# Open source Data Warehousing with Swarm64 DA-accelerated PostgreSQL

## Cut data warehouse costs by millions with free, open source PostgreSQL and Swarm64

Legacy data warehouses built on proprietary platforms like Oracle, Teradata, and Netezza cost millions per year to maintain.

Swarm64 database acceleration software speeds up PostgreSQL by orders of magnitude, enabling it to perform as fast as your legacy data warehouses for a fraction of the cost.

**9.5X LOWER 3-YEAR TOTAL COST OF OWNERSHIP**
(30TB DATA WAREHOUSE)

| | |
|---|---|
| SWARM64 & POSTGRES (ON-PREM) | $81,212 |
| SWARM64 & POSTGRES (AWS) | $92,865 |
| AMAZON REDSHIFT | $270,684 |
| LEGACY DATA WAREHOUSE | $765,160 |

## How Swarm64 accelerates PostgreSQL

Swarm64 DA extends PostgreSQL and EDB Postgres with the following acceleration features, and requires no changes to your SQL or application code:

### Greater Parallelism
The Swarm64 DA extension rewrites query patterns that execute in parallel at every phase of the query. It parallelizes scanning, filtering, joining, and merging, and spins up 5x more parallel threads than standard PostgreSQL.

### Columnar indexing
Swarm64 DA loads and queries data stored in a columnar-indexed format within PostgreSQL foreign data tables (FDW). The format is optimized for highly parallel access. Partitioning and range indexes reduce I/O.
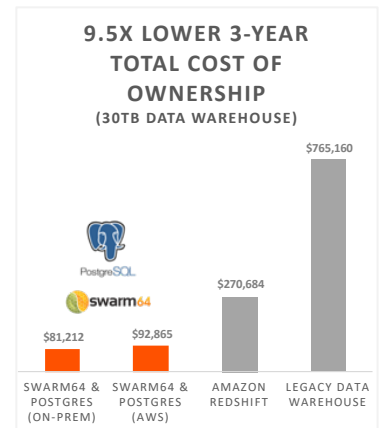
### IO reduction
Swarm64 DA compresses data 5x to 25x depending on the data type. Besides reducing storage costs, reading compressed data, along with columnar indexing, reduces I/O by ~20x relative to standard PostgreSQL.

### FPGA support
If an FPGA coprocessor is present on the server, Swarm64 DA initiates 100+ SQL reader & writer processes on the FPGA. The processes work in parallel to accelerate queries and data insertion. It adds massive parallelism at a very low cost, to handle real-time insertion and querying, greater concurrency, or very complex queries.

### Deployment flexibility
Swarm64 DA accelerates PostgreSQL v11 and higher, on-premises or on the cloud. It works with free, open source PostgreSQL as well as EnterpriseDB Postgres, and does not affect PostgreSQL compatibility with BI, ETL, DBA tooling.
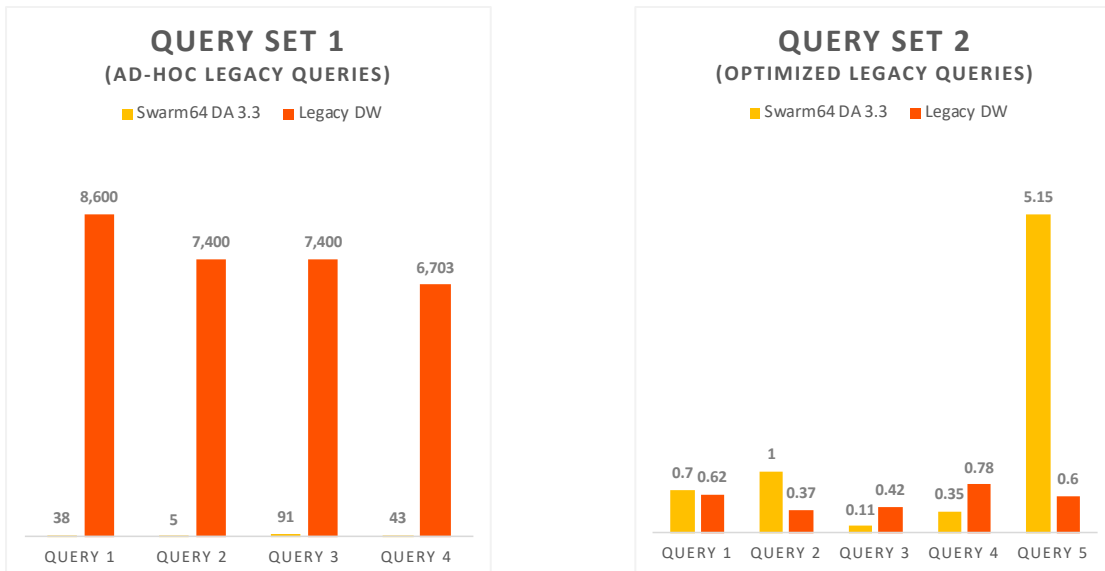
## Benefits

Swarm64 DA is the easiest way to accelerate and scale PostgreSQL performance. Benefits of the Swarm64 DA approach include:

- **Easy high performance** – Experience speed ups of 10x to 150x, without rearchitecting, migrating, or recoding.
- **Stay on free, open source PostgreSQL** – no disruptive migrations or proprietary forks.
- **Low scaling costs** – Acceleration allows you to scale up or out on less expensive hardware or fewer servers.
- **Real-time analytics** – If run on an FPGA-equipped server, you can analyze data as it streams into PostgreSQL - CPUs work on updates while FPGA executes queries.

## Swarm64 DA & PostgreSQL customer benchmark

**QUERY SET 1**
**(AD-HOC LEGACY QUERIES)**

■ Swarm64 DA 3.3   ■ Legacy DW

| | QUERY 1 | QUERY 2 | QUERY 3 | QUERY 4 |
|---|---|---|---|---|
| Swarm64 DA 3.3 | 38 | 5 | 91 | 43 |
| Legacy DW | 8,600 | 7,400 | 7,400 | 6,703 |

**QUERY SET 2**
**(OPTIMIZED LEGACY QUERIES)**

■ Swarm64 DA 3.3   ■ Legacy DW

| | QUERY 1 | QUERY 2 | QUERY 3 | QUERY 4 | QUERY 5 |
|---|---|---|---|---|---|
| Swarm64 DA 3.3 | 0.7 | 1 | 0.11 | 0.35 | 5.15 |
| Legacy DW | 0.62 | 0.37 | 0.42 | 0.78 | 0.6 |

A healthcare company compared Swarm64 DA-accelerated PostgreSQL performance to that of their Netezza data warehouse. The test involved 10TB of data. Swarm64 DA accelerated free, open source PostgreSQL 11 on a single server equipped with an FPGA.

Swarm64 DA performance was equal to or vastly better than Netezza in ad-hoc queries, and roughly equal to Netezza when compared against optimized legacy queries. Swarm64 DA changes the economics of data warehousing, enabling you to replace expensive legacy data warehouse appliances with an open source analytic data stack, on premises or on the cloud.

## Next Steps

If you're interested in experiencing Swarm64 PostgreSQL acceleration for your analytic data systems, please visit Swarm64.com for more information. Contact us at info@swarm64.com to schedule a demo or request an evaluation copy of Swarm64 DA.