PostgreSQL Development Roadmap

Simon Riggs
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Research Funding

- AXLE Project
- 4CaaST Project
- SP-GiST (NSF)
- PostgreSQL!

- Telegraph CQ
- MayBMS
- Postgres Raw

- ...as well as commercial funding
Release Mechanisms

- Current Stable Release  9.2
- Current Beta Release   9.3
- Current Development Release 9.4

- Annual release cycle
- Each release takes about 16 months
- Typical time-to-production
  - 8 – 16 months for minor tweaks
  - 20, 32+ months for larger new features
Many Eyeballs

• Open source's advantage over other development approaches

• Many advantages
  – Leverage
  – Feedback/Focus
  – Discussion
  – Wide testing
Beta testing

- PostgreSQL 9.3 currently in Beta
- Please use this release for new developments, so by the time your project is finished the platform will be tested *for you*, by you
Beta testing doesn't hurt...
9.4 Development Schedule

- May 14  Development Pre-meeting
- Jun 14  Commit Fest 1
- Sep 14  Commit Fest 2
- Nov 14  Commit Fest 3 – Last chance new items
- Jan 14  Commit Fest 4 – Final designs in
- Mar 14  Beta 1
- Sep 14  Release
9.4 Features Already In

• WAL Insert Concurrency
  – xloginsert_slots
• Dynamic Background Workers
  – max_worker_processes
• ALTER TABLE … ALTER CONSTRAINT
• Compression performance optimizations
• Large memory allocations
• MVCC Catalog Access
9.4 Features Complete

- Row Level Security
- Locking Impact Reductions
  - ALTER TABLE
  - REINDEX CONCURRENTLY
  - REFRESH CONCURRENTLY
9.4 Big Features In-Progress

- Logical Replication
- Min Max Indexes
- Parallel Sort
- Event Triggers
- Mat View Maintenance
9.4 Other Features In-Progress

- Tablesample
- Data Load performance enhancements
- SKIP LOCKED
- Extension enhancements
- Foreign Keys on Arrays
Research in Progress

- Parallel Query
- Storage Manager Plugins
- Autonomous Transactions
- I/O and WAL Rate Limiting
- Improving Test Coverage
- Mat View Maintenance
- Range Joins
- Bi Directional Replication
- Online Upgrade
AXLE Project

- Analytics on Xtremely Large European data
  - Secure
  - Big
  - Fast
  - Hardware optimised
  - Visual Analytics

axleproject.eu
AXLE

• Security
• Algorithms
  – Minmax Indexes
  – Bitmap Indexes
  – Column Store
• Architectures
  – GPU integration
  – Compiled predicates
• Visualisation
  – Data Mining

• Who?
  – 2ndQuadrant
  – BSC
  – Portavita
  – UNIMAN
  – UL
Min Max Indexes

• Automatic Partitioning
  – Use theorem proving to avoid sections of scan
  – Covers all columns, not just defined partition key

• ~0.01\% size of table - “min/max indexes”

• Options for placement/free-space use
PostgreSQL Roadmap

- Logical Replication
- Advanced Business Intelligence
- High Security
- Online Change
- Globally Distributed Database
- Very Large Database
Database → Rich Data Platform

Direction

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