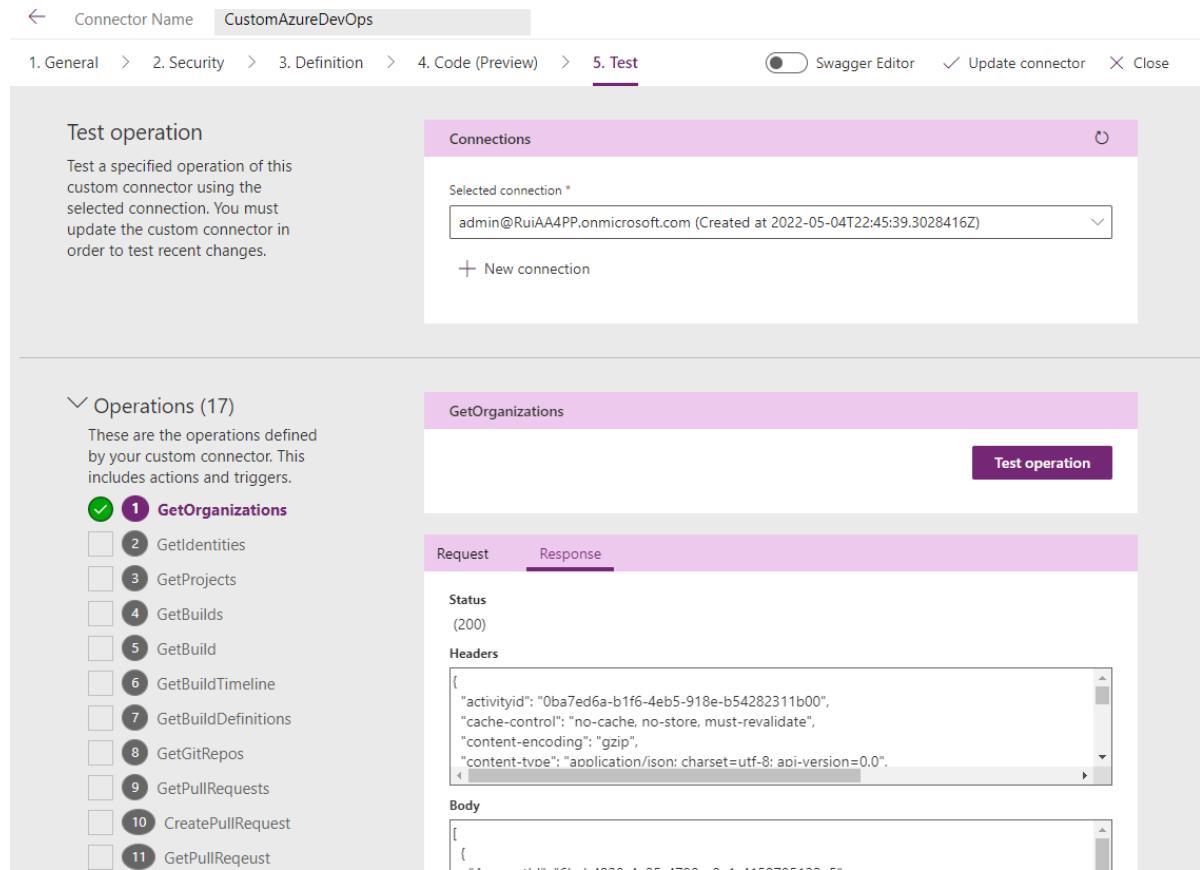
Enable on-behalf-of login: false

Scope: Scope

Redirect URL: Save the custom connector to generate the redirect URL

3. Select **Update connector**.
4. Verify that the **Redirect URL** is populated on the **Security** page with the URL <https://global.consent.azure-apim.net/redirect>. If the redirect URL is other than <https://global.consent.azure-apim.net/redirect>, copy the URL and [return to the app registration your created](#) and update the redirect URI you set earlier to the updated URL.
5. After you've completed the preceding steps, verify the connector from the **Test** menu:

- a. Open the **Test** menu.
- b. Select **New Connection**, and then follow the prompts to create a new connection.
- c. In [Power Apps](#), select your environment, and then select **Data > Custom Connectors > CustomAzureDevOps**.
- d. Select **Edit**, go to the **Test** section, and then find the **GetOrganizations** operation. Create a new connection in case it is not showing any, and go back to test the customer connector.
- e. Select **Test operation**, and verify that the **Response Status** returned is **200**.



Connector Name: CustomAzureDevOps

1. General > 2. Security > 3. Definition > 4. Code (Preview) > 5. Test

Selected connection: admin@RuiAA4PP.onmicrosoft.com (Created at 2022-05-04T22:45:39.3028416Z)

Operations (17):

- 1. GetOrganizations (selected)
- 2. GetIdentities
- 3. GetProjects
- 4. GetBuilds
- 5. GetBuild
- 6. GetBuildTimeline
- 7. GetBuildDefinitions
- 8. GetGitRepos
- 9. GetPullRequests
- 10. CreatePullRequest
- 11. GetPullRequest

GetOrganizations

Status: (200)

Headers:

```
{ "activityid": "0ba7ed6a-b1f6-4eb5-918e-b54282311b00", "cache-control": "no-cache, no-store, must-revalidate", "content-encoding": "gzip", "content-type": "application/json; charset=utf-8; api-version=0.0", }
```

Body:

```
[ { }
```

## Create a new ALM Accelerator project

After the configuration of the customer connector is done, please open the Admin Power Apps of AA4PP (Model driven App)

Go to section Azure DevOps -> Projects and select the Azure DevOps Organization. We are going to create a new Azure DevOps project by selecting **New -> Project**

New Azure DevOps Project

Create a new Azure DevOps Project to be used with ALM Accelerator

Project Name: AA4PP Project Pipelines

Project Description: Project that contains the alm acc pipelines templates

Install Pipeline Templates

Pipeline Templates Repository: coe-alm-accelerator-templates

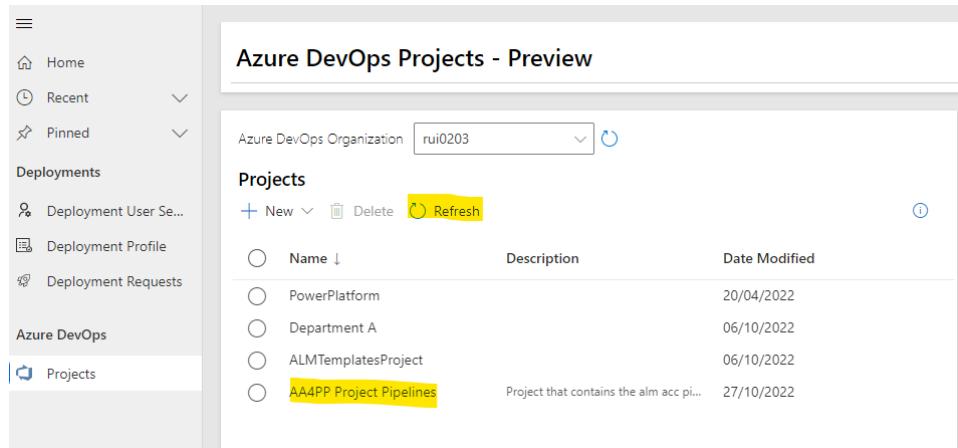
Pipeline Templates Version: CenterofExcellenceALMAccelerator-October2022/ 

Configure the new project providing a Project name, description and select to install Pipelines templates and choose the latest template version.

If you would like, give a different name for the Pipeline Templates Repository.

Select **Create**.

After the creation is done, you should be able to see the new project in the list, otherwise select refresh.



The screenshot shows the 'Azure DevOps Projects - Preview' page. On the left is a navigation sidebar with 'Home', 'Recent', 'Pinned', 'Deployments', 'Deployment User Se...', 'Deployment Profile', 'Deployment Requests', 'Azure DevOps', and 'Projects'. The 'Projects' item is selected and highlighted in blue. The main area displays a table of projects with columns for 'Name', 'Description', and 'Date Modified'. The table shows four projects: 'PowerPlatform' (20/04/2022), 'Department A' (06/10/2022), 'ALMTemplatesProject' (06/10/2022), and 'AA4PP Project Pipelines' (27/10/2022). The 'AA4PP Project Pipelines' row is highlighted with a yellow background. At the top of the main area, there is a search bar for 'Azure DevOps Organization' set to 'rui0203' and a 'Refresh' button.

Cancel

**Create**

Now is time to create a new Project where we will have our solutions. This time we will use the Projects->**New** -> **Project Wizard**. Please follow the next steps and configure it accordingly.

**Setup new ALM Accelerator Project**

Follow the steps below to setup a complete ALM Accelerator Project

**Use a new or existing project?**

Select an existing empty project or create a new Project for use with ALM Accelerator.

Each Project can host multiple Power Platform solutions.

Each Project will have an Default Team. Members of the Project Team will have access to the solutions in the project.

Consider creating Projects per Team, Department, Power Platform Project.

**Project Name:** ppplatform

**Project Description:** Project that contains the source code of my solutions

**Or**

Select an existing project

**Setup new ALM Accelerator Project**

Follow the steps below to setup a complete ALM Accelerator Project

**Project**  **Pipeline Templates**  **Service Connections**  **Generic Pipelines**

**Create new or use existing Pipeline Templates repository?**

ALM Accelerator requires a Pipeline Repository to be configured

You can select to install the pipeline templates into a new repository in test or select an existing Pipeline Repository.

Installation of the pipeline templates takes 1 - 2 minutes to complete. You can continue once the install process has started.

Install into new coe-alm-accelerator-templates repository

Version: CenterofExcellenceALMAccelerator-October2022

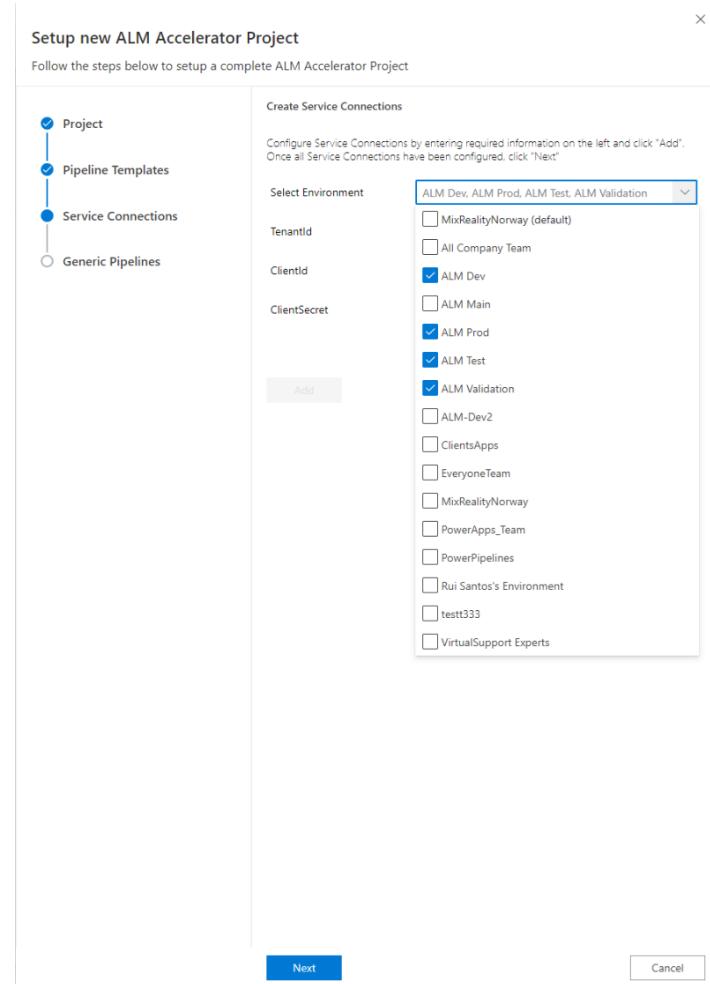
Select existing Project hosting Pipeline Templates

AA4PP Project Pipelines

Select existing Repository hosting Pipeline Templates

coe-alm-accelerator-templates

Select all the Environments you would like to use for Dev, Validation, Test and Production



Using the information from before we will configure the TenantId, ClientId and ClientSecret and select **Add**.

Azure DevOps Id:	499b84ac-1321-427f-aa17-267ca6975798
Secret:	jXPxxxxxxxxxxxxxxxxxxxxxxxxxxxxxMb
Application (client) ID:	ff5axxxx-xxxx-xxxxxx-xxxxxx-xxxxxx7027
Directory (tenant) ID:	d310 ff5axxxx-xxxx-xxxxxx-xxxxxx-xxxxxxe8be

Setup new ALM Accelerator Project

Follow the steps below to setup a complete ALM Accelerator Project

Project Pipeline Templates Service Connections Generic Pipelines

Create Service Connections

Configure Service Connections by entering required information on the left and click "Add". Once all Service Connections have been configured, click "Next".

Select Environment: ALM Dev, ALM Prod, ALM Test, ALM Validation

TenantId: d310 ff5a000x-xxxx-xxxxxx-xxxxxx-xxxxxxe8be

ClientId: ff5a000x-xxxx-xxxxxx-xxxxxx-xxxxxx7027

ClientSecret: .....  
 Share with all Pipelines

Add

ALM Dev  
<https://ruialmdev.crm4.dynamics.com/>

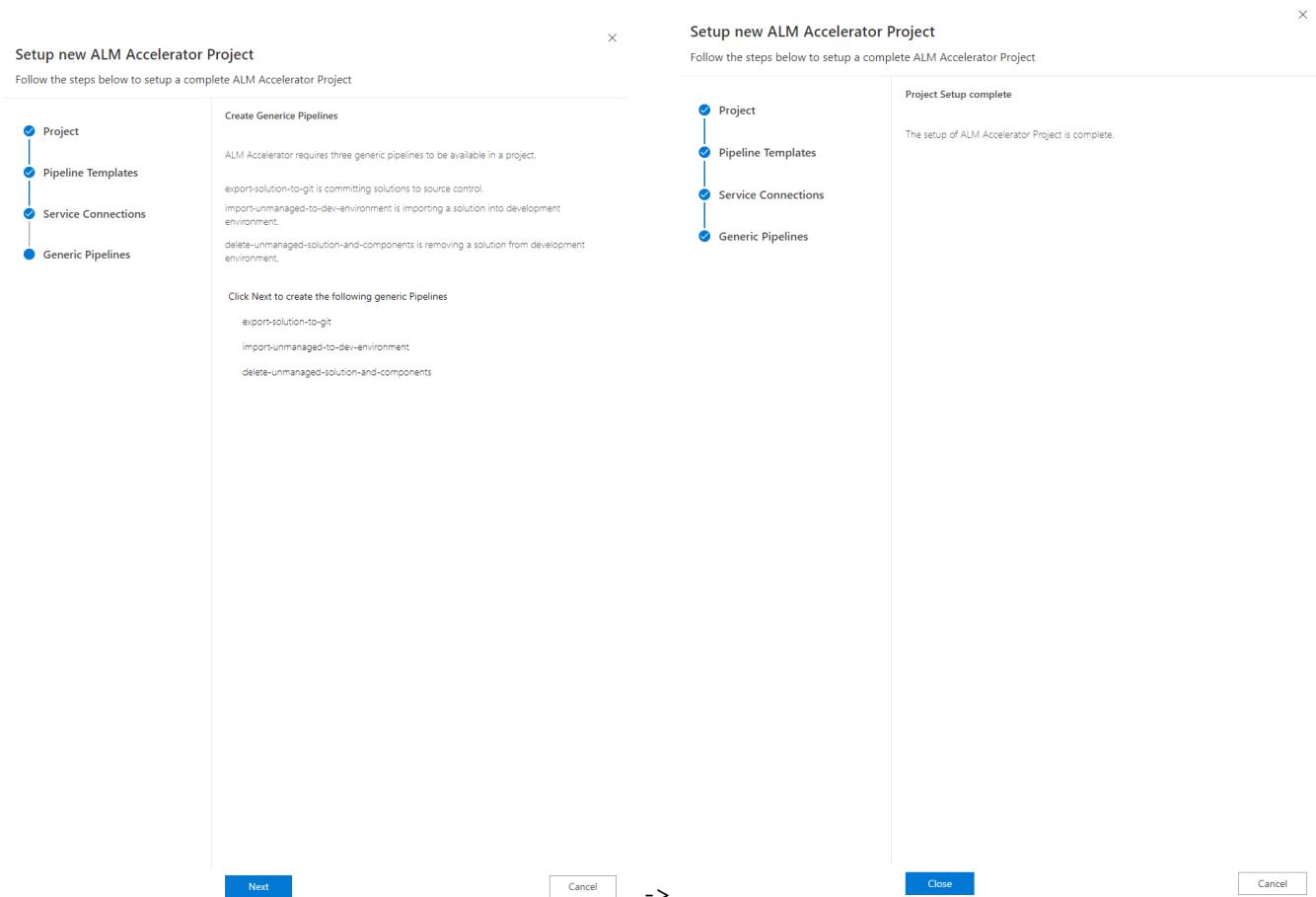
ALM Prod  
<https://ruialmprod.crm4.dynamics.com/>

ALM Test  
<https://ruialmttest.crm4.dynamics.com/>

ALM Validation  
<https://almvalidation.crm4.dynamics.com/>

Next Cancel ->

After you select Add, you will be able to see the list of environments queued, you can have different ClientId and Secrets for each environment, for simplification we will use the same settings for all environments. Select **Next** after all configurations.



After you conclude the wizard you will be able to see the new Project and after select it, you can observe all the information for Team Members, Pipelines, Repositories, Service Connections and Variables Groups.

The screenshot shows the ALM Accelerator for Power Platform A... interface in the 'Sandbox' view. The left sidebar includes 'Power Apps', 'Home', 'Recent', 'Pinned', 'Deployments', 'Deployment User Se...', 'Deployment Profile', 'Deployment Requests', 'Azure DevOps', and 'Projects' (which is selected). The main area displays 'Azure DevOps Projects - Preview' with the following data:

- Projects:**

Name	Description	Date Modified
pplatform	Project that contains the source code...	27/10/2022
PowerPlatform		20/04/2022
Department A		06/10/2022
ALMTemplateProject		06/10/2022
AA4PP Project Pipelines	Project that contains the alm acc pi...	27/10/2022
- Team Members:**

Name	Email	Is Admin
Rui Santos	rui@MRnorway.onmicrosoft.com	True
- Pipelines:**

Name	Path
delete-unmanaged-solution-a...	\
export-solution-to-git	\
import-solution-to-dev-enviro...	\
- Repositories:**

Name	Default Branch
pplatform	refs/heads/main
- Service Connections:**

Name	Environment URL
https://ruialmdev.crm4.dynamics.com/	https://ruialmdev.crm4.dynamics.com/
https://ruialmprod.crm4.dynamics.com/	https://ruialmprod.crm4.dynamics.com/
https://ruialmtest.crm4.dynamics.com/	https://ruialmtest.crm4.dynamics.com/

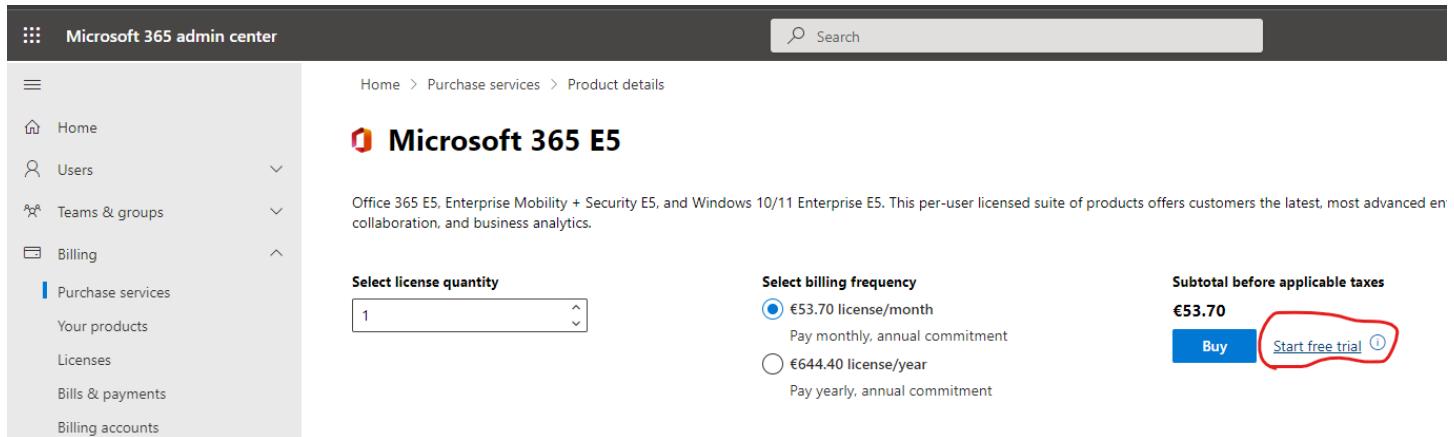
All the configurations are now finished.

# Exercise 1: Import the sample solution.

In this exercise, you will import the sample solution file ALMAcceleratorSampleSolution\_1.0.20220502.4.zip into the ALM-Dev environment and configure AA4PP to deploy the solution to Azure DevOps and the downstream environments.

