


# Power BI – Granting Permission to a Custom Application in Azure Active Directory (App Registration)

 [blog.jpries.com/2020/01/25/power-bi-granting-permission-to-a-custom-application-in-azure-active-directory-app-registration](https://blog.jpries.com/2020/01/25/power-bi-granting-permission-to-a-custom-application-in-azure-active-directory-app-registration)

jpries

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The Power BI Service, available at [powerbi.com](https://powerbi.com), utilizes Azure Active Directory to handle its authentication. This is important to know for creating a custom Power BI application (in any language — C#, Python, etc.) that reads and write from the [Power BI REST API](#). The one exception to this would be using the [Power BI PowerShell cmdlets](#), as they internally, use their own registration mechanism.

This post rehashes and elaborates on the information I touched on [in this post](#), but I wanted to have a dedicated post on just this topic that I could link back to.

So, what is an App Registration? An App Registration is an entry in Azure Active Directory that lets Azure Active Directory know that you will be using a custom application and associates permissions to that application. Additionally, with the addition of permissions, it associates the application to the Azure Active Directory Resource (aka <https://analysis.windows.net/powerbi/api>). When your application connects to Azure Active Directory, it provides an Application ID (a GUID generated during the registration process) and some form of authentication. Depending on the type of application, the authentication might be user credentials (Delegated Permissions) or a Client Secret or Certificate (Application Permissions).

Available permissions and capabilities are different between the two authentication types (Delegated and Application) so I'll be using Delegated in most of my work as it allows for much more flexibility. You only need to be an administrator in your Active Directory / Office 365 organization for some setup options (most notably for Application Permission setup) — otherwise, an application can be registered and used as a user without need of an organizational administrator.

## First Time Registration via the Wizard

In a web browser, go to <https://dev.powerbi.com/apps> to launch the registration wizard and sign in with your Power BI credentials.

# Register your application for Power BI

Register your application with Azure Active Directory (Azure AD). You'll be able to manage and modify these settings later in the Azure portal. [Learn more](#)

STEP 1

## Sign in to Power BI

Sign in to your Power BI account to start registering your application.

Sign in

Don't have an account? [Sign up now, for free](#)

STEP 2

## Register your application

Next, enter an Application Name of your choosing. This name is primarily for display in the management portal.

Select Native for the Application Type (which is what we'll use for Delegated Permissions as mentioned above)

Select which permissions your application will be allowed to use. These can be changed later, but select at least one permission. I typically use all of the Read operations.

STEP 2

## Register your application

Register your application with Azure AD to allow your application to access the Power BI REST APIs and to set resource permissions for your application. You can change this later in the Microsoft Azure portal. [Learn more](#)

### Application Name

Enter a display name to identify your application in Azure

Power BI API Reporting

### Application Type

Choose the type of application you are developing

Native (for apps that run on client devices, such as Android, iOS, Windows, etc.)

### API access

Select the APIs and the level of access your application needs. You can change these settings later in the Azure portal.

[Learn more](#)

☐ Select all

#### Read only APIs ①

- ☒ Read all datasets
- ☒ Read all dashboards
- ☒ Read all reports
- ☒ Read all workspaces
- ☒ Read all capacities
- ☒ Read all storage accounts
- ☒ Read all dataflows
- ☒ Read all gateways
- ☒ Read all Power BI apps

