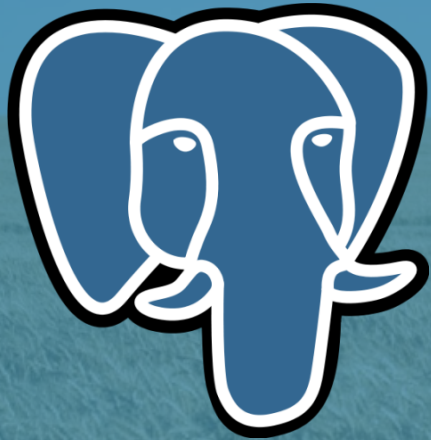


What happens when more than 30
years of Oracle experience hit
PostgreSQL



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My personal Journey from Oracle to PostgreSQL



Started with Oracle back in 2001 as a PL/SQL developer

- > Did that for 5 years and switched over for becoming a DBA
- > Did that for 7 years leading the Oracle service desk at the company I worked these days
- > Was happy with that, until

Oracle acquires SUN, 2010

- > Oracle tried to de-support the Itanium, 2011
 - > Tried to bring the HP-UX customers to the Solaris platform
 - > Lost that battle, Oracle 12cR2 is still available for HP-UX on Itanium
- > Oracle removes the core factor for AWS and Azure => doubling the price over night. 2017
- > Done.

About me



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My personal Journey from Oracle to PostgreSQL



Got exposed to Oracle somewhere in 1994...

- >Cool technology (this SQL-stuff) but...
- >Forms & Reports were technically separate, but commercially not so
- >We needed some stuff, but were not allowed to buy (Enterprise Edition only)
- >Got addicted to APEX along the way
- >Oracle started moving more & more away from (core)tech
- >A lot of uncertainty around Oracle Standard Edition (One)
- >Introduction of Oracle Standard Edition Two basically shot the door
- >Cloud first (& only)
- >Done!

If you have something to say...

Audience participation time!!

- >Works with Oracle
 - >Works with PostgreSQL
 - >Works as a platform developer
 - >Works as an application developer
 - >Works as a systems administrator
 - >Works as a database administrator
-
- >Well... I usually come in, in the morning, and just see what is on fire...



If you have something to say...

Just shout, don't be shy!

Participation rules...





PostgreSQL sucks

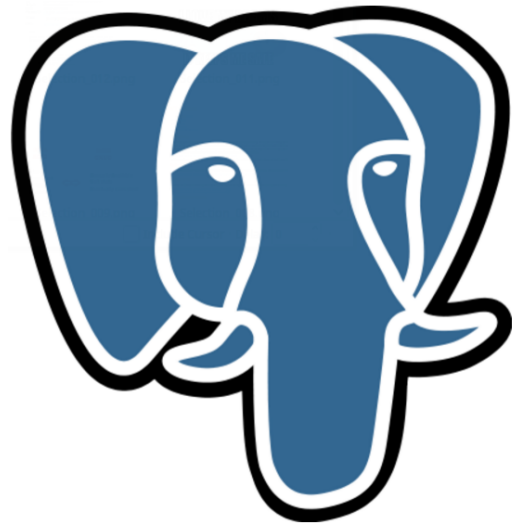


For a moment, please forget everything you know about PostgreSQL

Assume your only background is Oracle

And now you want to start with PostgreSQL

PostgreSQL sucks



A very personal journey

PostgreSQL sucks

Have you heard? #OOW17?



Oracle Cloud @OracleCloud · Oct 3

Thomas Kurian introducing:

- ⚡ Fastest Compute
 - ⚡ Fastest GPUs
 - ⚡ Fastest Storage
 - ⚡ Fastest Network
 - ⚡ Industry-leading Global DNS.
- #oow17 #cloud



Oracle ✓ @Oracle · Oct 3

Larry Ellison: #MachineLearning = Machines looking at lots of data.
Distinguishing patterns in the data from normal to abnormal. #oow17



Oracle ✓ @Oracle · Oct 3

Kurian: We've allowed our software to patch, configure, encrypt... eliminating human errors, making the software running predictable. #oow17



Oracle Cloud @OracleCloud · Oct 6

Larry Ellison introduces 2 new cloud #security suites at #OOW17 that automatically detect and resolve threats ora.cl/iG2Yd



PostgreSQL sucks - installation

Where do I need to install from?