PETE:

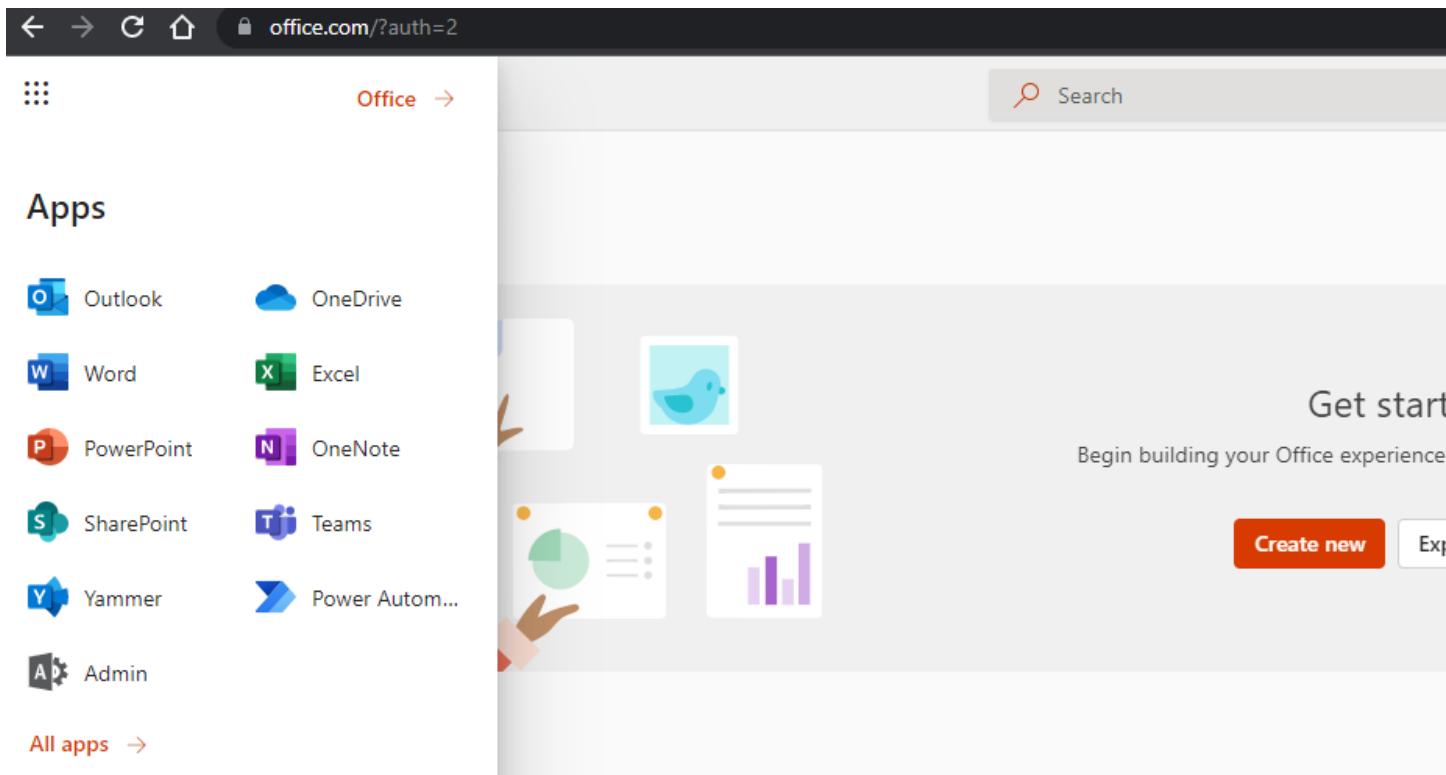
Add E3/5 trial licenses to tenant in admin center



The screenshot shows the Microsoft 365 admin center interface. The left sidebar includes Home, Users, Teams & groups, Billing, Purchase services, Your products, Licenses, Bills & payments, and Billing accounts. The main content area shows the 'Microsoft 365 E5' product details. It has a 'Select license quantity' dropdown set to 1, a 'Select billing frequency' section with two options (radio buttons): '€53.70 license/month' (selected) and '€644.40 license/year', and a 'Subtotal before applicable taxes' of '€53.70'. A 'Buy' button and a 'Start free trial' button are present. The 'Start free trial' button is highlighted with a red oval.

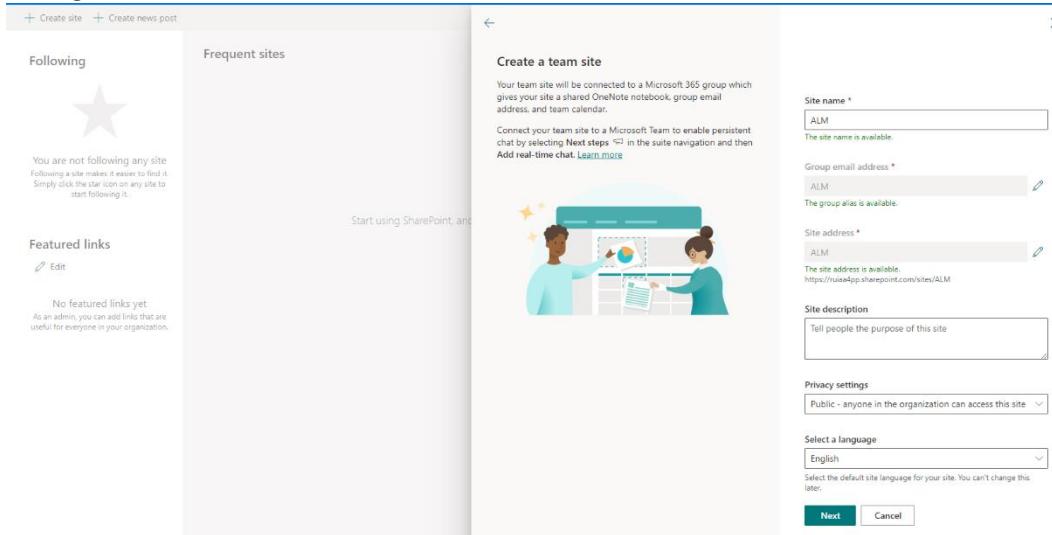
## Prep Task: Create a Sharepoint site and an Issue Tracker

Create a Sharepoint site by going to <https://office.com> and select **Sharepoint** in a new tab

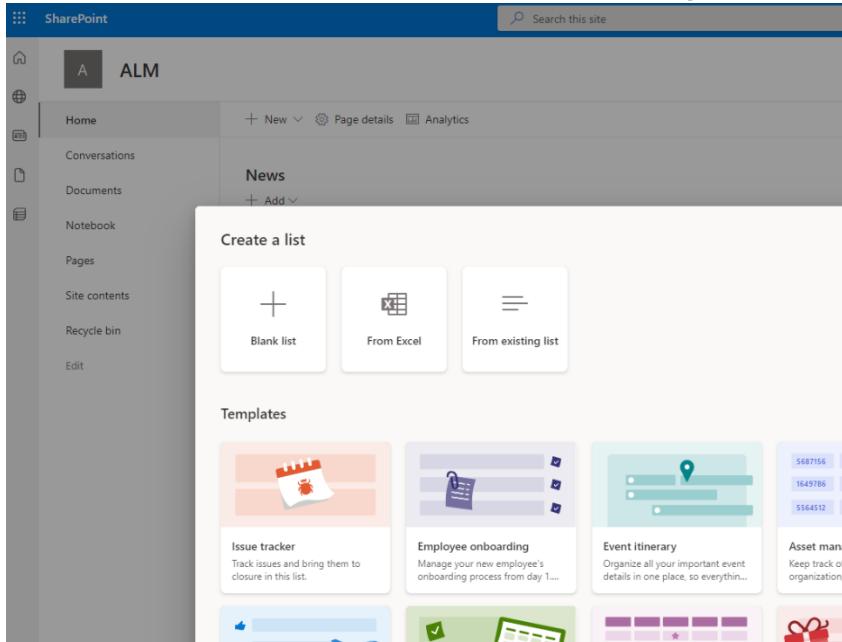


The screenshot shows the Microsoft Office 365 landing page. The left sidebar lists Apps: Outlook, OneDrive, Word, Excel, PowerPoint, OneNote, SharePoint, Teams, Yammer, Admin, and All apps. The main area features a 'Get started' section with the text 'Begin building your Office experience' and 'Create new' and 'Explore' buttons. The SharePoint icon is visible in the app list.

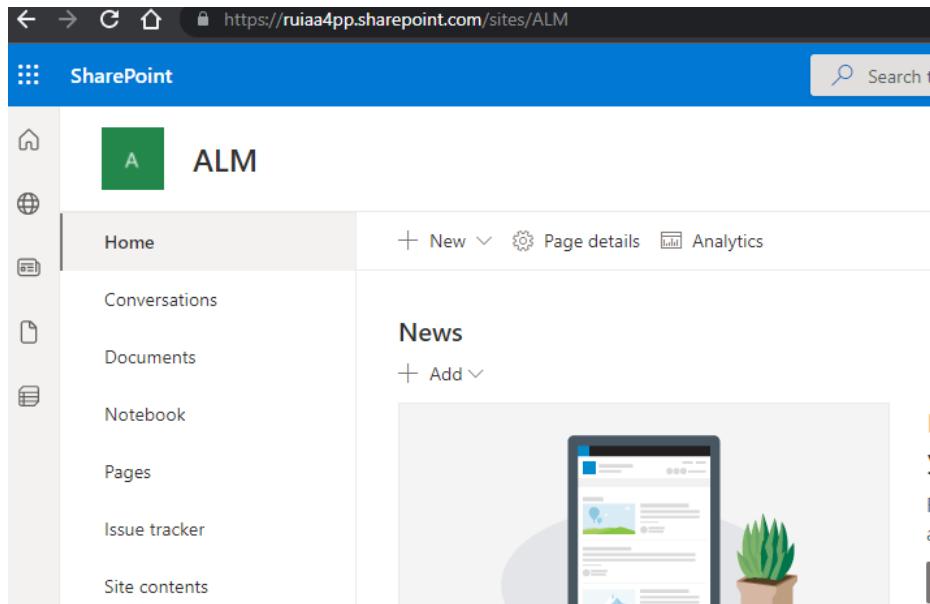
1. Select **Create site** and pick **Team site**, provide any name you would like and make it **Public** under Privacy settings. Add the user admin as owner and select finish.



2. Select **New->List** and select the **Issue tracker->Use Template -> Create**.



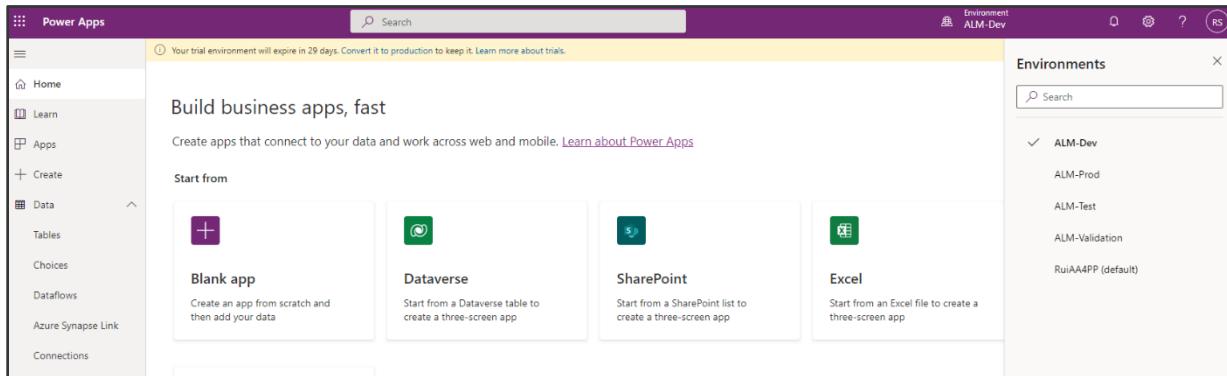
3. Go back to the main page and **copy the url**, in my case <https://ruiaa4pp.sharepoint.com/sites/ALM>.



The screenshot shows a SharePoint site with the URL <https://ruiaa4pp.sharepoint.com/sites/ALM>. The site title is 'ALM'. The left navigation bar includes links for Home, Conversations, Documents, Notebook, Pages, Issue tracker, and Site contents. The main content area displays a 'News' section with a 'Add' button and a placeholder image of a smartphone displaying a news feed. The top navigation bar has 'Search' and other site settings.

## Import the sample solution

1. Select the **Development** environment



The screenshot shows the Power Apps portal. On the left, there's a navigation bar with 'Home', 'Learn', 'Apps', 'Create', 'Data' (Tables, Choices, Dataflows, Azure Synapse Link, Connections), and a 'Search' bar. The main area has a heading 'Build business apps, fast' and a sub-section 'Start from' with four options: 'Blank app', 'Dataverse', 'SharePoint', and 'Excel'. On the right, there's an 'Environments' sidebar with a list of environments: ALM-Dev (selected), ALM-Prod, ALM-Test, ALM-Validation, and RuiAA4PP (default).

2. Select **Solutions** and import the ALMAcceleratorSampleSolution. Please find the sample solution in the lab resources ALMAcceleratorSampleSolution\_xxxxx.4.zip or find the latest version [here](#).

Solutions

Display name	Name	Created	Version
Power Apps Checker Base	msdyn_PowerAppsC...	01/05/2022	1.2.0.176
Power Apps Checker	msdyn_PowerAppsC...	01/05/2022	1.2.0.176
Contextual Help Base	msdyn_ContextualH...	01/05/2022	1.0.0.22
Contextual Help	msdyn_ContextualH...	01/05/2022	1.0.0.22
Common Data Services Default Solution	Cr015d	01/05/2022	1.0.0.0
Default Solution	Default	01/05/2022	1.0

Select a file  
Browse ALMAcceleratorSampleSolution\_1.0.20220502.4.zip

### 3. Create new connections for the Sample App

Import a solution

Environment: ALM-Dev

Refresh

Connections

Re-establish connections to activate your solution. If you create a connection you must Refresh. You will not lose your import progress.

2 updates needed

CDS_Current * cat_CDS_Current	admin@RuiAA4PP.onmicrosoft.com
SharePoint * SharePoint	admin@RuiAA4PP.onmicrosoft.com

Solutions

Display name	Name	Created	Version
Power Apps Checker Base	msdyn_PowerAppsC...	01/05/2022	1.2.0.176
Power Apps Checker	msdyn_PowerAppsC...	01/05/2022	1.2.0.176
Contextual Help Base	msdyn_ContextualH...	01/05/2022	1.0.0.22
Contextual Help	msdyn_ContextualH...	01/05/2022	1.0.0.22
Common Data Services Default Solution	Cr015d	01/05/2022	1.0.0.0
Default Solution	Default	01/05/2022	1.0

### 4. Paste in the url of the Sharepoint site copied before in the prep task, into Environment Variables definition. Select the Issue tracker from the drop-down menu and select **Import**

← Import a solution X

Environment  
ALM-Dev

**Environment Variables**  
Enter information for each field, so your app works properly. You can edit your environment variables later.

1 updates needed

76 ALMAcceleratorSampleTest - https://pplatf... SharePoint  
cat\_shared\_sharepointonline\_97456712308a4e...

76 Issue tracker SharePoint  
cat\_shared\_sharepointonline\_21f63b2d26f043f...

Wait until the solution is created completely.

# Exercise 2: Add the Sample solution to AA4PP

In this exercise, you will configure AA4PP to deploy the solution to Azure DevOps and the downstream environments.

1. Select the **Production** environment

The screenshot shows the Power Apps environment selection dialog. On the left, there's a sidebar with options like Home, Learn, Apps, Create, Data, Flows, Chatbots, AI Builder, and Solutions. The main area has a heading 'Build business apps, fast' and a sub-section 'Start from' with four options: 'Blank app', 'Dataverse', 'SharePoint', and 'Excel'. On the right, there's a 'Environments' section with a search bar and a list of environments: ALM-Dev, ALM-Prod (selected with a checkmark), ALM-Test, ALM-Validation, and RuiAA4PP (default).

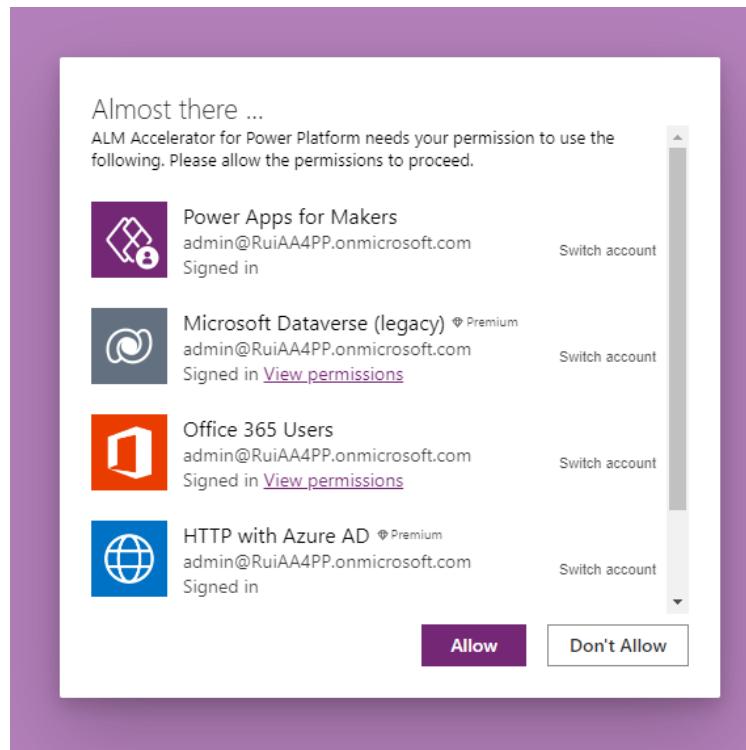
2. Select **Apps** from the left menu

The screenshot shows the Power Apps 'Apps' list. The sidebar on the left is identical to the previous screenshot. The main area has a heading 'Apps' and a sub-section 'Component libraries (preview)'. Below this, there's a table with three rows:
 

Name	Modified	Owner	Type
ALM Accelerator for Power Platform Administration	35 min ago	Rui Santos	Model-driven
ALM Accelerator for Power Platform	37 min ago	Rui Santos	Canvas
Solution Health Hub	3 d ago	SYSTEM	Model-driven

## Task 1: Open the ALM Accelerator for Power Platform

1. Allow all the connections



**Note:** In case you need to configure the HTTP with Azure AD, specify <https://graph.microsoft.com> in both parameters.

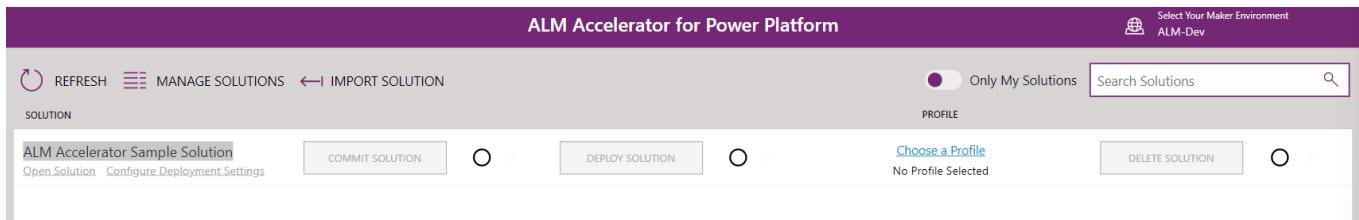
2. Select the Maker environment, where the users will create Apps, in our case ALM-Dev



3. Show All solutions by switching the toggle from the top



4. You should be able to see the "ALM Accelerator Sample Solution"



## Task 2: Create a new Profile

If you want to configure a new Repository manually in Azure DevOps please follow this [steps](#), otherwise you can continue in the AA4PP Administration app and create a new Repository inside the project pplatform like is shown in the following picture Projects-> pplatform-> Repositories -> **New** and select **Create**. After this process is finished you will have a new Repository where we will commit our Power Platform solutions.

The screenshot shows the AA4PP Administration app interface. The left sidebar has sections for Power Apps, Deployments, and Azure DevOps, with 'Projects' selected. The main area is titled 'Azure DevOps Projects - Preview' and shows a list of projects: 'pplatform' (selected), 'PowerPlatform', 'Department A', 'ALMTemplatesProject', and 'AA4PP Project Pipelines'. The 'pplatform' project is described as 'Project that contains the alm acc pi...'. To the right, a modal window titled 'New Azure DevOps Project' is open. It has fields for 'Project Name' (set to 'pplatform') and 'Repository Name' (set to 'ALM\_Solutions'). A checked checkbox 'Set Permissions' is present. At the bottom right of the modal is a green 'Create' button.

A new Repository is created.

Name	Default Branch
pplatform	refs/heads/main
ALM_Solutions	

Go back to the AA4PP Canvas App to configure where do we want to deploy the solution, we need to create a Profile.

SOLUTION PROFILE  
ALM Accelerator Sample Solution

Create a Profile: ALM Sample Solution

Organization: RuiAA4PP

Project: pplatform

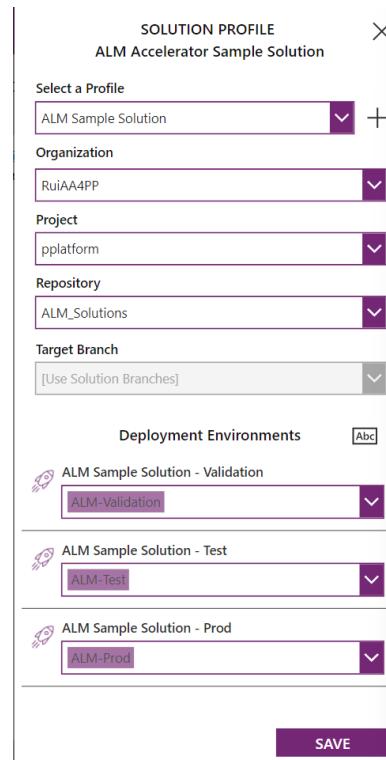
Repository: ALM\_Solutions

Target Branch: [Use Solution Branches]

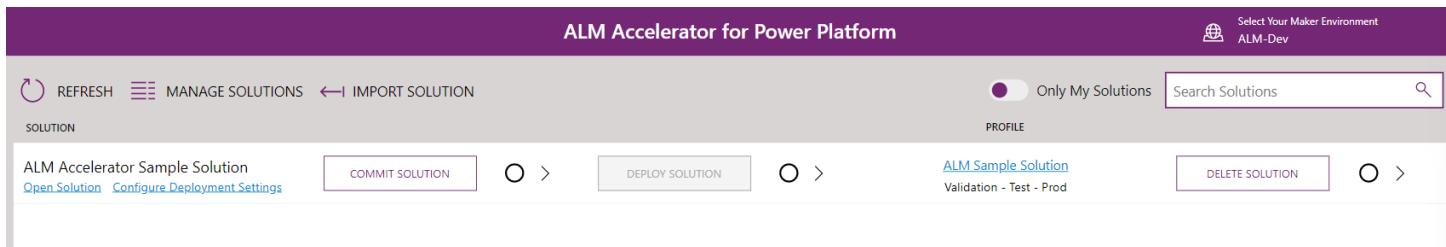
Deployment Environments: Abc

CREATE

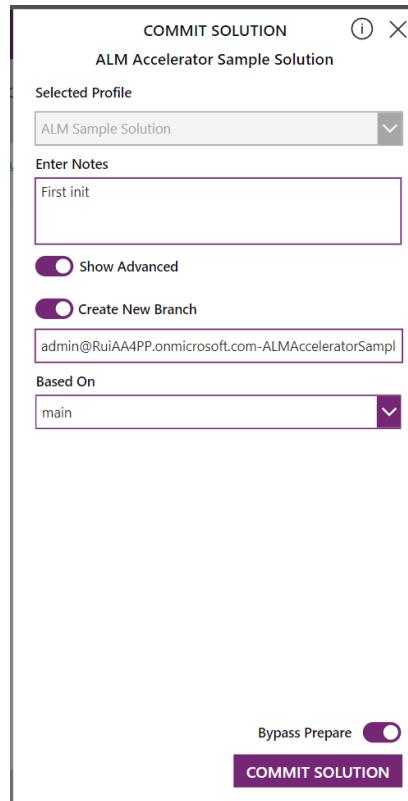
1. Select the **Deployment Environments** by picking the right environment for each step. Use the dropdown menu to find, or search and select **Save**



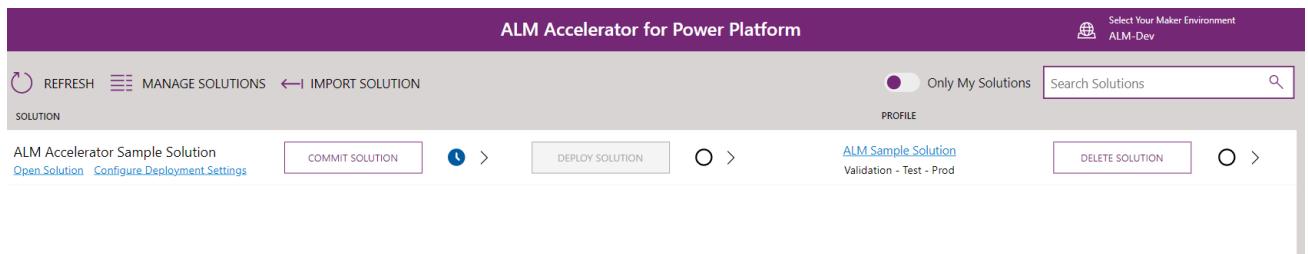
2. We should have the option to Commit Solution available, select in **Commit Solution**



3. Enter some **notes** about the commit and **Bypass Prepare** (for simplification) and **Commit Solution**



You should be able to see the commit in progress.



