

SQLServerFast.com

Execution Plan Video Training

Block 1: Understanding execution plans

Level: Basic

Chapter 7: Percentages in the execution plan

Cost percentages

“Query cost (relative to the batch)”

Estimated cost of one execution plan compared to total cost of all plans

Batch of statements

Stored procedure

User-defined function

Trigger

Can be misleading!

Based on ***estimated*** cost of each execution plan

These estimates can be wrong

Cost percentages


“Query cost (relative to the batch)”

Estimated cost of one execution plan compared to total cost of all plans
Can be misleading!

Operator cost percentage

Estimated cost of one operator compared to total cost of plan
Can be misleading!

Based on ***estimated*** cost of each execution plan
These estimates can be wrong



```
Index Seek (NonClus...  
[SalesOrderDetail] ...  
Cost: 45 %
```

Cost percentages

“Query cost (relative to the batch)”

Can help identify problem queries in batch or code unit

No more reliable than the cardinality estimates

Based on hardware assumptions that are ...

probably not true for your hardware and requirements ...

and mostly outdated

Cost percentages

“Query cost (relative to the batch)”

Operator cost percentage

Can help identify problem queries in batch or code unit

No more reliable than the cardinality estimates

Based on hardware assumptions that are ...

probably not true for your hardware and requirements
and mostly outdated

Cost percentages

All cost percentages are *estimates*

Not an SSMS specific problem

Based on execution plan XML → Only estimated cost available

Other tools have the same data and display the same percentages

Exception: SentryOne Plan Explorer

Option to track actual resource usage while query is running

Used for “recosting”: attempt to approximate “actual operator cost”

Actual and estimated cost can be toggled in display

Cost percentages

All cost percentages are *estimates*

Not an SSMS specific problem

Based on execution plan XML → Only estimated cost available

Other tools have the same data and display the same percentages

Exception: SentryOne Plan Explorer

Option to track actual resource usage while query is running

Not collected for queries that finish too fast

Actual costs display shows estimated costs in this case (like other tools)

Cost percentages

All cost percentages are *estimates*

Not an SSMS specific problem

Based on execution plan XML → Only estimated cost available

Other tools have the same data and display the same percentages

Exception: SentryOne Plan Explorer

Option to track actual resource usage while query is running

Not collected for queries that finish too fast

Does not affect query cost relative to batch

Only operator cost relative to plan

Completion percentages

Live execution plan

- Completion percentage for each operator

 - Number of rows produced so far vs. estimated number of rows to produce

 - Can go (far) over 100% if estimated number of rows is too low

 - May never reach 100% if estimated number of rows is too high

 - Progression not always linear

Execution plan plus run-time statistics

- Final numbers only

- If not (near) 100%, estimated number of rows was wrong!

Finding bad cardinality estimates

Bad cardinality estimate

Often root cause of performance issue

Find by ...


Comparing *Actual Number of Rows* vs *Estimated Number of Rows*

Completion percentage in execution plan plus run-time statistics

All methods are *sometimes* potentially confusing

Edge cases where number of rows wrong in execution plan XML

Actual Number of Rows for All Executions	42
Estimated Number of Rows Per Execution	1
Estimated Number of Rows for All Executions	1
Estimated Row Size	15 B
Estimated Data Size	15 B


Merge Join
(Inner Join)
Cost: 4 %
0.031s
42 of
1 (4200%)

Summary

Percentages in the execution plan

Cost percentages

- Always based on estimates, not on actual cost

- If cardinality estimates are wrong, cost percentages are unreliable

Completion percentages

- Number of rows really returned vs estimated number of rows

- Measure of completion

- Indication for wrong cardinality estimates

Summary

Block 1, basic level

- Importance of execution plans

- Ways to request an execution plan

- Basics of reading execution plans

- Properties

- Finding execution plans that have already executed

- Cardinality

- Percentages

Next chapters

Block 1: Understanding execution plans – advanced level

- Properties for the entire execution plan

- Properties found on (almost) all operators

- Ordering in the data stream

- Missing nodes

- Batch mode execution versus row mode execution

Next chapters

Block 1: Understanding execution plans – advanced level

Block 2: Reading data – basic level

- Scans

- Seeks

- Lookups

- Special cases