SYRCoDIS 2011

Development of a Parallel DBMS on the Basis of PostgreSQL

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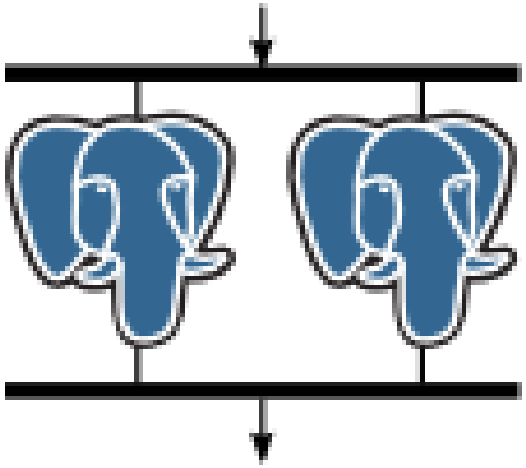
Moscow, 2011

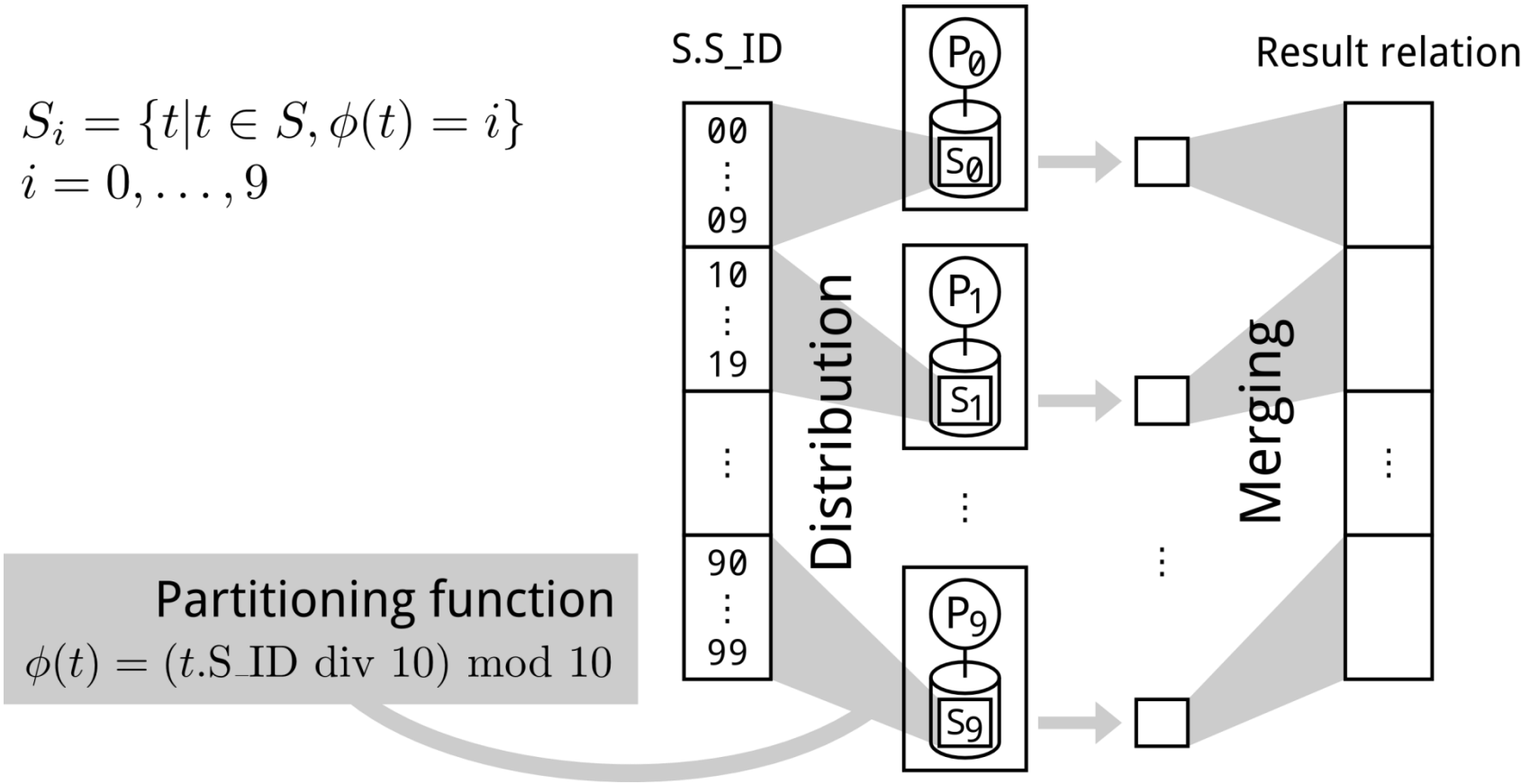
This work is supported by the Russian Foundation for Basic Research (grant No. 09-07-00241-a).



