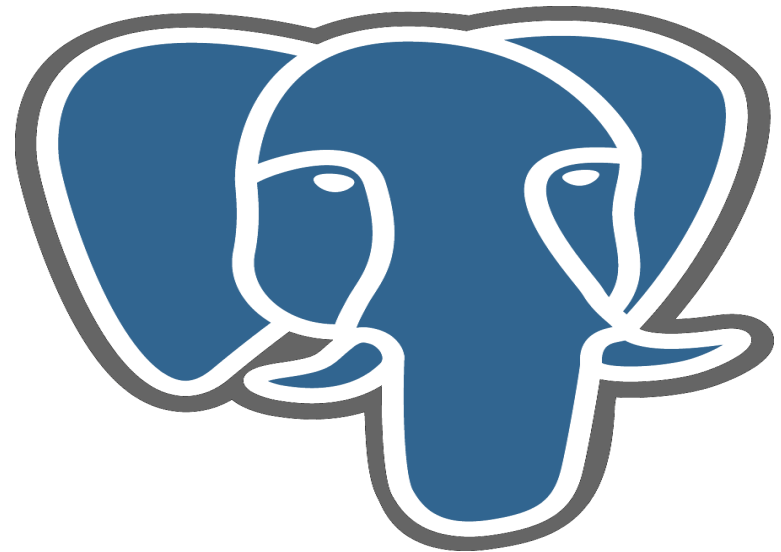
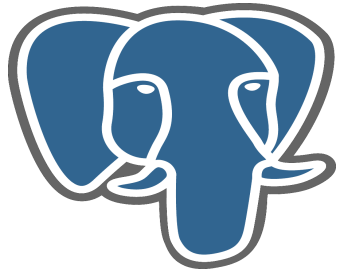


PostgreSQL Futures

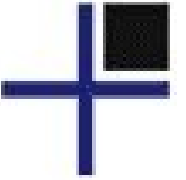
Simon Riggs
CTO 2ndQuadrant
Major Developer, PostgreSQL

simon@2ndQuadrant.com
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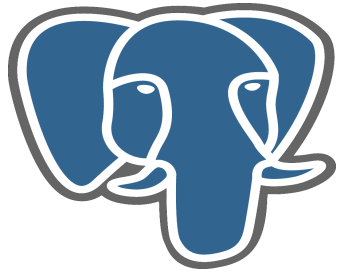




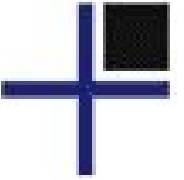
9.2 Features



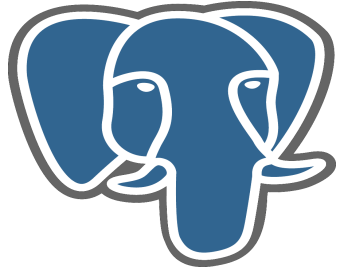
- Index only scans
- JSON datatype
- Range types
- Foreign Keys for array types
- Power management reductions
- Cascading replication
- New synchronous replication mode
- SP-GiST



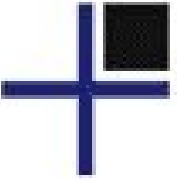
9.2 Overall Performance



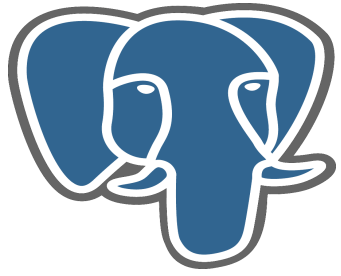
- Throughput, response time and scalability
 - Group Commit
 - Lock cacheing
 - Clog Cacheing improved
 - Reduced snapshot rate
- Scaling improvements
 - “We know scale to 32 CPUs for write, and 64 CPUs for read only”
 - We're 300% faster at 32 CPUs
 - Asynchronous commit much faster



Success



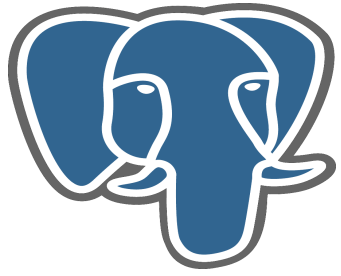
- PostgreSQL usage is increasing rapidly
 - RHEL and CentOS now carrying 9.0+
- 9.2 will cause major disruption
 - PostgreSQL adoption will accelerate further
- Development of PostgreSQL is accelerating
 - So where next?



