The Advantages of PostgreSQL

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POSTGRESQL offers companies many advantages that can help their businesses thrive.

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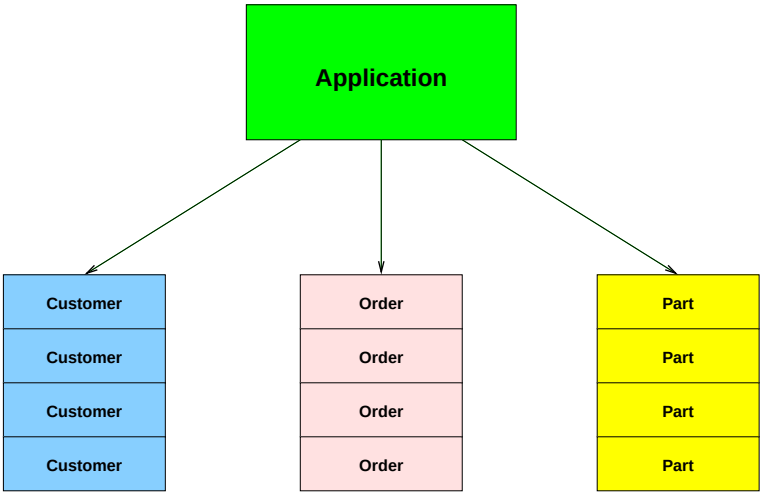
Introduction

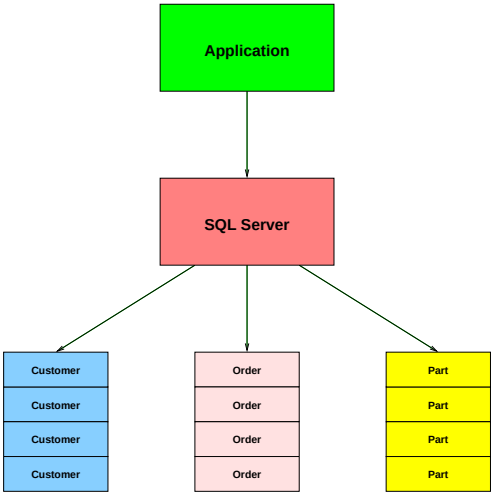
- Why use databases?
- Why use open-source?
- PostgreSQL history
- PostgreSQL in the real world

Why use databases?

Non-SQL Database Applications



SQL Database Applications



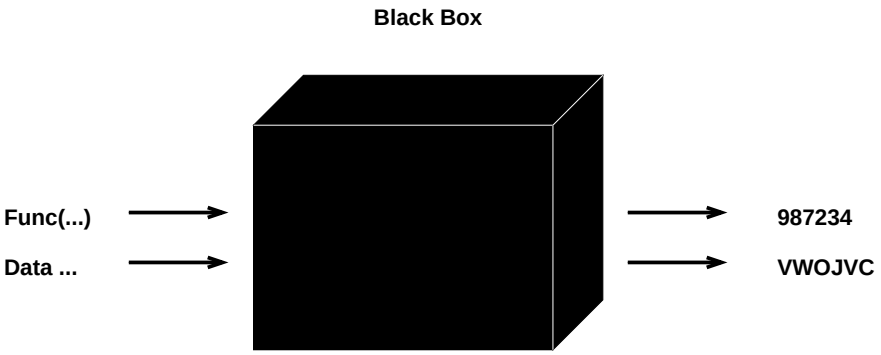
Database Transaction Protection (ACID)

- Multiple changes either all take place, or none of them
- Data always in a consistent state
- In-process changes invisible to outside users
- Data reliably stored

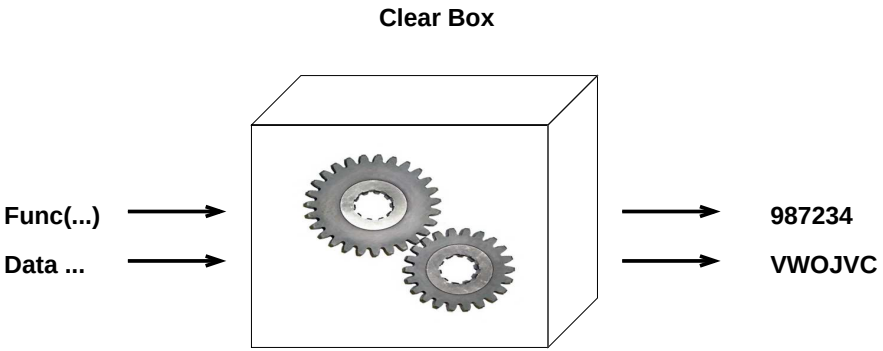
- High level of concurrency and reliability

Why use Open Source Software?

