

Agenda PostGIS

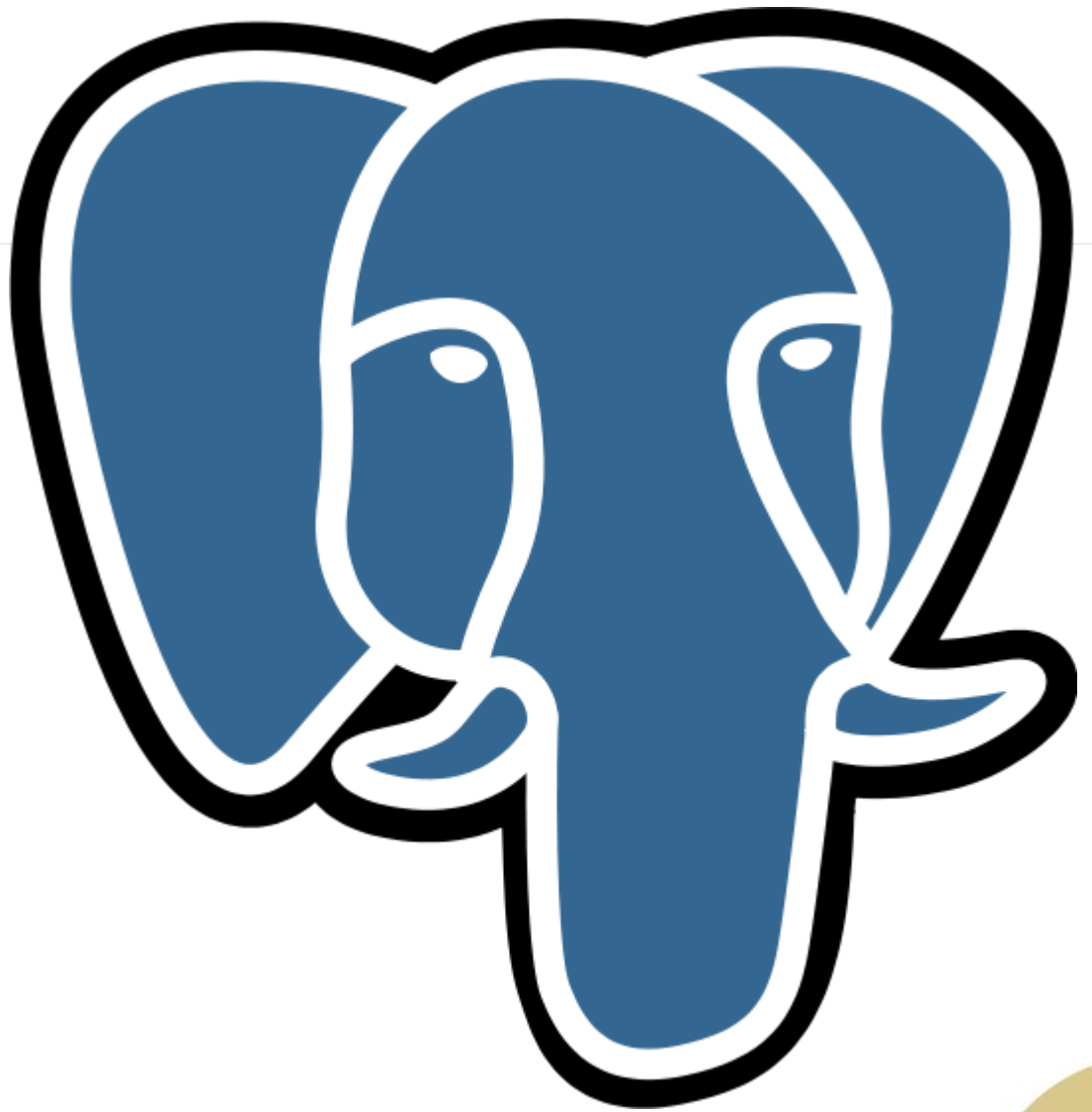
- Open Source
- PostgreSQL Historik
- Databashanterare (andra Mysql, Oracle, MSSql)
- Geografiska typer
- Topologi
- Varför Databashanterare? Varför inte Filer?
- Stored procedures
- Ladda data i databasen
- Titta på data i databasen
- PG-Admin
- Relationsdatabaser
- Transaktioner
- Connection string
- <http://planet.postgis.net/>
- SQL olika dialekter
- Programmering med/mot PostGIS



PostgreSQL (Postgres)

Känd för:

- Använder Standarder
- Stabil
- Bra prestanda





- PostGIS is an **extension** to the PostgreSQL object-relational database system which allows **GIS (Geographic Information Systems) objects** to be stored in the database. PostGIS includes support for GiST-based **R-Tree spatial indexes**, and functions for **analysis and processing of GIS objects**.