- >Sources? Really? Are you crazy?
 - >Is that state of the art?
- >Binary distributions (rpm,deb,whatever)? Really?
 - >Dependency on what the distribution believes is good?
- >EDB installer? Hmm...
 - >We need only need the database, not more



PostgreSQL sucks - installation

It can't be great when it uses only a few MB on disk, really, don't tell me that

```
postgres@pgbox:/home/postgres/ [pg960final] du -sh /u01/app/postgres/product/10/db_0b2/  
28M      /u01/app/postgres/product/10/db_0b2/  
postgres@pgbox:/home/postgres/ [pg960final]
```

```
oracle@oelora:/home/oracle/ [rdbms11204] du -sh /u01/app/oracle/product/12.2.0/  
7.2G     /u01/app/oracle/product/12.2.0/
```

>There can't be many features inside, away with this TOY

PostgreSQL sucks - Instance creation

Creating an instance in a few seconds? No way, can't be real

```
postgres@pgbox:/u01/app/postgres/product/10/db_0b2/bin/ [pg960final] time ./initdb -D /tmp/tmp
The files belonging to this database system will be owned by user "postgres".
This user must also own the server process.

The database cluster will be initialized with locales
COLLATE:   en_US.UTF-8
CTYPE:     en_US.UTF-8
MESSAGES:  en_US.UTF-8
MONETARY:  de_CH.UTF-8
NUMERIC:   de_CH.UTF-8
TIME:      en_US.UTF-8
The default database encoding has accordingly been set to "UTF8".
The default text search configuration will be set to "english".

Data page checksums are disabled.

creating directory /tmp/tmp ... ok
creating subdirectories ... ok
selecting default max_connections ... 100
selecting default shared_buffers ... 128MB
selecting dynamic shared memory implementation ... posix
creating configuration files ... ok
running bootstrap script ... ok
performing post-bootstrap initialization ... ok
syncing data to disk ... ok

WARNING: enabling "trust" authentication for local connections
You can change this by editing pg_hba.conf or using the option -A, or
--auth-local and --auth-host, the next time you run initdb.

Success. You can now start the database server using:

    ./pg_ctl -D /tmp/tmp -l logfile start

real    0m6.832s
user    0m0.399s
sys     0m0.501s
```

PostgreSQL sucks - file system layout

What the heck is this? Honestly?

```
postgres@pgbox:/u02/pgdata/PG10B2/ [PG10B] echo $PGDATA
/u02/pgdata/PG10B2
postgres@pgbox:/u02/pgdata/PG10B2/ [PG10B] tree | wc -l
998
postgres@pgbox:/u02/pgdata/PG10B2/ [PG10B]
```

```
oracle@oelora:/u02/oradata/DB11204/ [DB4] ls
controlfile datafile onlineolog
oracle@oelora:/u02/oradata/DB11204/ [DB4] tree | wc -l
17
oracle@oelora:/u02/oradata/DB11204/ [DB4]
```

```
global
├── 1136
├── 1136_fsm
├── 1136_vm
├── 1137
├── 1213
├── 1213_fsm
├── 1213_vm
├── 1214
├── 1214_fsm
├── 1214_vm
├── 1232
├── 1233
├── 1260
├── 1260_fsm
├── 1260_vm
├── 1261
├── 1261_fsm
├── 1261_vm
├── 1262
├── 1262_fsm
├── 1262_vm
├── 13212
├── 112
├── 113
├── 1247
├── 1247_fsm
├── 1247_vm
├── 1249
├── 1249_fsm
├── 1249_vm
├── 1255
├── 1255_fsm
├── 1255_vm
├── 1259
├── 1259_fsm
├── 1259_vm
├── 13047
├── 13047_fsm
├── 13047_vm
├── 13051
├── 13052
├── 13052_fsm
├── 13052_vm
├── 13054
├── 13056
├── 13057
├── 13057_fsm
├── 13057_vm
├── pg_commit_ts
├── pg_dynshmem
├── pg_hba.conf
├── pg_ident.conf
├── pg_log
├── pg_logical
├── ├── mappings
├── ├── replorigin_checkpoint
├── └── snapshots
├── pg_multixact
├── ├── members
├── │   └── 0000
├── └── offsets
├── │   └── 0000
├── pg_notify
├── │   └── 0000
├── pg_replslot
├── pg_serial
├── pg_snapshots
├── pg_stat
├── ├── db_0.stat
├── ├── db_13212.stat
├── └── global.stat
├── pg_stat_tmp
├── pg_subtrans
├── │   └── 0000
├── pg_tblspc
├── pg_twophase
├── PG_VERSION
├── pg_wal
├── ├── 00000001000000000000000002
├── ├── 00000001000000000000000003
├── └── archive_status
```

```
oracle@oelora:/u02/oradata/DB11204/ [DB4] tree
.
├── controlfile
│   └── 01_mf_dlmcpff2_.ctl
├── datafile
│   ├── 01_mf_credi_bs_dlmgkytj_.dbf
│   ├── 01_mf_credi_bs_dlmglbj1_.dbf
│   ├── 01_mf_sysaux_dlmcq5lw_.dbf
│   ├── 01_mf_system_dlmcpp2f_.dbf
│   ├── 01_mf_temp_dlmccqct_.tmp
│   ├── 01_mf_undotbs1_dlmcqlcc_.dbf
│   └── 01_mf_users_dlmccyp8_.dbf
└── onlineolog
    ├── 01_mf_1_dlmcpjgt_.log
    ├── 01_mf_2_dlmcpjh4_.log
    └── 01_mf_3_dlmcp11q_.log

3 directories, 11 files
oracle@oelora:/u02/oradata/DB11204/ [DB4]
```

