Query Performance Monitoring For The Absolute Beginner

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Session Goals

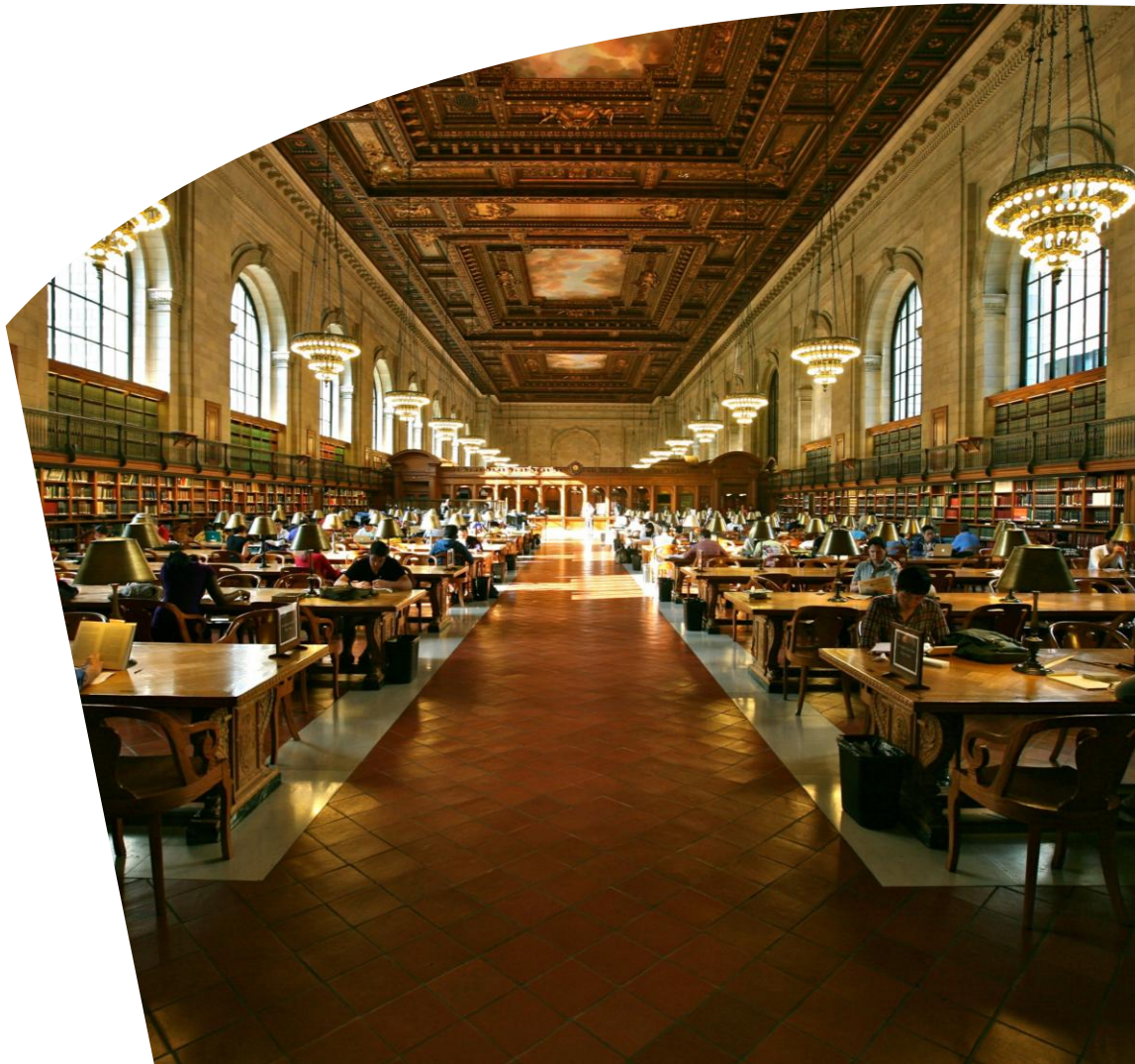
- Understand the importance of metrics to drive tuning
- Learn what kinds of metrics are available within PostgreSQL
- Explore how metrics are gathered and applied within PostgreSQL

Why Capture Query Metrics?

