

The Maze of Postgres Options

BRUCE MOMJIAN



This presentation explains the many decisions needed to deploy Postgres successfully.

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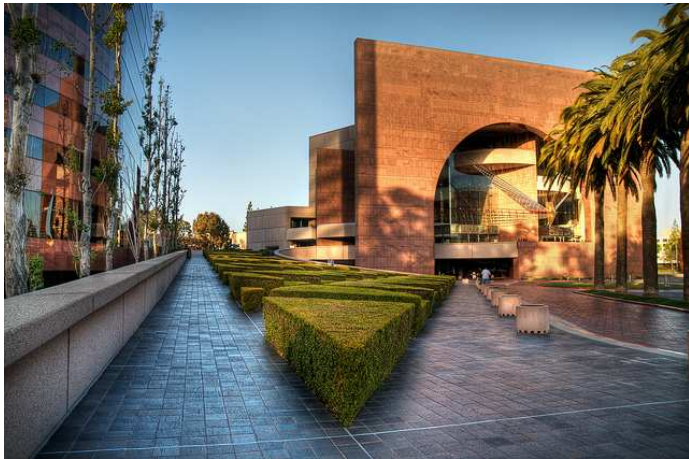
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Outline

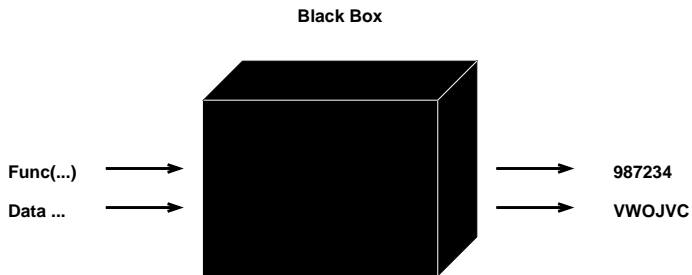
1. Open source's many options
2. Database server
3. Extensions
4. Deployment utilities
5. Monitoring options
6. Do you need a vendor?
7. Conclusion

1. Open Source's Many Options



https://www.flickr.com/photos/zoso_tc/

Closed-Source Software

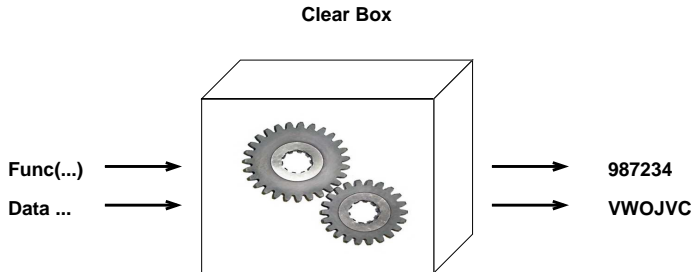


Support of Close-Source Software

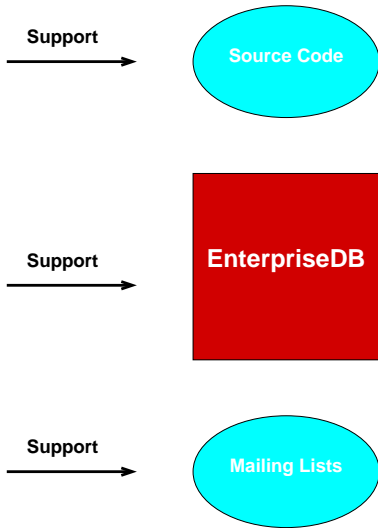
Support
→

**Database
Company**

Open-Source Software



Support of Open-Source Software



2. Database server

- ▶ Community server, www.postgresql.org
- ▶ Company-enhanced (closed-source) servers
 - ▶ EnterpriseDB (EDB Postgres Advanced Server)
 - ▶ Postgres Professional (Postgres Pro Enterprise)
 - ▶ 2nd Quadrant (2ndQPostgres)
 - ▶ FUJITSU (FUJITSU Enterprise Postgres)
 - ▶ Amazon Web Services (RDS Postgres)

These products closely track Postgres community versions.

https://wiki.postgresql.org/wiki/PostgreSQL_derived_databases

3. Extensions

As an object-relational open-source database, extensions are a rich source of features in Postgres. These include:

- ▶ Extensions shipped with Postgres, e.g., *pgcrypto*, *postgres_fdw*
- ▶ Extension repositories, e.g., PGXN
- ▶ Independent extensions, e.g., PostGIS, Citus extensions

<https://www.postgresql.org/docs/current/index.html>

Server-Side Languages

- ▶ Included in the Postgres distribution
 - ▶ PL/Perl
 - ▶ PL/pgSQL
 - ▶ PL/Python
 - ▶ PL/Tcl
 - ▶ SPI
- ▶ Github
 - ▶ PL/Java
 - ▶ PL/PHP
 - ▶ PL/Ruby
 - ▶ PL/Scheme
 - ▶ PL/sh
- ▶ PGXN
 - ▶ PL/v8
- ▶ External
 - ▶ PL/R