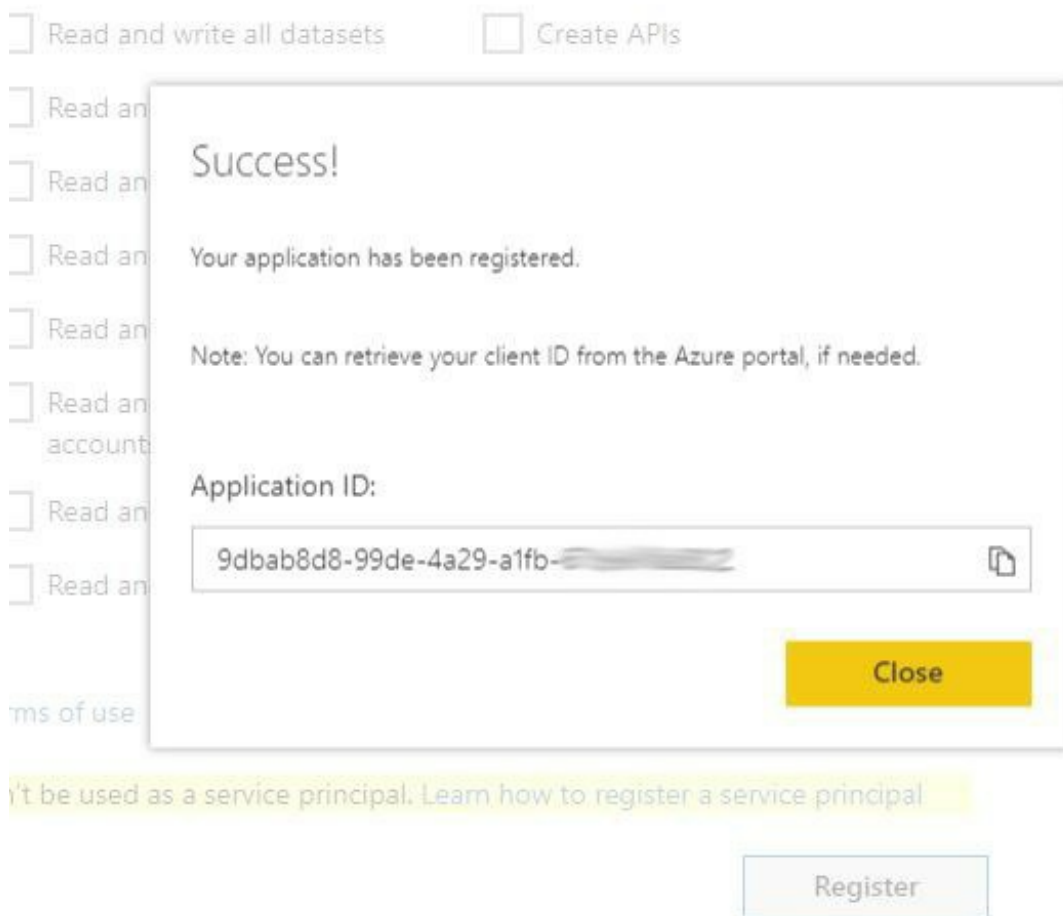
#### Read and write APIs ①

- ☐ Read and write all datasets
- ☐ Read and write all dashboards
- ☐ Read and write all reports
- ☐ Read and write all workspaces
- ☐ Read and write all capacities
- ☐ Read and write all storage accounts
- ☐ Read and write all dataflows
- ☐ Read and write all gateways

#### Create APIs ①

- ☐ Create APIs

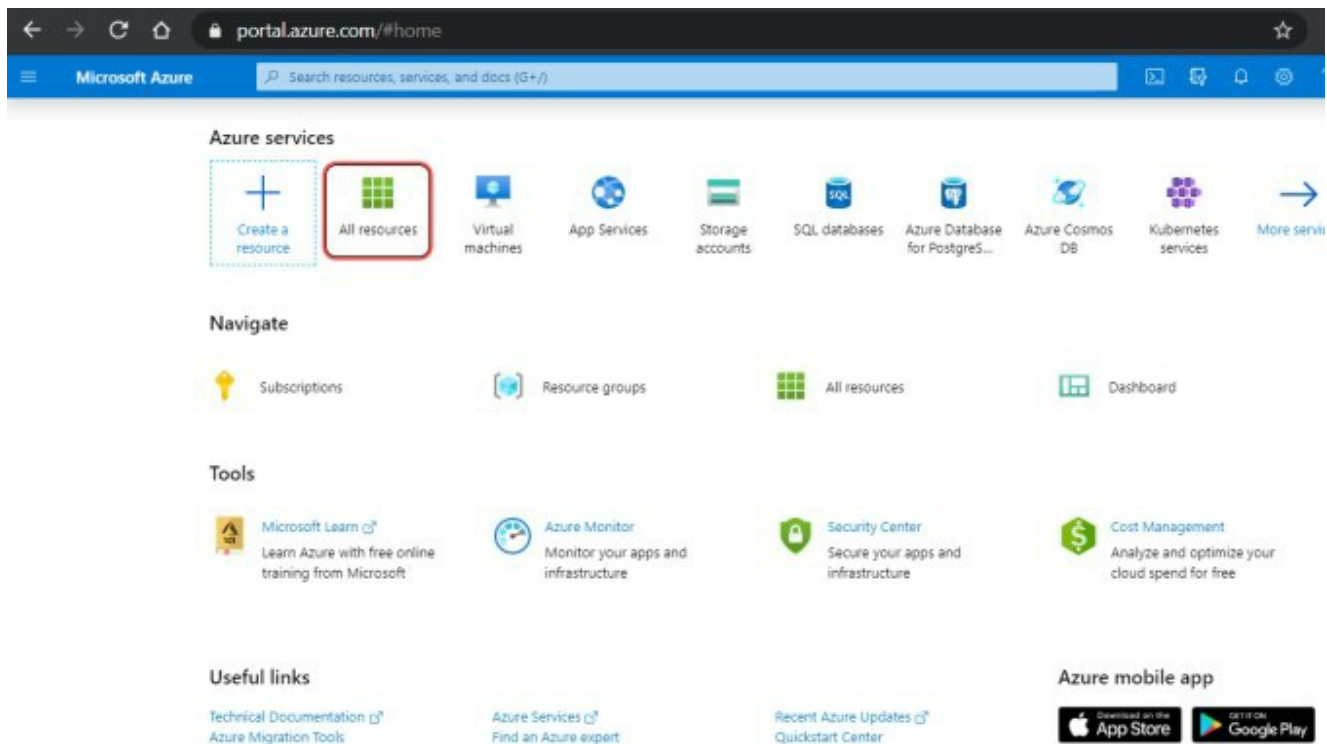
Press the orange **Register** button to complete the registration. Upon completion, you will be presented with an Application ID. Make a note of this, though if you lose it, you can retrieve it later via <https://portal.azure.com> (see below for instructions).