Where are my tablespaces? What is that?

```
1* select tablespace_name,file_name from dba_data_files order by 1
```

TABSPACE_NAME	FILE_NAME
CREDI_BS	/u02/oradata/DB11204/datafile/ol_mf_credi_bs_d1mgkytj_.dbf
CREDI_BS_I	/u02/oradata/DB11204/datafile/ol_mf_credi_bs_d1mg1bj1_.dbf
SYS_AUX	/u02/oradata/DB11204/datafile/ol_mf_sysaux_d1mcq5lw_.dbf
SYSTEM	/u02/oradata/DB11204/datafile/ol_mf_system_d1mcpp2f_.dbf
UNDOTBS1	/u02/oradata/DB11204/datafile/ol_mf_undotbs1_d1mcqlcc_.dbf
USERS	/u02/oradata/DB11204/datafile/ol_mf_users_d1mcqyp8_.dbf

```
pgbox/postgres MASTER (postgres@5441) # \db+
                                List of tablespaces
   Name   | Owner  | Location | Access privileges | Options | Size  | Description
-----+-----+-----+-----+-----+-----+-----
pg_default| postgres |          |                    |         | 22 MB |
pg_global | postgres |          |                    |         | 573 kB |
tbs1      | postgres | /tmp/tbs1 |                    |         | 0 bytes |
tbs2      | postgres | /tmp/tbs2 |                    |         | 0 bytes |
(4 rows)

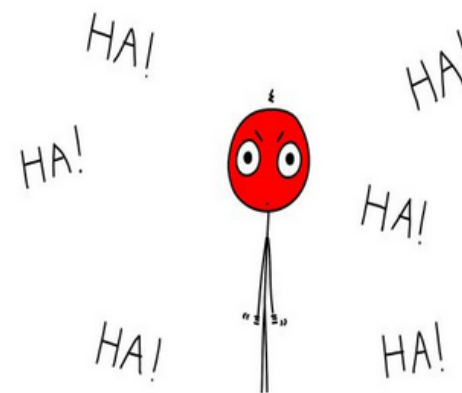
pgbox/postgres MASTER (postgres@5441) # \! ls -l /u02/pgdata/PG10/pg_tblspc/*
lrwxrwxrwx. 1 postgres postgres 9 Oct  8 20:11 /u02/pgdata/PG10/pg_tblspc/16384 -> /tmp/tbs1
lrwxrwxrwx. 1 postgres postgres 9 Oct  8 20:11 /u02/pgdata/PG10/pg_tblspc/16385 -> /tmp/tbs2
```

Symlinks? Come on... NO!

PostgreSQL sucks - Words

Look, guys, I am trying to read some docs here...

- >Tuples?
- >Relations?
- >Attributes?
- >Come on... how the <beep> am I ever going to make sense of this...
- >Where are all the books?
 - >Installation guide?
 - >Performance tuning guide?
 - >Concepts and prescriptions like MAA?
 - >Backup and recovery guide?
 - >...



PostgreSQL sucks - Standby/replica database

How do I use Active Data Guard here?

- >I mean, my data is important, I need a standby database!!
- >What'd you expect?

Regarded as a top important tool

- >I am allowed to buy it as I have Oracle Enterprise Edition

Where is my broker?



PostgreSQL sucks - Scalability

How do I create a RAC?

- >Come on, RAC is cool stuff and without having it we can not do anything
- >No RAC, no PostgreSQL
- >PostgreSQL-XL? Really?
- >Exadata? No?
- >Exadata and RAC are "the" things we need, honestly



PostgreSQL sucks - Backup and restore

Where is something like RMAN? How do we backup & restore?

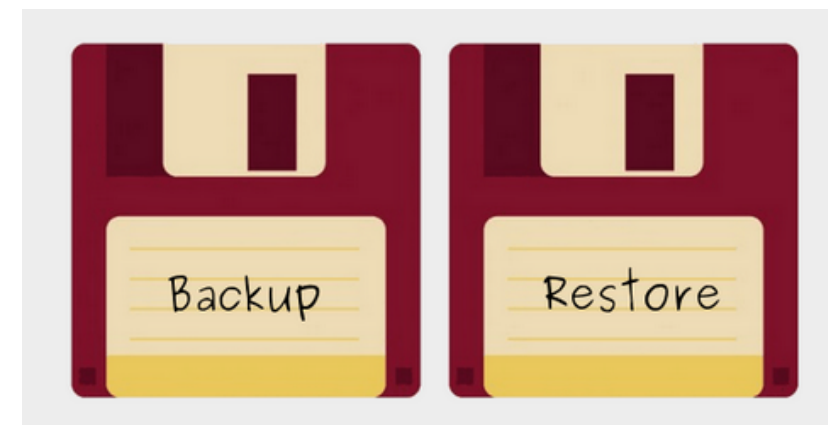
A backup is just a file-copy... no!!

