INSTRUCTION ON HOW TO IMPLEMENT CHANGE DATA CAPTURE

By Nate, Paul, and Brent

1. Change Data Capture:
    a. Flip on Capture Database Changes
        i. Turn on: Execute a System Stored Procedure
            1. USE database_name;
            2. GO
            3. EXECUTE sys.sp_cdc_enable_db;
            4. GO
        ii. Turn off: Execute a SystemStore Procedure
            1. *USE database_name;*
            2. *GO*
            3. *EXECUTE sys.sp_cdc_disable_db;*
            4. *GO*
    b. Setup Tables you want to “watch”
        i. Turn on for tables
            1. Do the USE database_name; GO
            2. EXECUTE *sys.sp_cdc_enable_table ** SEE GLOSSARY FOR EXPLANATIONS*
                i. @source_schema = 'source_schema'
                ii. , @source_name = 'source_name'
                iii. , @role_name = 'role_name'
                iv. , @capture_instance = 'capture_instance'
                v. , @supports_net_changes = supports_net_changes
                vi. , @index_name = 'index_name'
                vii. , @captured_column_list = 'captured_column_list'
                viii. , @filegroup_name = 'filegroup_name'
                ix. , @allow_partition_switch = 'allow_partition_switch
                x. .

c. Make sure SQL Server Agent is ON!!!

1. Microsoft SQL Server Management Studio
2. *Select SQL Server Agent*
3. *RIGHT CLICK. Hit START*

2. GLOSSARY OF COLUMNS

   a. Capture Instance Table

      i. __$start_lsn

         1. *Log sequence number (LSN) associated with the commit transaction for the change. All changes committed in the same transaction share the same commit LSN. For example, if a delete operation on the source table removes two rows, the change table will contain two rows, each with the same __$start_lsn value.*

      ii. __$end_lsn
         1. Identified for informational purposes only. Not supported. Future compatibility is not guaranteed.
         2. In SQL Server 2012, this column is always NULL

      iii. __$seqval

         1. Sequence value used to order the row changes within a transaction.

      iv. __$operation
         1. Identifies the data manipulation language (DML) operation associated with the change. Can be one of the following:
         2. 1 = delete
         3. 2 = insert
         4. 3 = update (old values)
         5. Column data has row values before executing the update statement.
         6. 4 = update (new values)
         7. Column data has row values after executing the update statement.

v. __$update_mask

1. A bit mask based upon the column ordinals of the change table identifying those columns that changed.

vi. <captured source table columns>

1. T he remaining columns in the change table are the columns from the source table that were identified as captured columns when the capture instance was created. If no columns were specified in the captured column list, all columns in the source table are included in this table.

3. Definitions FOR sys.sp_cdc_enable_table:

a. source_schema

i. Is the name of the schema in which the source table belongs. source_schema is sysname, with no default, and cannot be NULL

b. source_name

i. Is the name of the source table on which to enable change data capture. source_name is sysname, with no default, and cannot be NULL. source_name must exist in the current database. Tables in the cdc schema cannot be enabled for change data capture.

c. role_name

i. Is the name of the database role used to gate access to change data. role_name is sysname and must be specified. If explicitly set to NULL, no gating role is used to limit access to the change data.

ii. If the role currently exists, it is used. If the role does not exist, an attempt is made to create a database role with the specified name. The role name is trimmed of white space at the right of the string before attempting to create the role. If the caller is not authorized to create a role within the database, the stored procedure operation fails.

d. capture_instance

i. Is the name of the capture instance used to name instance-specific change data capture objects. capture_instance is sysname and cannot be NULL.

ii. If not specified, the name is derived from the source schema name plus the source table name in the format schemaname_sourcename. capture_instance cannot exceed 100 characters and must be unique within the database. Whether specified or derived, capture_instance is trimmed of any white space to the right of the string.

iii. A source table can have a maximum of two capture instances.

e. supports_net_changes

i. Indicates whether support for querying for net changes is to be enabled for this capture instance. supports_net_changes is bit with a default of 1 if the table has a primary key or the table has a unique index that has been identified by using the @index_name parameter. Otherwise, the parameter defaults to 0.

ii. If 0, only the support functions to query for all changes are generated.

iii. If 1, the functions that are needed to query for net changes are also generated.

iv. If supports_net_changes is set to 1, index_name must be specified, or the source table must have a defined primary key.

f. index_name

i. The name of a unique index to use to uniquely identify rows in the source table. index_name is sysname and can be NULL. If specified, index_name must be a valid unique index on the source table. If index_name is specified, the identified index columns takes precedence over any defined primary key columns as the unique row identifier for the table

g. captured_column_list

i. Identifies the source table columns that are to be included in the change table. captured_column_list is nvarchar(max) and can be NULL. If NULL, all columns are included in the change table.

ii. Column names must be valid columns in the source table. Columns defined in a primary key index, or columns defined in an index referenced by index_name must be included.

iii. captured_column_list is a comma-separated list of column names. Individual column names within the list can be optionally quoted by using either double quotation marks ("") or square brackets ([]). If a column name contains an embedded comma, the column name must be quoted.

iv. captured_column_list cannot contain the following reserved column names: __$start_lsn, __$end_lsn, __$seqval, __$operation, and __$update_mask.

h. filegroup_name

i. Is the filegroup to be used for the change table created for the capture instance. filegroup_name is sysname and can be NULL. If specified, filegroup_name must be defined for the current database. If NULL, the default filegroup is used.

ii. We recommend creating a separate filegroup for change data capture change table

i. allow_partition_switch

i. Indicates whether the SWITCH PARTITION command of ALTER TABLE can be executed against a table that is enabled for change data capture. allow_partition_switch is bit, with a default of 1.

ii. For nonpartitioned tables, the switch setting is always 1, and the actual setting is ignored. If the switch is explicitly set to 0 for a nonpartitioned table, warning 22857 is issued to indicate that the switch setting has been ignored. If the switch is explicitly set to 0 for a partitioned table, the warning 22356 is issued to indicate that partition switch operations on the source table will be disallowed. Finally, if the switch setting is either set explicitly to 1 or allowed to default to 1 and the enabled table is partitioned, warning 22855 is issued to indicate that partition switches will not be blocked. If any partition switches occur, change data capture will not track the changes resulting from the switch. This will cause data inconsistencies when the change data is consumed.

4. REFERENCES

a. Enable Table

i. http://msdn.microsoft.com/en-us/library/bb500302.aspx

b. Disable Table

i. http://msdn.microsoft.com/en-us/library/bb510702.aspx

c. <capture_instance> table that was created

i. http://msdn.microsoft.com/en-us/library/bb500305%28v=sql.105%29.aspx

d. About Change Data Capture

i. http://msdn.microsoft.com/en-us/library/cc645937.aspx

e. Enable Change Data Capture

i. http://msdn.microsoft.com/en-us/library/cc627369%28v=sql.105%29.aspx

NOTE, I was lazy on the links. Might need to “Show Version” 2008 R2 on some, but pretty sure they are all the same.