Log Shipping Developments



- 8.0 – Point in Time Recovery, Full WAL info
- 8.2 – Restartable Recovery, Log Switching
- 8.3 – Full page optimization, pg_standby
- 8.4 – BgWriter during Recovery
- 9.0 – Streaming Replication
Hot Standby
- 9.1 – Synchronous Replication
- 9.2 – Cascading Replication, keepalives

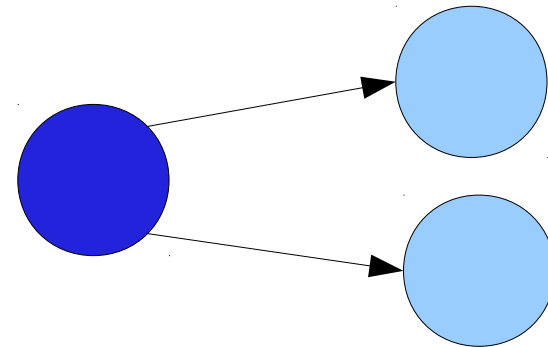


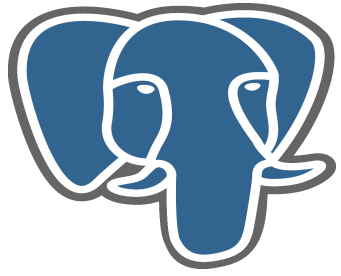
High Availability Replication



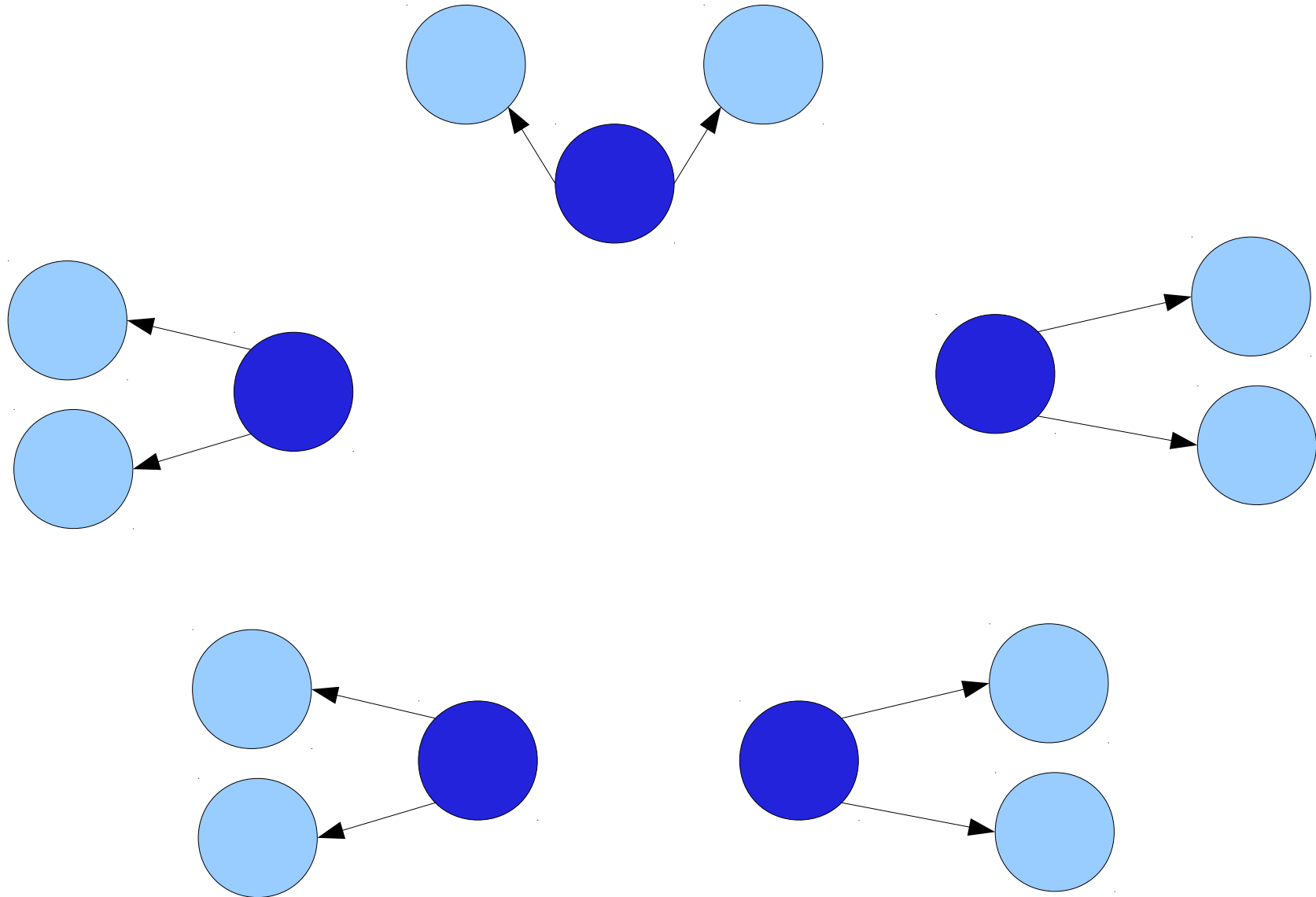
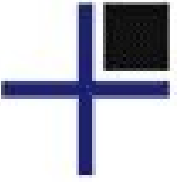
- Master-Slave clusters
- High Availability
- Read scalability

