DSS020 - 500 tables limit

Last updated by | Keith Elmore | Apr 5, 2021 at 7:57 AM PDT

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Issue

Error during Refresh Schema operation:
Getting schema information for the database failed with the exception "**Unable to process a schema with** X **tables, 500 is the max**"

The 500 tables in a sync group is one of the limitations listed at Limitations on service and database dimensions
But this limitation also applies when customer tries to do Refresh Schema using a database with more than 500 tables, even if customer want's to select only 1 table.

Mitigation

Sync less than 500 tables

Refresh Schema can be performed using any database that is part of the sync group (from hub or from any member). When customers need to sync less than 500 tables, check if any database has less than 500 tables, if so, use that database to configure the data sync schema. Some customers may even decide to drop some tables that will not be used in data sync from hub or a member.

If customer does not have a database with 500 tables or less, use this next method.

Sync more than 500 tables

In order to overcome the 500 table limit we can split the tables in several sync groups and create an user with limited table visibility for each one. The goal is to have users that only can see a subset of the tables. Using this users to Refresh Schema will work because each one will see less then 500 tables.

To give you some context, please take a look at Sync data between databases with many tables at https://azure.microsoft.com/en-us/blog/sync-sql-data-in-large-scale-using-azure-sql-data-sync/

You will need to split your database into several sync groups. In order to keep referential integrity, you will **need to group all the tables that reference each other in the same sync group**.

If that's not possible, you will need to consider having 'master' tables in one sync group and 'detail' tables in another one and always run sync on the masters first.

Refresh Schema also **requires the user to have visibility on the table and all tables referenced by foreign keys on that table**.

After splitting the database into several table groups you will need to create one sync group and one user for each table group.

You will need to limit table visibility on the user so the Refresh Schema operation can only see the <=500 tables that you have on the table group.

After creating the sync group you can change the user into a user with more privileges (like dbo) so the provisioning task doesn't get blocked.

Data sync will need to create tracking tables, triggers, stored procedures and UDDT in all the members in order to be able to track your changes and sync the data. The user needs to be able to perform these operations.

In the following example, we created a user, limited visibility on all the tables and then added visibility on just the 2 we would like to have in the sync group.

```
CREATE LOGIN User1 WITH PASSWORD = 'PutAStrongPasswordHere';
GO
CREATE USER User1 FOR LOGIN User1;
GO
EXEC sp_addrolemember 'db_ddladmin', 'User1';
GO

declare @n char(1)
set @n = char(10)
declare @tables nvarchar(max)

select @tables = CAST('' as nVarChar(MAX))+ isnull( @tables + @n, '' ) + 'DENY VIEW DEFINITION ON [' + schema_
from sys.tables
order by name desc

exec sp_Executesql @tables
GO

GRANT VIEW DEFINITION ON [dbo].[MasterTable1] TO [User1];
GRANT VIEW DEFINITION ON [dbo].[DetailTable1] TO [User1];
```

After creating the sync group (and before running the first sync), we changed the user to one that has all the permissions so the provisioning task doesn't face any issue.
See more about required permissions at https://docs.microsoft.com/en-us/azure/azure-sql/database/sql-data-sync-best-practices#database-accounts-with-least-required-privileges

If you need to update the schema later you can change the credentials back to the user with limited visibility in order to be able to run Refresh Schema.
Other option is to add relevant permissions to the users with limited visibility so they can run provision/re-provision.

Root Cause Classification

Cases resolved by this TSG should be coded to the following root cause:
Root Cause: DataSync\User Issue/Error\SetupSyncFail

How good have you found this content?