

PostgreSQL 9.0

KEWL STUFF U CAN DO

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Introductions

```

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    |__|      |__| -"
```

. o 0 (PostgreSQL?)

PostgreSQL

- Current version 8.4.3
- 9.0 is in alpha
- Get it here:
<http://www.postgresql.org/ftp/source/9.0alpha4/>
<http://www.postgresql.org/developer/alpha>

Contents

Full list of features:

[http://developer.postgresql.org/pgdocs/postgres/
release-9-0.html](http://developer.postgresql.org/pgdocs/postgres/release-9-0.html)

Install server-side language PL/pgSQL by default (Bruce Momjian)

Yes.

Allow function calls to supply parameter names and match them to named parameters in the function definition
(Pavel Stehule)

(Demo.)

Add support for to_char() scientific notation output ('EEEE') (Pavel Stehule, Brendan Jurd)

```
postgres=# create table exponents_demo
(example numeric);
CREATE TABLE
postgres=# INSERT INTO exponents_demo
VALUES
    ('10000000'),
    ('2.54'),
    ('3.1415'),
    ('666'),
    ('6.02e+23'),
    ('5.29e-11'),
    ('8675309')
;
```


Con't

```
postgres=# SELECT * from exponents_demo ;
example
```

```
-----
                                10000000
                                2.54
                                3.1415
                                666
6020000000000000000000000000
                                0.0000000000529
                                8675309
(7 rows)
```

Con't

```
postgres=# SELECT to_char(example, '9.9EEEE')
AS lookyhere
FROM exponents_demo ;
 lookyhere
-----
 1.0e+07
 2.5e+00
 3.1e+00
 6.7e+02
 6.0e+23
 5.3e-11
 8.7e+06
(7 rows)
```

RADIUS Authentication (Magnus Hagander)

```
#host  database  user  CIDR-address  auth-method  [auth-opt  
host   all       all   0.0.0.0/0     radius       \  
radiusserver=1.2.3.4 radiussecret=canttouchthis \  
radiusport=1234  radiusidentifier=gabscooldatabase
```

Add samehost and samenet designations to pg_hba.conf

(Stef Walter)

```
# IPv4 local connections:
```

host	all	all	127.0.0.1/32	md5
host	all	all	samehost	md5
host	all	all	samenet	md5

Log changed parameter values when postgresql.conf is reloaded (Peter Eisentraut)

```
LOG:  parameter "log_rotation_age" changed to "7d"  
LOG:  parameter "port" cannot be changed without restarting  
LOG:  parameter "log_rotation_age" changed to "1d"  
LOG:  parameter "log_min_messages" changed to "notice"  
LOG:  parameter "autovacuum" changed to "off"  
<2010-04-22 14:00:50 PDT >LOG:  parameter "log_line_prefix"  
<2010-04-22 14:00:50 PDT >LOG:  parameter "log_statement"
```

Add an SQL state option (%e) to log_line_prefix (Guillaume Smet)

e.g.:

```
log_line_prefix = '<%t %d %u %e>'
```

gives you something like:

```
<2010-04-22 21:02:02 PDT postgres postgres 00000> \  
LOG:  statement: ALTER TABLE drop_column_demo DROP COLUMN  
<2010-04-22 21:02:54 PDT postgres postgres 00000> \  
LOG:  statement: GRANT SELECT on drop_column_demo to groth  
<2010-04-22 21:02:54 PDT postgres postgres 42704> \  
ERROR:  role "groth" does not exist
```

Allow EXPLAIN output in XML, JSON, and YAML formats (Robert Haas, Greg Sabino Mullane)

```
EXPLAIN
```

```
SELECT * FROM user_history ORDER BY "timestamp";
```

```
QUERY PLAN
```

```
-----  
Sort   (cost=18494.32..18852.33 rows=143204 width=34)  
  Sort Key: "timestamp"  
    -> Seq Scan on user_history   (cost=0.00..2559.04 rows=143204  
(3 rows)
```

Con't

```
EXPLAIN (FORMAT XML)
SELECT * FROM user_history ORDER BY "timestamp";
QUERY PLAN
```

```
-----
<explain xmlns="http://www.postgresql.org/2009/explain">
  <Query>
    <Plan>
      <Node-Type>Sort</Node-Type>
      <Startup-Cost>18494.32</Startup-Cost>
      <Total-Cost>18852.33</Total-Cost>
      <Plan-Rows>143204</Plan-Rows>
      <Plan-Width>34</Plan-Width>
      <Sort-Key>
        <Item>"timestamp"</Item>
      </Sort-Key>
```

...