- It’s the code
- Except when it’s the index
- Unless it’s statistics
- Or it could be the structure
- But it’s probably the code

Why Capture Query Metrics

- Knowledge-based decision making
- An understanding of actual behaviors
- No more guessing



Three Tools in Core

- Logs
- Cumulative Statistics System (CSS)
- Explain/Execution Plans

Logs

- log_duration
- log_min_duration_statement
- Auto_explain
- Log_statement
- Log_line_prefix

Logs

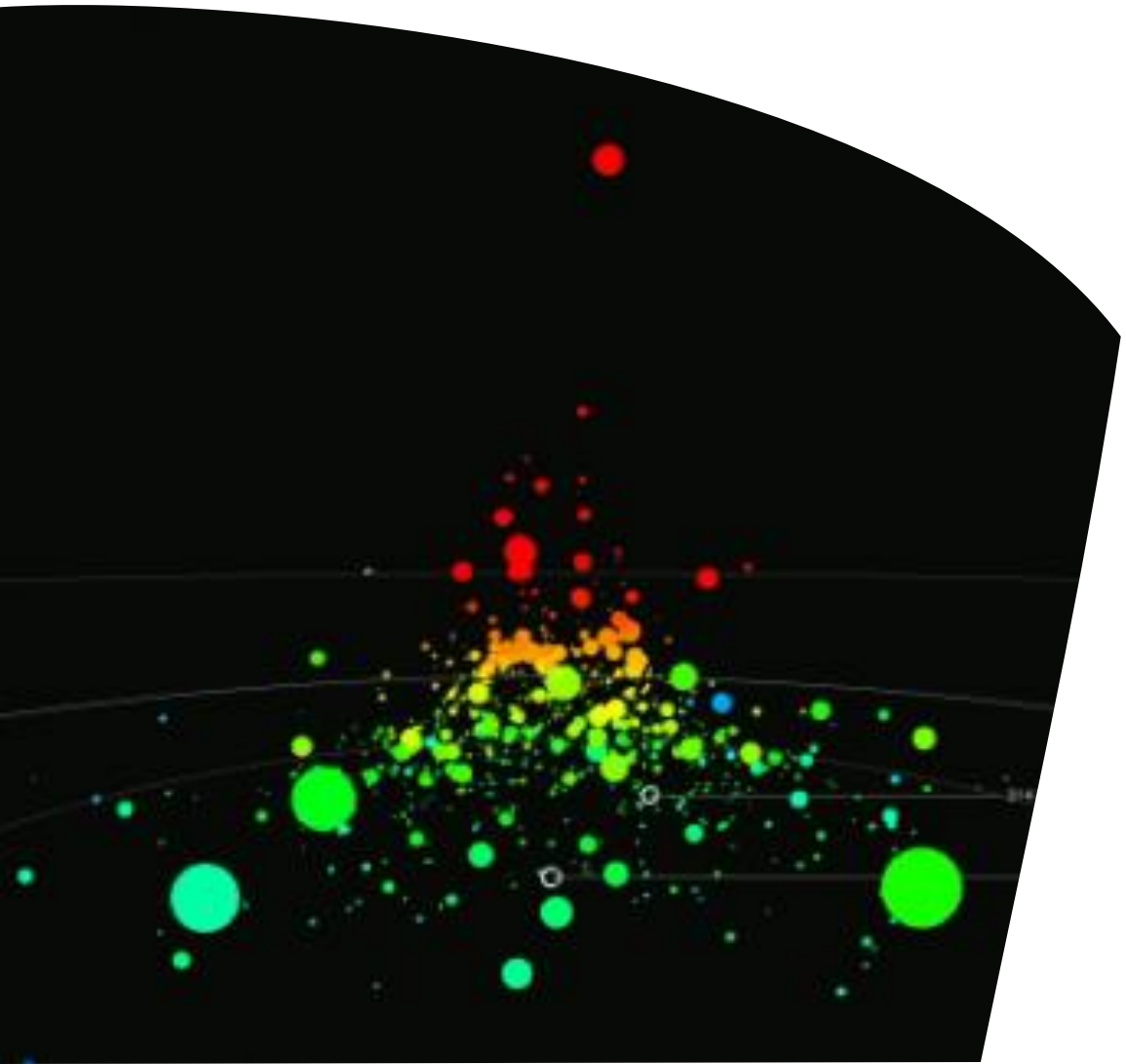
- Query using pg_read_file()
- Or, query using file_fdw
- Can store logs as CSV or JSON for easier querying
- Get pgBadger