<http://www.postgresql.org/docs/current/external-pl.html>

4. Deployment Utilities

- ▶ Deployment utilities shipped with Postgres, e.g., *vacuumlo*
- ▶ Tool repositories, e.g., PGXN
- ▶ Company produced

<https://www.postgresql.org/docs/current/contrib-prog.html>

Backup Utilities

- ▶ Shipped with Postgres: *pg_dump*, *pg_restore*, point-in-time recovery
- ▶ pgBackRest
- ▶ Barman
- ▶ EDB Backup and Recovery Tool (BART)

Failover Utilities

- ▶ Patroni
- ▶ repmgr
- ▶ EDB Postgres Failover Manager (EFM)

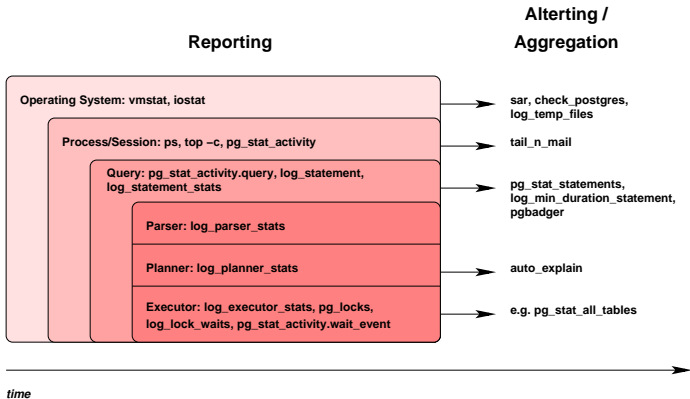
Cloud/Container/VM Deployment

- ▶ Single-vendor cloud, e.g., AWS, Azure
- ▶ Multi-vendor cloud, e.g., EDB Ark
- ▶ Docker deployment
- ▶ Kubernetes tools

5. Monitoring Options

- ▶ Shipped with Postgres, e.g., `pg_stat_activity`, `pg_locks`, statistic views, `pg_stat_statements`
- ▶ Independent, e.g., pgbadger, Nagios, Prometheus, Grafana
- ▶ Postgres Enterprise Manager (PEM)

Monitoring Capabilities



6. Do You Need a Vendor?

- ▶ The database server and many extensions and tools are available for free
- ▶ Adding the missing parts is “a simple matter of programming”
- ▶ You can build your own Postgres open source support team

This is only possible because open source gives everyone the ability to become an expert.

Becoming an Expert Has Costs

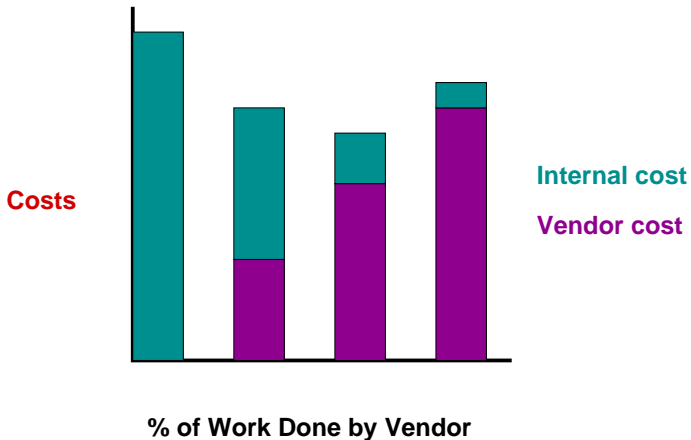
- ▶ Payroll, management
- ▶ Testing, risk
- ▶ Delayed deployment
- ▶ Increased dependency on staff skills
- ▶ Deployment rigidity, but easy customization

Make or Buy Decision

Cook for yourself or go to a restaurant?

- ▶ Cook yourself
 - ▶ Ingredients
 - ▶ Cooking skills
 - ▶ Single dish
 - ▶ Less cost, more time
- ▶ Restaurant
 - ▶ Variety
 - ▶ Simplicity, flexibility
 - ▶ More cost, less time

In-House/Vendor Trade Off



Choosing a Postgres Vendor (or Restaurant)

- ▶ A broad range of vendor-cost options are available, more than in proprietary software
- ▶ Are vendor expenses less than the value of increased efficiency and reduced in-house costs?
 - ▶ Paid vendor \$400k but increased efficiency and reduced in-house costs by \$700k
- ▶ More expensive vendors can sometimes increase efficiency and reduce in-house costs more than inexpensive vendors

Postgres Vendor Specialties

- ▶ Support
- ▶ Consulting
- ▶ Open-source products
- ▶ Closed-source products
- ▶ Cloud hosting
- ▶ Training
- ▶ Migration assistance
- ▶ System health check

7. Conclusion



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