Selecting the blue clock, you are redirected to Azure DevOps and you can see the pipeline running.

Jobs in run #export-A...  
export-solution-to-git

Export solution to git

export\_solution\_to\_git 40s

- Initialize job 2s
- Checkout Pipeline ... 15s
- Checkout Source Bra... 1s
- Set SpnToken for us... 20s
- Set toolsPaths
- Cache Powershell Mod...
- Initialize Git

Starting: export\_solution\_to\_git

Going back to the Jobs list we should see the **export\_solution\_to\_git** run successful

#export-ALMAcceleratorSampleSolution-to-git-branch Update with latest from PALT (#130)

This run is being retained as one of 3 recent runs by main (Branch).

Run new

Summary Scans

Manually run by Rui Santos

View 252 changes

Repositories 2 Time started and elapsed Today at 13:46 Related 0 work items Tests and coverage 1 consumed

Warnings 3

- The names of some imported commands from the module 'Microsoft.Xrm.WebApi.PowerShell' include unapproved verbs that might make them less discoverable. To find the commands with unapproved verbs, run the Import-Module command.
- The names of some imported commands from the module 'Microsoft.Xrm.WebApi.PowerShell' include unapproved verbs that might make them less discoverable. To find the commands with unapproved verbs, run the Import-Module command.
- The names of some imported commands from the module 'Microsoft.Xrm.WebApi.PowerShell' include unapproved verbs that might make them less discoverable. To find the commands with unapproved verbs, run the Import-Module command.

Jobs

Name	Status	Duration
export_solution_to_git	Success	5m 8s

Going to the repository **ALM\_Solutions** we see 2 new branches created, ALMAcceleratorSampleSolution and [user@domain.com-\(SolutionName\)](https://user@domain.com-(SolutionName))

RuiAA4PP / pplatform / Repos / Files / ALM\_Solutions

ALM\_Solutions

MI README.md

main / Type to find a file or folder...

Filter branches

Branches Tags

✓ main Default

All

ALMAcceleratorSampleSolution admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorSampl...

+ New branch

Commits

b686c58e Added README.md Rui Santos

he objectives or the motivation behind this project.

**Getting Started**

TODO: Guide users through getting your code up and running on their own system. In this section you can talk about:

1. Installation process
2. Software dependencies
3. Latest releases
4. API references

The ALMAcceleratorSampleSolution represents the Test branch and the [user@domain.com-\(SolutionName\)](#) represents the development branch of the specific user. Selecting the [user@domain.com-\(SolutionName\)](#) branch we can see all the code of our solution

RuiAA4PP / pplatform / Repos / Files / ALM\_Solutions

ALM\_Solutions

ALMAcceleratorSampleSolution

config

SolutionPackage

AppModules

AppModuleSiteMaps

CanvasApps

Connectors

Entities

environmentvariabledefinitions

Other

Roles

Workflows

deploy-prod-ALMAccelerat...

deploy-test-ALMAccelerato...

deploy-validation-ALMAcc...

admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorSampleSolution / ALMAcceleratorSampleSolu... / SolutionPackage

Search

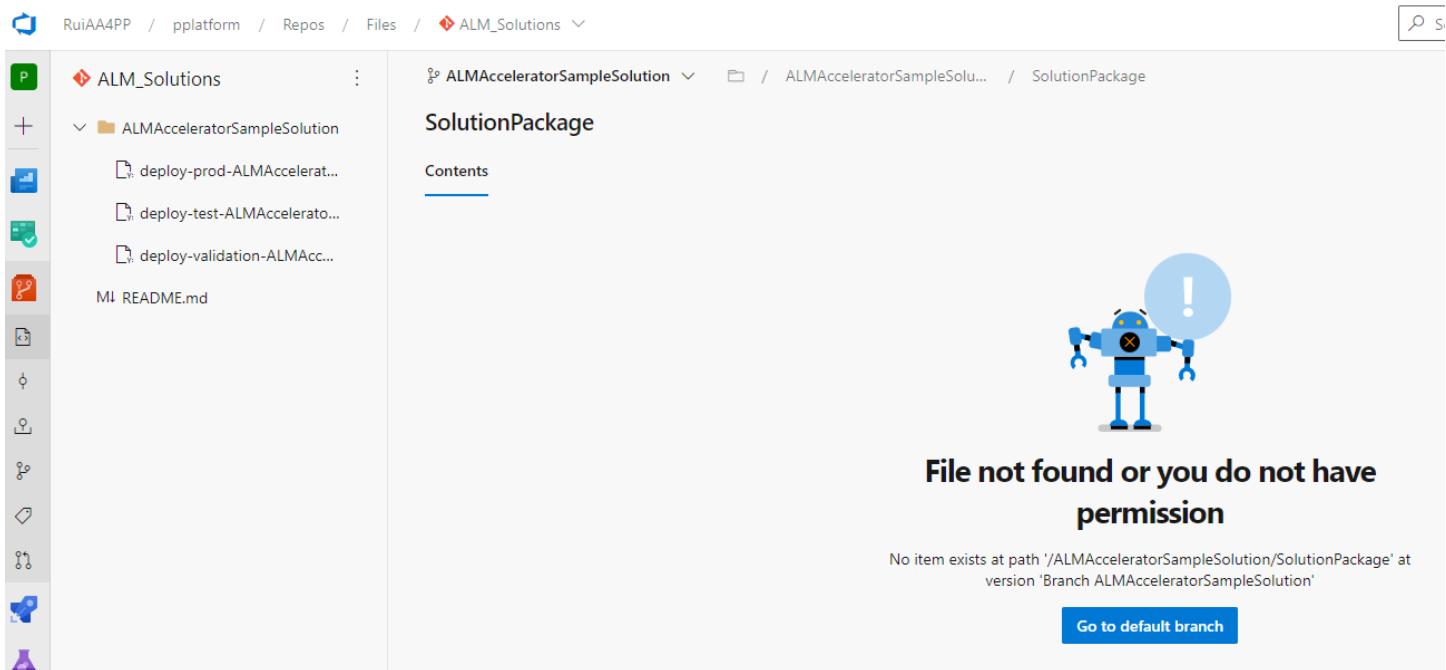
+ New

**SolutionPackage**

Contents History

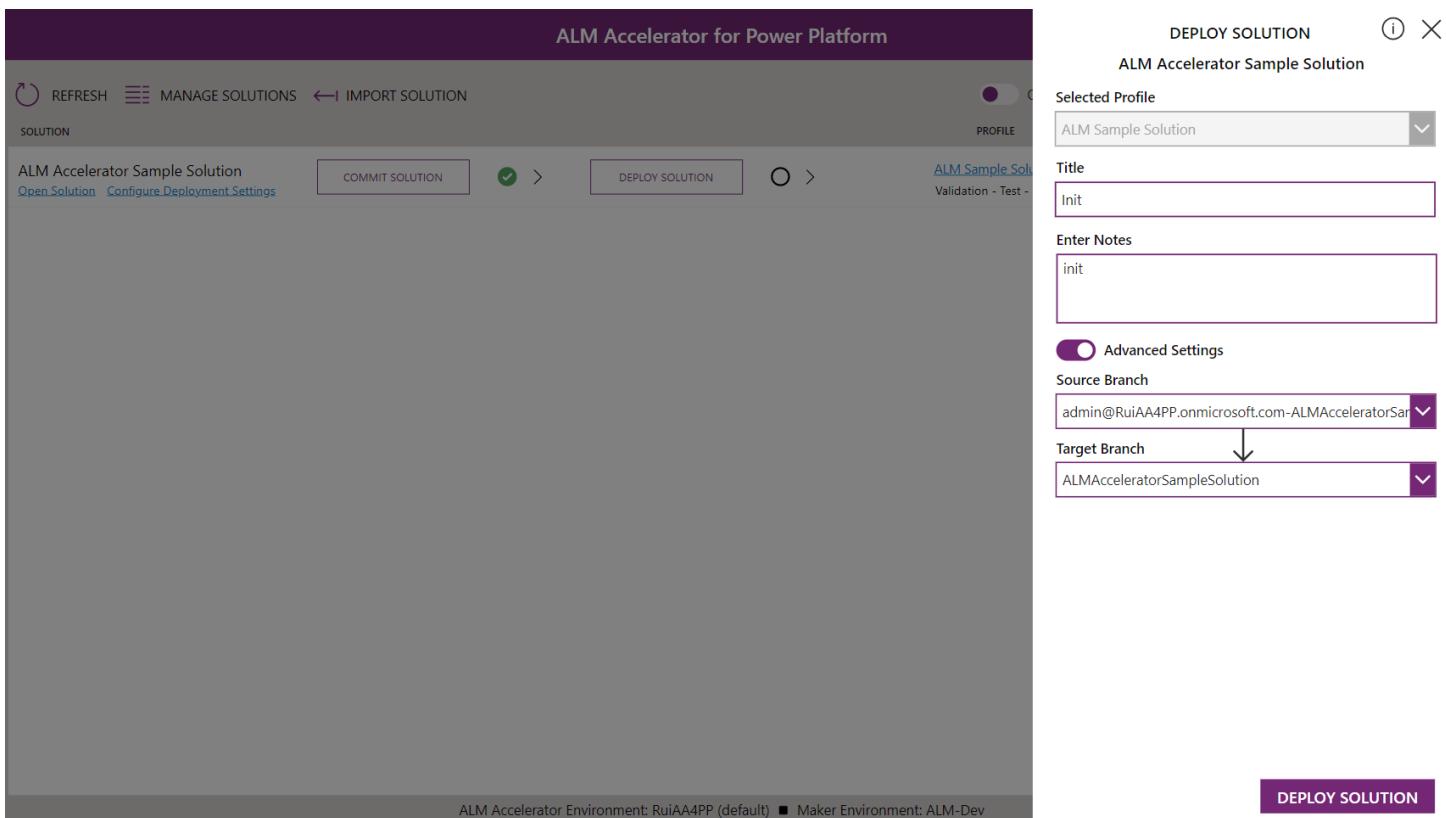
Name ↑	Last change	Commits
AppModules	7m ago	7687270e Init Rui Santos
AppModuleSiteMaps	7m ago	7687270e Init Rui Santos
CanvasApps	7m ago	7687270e Init Rui Santos
Connectors	7m ago	7687270e Init Rui Santos
Entities	7m ago	7687270e Init Rui Santos
environmentvariabledefinitions	7m ago	7687270e Init Rui Santos
Other	7m ago	7687270e Init Rui Santos
Roles	7m ago	7687270e Init Rui Santos
Workflows	7m ago	7687270e Init Rui Santos

If you select the ALMAcceleratorSampleSolution branch (representing the test branch) we only see the helper pipelines created automatically, these pipelines will be used to deploy the code to the downstream environments.



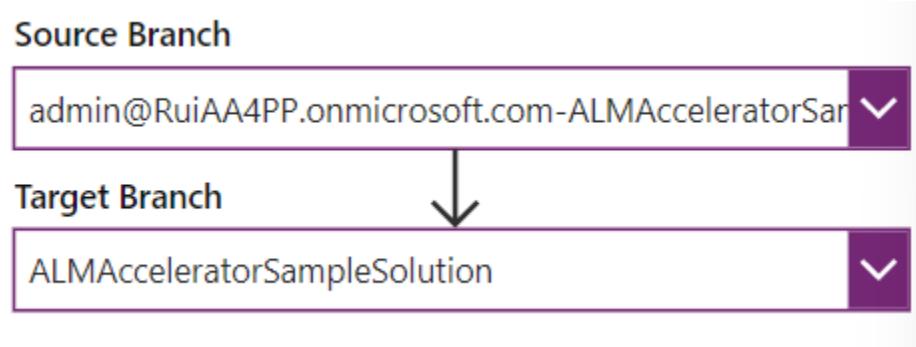
The screenshot shows the ALM Accelerator for Power Platform interface. The left sidebar has a 'P' icon and various other icons. The main area shows a 'SolutionPackage' with 'Contents' and three deployment files: 'deploy-prod-ALMAccelerat...', 'deploy-test-ALMAccelerato...', and 'deploy-validation-ALMAcc...'. A 'README.md' file is also listed. The right side shows a blue robot icon with an exclamation mark and the text 'File not found or you do not have permission'. Below that, a message says 'No item exists at path '/ALMAcceleratorSampleSolution/SolutionPackage' at version 'Branch ALMAcceleratorSampleSolution''. A 'Go to default branch' button is at the bottom.

To deploy to our ALM-Test environment we go back to AA4PP and select **Deploy**, after we specify the **Title** and **Notes** we can select **Deploy Solution**.



The screenshot shows the 'Deploy Solution' dialog box. It includes fields for 'Selected Profile' (set to 'ALM Sample Solution'), 'Title' (set to 'Init'), 'Enter Notes' (set to 'init'), and 'Advanced Settings' (with 'Source Branch' set to 'admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorS...' and 'Target Branch' set to 'ALMAcceleratorSampleSolution'). At the bottom is a 'DEPLOY SOLUTION' button.

**Note:** Pay attention to the **Source Branch** and **Target Branch**, as explained before we will deploy our code from the dev branch [user@domain.com-\(SolutionName\)](mailto:user@domain.com-(SolutionName)) to our Test branch ALMAcceleratorSampleSolution, represented in the following diagram.



After selecting **Deploy Solution** the AA4PP will use the pipelines to move the code to the different environments as managed solutions, selecting the **blue clock** we are redirected to Azure DevOps and see the pipeline execution.

1. Now you should see a blue clock under **build\_and\_deploy\_job** select on it to see the progress of the job

Azure DevOps

RuiAA4PP / pplatfrom / Pipelines / deploy-validation-ALMAcceleratorSampleSolution / 1.0.20220505.5

Search

Jobs in run #1.0.2022...  
deploy-validation-ALMAcceleratorSampleSolution

Build and Deploy

build\_and\_deploy\_job 31s

- Initialize job 6s
- Checkout Pipeline Br... 7s
- Checkout Source Bra... 1s
- Set SpnToken for us... 15s
- Set toolsPaths
- Install Power Platform ...
- Set Source Repo Name

Set SpnToken for use by other tasks that need one

```

1 Starting: Set SpnToken for use by other tasks that need one
2 =====
3 Task      : PowerShell
4 Description : Run a PowerShell script on Linux, macOS, or Windows
5 Version   : 2.200.0
6 Author    : Microsoft Corporation
7 Help      : https://docs.microsoft.com/azure/devops/pipelines/tasks/utility/powershell
8 =====
9 Generating script.
10 =====
11 "C:\Program Files\PowerShell\7\pwsh.exe" -NoLogo -NoProfile -NonInteractive -ExecutionPolicy Unrestricted -Command ". 'D:\a\temp\2734fee5-f4ce-4a5c-9a9b-4e64f52

```

2. After the pipeline is finished, we can complete the Pull Request selecting **Complete**

Azure DevOps

RuiAA4PP / pplatfrom / Repos / Pull requests / ALM\_Solutions

Search

Init

Active 15 Rui Santos admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorSampleSolution into ALMAcceleratorSampleSolution

Approve Complete

Overview Files Updates Commits

Required Reviewers: No required reviewers

Optional Reviewers: No optional reviewers

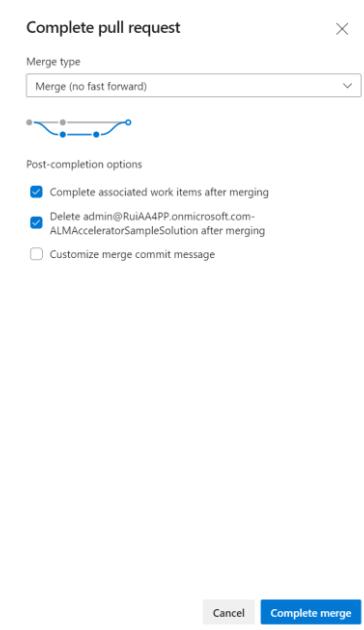
Tags: No tags

Required

Optional

Tags

Description: Init



3. Select **Complete merge**. This action will pull all the code to the test branch (ALMAcceleratorSolution), automatically the pipeline to deploy to test environment will be trigger and we will be able to see our solution in the ALM\_Test. After completing the merge follow the approvals in the next sequence of image.

RuiAA4PP / pplatform / Repos / Pull requests / ALM\_Solutions

Init

Completed 15 Rui Santos admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorSampleSolution into ALMAcceleratorSampleSolution

Overview Files Updates Commits

Rui Santos completed this pull request 2m ago

Merged PR 5: Init 228ffce3 Rui Santos Today at 20:57

Cherry-pick Revert

Required check succeeded

Build Validation Build Validation succeeded

No merge conflicts Last checked 2m ago

Reviewers Required No required reviewers

Optional No optional reviewers

Tags No tags

Work items No work items

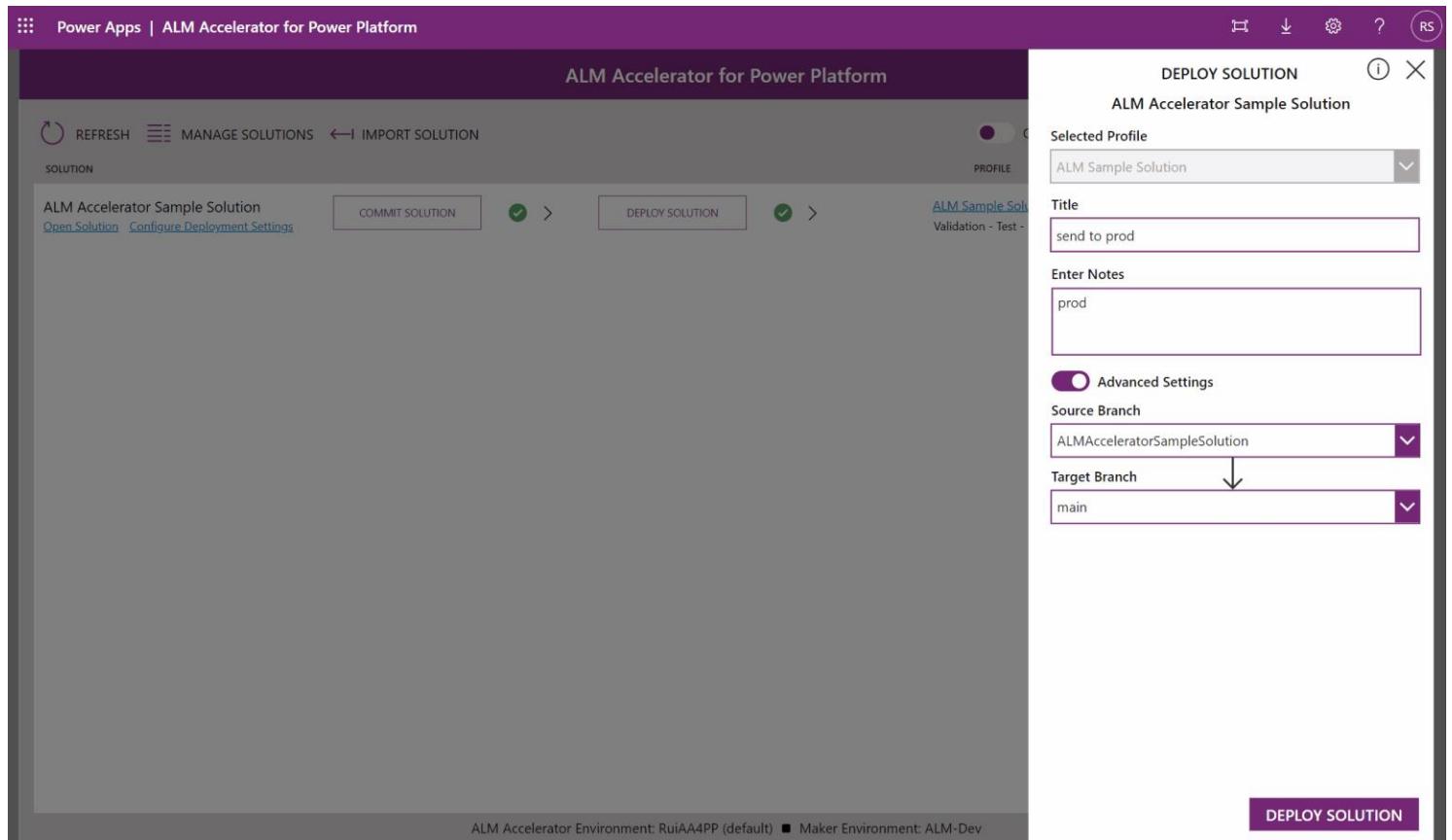
Description

Init

Show everything (2) ▾

Add a comment...

4. The last step is to deploy to production, to do that we go to AA4PP and we select **deploy solution**, notice the selection of **main** branch, which represent the production branch associated to ALM\_Prod. After the pipeline is completed, we proceed with the completion of the Pull-Request.