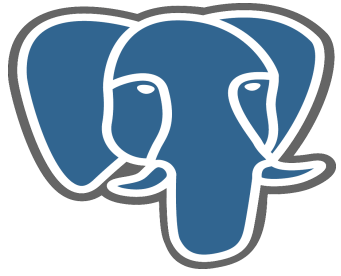
CLUSTER



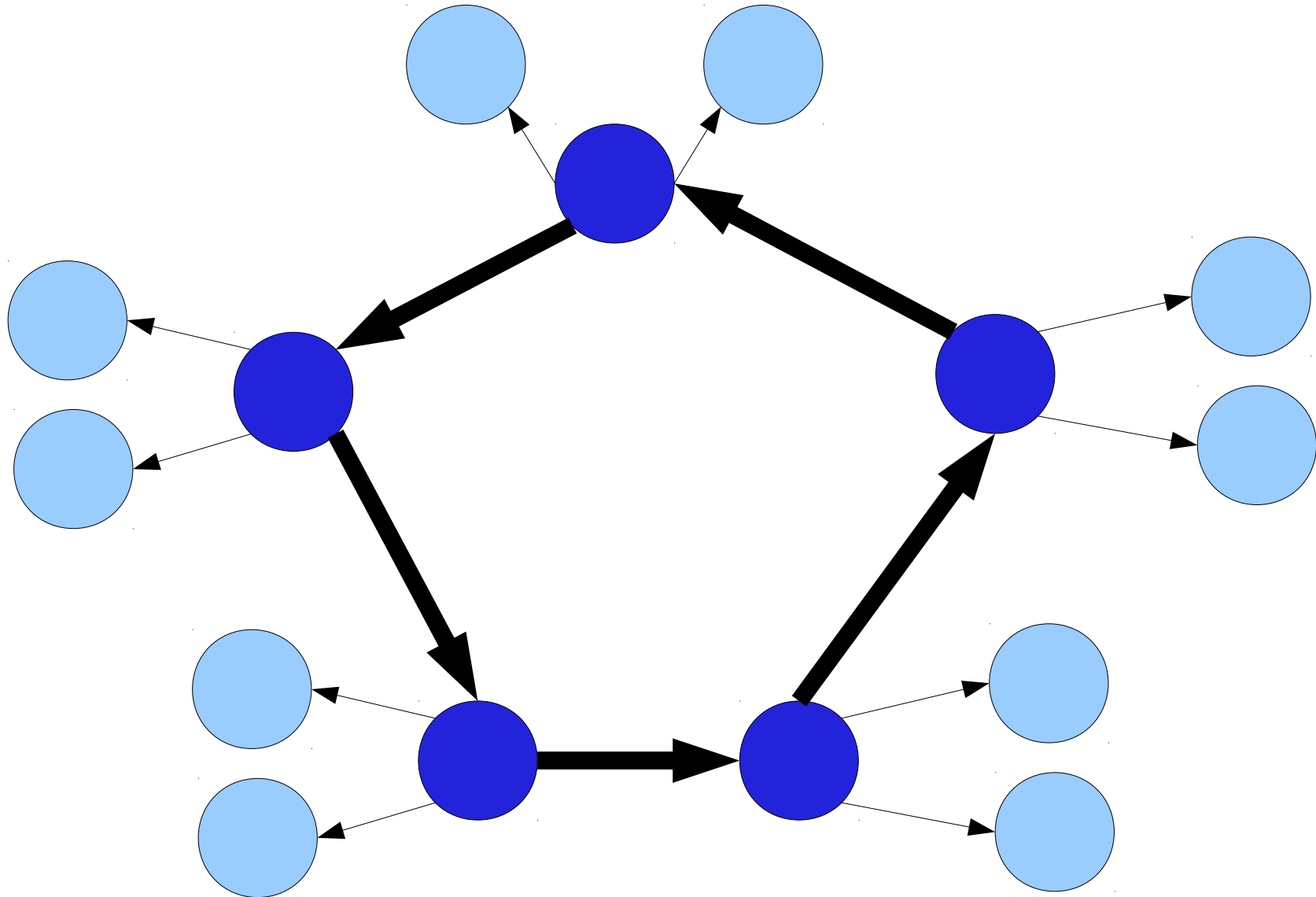
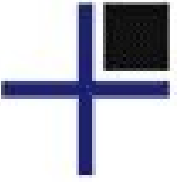