A backup is a mystical thing

>you cannot just copy files and call it at a backup!

>pg_basebackup? And that is reliable?

Retention policies? What!



PostgreSQL sucks - Where are my hints?

I am used to using hints to fix performance regressions

```
select /*+ I_KNOW_IT_BETTER */  
      FROM slow  
      WHERE decode ( fast  
                    , 0, TRUE  
                    , 1, FALSE  
                    ) = TRUE  
      AND optimizer = 'WRONG';
```

When there are no hints, this is not an enterprise solution! Damn... I really need that

PostgreSQL sucks - Undo?

There is no UNDO in PostgreSQL?

- >Redo and Undo are essential, you can not survive without that
- >No undo => no flashback
- >MVCC what? What is that, I don't need that...



PostgreSQL sucks - Support

Where is My Oracle Support for PostgreSQL?



Welcome to My Oracle Support!

The one-stop support solution for Oracle Premier Support Customers.

- Search for solutions
- Download patches and updates
- Access proactive support tools
- Collaborate in the My Oracle Support Community
- Create a Service Request

Register, sign in, and visit the [User Resource Center](#) to learn more.

Save Time, [Renew Your Oracle Premier Support](#) Online. [Learn More.](#)

Nothing comparable exists!

I can not trust PostgreSQL because the community does not offer support!

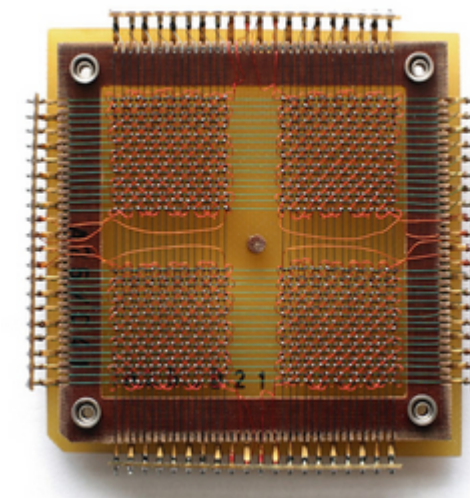
- >When I tell business I need to ask the community for support they will kill me!
- >Community support is bullshit, there is no guarantee!
- >When it is free it is not enterprise ready!
- >Who do I blame when something goes wrong?!
- >Where is the knowledge base?
- >Where can I download patches?
- >Who provides patches? Are they tested and certified?
- >Where is something like OPatch?



PostgreSQL sucks - Memory configuration

Usually I give my database as much memory as I can, why then

- >shared_buffers so small?
- >work_mem per operation?
- >no direct I/O?
- >PostgreSQL relies on the file system/os cache? Really?
- >Cursors are not shared?



PostgreSQL, wait a minute - Re-thinking

Maybe, it's time to re-think and to start thinking the  way?

PostgreSQL, wait a minute - Re-thinking

Maybe  is different, works in another way, but just gets the job done?

PostgreSQL, wait a minute - Installation

I have freedom of choice!

- >It really depends in what environment I am working in
 - >Minimal effort => go for what the OS distribution offers you
 - >More control => go for the EDB installer (graphical or text mode) or BigSQL or any other vendor
 - >Full control => go from source
- >Small footprint => fast deployments, easier to script
- >No restrictions on OS vendors, I can use what I want
- >I am much closer to the operating system
 - >Not always better, not always worse