DEMONSTRATION

Log Shortcomings

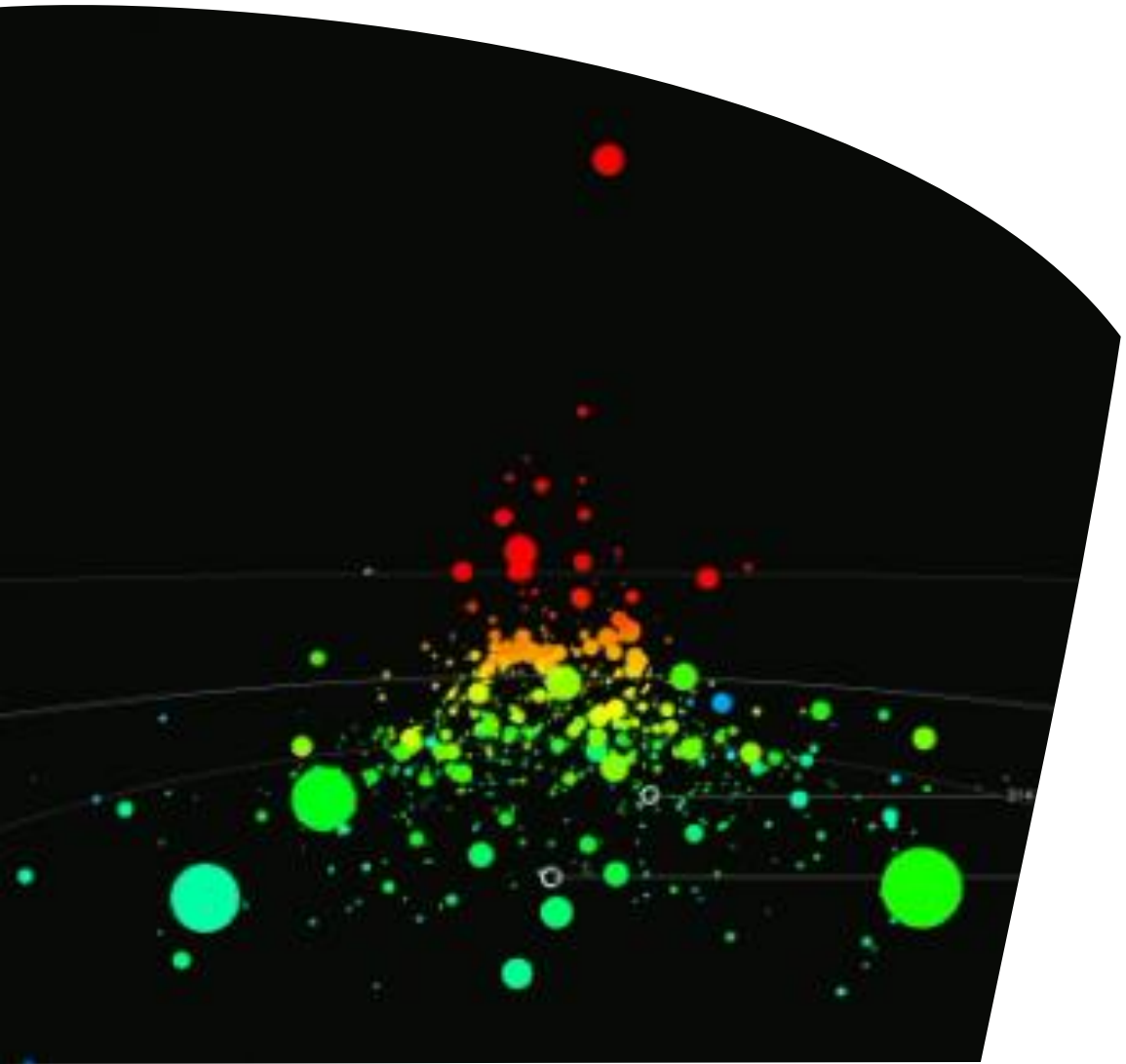
- Hard to read
- Requires storage management
- Can negatively impact I/O
- Production may be locked down
- Lack of correlation with other metrics

