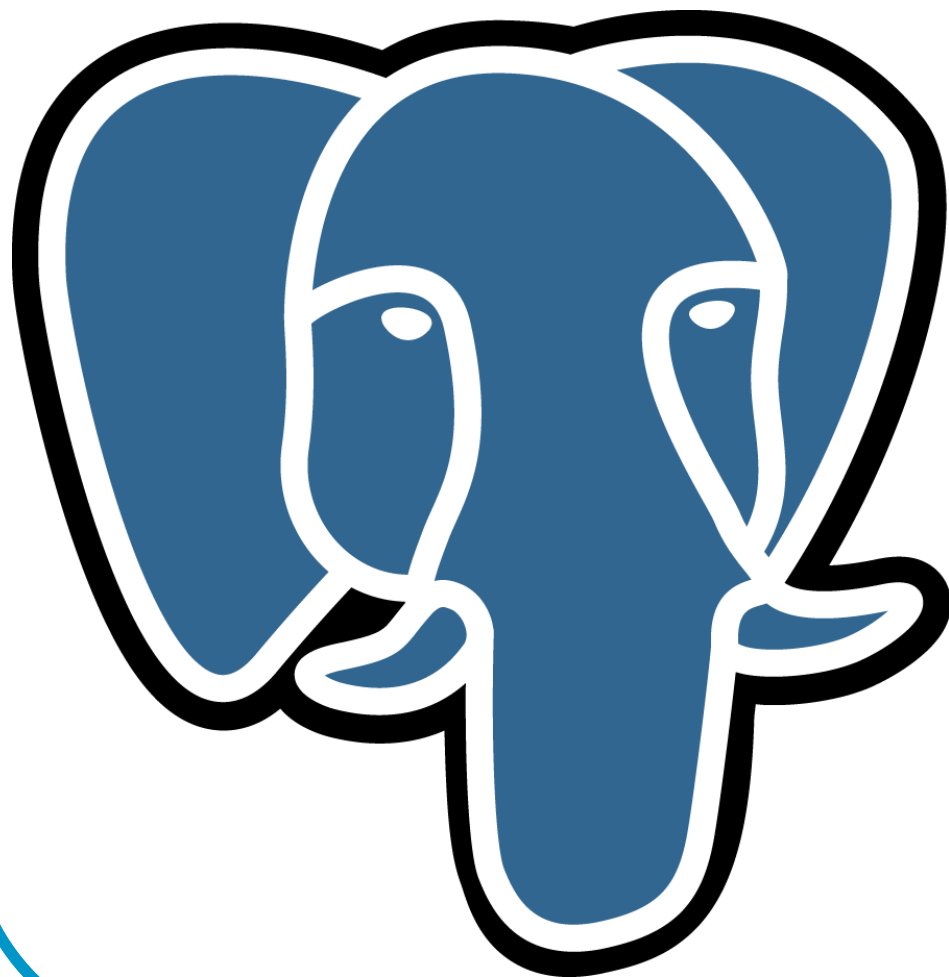# PostgreSQL Today and Tomorrow

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Agenda

- What's new in PostgreSQL 8.2
  - Simpler usage
  - Better performance
  - Higher reliability
- What's already in CVS for 8.3
- What else is in line

What's new in PostgreSQL 8.2

- Multirow INSERTs

```
INSERT INTO foo (a,b,c) VALUES (1,1,1)
INSERT INTO foo (a,b,c) VALUES (2,2,2)
INSERT INTO foo (a,b,c) VALUES (3,3,3)
```

- Now written as

```
INSERT INTO foo (a,b,c) VALUES
  (1,1,1), (2,2,2), (3,3,3)
```

- One transaction (of course)
- *Not* a replacement for COPY

What's new in PostgreSQL 8.2

- ## INSERT & UPDATE RETURNING

```
CREATE TABLE foo
  (a SERIAL PRIMARY KEY, b text);

INSERT INTO foo (b) VALUES ('test')
  RETURNING a;

UPDATE foo SET b='test2' WHERE
  b='test' RETURNING a;
```

