Google BigQuery

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Overview

In this article we will discuss how to connect a Google BigQuery database to Preset. There are two methods that we support to do this:

- **Connect using a Service Account**; or
- **Connect via an OAuth2 integration**.

Allowlist Preset IPs

Access to your BigQuery instance might be limited via **VPC Service Controls with IP restrictions (https://cloud.google.com/bigquery/docs/vpc-sc)**. In this case, you need to allow Preset IPs to interact with BigQuery for a successful connection.

Preset Cloud runs on four regions. Below IPs should be allowed (according to the workspace region):

us-west-2 (us1a)	us-east-1 (us2a)	eu-north-1 (eu5a)	ap-northeast-1 (ap1a)
35.161.45.11	44.193.153.196	13.48.95.3	35.74.159.67
54.244.23.85	52.70.123.52	13.51.212.165	35.75.171.157
52.32.136.34	54.83.88.93	16.170.49.24	52.193.196.211

If you are not sure where your Preset workspace is located, you can refer to the URL on your browser when accessing Preset. It should look like this: `https://xxxxxxxx.us2a.app.preset.io/superset...` , where `us2a` means it is in `us-east-1` .

Connect using a Service Account

It's possible to use a Service Account to connect BigQuery to Preset. Let's go through this process:

Create & Configure a Google Service Account

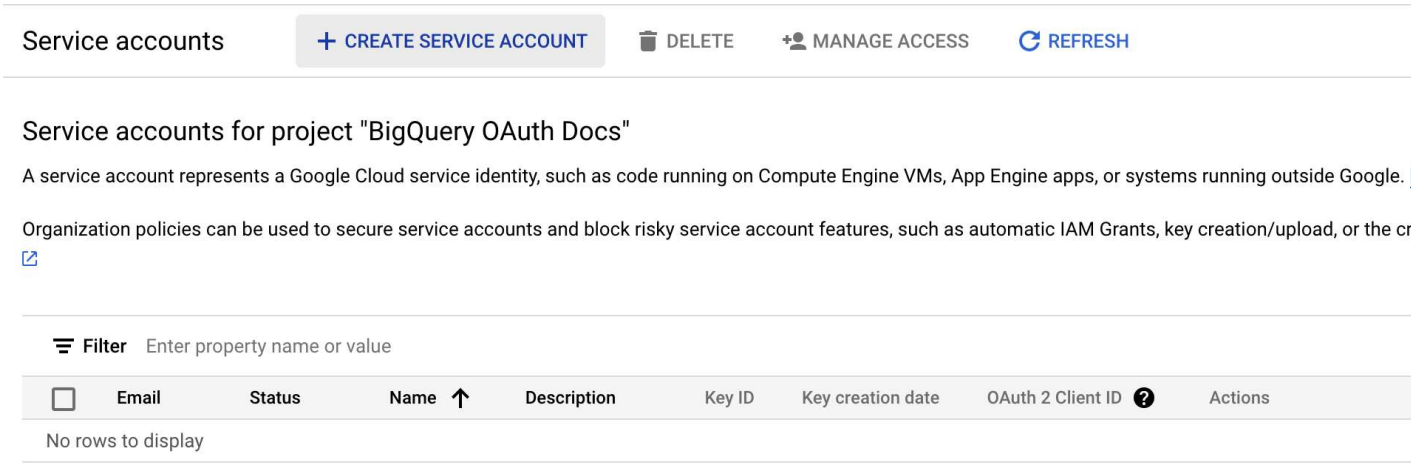
What is a Google Service Account?

> A service account is a special type of Google account intended to represent a non-human user that needs to authenticate and be authorized to access data in Google APIs.

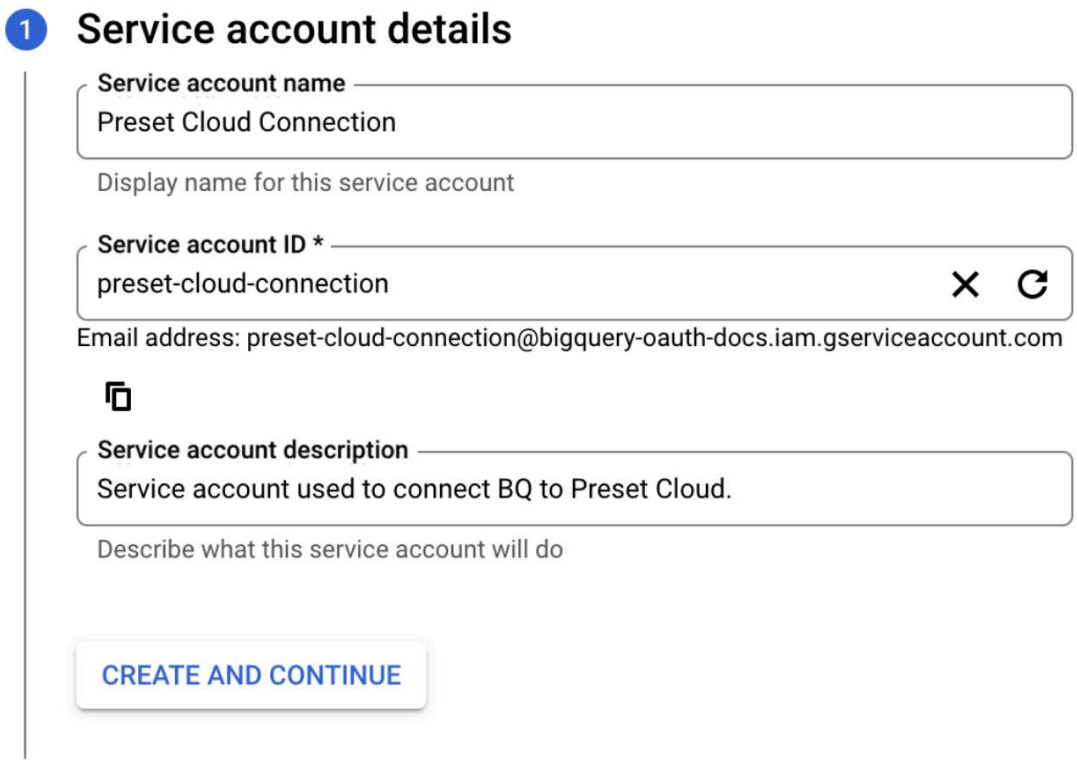
Access **Google Cloud Platform Console** (https://console.cloud.google.com/projectselector2/iam-admin/serviceaccounts?pli=1&supportedpurview=project), and select the Project that contains the BigQuery instance you're looking to connect to Preset. Copy the **Project ID**, as you will need this information to set up the connection in Preset.

