Der wachsende Einsatz von Postgres weltweit: Zahlen und Fakten

Sandra Wiecki | November 2015
Agenda

• Überblick
• Erfahrungen Postgres Support
• Erfahrungen Architectural Health Checks
• Zusammenfassung
EDB Serves All Your Postgres Needs

PostgreSQL
Postgres Plus Advanced Server
Postgres Plus Cloud Database

Management
Security
High Availability
Performance

REMOTE DBA
24x7 SUPPORT
PROFESSIONAL SERVICES
TRAINING

TOOLS
SERVICES
DB-Engines Ranking for Postgres

PostgreSQL 9.3 Release: SEP 9th, 2013
Postgres named a Challenger in Gartner Magic Quadrant: OCT 21, 2013

Multiple NoSQL Blogs, News Articles, Tweets & Webinars (over 50,000 page views)

PostgreSQL 9.4 Release: DEC 18, 2015
Postgres named a Leader in Gartner Magic Quadrant: OCT 27, 2014

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Survey: Adoption Drivers for Postgres

Reasons behind IT decision to select Postgres Plus Advanced Server as their database management system:

- Strategic open source requirement: 60%
- Lower overall IT spend: 67%
- Unhappy with existing database vendor support and/or pricing: 42%
- Vendor flexibility: 33%
- Other: 12%

Note: this is a multiple choice question—response percentages may not add up to 100.
EnterpriseDB is a Leader

The Gartner report, *Magic Quadrant for Operational Database Management Systems*, by Donald Feinberg, Merv Adrian, Nick Heudecker, Adam Ronthal, and Terilyn Palanca was published October 12, 2015.
Postgres Support Experiences
Why Analyze Support Tickets

• Adoption of Postgres is growing fast
  – More and more Postgres users are not ‘dyed in the wool’ Postgres users – they come from Oracle, MS SQL, DB2, etc.

• Postgres is moving into more complex and more mission-critical applications
  – Question patterns are changing from simple to complex
  – Expertise level is changing – when the customer calls, it is with a (more) difficult problem or urgent issue

• How do we make Postgres users even more successful?
  – Targeted white papers
  – Targeted training for support team
  – Pro-active training for users as part of our customer enablement process
  – Balanced product strategy of new features, new capabilities and usability
Tickets pro Platform
Postgres Plus Advanced Server vs. PostgreSQL
Ticket Volumes & Multi Year Growth
Kundenanfragen nach Lifecycle-Phase
Tickets nach Kategorie

- POC
- Dev
- Deployment
- Maintenance

- Tuning
- Product Awareness
- How to
- Enhancements
- Corruption
- Bug
Top questions

• **Deployment/Product Awareness & How To**
  - How to set up connection pooling?
  - How to set up a hot standby and streaming replication?
  - How to add table spaces?
  - How to partition?
  - How to upgrade the major version?

• **Maintenance/Product Awareness & How To**
  - How to find bloat in tables & indexes?
  - How to enable auditing selectively without performance impact?
  - What are the effects of changes to the values of `postgresql.conf` file parameters `wal_writer_delay`, `bgwriter_delay`?
  - What is the correct configuration of `hba_conf`?
## Where Do Users Need Help

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Lessons Learned from the AHC
Architectural Health Check

• Systematic top-to-bottom review of the customer’s Postgres production installation

• Identifies issues and improvement opportunities in:
  – Resource management
  – Configuration tuning
  – Resource management
  – Query performance
  – Maintenance
  – Security
  – DR Plan
  – Upgrades
Database Parameter

Top Database Parameter Adjustments - Ordered by Frequency

- effective_cache_size
- shared_buffers
- wal_buffers
- maintenance_work_mem
- bgwriter_lru_maxpages
- bgwriter_lru_multiplier
- work_mem
- random_page_cost
- work_mem
- cpu_tuple_cost
- checkpoint_segments
- checkpoint_completion_target
- checkpoint_timeout
- log_line_prefix
- log_lock_waits
- log_min_duration_statement
- logautovacuum_vacuum_scale_factor
- logautovacuum_vacuum_cost_delay
- logautovacuum_vacuum_cost_threshold
- logautovacuum_vacuum_naptime
- logautovacuum_min_duration
Kernel Parameters

- vm.dirty_background_ratio
- vm.dirty_ratio
- kernel.shmmax
- swappiness
- kernel.shmmax
- kernel.mm.transtransparent_hugepage.e
- kernel.mm.transtransparent_hugepage.d
Lessons Learned

- Adjusting the kernel's behaviour to flush dirty buffers to disk
  - `vm.dirty_ratio` and `vm.dirty_background_ratio`
- Optimizing memory usage
  - `shared_buffers`
  - `work_mem * max_connections`
- Identifying long-running queries
Backup and Standby

Backup
- Physical Only: 36%
- Logical Only: 29%
- Physical and Logical: 14%
- FS Snapshot: 7%
- None: 14%

Standby
- Hot: 47%
- Warm: 23%
- Cold: 12%
- None: 18%
Backup and Recovery Best Practices

• Backup Strategy Framework
  – Physical backup (daily, weekly)
  – WAL file archiving
  – Logical backup after structural changes or major updates of reference/meta data
  – Combine Backup/Recovery and Streaming Replication

• Consider
  – Allowable PITR timeframe
  – Data retention policy
  – Test, test, test: Periodic backup validation

• Advanced solutions, such as RHCS, Veritas Clustering, EFM and EDB BART augment the basic capabilities
Maintenance Tasks

- Missing Indexes: 9%
- Missing PK: 9%
- Bloated Tables: 13%
- Bloated Indexes: 30%
- Unused Indexes: 39%
Summary
EDB Summary

• The analysis helped us understand where we need to collect more data during our support interactions to better pinpoint problem trends and drive knowledge base development

• This will drive our product development and feature prioritization so that we can make customer problems go away
DBA Summary

• Most problems occur when moving to production
  – Get ready early
  – Get trained before MTP
  – New Postgres DBA -- consider RDBA to help you get started

• Postgres DBAs need to focus on
  – Config file settings, especially understanding memory configs
  – Storage subsystem configuration
  – OS Configuration
  – Bloat & vacuum
  – Backup - logical and physical
  – HA setup
  – Monitoring - see the Freight Train before it hits you!

• Tools, tools, tools – Get the right tools
Kontakt

Danke!

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