

# Polaroids of your data: capturing changes in tables using **dbt snapshots**

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Illustration by Freepik Stories

## Data table can be...

### Immutable

- events in an app
- page views

### Mutable

- orders
- user accounts



# Tracking user changes: original data

| id                | email                       | role    | created_at  | updated_at  |
|-------------------|-----------------------------|---------|-------------|-------------|
| 87dyf8dr8gfhdcl   | salvador.dali@company.com   | admin   | 23-Oct-2022 | 23-Oct-2022 |
| 7thef98ehr84hjj   | frida.khalo@company.com     | manager | 23-Oct-2022 | 23-Oct-2022 |
| 25dyf7dg8gfhwpl   | piet.mondrian@company.com   | manager | 23-Oct-2022 | 23-Oct-2022 |
| 7d8yf8dhv8dhgsl   | claudio.monet@company.com   | guest   | 23-Oct-2022 | 23-Oct-2022 |
| 86dfisdjfoisjdlcm | vincent.vangogh@company.com | guest   | 23-Oct-2022 | 23-Oct-2022 |

# Tracking user changes: original data

|                  | admin | manager | guest |
|------------------|-------|---------|-------|
| 31 October 2022  | 1     | 2       | 2     |
| 30 November 2022 | 1     | 2       | 2     |
| 31 December 2022 | 1     | 2       | 2     |
| 31 January 2023  | 1     | 2       | 2     |
| 28 February 2023 | 1     | 2       | 2     |

# Tracking user changes: **value change in mutable data source** (Type 1 slowly changing dimension)

| id                | email                       | role           | created_at  | updated_at         |
|-------------------|-----------------------------|----------------|-------------|--------------------|
| 87dyf8dr8gfhdel   | salvador.dali@company.com   | admin          | 23-Oct-2022 | 23-Oct-2022        |
| 7thef98ehr84hjpg  | frida.khalo@company.com     | manager        | 23-Oct-2022 | 23-Oct-2022        |
| 25dyf7dg8gfhwpp   | piet.mondrian@company.com   | manager        | 23-Oct-2022 | 23-Oct-2022        |
| 7d8yf8dhv8dhgs    | claudio.monet@company.com   | <b>manager</b> | 23-Oct-2022 | <b>23-Feb-2023</b> |
| 86dfisdjfoisjdlcm | vincent.vangogh@company.com | guest          | 23-Oct-2022 | 23-Oct-2022        |

# Tracking user changes: **value change in mutable data source** (Type 1 slowly changing dimension)

|                  | admin | manager  | guest    |
|------------------|-------|----------|----------|
| 31 October 2022  | 1     | <b>3</b> | <b>1</b> |
| 30 November 2022 | 1     | <b>3</b> | <b>1</b> |
| 31 December 2022 | 1     | <b>3</b> | <b>1</b> |
| 31 January 2023  | 1     | <b>3</b> | <b>1</b> |
| 28 February 2023 | 1     | <b>3</b> | <b>1</b> |

# Solution: Snapshots in dbt (Type 2 slowly changing dimension)

## Step 1: Define your source table

- always run snapshots against source models

## Step 2: Tell dbt how to identify data changes

- timestamp
- check

## Step 3: Determine how to deal with hard deletes

- use `invalidate_hard_deletes = False` to keep track of deleted values

## Step 4: Implement the snapshot in dbt

- create a snapshot model
- set up a snapshot schedule: `dbt snapshot` command
- keep your snapshots simple!

# Adding snapshots to your dbt project

```
snapshot_users.sql x
snapshots > snapshot_users.sql
1  {% snapshot snapshot_users %}
2
3  {{
4      config(
5          target_database='personal-projects-375809',
6          target_schema='snapshots',
7          unique_key='id',
8
9          strategy='timestamp',
10         updated_at='updated_at',
11     )
12 }}
13
14 SELECT
15     *
16 FROM
17     {{ source('jaffle_shop', 'users') }}
18
19 {% endsnapshot %}
```

```
snapshots > snapshot_users.sql
1  {% snapshot snapshot_users %}
2
3  {{
4      config(
5          target_database='personal-projects-375809',
6          target_schema='snapshots',
7          unique_key='id',
8
9          strategy='check',
10         check_cols=['role']
11     )
12 }}
13
14 SELECT
15     *
16 FROM
17     {{ source('jaffle_shop', 'users') }}
18
19 {% endsnapshot %}
20
21
```



# Snapshot table after the change

| id                | email                       | role    | created_at | updated_at | dbt_scd_id     | dbt_updated_at | dbt_valid_from | dbt_valid_to |
|-------------------|-----------------------------|---------|------------|------------|----------------|----------------|----------------|--------------|
| 87dyf8dr8gfhdel   | salvador.dali@company.com   | admin   | 10/23/2022 | 10/22/2022 | ee62addacb86a  | 10/22/2022     | 10/22/2022     |              |
| 7thef98ehr84hjg   | frida.khalo@company.com     | manager | 10/23/2022 | 10/23/2022 | 5f4adc7c2f2e25 | 10/23/2022     | 10/23/2022     |              |
| 25dyf7dg8gfhwpx   | piet.mondrian@company.com   | manager | 10/23/2022 | 10/23/2022 | 82edf36d9d08a  | 10/23/2022     | 10/23/2022     |              |
| 86dfisdjfoisidlcm | vincent.vangogh@company.com | guest   | 10/23/2022 | 10/23/2022 | 1d26be0ba89cb  | 10/23/2022     | 10/23/2022     |              |
| 7d8yf8dhv8dhgs    | claude.monet@company.com    | guest   | 10/23/2022 | 10/23/2022 | 983b02092a2fca | 10/23/2022     | 10/23/2022     | 2/23/2023    |
| 7d8yf8dhv8dhgs    | claude.monet@company.com    | manager | 10/23/2022 | 2/23/2023  | e5da2a5b4a010  | 2/23/2023      | 2/23/2023      |              |

# Tracking user changes: **role change with snapshots** (slowly changing dimension type 2)

|                  | admin | manager  | guest    |
|------------------|-------|----------|----------|
| 31 October 2022  | 1     | 2        | 2        |
| 30 November 2022 | 1     | 2        | 2        |
| 31 December 2022 | 1     | 2        | 2        |
| 31 January 2023  | 1     | 2        | 2        |
| 28 February 2023 | 1     | <b>3</b> | <b>1</b> |

# Learn more about integrating snapshots in dbt



**Read** dbt documentation

<https://docs.getdbt.com/docs/build/snapshots>



**Read** community blogs

<https://blog.montrealanalytics.com>

<https://www.getdbt.com/blog/>

<https://hightouch.com/blog/dbt-snapshots-guide>



**Join** dbt community

<https://www.getdbt.com/community/>

# Questions?

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# Thank you!



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