You'll be redirected to the **Service Accounts** menu.

1. Click on the **+ CREATE SERVICE ACCOUNT** button.



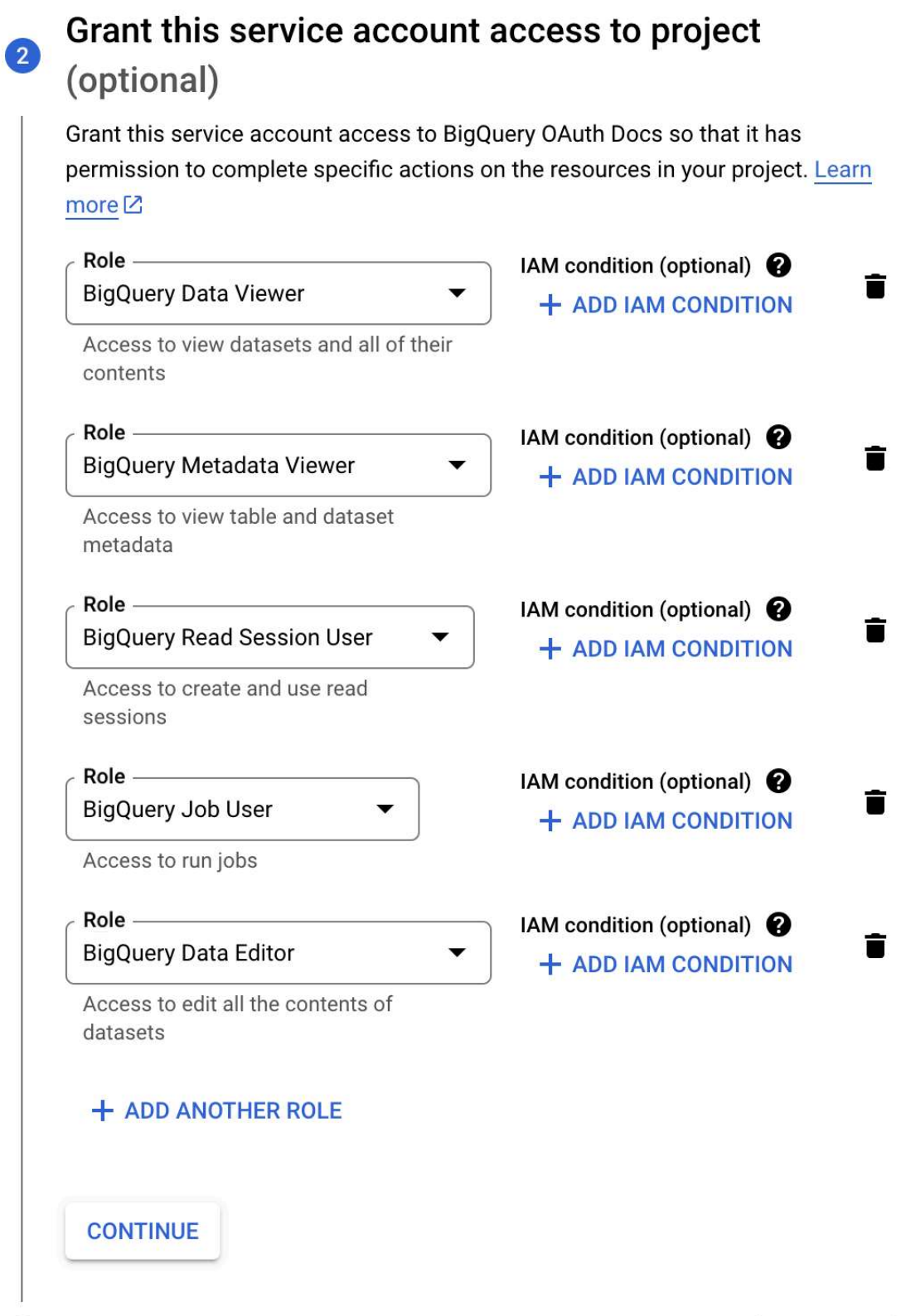
2. Provide a name for the service account, and optionally a description.



3. Click on **CREATE AND CONTINUE.**
4. In the **Select a role** dropdown, grant the desired permissions to the service account, according to your

needs:

- If you plan to use Preset for read-only access, granting **BigQuery Data Viewer**, **BigQuery Metadata Viewer**, **BigQuery Read Session User** and **BigQuery Job User** roles should be sufficient.
- If you also want to execute DML queries in Preset, grant the **BigQuery Data Editor** role as well.