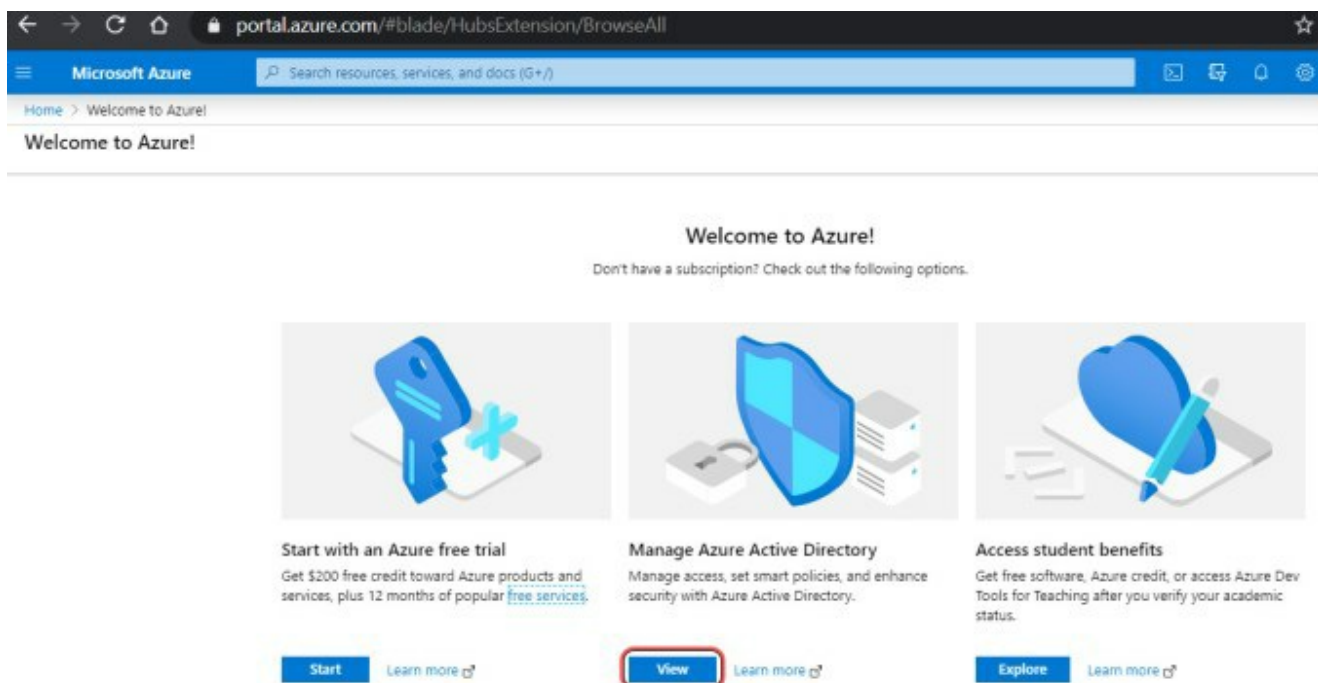
At this point, your registration is complete and you can start using your Application ID in your custom application. If your application will be using functions in the Admin section of the Power BI API reference, you will need the additional Tenant.Read.All permission, which must be granted via the <https://portal.azure.com> portal (see below for instructions).