Cumulative Statistics System



- Collection is automatic
- Information is aggregated
- Metrics are broken down by type
- Both real-time and historical information is available

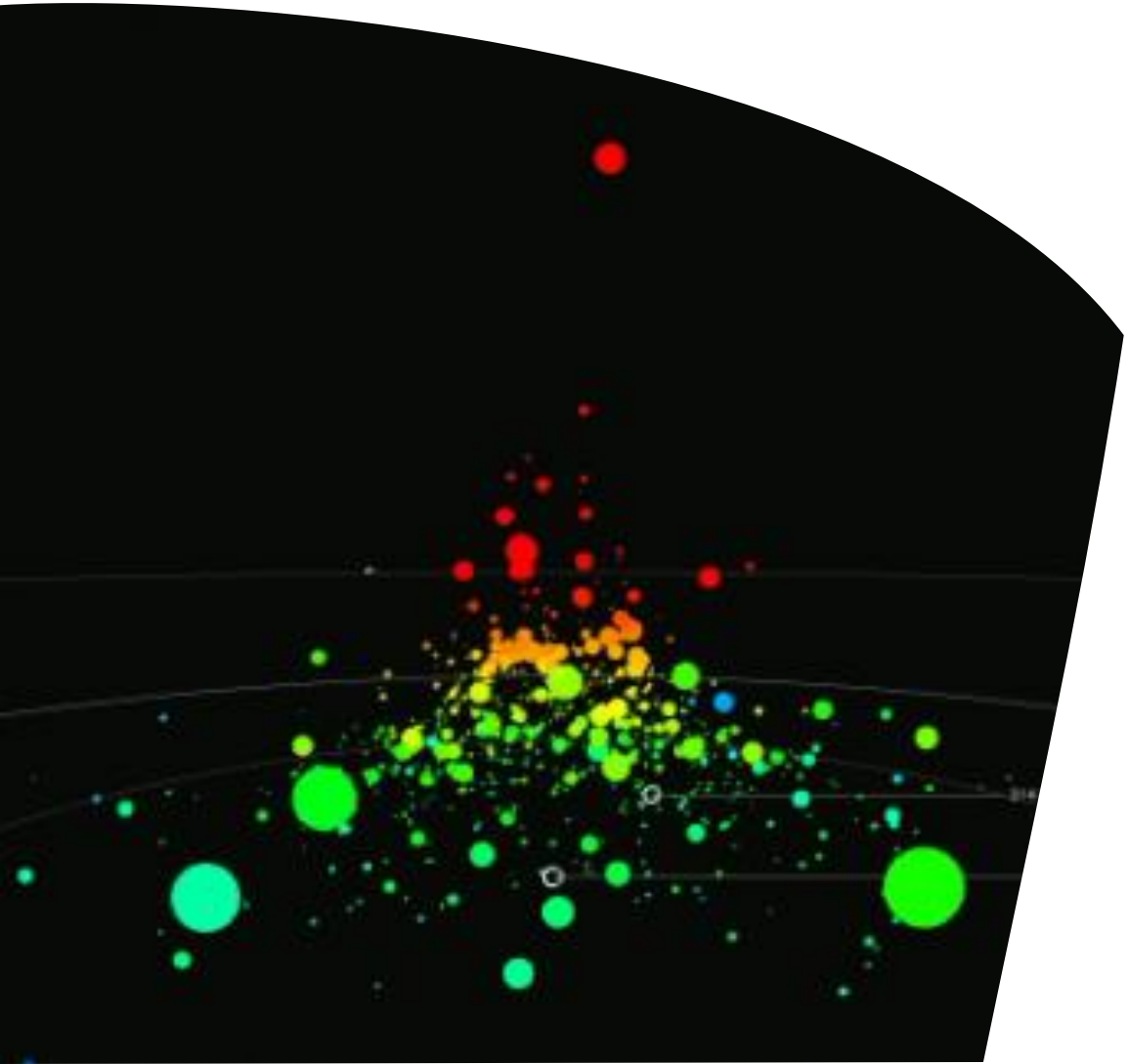
Cumulative Statistics System



- pg_stats_statement is disabled by default
- Enabling requires cluster restart
- Data collection is automated from there
- It’s just queries to see the data