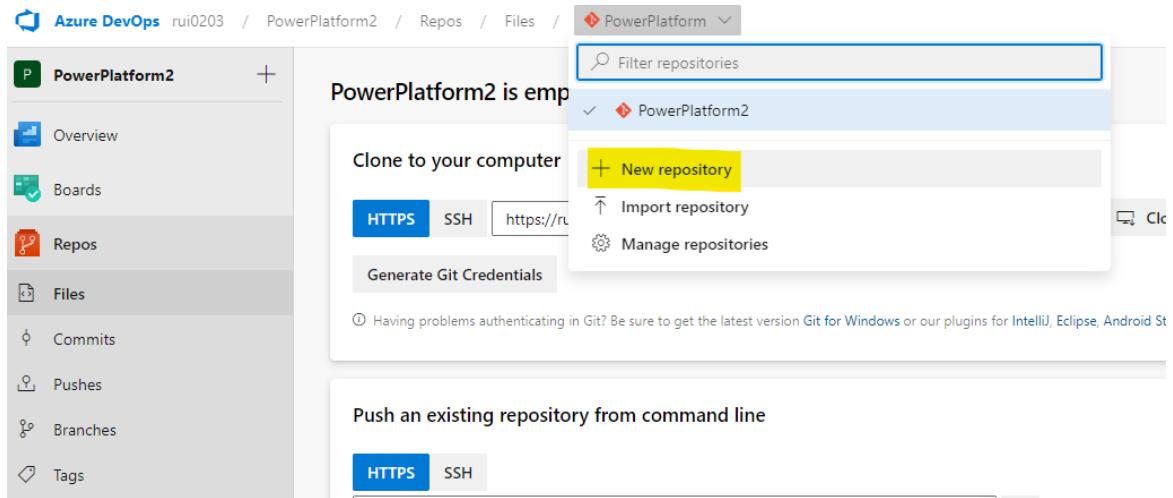


# FAQ

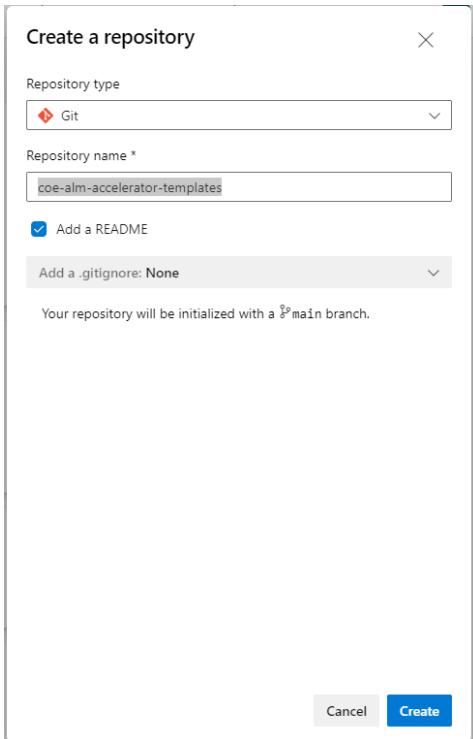
## How to setup new AA4PP manually

### Task A: Clone the YAML pipelines from GitHub to your Azure DevOps instance

1. Go to <https://dev.azure.com/> and sign in to **DevOps (AzDO)**.
2. Select the **pplatform** project.
3. Go to **Repos**, and then select **New repository** from the repository dropdown list.



4. Give the name **coe-alm-accelerator-templates** and proceed with **Create**, and **uncheck** the "Add a Readme"



5. If you don't have **git** installed on your computer, go to <https://git-scm.com/downloads> and download it, after install go to next step
6. Open a **Command Prompt** and check the version of git by running the command **git --version**

```
C:\>git --version
git version 2.37.3.windows.1
C:\>
```

7. If you got any error, check the git installation.
8. Execute the following git commands in your terminal after replace the variables

```
git clone -b [releaseTag] --single-branch
https://github.com/microsoft/coe-alm-accelerator-templates
cd coe-alm-accelerator-templates
git checkout -b main
git remote add ado [adoOrgUrl]/[project]/[pipelineRepo]
git push -u ado --all
```

You should replace the variables by

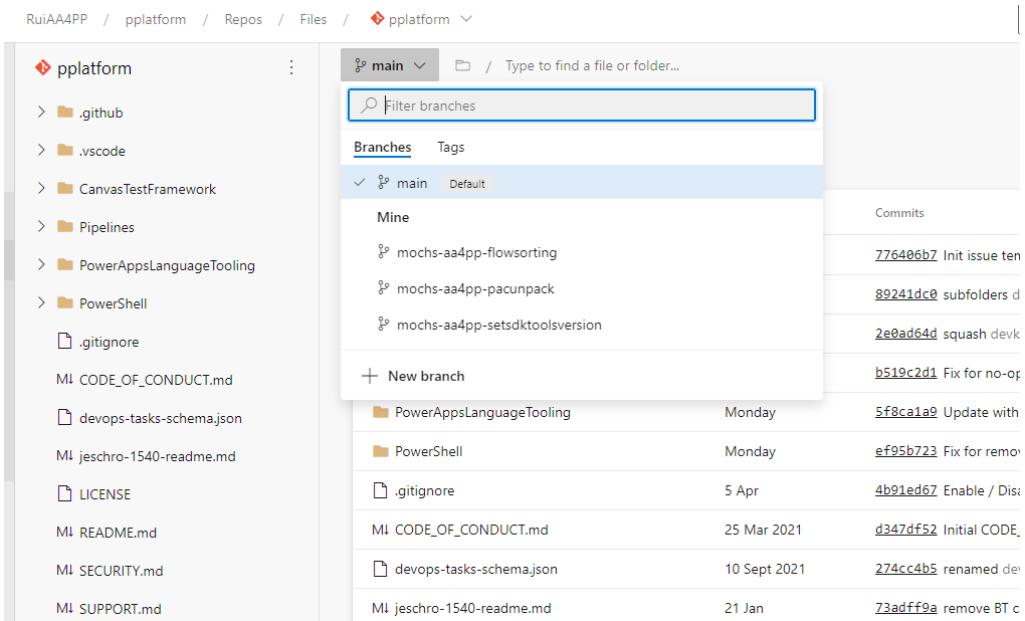
[releaseTag]	Go to <a href="https://github.com/microsoft/coe-alm-accelerator-templates/tags">https://github.com/microsoft/coe-alm-accelerator-templates/tags</a> and get the latest one, at this time was <b>CenterofExcellenceALMAccelerator-September2022</b>
[adoOrgUrl]	<a href="https://dev.azure.com/RuiAA4PP">https://dev.azure.com/RuiAA4PP</a>

[project]	pplatform
[pipelineRepo]	coe-alm-accelerator-templates

The result would look like this

```
git clone -b CenterofExcellenceALMAccelerator-September2022 --single-branch
https://github.com/microsoft/coe-alm-accelerator-templates
cd coe-alm-accelerator-templates
git checkout -b main
git remote add ado https://dev.azure.com/RuiAA4PP/pplatform/coe-alm-accelerator-templates
git push -u ado --all
```

- After the script has run, you should have the files in your repository. Confirm the default branch for this repo is main. Choose **Repos** and **Branches** and ensure that the main branch is tagged as the default. If it isn't, select the three vertical dots (⋮) corresponding to the main branch, and from the **More options** menu, select **Set as default branch**



- To give access to all pipelines for this repository we can configure the **Open Access**, otherwise a manual authorization will be needed from the pipelines. To configure the **Open Access** follow the next steps.
- Go to **Project Settings -> Repositories -> pplatform -> Security -> Pipeline permissions -> More(...) -> Open Access**

Project Settings

- Permissions
- Notifications
- Service hooks
- Dashboards

Boards

- Project configuration
- Team configuration
- GitHub connections

Pipelines

- Agent pools
- Parallel jobs
- Settings
- Test management
- Release retention
- Service connections
- XAML build services

Repos

- Repositories

All Repositories

Filter by keywords

PA Project Collection Service Accounts

Users

pplatform Build Service (RuiAA4PP)

Manage notes

Manage permissions

Read

Remove others' locks

Rename repository

Pipeline permissions

The following YAML pipelines are allowed to use this resource. YAML pipelines from other collections are not shown in this list. All Classic pipelines can use this resource.

Open access

deploy-validation-ALMAcceleratorSampleSolution

deploy-test-ALMAcceleratorSampleSolution

deploy-prod-ALMAcceleratorSampleSolution

Search

## Task B: Create pipeline global variables

1. In Azure DevOps, select **Pipelines** > **Library** > **+ Variable group**

**Note:** Check is there is any new variable added, described in this section <https://docs.microsoft.com/en-us/power-platform/guidance/coe/setup-almacceleratorpowerplatform#create-pipeline-global-variables>

2. Name the variable group **alm-accelerator-variable-group**.
3. Add the following variables to the variable group.

Name	Value
CdsBaseConnectionString	AuthType=ClientSecret;ClientId=\$(ClientId);ClientSecret=\$(ClientSecret);Url=
ClientId	[The Application (client) ID you copied when creating the app registration]
ClientSecret	[The Application (client) secret you copied when creating the app registration] <b>Note:</b> We recommend that you secure this value by selecting the lock next to the value so others can't see your secret.
TenantID	[The Directory (tenant) ID you copied when creating the app registration]
AADHost	The Azure Active Directory authorization endpoint, for public cloud use: <b>login.microsoftonline.com</b> , for government clouds use the appropriate authorization url.

In my case, getting my note from before

Azure DevOps Id:	499b84ac-1321-427f-aa17-267ca6975798
Secret:	jXPxxxxxxxxxxxxxxxxxxxxxxxxxxxxxMb
Application (client) ID:	ff5axxxx-xxxx-xxxx-xxxx-xxxxxx7027

Directory (tenant) ID:	d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxxxe8be
------------------------	---

Should look like this

Name	Value
CdsBaseConnectionString	AuthType=ClientSecret;ClientId=\$(ClientId);ClientSecret=\$(ClientSecret);Url=
ClientId	ff5axxxx-xxxx-xxxx-xxxx-xxxxxxxx7027
ClientSecret	jXPxxxxxxxxxxxxxxxxxxxxxxxxaMb
TenantID	d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxxxe8be
AADHost	login.microsoftonline.com

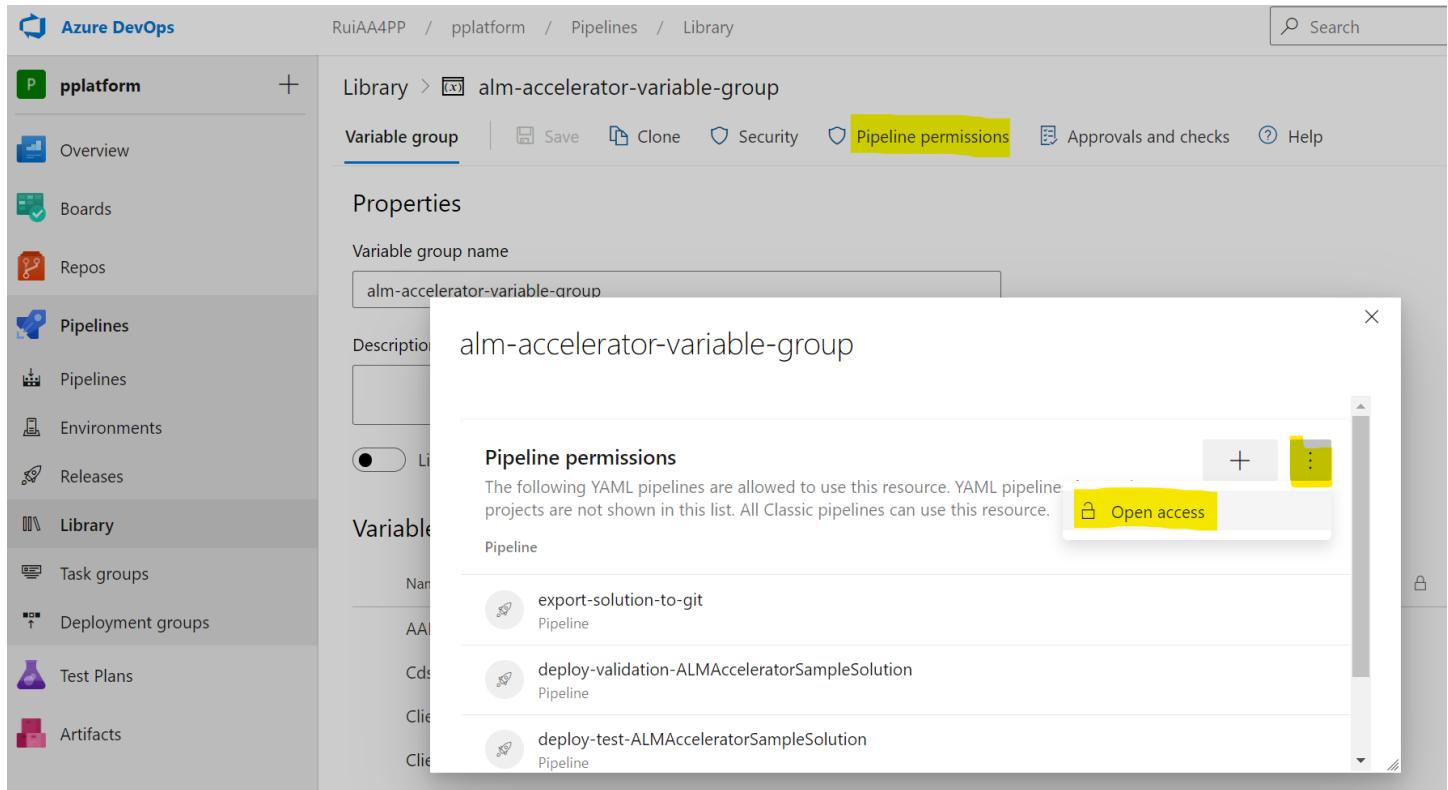
After saving, your **Variable group** should look like this.

The screenshot shows the Azure DevOps Library interface. On the left, there is a sidebar with various project and pipeline management options. The 'Library' option is selected. In the main content area, the path 'RuiAA4PP / pplatform / Pipelines / Library' is displayed. A variable group named 'alm-accelerator-variable-group' is selected. The 'Properties' section shows the variable group name as 'alm-accelerator-variable-group'. The 'Variables' section lists the following variables:

Name	Value
AADHost	login.microsoftonline.com
CdsBaseConnectionString	AuthType=ClientSecret;ClientId=\$(ClientId);ClientSecret=\$(ClientSecret);Url=
ClientId	ff5axxxx-xxxx-xxxx-xxxx-xxxxxxxx7027
ClientSecret	jXPxxxxxxxxxxxxxxxxxxxxxxxxaMb
TenantID	d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxxxe8be

The 'Link secrets from an Azure key vault as variables' option is selected.

Since multiple pipelines will need access to the Variable Group, a permission will need to be given for each pipeline, and a manual configuration will need to be performed, for simplification we can Open Access to allow any pipeline access this Variable Group, to configure that select **Pipeline permissions** and select **Open Access**



RuiAA4PP / pplatform / Pipelines / Library

Library > alm-accelerator-variable-group

Variable group | Save | Clone | Security | Pipeline permissions | Approvals and checks | Help

Properties

Variable group name: alm-accelerator-variable-group

Description: alm-accelerator-variable-group

Variables

Pipeline permissions

The following YAML pipelines are allowed to use this resource. YAML pipeline projects are not shown in this list. All Classic pipelines can use this resource.

+

Open access

Pipeline
export-solution-to-git Pipeline
deploy-validation-ALMAcceleratorSampleSolution Pipeline
deploy-test-ALMAcceleratorSampleSolution Pipeline

## Task C: Update permissions for the project build service

1. In Azure DevOps on the left pane, select **Project settings**.
2. Select **Repositories > Security**.
3. Find and select **Project Collection Build Service Accounts** under **Az DevOps Groups**.
4. Set the following permissions for the build service user.

Permission	Value
Contribute	Allow
Contribute to pull requests	Allow
Create branch	Allow
Edit policies	Allow

Permission	Value
Bypass policies when completing pull requests	Not set
Bypass policies when pushing	Not set
Contribute	Allow
Contribute to pull requests	Allow
Create branch	Allow
Create repository	Not set
Create tag	Not set
Delete or disable repository	Not set
Edit policies	Allow
Force push (rewrite history, delete branches and tags)	Not set
Manage notes	Not set
Manage permissions	Not set
Read	Allow (inherited)
Remove others' locks	Not set
Rename repository	Not set

5. Find and select the username **[Your Project Name] Build Service ([Your Organization Name])** under **Users**, and then set the following permissions.

Permission	Value
Contribute	Allow
Contribute to pull requests	Allow
Create branch	Allow
Create tag	Allow
Edit policies	Allow

All Repositories

Repositories Settings Policies Security

User permissions Download detailed report

Inheritance 

Search for users or groups

**Azure DevOps Groups**

- Build Administrators
- Contributors
- Project Administrators
- Readers
- Project Collection Administrators
- Project Collection Build Service Accounts
- Project Collection Service Accounts

**Users**

- pplatform Build Service (RuiAA4PP)

**pplatform Build Service (RuiAA4PP)**

Bypass policies when completing pull requests	Not set
Bypass policies when pushing	Not set
Contribute	Allow
Contribute to pull requests	Allow
Create branch	Allow
Create repository	Not set
Create tag	Allow
Delete or disable repository	Not set
Edit policies	Allow
Force push (rewrite history, delete branches and tags)	Not set
Manage notes	Not set
Manage permissions	Not set
Read	Allow
Remove others' locks	Not set
Rename repository	Not set

6. Select **Pipelines**, select the three dots (...), and then select **Manage Security**.

Azure DevOps RuiAA4PP / pplatform / Pipelines

Search

**pplatform**

- Overview
- Boards
- Repos
- Pipelines**
- Pipelines
- Environments
- Releases
- Library
- Task groups
- Deployment groups
- Test Plans
- Artifacts



**Create your first Pipeline**

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

**Create Pipeline** 

New folder Import a pipeline Manage security

7. Set the following permissions for the build service user **[Your Project Name] Build Service ([Your Organization Name])**.

Permission	Value
Edit build pipeline	Allow
Edit build quality	Allow
Manage build queue	Allow
Override check-in validation by build	Allow
Update build information	Allow
View build pipeline	Allow
View builds	Allow

Permissions for pplatform

Search for users or groups

ppplatform Build Service (RuiAA4PP)

Administer build permissions	Not set
Delete build pipeline	Not set
Delete builds	Not set
Destroy builds	Not set
Edit build pipeline	Allow
Edit build quality	Allow
Manage build qualities	Not set
Manage build queue	Allow
Override check-in validation by build	Allow
Queue builds	Not set
Retain indefinitely	Not set
Stop builds	Not set
Update build information	Allow
View build pipeline	Allow
View builds	Allow

Administrative Groups

- Build Administrators
- Contributors
- Project Administrators
- Readers
- Project Collection Administrators
- Project Collection Build Administrators
- Project Collection Build Service Accounts
- Project Collection Test Service Accounts

Users

- ppplatform Build Service (RuiAA4PP)

- Under **Project Settings -> Pipelines**, select **Agent pools** and select **Security**, and then select **Add**.
- Find and select the username **[Your Project Name] Build Service ([Your Organization Name])**, and then set the **Role** to **Reader**. Select **Add**.

Project Settings pplatform

Agent pools

Name

- Azure Pipelines
- Default

User permissions

Manage user permissions for all pools within the project.

User	Role	Access
[pplatform]\Build Administrators	Administr...	Assigned
[pplatform]\Project Administrators	Administr...	Assigned
[pplatform]\Project Valid Users	Reader	Assigned

Add user

User or group: pplatform Build Service (RuiAA4PP)

Role: Reader

Add Close

After **Add**, this is how should look the saved list

User permissions

Manage user permissions for all pools within the project.

User	Role	Access
[pplatform]\Build Administrators	Administr...	Assigned
[pplatform]\Project Administrators	Administr...	Assigned
[pplatform]\Project Valid Users	Reader	Assigned
pplatform Build Service (RuiAA4PP)	Reader	Assigned

## Task D: Create service connections for Azure DevOps to access Microsoft Power Platform

The following section guides you through the setup steps required for each of the development projects you'll support. In this context, a development project signifies the required infrastructure and configuration needed to support healthy ALM, including configuration of your Dataverse environment that will support the ALM process.

Each Dataverse environment—development, validation, test, or production—must have a Power Platform service connection in Azure DevOps. For each of your environments, follow these steps to set up the service connection.

1. In Azure DevOps select your **Project** (pplatform).
2. Under **Project settings** in your Azure DevOps project, select **Service connections** (Project Settings-> Pipelines -> Service Connections).
3. Select **Create/New service connection**, search for Power Platform, and then select the **Power Platform** service connection type. Select **Next** at the bottom.
4. In the **Server URL**, enter your environment URL, for example <https://myorg.crm.dynamics.com/>.

**Important:** You must include the trailing forward slash after the URL (.com/), in the preceding example).

5. For the **Service Connection Name**, enter the same URL that you used in step 4.
6. Enter the **Tenant ID**, **Application (client) ID**, and **Client Secret** you copied from Azure AD when you created your app registration, and then select **Grant access permissions to all pipelines**. Select **Save**.

New Power Platform service connection	New Power Platform service connection	New Power Platform service connection	New Power Platform service connection
<p>Server URL  <input type="text" value="https://rui-alm-dev.crm19.dynamics.com/"/></p> <p>Authentication</p> <p>Tenant ID  <input type="text" value="d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxe8be"/>            Tenant ID (also called directory ID in Azure portal) to authenticate with. <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Application ID  <input type="text" value="ff5axxxx-xxxx-xxxx-xxxx-xxxxxx7027"/>            Azure Application ID to authenticate with. <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Client secret of Application ID  <input type="text" value="*****"/>            Client secret of the Service Principal associated to above Application ID; used to prove identity. <a href="#">Details</a></p> <p>Service connection name  <input type="text" value="https://rui-alm-dev.crm19.dynamics.com/"/></p> <p>Description (optional)</p> <p>Security  <input checked="" type="checkbox"/> Grant access permission to all pipelines  <a href="#">Learn more</a> <a href="#">Troubleshoot</a></p>	<p>Server URL  <input type="text" value="https://rui-alm-test.crm19.dynamics.com/"/></p> <p>Authentication</p> <p>Tenant ID  <input type="text" value="d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxe8be"/>            Tenant ID (also called directory ID in Azure portal) to authenticate with. <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Application ID  <input type="text" value="ff5axxxx-xxxx-xxxx-xxxx-xxxxxx7027"/>            Azure Application ID to authenticate with. <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Client secret of Application ID  <input type="text" value="*****"/>            Client secret of the Service Principal associated to above Application ID; used to prove identity. <a href="#">Details</a></p> <p>Service connection name  <input type="text" value="https://rui-alm-dev.crm19.dynamics.com/"/></p> <p>Description (optional)</p> <p>Security  <input checked="" type="checkbox"/> Grant access permission to all pipelines  <a href="#">Learn more</a> <a href="#">Troubleshoot</a></p>	<p>Server URL  <input type="text" value="https://rui-alm-validation.crm19.dynamics.com/"/></p> <p>Authentication</p> <p>Tenant ID  <input type="text" value="d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxe8be"/>            Tenant ID (also called directory ID in Azure portal) to authenticate to. Refer to <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and configures Application ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Application ID  <input type="text" value="ff5axxxx-xxxx-xxxx-xxxx-xxxxxx7027"/>            Azure Application ID to authenticate with. <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Client secret of Application ID  <input type="text" value="*****"/>            Client secret of the Service Principal associated to above Application ID; used to prove identity. <a href="#">Details</a></p> <p>Service connection name  <input type="text" value="https://rui-alm-dev.crm19.dynamics.com/"/></p> <p>Description (optional)</p> <p>Security  <input checked="" type="checkbox"/> Grant access permission to all pipelines  <a href="#">Learn more</a> <a href="#">Troubleshoot</a></p>	<p>Server URL  <input type="text" value="https://rui-alm-production.crm19.dynamics.com/"/></p> <p>Authentication</p> <p>Tenant ID  <input type="text" value="d310 ff5axxxx-xxxx-xxxx-xxxx-xxxxxxe8be"/>            Tenant ID (also called directory ID in Azure portal) to authenticate to. Refer to <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and configures Application ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Application ID  <input type="text" value="ff5axxxx-xxxx-xxxx-xxxx-xxxxxx7027"/>            Azure Application ID to authenticate with. <a href="https://aka.ms/buildtools-spn">https://aka.ms/buildtools-spn</a> for a script that shows Tenant ID and associated Client Secret. The application user must also be created in CDS</p> <p>Invalid GUID input</p> <p>Client secret of Application ID  <input type="text" value="*****"/>            Client secret of the Service Principal associated to above Application ID; used to prove identity. <a href="#">Details</a></p> <p>Service connection name  <input type="text" value="https://rui-alm-dev.crm19.dynamics.com/"/></p> <p>Description (optional)</p> <p>Security  <input checked="" type="checkbox"/> Grant access permission to all pipelines  <a href="#">Learn more</a> <a href="#">Troubleshoot</a></p>
<p><a href="#">Back</a> <a href="#">Save</a></p>			

After configuring the four service connections (one per each environment) you should have something similar to this picture

The screenshot shows the 'Service connections' page in the Azure DevOps interface. The left sidebar is titled 'Project Settings' and includes sections for General, Teams, Permissions, Notifications, Service hooks, Dashboards, Boards, Project configuration, Team configuration, GitHub connections, Pipelines, Agent pools, Parallel jobs, Settings, Test management, Release retention, and Service connections. The 'Service connections' section is currently selected. The main content area is titled 'Service connections' and contains a table with four rows, each representing a service connection with a Dynamics 365 icon and a URL: https://rui-alm-dev.crm19.dynamics.com/, https://rui-alm-production.crm19.dynamics.com/, https://rui-alm-test.crm19.dynamics.com/, and https://rui-alm-validation.crm19.dynamics.com/. A 'New service connection' button is located in the top right corner of the table area.