Terminologi

- Flatfiler
- Databaser
- Databashanterare
- Relationsdatabaser (Accessfiler...)
- Relationsdatabashanterare






Quick Summary

 Edit

A very short, BSD-style license, used specifically for PostgreSQL.

Can

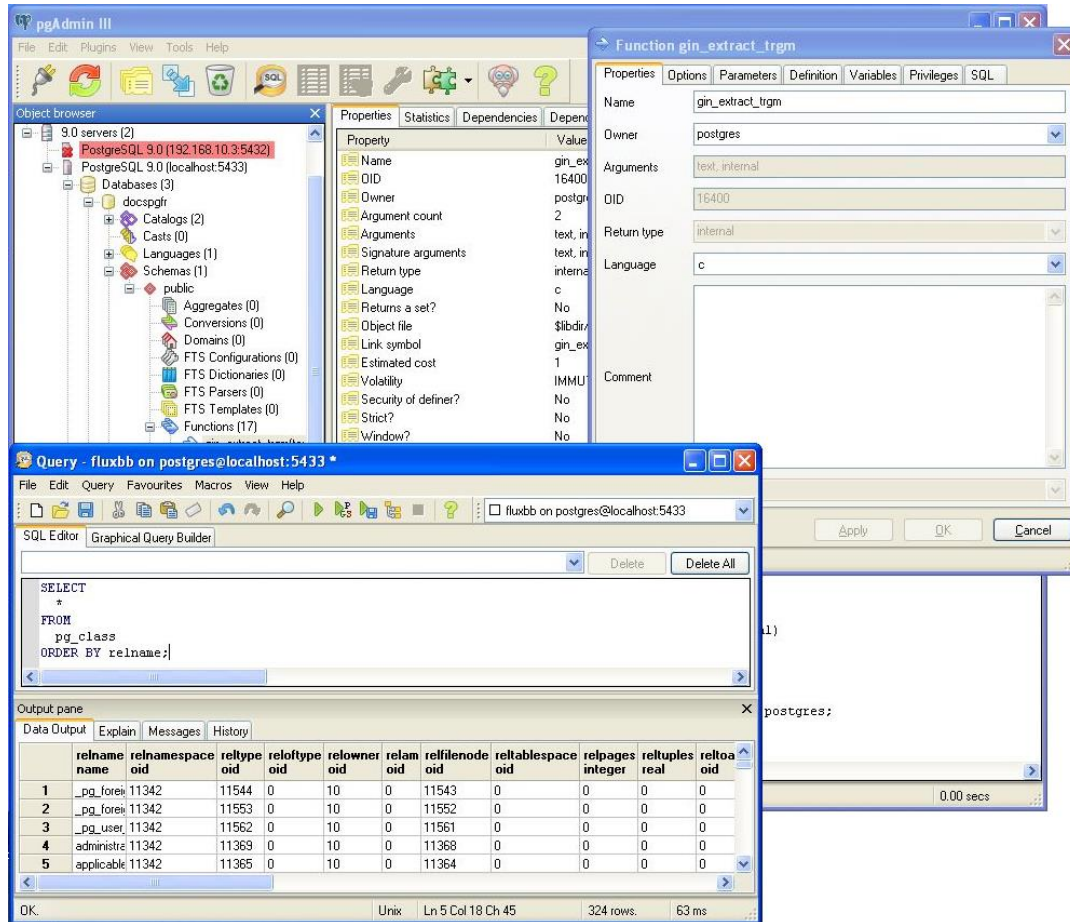
- ▶ Distribute 
- ▶ Modify 
- ▶ Commercial Use 