PostgreSQL, wait a minute - Complexity

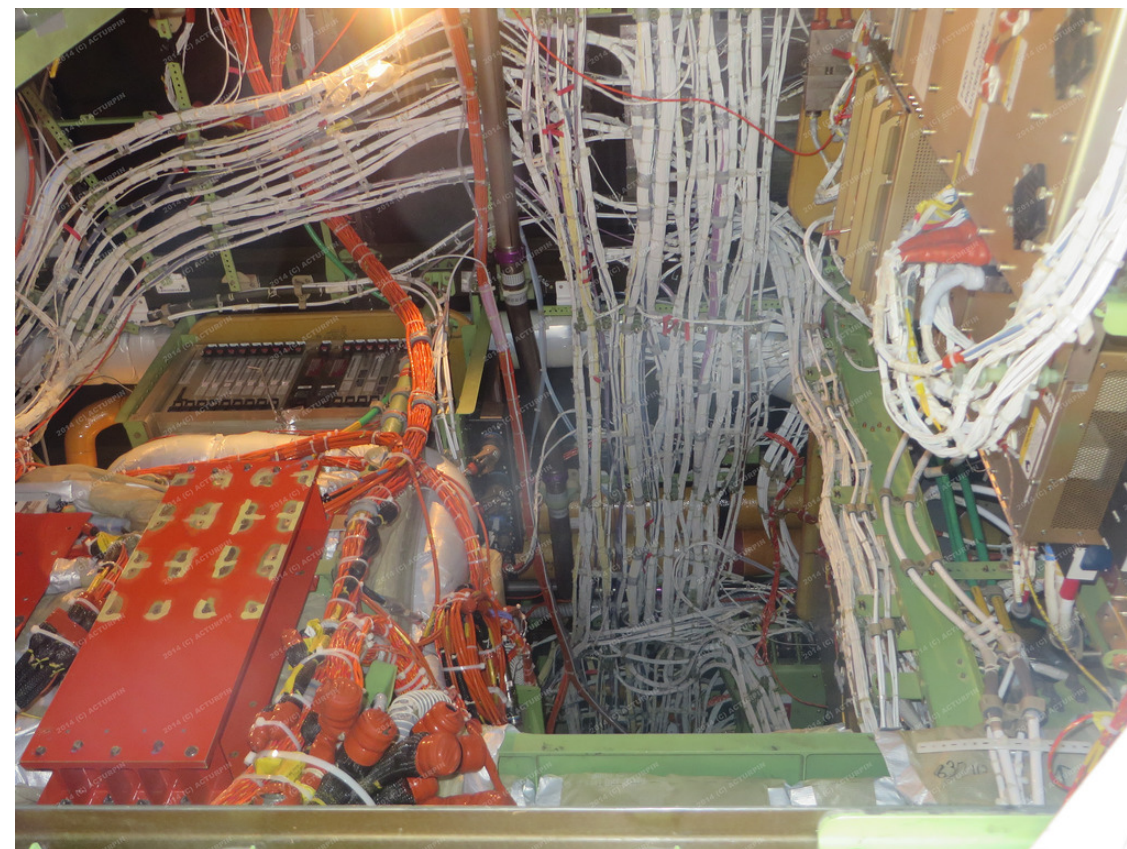
Doesn't this, in fact, look easier?

- > Building my first PostgreSQL VM left me puzzled
- > This is so easy
- > This can't be right...

First database up and running in @ 10 minutes

I don't need an expert to get it up and running?

- > Wow, cool!



What do you mean, complexity?

Do I really need to deal with tablespaces?

- > Why should I bother with space limits inside the database?
- > Why should I bother with huge files at all?
- > Is a self-containing “thing” not even better?
- > Is the concept of tablespaces as pointers not much more flexible?
- > Do I really want to have tablespaces at all?

PostgreSQL, wait a minute - Masters and replicas

Rock solid and embarrassingly simple

- >Create a “replica” in seconds*
- >Like WOW!!
- >No massive license overhead
- >Third party solutions adds massive functionality & scalability
 - >pgpool II
 - >pgbadger
 - >...

Do you really _need_ RAC?

- ><http://www.sdmc.nl/YouProbablyDontNeedRACUSVersion.pdf>



PostgreSQL, wait a minute - Where are my friends?

OOW and marketing?

There are countless PostgreSQL conferences all over the world, but ...

... they are not marketing driven, but driven by the community!

>Although marketing becomes more and more important for PostgreSQL as well



PostgreSQL, wait a minute - Where are my friends?

Oracle community does not offer platform development

>It's closed source!!

PostgreSQL community focusses a lot on platform development

- >Can be confusing when moving over
- >Need to distinguish and get used to
- >Need to select what fits for you, choose a toolset



PostgreSQL, wait a minute

- no need to reverse engineer stuff?

To explain many things, you need to know how it works

- >To know how it works, you need to know how it is written
- >If you can't read how it is written ...

You need to figure out what was probably written

- >Tideous
- >Prone to faults
- >BORING
- >Why do you want to do that at all? That is waste of time!



PostgreSQL, wait a minute

- no need to reverse engineer stuff?

PostgreSQL is real Open Source

- >You can just read the code
- >You can just read the comments and documentation in the source tree
- >No need to waste good IQ to reverse engineer
 - >Can you imagine how many brilliant engineers try to figure out how Oracle works?
- >Just invest in improvement



PostgreSQL, wait a minute- memory configuration

It works not the same, but that does not mean it is bad

- >Blocks/pages are expected to be in the OS/file system cache
- >There is no concept of various pools (db_cache, shared_pool, large_pool, ...)
 - >This makes life easier
 - >This reduces complexity
 - >No ORA-[already_forgot_the_number] with resize operations of the pools
- >No library cache locks
 - >Much easier deployment

What, no licensing?

What should we let our Oracle license compliancy officer do now?

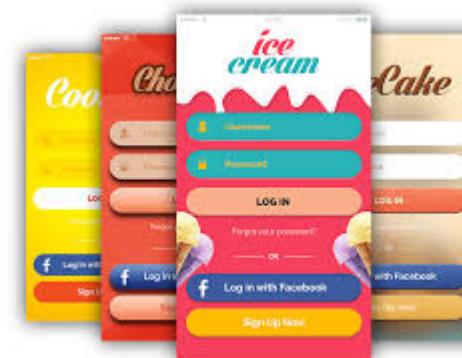
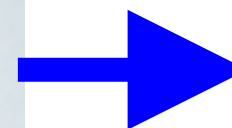
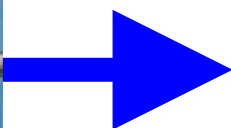
>Oracle license guide is only 62 pages!