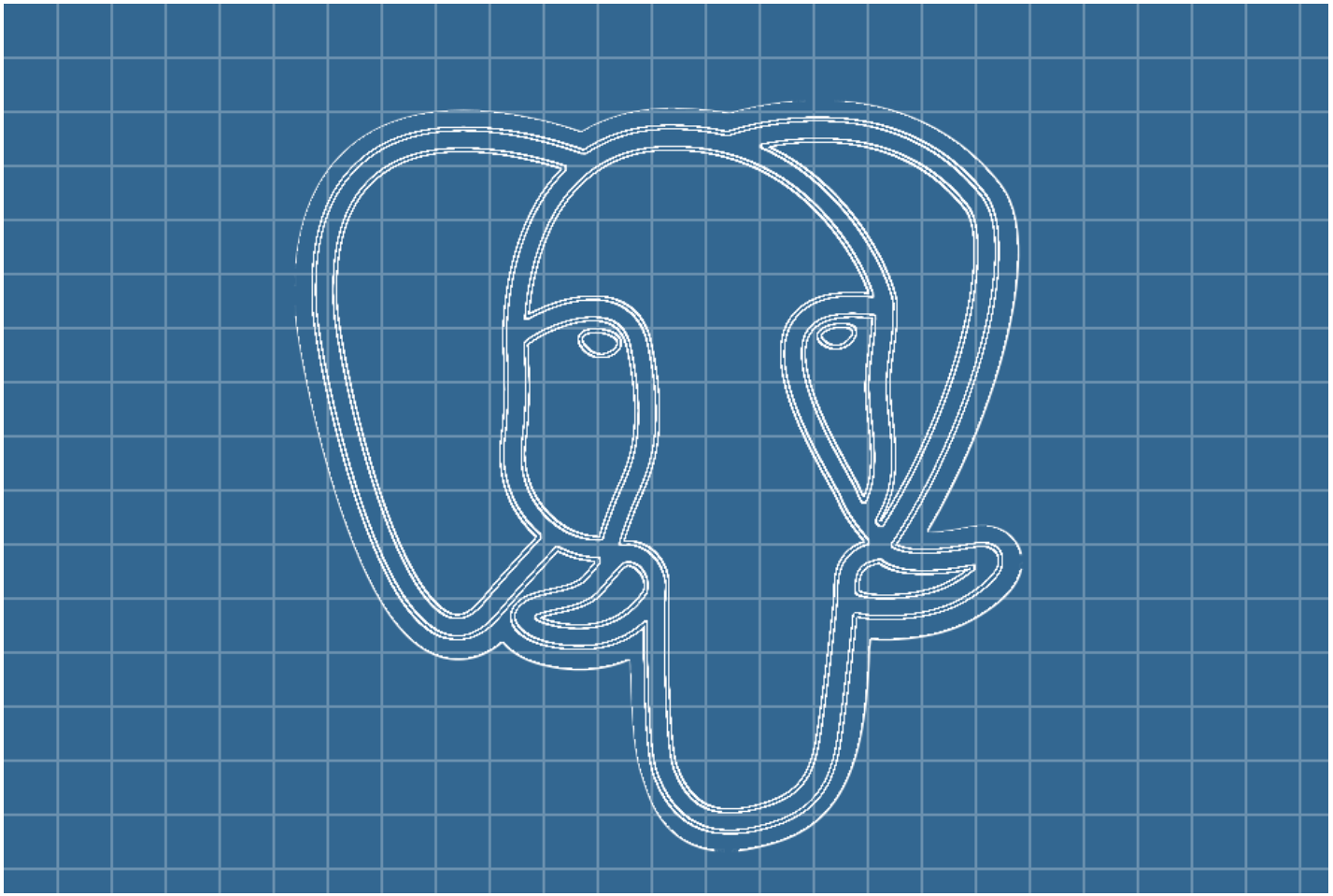
PargreSQL

Partitioned Parallelism