Cannot

- ▶ Hold Liable 

Must

- ▶ Include Copyright 
- ▶ Include License 



The screenshot displays the pgAdmin III interface. The main window shows the 'Function gin_extract_trgm' properties, including its name, owner (postgres), arguments (text, internal), and return type (internal). A query window titled 'Query - fluxbb on postgres@localhost:5433' is open, showing the following SQL query:

```
SELECT
 *
FROM
 pg_class
ORDER BY relname;
```

The output pane shows the results of the query, displaying a table with columns: relname, relnamespace, reltype, reloftype, relowner, relam, relfilename, reltablespace, relpages, reltuples, and reltoast. The results are as follows:

	relname	relnamespace	reltype	reloftype	relowner	relam	relfilename	reltablespace	relpages	reltuples	reltoast
1	_pg_foreign	11342	11544	0	10	0	11543	0	0	0	0
2	_pg_foreign	11342	11553	0	10	0	11552	0	0	0	0
3	_pg_user	11342	11562	0	10	0	11561	0	0	0	0
4	administr	11342	11369	0	10	0	11368	0	0	0	0
5	applicable	11342	11365	0	10	0	11364	0	0	0	0

The status bar at the bottom indicates '324 rows. 63 ms'.

pgAdmin III

File Edit Plugins View Tools Help

Object browser

- Server Groups
 - Servers (2)
 - DemoServer (servicedemo.mtua.se:5432)
 - ds51 (ds51.mtua.se:5432)
 - Databases (5)
 - PostGISAdmin1
 - Catalogs (2)
 - Event Triggers (0)
 - Extensions (2)
 - Schemas (1)
 - public
 - Collations (0)
 - Domains (0)
 - FTS Configurations (0)
 - FTS Dictionaries (0)
 - FTS Parsers (0)
 - FTS Templates (0)
 - Functions (1049)
 - Sequences (7)
 - Tables (9)
 - accindex
 - aktrutor
 - Columns (4)
 - Constraints (1)
 - Indexes (0)
 - Rules (0)
 - Triggers (0)
 - befgenger
 - beftotal
 - city
 - cityaktruta
 - nvdb2014_20150601
 - spatial_ref_sys
 - speedtable
 - Trigger Functions (2)
 - Views (4)
 - Slony Replication (0)

- postgres
- struktur
- tpcc
- tpch
- Tablespaces (2)
- Group Roles (0)
- Login Roles (6)

Properties Statistics Dependencies Dependents

| Property | Value |
|------------------------|-------------|
| Name | aktrutor |
| OID | 111660 |
| Owner | rt_admin |
| Tablespace | pg_default |
| ACL | |
| Of type | |
| Primary key | gid |
| Rows (estimated) | 9621 |
| Fill factor | |
| Rows (counted) | not counted |
| Inherits tables | No |
| Inherited tables count | 0 |
| Unlogged? | No |

SQL pane

```

-- Table: aktrutor
-- DROP TABLE aktrutor;

CREATE TABLE aktrutor
(
  gid serial NOT NULL,
  the_geom geometry(Polygon,3006),
  ruta_250 bigint,
  urbansize integer,
  CONSTRAINT aktrutor_pkey PRIMARY KEY (gid)
)
WITH (
  OIDS=FALSE
);
ALTER TABLE aktrutor
  OWNER TO rt_admin;

```

Retrieving details on table aktrutor... Done.

0,07 secs

Installera PostGIS

- **Installationspaket med PostGRESS, PostGIS och PGadmin**
- **CREATE EXTENSION postgis;**



Connectionsstrings

- "Server=ds51.mtua.se;
Port=5432;
User Id=rt_admin;
Password=XDD!23a0-23d!Zds;
Database=PostGISAdmin1;
CommandTimeout=5000;"



SQL-språket

- **select * from Butiker;**

| ID | NAMN | KEDJA |
|----|------------------|--------|
| 1 | COOP Lillänge | COOP |
| 2 | ICA MAXI | ICA |
| 3 | Willys-Östersund | Willys |