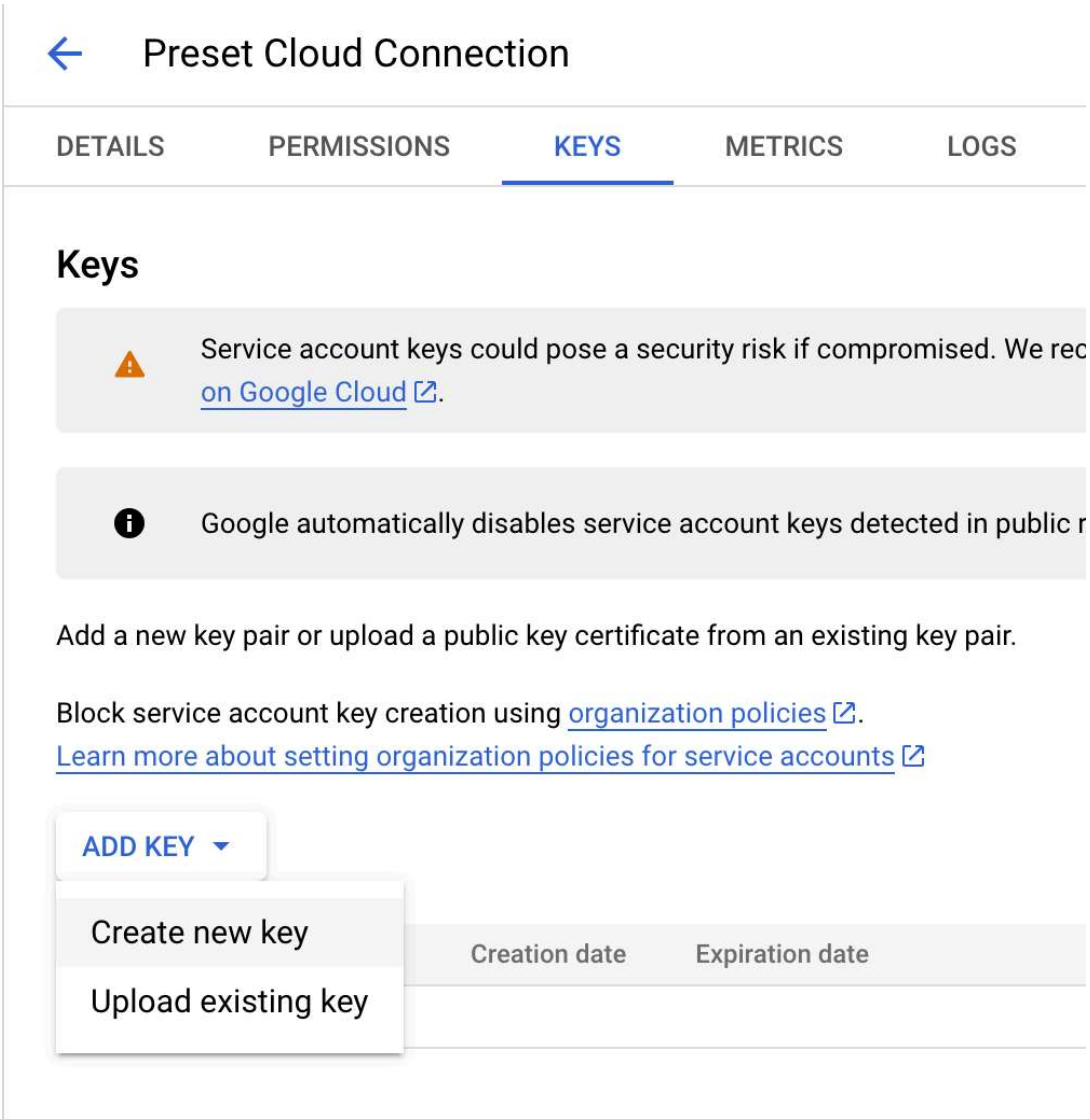
5. Click on **DONE**.

You'll be redirected to the Service Accounts list.

Create & Save a JSON Key

Our next step is to create and download a private JSON key. This will be used later on when we configure the database connection in Preset.

1. In the list of accounts, click on the service account email.
2. Navigate to the **KEYS** tab.
3. Click on the **ADD KEY** dropdown and select **Create new key**.



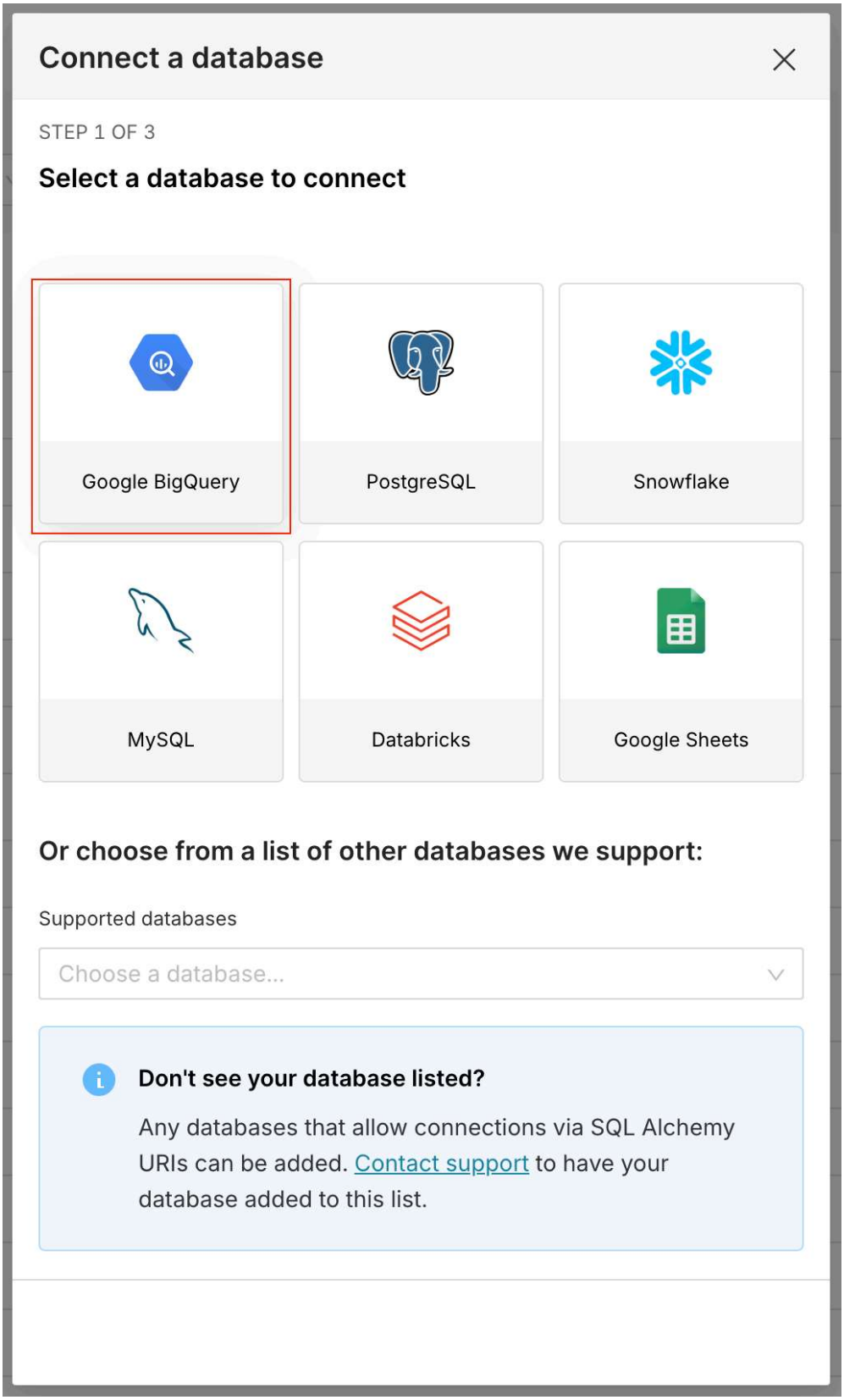
4. The **Create private key** dialog appears. By default, the JSON key type is selected. Click on **CREATE** to download the file to your computer.