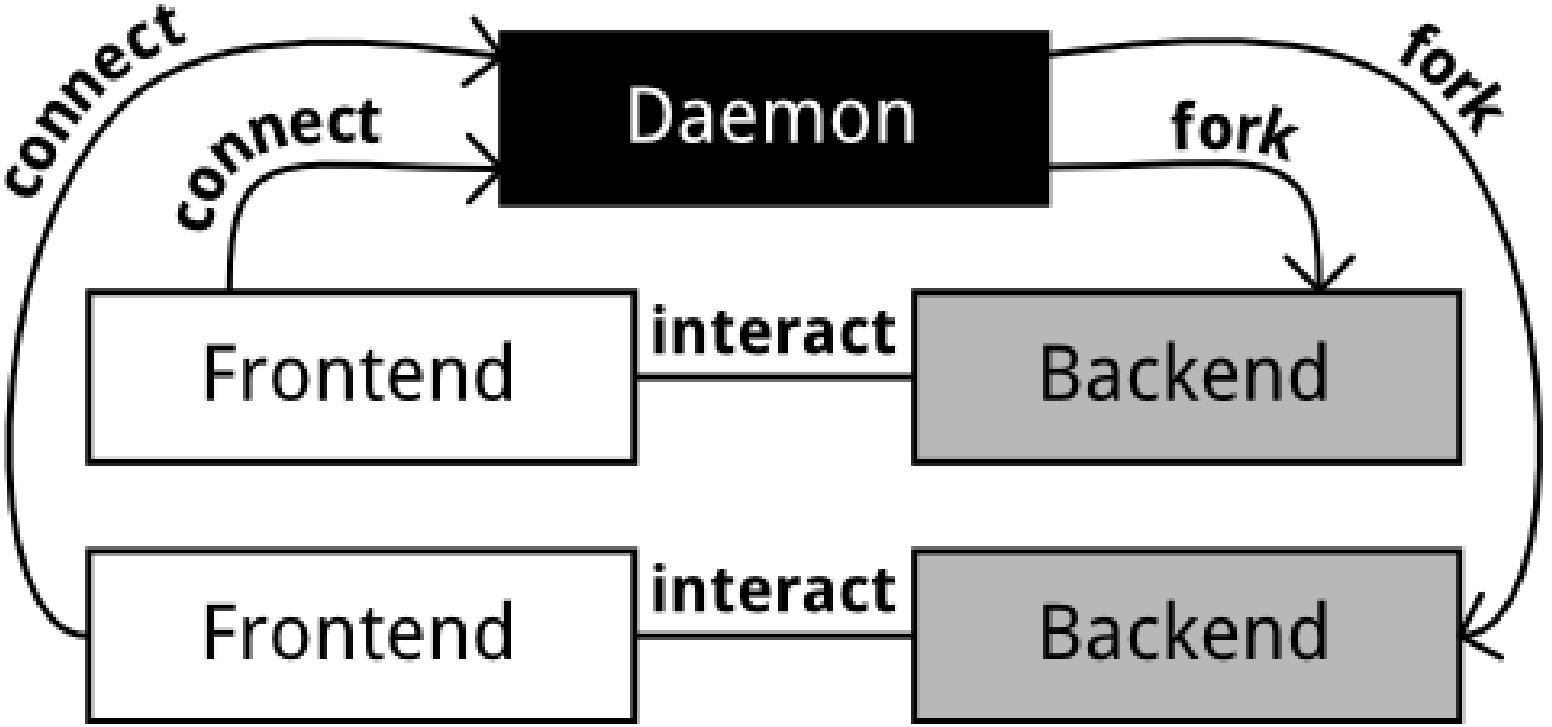
$S_i = \{t | t \in S, \phi(t) = i\}$