Closed-Source Software



Open-Source Software



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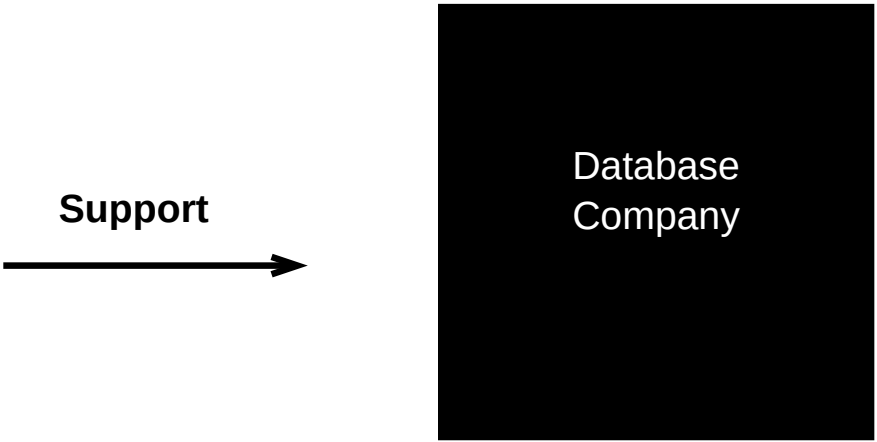
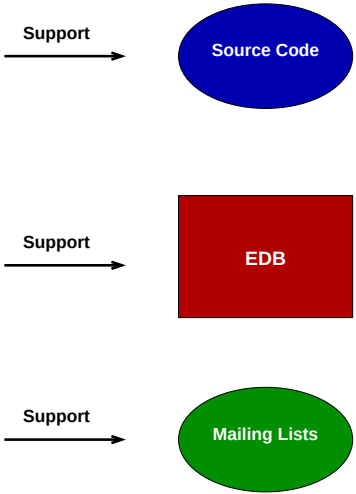
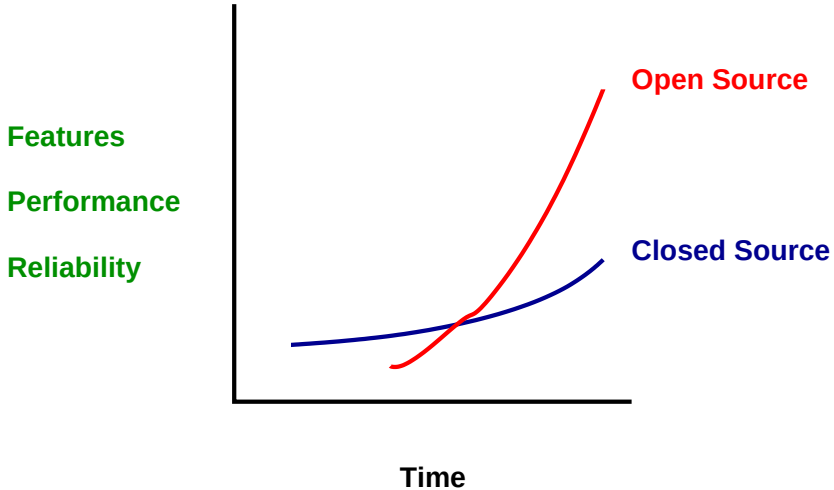
Support of Close-Source Software



Support of Open-Source Software



The Future of Open Source



PostgreSQL License

Use for any purpose, including sale of customized versions with your closed-source modifications. PostgreSQL supports custom:

- Functions
- Operators
- Data Types

PostgreSQL History

The University of California at Berkeley

Michael Stonebraker

Jolly Chen and Andrew Yu

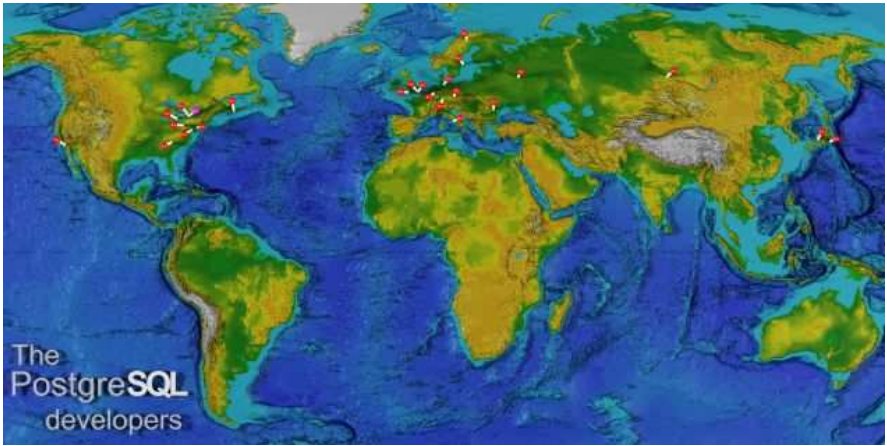
PostgreSQL Code Base History

- Ingres — research prototype, spawned Relational Technologies, purchased by Computer Associates
- Postgres — research prototype, spawned Illustra, purchased by Informix
- Postgres95 — added SQL, spawned PostgreSQL

PostgreSQL Through the Years

1977–1985	Ingres
1986–1994	Postgres
1994–1995	Postgres95
1996–	PostgreSQL

Developer's Globe



PostgreSQL Core Team

Top row: Thomas Lockhart, Jan Wieck, Tom Lane, Marc Fournier
Bottom row: Vadim Mikheev, Bruce Momjian

Release Dates and Sizes

Date	Release	Lines of code
1994		244,581
1996-08-01	1.02.1	
1996-10-27	1.09	178,976
1997-01-29	6.0	
1997-06-08	6.1	200,709
1997-10-02	6.2	225,848
1998-03-01	6.3	260,809
1998-10-30	6.4	297,918
1999-06-09	6.5	331,278
2000-05-08	7.0	383,270
2001-04-13	7.1	410,500
2002-02-04	7.2	394274
2002-??-??	7.3	453282

Release 1.02
Date: 1996-08-01

- Initial release by PostgreSQL Global Development Team
- Apply all outstanding email patches.

PostgreSQL Releases (Continued)

Release 1.09
Date: 1996-11-04

- Fixes for server and command failures.

PostgreSQL Releases (Continued)

Release 6.0
Date: 1997-01-29

- Unique indexes
- GIST added
- Improved authentication
- IN/BETWEEN added

PostgreSQL Releases (Continued)

Release 6.1
Date: 1997-06-08

- New data types: DATETIME, TIMESPAN, CIRCLE
- GEQO
- Improved optimizer statistics
- Libpq++ overhauled
- Multi-column btree indexes
- new SET/SHOW/RESET commands
- New SEQUENCE feature

PostgreSQL Releases (Continued)

Release 6.2
Date: 1997-10-02

- New Java JDBC driver
- Triggers added
- Server Programming Interface (SPI) added
- NOT NULL constraint
- DEFAULT and CONSTRAINT added
- ANSI functions added for DATE/TIME and PRECISION

PostgreSQL Releases (Continued)

Release 6.3
Date: 1998-03-01

- Subselcts
- Unix domain socket support for performance
- Improved user password configuration
- Much improved documentation
- Separate permissions for VIEWs
- PRIMARY KEY support
- PL/TCL procedural language added
- UNION added
- Python added
- ECPG added
- New ODBC driver
- Pgaccess added

PostgreSQL Releases (Continued)

Release 6.4
Date: 1998-10-30

- Improved RULEs and VIEWs
- PL/PgSQL added
- Multi-byte character support
- Internet address data types
- HAVING added

PostgreSQL Releases (Continued)

Release 6.5
Date: 1999-06-09

- MVCC
- Live backups
- NUMERIC data type
- Temporary tables
- CASE
- INTERSECT
- EXCEPT
- LIMIT/OFFSET
- SELECT…FOR UPDATE
- Optimizer overhaul

PostgreSQL Releases (Continued)

Release 7.0
Date: 2000-05-08

- Foreign keys
- More optimizer improvements
- ANSI JOIN syntax
- PL/Perl
- Oracle compatibility functions

PostgreSQL Releases (Continued)

