SQLServerFast.com
Execution Plan Video Training

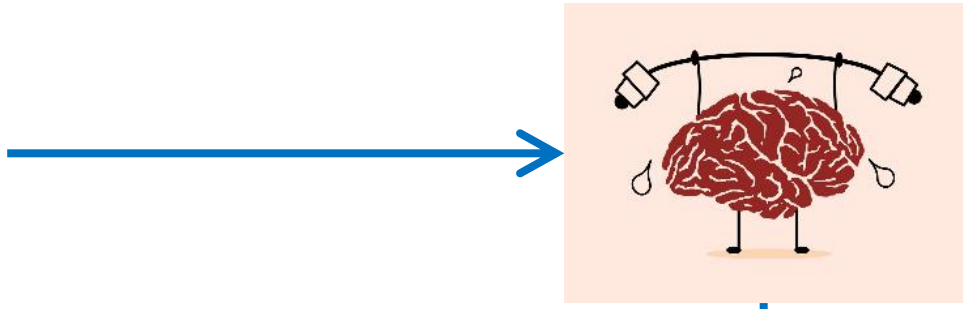
Block 1: Understanding execution plans

Level: Advanced

Chapter 4: Missing nodes

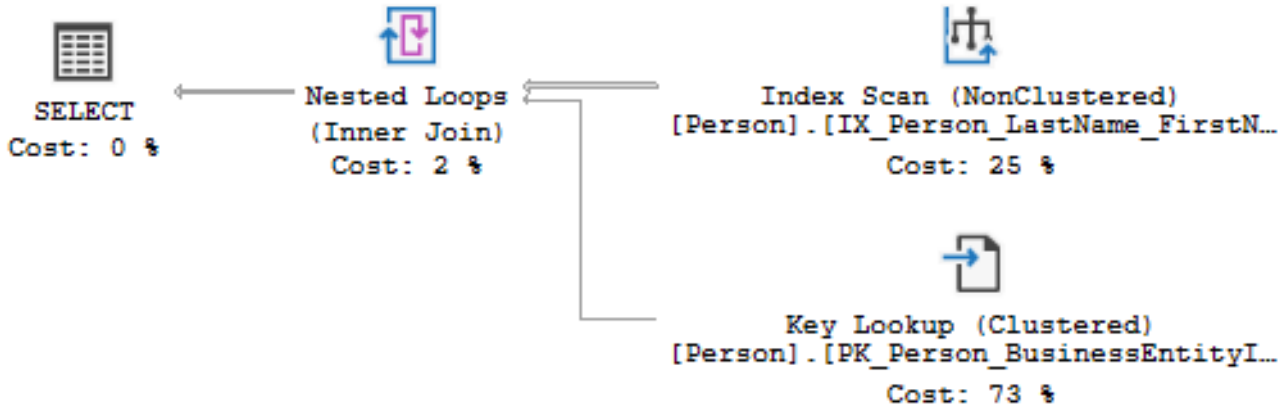
Query optimization

```
SELECT p.FirstName,
       p.LastName,
       p.Title
FROM   Person.Person AS p
WHERE  p.LastName = 'Kornelis';
```



Mostly not in scope

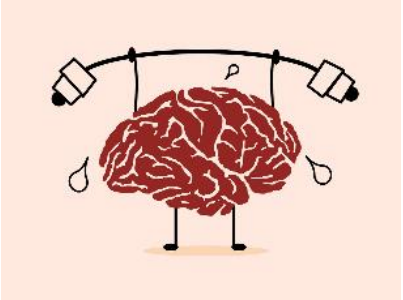
Except now



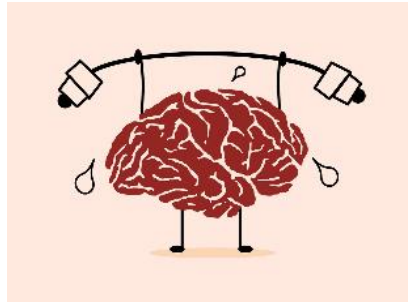
Query optimization

Phases in query optimization

- Pre-processing
  - Parser
    - Checks syntax
    - Transforms query to parse tree
  - Algebrizer
    - Binds names to objects
    - Checks existence and permissions
    - Inlines views and user-defined functions when possible
    - Transforms parse tree to bound tree