$i = 0, \ldots, 9$



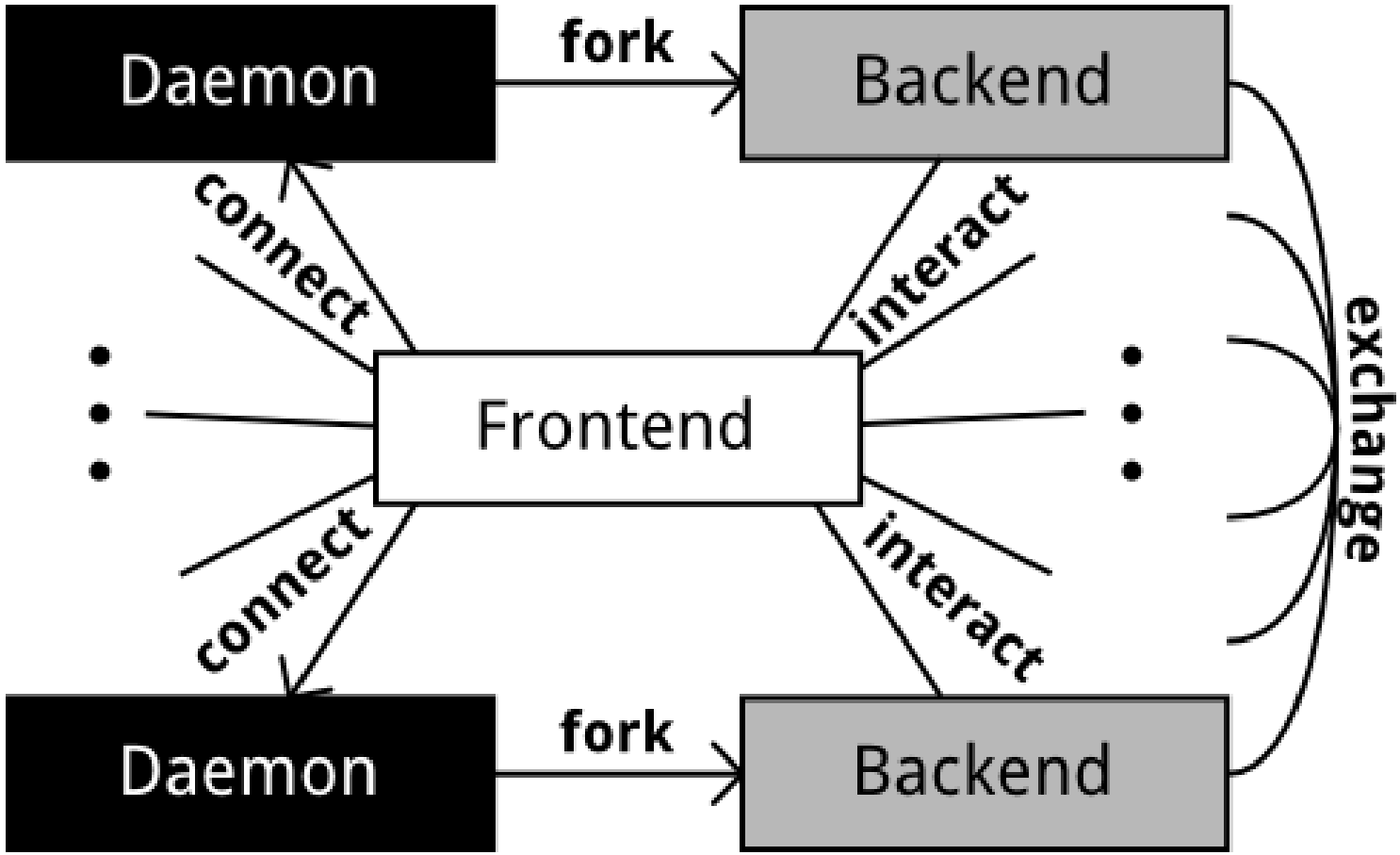
Architecture