To simplify the Lab we are not configuring more users than the Administrator, so you can skip the next step (number 7).

7. **(Optional)** In order for users to be able to use the service connection from the ALM Accelerator for Power Platform app, the service connections must provide user permissions to all users. Update permissions as follows for environments that users need to be able to access from the app (for example, maker environments):
  0. From the **Service Connections** list, select the service connection to be shared with users
  1. Select **More (...)** in the upper-right corner, and then select **Security**.
  2. If you don't see the user or group, select **Add -> User or Group -> Role**

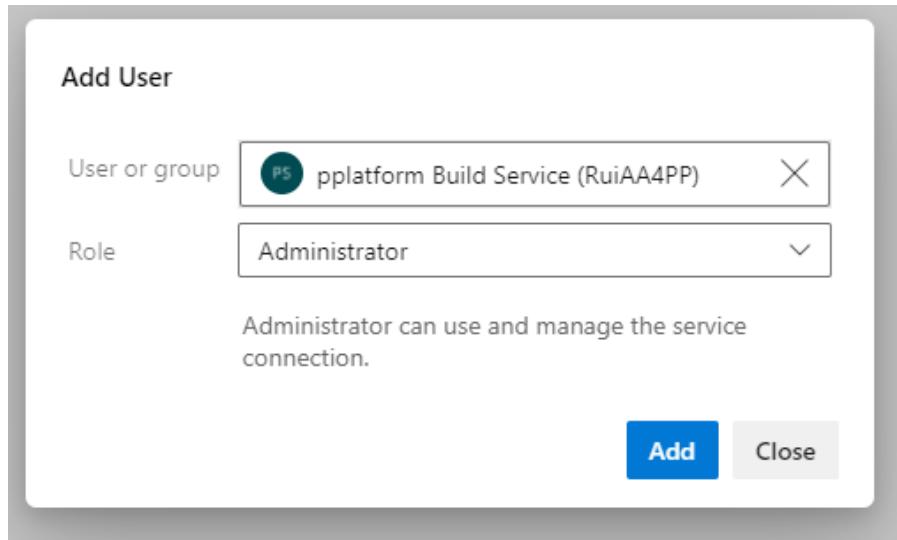
**Note: Sometimes the newly added users show up with the "administrator" role. Refreshing the page shows that the users have been added with the "user" role.**

3. If you see the user or group, select the Role from the dropdown list.
4. Repeat these steps for each of your environments—development, validation, test, and production.

## Task E: Update permissions for the project build service to use the Service Connections

1. In Azure DevOps on the left pane, select **Project settings**.
2. Select **Service connections**, select ... in the upper-right corner, and then select **Security**. Select **Add**.

3. Find and select the username **[Your Project Name] Build Service ([Your Organization Name])**, and then set the **Role** to Administrator. Select **Add**.



Some pipelines will need to have access to these Service Connections, a manual step will be needed to allow each pipeline, to simplify, an Open Access can be configured.

1. To configure Open Access for the Service Connection, open the service connection by select **More(...)** from top right and select **Security**.

Project Settings

Overview Usage history

Details

Service connection type

Power Platform using power platform authentication via application id and client secret

Creator: Rui Santos (admin@RuiAA4PP.onmicrosoft.com)

Approvers and checks

Security (highlighted)

Delete

2. Select **Open Access** like the next picture shows

User permissions

User	Role	Access
[ppplatform]\Endpoint Administrators	Administrator	Inherited
ppplatform Build Service (RuiAA4PP)	Administrator	Inherited
Rui Santos	Administrator	Assigned

Pipeline permissions

No permitted pipelines

This resource cannot be used in a YAML pipeline until at least one pipeline has permission.  
All Classic pipelines can use this resource.

Learn more

Open access (highlighted)

3. Perform the **previous actions for all Service Connections**, each service connection represents the credentials to access the Power Platform environments.

## Task F: Create the pipelines

The Azure DevOps pipelines are responsible for multiple actions, but in general they will be able to export the solution from one environment to another, they are also responsible to unpack the solution and save the code in Git.

Follow the steps in this section to create the following pipelines based on the YAML in the Azure DevOps repo. These pipelines will run when you **Commit to Git**, **Import a Solution**, or **Delete a Solution** from the AA4PP app, respectively.

YAML file	Pipeline name
export-solution-to-git.yml	export-solution-to-git
import-unmanaged-to-dev-environment.yml	import-unmanaged-to-dev-environment
delete-unmanaged-solution-and-components.yml	delete-unmanaged-solution-and-components

1. In Azure DevOps, go to **Pipelines** > **Create a New Pipeline**.
2. Select **Azure Repos Git** for your code repository and point to the Azure DevOps repo you created (pplatform) and seeded with the pipeline templates in the preceding steps.
3. On the **Configure your pipeline** page, select **Existing Azure Pipelines YAML file**

and point to **/Pipelines/export-solution-to-git.yml**, select **Save** from Run menu

```

1 # This pipeline gets triggered manually or via an API call.
2 # It is a general purpose automation that allows you to export a solution from a Dataverse environment and commit it to a git branch.
3 # It facilitates:

```

By default the Pipeline name will be “pplatform”, rename the pipeline to **export-solution-to-git** by mouse hover in the name of pipeline, select **More(...)** and **Rename/move**

The screenshot shows the Azure Pipelines interface. In the center, there is a table titled 'Recently run pipelines' with one item: 'pplatform' (No runs yet). A context menu is open over the 'pplatform' row, with 'Rename/move' highlighted. Other options in the menu include 'Edit', 'Run pipeline', 'Manage security', and 'Delete'.

Repeat the same steps for

**/Pipelines/import-unmanaged-to-dev-environment.yml** and

**/Pipelines/delete-unmanaged-solution-and-components.yml**

The result will be like this:

The screenshot shows the Azure DevOps browser interface. The left sidebar is visible with 'pplatform' selected. The main area shows the 'Pipelines' page with the 'All pipelines' section. Three pipelines are listed: 'delete-unmanaged-solution-and-components' (No runs yet), 'export-solution-to-git' (No runs yet), and 'import-unmanaged-to-dev-environment' (No runs yet).

**Note:** Confirm if the security is correctly configured. The settings should be inherited from Task 8 Step 6.

Select **More (...)**, near the button **New pipeline**, and choose **Manage Security**. Confirm the user **(project name) Build Service (orgname)** has **Edit build pipeline** to **Allow**:

## Permissions for pplatform



Search for users or groups		pplatform Build Service (RuiAA4PP)	
▼	Azure DevOps Groups	Administer build permissions	Not set
 BA	Build Administrators	Delete build pipeline	Not set
 C	Contributors	Delete builds	Not set
 PA	Project Administrators	Destroy builds	Not set
 R	Readers	Edit build pipeline	Allow
 PA	Project Collection Administrators	Edit build quality	Allow
 PA	Project Collection Build Administrators	Manage build qualities	Not set
 PA	Project Collection Build Service Accounts	Manage build queue	Allow
 PA	Project Collection Test Service Accounts	Override check-in validation by build	Allow
▼	Users	Queue builds	Not set
 PS	Pplatform Build Service (RuiAA4PP)	Retain indefinitely	Not set
		Stop builds	Not set
		Update build information	Allow
		View build pipeline	Allow
		View builds	Allow

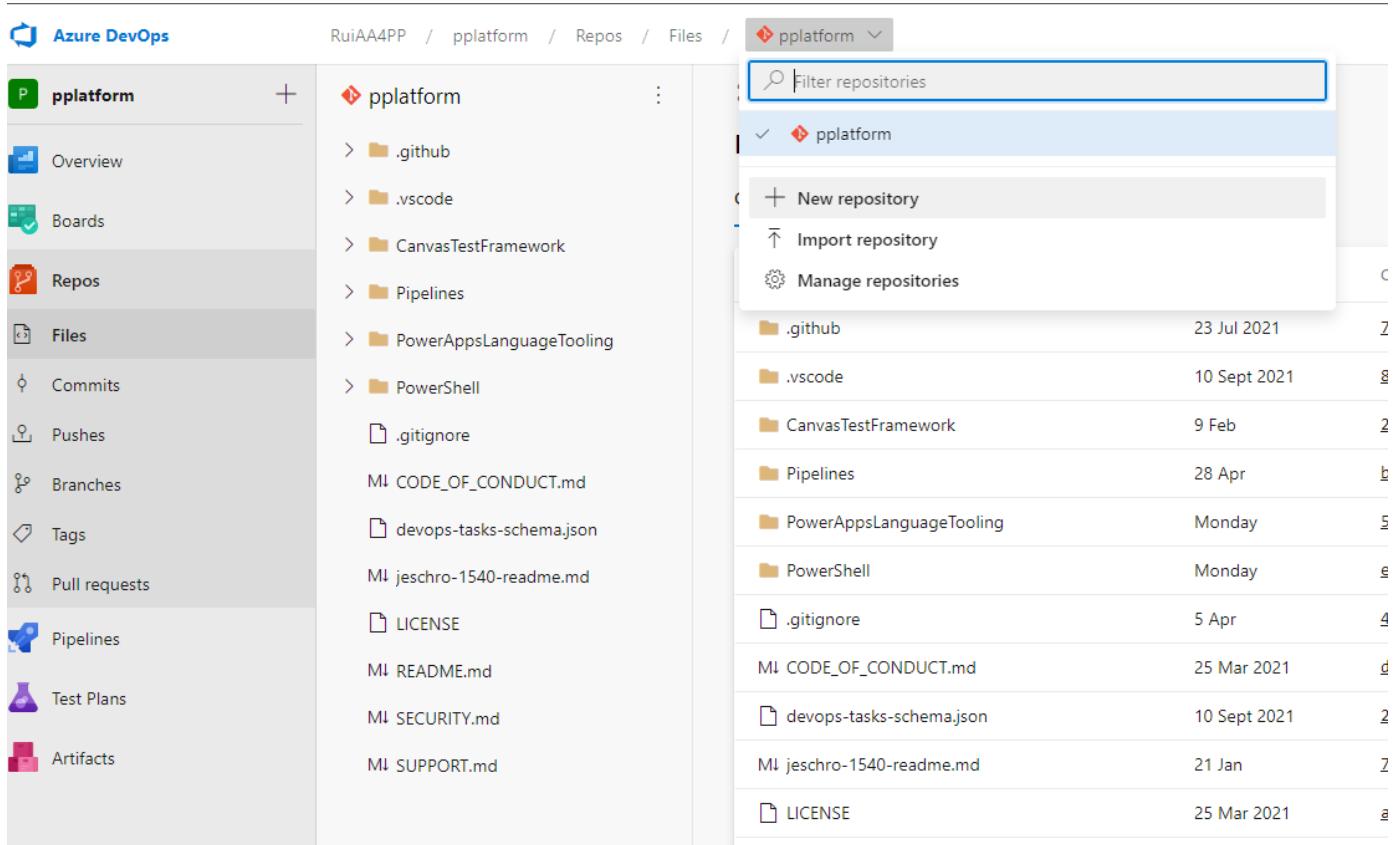
After this manual configuration, go to [Task](#) from the Configurations in your tenant sections

## How to create a new repository manually

To configure where do we want to deploy the solution, we need to create a Profile.

**Note: you shouldn't send your solution code to the pplatform repository**, you should have one repository per each solution or one repository to all solutions, keep the pplatform clean for future updates of the pipelines.

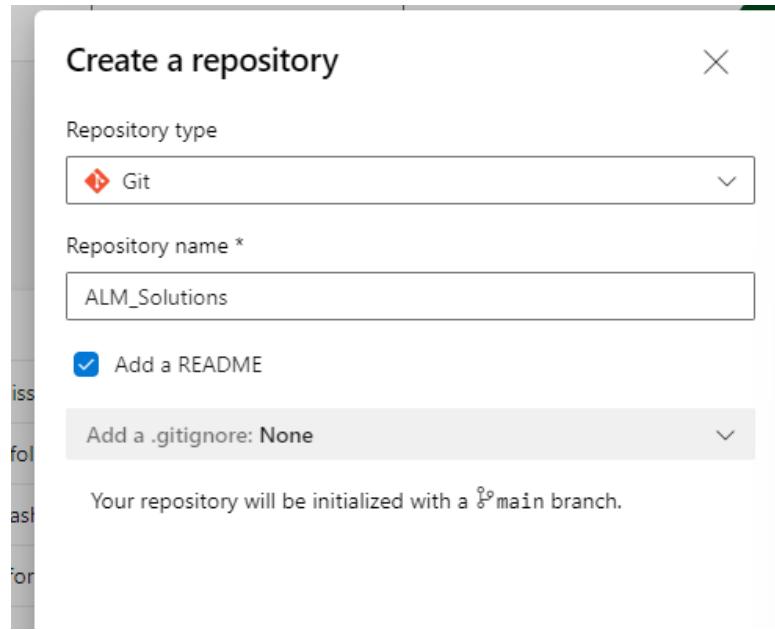
In this case we will use one repository for all solutions, but before we configure AA4PP we need to create the repository in Azure DevOps. Go <https://dev.azure.com> select the **pplatform** project and select **Repos**. Create a new Repository by selecting **New Repository**.



The screenshot shows the Azure DevOps interface for the 'pplatform' project. The left sidebar has 'pplatform' selected. The 'Files' tab is active. A context menu is open over the 'pplatform' repository, with 'New repository' highlighted. The repository list shows various files and folders like .github, .vscode, CanvasTestFramework, Pipelines, and PowerAppsLanguageTooling.

File/Folder	Last Modified	Actions
.github	23 Jul 2021	...
.vscode	10 Sept 2021	...
CanvasTestFramework	9 Feb	...
Pipelines	28 Apr	...
PowerAppsLanguageTooling	Monday	...
PowerShell	Monday	...
.gitignore	5 Apr	...
CODE_OF_CONDUCT.md	25 Mar 2021	...
devops-tasks-schema.json	10 Sept 2021	...
jeschro-1540-readme.md	21 Jan	...
LICENSE	25 Mar 2021	...
README.md		
SECURITY.md		
SUPPORT.md		

Add a good name, remember this repository will be the container for all your solutions



The pipelines will need to access this repository, a manual configuration will be needed. To simplify the process, we can configure **Open Access** to allow all pipelines to access this repositories, to configure this go to **Project Settings -> Repositories -> ALM\_Solutions -> Security -> Open Access**.

Setting	Value
Create branch	Allow (inheri...)
Create tag	Allow (inheri...)
Delete or disable repository	Not set
Edit policies	Not set
Force push (rewrite history, delete branches and tags)	Not set
Manage notes	Allow (inheri...)
Manage permissions	Not set
Read	Allow (inheri...)
Remove others' locks	Not set
Rename repository	Not set

Going to AA4PP, select **Choose a Profile** -> Select **plus icon**, we should be able to see the Repository we just created, select **ALM\_Solutions** and select **Create**

# How to configure agent pools missing configuration

## Define the Default agent pool for YAML

YAML Variables Triggers History | Save & queue Discard Summary Queue ...

**Pipeline**  
Some settings need attention

**Get sources**  
May2022Test May2022Test

**Name \***  
deploy-prod-May2022Test

**Default agent pool for YAML**  
Azure Pipelines

The vmlImage must be specified in the YAML file

**YAML file path \***   ⓘ   ↗

# How to edit the Environment URL

To make the url of the environments friendly, let's rename them, using the admin account select on each of the environments and perform this action:

- 1) From the Environment list select on the name of the environment
- 2) Select **Edit** under **Details** section and change the URL accordingly to the environment **Name**. Since the URL must be unique in the world try to add some personalization to it. Originally the url will be in a format of "orgxxxxxx".

Power Platform admin center

Environments > ALM-Dev

**Details**

Environment URL	State
org5c4f9170.crm19.dynamics.com	Ready
Region	Refresh cadence
Norway	Frequent
Type	Security group
Trial (29 days remaining)	Not assigned
Organization ID	
74003d4e-305f-4fa2-bf98-0c80-50deaf	

**Updates**

2022 release wave 1  
On  
See what's new in the release

**Recent operation**

Type	Start time
Create	5/4/2022, 6:28:11 PM
End time	Initiated by
5/4/2022, 6:28:16 PM	ALM
Status	

**Edit details**

**ALM-Dev**

**Name \***  
ALM-Dev

**URL \***  
org5c4f9170  
crm19.dynamics.com

**Security roles**  
See all

**Teams**  
See all

**Users**  
See all

**S2S Apps**  
See all

**Resources**

- Dynamics
- Portals
- Power A
- Flows

**Purpose**  
Describe the environment's purpose

**Security group**  
No group is selected

**Save** **Cancel**

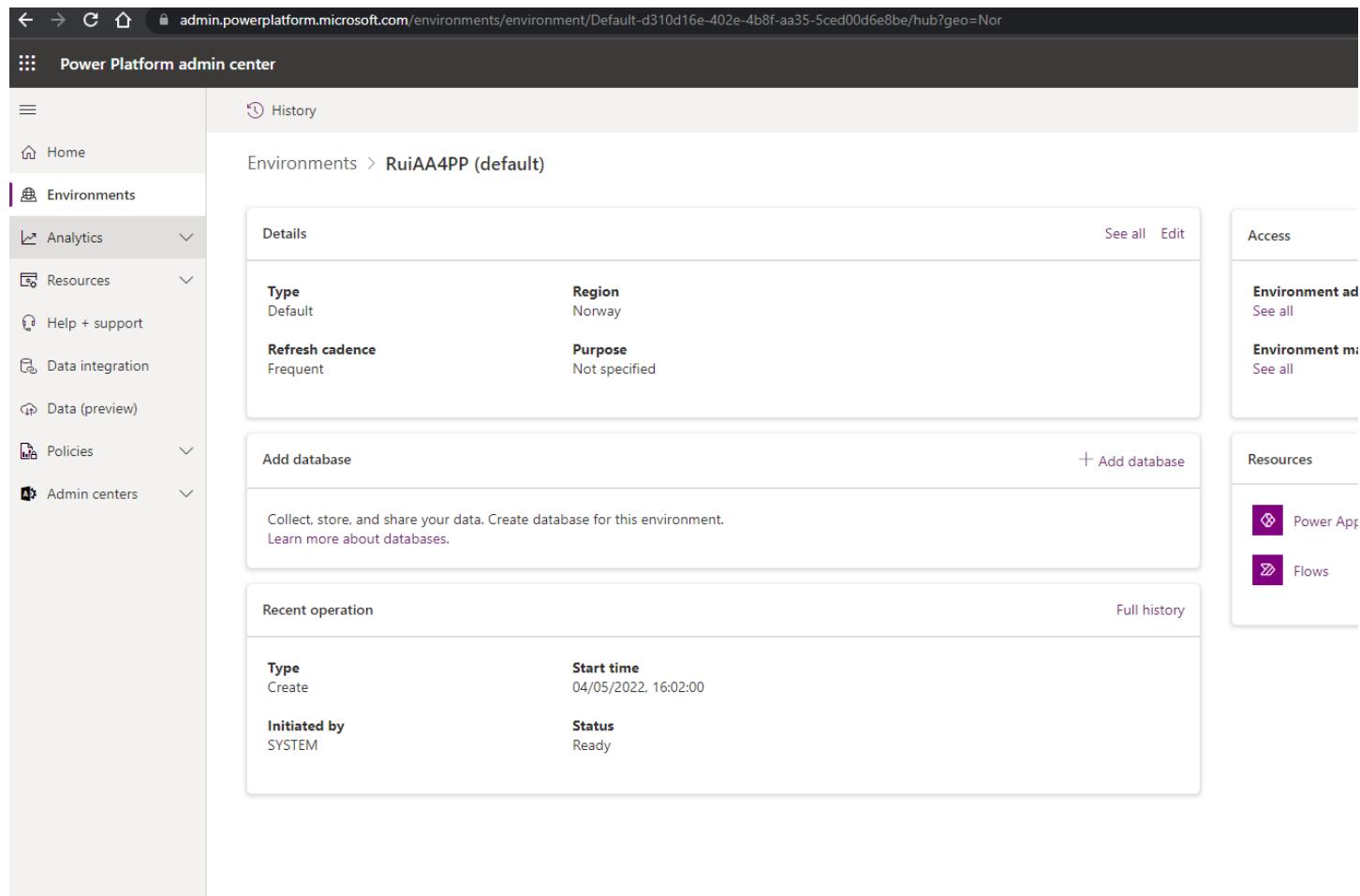
- 3) Rename it in a format easy to identify which ALM step belongs, i.e. xxxx-alm-test

The screenshot shows the 'Edit details' dialog for the 'ALM-Dev' environment. The 'Name' field is set to 'ALM-Dev'. The 'URL' field is updated to 'rui-alm-dev.crm19.dynamics.com'. The 'Type' is set to 'Trial'. The 'Security group' is 'Not assigned'. The 'Updates' section shows '2022 release wave 1' is 'On'. The 'Recent operation' section shows a 'Create' operation on 5/4/2022 at 6:28:11 PM, initiated by 'ALM'. The 'Resources' section includes links for Dynamics 365 apps, Portals, Power Apps, and Flows.

After the rename has been concluded you can see the new url in the **Environment URL**. Please remember the "crm19", part of the url, depends on the location you have chosen to create the Environment, in this example, crm19 corresponds to the Norwegian datacenter.

The screenshot shows the environment details for 'ALM-Dev'. A green banner at the top indicates 'Environment details were edited at 5/4/2022, 8:29:13 PM'. The 'Details' section shows the 'Environment URL' is now 'rui-alm-dev.crm19.dynamics.com'. The 'Region' is 'Norway', 'Type' is 'Trial', and 'Organization ID' is '74003d4e-305f-4fa2-bf98-0c80c50deaf2'. The 'Updates' section shows '2022 release wave 1' is 'On'. The 'Recent operation' section shows an 'Edit' operation on 5/4/2022 at 8:28:41 PM, initiated by 'Rui Santos'. The 'Resources' section includes links for Dynamics 365 apps, Portals, Power Apps, and Flows.

