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MANAGING LOG FILE OBESITY

Mike Fal

Has this ever happened to you?

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The Finish Line

- ## SQL's Eating Habits
  What is the log and how does it work?

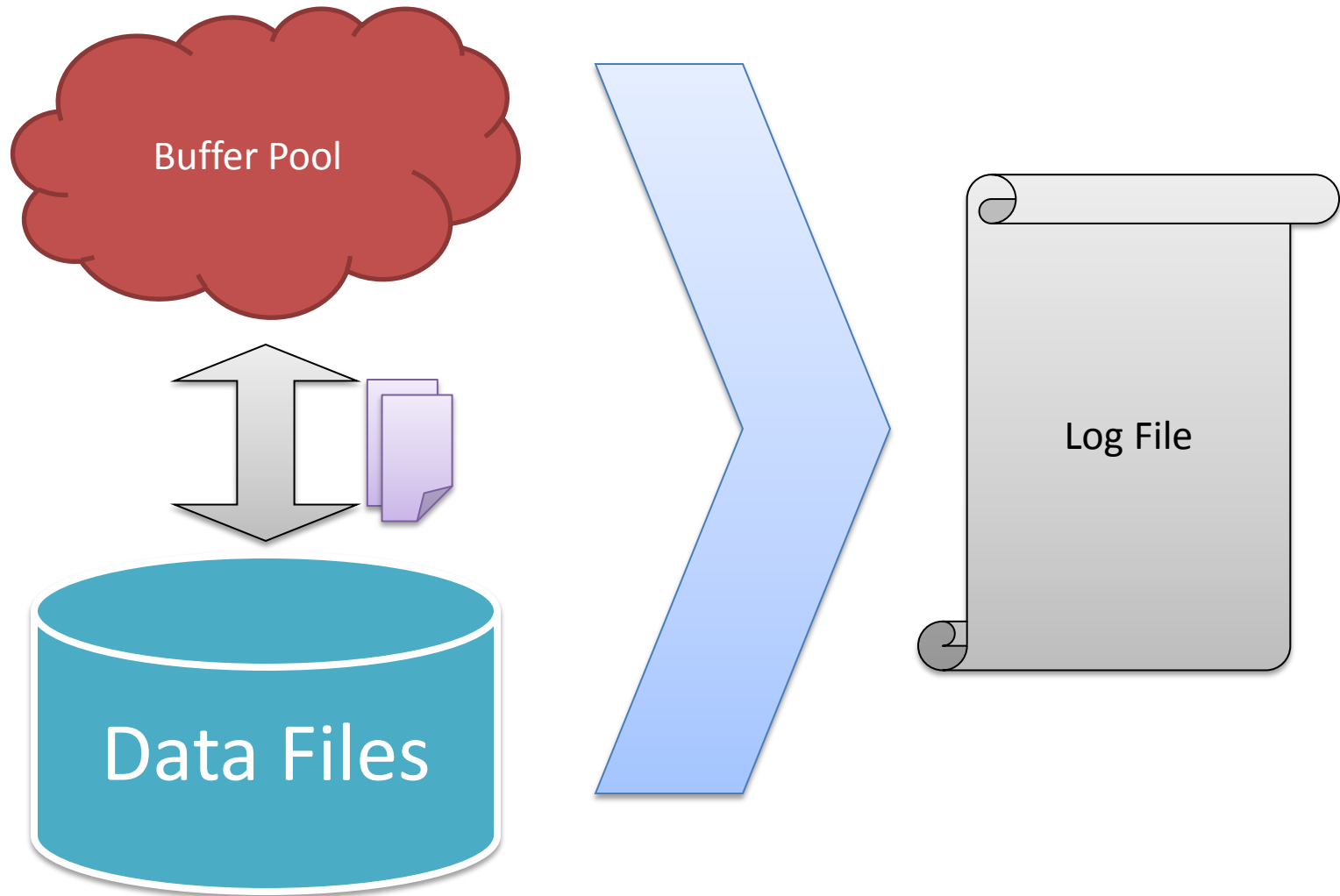- ## Daily Diet
  How does the log file mange itself?