Alright! It's time to connect your BigQuery database to Preset.

Setting up the connection In Preset

Let's start by selecting **+ Database** — have a look at **Connecting your Data** if you need help wth this step.

Select **Google BigQuery**.

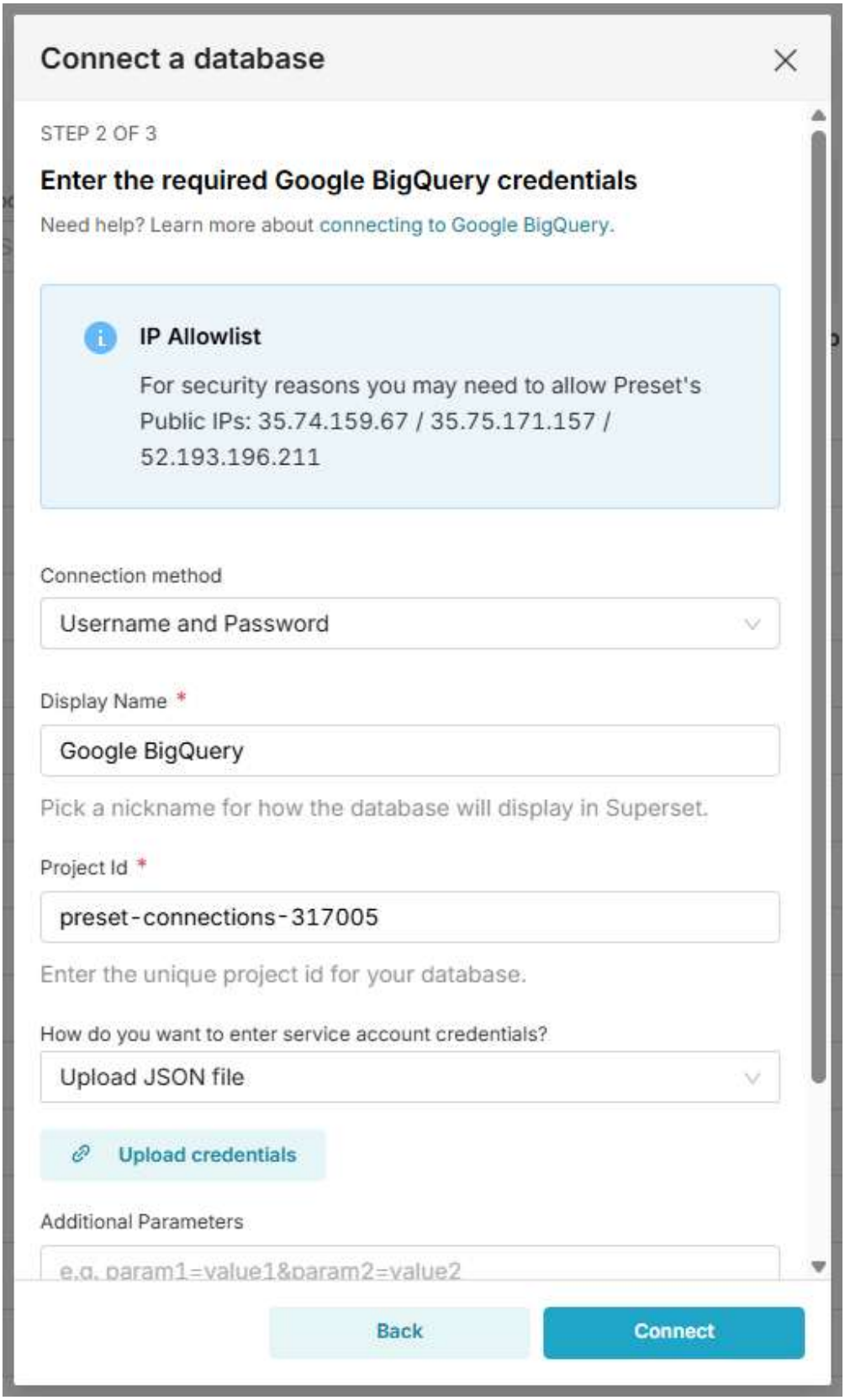


There are two ways to provide the Service Account credentials:

Method One: Using the dynamic form

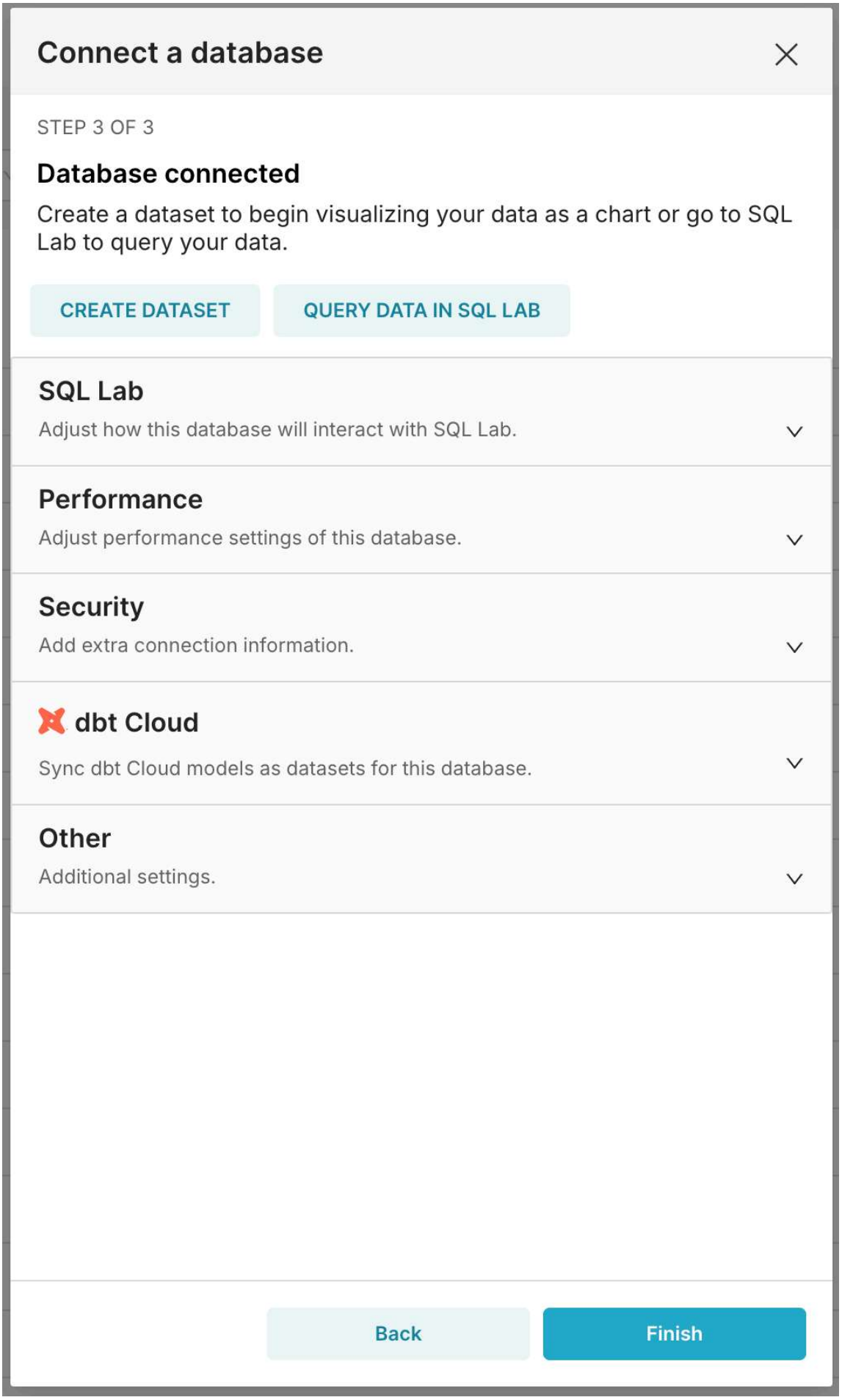
1. In the **Display Name** field, enter a nickname for your database for display in the Preset environment.

2. Provide the **Project ID** previously copied from Google:



3. In the **How do you want to enter service account credentials?** field, select:
    a. **Upload JSON file** and then click on **Choose File** to upload the JSON key downloaded earlier; or
    b. **Copy and Paste JSON credentials** and then paste the JSON key content in the **Service Account** text field.
4. *(optional)* Additional connection parameters can be provided in the **Additional Parameters** field.
5. Click on **Connect.**

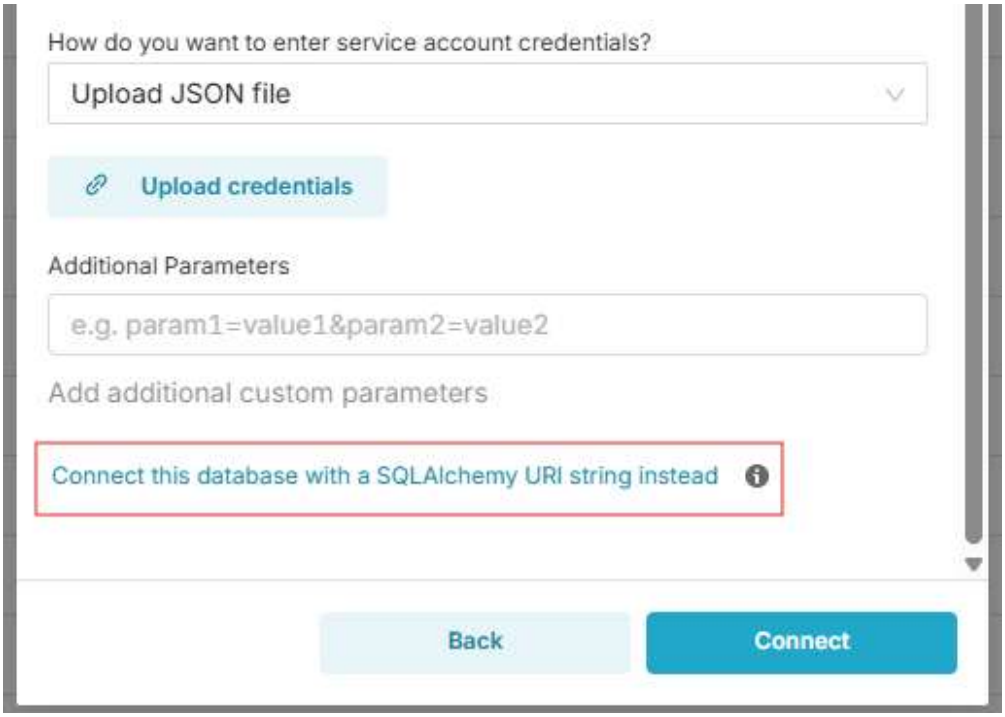
Great work! You can now make additional configurations to your database, if needed. To learn how to do this, please visit the **Advanced Connection Settings** article. When ready, click on **Fini**



Method Two: Connect via a SQLAlchemy URI

1. Like the previous method, start by selecting the **Google BigQuery** icon, then scroll to the bottom of the Connect a Database panel.