### First Time Registration via the Azure Portal

An application can also be initially registered via the <https://portal.azure.com> portal, though it is a few more steps than the registration wizard noted above. To manually perform a registration, follow the steps below.



Login to the Azure Management Portal and, once logged in, choose “All resources.”



After choosing “All resources,” select the “View” button in the center section named “Manage Azure Active Directory.”

The screenshot shows the Azure Active Directory management console. The top navigation bar includes a search bar and a 'New registration' button. The left-hand menu lists various management options, with 'App registrations' highlighted. The main content area displays a table of registered applications.

Display name	Application (client) ID	Created On
Power BI API Reporting	ecdb0a97-e9af-4b98-...	1/9/2020
One Time Test Application	9dbab8d8-99de-4a29-...	1/25/2020
Power BI Test App	d842210d-b465-4c2a-...	1/22/2020

Once in the Azure Active Directory management console, select “App registrations” from the left hand menu. From here, you can see your current registrations. Press the “New registration” box at the top of the page.

portal.azure.com/#blade/Microsoft\_AAD\_IAM/ActiveDirectoryMenuBlade/RegisteredApps

Microsoft Azure Search resources, services, and docs (G+)

Home > jpries.com - App registrations > Register an application

## Register an application

\* Name

The user-facing display name for this application (this can be changed later).

Power BI API Reporting App ✓

Supported account types

Who can use this application or access this API?

☒ Accounts in this organizational directory only (jpries.com only - Single tenant)

☐ Accounts in any organizational directory (Any Azure AD directory - Multitenant)

☐ Accounts in any organizational directory (Any Azure AD directory - Multitenant) and personal Microsoft accounts (e.g. Skype, Xbox)

[Help me choose...](#)

Redirect URI (optional)

We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.

