

Why You Should NOT Move Away From Oracle ... Or, why you SHOULD

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Agenda

- Compare Oracle and Postgres
 - Business Perspective
 - Technical Perspective

Personal Preferences: Oracle

- You just Looooove Larry Ellison
- You want him to buy another yacht
- ... or, another private jet team,
- ... or, spend more on Sailboat racing

Personal Preferences: Postgres

- You love Open Source Software
- You hate Oracle
- You loathe Larry Ellison
- You want to own a yacht someday
- ... or a Sailboat racing team
- ... or a private jet.

Cost: Oracle

- Oracle costs money
- - big money
- You get a lot of features in return
- 80% of users use only 20% of the features
- Customers are sold features they might never use
- ... eg, RAC

Cost: Postgres

- Free
- Freer than GPL (MySQL), because it's BSD licensed
- Comparable features to Oracle, and growing
- Very active developer community

Cost: Postgres Plus [Advanced Server]

- Postgres Plus: Free
- Advanced Server: Cheap alternative to Oracle
- Help Ed Boyajian buy a yacht :)

Support: Oracle

- Costs big money
- Service Level Agreements in place
- Have to be a big customer to get fixes quick.
- Smaller/less impacting issues delayed to next releases

Support: Postgres

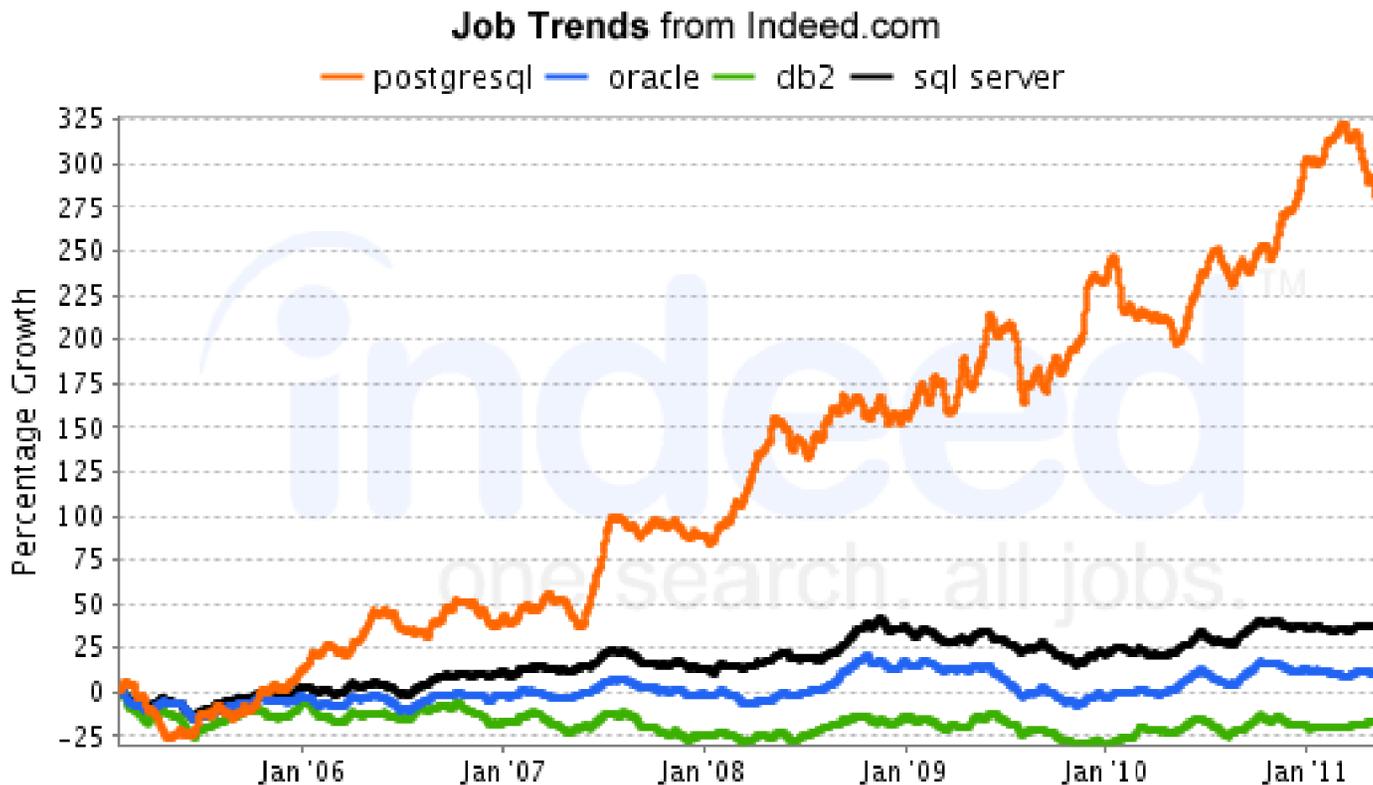
- Mailing lists: Free
- Quick turnaround times on bug reports, or other issue.
- No SLA
- Many commercial companies providing support:
 - EnterpriseDB
 - 2nd Quadrant
 - OmniTI
 - ...
- Provide Service Level Agreements
- Quick turnaround times
- Much cheaper than Oracle

Ecosystem: Oracle

- Vast knowledge pool
- Forums
 - In-house (Ask Tom, ...)
 - Independent
- Certification
- Market full of Developers and DBAs.
- Peace of mind for managers, as resource-pool is big.

