SQL Server Transaction Log Not Truncating

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Topic#: 002801
Created: August 2013

Introduction

It is possible that SQL Server leaves open transactions. When this happens, the Transaction Log will grow until the disk is full.

If you are using **Full Recovery** mode, the backup procedure should shrink the transaction log. Note that the file itself does not get smaller, but its space is freed up. See the following procedure for details on how to determine this.

This *Tech Note* describes the procedure for fixing or freeing space in the SQL Server Transaction Log.

Application Versions

- Microsoft SQL Server: All supported versions

The examples in the this *Tech Note* use the **MESDB** database with a transaction log named **MESDB_LOG**. You will have to update these names in the scripts with the name of your database and transaction log.

You can get the name of the transaction log by clicking on the database name, and click **Properties/Files**. It is the Logical Name for the **File Type=Log**.

> **Note:** See **Tech Note 930 Wonderware Application Server Clean-up Guide** for information about optimizing your Application Server system.

Diagnostic Procedure

Complete the following tasks in the order presented for a comprehensive diagnostic procedure. When a task is successful, proceed to the **Cleaning Up** section.

Task 1: Check for Open Transactions

```
DBCC OPENTRAN(MESDB)
--Or
SELECT  SID       = SID
      , DBName    = DB_NAME(dbid)
      , LastSQL   = (SELECT text FROM sys.dm_exec_sql_text(sql_handle))
      , LastTime  = last_Batch
      , LoginName = Loginame
      , Username  = nt_userName
      , *
FROM Master..sysprocesses
```

```
            WHERE open_tran > 0
```

> **Note:** The Production database might be running transactions at this time. The problem comes in when old transactions never get closed or the transaction log thinks it is open. Run the query several times if you see an active transaction. You can also use Activity Monitor to see what is going on.

If you conclude it is an old transaction, use Activity Monitor to kill the associated process.

Task 2: Check the Transaction Log

- Run the following SQL command to determine the space used by the transaction log:

```
DBCC SQLPERF('LOGSPACE') ;
```

This will return the Log Space Used (%). If the percentage is high (**>80%**) and the Log Size (MB) is high (**> 1000 MB**) you have a problem.

If it is NOT high, skip to the **Cleaning Up** section.

Task 3: Take Full Backup of the DB

Assuming you have Full Recovery Mode this should clean up the free space.

- Check the log space again by running the **DBCC SQLPERF** query (above). If the % used is low, skip to the **Cleaning Up** section.

Task 4: Use the Truncate_Only Command

In some cases, the **Truncate_Only** command will fix the situation. Use the following command:

```
BACKUP log MESDB with truncate_only;
DBCC SHRINKFILE (MESDB_Log,1, TRUNCATEONLY) ;
DBCC SQLPERF('LOGSPACE') ;
```

Check the log space again and if the % used is low or the file size is small, skip to the **Cleaning Up** section.

Task 5: Backup and Repeat

You can also take another backup and repeat this step during production. However, it may result in loss of transaction log data so make sure you have a good backup.

```
ALTER DATABASE MESDB SET RECOVERY SIMPLE;
GO
-- Shrink the truncated log file to 1 MB.
DBCC SHRINKFILE (MESDB_Log, 1);
GO
-- Reset the database recovery model.
ALTER DATABASE MESDB SET RECOVERY FULL;
GO

DBCC SQLPERF('LOGSPACE') ;
```

This assumes you had **Full Recovery** mode set.

- Check the log space again. If the % used is low or the file size is small, skip to the **Cleaning Up** section.

- You should also do another backup as some of the logs where deleted.

