CREATE OR REPLACE TABLE source\_customers (

customer\_id INT,

name STRING,

email STRING,

last\_updated TIMESTAMP

);

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES

(101, 'Alice', 'alice@example.com', CURRENT\_TIMESTAMP),

(102, 'Bob', 'bob@example.com', CURRENT\_TIMESTAMP),

(103, 'Charlie', 'charlie@example.com', CURRENT\_TIMESTAMP);

CREATE OR REPLACE STREAM source\_customers\_stream ON TABLE source\_customers;

CREATE OR REPLACE TABLE target\_customers (

customer\_id INT,

name STRING,

email STRING,

last\_updated TIMESTAMP

);

SELECT \*FROM target\_customers;

SELECT \* FROM source\_customers\_stream;

UPDATE source\_customers

SET email = 'alice.new@example.com', last\_updated = CURRENT\_TIMESTAMP

WHERE customer\_id = 101;

number of rows updated number of multi-joined rows updated

1 0

SELECT \* FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice.new@example.com 2025-09-14 08:21:13.471 INSERT TRUE b72ff4afddaeda2fb3741c6fc6fab2d1f3d22181

101 Alice alice@example.com 2025-09-14 08:20:06.107 DELETE TRUE b72ff4afddaeda2fb3741c6fc6fab2d1f3d22181

SELECT \* FROM source\_customers;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED

101 Alice alice.new@example.com 2025-09-14 08:21:13.471

102 Bob bob@example.com 2025-09-14 08:20:06.107

103 Charlie charlie@example.com 2025-09-14 08:20:06.107

-- Insert a new record

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES (104, 'David', 'david@example.com', CURRENT\_TIMESTAMP);

number of rows inserted

1

SELECT \* FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice.new@example.com 2025-09-14 08:21:13.471 INSERT TRUE b72ff4afddaeda2fb3741c6fc6fab2d1f3d22181

104 David david@example.com 2025-09-14 08:23:44.213 INSERT FALSE 5c9cab151462e8f5d318722541d0e9b590e1c282

101 Alice alice@example.com 2025-09-14 08:20:06.107 DELETE TRUE b72ff4afddaeda2fb3741c6fc6fab2d1f3d22181

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES (104, 'David', 'david@example.com', CURRENT\_TIMESTAMP);

number of rows inserted

1

SELECT \* FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice.new@example.com 2025-09-14 08:21:13.471 INSERT TRUE b72ff4afddaeda2fb3741c6fc6fab2d1f3d22181

104 David david@example.com 2025-09-14 08:23:44.213 INSERT FALSE 5c9cab151462e8f5d318722541d0e9b590e1c282

104 David david@example.com 2025-09-14 08:27:23.417 INSERT FALSE dd1aab62108ab9bb05aa621df58635d116a0d05c

101 Alice alice@example.com 2025-09-14 08:20:06.107 DELETE TRUE b72ff4afddaeda2fb3741c6fc6fab2d1f3d22181

Why You are Seeing Duplicate Records in the Stream

Snowflake Streams track changes (inserts, updates, deletes) to a table at the row level, not at the primary key level. This means:

If you insert the same customer\_id twice (like David with ID 104), Snowflake treats each insert as a distinct change, even if the data is identical.

The stream doesn’t deduplicate based on business logic or primary key — it simply logs every change that modifies the table.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

CREATE OR REPLACE TABLE source\_customers (

customer\_id INT,

name STRING,

email STRING,

last\_updated TIMESTAMP

);

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES

(101, 'Alice', 'alice@example.com', CURRENT\_TIMESTAMP),

(102, 'Bob', 'bob@example.com', CURRENT\_TIMESTAMP),

(103, 'Charlie', 'charlie@example.com', CURRENT\_TIMESTAMP);

CREATE OR REPLACE STREAM source\_customers\_stream ON TABLE source\_customers APPEND\_ONLY = FALSE;

SELECT \*FROM source\_customers\_stream;--Zero records

UPDATE source\_customers

SET email = 'alice.new@example.com', last\_updated = CURRENT\_TIMESTAMP

WHERE customer\_id = 101;

number of rows updated number of multi-joined rows updated

1 0

SELECT \*FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice.new@example.com 2025-09-14 08:37:31.135 INSERT TRUE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

101 Alice alice@example.com 2025-09-14 08:36:09.881 DELETE TRUE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

SELECT \*FROM source\_customers;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED

101 Alice alice.new@example.com 2025-09-14 08:37:31.135

102 Bob bob@example.com 2025-09-14 08:36:09.881

103 Charlie charlie@example.com 2025-09-14 08:36:09.881

-- Insert a new record

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES (104, 'David', 'david@example.com', CURRENT\_TIMESTAMP);

number of rows inserted

1

SELECT \*FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice.new@example.com 2025-09-14 08:37:31.135 INSERT TRUE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