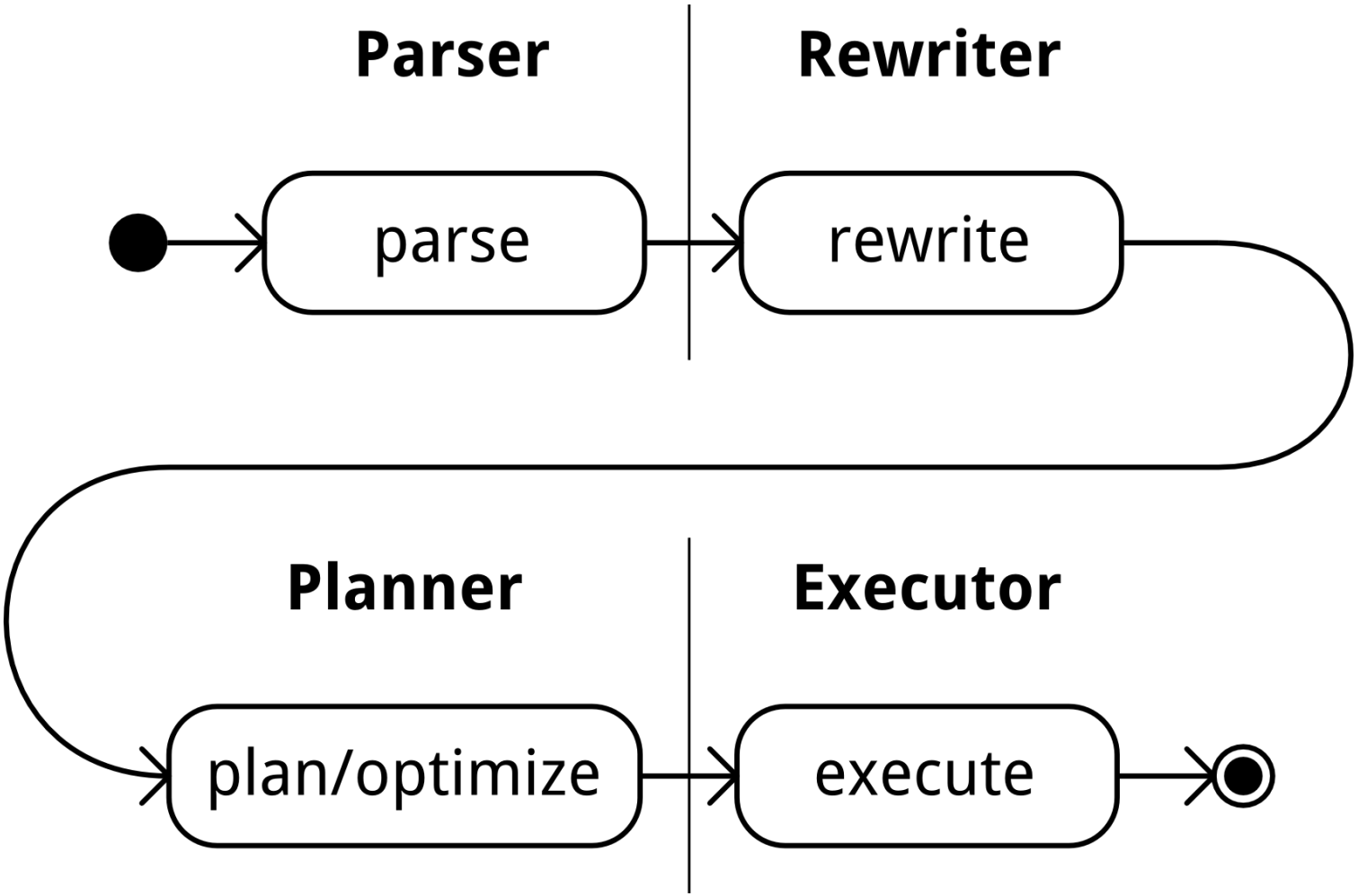
Client-server model



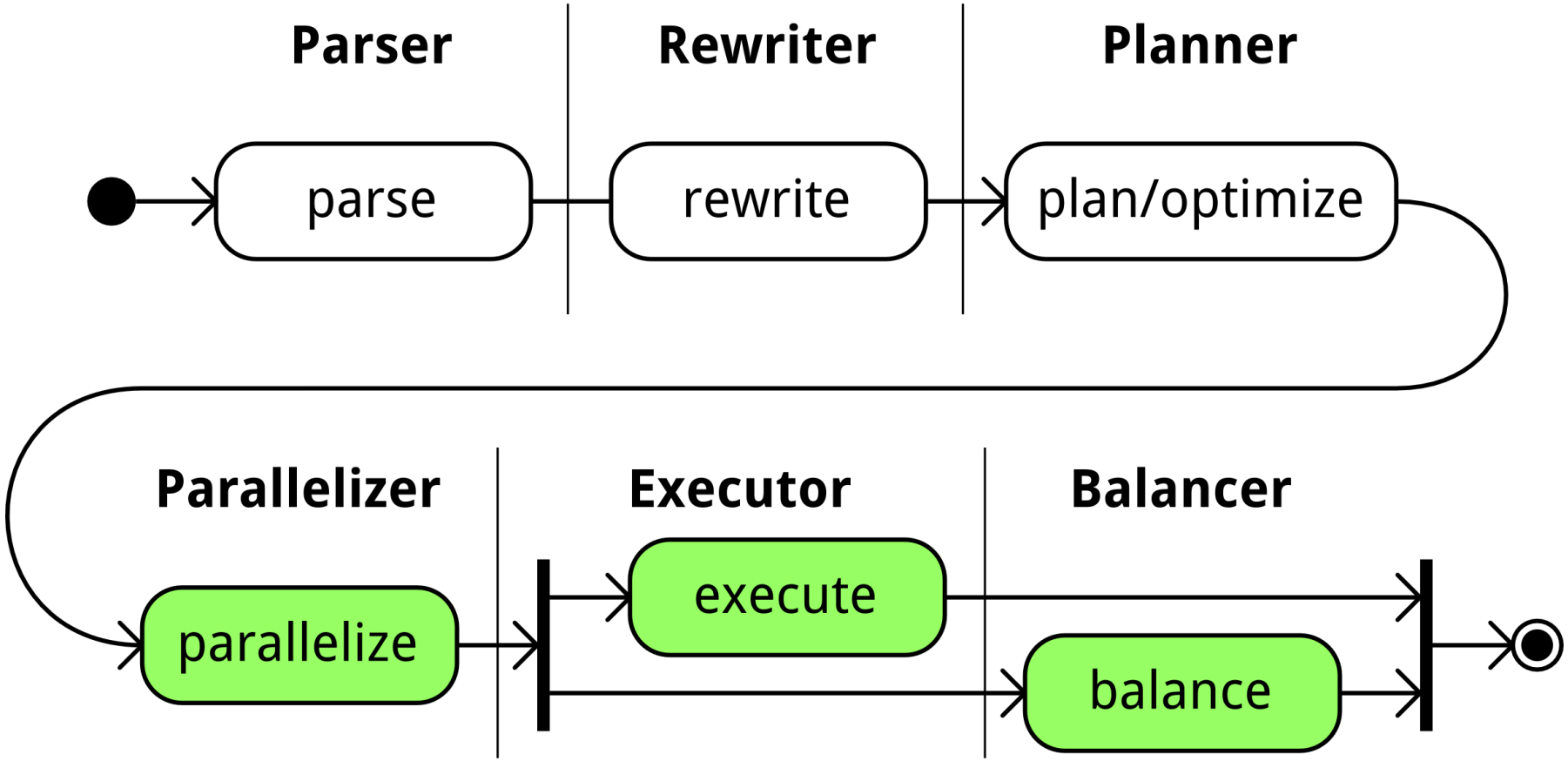