Task 6: Check for Replication

In some cases Replication causes the problem. For this scenario, run the following query on the DB:

```
EXEC sp_repldone @xactid = NULL, @xact_segno = NULL, @numtrans = 0, @time = 0, @reset = 1
```

References

- **http://social.technet.microsoft.com/Forums/pt-BR/sqlreplication/thread/34ab68ad-706d-43c4-8def-38c09e3bfc3b**

- **http://www.eggheadcafe.com/conversation.aspx?messageid=34020486&threadid=33890705**

Task 7: Detach the Database and Delete the Transaction Log

If you are still having problems, complete the following steps:

> **Warning: DO NOT do the following procedure during production. This may cause you to lose your DB or it will be recovered in a bad state!**

1. Determine what files are used:

   ```
   USE MESDB;
   GO

   EXEC sp_HelpFile;
   ```

2. Record the list of files. For example:

   1. I:\SQL\FactelligenceProd.mdf

   2. **I:\SQL\FactelligenceProd_log.ldf**

   3. I:\SQL\FactelligenceProd_Data.ndf

   4. I:\SQL\FactelligenceProd_Data_2.ndf

   5. I:\SQL\FactelligenceProd_Index.ndf

   6. I:\SQL\FactelligenceProd_Index_2.ndf

   7. I:\SQL\FactelligenceProd_Large.ndf

8. I:\SQL\FactelligenceProd_Large_Index.ndf

You can use SQLServer Management Studio or run the following command.

3. Stop all applications connected to the Database. For IAS put the Engines Off Scan.

4. Put the database in Single User mode.

```
-- Put in single user mode
USE Master;
GO
ALTER DATABASE MESDB
SET SINGLE_USER
WITH ROLLBACK IMMEDIATE;
GO
--You may need to go to Activity Monitor and kill the processes.
```

5. Detach the Database.

```
-- Detach the DB
EXEC sp_detach_db MESDB
```

6. Find the transaction log file and delete it. It should be the second file in the list above, with the extension **ldf**.

7. Reattach the DB but don't specify the log file name. It will be created.

   See the help files for **sp_attach_db**. The following is an example:

```
EXEC sp_attach_DB
  @dbname='MESDB'
, @fileName1='I:\SQL\FactelligenceProd.mdf'
--I:\SQL\FactelligenceProd_log.ldf
, @fileName2='I:\SQL\FactelligenceProd_Data.ndf'
, @fileName3='I:\SQL\FactelligenceProd_Data_2.ndf'
, @fileName4='I:\SQL\FactelligenceProd_Index.ndf'
, @fileName5='I:\SQL\FactelligenceProd_Index_2.ndf'
, @fileName6='I:\SQL\FactelligenceProd_Large.ndf'
, @fileName7='I:\SQL\FactelligenceProd_Large_Index.ndf'

GO
```

8. Reset to multi-user:

```
USE Master;
GO
ALTER DATABASE MESDB
SET MULTI_USER;
```

Cleaning Up

Wonderware Technical Support does NOT recommend scheduling tasks to shrink databases or files. Doing so will result in file fragmentation.

Instead, configure the database and log settings to reasonable sizes, with a good constant growth parameter.

For the log, an initial size of **500 MB** and a growth of **250 MB** is recommended.

Hopefully you will never need any more extents and everything will fit into the 500 MB.

Set up the Initial Size (MB) and Auto growth by clicking on the DB name, **Properties/Files**:

Initial Size (MB) 500	
Autogrowth	• File Growth: In Megabtyes • 250 • Maximum File Size: • Unrestricted

Cleanup Procedure

1. Shrink the DB.

2. Check once more the space used.

3. Finally do a check on the DB. This is "safe" during production but it can slow down the system. Some prefer to run on off hours (see the following note on CHECKDB):

The queries are:

```
DBCC SHRINKFILE (MESDB_Log,1);
DBCC SQLPERF('LOGSPACE') ;
DBCC CHECKDB ;
```

CHECKDB Notes from MS Help

In versions of SQL Server 2005 before SP2, executing DBCC CHECKDB clears the plan cache for the instance of SQL Server. Clearing the plan cache causes recompilation of all later execution plans and can cause a sudden, temporary decrease in query performance.

In SP2 and later, executing DBCC CHECKDB does not clear the plan cache.

Best Practices

Wonderware Support recommends that you use the **PHYSICAL_ONLY** option for frequent use on production systems.

Using **PHYSICAL_ONLY** can greatly shorten run-time for DBCC CHECKDB on large databases.

Wonderware Support also recommends that you periodically run DBCC CHECKDB with no options. How frequently you should perform these runs depends on individual businesses and your production environments.

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For technical support questions, send an e-mail to **wwsupport@invensys.com**.

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