Is recommended, in a real scenario, to have an additional Environment where you install the AA4PP to enable the makers from your organization to access it (and also have ALM for the AA4PP), in this case to reduce the number of environments we will use the Default environment to install the AA4PP as the production environment for AA4PP.



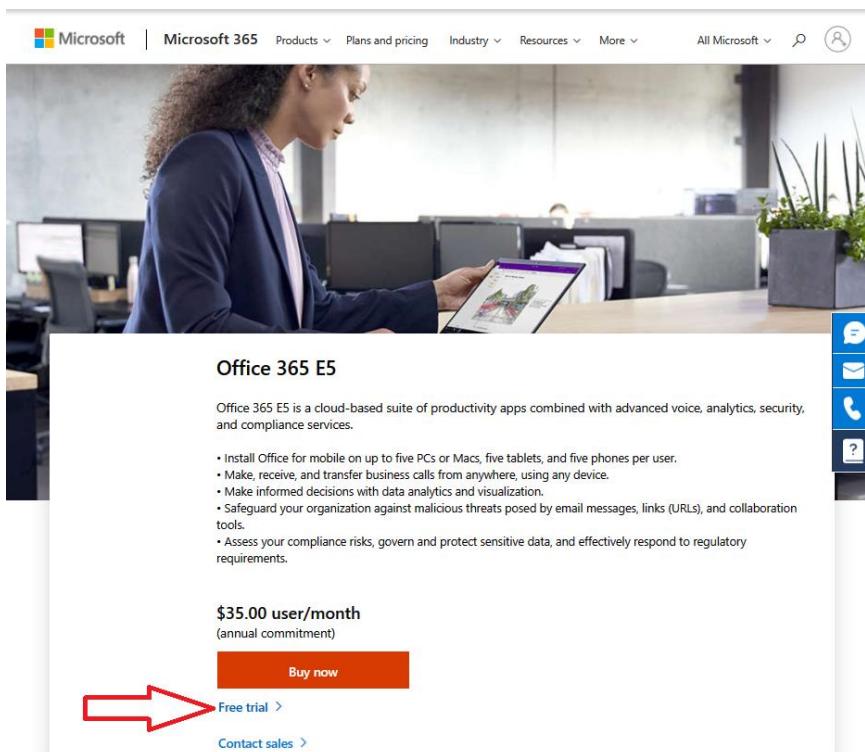
The screenshot shows the Power Platform admin center interface. The left sidebar is titled 'Power Platform admin center' and includes sections for Home, Environments (selected), Analytics, Resources, Help + support, Data integration, Data (preview), Policies, and Admin centers. The main content area shows the 'RuiAA4PP (default)' environment details. The 'Details' card shows the environment is of type 'Default' with 'Region' set to 'Norway', 'Refresh cadence' set to 'Frequent', and 'Purpose' set to 'Not specified'. Below this is an 'Add database' section with a link to 'Learn more about databases'. The 'Recent operation' card shows a single entry: a 'Create' operation initiated by 'SYSTEM' on '04/05/2022, 16:02:00' with a 'Status' of 'Ready'. To the right of the main content are two vertical panels: 'Access' (with links to 'Environment ad' and 'Environment mi') and 'Resources' (with links to 'Power App' and 'Flows').

# How to start a NEW trial tenant of Office 365 and create environments

**Tip for Pro's** If you are very confident you have licensing, capacity, and ability to deploy Environments with Dataverse and import Solutions in your tenant, then you could skip this entire Task 3.

**NOTE:** Dev Community plan described [here](#) is just 1 free Environment and within your organization tenant, if you would like to follow this lab you will need at least 4 environments (Dev – Validation – Test – Production), so only this plan might limited.

1. In **new In-Private browser session** provision a free Office 365 demo tenant at [Microsoft Office 365 Trail web page](#). **TIP:** If you had other sessions active in your In-Private browser, we suggest you close it and start over to be sure you are completely fresh session.
2. Select on **Free trial**



Microsoft | Microsoft 365 Products v Plans and pricing Industry v Resources v More v All Microsoft v 🔍 👤

**Office 365 E5**

Office 365 E5 is a cloud-based suite of productivity apps combined with advanced voice, analytics, security, and compliance services.

- Install Office for mobile on up to five PCs or Macs, five tablets, and five phones per user.
- Make, receive, and transfer business calls from anywhere, using any device.
- Make informed decisions with data analytics and visualization.
- Safeguard your organization against malicious threats posed by email messages, links (URLs), and collaboration tools.
- Assess your compliance risks, govern and protect sensitive data, and effectively respond to regulatory requirements.

**\$35.00 user/month**  
(annual commitment)

**Buy now**

**Free trial >** Contact sales >

3. Use your personal Email Address, as long as it's not your work email. If you used your organization email address, be sure you select the **No, I'll sign up for a new account** this way the trial does not attempt to attach to anything you already have.



## You've selected Office 365 E5

### 1 Let's get you started

Looks like you're already using **laptop.com** with another Microsoft service. Sign in to use this account with this trial, or create a new account.

[Sign In](#)

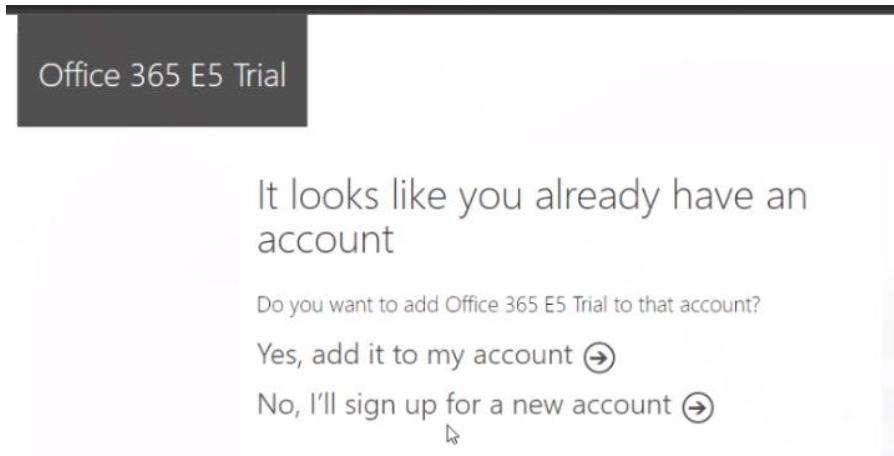
[Create a new account instead](#)

### 2 Tell us about yourself

### 3 How you'll sign in

### 4 Confirmation details

4. This screen might look like this depending on variety in regions



5. For Company Name – you can use your name something like “AA4PP’s Lab” use your work or cell phone for business phone number. Use a cell phone you can access for the verification code step as it must be received and validated.

**② Tell us about yourself**

A text or phone call helps us make sure this is you.  
Enter a number that isn't VoIP or toll free.

Text me  
 Call me

Country code      Phone number

(+1) United States

We don't save this phone number or use it for any other purpose.

Enter your verification code

This is required

Didn't get it or need a new code? [Try again.](#)

**Verify**      [Change my phone number](#)

6. In *yourbusiness.onmicrosoft.com* you can get creative Ex: YourNameAA4PP.onmicrosoft.com

Microsoft

## You've selected Office 365 E5

1 Let's get you started

2 Tell us about yourself

3 How you'll sign in

To set up your account, you'll need a domain name.  
[What is a domain?](#)

You'll probably want a custom domain name for your business at some point. For now, choose a name for your domain using **onmicrosoft.com**.

yourbusiness.onmicrosoft.com

Check availability Next

4 Confirmation details

7. Short username like "Admin" or just your first name is just fine and certainly choosing a memorable password you can remember. Write this down somewhere for yourself.

8. This is what success looks like:



This task would have created a net-new tenant for your trial away from your organization, you might have users your personal email address or mobile phone this was only for activation validation and account recovery reasons.

No Credit Card required, and you can ignore and abandon this environment with no recourse.

You can stop right at this point and close the setup page - you won't need anything else setup on in Office for this lab. Don't close this browser session.

9. In this same browser session go to: [Pricing - Power Apps](#) – select **Try free** under Per App plan

## Power Apps pricing

Review standard plans, costs, and availability to start running business apps.

Subscription plans

Best for businesses that want predictable user-based licensing – with the flexibility to license users to run one app at a time or run unlimited apps.

Per app plan	Per user plan
<b>\$5</b> per user/app/month	<b>\$20</b> per user/month
Run one app or portal per user, stacking licenses for access to each additional as their needs change.	Run unlimited apps and portals per user for one flat monthly rate.
<ul style="list-style-type: none"><li>Includes 250 <a href="#">AI Builder</a> service credits per month.<sup>1</sup></li><li>Requires access to the Microsoft 365 admin center with <a href="#">global administrator or billing administrator roles</a>.</li></ul>	<ul style="list-style-type: none"><li>Includes 500 <a href="#">AI Builder</a> service credits per month.<sup>1</sup></li><li>Available to buy now with a credit card.</li></ul>
<a href="#">Buy now &gt;</a>	<a href="#">Buy now &gt;</a> <a href="#">Try free &gt;</a> 

10. Select **Yes, add it to my account**

Power Apps per user plan Trial

It looks like you already have an account

Do you want to add Power Apps per user plan Trial to that account?

[Yes, add it to my account](#) 

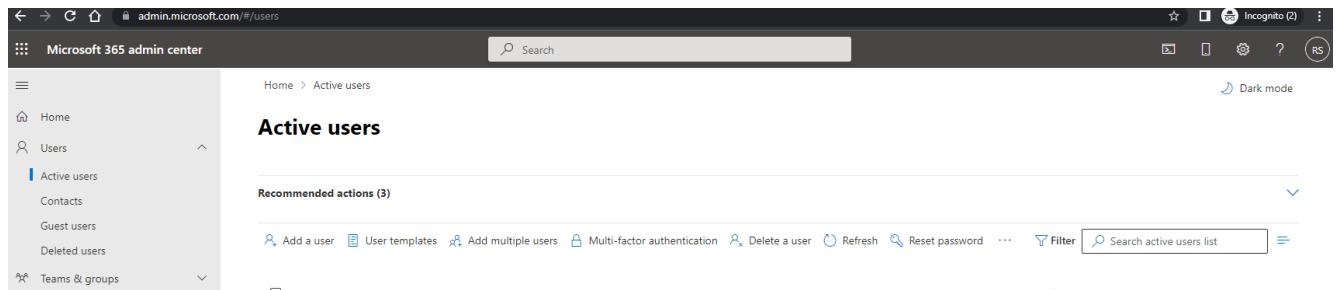
[No, I'll sign up for a new account](#) 

11. Select on **Try now**

Check out  
confirm your order

Power Apps per user plan Trial | 1 month term  
25 users

12. After you select **Try Now** you will get redirected to Microsoft admin portal otherwise continue until you complete the process (or go directly to <https://admin.microsoft.com>), stop once you are navigated to the Office 365 admin center. Under **Active users**, select **Add multiple users**:



The screenshot shows the Microsoft 365 Admin Center interface. The left sidebar is collapsed. The main navigation bar shows 'admin.microsoft.com/#/users' and the 'Microsoft 365 admin center' logo. The top right corner has a 'Dark mode' toggle. The main content area is titled 'Active users'. A 'Recommended actions' bar at the top of the list contains several buttons: 'Add a user', 'User templates', 'Add multiple users' (which is highlighted with a blue border), 'Multi-factor authentication', 'Delete a user', 'Refresh', 'Reset password', and a 'Filter' button. Below this is a search bar with the placeholder 'Search active users list'.

13. Add similar usernames, follow the image. The format is

**First Name:** ALM

**Last Name:** Dev/Validation/Test/Prod

Microsoft 365 admin center

Home > Active users

Active users

Recommended

Add a user

Display

Rui Sa

List of users

Licenses

Finish

Add multiple users

Add list of users

Enter up to 249 users. All users are given temporary passwords.

Add row Remove row

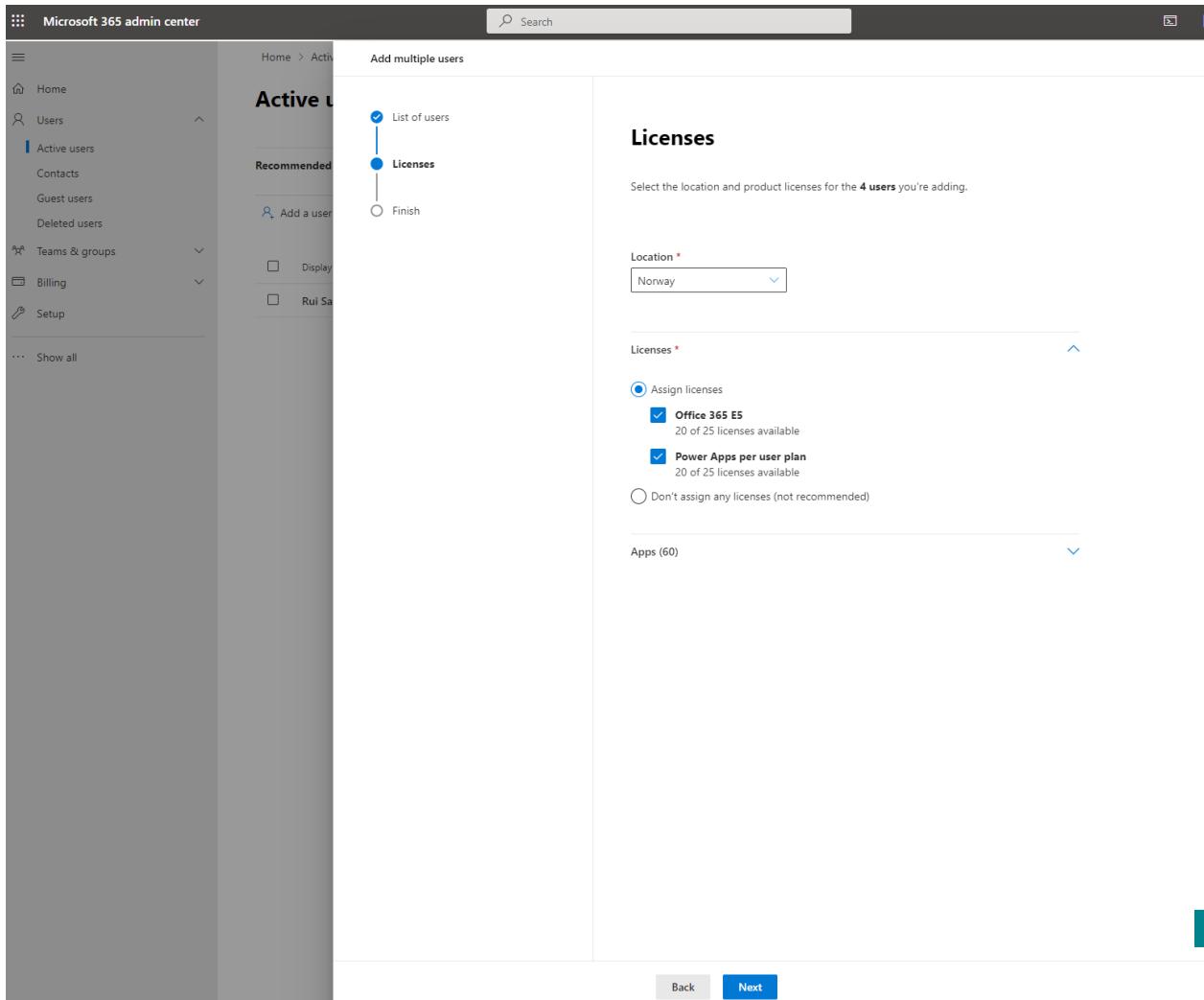
First name	Last name	Username	Domain
ALM	Last name	Dev	RuiAA4PP.onmicrosoft.com
ALM	Last name	Validation	RuiAA4PP.onmicrosoft.com
ALM	Last name	Test	RuiAA4PP.onmicrosoft.com
ALM	Last name	Prod	RuiAA4PP.onmicrosoft.com
First name	Last name	Username	RuiAA4PP.onmicrosoft.com

I'd like to upload a CSV with user information

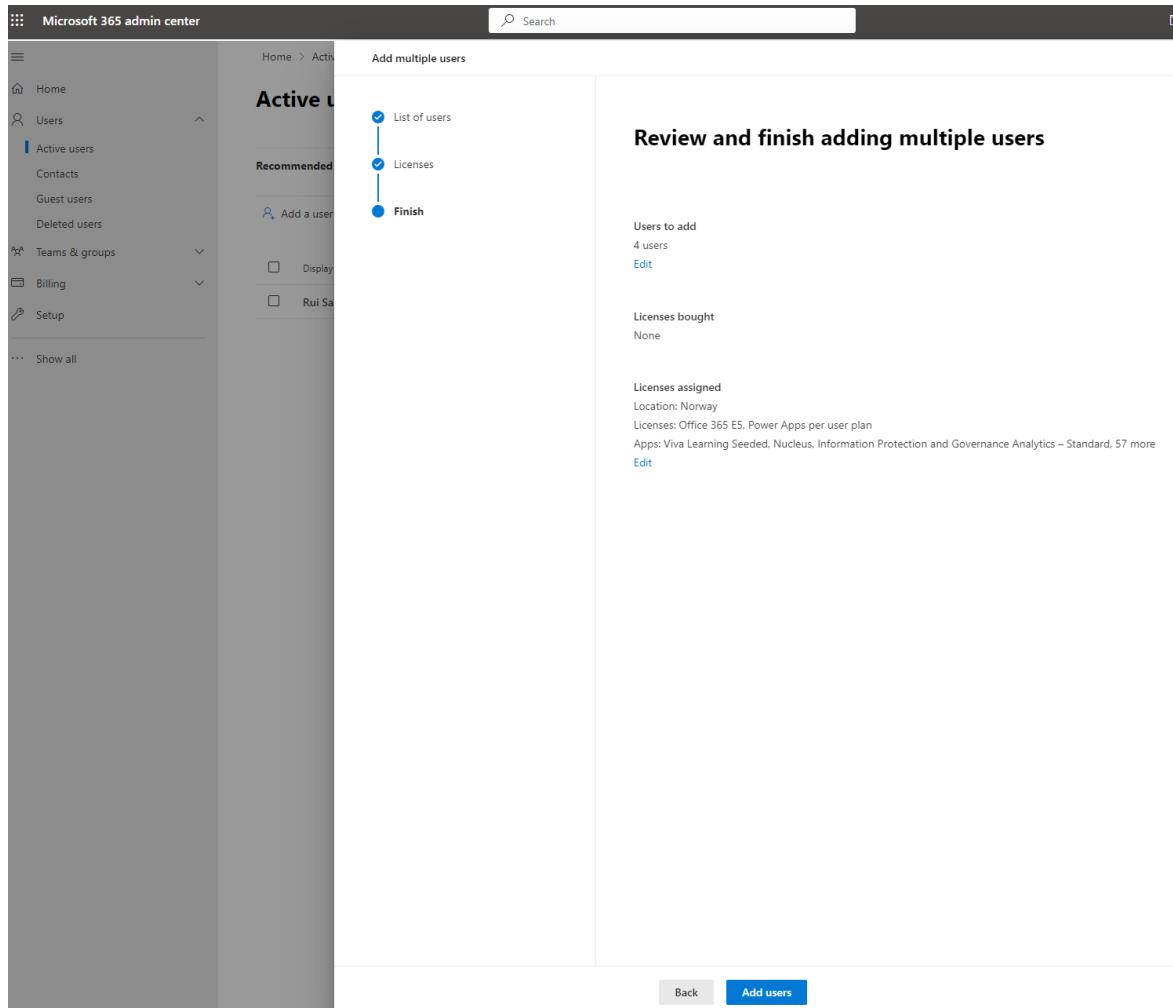
Next Cancel

Help & support

14. Add an Office 365 and PowerApps per user plan to all these user users in this screen



15. Finish the process by **Adding Users**



16. Your users are now added to your tenant, to have access to them select **Show** to see the passwords and save them for later use:

Microsoft 365 admin center

Home > Active users

Add multiple users

Active users

Recommended

Home

Users

Active users

Contacts

Guest users

Deleted users

Teams & groups

Billing

Setup

Show all

List of users

Licenses

Finish

You added 4 users

These users will appear in your list of **Active users** where you can view and manage their settings. All users have been given temporary passwords and they can now log in to their accounts.

Email sign-in information

The file contains sign-in information, so we recommend that you only send it to one person.

admin@RuiAA4PP.onmicrosoft.com

Send email

Download user details

Display name

Username

ALM

Dev@RuiAA4PP.onmicrosoft.com

ALM

Validation@RuiAA4PP.onmicrosoft.com

ALM

Test@RuiAA4PP.onmicrosoft.com

ALM

Prod@RuiAA4PP.onmicrosoft.com

Help & support

Close

Save locally the usernames and password generated

Username	Password
Dev@RuiAA4PP.onmicrosoft.com	*****
Validation@RuiAA4PP.onmicrosoft.com	*****
Test@RuiAA4PP.onmicrosoft.com	*****
Prod@RuiAA4PP.onmicrosoft.com	*****

You should be able to see the full list of the users you just created:

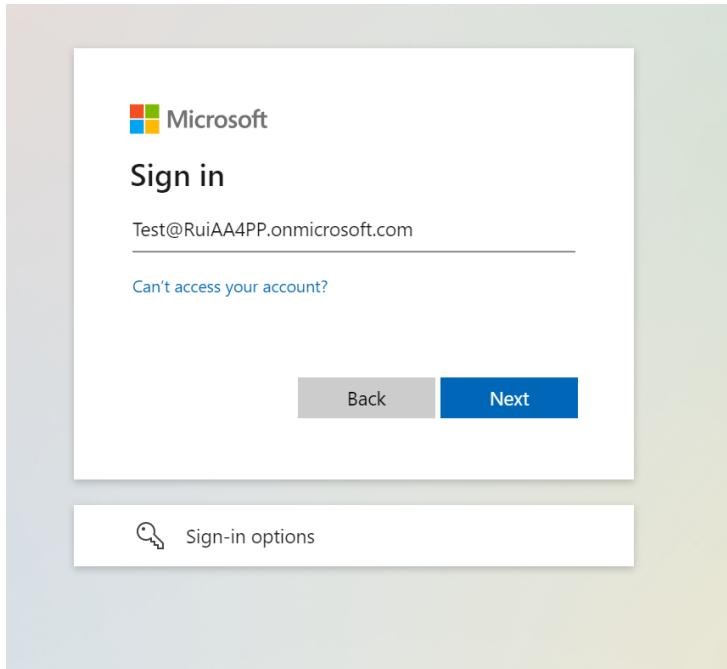
Display name ↑	Username	Licenses
ALM	Prod@RuiAA4PP.onmicrosoft.com	Power Apps per user plan, Office 365 E5
ALM	Validation@RuiAA4PP.onmicrosoft.com	Power Apps per user plan, Office 365 E5
ALM	Test@RuiAA4PP.onmicrosoft.com	Power Apps per user plan, Office 365 E5
ALM	Dev@RuiAA4PP.onmicrosoft.com	Power Apps per user plan, Office 365 E5
Rui Santos	admin@RuiAA4PP.onmicrosoft.com	Power Apps per user plan, Office 365 E5

Since each environment needs to have Dataverse (to import/export your solution), we would need capacity in the tenant to create the 4 environments needed. Since we are in a trial tenant (free of charge) we can use the benefit of each user been able to create 1 trial environment, so we will login with each user and create an Environment, in total we will have 4.