2. Click on **Connect this database with a SQLAlchemy URI string instead.**



3. The dialog is now organized into two tabs: **Basic** and **Advanced.**
4. In the SQLAlchemy URI field, enter your URI using the following syntax (replace `${Project_ID}` with the actual Project ID):

Plain text | Copy

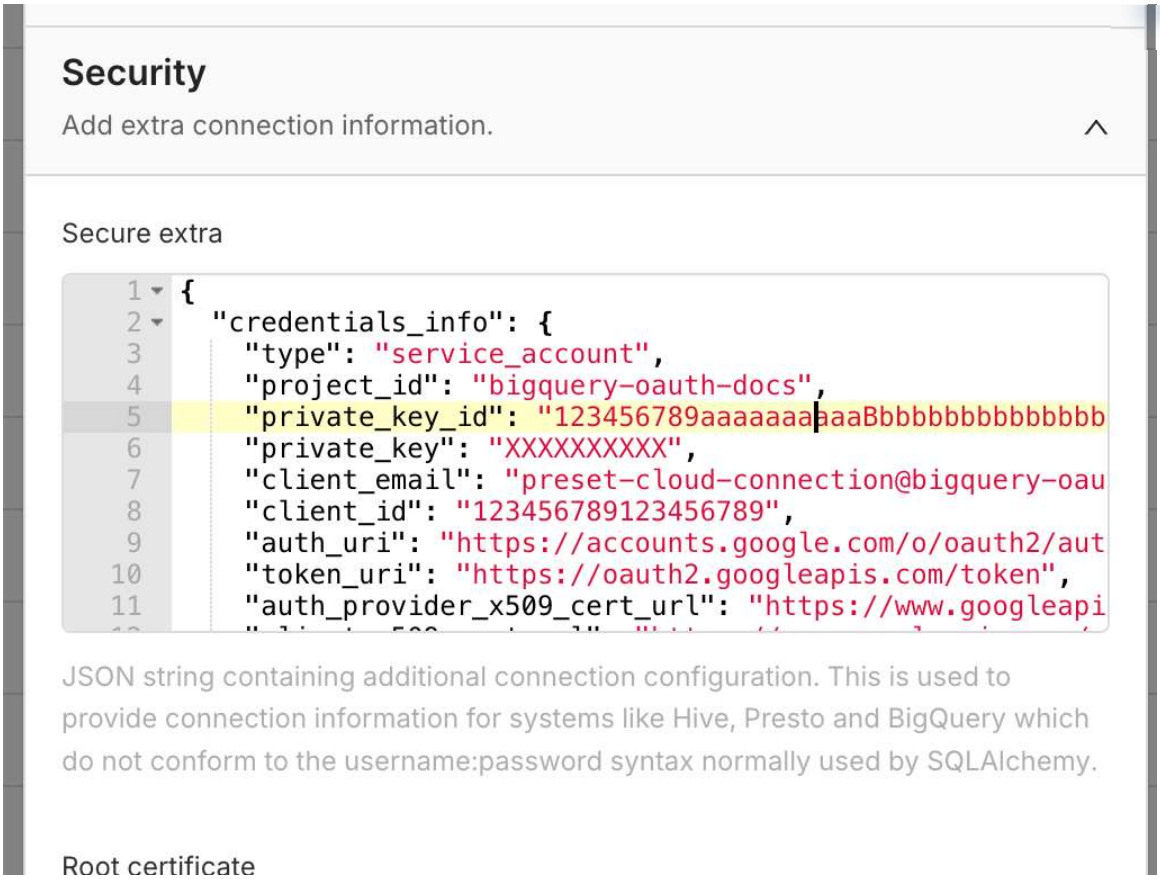
```
bigquery://${Project_ID}
```

5. Navigate to the **Advanced** tab and expand the **Security** section.
6. Paste below content in the **Secure Extra** field:

JSON | Copy

```
{
  "credentials_info":  ${JSON_KEY}
}
```

7. Open the JSON key downloaded earlier with a text editor, and copy its entire content.
8. Replace `${JSON_KEY}` in the **Secure Extra** field with the copied key.



9. Other configurations can be applied in the **Advanced** tab. If you want to explore them, refer to **Advanced Connection Settings**.
10. Navigate back to the **Basic** tab and then select **Test Connection**.

Great work! The connection is now created.

Connect using an OAuth2 integration

It's possible to connect to BigQuery via OAuth2 to apply individual user permissions from BigQuery to the queries that users run in Preset. This approach requires setting up the integration in the Google Cloud Console.

Let's go through this process.

Select the Google Project

Access **Google Cloud Platform Console** (https://console.cloud.google.com/projectselector2/iam-admin/serviceaccounts?pli=1&supportedpurview=project), and select the Project that contains the BigQuery instance you're looking to connect to Preset. Copy the **Project ID**, as you will need this information to set up the connection in Preset.

Setting up API & Services

Navigate to the **API & Services** menu. Then follow these steps:

Creating an OAuth consent screen

1. Select **OAuth consent screen** in the sidebar menu.
2. Set **User Type** as **Internal** and click on **CREATE**.
3. Provide an **App name** and **User support email**.
4. Click on **ADD DOMAIN** and add `preset.io` as an **Authorized domain**.
5. Provide **Developer email address**.
6. Click on **SAVE AND CONTINUE**.