SQL-språket

- **select * from Butiker
where Butiker.Kedja = 'ICA';**

| ID | NAMN | KEDJA |
|----|----------|-------|
| 2 | ICA MAXI | ICA |



SQL-språket

- **select Namn from Butiker
where Butiker.Kedja = 'ICA';**

| NAMN |
|----------|
| ICA MAXI |



Edit Data - ds51 (ds51.mtua.se:5432) - PostGISAdmin1 - aktrutor

File Edit View Tools Help

100 rows

| | gid
[PK] serial | the_geom
geometry(Polygon,3006) | ruta_250
bigint | urbansize
integer |
|----|--------------------|---|--------------------|----------------------|
| 1 | 1 | 0103000020BE0B0000010000000500000000000000050452541000000002A63584100000000504525410000 | 6970006393000 | 22593 |
| 2 | 2 | 0103000020BE0B000001000000050000000000000024762541000000003837584100000000247625410000 | 7032506348000 | 1715 |
| 3 | 3 | 0103000020BE0B000001000000050000000000000028222541000000005547584100000000282225410000 | 6925006364500 | 1363 |
| 4 | 4 | 0103000020BE0B0000010000000500000000000000E027264100000000F46B584100000000E02726410000 | 7260006402000 | 1483 |
| 5 | 5 | 0103000020BE0B000001000000050000000000000005045254100000000A164584100000000504525410000 | 6970006394500 | 22593 |
| 6 | 6 | 0103000020BE0B000001000000050000000000000044472541000000080F760584100000000444725410000 | 6972506390750 | 22593 |
| 7 | 7 | 0103000020BE0B000001000000050000000000000064952541000000008454584100000000649525410000 | 7072506378000 | 913 |
| 8 | 8 | 0103000020BE0B000001000000050000000000000024762541000000003238584100000000247625410000 | 7032506349000 | 0 |
| 9 | 9 | 0103000020BE0B0000010000000500000000000000282225410000000809347584100000000282225410000 | 6925006364750 | 1363 |
| 10 | 10 | 0103000020BE0B0000010000000500000000000000D429264100000000F46B584100000000D42926410000 | 7262506402000 | 1483 |
| 11 | 11 | 0103000020BE0B00000100000005000000000000008512541000000002A6358410000000085125410000 | 6985006393000 | 22593 |
| 12 | 12 | 0103000020BE0B00000100000005000000000000007C912541000000007E555841000000007C9125410000 | 7067506379000 | 913 |
| 13 | 13 | 0103000020BE0B00000100000005000000000000005C43254100000008062645841000000005C4325410000 | 6967506394250 | 22593 |
| 14 | 14 | 0103000020BE0B0000010000000500000000000000709325410000000803F55584100000000709325410000 | 7070006378750 | 913 |
| 15 | 15 | 0103000020BE0B00000100000005000000000000002822254100000000D247584100000000282225410000 | 6925006365000 | 1363 |
| 16 | 16 | 0103000020BE0B00000100000005000000000000008512541000000080EB6258410000000085125410000 | 6985006392750 | 22593 |
| 17 | 17 | 0103000020BE0B0000010000000500000000000000E027264100000000F46B584100000000E02726410000 | 7260006402000 | 1483 |

Scratch pad

100 rows.

Topologiskt SQL-språk

- **select * from Butiker;**

| The_geom | ID | NAMN | KEDJA |
|-------------|----|----------------------|--------|
| 16348127... | 1 | COOP Lillänge | COOP |
| 16348127... | 2 | ICA MAXI | ICA |
| 16348127... | 3 | Willys-
Östersund | Willys |

Geografiska funktioner.

- <http://postgis.net/docs/manual-1.4/ch08.html>



```
SELECT "KDhh_survey".*  
FROM public."KDhh_survey", public."ur_pilot_survey" WHERE  
ST_contains(public."ur_pilot_survey".the_geom,  
public."KDhh_survey".the_geom);
```



Topologiskt SQL-språk

- SELECT name, ST_AsGeoJSON(way)

AS geojson

FROM planet_osm_point

‘WHERE **Butiker.Kedja = 'ICA'**;;

| Name | Position |
|----------|--|
| ICA-Maxi | {"type":"Point","coordinates":[13.6031192,58.1354088]} |

NPGSQL (<http://www.npgsql.org/>)

Npgsql is the .NET data provider for PostgreSQL. It allows any program developed for .NET framework to access a PostgreSQL database server. It is implemented in 100% C# code.