Postgres Rocks! - Licensing

Highly skilled Oracle license compliancy officer can contribute to project success!

PostgreSQL is free - of course

- >EnterpriseDB offers the complete PostgreSQL platform
- >Others offer support too...



Postgres Rocks! - Focus on the project

Open Source Software requires no licensing

Do NOT spend 80% of project budget on database licensing...



Depending on your issue

- >pgsql-general
- >pgsql-performance
- >pgsql-hackers

Take your time to describe your issue

- >https://wiki.postgresql.org/wiki/Guide_to_reporting_problems
- >When you follow these guidelines
 - >You'll be surprised on how fast you get answers that really help you

Postgres Rocks! - No artificial complexity

Oracle (needs to) support an ECO-System

Wikipedia:

An ecosystem is a community of living organisms in conjunction with the nonliving components of their environment (things like air, water and mineral soil), interacting as a system. These biotic and abiotic components are regarded as linked together through nutrient cycles and energy flows. As ecosystems are defined by the network of interactions among organisms, and between organisms and their environment, they can be of any size but usually encompass specific, limited spaces.

Jeff Wayne:

*No one could have dreamed we were being scrutinized
as someone with a microscope studies creatures
that swarm and multiply in a drop of water.*

Postgres Rocks! - No artificial complexity



PostgreSQL does not need to support an ECO-System

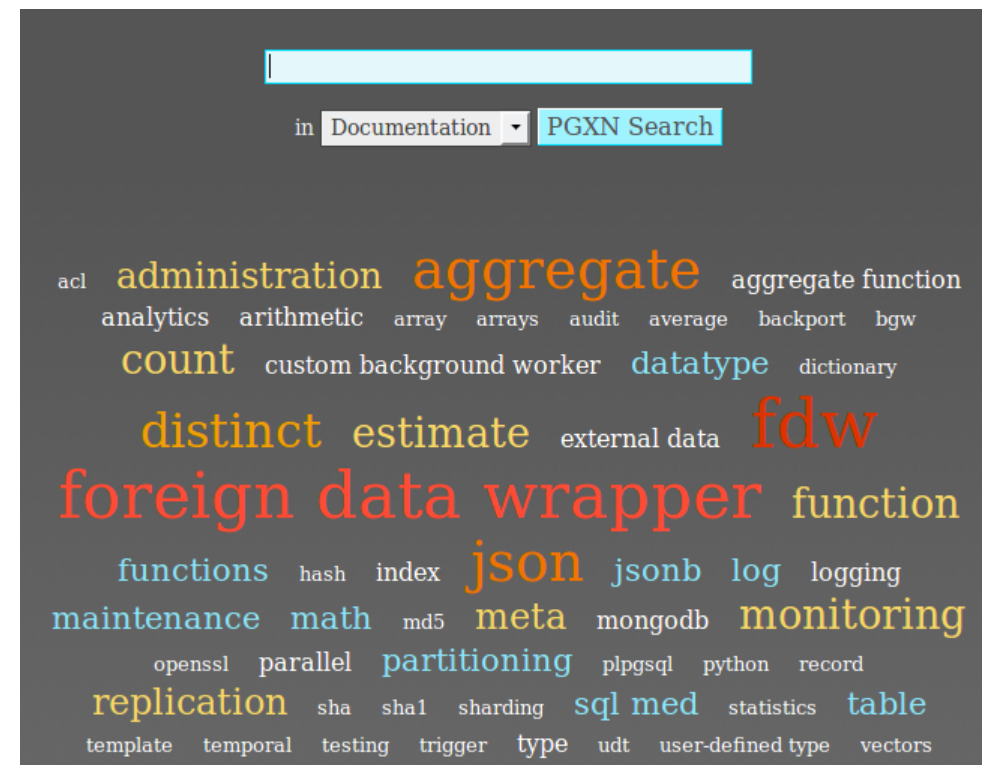
This means no artificial complexity to

- > satisfy the ECO-system partners
- > keep ECO-system partners employed
- > ensure enhanced money flows

Postgres Rocks! - An answer to every challenge

If I run into something, someone will probably have already built something

- >Extensions
- >Foreign Data Wrappers
- >Index access methods
- >Data types



Postgres Rocks! - Annual release cycles

It is so cool, Oracle even copied it



Star Wars:

4
5
6
1
2
3
7
3.5



Version	Datum	RU	RUR
18.1.0	Dezember 2018	1	0
18.1.1	Januar 2019	1	1
18.1.2	April 2018	1	2
18.2.0	Januar 2018	2	0
18.2.1	April 2018	2	1
18.2.2	Juli 2018	2	2
18.3.0	April 2018	3	0
18.3.1	Juli 2018	3	1
18.3.2	Oktober 2018	3	2
18.4.0	Juli 2018	4	0
18.4.1	Oktober 2018	4	1
18.4.2	Januar 2019	4	2
19.1.0	Januar 2019	1	0
18.5.0	Januar 2019	5	0
18.5.1	April 2019	5	1
19.2.0	April 2019	2	0
19.1.1	April 2019	1	1

Postgres Rocks! - Not a vendor to blame



PostgreSQL is a community project

- >You need to accept that
- >You need to learn to write emails again
 - >... do not top post :)
- >You need to learn to discuss again
- >No contract, no blaming
- >Participation is welcome

This is great

- >Well, most of the time...