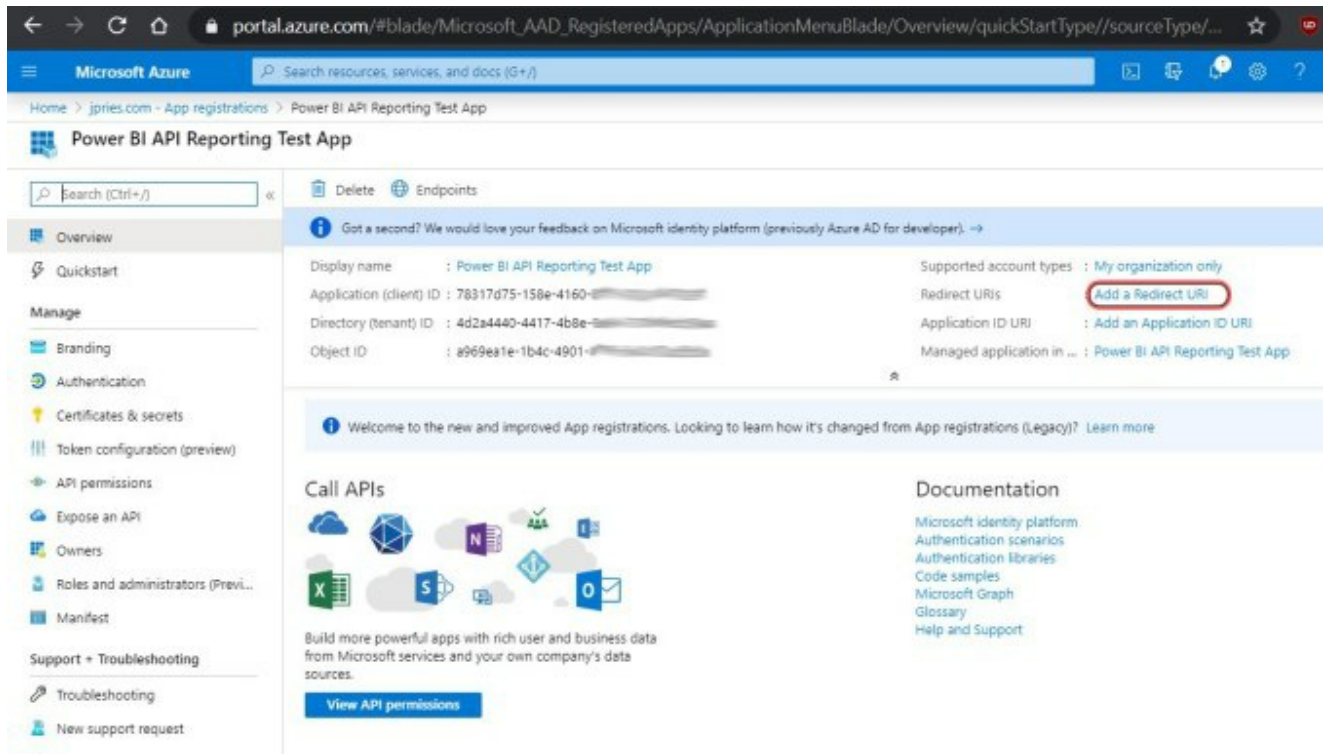
Web e.g. https://myapp.com/auth

By proceeding, you agree to the [Microsoft Platform Policies](#)