Query optimization



- Phases in query optimization
  - Pre-processing
    - Parser
    - Algebrizer
  - Actual optimization
    - Optimizer considers lots of possible execution plans
    - Cheapest estimated cost found within available search time is selected
    - Still beyond the scope of this course
  - Post optimization cleanup
    - Various “obvious” standard replacements

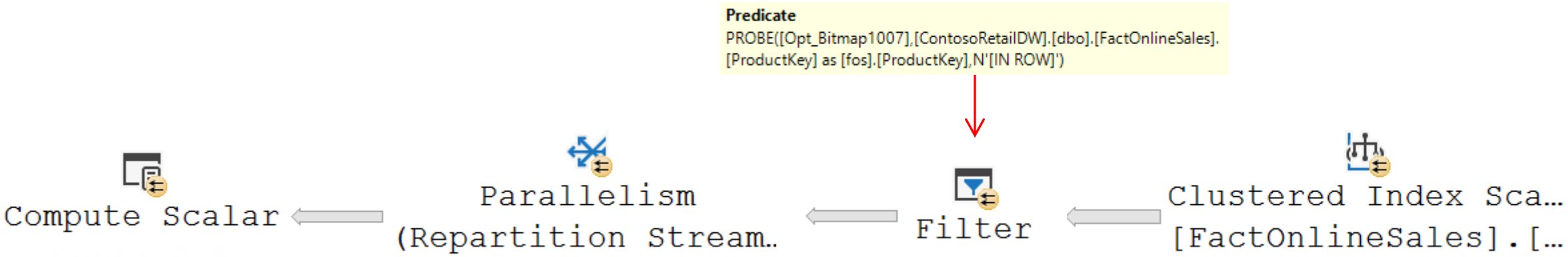
Missing nodes

Property: *Node ID*

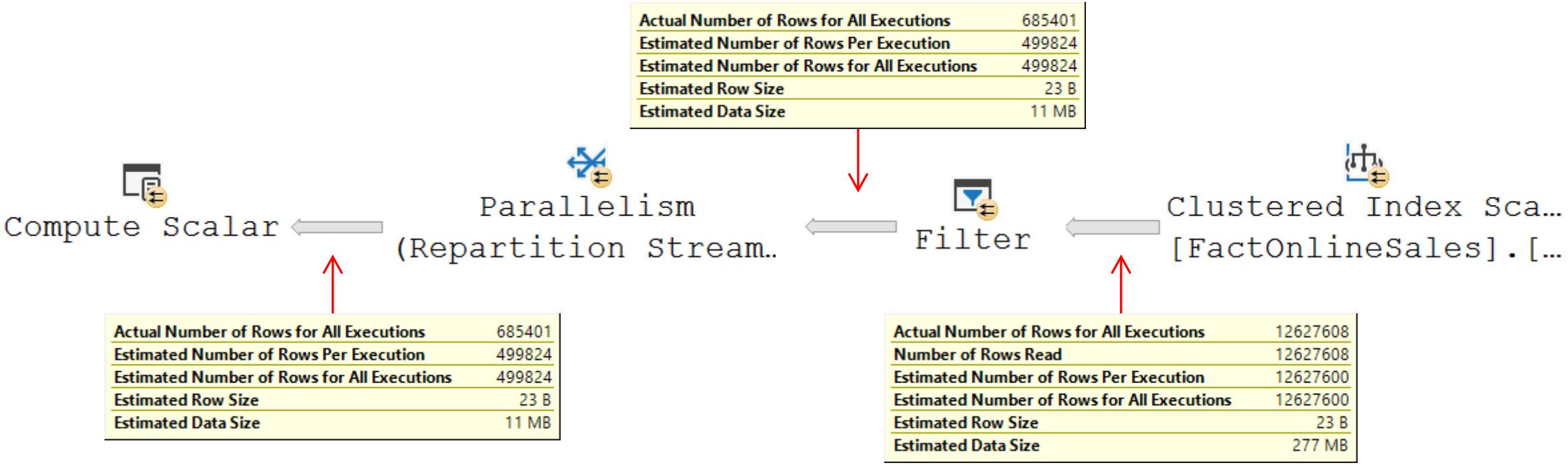
- Zero-based, consecutive numbers
- Assigned left to right, top to bottom
- Assigned at the end of actual optimization
- Not renumbered after / during post optimization cleanup
- Can be used to identify post optimization cleanup effects:
  - Gap in numbers indicates node was removed
  - Numbers out of order *probably* indicates operators where swapped

