

Upcoming PostgreSQL Features

BRUCE MOMJIAN



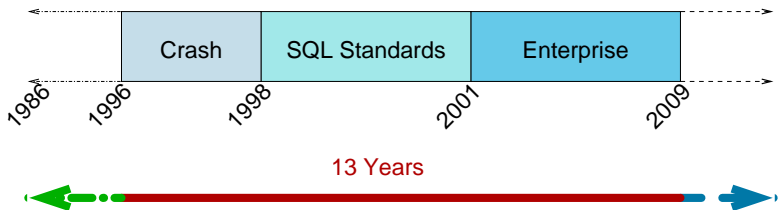
January, 2012

This outlines the upcoming features of PostgreSQL 8.4.

Creative Commons Attribution License

<http://momjian.us/presentations>

PostgreSQL Evolution



Enterprise features include:

- ▶ Improved Performance
- ▶ Simplified Maintenance and Administration
- ▶ Efficient 24/7 Operation

Column-Level Permissions

```
GRANT SELECT (col1), INSERT (col2), UPDATE (col3)  
ON sales_activity TO salesteam;
```

Windowing Functions: Sum

```
SELECT depname, empno, salary,  
       sum(salary) OVER (PARTITION BY depname)  
FROM empsalary  
ORDER BY depname, salary;
```

depname	empno	salary	sum
develop	7	4200	25100
develop	9	4500	25100
develop	11	5200	25100
develop	10	5200	25100
develop	8	6000	25100
personnel	5	3500	7400
personnel	2	3900	7400
sales	3	4800	14600
sales	4	4800	14600
sales	1	5000	14600

(10 rows)

Windowing Functions: Rank

```
SELECT depname, empno, salary,  
       rank() OVER (PARTITION BY depname ORDER BY salary)  
FROM empsalary;
```

depname	empno	salary	rank
develop	7	4200	1
develop	9	4500	2
develop	11	5200	3
develop	10	5200	3
develop	8	6000	5
personnel	5	3500	1
personnel	2	3900	2
sales	3	4800	1
sales	4	4800	1
sales	1	5000	3

(10 rows)

WITH Queries: Simple

```
WITH tab1(x) AS (SELECT 23 UNION SELECT 55)
SELECT * FROM tab1;
```

```
x
```

```
----
```

```
23
```

```
55
```

```
(2 rows)
```

WITH Queries: Recursive

```
WITH RECURSIVE tab1(x) AS  
  (SELECT 1 UNION ALL SELECT x + 1 FROM tab1 WHERE x < 10)  
SELECT * FROM tab1;
```

x

1

2

3

4

5

6

7

8

9

10

(10 rows)

Parallel Restore of Dumps

```
$ pg_restore --multi-thread=4 db.dump
```

Visibility Maps Reduce Vacuum Overhead

Pre-8.4



D	D	D	D	D	D	D	D	D	D	D	D
A	A	A	A	A	A	A	A	A	A	A	A
T	T	T	T	T	T	T	T	T	T	T	T
A	A	A	A	A	A	A	A	A	A	A	A



8.4+

No Need for Free-Space Map Configuration

Removed from postgresql.conf:

```
#max_fsm_pages = 204800
```

```
#max_fsm_relations = 1000
```

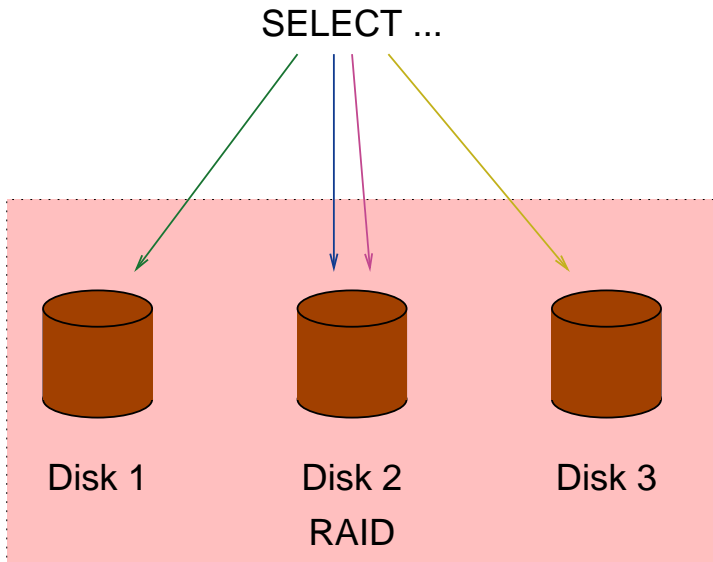
```
# min max_fsm_relations*16, 6 bytes each
```

```
# (change requires restart)
```

```
# min 100, ~70 bytes each
```

```
# (change requires restart)
```

Prefetch I/O Using `posix_fadvise()`



Per-Database Locales

```
CREATE DATABASE newdb  
WITH ENCODING 'UTF8'  
      COLLATE 'en_GB.UTF8'  
      CTYPE 'en_GB.UTF8';
```

Default Values for Function Arguments

```
CREATE FUNCTION magical(int, int DEFAULT 42) ...
```

Other Improvements

- ▶ Safe termination of individual sessions
- ▶ Full text search (GIN) performance improvements

Possible 8.4 Features

- ▶ In-Place upgrades with `pg_migrator`

Possible 8.5 Features

- ▶ SE-Linux and SQL row-level permissions
- ▶ Read-Only queries on continuous archiving slaves (hot standby)
- ▶ Streaming continuous archiving (log streaming)
- ▶ Index-only scans (covering index)
- ▶ Simplified table partitioning
- ▶ Automatically updatable views
- ▶ Views with CHECK OPTION
- ▶ Autotuning wizard

Questions?



<http://momjian.us/presentations>