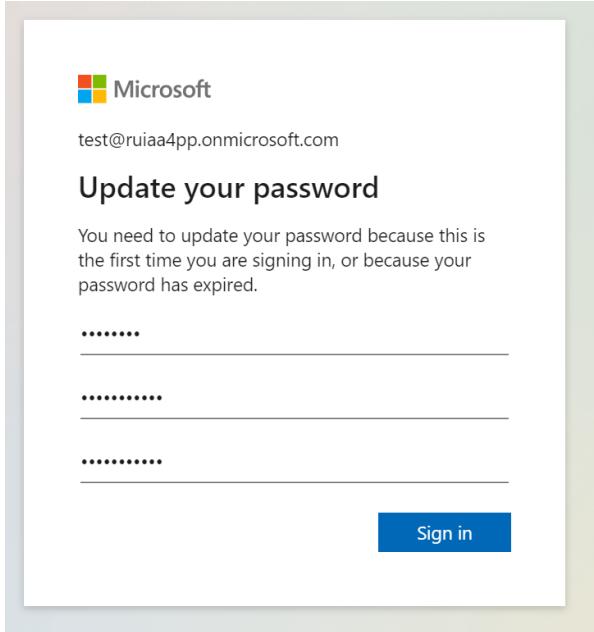
**Note:** After you have associated the licenses to the user, it sometimes takes some minutes to reflect in the system, if you are getting errors when create the environment, try to logout and login again and repeat the process.

Login with each username&password and repeat these instructions. Use the browser in incognito mode and go to <https://admin.powerplatform.com/> and follow the next instructions:

- 1) Sign-out if you are logged in
- 2) Login with one of the user



- 3) The first time you login with the user you need to update the password, for the purpose of this lab, you can specify the same password to help you remember, but it's up to you.



- 4) Choose Connect the username with the name of the Environment:

- "dev" user, create the "ALM-Dev" environment
- "validation" user, create the "ALM-Validation" environment
- "test" user, create the "ALM-Test" environment
- "prod" user, create the "ALM-Prod" environment

Use the **Region** closer to you, use Type **Trial** and enable **Create a database for this environment** (to create the Dataverse instance)

New environment

This operation is subject to [capacity constraints](#)

Name \*

Region \*

A local region can provide quicker data access

Type  \*

Purpose

Create a database for this environment?  Yes

Next Cancel

- 5) Select **next** and specify the **Language** and **Currency** to your preferences and select **save**.  
**Note:** As best practice you should configure the unique URL under select **here** in URL

Add database

This operation is subject to [capacity constraints](#)

Language \*

Default language for user interfaces in this environment

URL

A unique domain name will be generated. Click [here](#) to enter a custom domain

Currency \*

Reports will use this currency

Enable Dynamics 365 apps?

In addition to Power Apps. [Learn more](#)

No

⚠ Dynamics 365 apps can only be enabled for Production environments. You can start a trial [here](#)

Deploy sample apps and data?

No

Security group

Restrict environment access to people in this security group. Otherwise, everyone can access. [Learn more](#)

Select

Save Cancel

[← Add database](#) [X](#)

*(i) This operation is subject to [capacity constraints](#)*

**Language \***  
 [▼](#)  
 Default language for user interfaces in this environment

**URL**  
 If you don't enter a domain name, we will pick one for you

**Currency \***  
 [▼](#)  
 Reports will use this currency

**Enable Dynamics 365 apps?**  
 In addition to Power Apps. [Learn more](#)  
 No

**Deploy sample apps and data?**  
 No

**Security group**  
 Restrict environment access to people in this security group. Otherwise, everyone can access. [Learn more](#)

[Save](#) [Cancel](#)

6) The creation of the environment should have started

[admin.powerplatform.microsoft.com/environments](https://admin.powerplatform.microsoft.com/environments)

**Power Platform admin center**

[☰ Home](#) [+ New](#) [⟳ Refresh](#) [🕒 Recover deleted environments](#) [🔍 Search](#) [A](#)

**Environments**

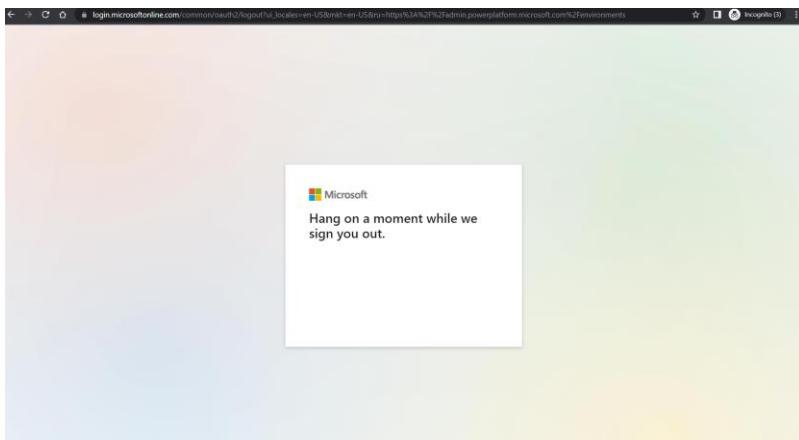
**Environments**

Environment	Type	State	Region	Created on	Created by
ALM-Test	Trial	PreparingInstance	Norway	05/04/2022 6:52 PM	ALM

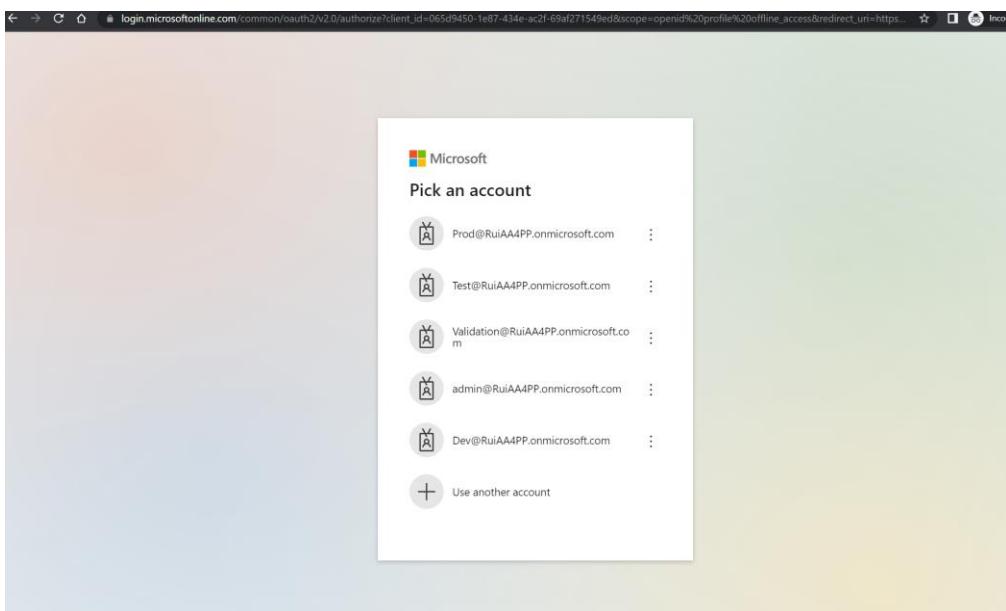
**Note:** You don't have to wait until the creation is completed. You can follow the same procedures to create the other 3 environments repeating the previous steps using a different username&password.

After you have created the 4 environments follow the next steps:

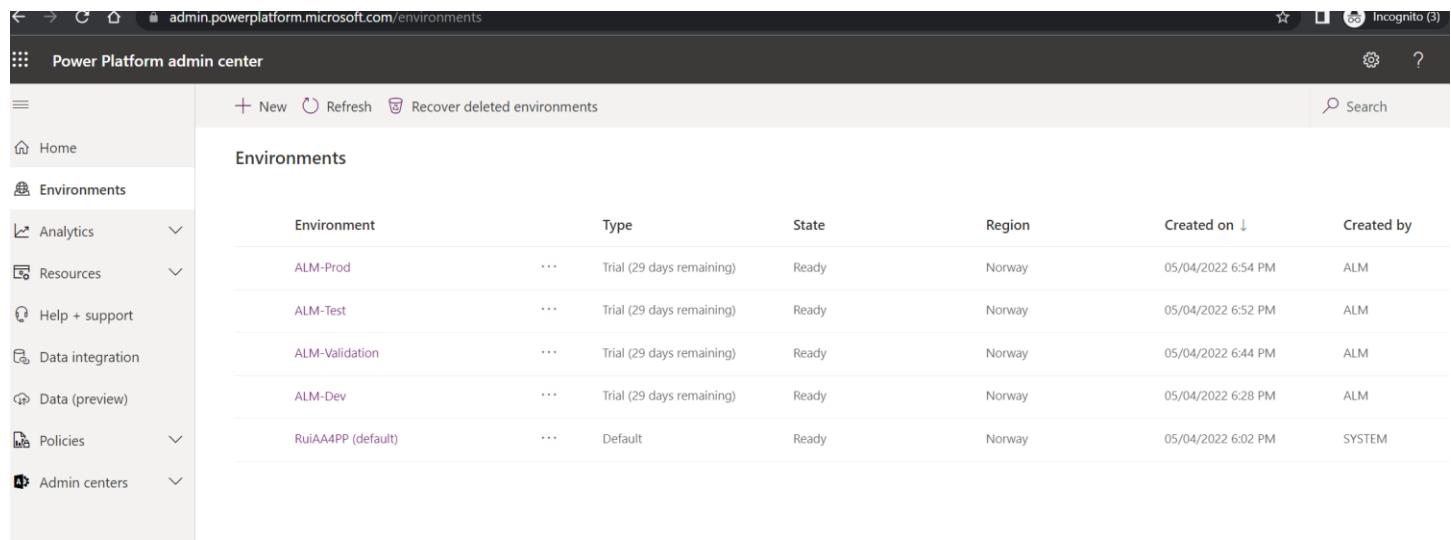
- a. Logout from your current account



- b. Login with the admin account in <https://admin.powerplatform.com>



- c. You should be able to see all Environments created:



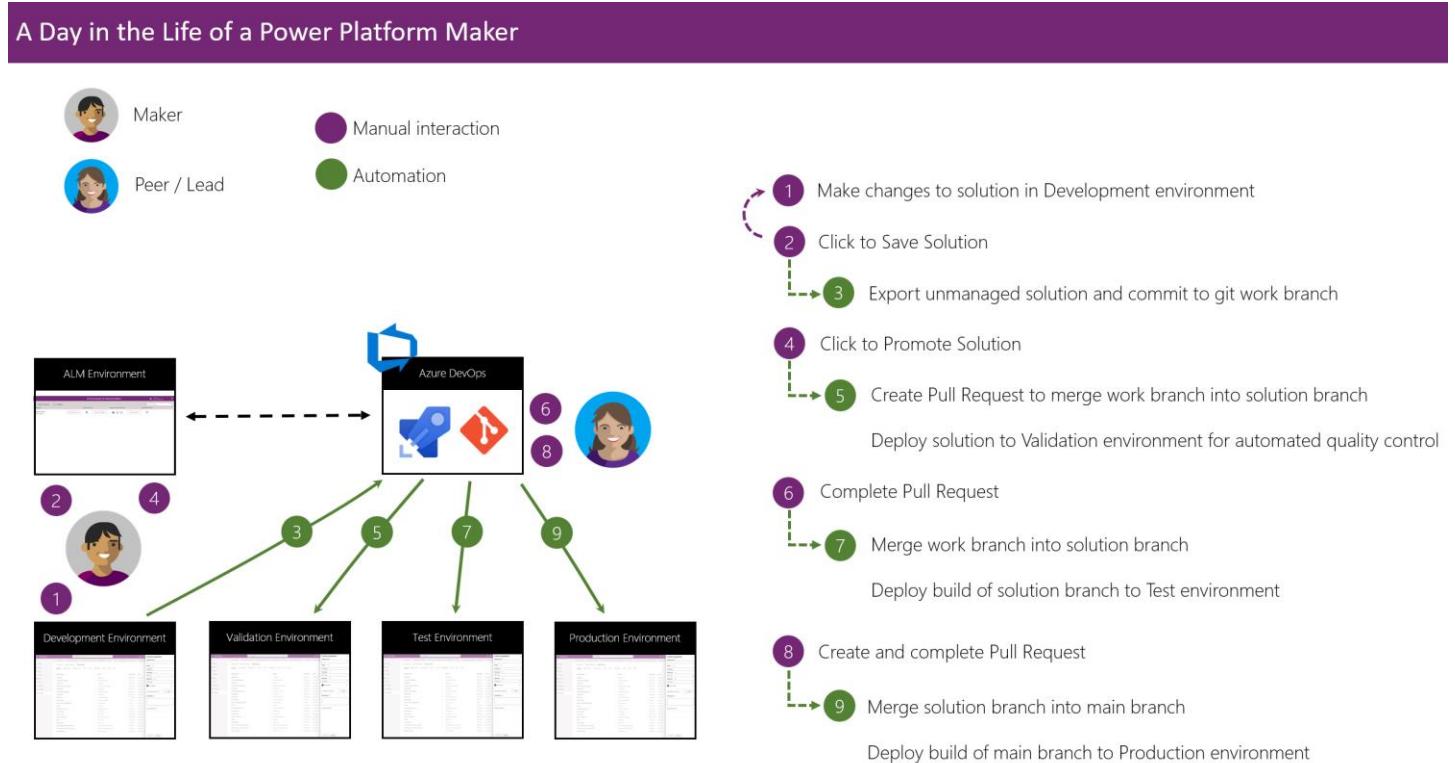
The screenshot shows the Microsoft Power Platform admin center interface. The left sidebar is collapsed, and the main content area is titled "Environments". At the top of the content area are buttons for "+ New", "Refresh", and "Recover deleted environments", along with a "Search" bar. The main table lists six environments:

Environment	Type	State	Region	Created on	Created by	
ALM-Prod	...	Trial (29 days remaining)	Ready	Norway	05/04/2022 6:54 PM	ALM
ALM-Test	...	Trial (29 days remaining)	Ready	Norway	05/04/2022 6:52 PM	ALM
ALM-Validation	...	Trial (29 days remaining)	Ready	Norway	05/04/2022 6:44 PM	ALM
ALM-Dev	...	Trial (29 days remaining)	Ready	Norway	05/04/2022 6:28 PM	ALM
RuiAA4PP (default)	...	Default	Ready	Norway	05/04/2022 6:02 PM	SYSTEM

## Why the need for different environments

A recommended approach for Power Platform ALM (Application Life-cycle Management) is to have 4 Environments. To handle the developments of Apps (**ALM-Dev**), validate of the solution deployed to Azure Dev Ops (**ALM-Validation**), test environment is where the testes from business will test the solution (**ALM-Test**) and production is where the end users will access the solution (**ALM-Prod**).

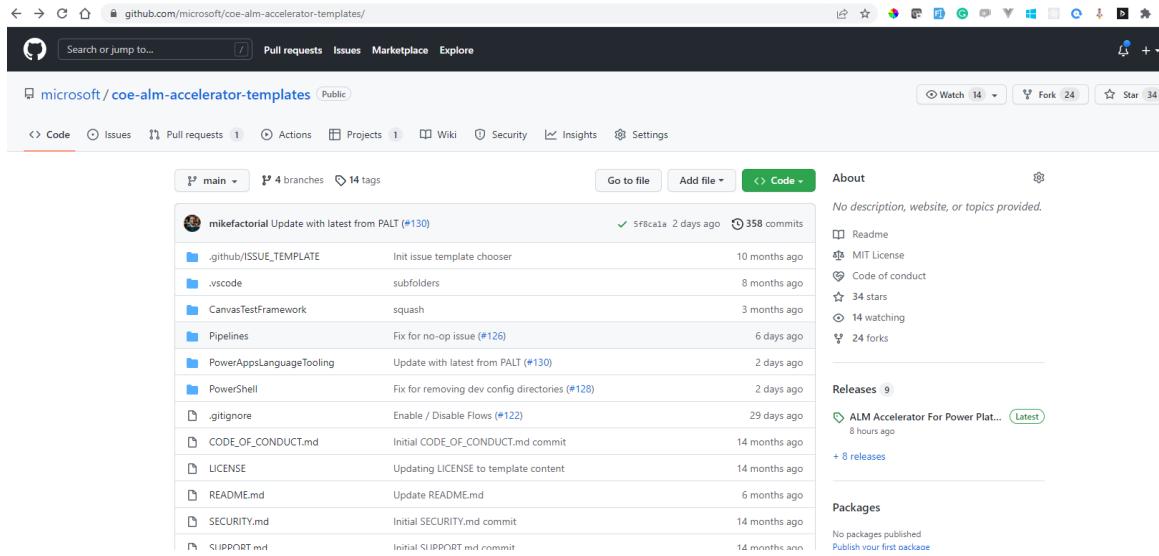
We will explain better in coming tasks, but the main flow is:



# How to find the latest CoE ALM Accelerator Templates

To find the latest release go to <https://github.com/microsoft/coe-alm-accelerator-templates/> and select on the right side **Releases->Latest**

To find the latest release go to <https://github.com/microsoft/coe-alm-accelerator-templates/> and select on the right side **Releases->Latest**



Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Code main 4 branches 14 tags Go to file Add file Code About

No description, website, or topics provided.

Readme MIT License Code of conduct 34 stars 14 watching 24 forks

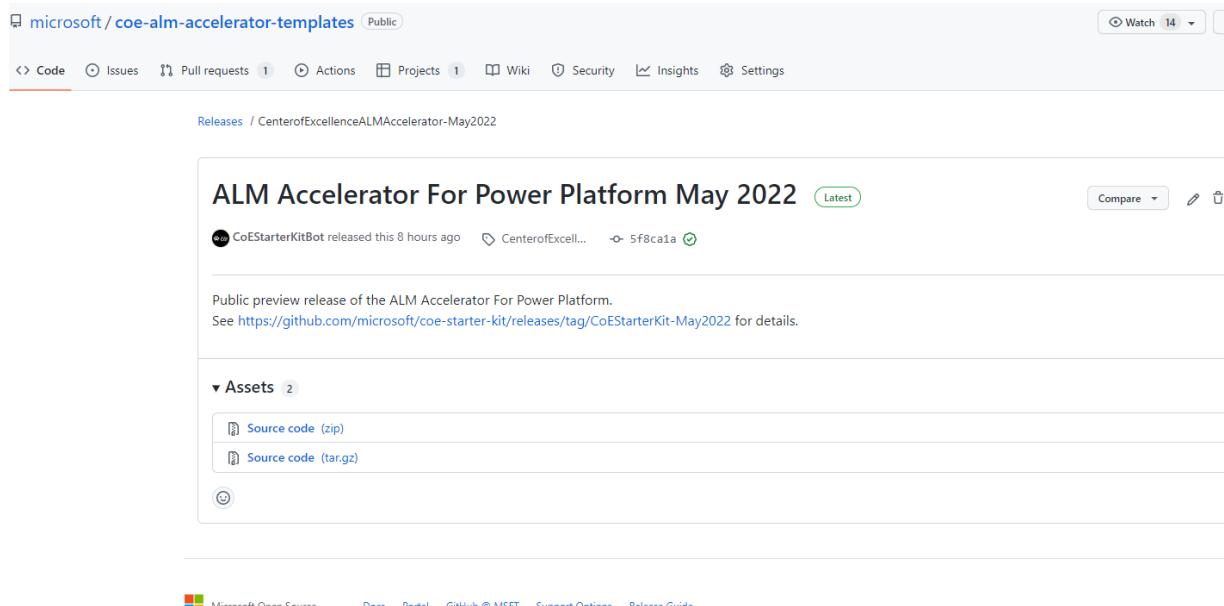
Releases 9

ALM Accelerator For Power Plat... (Latest) 8 hours ago + 8 releases

Packages

No packages published Publish your first package

Select in the tag and follow the url on the page



Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Releases / CenterofExcellenceALMAccelerator-May2022

ALM Accelerator For Power Platform May 2022 (Latest)

CoEStarterKitBot released this 8 hours ago CenterofExcell... 5f8ca1a

Public preview release of the ALM Accelerator For Power Platform. See <https://github.com/microsoft/coe-starter-kit/releases/tag/CoEStarterKit-May2022> for details.

Assets 2

Source code (zip) Source code (tar.gz)

Microsoft Open Source Docs Portal GitHub @ MSFT Support Options Release Guide

Use the url in the instructions

[microsoft / coe-starter-kit](https://github.com/microsoft/coe-starter-kit) Public

Code Issues Pull requests Discussions Actions Projects Wiki Security Insights

Releases / CoEStarterKit-May2022

## CoE Starter Kit May 2022 Latest

CoEStarterKitBot released this 8 hours ago CoEStarterKit... -o- fe1bb0e

### First Time Setup Instructions

- Get started with the CoE Starter Kit Setup: <https://docs.microsoft.com/en-us/power-platform/guidance/coe/setup>
- Get started with the ALM Accelerator for Power Platform Setup: <https://docs.microsoft.com/en-us/power-platform/guidance/coe/setup-almacceleratorpowerplatform-cli>

### Upgrade Instructions

- Upgrading from the latest version of the CoE Starter Kit: <https://docs.microsoft.com/power-platform/guidance/coe/after-setup#installing-upgrades>
- Upgrading from the latest version of the ALM Accelerator for Power Platform
  - Import the latest managed AA4PP Solution [https://github.com/microsoft/coe-starter-kit/releases/download/CoEStarterKit-May2022/CenterofExcellenceALMAccelerator\\_1.0.20220503.1\\_managed.zip](https://github.com/microsoft/coe-starter-kit/releases/download/CoEStarterKit-May2022/CenterofExcellenceALMAccelerator_1.0.20220503.1_managed.zip)
  - Update your pipeline templates repo with the latest from <https://github.com/microsoft/coe-alm-accelerator-templates/tree/CenterofExcellenceALMAccelerator-May2022>

### Change Log

- #1799-[CoE Starter Kit] Store HTTP hostname
- #1898-ALM Accelerator for Power Platform - Show Deployment Pipeline Statuses

Select the Https url under **Code-> Clone**

[github.com/microsoft/coe-alm-accelerator-templates/tree/CenterofExcellenceALMAccelerator-May2022](https://github.com/microsoft/coe-alm-accelerator-templates/tree/CenterofExcellenceALMAccelerator-May2022)

Search or jump to... Pull requests Issues Marketplace Explore

[microsoft / coe-alm-accelerator-templates](https://github.com/microsoft/coe-alm-accelerator-templates) Public

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

CenterofExcellenceALMAccelerator-May2022 4 branches 14 tags

Go to file Code

Local Codespaces

Clone HTTPS SSH GitHub CLI

<https://github.com/microsoft/coe-alm-accelerator-templates>

Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop Open with Visual Studio Download ZIP

Commits

Author	Commit Message	Created
mikefactorial	Update with latest from PALT (#130)	14 months ago
	.github/ISSUE_TEMPLATE Init issue template chooser	14 months ago
	.vscode subfolders	14 months ago
	CanvasTestFramework squash	14 months ago
	Pipelines Fix for no-op issue (#126)	14 months ago
	PowerAppsLanguageTooling Update with latest from PALT (#131)	14 months ago
	PowerShell Fix for removing dev config directo	14 months ago
	.gitignore Enable / Disable Flows (#122)	14 months ago
	CODE_OF_CONDUCT.md Initial CODE_OF_CONDUCT.md con	14 months ago
	LICENSE Updating LICENSE to template content	14 months ago
	README.md Update README.md	6 months ago
	SECURITY.md Initial SECURITY.md commit	14 months ago

About No description Read MIT Code 34 stars 14 weeks 24 forks

Releases ALM 8 hours + 8 releases

Package ..

