SQL Server Query Performance Tuning:
A 12–Step Program

solarwinds

START

1 CHECK FOR TABLES + ROWCOUNTS

- Make certain you know the rowcount
- Make sure you're working with tables (not views)

2 EXAMINE THE FILTERS

- Examine WHERE and JOIN clauses — what is the filtered rowcount?

3 KNOW THE SELECTIVITY OF THE TABLES

- Most useful for RIGHT, LEFT, OUTER joins
- Make sure to work with the smallest possible logical set

4 ANALYZE QUERY COLUMS

- Know when the predicate is applied– should be earlier rather than later
- Look for CASE, CAST, CONVERT
- Look for select * or scalar functions (the more data brought back, the less optimal it may be to use certain functions
- Sub-queries
- SARG-able (make an index searchable so a full scan isn't needed)

5 REVIEW EXISTING KEYS, CONSTRAINTS AND INDEXES

- Know what objects exist (avoid duplicating efforts later on)
- What is primary key definition, and is it clustered?
- Check to see if covering indexes can be created (avoid duplication, overlapping)

6 EXAMINE THE EXECUTION PLAN

- Set statistics on (set statistics IO on + set statistics time on)
- Run the plan
- Check the actual plan, not the estimated plan

7 RECORD RESULTS

- Look for logical reads (fewer logical I/Os means faster query)
- Focus on logical I/O (number of logical reads)

8 ADJUST THE QUERY

- Focus on most expensive operations first

9 RE-RUN THE QUERY

- Record the results and compare

10 CONSIDER ADJUSTING INDEXES

- Make small changes
- Consider covering index—an index that includes every column that satisfies the query
- Consider a filtered index (but not if you have parameterized statements)

11 RE-RUN THE QUERY

- Look to reduce logical i/o

12 ENGINEER OUT THE STUPID

- Code-first generators (EMF, LNQ, nHibernate) can be mis-used and bloat the plan cache
- Scalar functions
- Cursors and row-by-row processing
- Join/query/table hints
- Nested views that go across linked servers
- Abuse of wildcards (*) — pulling back too many rows

Find and fix query performance faster with **SolarWinds Database Performance Analyzer**. Free 14-day trial at: **www.solarwinds.com/dpa-download**

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