Client-server model (PargreSQL)



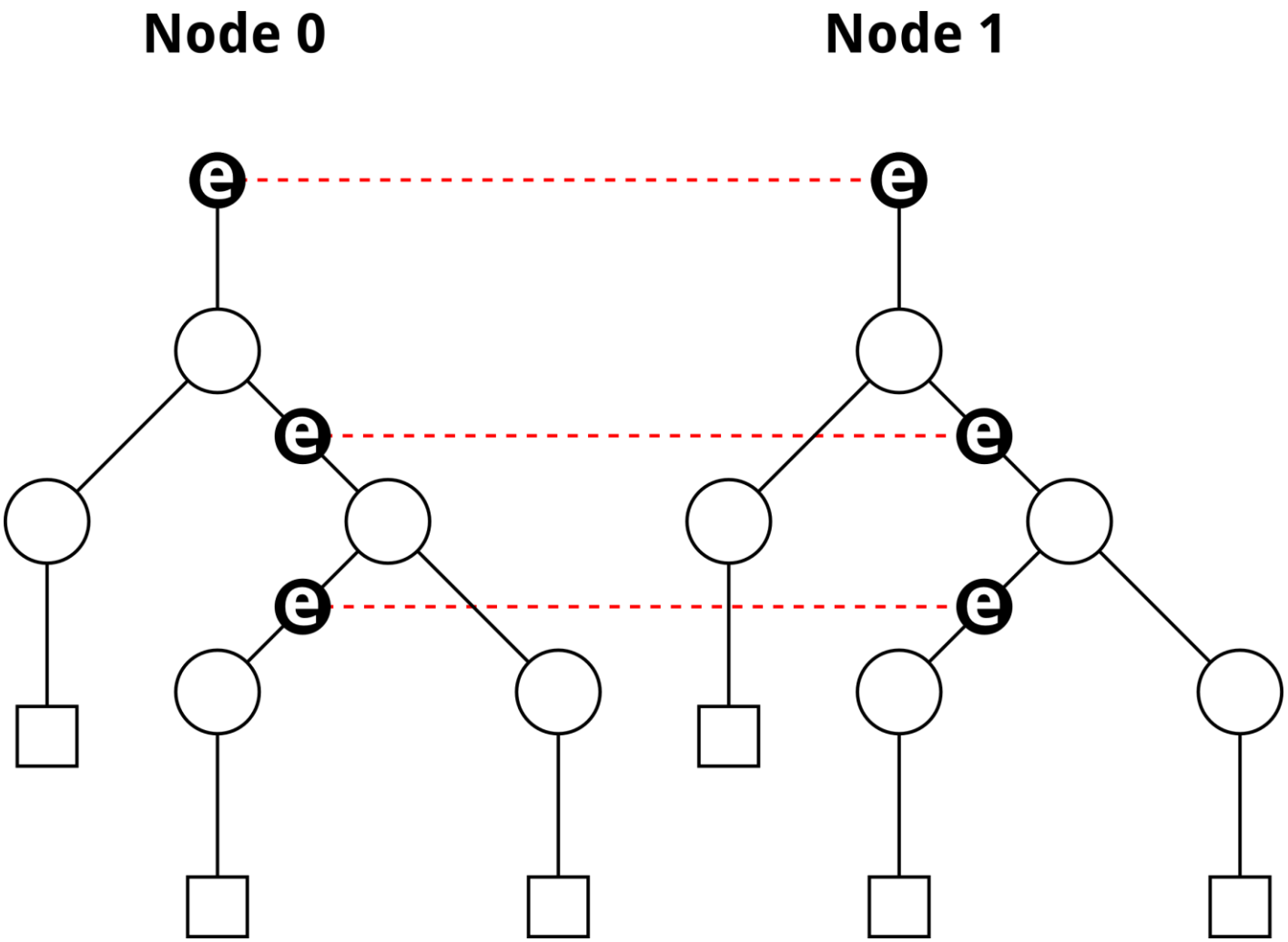