# How to unblock a job missing permission

Select in the red text **Permission needed**

#export-ALMAcceleratorSampleSolution-to-git-branch Update with latest from PALT (#130)

Manually run by Rui Santos

View 251 changes

Repositories 2

pplatform, +1

See Sources card for details

Time started and elapsed

Today at 02:20

Related

0 work items

1 consumed

Tests and coverage

Get started

⚠ This pipeline needs permission to access 2 resources before this run can continue to Export solution to git

View

Jobs

Permission needed

Name	Status	Duration
export_solution_to_git	Waiting	

Sources

Repository	Branch / tag	Version	Related
pplatform	main	5f8ca1a9	None
ALM_Solutions	main	b686c58e	

**Permit both**

#export-ALMAcceleratorSampleSolution-to-git-branch Update with latest from PALT (#130)

Manually run by Rui Santos

View 251 changes

Repositories 2

pplatform, +1

See Sources card for details

Time started and elapsed

Today at 02:20

Related

0 work items

1 consumed

⚠ This pipeline needs permission to access 2 resources before this run can continue to Export solution to git

Waiting for review

Export solution to git

Permission needed

alm-accelerator-variable-group

Permit

ALM\_Solutions Repository

Permit

Jobs

Permission needed

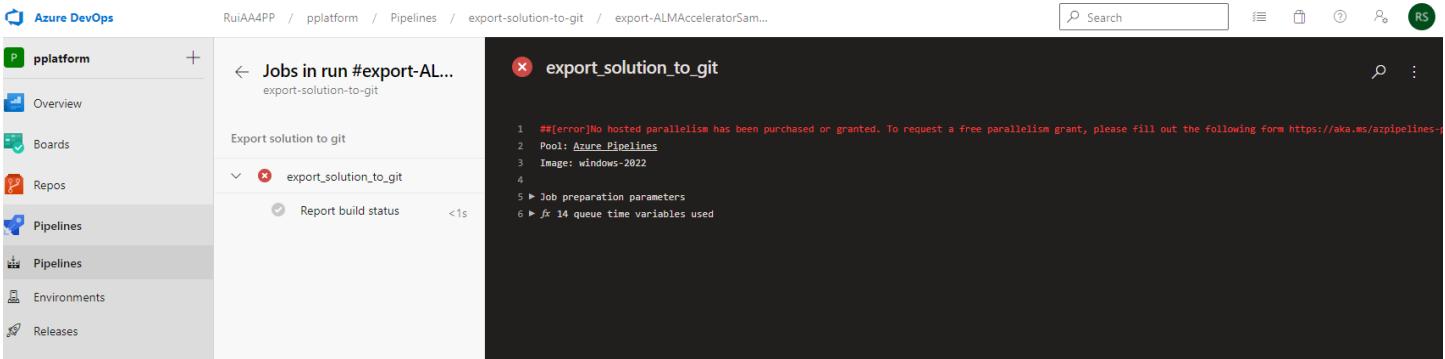
Name	Status
export_solution_to_git	Waiting

Sources

Repository	Branch / tag	Version
pplatform	main	5f8ca1a9

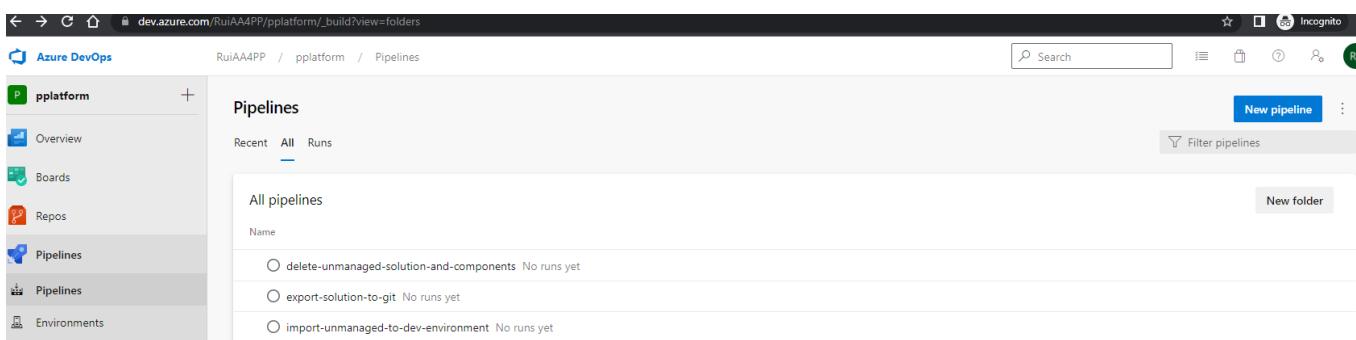
## How to add parallelism to Azure DevOps

You need to have parallelism grant, this might take some hours or sometimes day to get. This action was performed in the Pre-requisites of this lab, but in case it hasn't been done open the forms url shown in the error.



## How to configure the permission of pipelines

Find the list of pipelines going to **Pipelines -> All**



Update the permissions of the pipelines by going **More (...)**, from top right and select **Manage Security**.



# How to fix a missing service connection

Init

Active | 1 Rui Santos admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorSampleSolution into ALMAcceleratorSampleSolution

Overview Files Updates Commits

1 required check failed

Build Validation Build Validation failed

The pipeline is not valid. Job build and deploy\_job: Step PowerPlatformChecker input PowerPlatformSPN references service connection https://orgcc001826.crm19.dynamics.com/ which could not be found. The service connection does not exist or has not been authorized for use. For authorization details, refer to https://aka.ms/yamlauthz.

No merge conflicts

Description

init

Reviewers

Required: No required reviewers

Optional: No optional reviewers

Tags

No tags

Work items

No work items

1. Cancel the Pull Request selecting **Abandon**

Init

Active | 1 Rui Santos admin@RuiAA4PP.onmicrosoft.com-ALMAcceleratorSampleSolution into ALMAcceleratorSampleSolution

Overview Files Updates Commits

1 required check failed

Build Validation Build Validation failed

The pipeline is not valid. Job build and deploy\_job: Step PowerPlatformChecker input PowerPlatformSPN references service connection https://orgcc001826.crm19.dynamics.com/ which could not be found. The service connection does not exist or has not been authorized for use. For authorization details, refer to https://aka.ms/yamlauthz.

View 2 checks

Reviewers

Required: No required reviewers

Optional: No optional reviewers

Tags

No tags

Abandon

2. In case you continue to see the same error, let's confirm using the AA4PP if the environments has the correct URL, to do that open the **ALM Accelerator for Power Platform Administration** App from the portal

	Name	Modified	Owner	Type
	ALM Accelerator for Power Platform	13 h ago	Rui Santos	Canvas
	ALM Accelerator for Power Platform Administration	13 h ago	Rui Santos	Model-driven
	Solution Health Hub	4 d ago	SYSTEM	Model-driven

3. Select the item under **Activate Deployment User Settings**

Name
admin@RuiAA4PP.onmicrosoft.com - Def...

4. Select the item under **Deployment Profiles**

Name	AzDO Organization	AzDO Project	Repository	Created On
ALM Sample Solution	RuiAA4PP	pplatform	ALM_Solutions	5/4/2022 11:36 PM

5. Select the **Validation** under **Deployment Steps**

## AA4PP Lab

### ALM Sample Solution - Saved

Deployment Profile

General Related

Name	* ALM Sample Solution
AzDO Organization	* RuiAA4PP
AzDO Project	* pplatform
Repository	* ALM_Solutions
Repository ID	55b36400-5853-4223-8e98-b0f1fd219f0e
Target Branch	[Use Solution Branches]

Deployment Steps

Name	Step Number ↑	Deployment Environment	Approval Type	Deployable	Created On
Validation	1	ALM Sample Solution - Validation	Pull Request	Not Allowed	5/4/2022 11:36 PM
Test	2	ALM Sample Solution - Test	Pull Request	Allowed	5/4/2022 11:36 PM
Prod	3	ALM Sample Solution - Prod	Pull Request	Allowed	5/4/2022 11:36 PM

1 - 3 of 3

Page 1 →

## 6. Select the Environment link under General

Power Apps | ALM Accelerator for Power Platform A...

Home Recent Pinned Deployments Deployment User Se... Deployment Profile Deployment Requests

Validation - Saved Deployment Step

General Related

Name	* Validation
Deployment Profile	* ALM Sample Solution
Step Number	1
Environment	<input checked="" type="checkbox"/> ALM Sample Solution - Validation

Deployment Settings

Deployable	Not Allowed	Approval Type	Pull R
------------	-------------	---------------	--------

## 7. Confirm if the url matches with the environment url created, in this case, that was the error

ALM Sample Solution - Validation - Saved  
Deployment Environment

**General** Related

Name	* ALM Sample Solution - Validation
URL	* <a href="https://org6c001826.crm19.dynamics.com/">https://org6c001826.crm19.dynamics.com/</a>

8. Update the url to be correct in my case <https://rui-alm-validation.crm19.dynamics.com/> and select **Save**

ALM Sample Solution - Validation - Unsaved  
Deployment Environment

**General** Related

Name	* ALM Sample Solution - Validation
URL	* <a href="https://rui-alm-validation.crm19.dynamics.com/">https://rui-alm-validation.crm19.dynamics.com/</a>

9. Go back to your AA4PP canvas app and do a full refresh of the page if you still see the blue clock near the **Deploy Solution**, to the Azure DevOps by selecting the clock and **Abandon** the Pull Request. Go back to the AA4PP wait a few seconds and when you see the red cross button select **Deploy Solution**.

10. If you continue to have the same error, you need to check the automatic pipeline created. At the time of the generation of the pipeline there is a variable that contains the url of the environment, to check that go to **Pipelines** find the red with the name **deploy-validation-ALMAcceleratorSample** and select on **More(...)** and **Edit**

The screenshot shows the Azure DevOps Pipelines page for the 'pplatform' project. The left sidebar has 'Pipelines' selected. The main area shows 'Recently run pipelines' with two entries:

- deploy-validation-ALMAcceleratorSample...** (Status: Failed, Last run: 9m ago, PR automated for main)
- export-solution-to-git** (Status: Succeeded, Last run: 11m ago, Manually triggered for main)

Buttons for 'Edit', 'Run pipeline', and 'Manage security' are visible for each pipeline entry.

11. Select **Variables** in the top and scroll down

The screenshot shows the Azure DevOps Pipeline YAML editor for the 'deploy-validation-ALMAcceleratorSampleSolution' pipeline. The left sidebar has 'Pipelines' selected. The top navigation bar has 'Variables' selected. The main area shows the pipeline YAML code:

```

resources:
  repositories:
    - repository: PipelineRepo # repository name (DO NOT CHANGE THIS VALUE)

```

12. If you see the wrong url select on the Variable to edit the value

The screenshot shows the Azure DevOps Pipeline YAML editor for the 'deploy-validation-ALMAcceleratorSampleSolution' pipeline. The left sidebar has 'Pipelines' selected. The top navigation bar has 'Variables' selected. The main area shows the pipeline YAML code with a yellow box highlighting the 'ServiceConnection' variable:

```

ServiceConnection
= https://org6c001826.crm19.dynamics.com/

```

13. Update the url with the correct value and select **Ok** and **Save**.

## ← Update variable

Name

ServiceConnection

Value

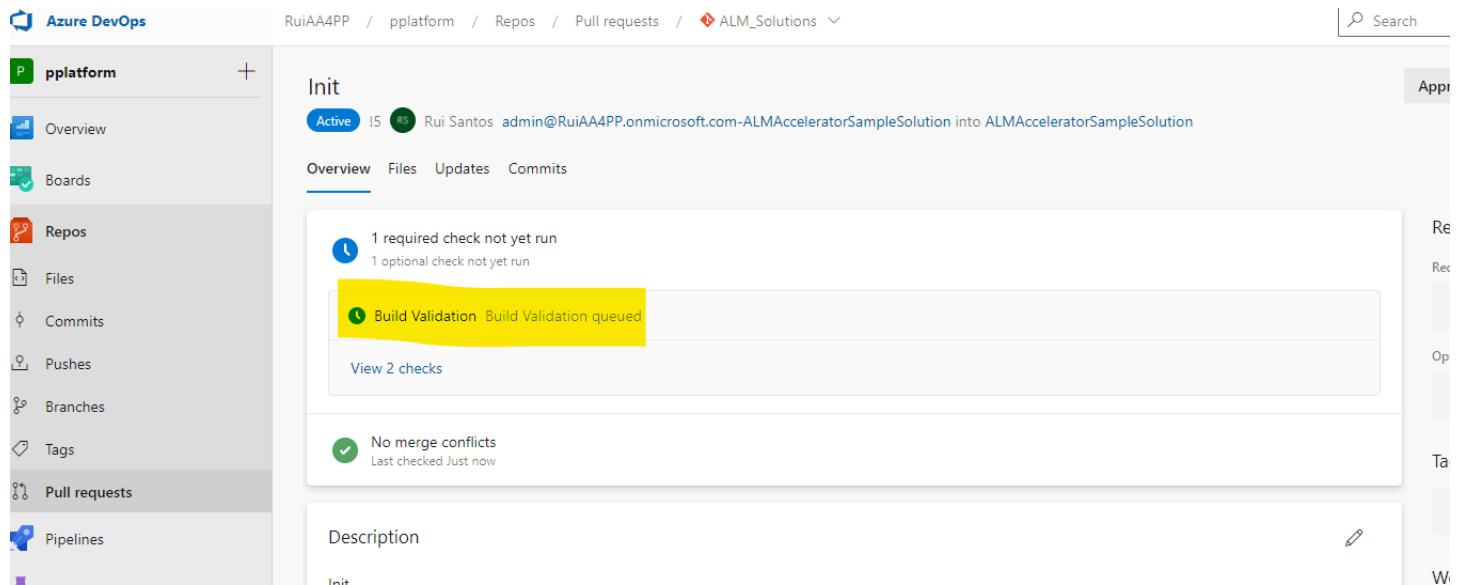
https://rui-alm-validation.crm19.dynamics.com/

Keep this value secret

Let users override this value when running this pipeline

14. Go back to the AA4PP and **Abandon** the Pull request, and repeat the **Deploy Solution** steps

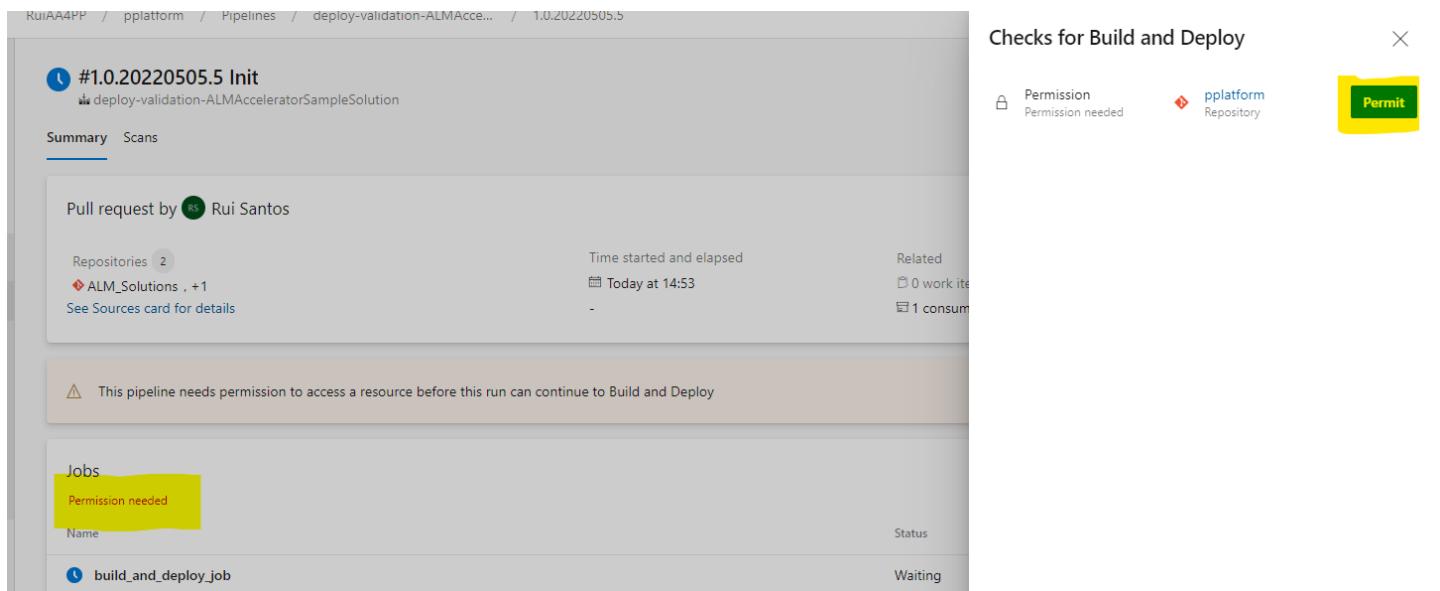
15. Selecting the blue clock you should be able to see the Build Validation waiting state, select in **Build Validation**



The screenshot shows the Azure DevOps interface for a pull request titled 'Init' in the 'pplatform' repository. The 'Build Validation' section is highlighted with a yellow box. The status is 'Build Validation queued'. The 'Overview' tab is selected, and the 'Build Validation' section is visible. The 'Build Validation' section shows 1 required check not yet run and 1 optional check not yet run. The 'Build Validation' item is highlighted with a yellow box. The 'View 2 checks' link is visible. The 'No merge conflicts' section is also visible.

16. Select **Permissions need** red text and **Permit** and confirm.

## AA4PP Lab



The screenshot shows a Microsoft DevOps pipeline interface. At the top, the pipeline path is RuiAA4PP / ppplatform / Pipelines / deploy-validation-ALMAcceleratorSampleSolution / 1.0.20220505.5. On the right, a 'Checks for Build and Deploy' panel is open, showing a 'Permission' section with a 'Permission needed' status and a 'ppplatform Repository' section with a 'Permit' button. The main pipeline view shows a pull request by Rui Santos, initiated at 14:53 today. The pipeline has two repositories: ALM\_Solutions (+1). A warning message states: '⚠ This pipeline needs permission to access a resource before this run can continue to Build and Deploy'. The 'Jobs' section shows one job named 'build\_and\_deploy\_job' in a 'Waiting' status. The 'Permission needed' status is highlighted with a yellow box.

## How to upgrade the ALM Accelerator

**Note:** Find the latest information to upgrade following this link <https://docs.microsoft.com/en-us/power-platform/guidance/coe/setup-almacceleratorpowerplatform-upgrade-config>.

The ALM accelerator for Power Platform (AA4PP), apart from the solution components, also uses pipeline templates, updated in every release. Every new release would need some steps to be followed to upgrade it, this document describes the required steps.

### Before you start

In every release the version of the solution is updated to the date when was created, example: 1.0.20220406.1 would mean version 1.0 created on 20220406 (yyyyMMdd) April 6 of 2022.

### Download the latest release

Access the latest release of the ALM accelerator for Power Platform [follow this link](#). The page describes the Change Log, and some instructions about the upgrade. At the end of the page, the assets files created in the newly release, example: **centerofexcellencealmaccelerator\_1.0.20220517.1\_managed.zip**.

To get the latest tag of the pipelines [follow this link](#) and select **tags** near the branch name, you should find the latest tag in the top of the list, example: **CenterofExcellenceALMAccelerator-May2022**.

### Installing the ALM accelerator for Power Platform solution

Go to <https://make.powerapps.com> and after selecting the environment you plan to use, select **Solutions** -> **Import solution** -> **Browse** to select the location of the zip file downloaded in the previous section, example: **centerofexcellencealmaccelerator\_1.0.20220517.1\_managed.zip**. Select **Next** and expand the **Advanced settings**, make sure the **Upgrade** is selected. Select **Import** to finalize the upgrade.

After the import is completed the reactivation of the **CustomAzureDevOps** custom connector needs to be done. The following steps need to be done.

1. Select **Data** -> **Custom Connectors** and edit the **CustomAzureDevOps**
2. Go straight to the Security tab and select **Edit**
3. Add your **ClientId**, **Client Secret** & **ResourceUrl**
4. Select the **Test** tab and select **Test operation**
5. Confirm the **status** of the response is Ok and select **Update connector** in the top

**Note:** If you already followed these steps before, you could run the **sync-pipeline-repo** pipeline with the new tag copied in the previous section, and **approve** and **complete** the pull request. If it is the first time you are executing these steps, please continue.

### Updating the pipelines in Azure DevOps

To simplify this process, there's a pipeline template that will automatically sync your Azure DevOps repo with the pipeline template repo in the CoE Starter Kit GitHub repository. Follow the steps below to get started using the pipeline sync pipeline.

1. In Azure DevOps, enter in the project you would like to update and go to **Pipelines**, then select **New pipeline**.
2. Select **Azure Repos Git** for your code repository and point to the Azure DevOps repo you created and seeded with the pipeline templates.
3. On the **Configure your pipeline** page, select **Existing Azure Pipelines YAML file**, point to **/Pipelines/sync-pipeline-repo.yml**, and then select **Continue**.
4. Select **Variables** and select **New Variable**. Give the name **TEMPLATE-REPO** and value [\*\*https://github.com/microsoft/coe-alm-accelerator-templates\*\*](https://github.com/microsoft/coe-alm-accelerator-templates) and select **OK** and **Save** to finalize the creation.

#### **Note**

The sync pipeline can be used to sync any GitHub repo to Azure DevOps. By setting the TEMPLATE-REPO to the source GitHub repo, you can specify the source of the sync.

5. Under **Run** dropdown, select **Save**, select ... next to **Run Pipeline**, and then select **Rename/Move**.
6. Update the pipeline name to **sync-pipeline-repo**, and then select **Save**.
7. Run the new pipeline.
8. Do the following settings: in **SyncFrom** select **Tag** , in **SourceBranchOrTag** enter the tag copied in the previous section (example: **CenterofExcellenceALMAccelerator-May2022**), in **BranchToCreate** define the name you want, example: update-from-original-repo, in **TargetBranch** define the name you want example: **main**, and then select **Run**.
9. After the pipeline runs, a pull request will be created for the **BranchToCreate** into the **TargetBranch** example: Pull request from **update-from-original-repo** to **main**. To commit the changes, approve and complete the pull request by selecting **Repos** and **Pull requests** .

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