Most of the time, missing/swapped nodes are not irrelevant

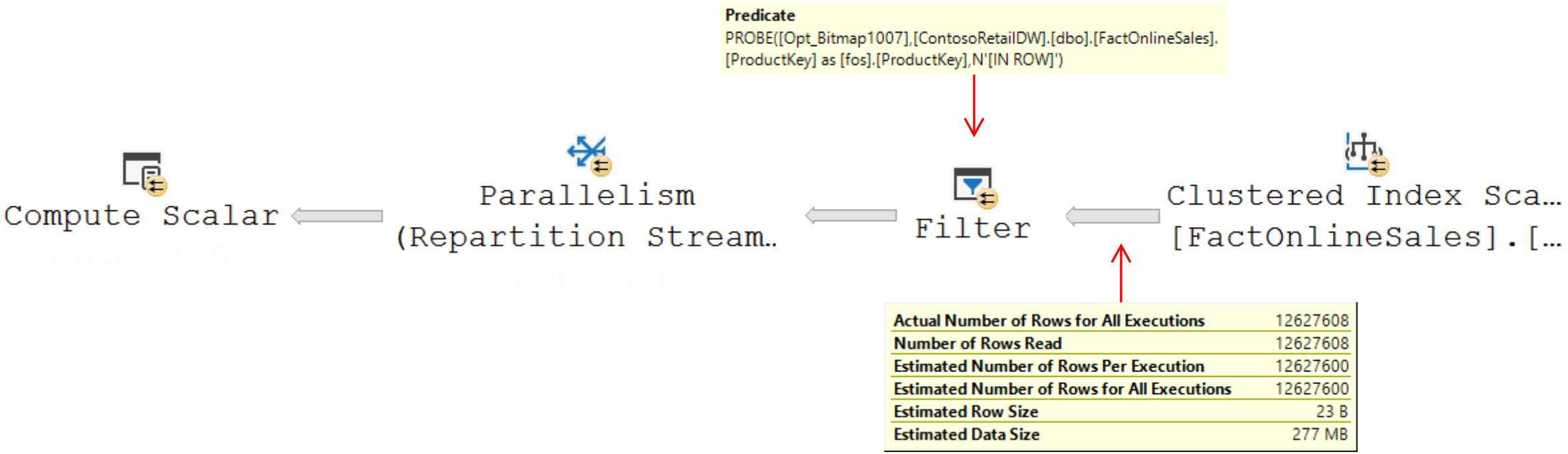
Missing nodes



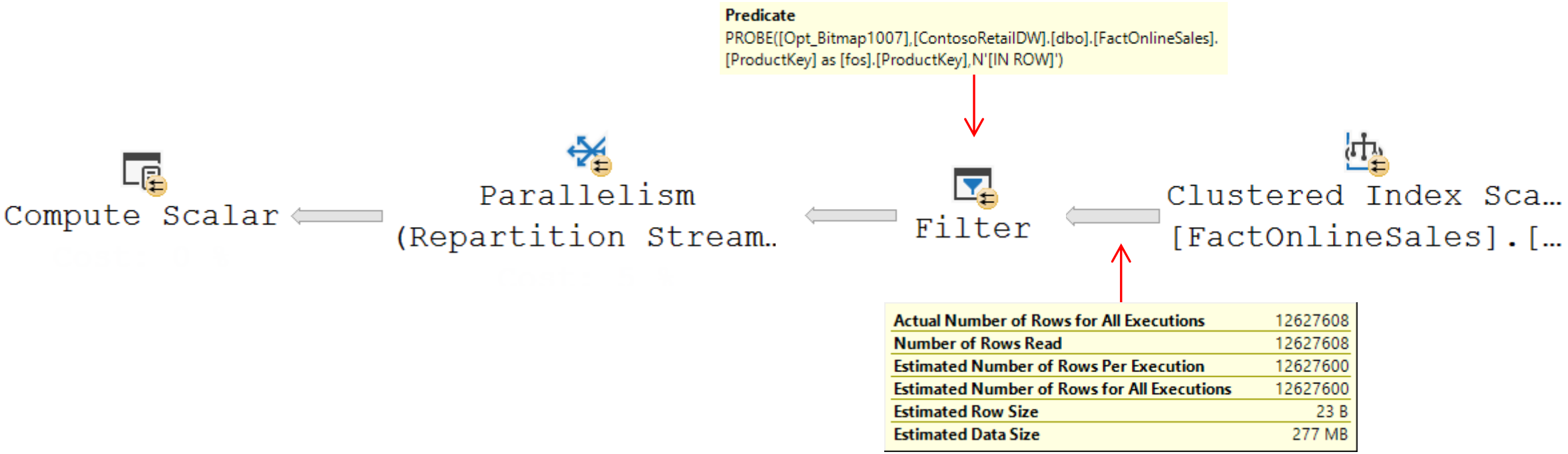
Missing nodes



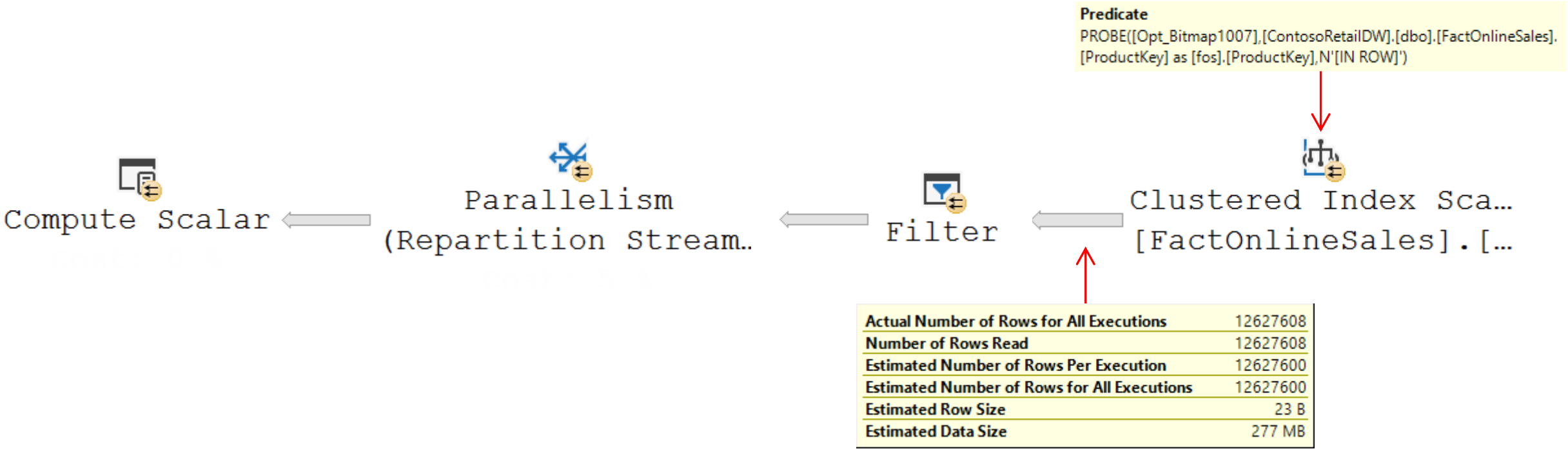
Missing nodes



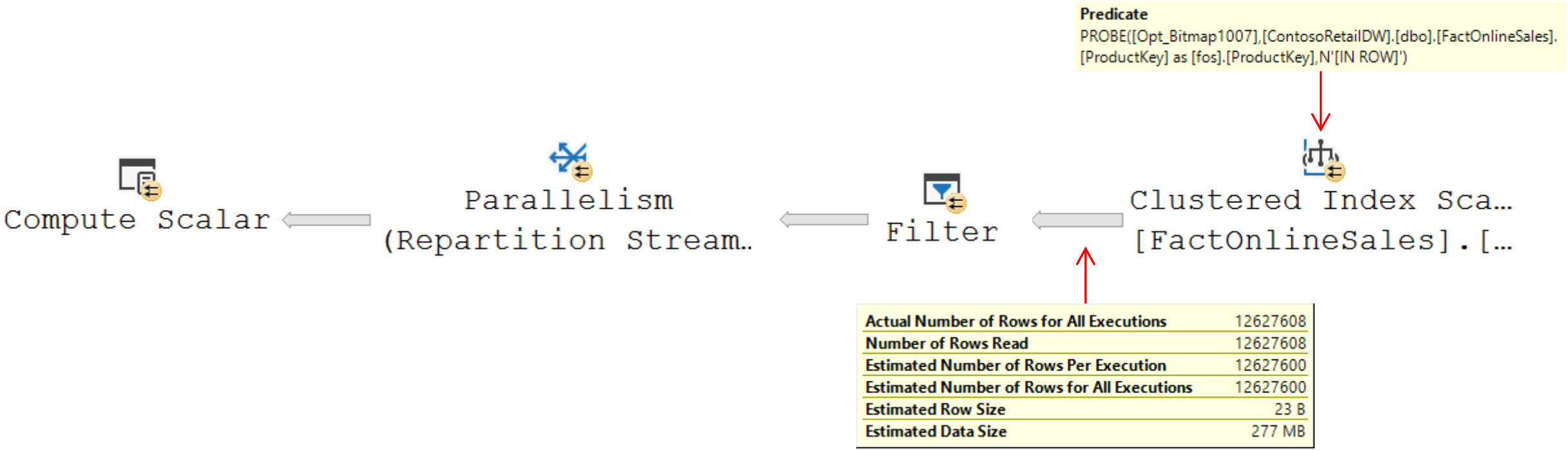
Missing nodes



Missing nodes