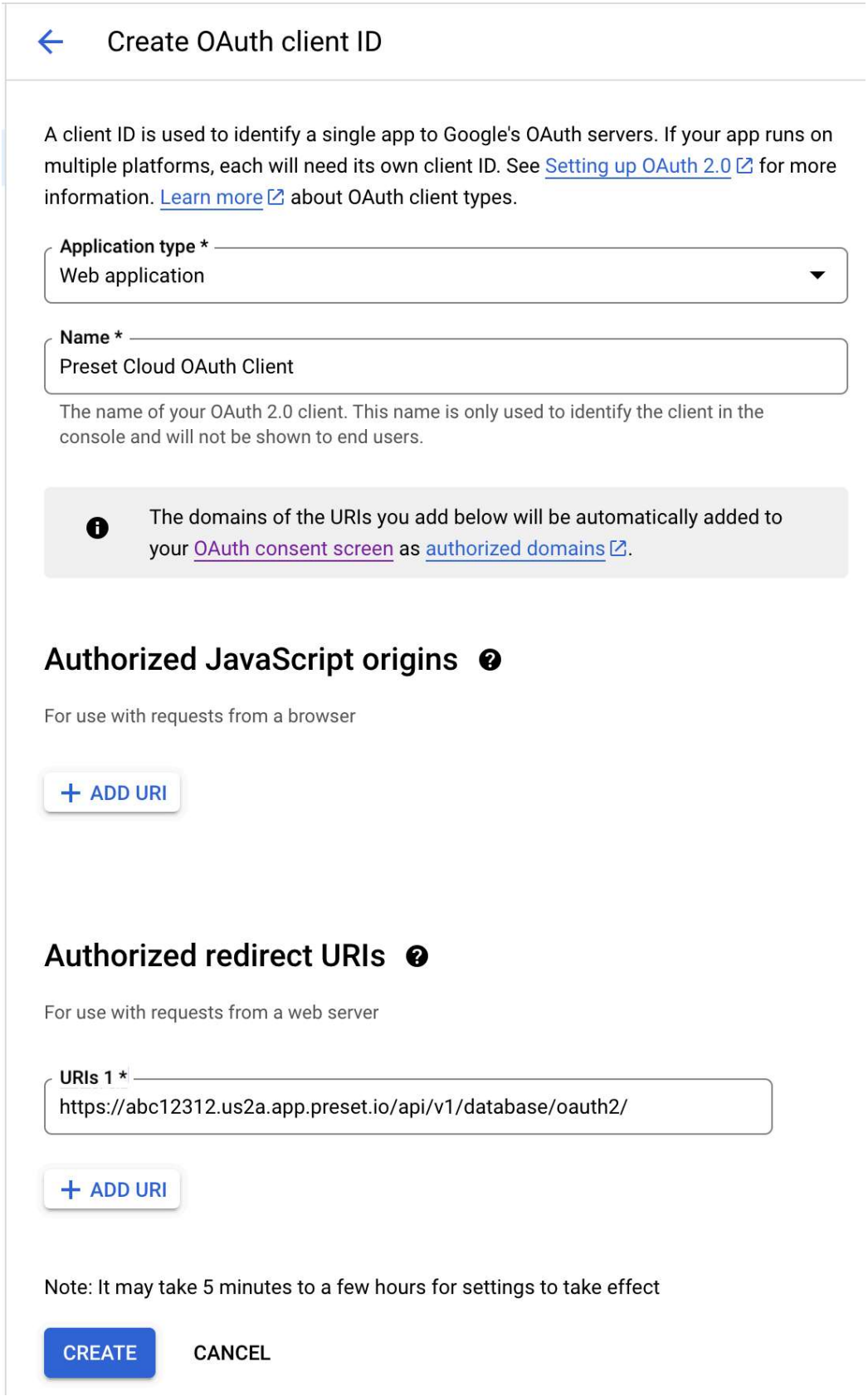
Note that the **User support email** and **Developer email address** can be internal to your Organization.

Setting up an OAuth Client ID

1. Select **Credentials** in the sidebar menu.
2. Click on **+ CREATE CREDENTIALS** > **OAuth Client ID**.
3. Set **Web application** in the **Application type** field.
4. Provide a **Name** to the client.
5. Click on **+ ADD URI** under the **Authorized redirect URIs** section.
6. Replace `${WORKSPACE_DOMAIN}` in the link below and use it as the URI:

Plain text | Copy

```
https://${WORKSPACE_DOMAIN}/api/v1/database/oauth2/
```



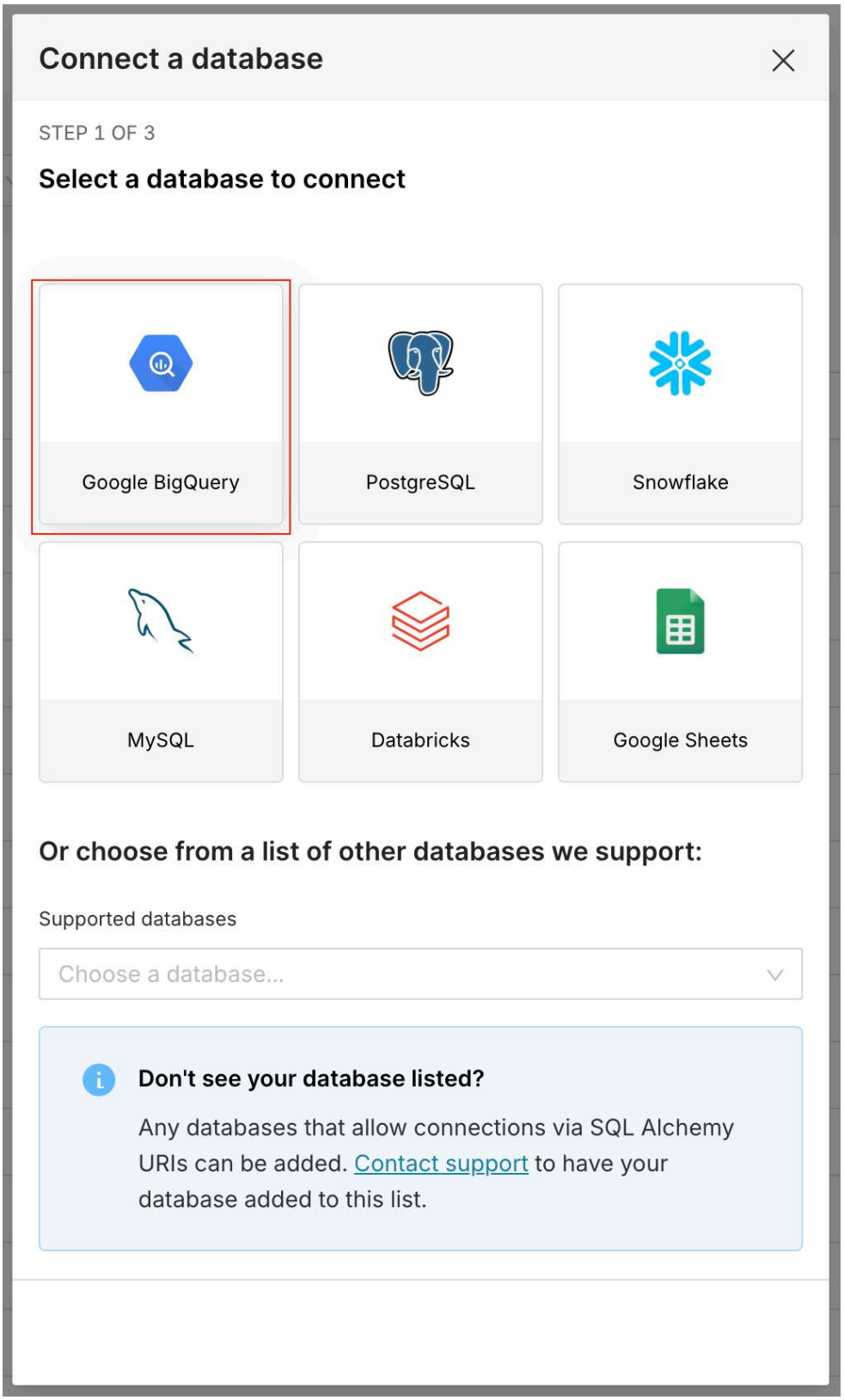
7. Click on **CREATE.**
8. In the confirmation dialog, click on **DOWNLOAD JSON** to retrieve the OAuth2 credentials.