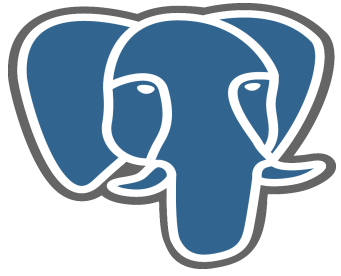
Multiple HA Masters



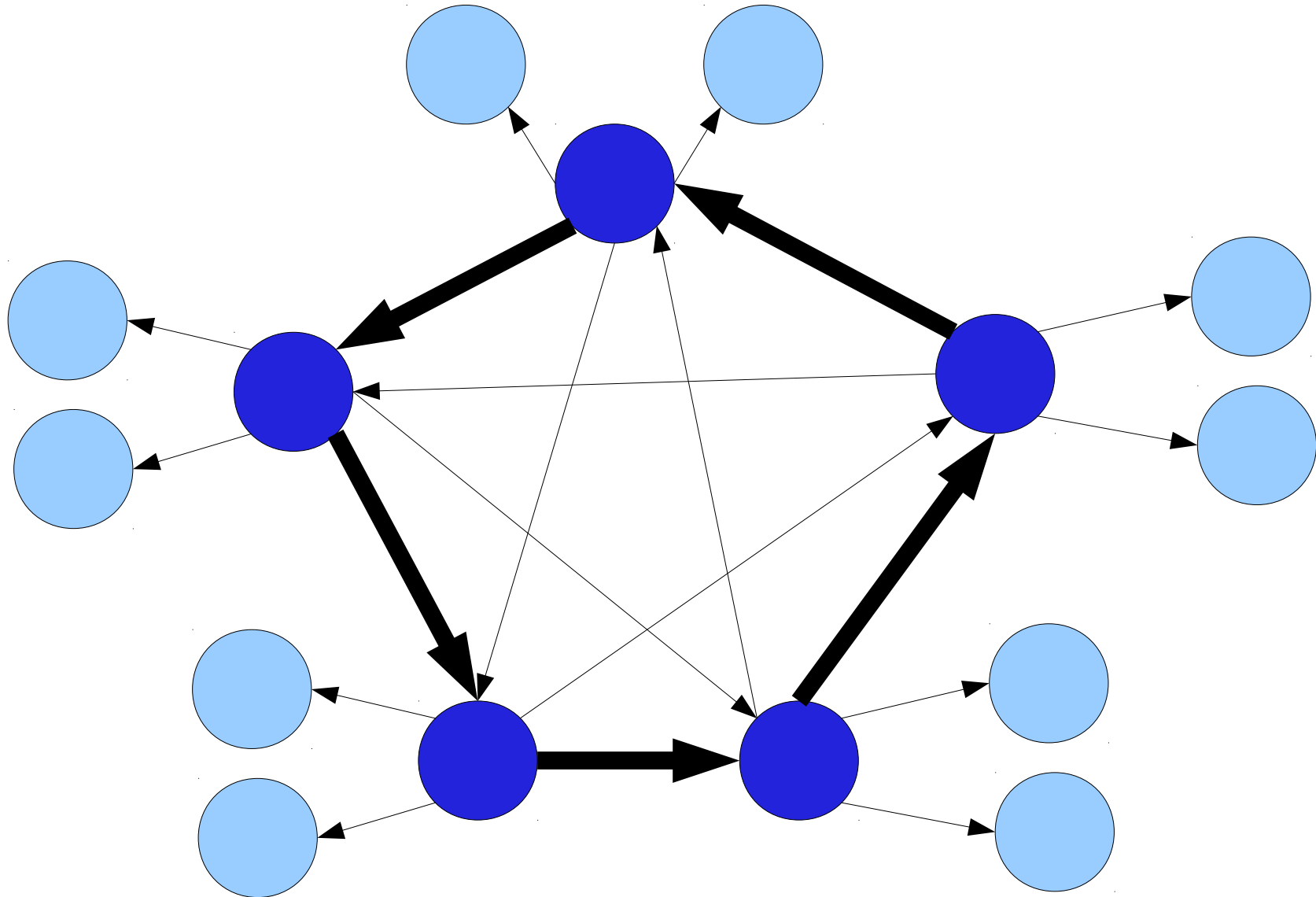
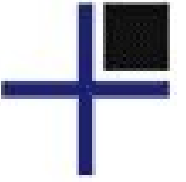