What's new in PostgreSQL 8.2

- COPY can now dump SELECT results

```
COPY (SELECT a,b FROM mytable)
 TO stdout
```

- Higher performance, streaming output
- CSV format

What's new in PostgreSQL 8.2

- New aggregates per SQL:2003
  - stddev_pop(), stddev_samp()
  - var_pop(), var_samp()
  - More statistical aggregates
- Support for multi-input aggregates

What's new in PostgreSQL 8.2

- GRANT CONNECT ON DATABASE
  - Controllable from SQL
  - Works alongside pg_hba.conf
  - Need permissions from *both* to get in

```
GRANT CONNECT ON DATABASE
  postgres TO mha
REVOKE CONNECT ON DATABASE
  postgres FROM public
```

What's new in PostgreSQL 8.2

- Native LDAP authentication
  - For platforms without PAM
  - And easier to set up
  - Not single sign-on, but single password
  - OpenLDAP or WinLDAP
  - Cleartext password – use SSL

host all all 127.0.0.1/32 ldap
  ldaps://ldap.example.net/dc=example,dc=net;EXAMPLE\

What's new in PostgreSQL 8.2

- Lots of performance enhancements
  - Less memory for large sorts
  - Constraint exclusion for UPDATE/DELETE
  - Faster VACUUM of b-tree indexes
  - Much much more
- Warm standby
  - Based on PITR
  - Delayed & asynchronous

What's new in PostgreSQL 8.2

- Non-blocking index creation
  - Previously blocked writes during creation

```
CREATE INDEX CONCURRENTLY
  bar_idx ON foo (bar);
```

- Two table scans – longer total time
- Can leave incomplete index behind

What's new in PostgreSQL 8.2

- FILLFACTOR on indexes
  - Leave empty space when creating new index pages
  - Less frequent pagesplits
  - Default is 90%

```
CREATE INDEX bar_idx ON foo(bar)
  WITH (FILLFACTOR=80)
```

What's new in PostgreSQL 8.2

- Generalized Inverted Indexes (GIN)
  - Fully transaction-safe, MVCC
  - Pluggable architecture
  - Initially: full text indexing (tsearch2), array indexing (intarray)
  - Faster searches. Ex 550,000 emails:
    - No index: 6,000 ms
    - GiST index: 250ms
    - GIN index: 6ms

What's new in PostgreSQL 8.2

- Tsearch2 improvements
  - GIN support
  - UTF-8 support
  - Improved ranking
  - Support for myspell

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What's already in CVS for 8.3

- Tentative schedule
  - March 31 – Feature Freeze
  - mid-may – Beta begins
  - July – Release 8.3.0

What's already in CVS for 8.3

- SQL/XML from SQL 2003
  - XML data type
  - XML parsing
  - XML serializing
  - XML manipulation
- Not complete yet
  - No generic XPath indexing
  - Expressional indexes still work

What's already in CVS for 8.3

- ORDER BY NULLS FIRST/NULLS LAST
  - Already possible
  - New ANSI standard syntax

```
SELECT * FROM foo
 ORDER BY a NULLS FIRST, b
```

What's already in CVS for 8.3

- costing of functions

```
CREATE FUNCTION foo ()
  RETURNS SETOF mytype
  LANGUAGE 'plpgsql'
  COST 10 ROWS 10 AS $$

  ....
  $$
```

What's already in CVS for 8.3

- COPY without WAL
- log_temp_files
- temp_tablespaces
- UUID datatype
- SSL improvements (choose cipher, hardware support)
- .. total of about 600 patches

Agenda

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- What's already in CVS for 8.3
- What else is in line
  - vaporware warning!!!

What else is in line

- ENUM
- Plan invalidation
- On-disk bitmap indexes
- Grouped Index Tuples
- HOT Updates

Thank you!

Questions?