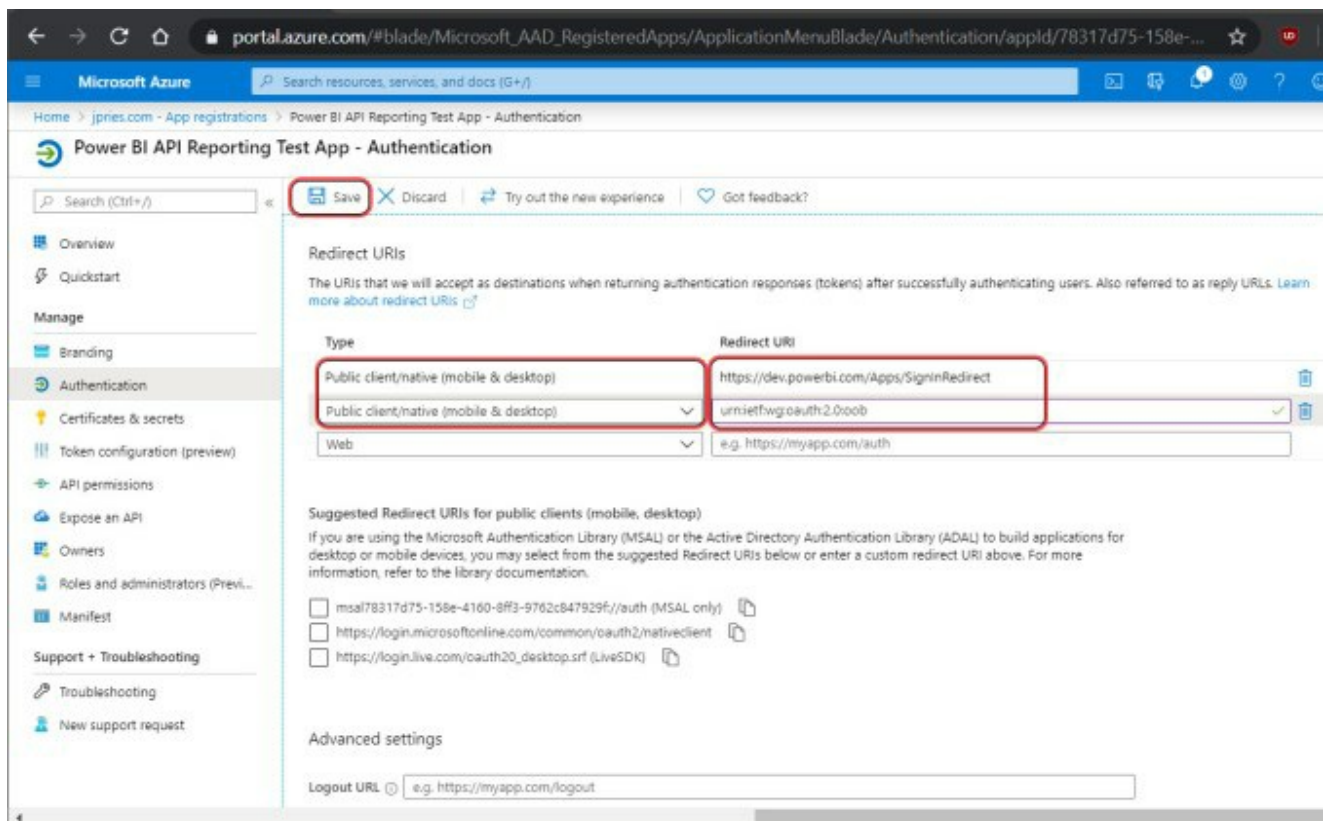
**Register**

Within the "Register an application" page, enter a display name for your new application. Additionally, set the supported account types (generally single tenant) and press the Register button.





Your application is now registered, but there are a few settings that need to be set yet. In the upper right corner, if it doesn't say "0 web, 2 public client," then select "Add a Redirect URI"



To match what the registration wizard would've done, we need to enter two "Public client/native (mobile & desktop)" entries. The first is "https://dev.powerbi.com/Apps/SignInRedirect" and the second is "urn:ietf:wg:oauth:2.0:oob". Press the Save button after entering both.



Lastly, the app will need to have at least one Power BI permission assigned to this. See below to accomplish this.

## Modifying Permissions of an Existing App Registration

The last step in performing an App Registration, and a step that may need to be performed over time as needs change, is to assign permissions to the registration. These are permissions that the app will be allowed to do, providing the authenticating user also has the necessary permission.

Note that if you need the Power BI Tenant.Read.All or Tenant.Write.All permission, those must be assigned via this process.

To add, view, or change permissions, follow the below steps:

The screenshot displays the Azure portal interface for an application registration named 'Power BI API Reporting'. The left-hand navigation pane shows various management options, with 'API permissions' highlighted. The main content area displays the application's details, including the 'Application (client) ID' which is circled in red. Below the details, there is a 'Call APIs' section with a 'View API permissions' button, also circled in red. The top of the page shows the breadcrumb navigation: 'Home > jpires.com - App registrations > Power BI API Reporting'.

*Within your registration, click on View API permissions either on the left menu or bottom button. Also note that your Application Client ID used in your application is visible at the top of the page.*

Home > jpries.com - App registrations > Power BI API Reporting - API permissions

## Power BI API Reporting - API permissions

Search (Ctrl+/) Refresh

Overview Quickstart

Manage

- Branding
- Authentication
- Certificates & secrets
- Token configuration (preview)
- API permissions**
- Expose an API
- Owners
- Roles and administrators (Previ...
- Manifest

Support + Troubleshooting

- Troubleshooting
- New support request

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 jpries.com

API / Permissions name	Type	Description	Admin Consent R...	Status
▼ Azure Active Directory Graph (1)				
User.Read	Delegated	Sign in and read user profile	-	Granted for jpries.com
▼ Power BI Service (12)				
App.Read.All	Delegated	View all Power BI apps	-	Granted for jpries.com
Capacity.Read.All	Delegated	View all capacities	-	Granted for jpries.com
Dashboard.Read.All	Delegated	View all dashboards	-	Granted for jpries.com
Dataflow.Read.All	Delegated	View all dataflows	-	Granted for jpries.com
Dataset.Read.All	Delegated	View all datasets	-	Granted for jpries.com
Gateway.Read.All	Delegated	View all gateways	-	Granted for jpries.com
Group.Read	Delegated	View user's groups	-	Granted for jpries.com
Metadata.View.Any	Delegated	View content properties	-	Granted for jpries.com
Report.Read.All	Delegated	View all reports	-	Granted for jpries.com
StorageAccount.Read.All	Delegated	View all storage accounts	-	Granted for jpries.com

View the permissions on this page and add additional ones with the Add a permission button. Note that permissions starting with Tenant. will require an Azure AD / O365 admin to visit this page to click on the "Grant admin consent" button

Home > jpries.com - App registrations > Power BI API R

## Power BI API Reporting - API permi

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Overview Quickstart

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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.