It's time to set up the connection in Preset.

Setting up the connection In Preset

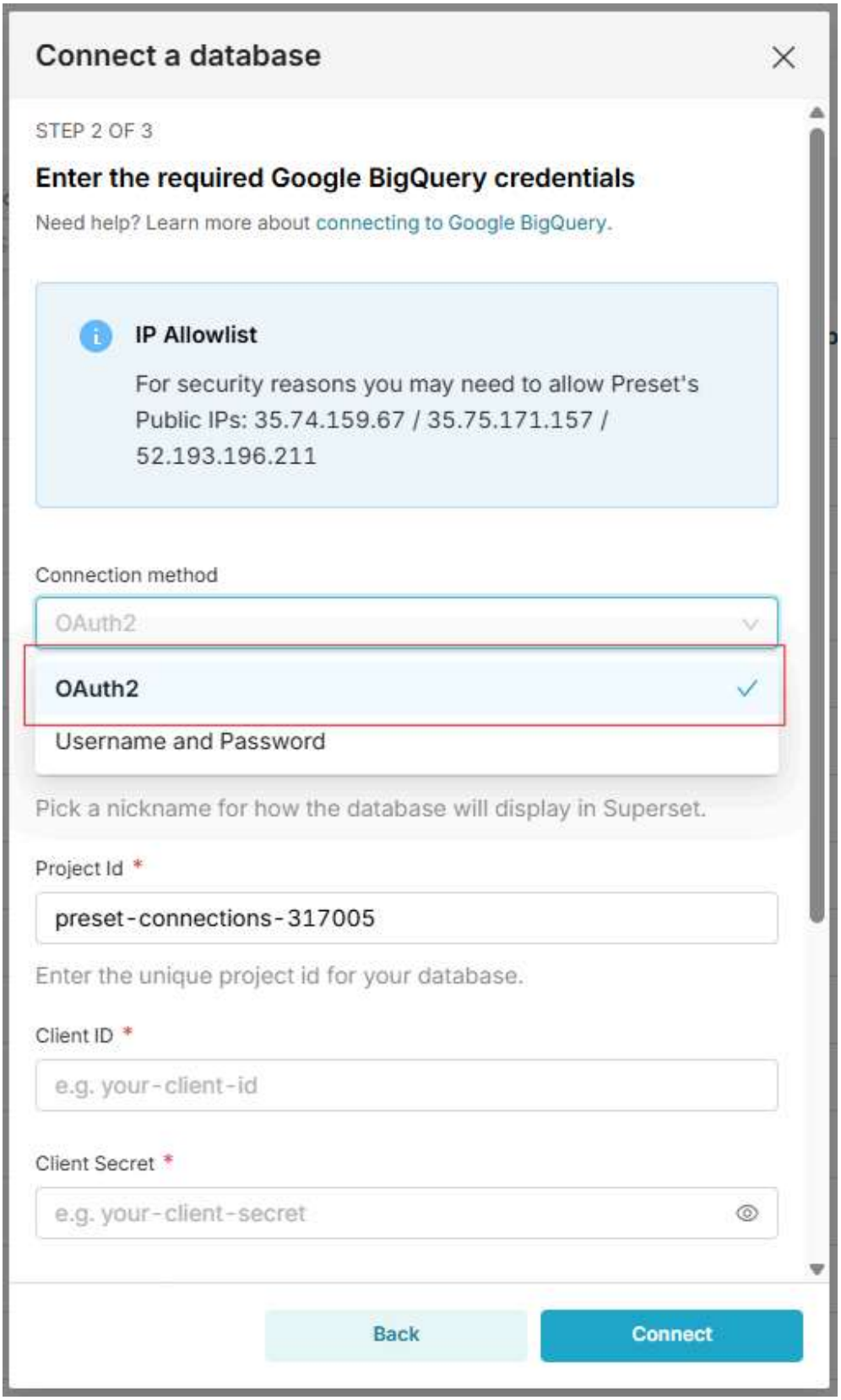
Let's start by selecting **+ Database** — have a look at **Connecting your Data** if you need help wth this step.

Select **Google BigQuery**.



1. In the **Display Name** field, enter a nickname for your database for display in the Preset environment.
2. Provide the **Project ID** previously copied from Google.

3. Change the **Connection method** to **OAuth2**



4. Open the OAuth2 credentials JSON file downloaded earlier in a text editor to fill the OAuth2 form. Fill the:
    a. **Client ID** field with the `"client_id"` value.
    b. **Client Secret** field with the `"client_secret"` value.
    c. **Authorization Request URI** field with the `"auth_uri"` value.
    d. **Token Request URI** field with the `"token_uri"` value.
    e. **Scope** field with `https://www.googleapis.com/auth/bigquery` .
5. Click on **Connect.**

6. You'll be redirected to the **Advanced** tab.
7. Expand the **Security** section and enable the **Impersonate logged in user** checkbox.
8. Other configurations can be applied in the **Advanced** tab. If you want to explore them, refer to **Advanced Connection Settings**.
9. Click **Finish** to save your database connection.

To test the integration:

1. Navigate to **SQL** > **SQL Lab**.
2. Select the BigQuery connection in the **Database** dropdown.
3. You should see an **Authorization needed** error. Click on **See more**.
4. Click on the provide authorization hyperlink to be redirected to Google. Authenticate to your Google account and grant consent for the integration.
5. After authentication, you're redirected back to Preset. Refresh the page.

Queries should now be properly authenticated with your OAuth2 token. Note that this **Authorization needed** prompt will be displayed to all users the first time they interact with this database (either in SQL Lab or via charts).

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