Open Source ≠ for free

- >We still need education
- >We still need operational processes
- >We still need people who can work with the tools
- >Sometimes we still need commercial support because it is required by business

What we don't need

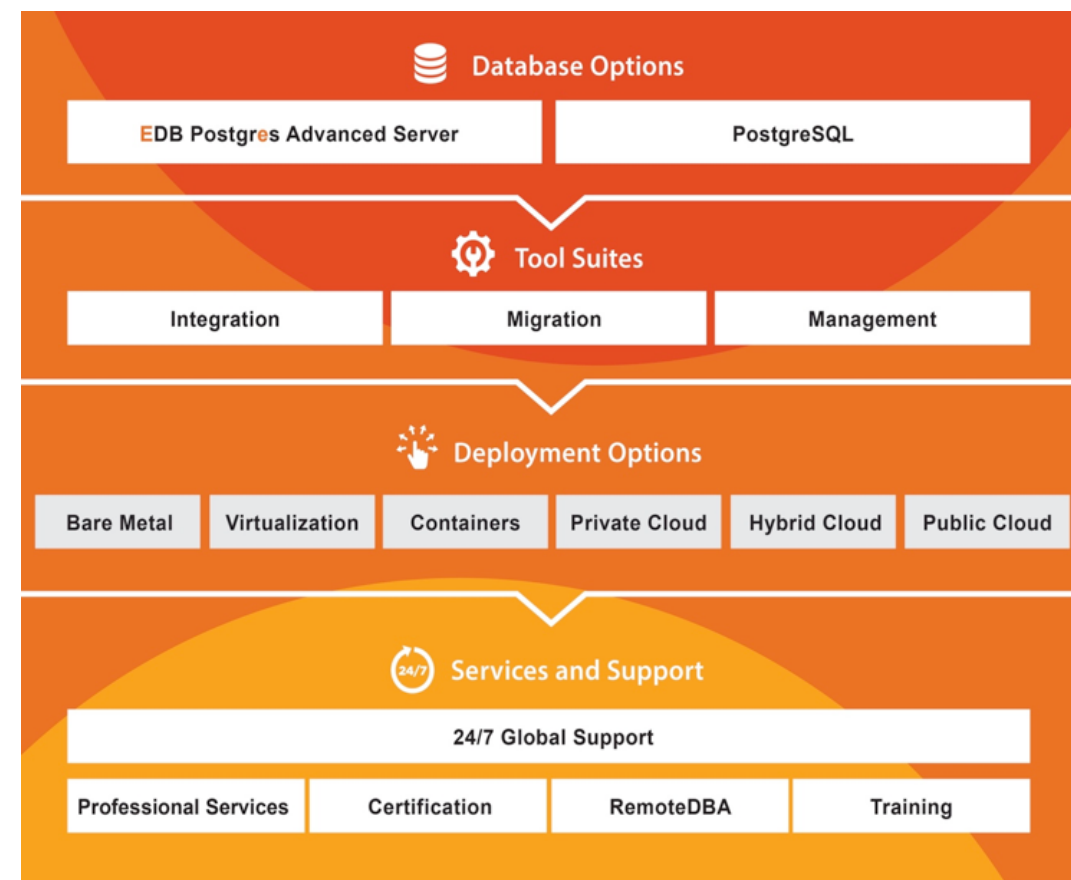
- >A software monster
- >Countless bug fixes, hot fixes, BP, PSU, RUR, RU

Postgres Rocks! - In the Enterprise

How can (or should) this be done...

(Mostly) boring things:

- >Support contract requirements
- >24/7 committed support / patching
- >IP indemnification
- >Roadmap



Sometimes there are legal requirements a company needs to follow

- >e.g. in the pharma sector a database must be able to encrypt its data
- >Yes, we can do that on the file system level, we know
 - >This is not a technical discussion
 - >When a product can not fulfill this requirement it will not be used, it is that simple!
- >Even when it technically does not make sense, sometimes
 - >A feature just needs to be there because companies are forced to have it implemented

Postgres Rocks! - In the Enterprise



PostgreSQL is really going places

- >Number of installations is really unknown, as you can get it anonymous
- >Many, many installations
- >Adoption of PostgreSQL by the major players
 - >Bringing PostgreSQL to it's full rights
 - >Major airline alliances
 - >Leading car manufacturers
 - >Major global financial institutions
 - >Local and global government