Release 7.1
Date: 2001-04-13

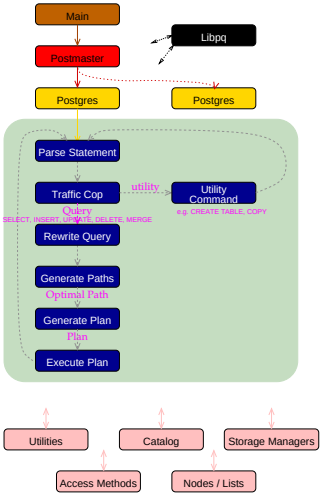
- Write-ahead Log (WAL)
- TOAST
- Outer Joins
- Overhauled function manager

PostgreSQL Releases (Continued)

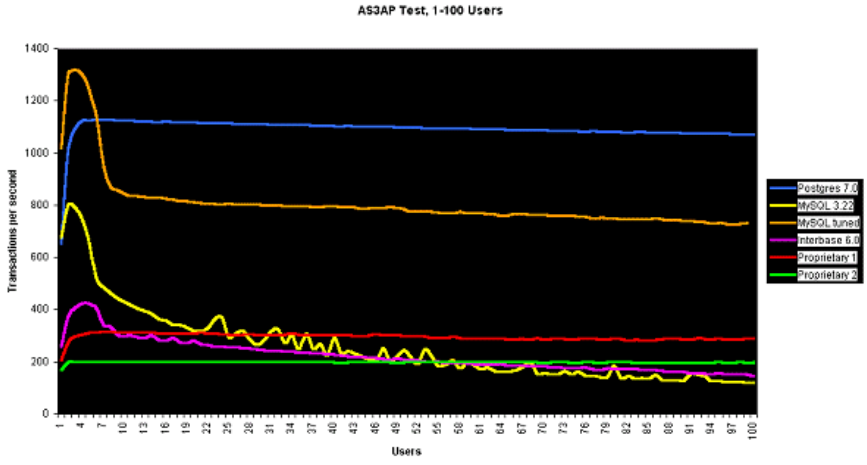
Release 7.2
Date: 2001-12-??

- Non-locking VACUUM
- Fix for Transaction id / OID wraparound
- Security fixes
- Optimizer improvements
- Error message internationalization

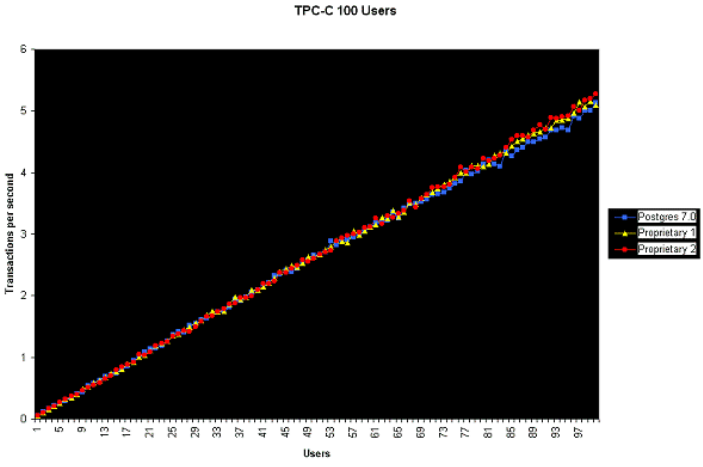
Internals Flowchart



Performance - AS3AP



Performance - TPC-C



PostgreSQL in the Real World

Database Migration

- Oracle
- IBM's DB2
- Microsoft-SQL
- Microsoft Access
- Informix
- Interbase
- Dbase/FoxPro
- MySQL

Database Languages

- C
- C++
- Embedded C
- Java
- Perl
- Python
- Tcl/Tk
- Php
- Odbc

PostgreSQL Platforms

AIX
BeOS
BSD/OS
FreeBSD
HP-UX
IRIX
Linux
MacOS
NetBSD
OpenBSD
SCO UnixWare
Solaris
SunOS
Tru64
Windows NT/2000

PostgreSQL Usage

- Order Entry, Inventory, Billing
- Customer Relations Management (CRM)
- Data warehouse, data analysis
- Medical/Hospital Records Storage
- Genetics
- Financial Accounting, Banking, Payroll
- Military
- Government, Social services, Elections
- Education
- Publishing
- Geography (GIS)
- Hotel Reservations, Restaurants
- Telephone billing, call tracking
- Helpdesk problem report tracking
- Sales Tracking
- Business to business commerce

PostgreSQL Web Site Usage

- Product purchase
- User preferences
- Job listings
- Auctions
- Real Estate listings
- Community building
- Dynamic content
- Text indexing

Future Directions

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Conclusion

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