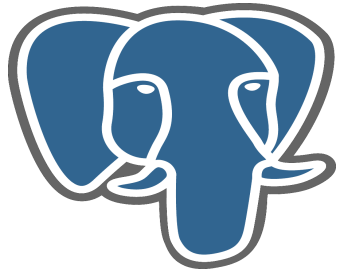
Minimally Efficient Data Flow



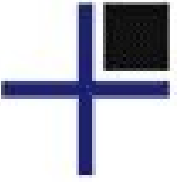


Add Secondary Connections

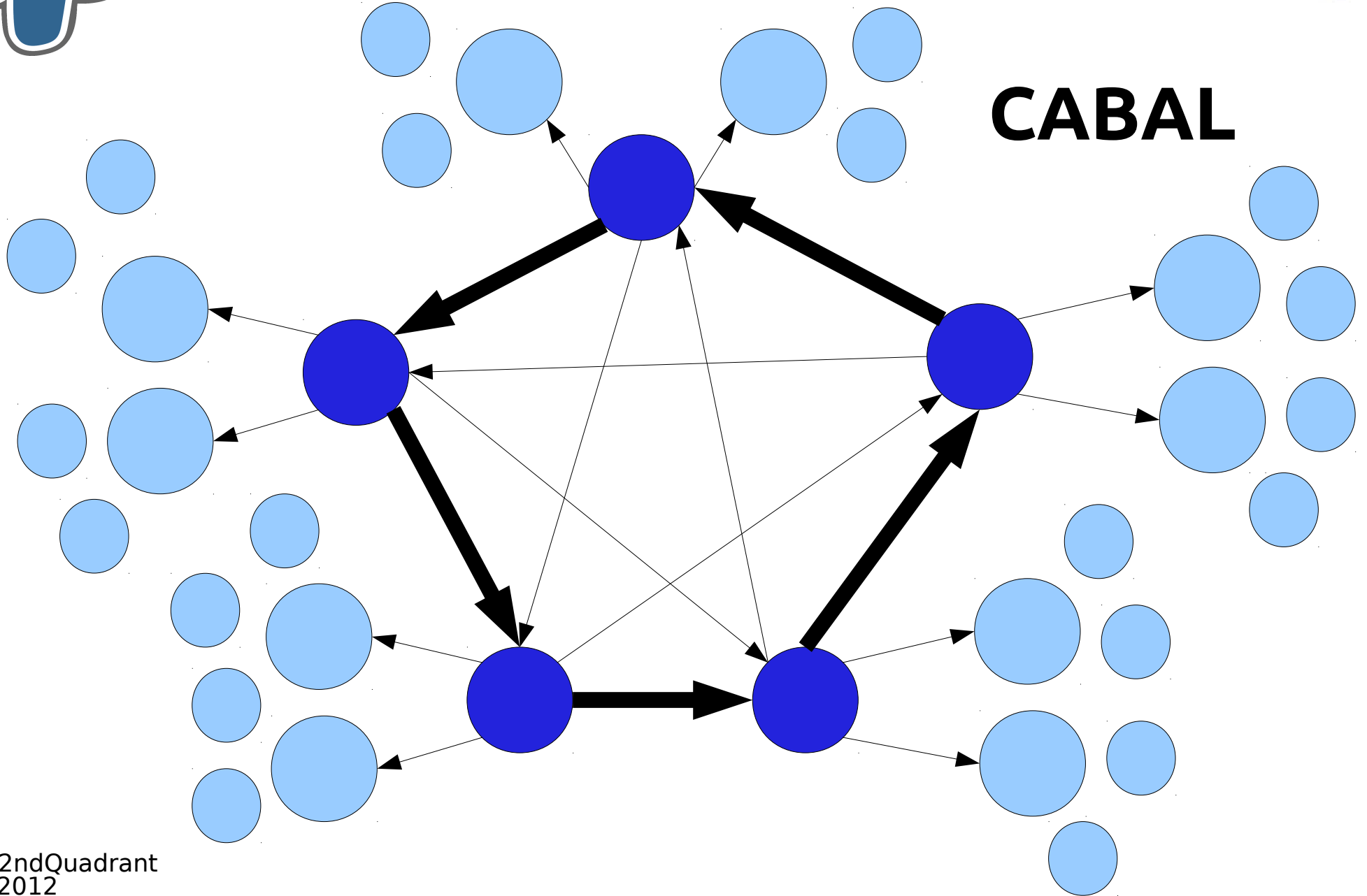


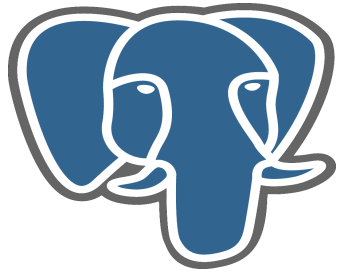


Add extra read slaves

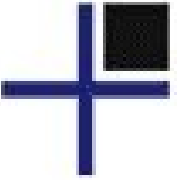


CABAL

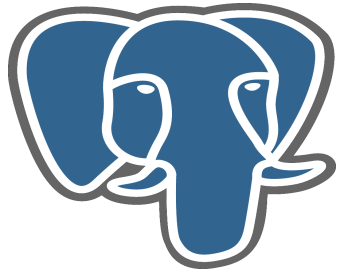




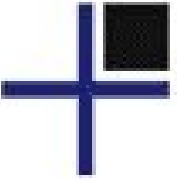
Bi-Directional Replication



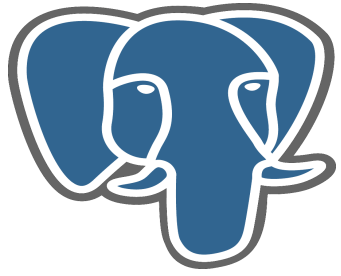
- OK, some people call it multi-master
- Read Anywhere
- Update Anywhere
- Conflict Resolution
- Conflict Avoidance