104 David david@example.com 2025-09-14 08:39:32.590 INSERT FALSE fbb90b09f44699280e704fa648a119ab596c3187

101 Alice alice@example.com 2025-09-14 08:36:09.881 DELETE TRUE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

SELECT \*FROM source\_customers;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED

101 Alice alice.new@example.com 2025-09-14 08:37:31.135

102 Bob bob@example.com 2025-09-14 08:36:09.881

103 Charlie charlie@example.com 2025-09-14 08:36:09.881

104 David david@example.com 2025-09-14 08:39:32.590

DELETE FROM source\_customers WHERE CUSTOMER\_ID=101;

number of rows deleted

1

SELECT \*FROM source\_customers\_stream;

--Previous records

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice.new@example.com 2025-09-14 08:37:31.135 INSERT TRUE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

104 David david@example.com 2025-09-14 08:39:32.590 INSERT FALSE fbb90b09f44699280e704fa648a119ab596c3187

101 Alice alice@example.com 2025-09-14 08:36:09.881 DELETE TRUE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

--After DELETE

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

104 David david@example.com 2025-09-14 08:39:32.590 INSERT FALSE fbb90b09f44699280e704fa648a119ab596c3187

101 Alice alice@example.com 2025-09-14 08:36:09.881 DELETE FALSE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

DELETE FROM source\_customers WHERE CUSTOMER\_ID=104;

number of rows deleted

1

SELECT \*FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

101 Alice alice@example.com 2025-09-14 08:36:09.881 DELETE FALSE 88a2b6a4d93580ec740eb7c3869d54867f750cd9

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

CREATE OR REPLACE TABLE source\_customers (

customer\_id INT,

name STRING,

email STRING,

last\_updated TIMESTAMP

);

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES

(101, 'Alice', 'alice@example.com', CURRENT\_TIMESTAMP),

(102, 'Bob', 'bob@example.com', CURRENT\_TIMESTAMP),

(103, 'Charlie', 'charlie@example.com', CURRENT\_TIMESTAMP);

CREATE OR REPLACE STREAM source\_customers\_stream ON TABLE source\_customers APPEND\_ONLY = TRUE;

SELECT \*FROM source\_customers\_stream;--No records

UPDATE source\_customers

SET email = 'alice.new@example.com', last\_updated = CURRENT\_TIMESTAMP

WHERE customer\_id = 101;

number of rows updated number of multi-joined rows updated

1 0

SELECT \*FROM source\_customers\_stream;--Zero records

SELECT \*FROM source\_customers;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED

101 Alice alice.new@example.com 2025-09-14 08:47:40.906

102 Bob bob@example.com 2025-09-14 08:46:53.560

103 Charlie charlie@example.com 2025-09-14 08:46:53.560

-- Insert a new record

INSERT INTO source\_customers (customer\_id, name, email, last\_updated)

VALUES (104, 'David', 'david@example.com', CURRENT\_TIMESTAMP);

number of rows inserted

1

SELECT \*FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

104 David david@example.com 2025-09-14 08:49:08.653 INSERT FALSE ee5645298e421da6e4cf6a6bae3ddb555aa95cc2

SELECT \*FROM source\_customers;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED

101 Alice alice.new@example.com 2025-09-14 08:47:40.906

102 Bob bob@example.com 2025-09-14 08:46:53.560

103 Charlie charlie@example.com 2025-09-14 08:46:53.560

104 David david@example.com 2025-09-14 08:49:08.653

DELETE FROM source\_customers WHERE CUSTOMER\_ID=104;

SELECT \*FROM source\_customers\_stream;

CUSTOMER\_ID NAME EMAIL LAST\_UPDATED METADATA$ACTION METADATA$ISUPDATE METADATA$ROW\_ID

104 David david@example.com 2025-09-14 08:49:08.653 INSERT FALSE ee5645298e421da6e4cf6a6bae3ddb555aa95cc2

--APPEND\_ONLY = FLASE equals to Standard stream

--APPEND\_ONLY = TRUE means it will capture only INSERT records

Why You're Seeing This Error

You're trying to create an INSERT\_ONLY stream on a standard internal table (source\_customers). But Snowflake now restricts INSERT\_ONLY = TRUE to:

External tables (e.g., S3-backed)

Iceberg tables with external catalog integration

This change was introduced to ensure consistency with how external data sources are tracked — internal tables already support APPEND\_ONLY = TRUE, which is the correct alternative.