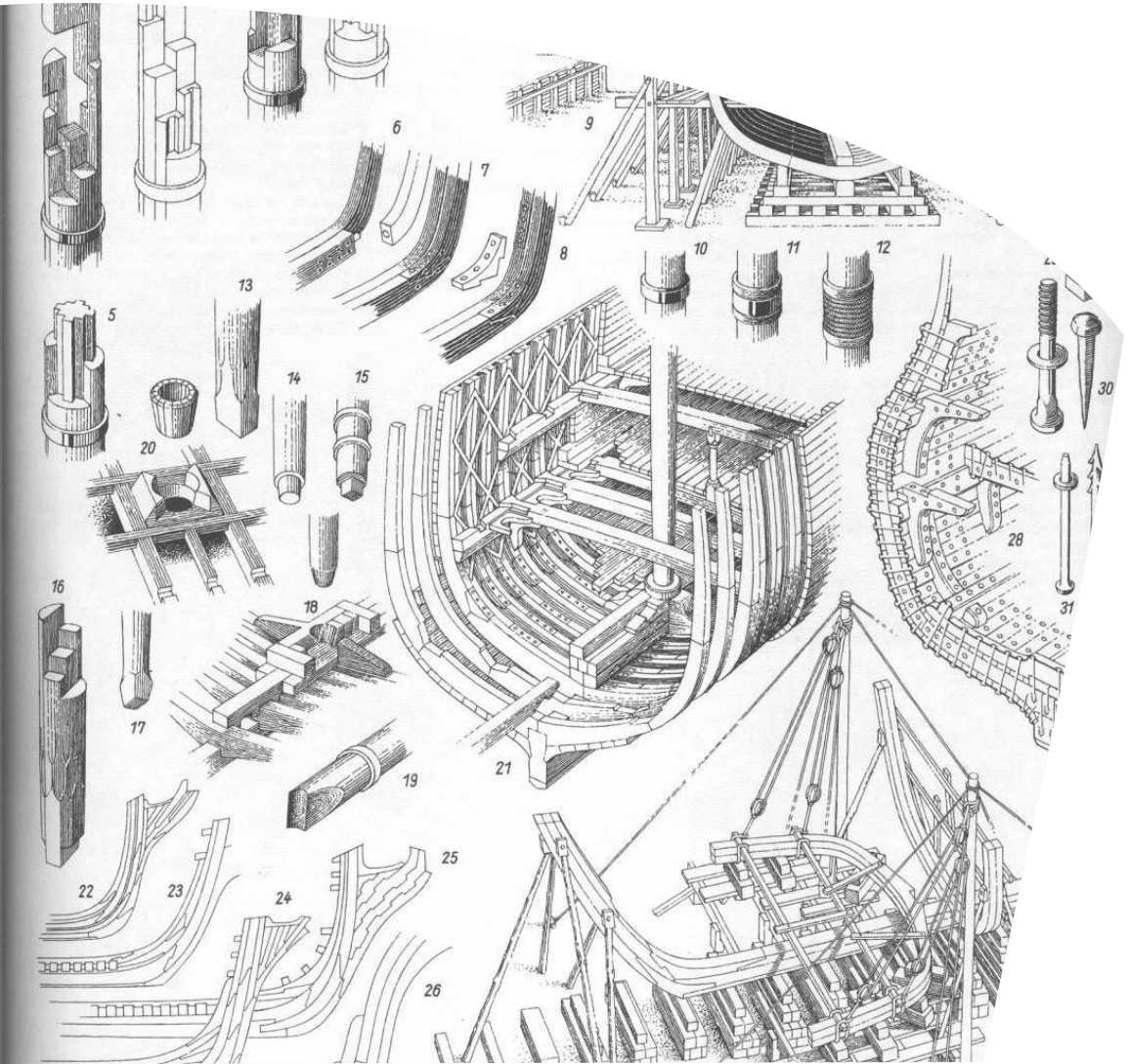
DEMONSTRATION

CSS Shortcomings



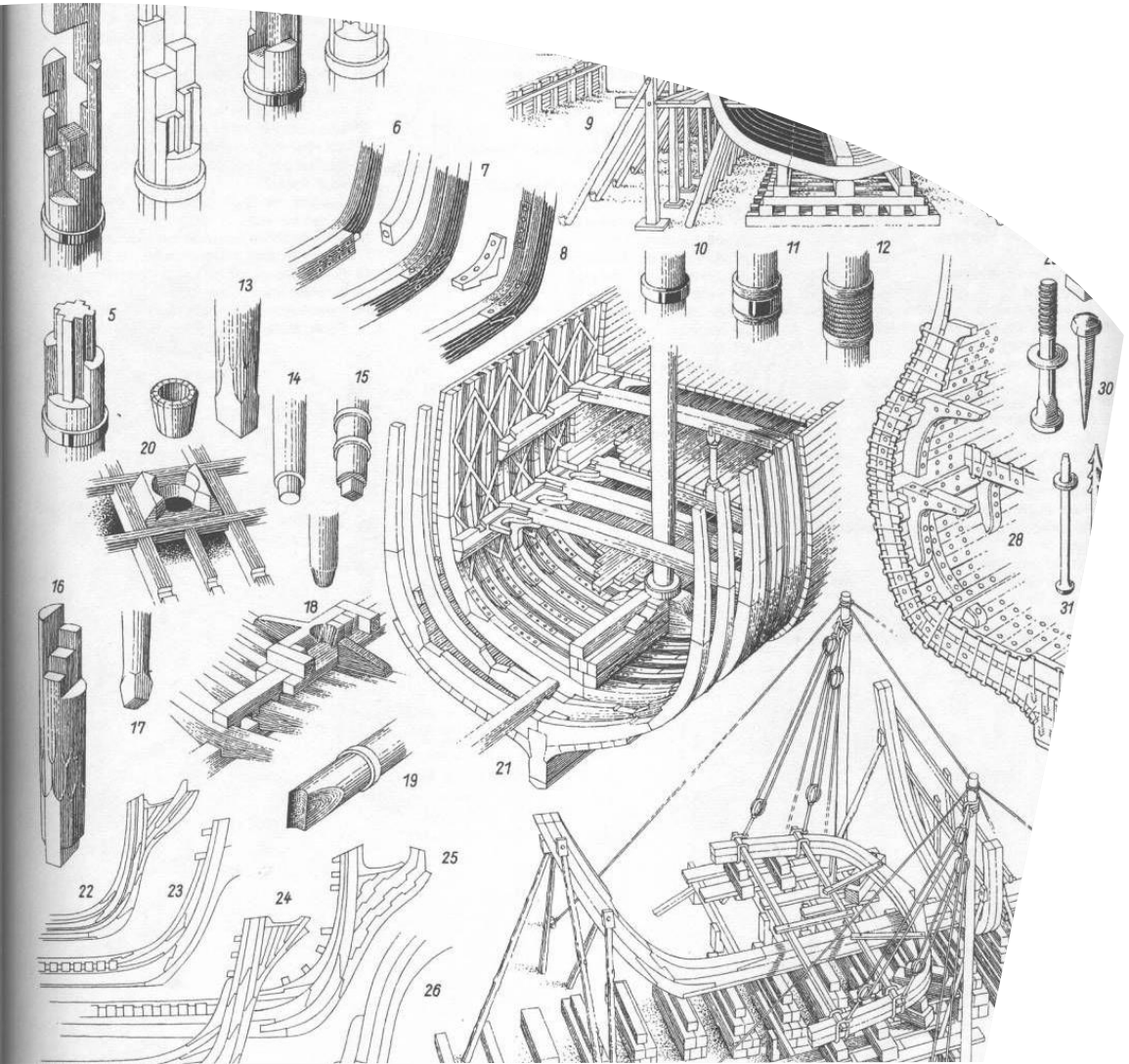
- Aggregation only, no history
- Enabling requires cluster restart
- Dependent on logs if you need plans

EXPLAIN Plans



- Not “data collection” as with the previous two
- To get measures, you must execute the query
- Fundamental tool for query tuning

