Distribution Agent Error 547

Last updated by | Vitor Pombeiro | Mar 25, 2022 at 10:37 AM PDT

Contents

Issue

User sees error 547 in the Distribution Agent log history

```
...
<timestamp> Initializing
<timestamp> 23000 The INSERT statement conflicted with the FOREIGN KEY constraint "FK_t2_t1_id". The conflict
<timestamp> Disconnecting from Subscriber 'vm002.repldns.com\INST1'
<timestamp> Connecting to Subscriber 'vm002.repldns.com\INST1'
<timestamp> Error executing a batch of commands. Retrying individual commands.
<timestamp> Disconnecting from Subscriber 'vm002.repldns.com\INST1'
<timestamp> Connecting to Subscriber 'vm002.repldns.com\INST1'
...
...
<timestamp> Agent message code 547. The INSERT statement conflicted with the FOREIGN KEY constraint "FK_t2_t1_
<timestamp> Category:COMMAND
Source:  Failed Command
Number:
Message: if @@trancount > 0 rollback tran
<timestamp> Category:NULL
Source:  Microsoft OLE DB Driver for SQL Server
Number:  547
Message: The INSERT statement conflicted with the FOREIGN KEY constraint "FK_t2_t1_id". The conflict occurred
```

Possible causes

Error 547 usually occurs when a user tries to update a row that violates the reference constraints. In this scenario, updates on tables at the subscription database having foreign key reference were performed by the Distribution Agent which caused the error. Normally, foreign key constraints are not created on tables that reside in the subscription database even if they existed at the tables in the publication database. Hence part of the investigation is to find out why the foreign key constraints existed at the subscription database.

Why the tables at the publication database are in conflicting state?

On the surface we can see the 547 error was caused by the Distribution Agent attempting to make inserts into the table that had foreign key constraints. However, the question is how did the data which cause violation of the key constraints get into the table at the publication database.

A possible scenario is where the user performs bulk inserts into tables at the publication database without specifying the CHECK_CONSTRAINT option. The user should be aware that the bulk insert operations (i.e. BCP, T-SQL Bulk Insert) are performed without constraint checking if the CHECK CONSTRAINT option is not specified, and they may be importing data with the potential risks of compromising their overall system data integrity.

Investigation

If you see 547 error occurring in the Distribution Agent log history, investigate these:

- Investigate why foreign key constraint exist in the table(s) at the subscription database.
- Investigate how the tables at the publication database are being updated. For example ask the user:
  - Is the update being done through the bulk insert operation?
  - Are they disabling checking constraints prior to performing updates?
- Check the schema_option values for the affected articles and constraints, and make sure that the following options are included:

Value	Description
0x10000	Replicates CHECK constraints as NOT FOR REPLICATION so that the constraints are not enforced during synchronization.
0x20000	Replicates FOREIGN KEY constraints as NOT FOR REPLICATION so that the constraints are not enforced during synchronization.

To see the configured @schema_option values, please create a script of the publication and check the stored procedure calls for `sp_addarticle`. Note that the value for @schema_option is a bitmask of the schema generation option for the given article. It is the | (Bitwise OR) product of one or more configuration values.

For example, the following value has both of the NOT FOR REPLICATION options set - they are included in the "3" on the 5th position from the right:

```
@schema_option = 0x000000000803529F
                 0x0000000000010000
                 0x0000000000020000
```

Reference: sp_addarticle

Mitigation

- Remove the foreign key constraint from the table at the subscription database.
- Specify the NOT FOR REPLICATION option on the constraints at the subscription database.
- Add the @schema_option values for the NOT FOR REPLICATION options to the article definition - this however requires the reinitialization of the subscriptions.

```
-- Example command to update schema_option:
sp_changearticle @publication = N'Publication_Tran', @article = N'MainTable',
@property= 'schema_option', @value= '0x000000000803529F',
@force_invalidate_snapshot = 1,
@force_reinit_subscription = 1
```

How good have you found this content?