- Selectable (Local-only, Replicated, Sharded)
- Filtered, Deferrable
- Major Release Upgrades



Operational Enhancements



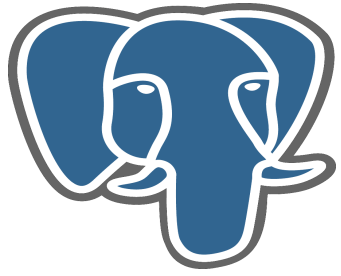
- Reduced locking
 - One day...
- Temp table catalog bloating
- AutoREINDEX
- Hint Bit perfection



SQL Enhancements



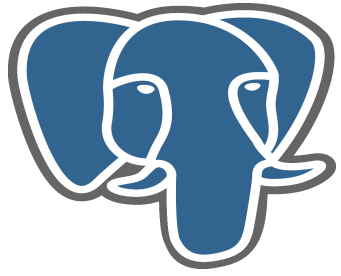
- MERGE
- Ref types
- Multisets
- ASSERTIONS



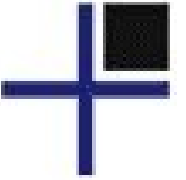
NoSQL Enhancements



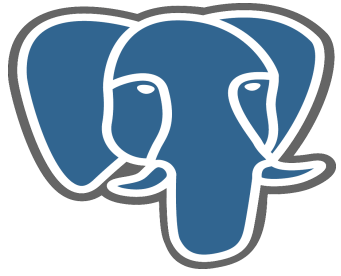
- Hstore in core
- Typed Attributes
- Name compression
- Direct Access
- Simple workload optimisations