Missing nodes



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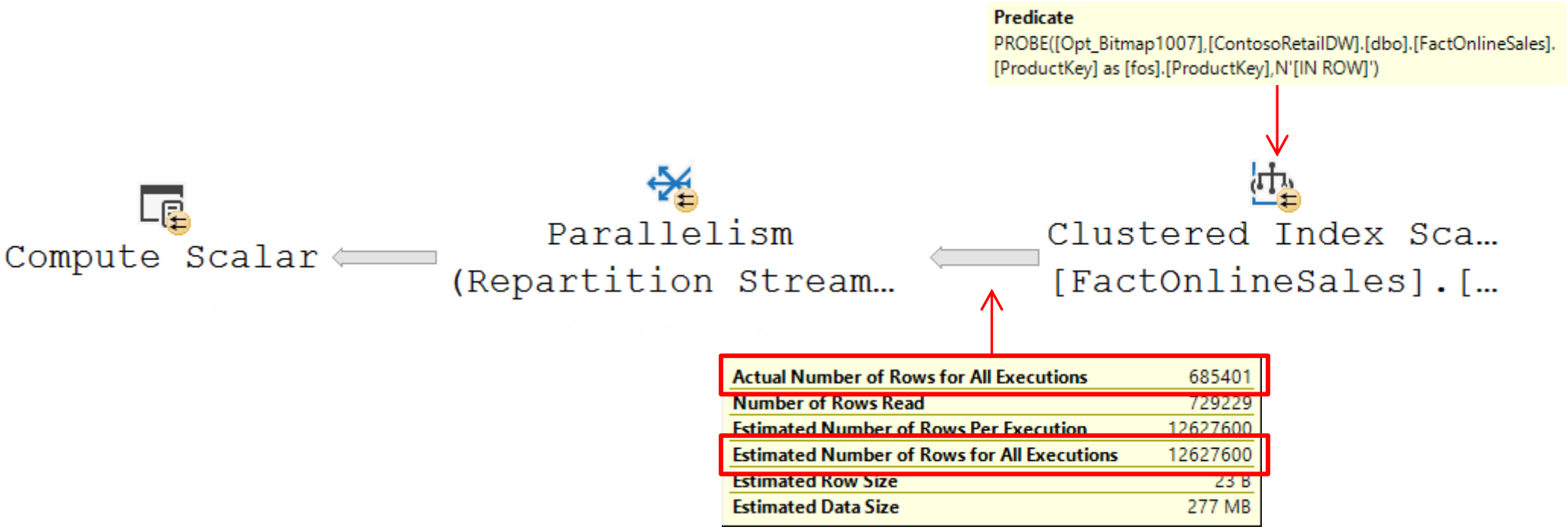

Summary

- Missing nodes
  - Removed during post optimization cleanup
    - Details of this process are undocumented and largely unknown
  - Recognized by “gap” in *Node ID* property
  - Can affect properties

  - Not the only possible cause for “weird” properties!

Next chapters

Chapter 5: Batch mode versus row mode

- Differences between batch mode and row mode
- Limitations, drawbacks, and benefits of batch mode
- Requirements to get batch mode execution
- How batch mode execution displays in execution plans