

# BigQuery Integration for Alchemer Survey

## Overview

BigQuery is a fully managed, serverless data warehouse used by organizations to store, query, and analyze large-scale datasets.

The Alchemer integration with BigQuery supports automated data retrieval, updates, and structured data pushes. The Alchemer BigQuery integration allows Alchemer to use information from BigQuery to personalize surveys, enrich survey data, and update information in BigQuery with survey response data.

### Common uses for the Alchemer BigQuery integration

- Personalize invites and surveys with information in BigQuery
- Use BigQuery information in survey logic
- Automate data retrieval and updates between Alchemer and BigQuery
- Reduce manual data entry and record maintenance
- Keep BigQuery records synchronized with responses collected in Alchemer
- Push survey and question metadata into BigQuery for analytics

### What can the Alchemer BigQuery integration do?

- Get row data
- Update row
- Upsert row
- Push to table
- Structured response

### You will need

- BigQuery API access and credentials
- An Alchemer plan that includes integrations and the Integration Manager permission enabled.
  - [Contact us](#) if you are unsure if your plan includes integrations.

## Setup Alchemer BigQuery integration in surveys

### [BigQuery | Get data](#)

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### You will need:

- BigQuery API credentials
  - Service account client email
  - Private key linked to that service account
  - Service account permissions on project(s) you want to query
- Survey fields containing a unique identifier for the row

### Configure the action

1. Open your survey in **Survey builder**.
2. Select **Add New: Action**.
3. In the Add Action modal, scroll to the **Integrations** section.
4. Select **BigQuery**.
5. Select **BigQuery | Get data**.
6. **BigQuery | Authentication:** Select an existing authentication or [create a new authentication](#).
7. **BigQuery | Select project:** Select which project contains the dataset and table you will query on.
8. **BigQuery | Select dataset:** Select which dataset contains the table you will query on.
9. **BigQuery | Select table:** Select which table contains the data you will query on.
10. **BigQuery | Find row:** Select the Alchemer field containing the lookup value. You can also specify whether filters should be separated by AND or OR operator.
11. **BigQuery | Get data back:** Select the BigQuery row fields you want returned to the survey.  
These can be used to personalize survey questions.
12. Save the action.

### Status codes

- 200: A single row was successfully found
- 201: Query succeeded but no rows were found
- 202: Multiple rows were found. The first row is used for the values returned to Alchemer
- 400: Error returned by BigQuery API

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## BigQuery | Update Row

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### You will need:

- BigQuery API credentials
  - Service account client email

- Private key linked to that service account
- Service account permissions on project(s) you want to query
- Survey fields containing the identifier for the row
- **Note: All rows matched on filters will be updated.**

### Configure the action

1. Open your survey in Survey builder.
2. Select Add New: Action.
3. In the Add Action modal, scroll to the **Integrations** section.
4. Select **BigQuery**.
5. Select **BigQuery | Update row**.
6. **BigQuery | Authentication:** Select an existing authentication or [create a new authentication](#).
7. **BigQuery | Select project:** Select which project contains the dataset and table you will query on.
8. **BigQuery | Select dataset:** Select which dataset contains the table you will query on.
9. **BigQuery | Select table:** Select which table contains the data you will query on.
10. **BigQuery | Find row:** Select the Alchemer field containing the lookup value. You can also specify whether filters should be separated by AND or OR operator.
11. **BigQuery | Update row in table:** Choose the Alchemer fields used to update corresponding BigQuery row fields.
12. **BigQuery | Get data back:** Select metadata fields (e.g. message, status code). These can be used to help debug your action setup.
13. Save the action.

### Status codes

- 200: Successfully updated row.
- 201: Query ran successfully. No rows updated.
- 202: Multiple rows were found. X row(s) updated.
- 400: BigQuery API returned an error.

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## BigQuery | Upsert Row

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### You will need:

- BigQuery API credentials
  - Service account client email

- Private key linked to that service account
- Service account permissions on project(s) you want to query
- Survey fields containing the identifier for the row
- **Note: All rows matched on filters will be updated.**

### Configure the action

1. Open your survey in Survey builder.
2. Select Add New: Action.
3. In the Add Action modal, scroll to the **Integrations** section.
4. Select **BigQuery**.
5. Select **BigQuery | Upsert row**.
6. **BigQuery | Authentication:** Select an existing authentication or [create a new authentication](#).
7. **BigQuery | Select project:** Select which project contains the dataset and table you will query on.
8. **BigQuery | Select dataset:** Select which dataset contains the table you will query on.
9. **BigQuery | Select table:** Select which table contains the data you will query on.
10. **BigQuery | Find row:** Select the Alchemer field containing the lookup value.
11. **BigQuery | Upsert row:** Choose the survey data you want to use to upsert the row in BigQuery. This will either update the row(s) if the data matches or create a new row.
12. **BigQuery | Get data back:** Select metadata fields (e.g. message, status code) to get back. These can be used to help debug your action setup.
13. Save the action.

