Lessons Learned & Future Plans

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PITR

• Point In Time Recovery

• Critical Feature for Enterprise adoption

• Do Big Things!

• Extensibility is Good → BaRman
Streaming Replication

• Streaming Replication
  – Simple Things work best

• Hot Standby
  – Sometimes, complexity is needed
  – Complexity takes much longer
  – Generates way more bugs

• Synchronous Replication
Extensibility

- Extensions
- Background Workers
- Logical Decoding
- Sequence Access Method
- Sample Access Method
AXLE Project from EU

• Block Range Indexes (BRIN)
• TABLESAMPLE
• Optimizer enhancements
  – Aggregate sharing
  – Aggregate pushdown
  – Multi-column statistics
• Attention to detail
Recent TPC-H results, 3TB

Baseline PG 9.2 vs PG 9.6 + patches

Query execution time (seconds)

Q1  Q2  Q3  Q4  Q5  Q6  Q7  Q8  Q9  Q10  Q11  Q12  Q13  Q14  Q15  Q16  Q17  Q18  Q19  Q20  Q21  Q22

Baseline 9.2  9.6 + patches

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• **Unified Data Analytics**

• **PostgreSQL 9.5**
  – TABLESAMPLE

• **Orange**

• **LibreOffice Calc**

• Access to all Big Data sources
  – Oracle
  – Hadoop
TABLESAMPLE in 9.5

- SELECT avg(cost)
  FROM bigtable
  - Scans whole table to return precisely calculated answer

- SELECT avg(cost)
  FROM bigtable TABLESAMPLE system(1)
  - 1% sample of table blocks - fast, approximate answer

- SELECT avg(cost)
  FROM bigtable TABLESAMPLE system_time(1)
  - 1 second sample – fast, approximate answer
  - Time-bounded
Performance Analysis

• Use more resources → Parallel Query

• Increase efficiency → BRIN, Optimizer

• Operational Business Intelligence
  – OLTP
  – Business Intelligence
  – Machine Intelligence
Summary

- 9.5 out soon, 9.6 looking good also
  AXLE has been a huge benefit to PostgreSQL
- 2ndQuadrant commit to 4 man years per year for Core PostgreSQL development, rising over time
  - Logical Replication & High Availability
  - Scalable PostgreSQL
  - Operational Business Intelligence
  - Administration Improvements
  - Security

- Customer funded, sustainable open source development
- *Highly Available, Responsive Support & RemoteDBA*