Query Execution



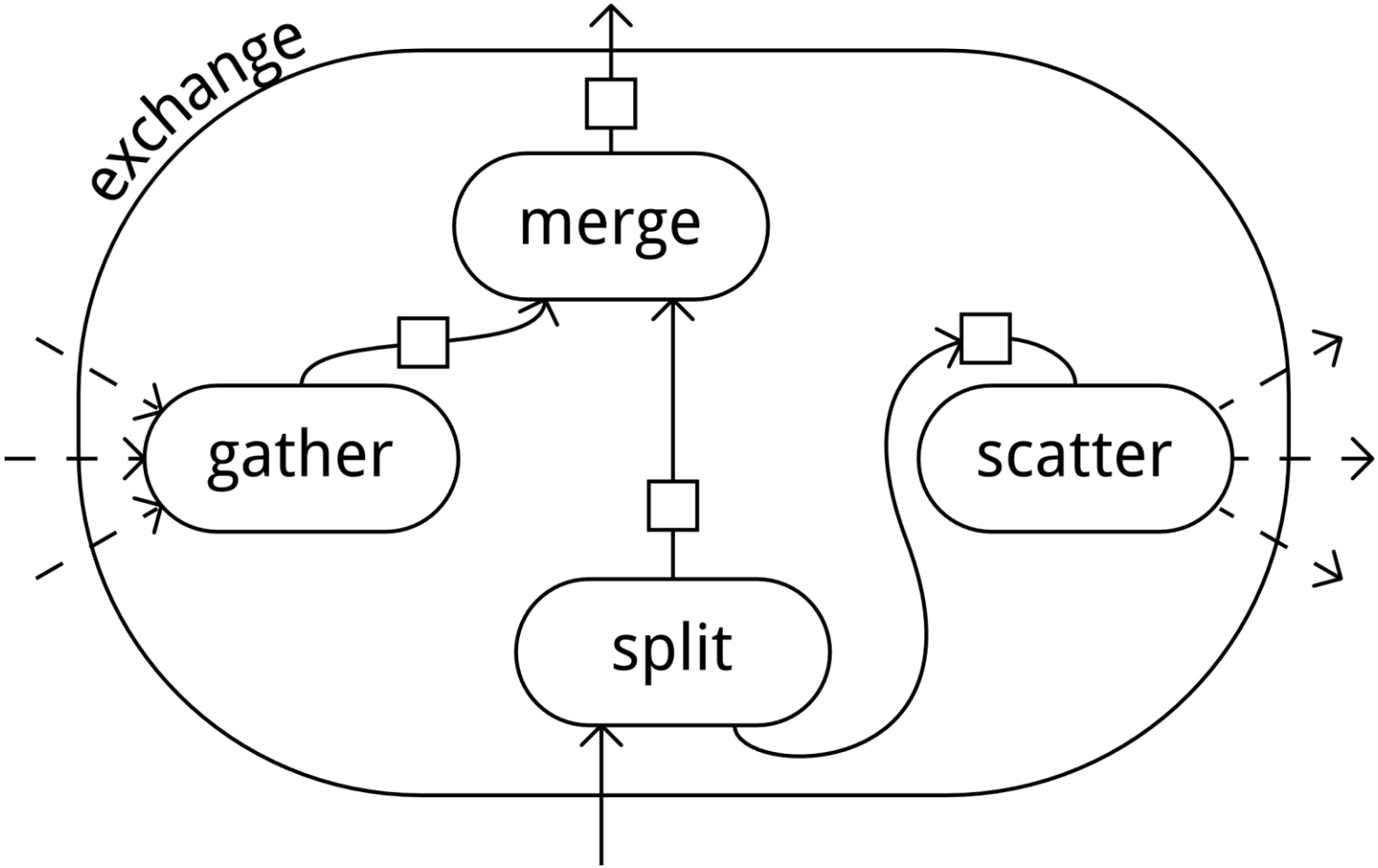
