Distribution Agent Error 545

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Issue

Customer is running a Transactional Replication environment. It has been running at first, but now the Distribution Agent is failing with error 545:

> Explicit value must be specified for identity column in table '<table_name>' either when IDENTITY_INSERT is set to ON or when a replication user is inserting into a NOT FOR REPLICATION identity column.

Investigation / Analysis

This error occurs when inserting data into a table that has an Identity column, and your Insert statement doesn't specify a value for the Identity column. The Insert will work as long as the `IDENTITY_INSERT` option is set to its default of "OFF"; the missing column value will then be filled through the `IDENTITY` property. If however `IDENTITY_INSERT` is set to "ON", the `IDENTITY` property will be disabled. The same command will then fail with error 545 because the table expects to receive an explicit value from the Insert command. Once the `IDENTITY_INSERT` option is set to "ON" for a particular table, then any Insert operation performed on the table has to specify a value to the `IDENTITY` column; otherwise error 545 will be raised.

Another, implicit way of setting `IDENTITY_INSERT` to "ON" is if the `IDENTITY` constraint has the `NOT FOR REPLICATION` flag. If you insert into such a table manually, the `IDENTITY` property is enabled; but if a replication agent like the Distribution Agent inserts the data, then the `IDENTITY` property is disabled. This is required to keep the values identical on both Publisher and Subscriber, so that the Subscriber doesn't maintain its own set of Identity values.

For replicated tables, by default the `IDENTITY` property is transferred to the tables at the Subscriber and the `NOT FOR REPLICATION` flag is set through the [sp_addarticle)](#) ↗ parameter `@identityrangemanagementoption = N'manual'`. The "sp_MSins_xxx" stored procedure that is called by the Distribution Agent to insert rows at the Subscriber includes the Identity column in its column list.

Therefore, when using a default configuration, the error 545 will not occur for the Distribution Agent, unless there is some additional factor.

Things to check with the customer include:

- Is there any user trigger on the Subscriber table that modifies the Insert operation? In a support case, the customer has added a trigger that had intercepted the replicated Insert and replaced it with its own operation; this replacement then ran into the error 545.
- Is the customer using custom insert stored procedures instead of the default stored procedure? Have they added their own business logic to the default procedure?
- Have they added business logic that is inserting data into a secondary table? For example, replication is inserting a row into table A; table A has a trigger inserting into table B, and the insert on table B is failing?
- Is the custom code using SET IDENTITY_INSERT in its own logic?

You need to discuss the scenario further with the customer. If there are any doubts:

- Ask the customer to create a script of the publication
- Ask the customer to create a script of the objects in the Subscriber database, including triggers and stored procedures.

Mitigation

The actual mitigation depends on the answers that you received in the investigation. It might be any of:

- Avoid replicating the Identity flag to the Subscriber database. Check the `sp_addarticle ... @schema_option` parameter if it contains the 0x04 flag for the identity proparty (0x04: Identity columns are scripted using the IDENTITY property). For example, the default "@schema_option = 0x000000000803509F" contains the 0x04 flag in 0x00....F value. This requires a reinitialization of the Subscribers though.
- Remove any custom business logic, triggers, or stored procedures at the Subscriber. Use the default, unchanged sp_MSins_xxx procedure if possible.
- Ask the customer to review any custom code and change the custom insert statement to include the missing Identity value.

Internal reference

Support case 2207180040000050

Public doc reference

- [sp_addarticle (Transact-SQL)](#) ↗
- [Replicate Identity Columns](#) ↗
- http://www.sql-server-helper.com/error-messages/msg-545.aspx ↗

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