Foreign Key Enhancements



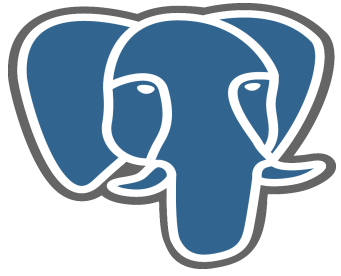
- Bulk FK optimisation
- Other FK optimisations
- Read only tables



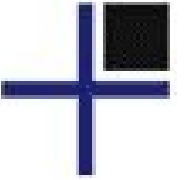
Transaction Enhancements



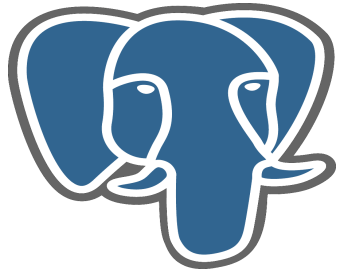
- Nested Transactions
- Autonomous Transactions



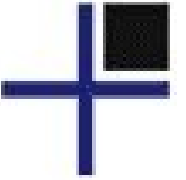
Query Speedups



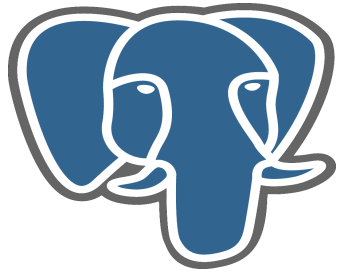
- Parallel Query
- Column Store
- Approximate Queries
- Materialized Views
- Partial MVs



Multiple SQL Dialects

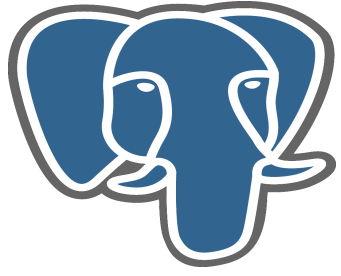


- Identifier handling
- Pluggable parsers
 - Future proofing applications
 - SQL Standard compliance
 - JCR-SQL
 - Faster porting of code
 - New SQL features

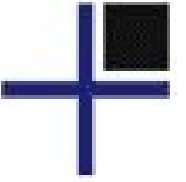


Increasing developer synergy+

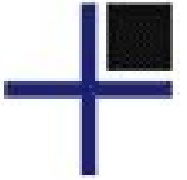
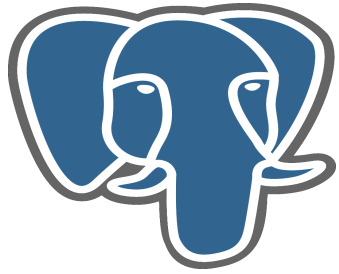
- “Database is a black box”
 - Does it matter which one you choose, they're all about the same aren't they
- Make sure the box isn't **black**
 - Forget what a DBMS *should* do
 - What features do developers need?
 - How can improve the software stack?



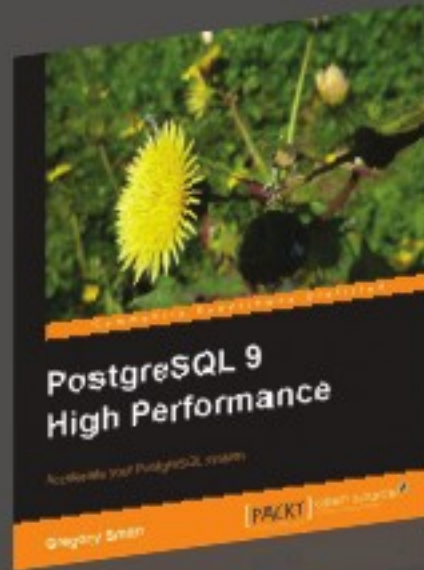
Making the future real



- Vision
- Ambitious Goals
- Positive Attitude
- Funding
- Attention to Simplicity
- Sense of Urgency
- Make It “Just Work”



PostgreSQL 9

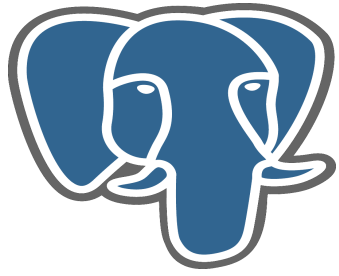


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