SUPPORT NOTE

SN-118

Truncating a Large Transaction Log File

Overview

SQL Server keeps track of database changes with a transaction log file (*.LDF) that rapidly grows as data is added, removed, altered, etc. Typical RDS Intranet use adds ~1GByte to the transaction log per day, so a server with 60GB of free space will run out of storage in ~60 days if the transaction log is not managed.

However, 1GB of transaction data normally translates into a few Mbytes of storage in the primary database files (*.MDF and *.NDF) once the transaction data is committed to the database. For example, locking and unlocking a record a dozen times adds tens of bytes to the log even though only one data byte is actually altered. Reedholm application note AN-118 has more information on database growth.

Backing up the transaction log moves database changes from the log file to the database and then truncates ("marks" is the Microsoft term) the file so that it can be shrunk during optimization. Furthermore, a transaction log backup file can be considerably larger than the log file itself, even 3X as large. Thus, proper maintenance of the database requires a lot of free disk space.

Database maintenance should include backing up the transaction log file one or more times a day. If not, the log file quickly grows to consume all the disk space. Once that happens, the database shuts down and the RDS Intranet application will not run.

Purpose of Note

This note was written to address situations in which normal transaction log backup and optimization steps fail because the backup media is full. That often happens when the transaction log file has not been truncated and shrunk for so long that it becomes too large to be backed up.

Recovering from Inadequate Space

The best way to recover is to cycle thru the DB maintenance backup and optimization jobs, which are accessed using SQL Server Enterprise Manager and following this menu tree: Console Root → Microsoft SQL Servers → SQL Server Group → (local) → Management → SQL Server Agent → Jobs.

Before executing the Optimization job, the DB maintenance plan should be temporarily altered so the optimization only performs the shrink step.

The job execution sequence should be:

1) Optimize the database
2) Backup the database
3) Backup the transaction log

Steps 1 and 3 should be repeated until the transaction log file is reduced below 2MB. Between the steps, backups that have been created may have to be deleted in order to make room for new backups.

Truncating and Shrinking the Log File

If the above instructions do not shrink the database, execution of the following commands from SQL Query Analyzer will truncate and shrink the log file without trying to make a backup first:

- Backup log RIWEBSQL with Truncate_only
- Use RIWEBSQL
- DBCC Shrinkfile (RIWEBSQL_log, 2)

If the Shrinkfile command doesn’t run because the transaction log is busy, the optimization job needs to be run in order to shrink the log file.

The Microsoft article, “INF: Shrinking the Transaction Log in SQL Server 2000 with DBCC Shrinkfile (ID: 272318)”, has detailed instructions.

Finishing the Maintenance Plan

Once RDS Intranet can run, all action jobs in DB maintenance plan need to be verified and executed.