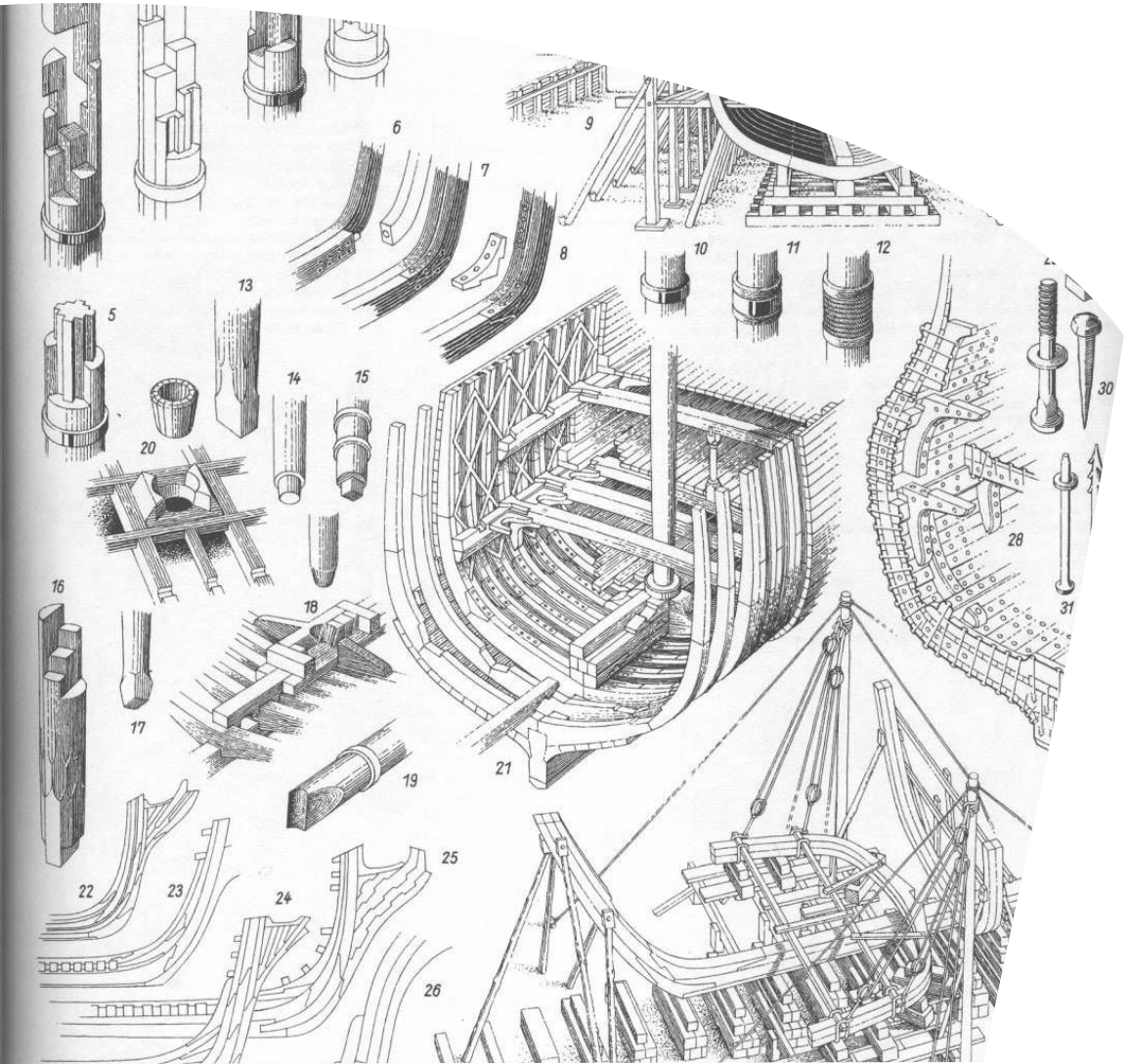
EXPLAIN Plans



- EXPLAIN: statistics & plan
- ANALYZE: + actual measures
- BUFFERS: + count of blocks touched