- ## Eating Healthy
  What can we do to keep our log file the right size?

The Big Picture

Buffer Pool

Data Files

Log File

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What is the log file?
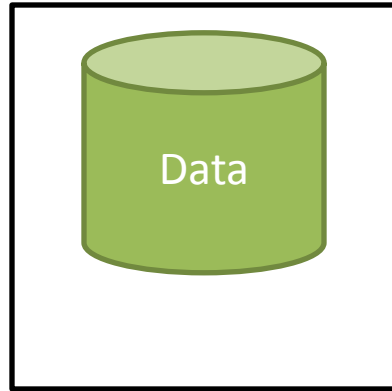
SQL Server's Scratch Pad

Where SQL keeps track of its work

Holds on to that until it's safe to "throw it away"

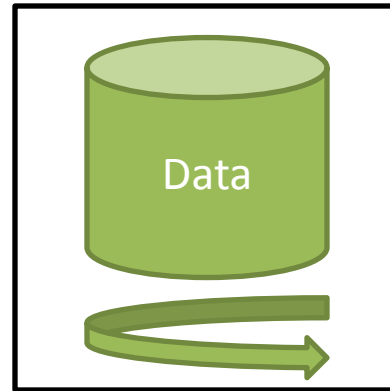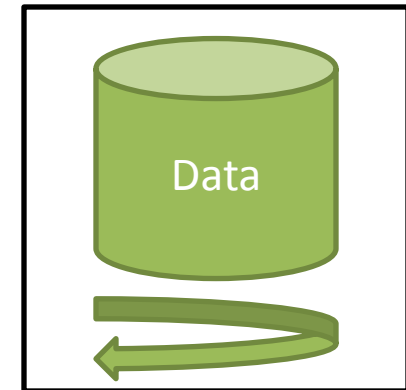*Includes work that is complete as well as work in progress*

Recovery

Phase I — Data

Phase II — Apply Logs

Phase III — Rollback

Recovery Models

SIMPLE

BULK LOGGED

FULL

Log Truncation

Process that empties certain parts of the log

Occurs based on different factors

- Checkpoint in Simple Recovery
- Log backup after checkpoint in Full or Bulk Logged

Checkpoints

- Flushes dirty pages to disk from memory
- Recovery Interval
  - Number of minutes between checkpoints
  - Default 0 – Automatic, usually once a minute
- Database is
  - Backed up
  - Taken offline (also, SQL Service is stopped)
  - Database files are added or removed
- Log becomes 70% full (SIMPLE only)
- CHECKPOINT issued

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Right Sized Portions

Virtual Log Files (VLFs)

- Segments within the log file
- Unit of log truncation
  - When a VLF no longer contains active transactions, it can be truncated
- Created when log file is created or grows, number is determined by how big the file/addition.
- Used in sequential order, round-robin
  - So having more than one log file doesn't really help

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Open Late

As long as a transaction is active, a VLF is active

DBCC OPENTRAN   **sys.dm_tran_active_transactions**

Demo

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Maintaining a Healthy Log

- Pre-size log
  - Mike's rule of thumb: 1/3rd data file size
  - Depends on activity, don't make it to small
- Avoid eating to much
  - Batch large INSERTS/UPDATES/DELETES
  - Regular log backups (SIMPLE is not always the answer)
  - Monitor your behavior and adjust as necessary
- Cleanup after every meal
  - Close/rollback transactions

Resources

- MSDN - http://msdn.microsoft.com/en-us/library/ms190925.aspx

- Kimberly Tripp (VLFs) - http://www.sqlskills.com/blogs/kimberly/transaction-log-vlfs-too-many-or-too-few/

HUH?

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