Con't

...

```
<Plans>
  <Plan>
    <Node-Type>Seq Scan</Node-Type>
    <Parent-Relationship>Outer</Parent-Relationship>
    <Relation-Name>user_history</Relation-Name>
    <Alias>user_history</Alias>
    <Startup-Cost>0.00</Startup-Cost>
    <Total-Cost>2559.04</Total-Cost>
    <Plan-Rows>143204</Plan-Rows>
    <Plan-Width>34</Plan-Width>
  </Plan>
</Plans>
</Plan>
</Query>
</explain>
(1 row)
```

Con't

```
EXPLAIN (FORMAT YAML)
SELECT * FROM user_history ORDER BY "timestamp";
QUERY PLAN
```

```
-----
- Plan:                                     +
  Node Type: Sort                           +
  Startup Cost: 18494.32                     +
  Total Cost: 18852.33                       +
  Plan Rows: 143204                          +
  Plan Width: 34                             +
  Sort Key:                                 +
    - "\"timestamp\"\"                     +
```

...

Con't

```
Plans: +
- Node Type: Seq Scan +
  Parent Relationship: Outer +
  Relation Name: user_history+
  Alias: user_history +
  Startup Cost: 0.00 +
  Total Cost: 2559.04 +
  Plan Rows: 143204 +
  Plan Width: 34
```

(1 row)

Speed up CREATE DATABASE by deferring flushes to disk (Andres Freund, Greg Stark)

(Demo.)

Add WHERE clause to CREATE TRIGGER to allow control over whether a trigger is fired (Takahiro Itagaki)

psst... It's actually a "When" clause...

```
CREATE TRIGGER name { BEFORE | AFTER } { event [ OR ... ] }  
    ON table [ FOR [ EACH ] { ROW | STATEMENT } ]  
    [ WHEN ( condition ) ]  
    EXECUTE PROCEDURE function_name ( arguments )
```

Allow NOTIFY to pass an optional string to listeners (Joachim Wieland)

```
lfnw-9.0=# LISTEN 19_0;  
LISTEN  
lfnw-9.0=# NOTIFY 19_0, 'need coffee...';  
NOTIFY  
Asynchronous notification "19_0"  
with payload "need coffee..."  
received from server process with PID 10480.
```

Have columns defined with storage type MAIN remain on the main heap page unless it cannot fit (Kevin Grittner)

8k page size

Before: a tuple might get TOAST'd prematurely

LIVE DEMO!

Add `pg_stat_reset_single_table_counters()` and `pg_stat_reset_single_function_counters()` to allow the resetting of statistics counters for individual tables and indexes (Magnus Hagander)

(Discuss.)

Add `pg_last_xlog_receive_location()` and `pg_last_xlog_replay_location()`, which can be used to monitor standby server WAL activity (Simon, Fujii Masao, Heikki)

(Discuss.)

Hot Standby/Streaming Replication

...drumroll ...

And now for something completely different...

Pg Android App Contest!

<http://wiki.postgresql.org/wiki/AndroidAppContest>

Odds & Ends

`vacuumdb --analyze-only` (Bruce Momjian)

`GRANT/REVOKE IN SCHEMA` (Petr Jelinek)

`pg_table_size` and `pg_indexes_size` (Bernd Helmle)

Add deferrable unique constraints (Dean Rasheed)

Remove the use of flat files for system table bootstrapping
(Tom, Alvaro)

`DROP COLUMN IF EXISTS` (Andreas Freund)

64-bit Windows support (Tsutomu Yamada, Magnus Hagander)

Improvements to PL/Perl (Tim Bunce)

Anonymous functions with 'DO' (Petr Jelinek, Joshua Tolley, Hannu Valtonen)

`/contrib/passwordcheck` (Laurenz Albe)

Final Notes

These slides:

<http://www.slideshare.net/markwkm>

Try it!

<http://www.postgresql.org/ftp/source/9.0alpha4/>

<http://www.postgresql.org/developer/alpha>

<http://wiki.postgresql.org/wiki/HowToBetaTest>

Acknowledgements

Post-it Extra-Sticky Notes

Hayley Jane Wakenshaw

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```

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