Ecosystem: Postgres

- Growing community
- Increasing involvement of developers and DBAs
- Rapidly increasing Postgres jobs



Application Ecosystem: Oracle

- Almost every DB driven application supports Oracle
- Every major language has Oracle connectors
 - PHP, Perl, Java, C/C++
- Myriad of types of applications
 - Reporting
 - Data Warehousing
 - Web apps,
 - Tools
- Even many OSS apps start with Oracle as backend

Application Ecosystem: Postgres

- Every DB driven application worth its salt supports/attempting to support Postgres
 - Eg. RedHat Spacewalk/Satellite
- Connectors for every major language
 - ODBC, JDBC, .Net, Perl, PHP, ...

Source Code: Oracle

- Closed Source
- No public visibility
 - Hires white-hat hackers
- Single owner
- No public contribution
 - except as bug reports/feature requests
- ~~Huge~~ Humongous code base

Source Code: Postgres

- Open Source: BSD style License
 - No one can buy the Postgres project
- Open for public scrutiny
- Contributions welcome from public
- Very open and welcoming community
- Users benefit from vast community and its contributions
 - Eg. SSI: Serializable Snapshot Isolation: First research paper by Michael Cahill in 2009, then Kevin Grittner, along with Dan Ports, a student at MIT, implemented it in Postgres. First ever production level integration of this feature.

ACID: Oracle and Postgres

- Both are strictly ACID compliant
 - Atomic transactions
 - Consistent state - always
 - Isolation of transactions
 - Durable transactions even after crash
 - PS: concurrency is not required by ACID
- Stable, rock solid databases
- REDO logs/Write Ahead Logs (WAL)

RDBMS: Oracle and Postgres

- Both products use Relations and Relational Algebra as basis
- They both deviate slightly from Relational Algebra, in same ways.
- They both provide Tables(Relations), Views, Triggers.
- Both support core constraints: Primary Key, Foreign Key, NOT NULL, CHECK.

Query Optimizer: Oracle and Postgres

- Both have great Query Optimizers
- Oracle started with RBO, moved on to CBO
- Oracle and Postgres both use cost-based optimization and dynamic-programming developed in System-R
- Oracle supports Hints, Postgres doesn't (EnterpriseDB does)

Multi-Master: Oracle

- RAC : Write scalable multi-master solution
 - Holy grail for database vendors
 - Follow-up of Oracle Parallel Server
 - Uses Cache-fusion
- Current TPC-C Benchmark leader
- Requires that application scales well on single node database with increasing CPU counts.

Multi-Master: Postgres

- Postgres-XC
- Write-scalable, shared-nothing implementation
- Open Source
- Collaboration of NTT, Japan and EnterpriseDB
- ETA: 2013

High Availability: Oracle

- Data Guard
 - Redo Apply, or
 - SQL Apply
- Redo Apply in 10g has a limitation that the node can be either in recovery mode, or in Read-only, but not both.
- 11g feature Active Data Guard allows read-only connections while recovery is in progress.
- Active Data Guard requires additional license (\$\$\$).
 - Still not usable by some reporting apps (E-Business Suite)
- Data Guard Broker: Utilities to manage Data Guard
- SQL Apply does not work with **many** database objects.
 - SYS objects, BFILE, ROWID, UROWID, Oracle Spatial.

High Availability: Postgres

- Streaming Replication
 - Equivalent of Oracle's Redo apply
- Hot Standby feature allows read-only queries on standby node while in recovery.
- No equivalent of SQL Apply
 - Use trigger based replication solutions, like Slony, Bucardo, Londiste.
 - Slony, Works for data objects, except Large Objects.
- No Equivalent of Data Guard Broker for management of standby nodes
 - Postgres Enterprise Manager might support this some day.
- PG 9.1 brings Synchronous Replication

Data Partitioning: Oracle

- Requires Enterprise Edition
- Provides List, Hash, Range partitioning
- Integrated with the Query Optimizer
- Parallel queries can finish quickly when working with partitions.

Data Partitioning: Postgres

- No syntactical sugar
- Supported by a combination of 3 features:
 - Table Inheritance
 - CHECK constraints
 - `constraint_exclusion`
- The query optimizer performs an optimization only if all three of the above being used correctly, and the query uses the right WHERE clause.

Geospatial: Oracle

- Oracle Spatial Extensions
- Special Storage types
- Special Index Types
- Costs extra; additional license
- Does not work with certain other features, like Data Guard's SQL Apply

Geospatial: Postgres

- PostGIS
 - Add-on; external module
 - GPL Licensed
- Standards Compliant
- Uses special indexes provided by Postgres
- Bundled with Postgres Plus Standard Server – free

Full Text Search: Oracle

- Oracle Text, Ultra Search, InterMedia
- Comes with Enterprise Edition
- Search documents even outside database

Full text Search: Postgres

- Extensive feature-set
- Can divide a document in 4 sections by relevance
- Sort results by relevance
- Can create FTS indexes on concatenated columns
- Can be integrated with external tables to search documents outside the database
- Feature integrated into core Postgres

Others

- Postgres: Transactional DDL
- Postgres: Create functions and triggers in many languages
 - PL/pgSQL, PL/Perl, PL/PHP, PL/R, PL/Java, PL/TCL, ...
- Both: Updatable views (PG 9.1 brings triggers on views)
- Oracle: On-disk bitmap indexes (PG: in-memory only)
- Postgres: Exclusion Constraints

Migration Tools

- EnterpriseDB
- EnterpriseDB Migration Toolkit
- Ora2PG
- OraFce
- TOra
- Custom migrations

EOT

Q & A