### Status codes

- 200: Successfully inserted a new row.
- 201: Successfully updated X row(s).
- 400: BigQuery API returned an error.

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## BigQuery | Push to table

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### You will need:

- BigQuery API credentials
  - Service account client email
  - Private key linked to that service account
  - Service account permissions on project(s) you want to push to

- Survey fields containing the identifier for the table

#### Configure the action

1. Open your survey in **Survey builder**.
2. Select **Add New: Action**.
3. In the Add Action modal, scroll to the **Integrations** section.
4. Select **BigQuery**.
5. Select **BigQuery | Push to table**.
6. **BigQuery | Authentication**: Select an existing authentication or [create a new authentication](#).
7. **BigQuery | Select project**: Select which project contains the dataset and table you will query on.
8. **BigQuery | Select dataset**: Select which dataset contains the table you will query on.
9. **BigQuery | Select table**: Select which table contains the data you will query on.
10. **BigQuery | Find row**: Select the Alchemer field containing the lookup value.
11. **BigQuery | Insert row into table**: Select the Alchemer survey field with data to push to BigQuery.
12. **BigQuery | Get data back**: Select metadata fields (e.g. message, status code) to get back. These can be used to help debug your action setup.
13. Save the action.

#### Status codes

- 200: Successfully inserted a new row.
- 400: BigQuery API returned an error.

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## BigQuery | Structured response

The Structured Response integration generates three tables in BigQuery: questions, sessions, and responses. The questions table is created during setup, and the sessions and responses tables populate automatically as people complete the survey.

#### You will need:

- BigQuery API credentials
  - Service account client email
  - Private key linked to that service account
  - Service account permissions on project(s) you want to push the tables to
- Designated location for new tables

#### Configure the action

1. Open your survey in **Survey builder**.
2. Select **Add New: Action**.
3. In the Add Action modal, scroll to the **Integrations** section.
4. Select **BigQuery**.
5. Select **BigQuery | Structured response**.
6. **BigQuery | Authentication**: Select an existing authentication or [create a new authentication](#).
7. **BigQuery | Select project**: Select which project contains the dataset you want to populate with the three new tables.
8. **BigQuery | Select dataset**: Select which dataset to add the three new tables to.
9. **BigQuery | Checking tables**: Checking if the three tables already exist from a previous setup. This is used in the next steps to construct the tables if necessary. Please wait for all boxes to load before proceeding.
10. **BigQuery | Creating tables**: This step builds the tables in your chosen dataset, unless they already exist. Please wait for all boxes to load before proceeding.
11. **BigQuery | Select data to push**: Select the questions you wish to push to the tables.
12. **BigQuery | Pushing question data**: Pushes question metadata to BigQuery tables.
13. **BigQuery | Get data back**: Select metadata fields (e.g. message, status code) to get back. These can be used to help debug your action setup.
14. Save the action.

#### **Status codes**

- 200: Successfully pushed to BigQuery.
- 400: BigQuery API returned an error.

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## Testing and Troubleshooting

### [Testing and Validation](#)

#### **How to test**

- Submit a survey response that triggers the integration action.
- Confirm the expected update, insert, or retrieval.
- Ensure all 3 tables are being made properly if using the Structured Response integration
- Use metadata for verification and debugging.

## How to verify results

- Check the impacted record in BigQuery.
- Ensure retrieved or updated values match expectations.

## Monitoring Integration Activity

### Where to find logs

- Go to Results → Individual Responses.
- Select the response you want to inspect.
- Open the Action Log tab.

### What logs display

- Success or failure status
- Timestamp
- Input and output values
- Returned status codes from BigQuery

## Troubleshooting

### Authentication issues

- Please ensure authentication is setup correctly. BigQuery requires very specific permissions, which can be easily missed.
  - Use this [how-to guide](#) for help.

### Lookup failures

- Invalid identifier values
- No matching records

### API errors

- Endpoint restrictions, such as not adding BigQuery Data Editor or Bigquery Job User as permissions in your service account.

## FAQs

### What permissions do I need?

Integration Manager in Alchemer and API permissions in BigQuery. BigQuery's API credentials are more complicated to acquire. We *highly* recommend using [our guide](#) on how to properly setup and authenticate BigQuery.

### When does the integration run?

In real time when a survey response is submitted. The structured response performs actions in both setup time and in real time when a survey is being completed.

### Can I use multiple BigQuery actions in one survey?

Yes. Actions can work independently or together.

### Why isn't my data updating?

Check the Action Log for lookup issues, mapping problems, or API errors.

### What if I need additional functionality?

Contact Alchemer Support for enhancement requests.

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