DEMONSTRATION

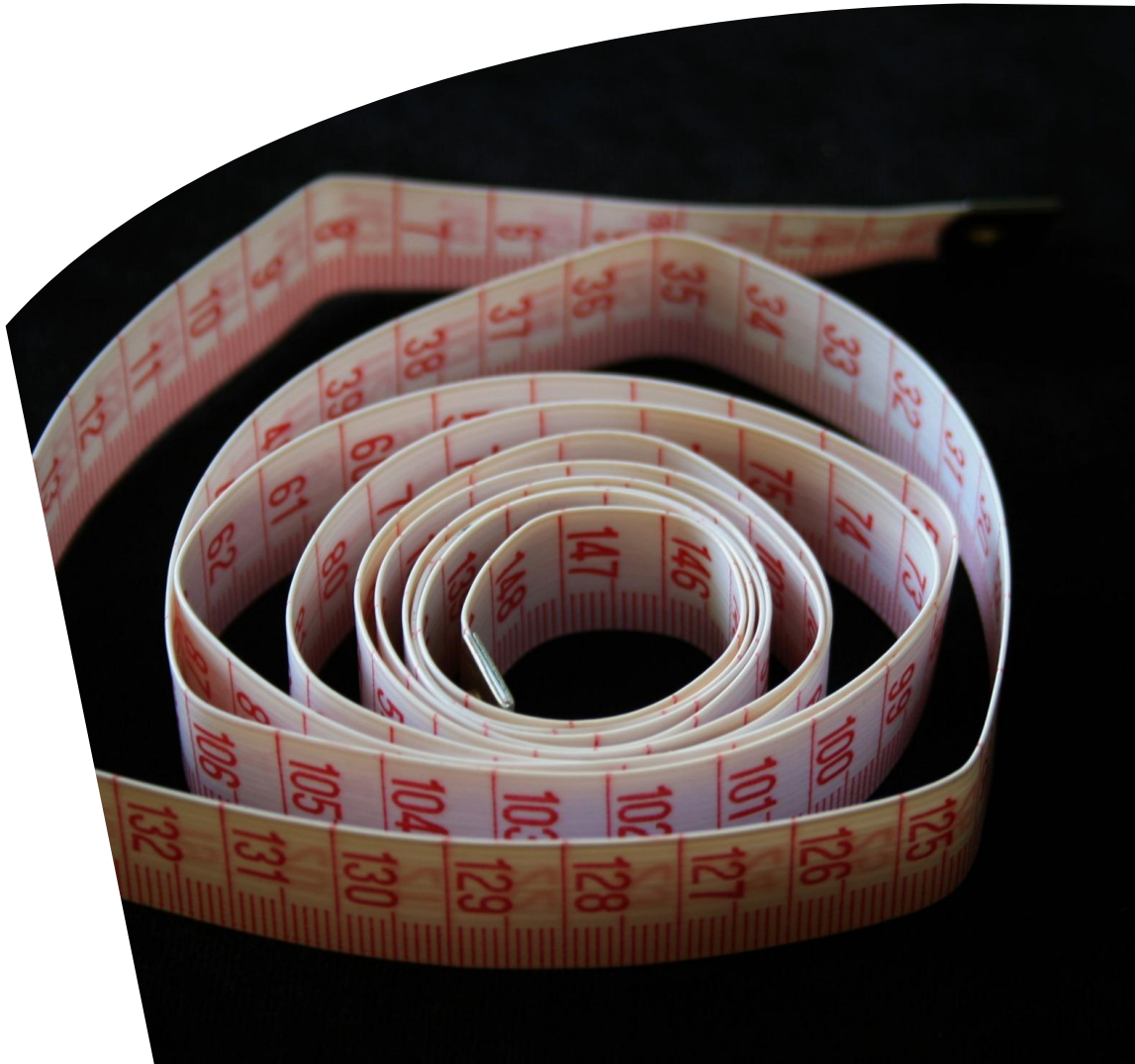
EXPLAIN Plans Shortcomings



- To get the measures, you must execute
- Except for logs, one at a time
- No aggregate behaviors

But What About Other Metrics?

- Memory
- CPU
- I/O
- Waits
- Others



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Code & Slides

- GitHub - ScaryDBA/PostgreSQL_PerformanceMonitoringForTheBeginner
- My profile presentations

Questions?

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