**Azure Service Management**  
Programmatic access to much of the functionality available through the Azure portal

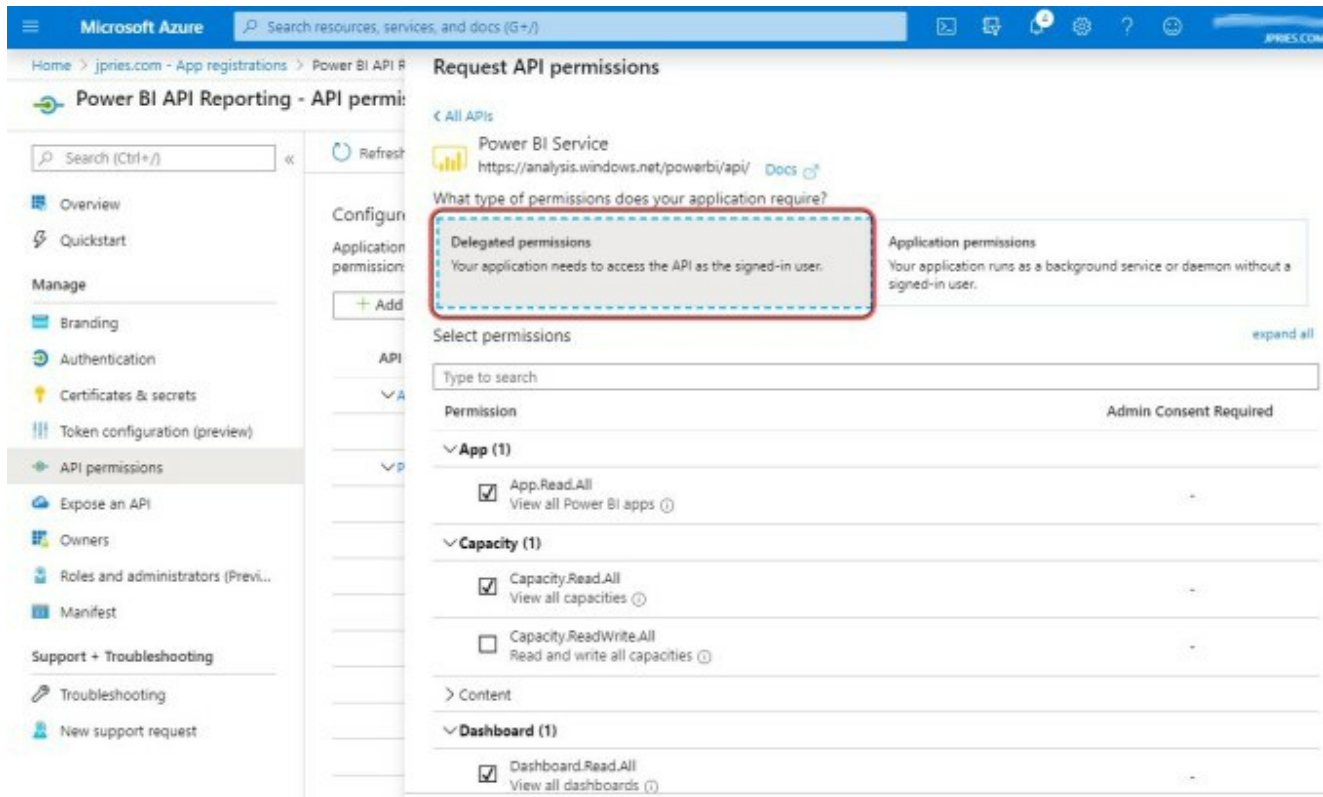
**Office 365 Management APIs**  
Retrieve information about user, admin, system, and policy actions and events from Office 365 and Azure AD activity

**Power BI Service**  
Programmatic access to Dashboard resources such as Datasets, Tables, and Rows in Power BI

More Microsoft APIs

Azure Batch Azure Data Catalog Azure Data Explorer

After clicking on Add a Permission, select Power BI Service.



Ensure that you select "Delegated permissions" (the option to use when the application connects with user credentials). Select the desired permissions and press Add permissions. Note that Tenant.Read.All and Tenant.Write.All permissions will require Azure AD / O365 admin consent before becoming effective. Also note that you need at least one Power BI permission assigned to your application to be able to authenticate as a Power BI application.

## Conclusion

At this point, you should have an App registered, you should have the Application (client) ID noted, that app should have 2 native redirects configured, and the app should have at least one Power BI (Delegated) permission assigned.

With those completed, you should now be able to authenticate to Power BI with this Application (client) ID and valid user credentials using a program developed in your language of choice. For more information on developing a sample C# application, see [this post](#).

## Posts in Series