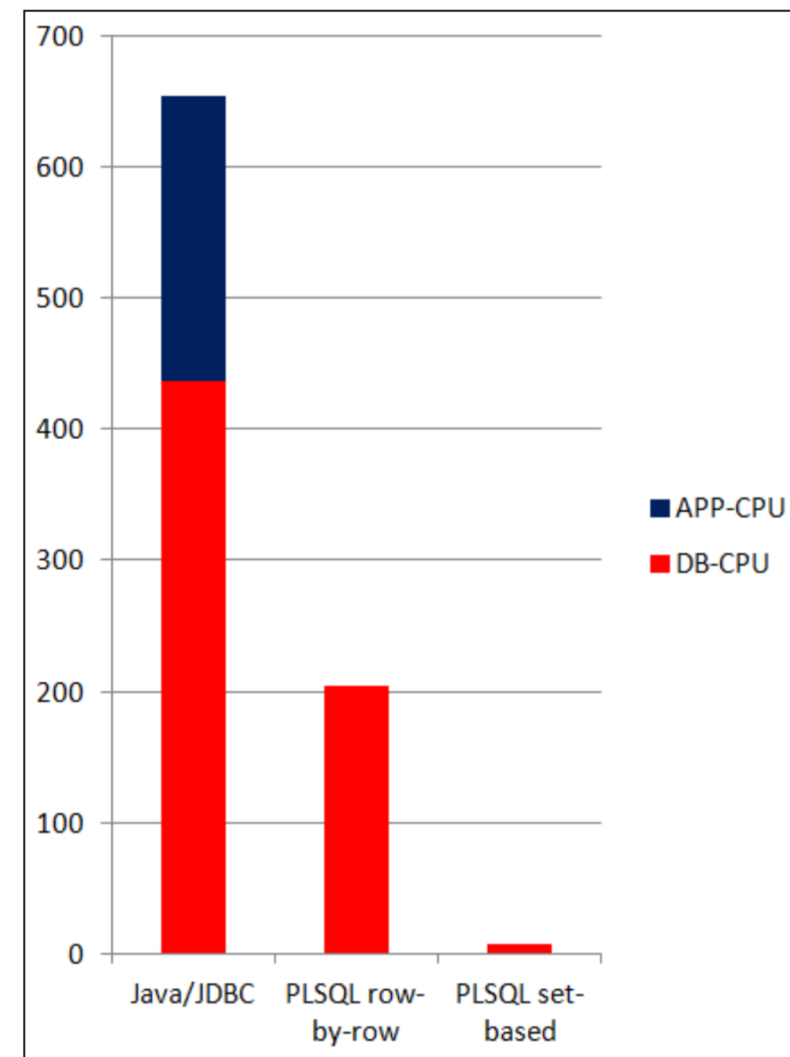
Postgres Rocks! - #SmartDB

Deserves more focus

It's a presentation on its own

- >Application development
- >Position of business logic
 - >Application business logic
 - >Data business logic
- >Leverage the power of the database
- >Reduce overhead

PostgreSQL: Data Processing Engine or persistency layer?



Source: Toon Koppelaars

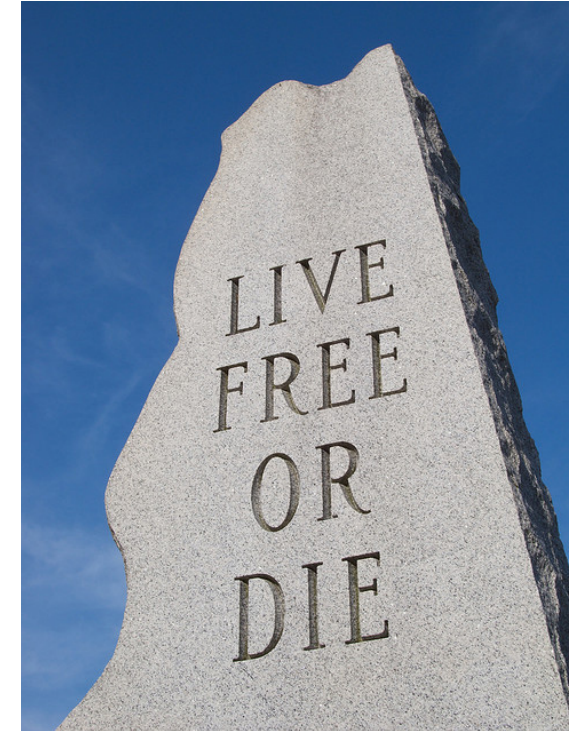
Postgres Rocks! - Some final words

1. It's easy to maintain
- 2 It's rock solid
- 3 It just does the work

Are we glad we got out of “Hotel California”?

Does it open up new roads?

Should we be religious about IT choices?



Keep up the great job

- >You are building a great product
- >Keep the spirit in the community
- >Keep the simplicity
- >Thank you for this great conference
- >Rock on!



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with 1-year of access to our full on-demand
eLearning library with 11 on-demand classes!

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**Any
questions?**
Please do
ask!



We would love to boost
your IT-Infrastructure
How about you?

Postgres Rocks!



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