Query Execution (PargreSQL)



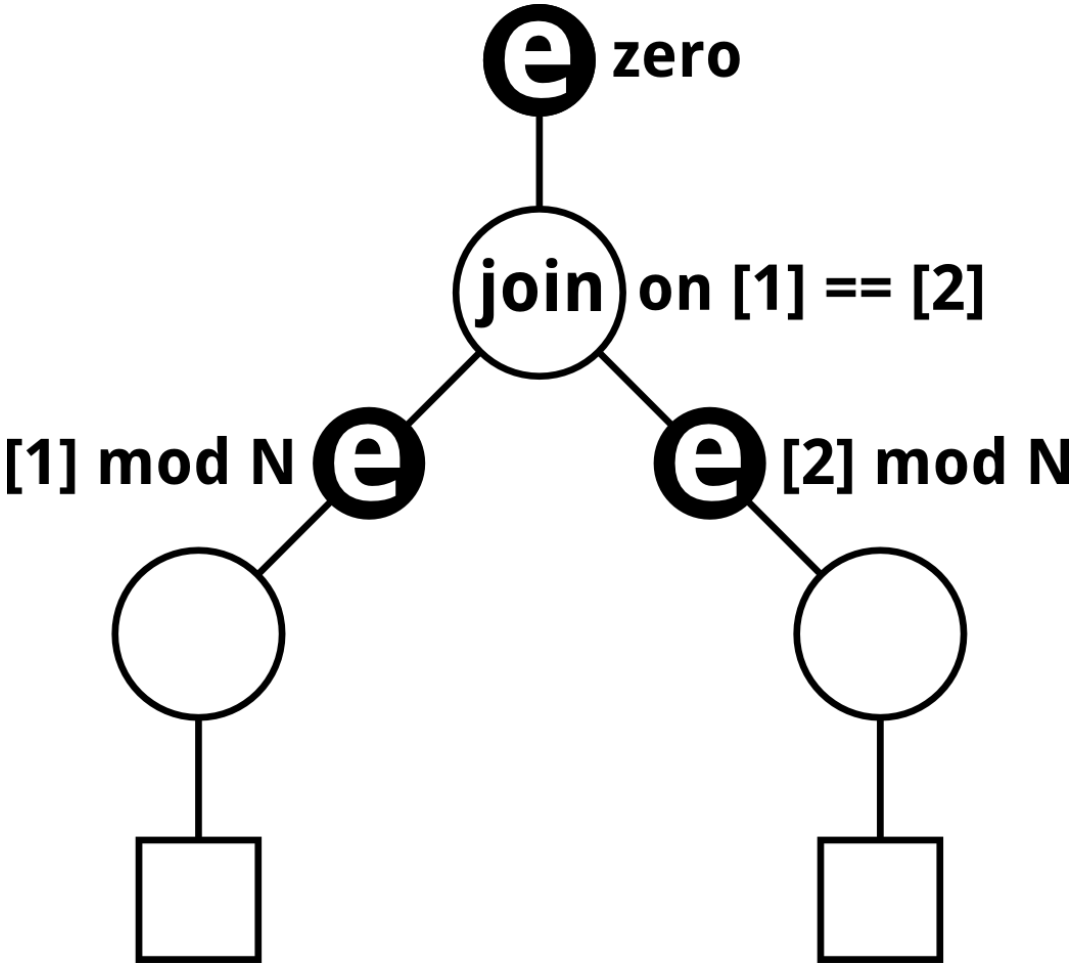
Exchange Operator



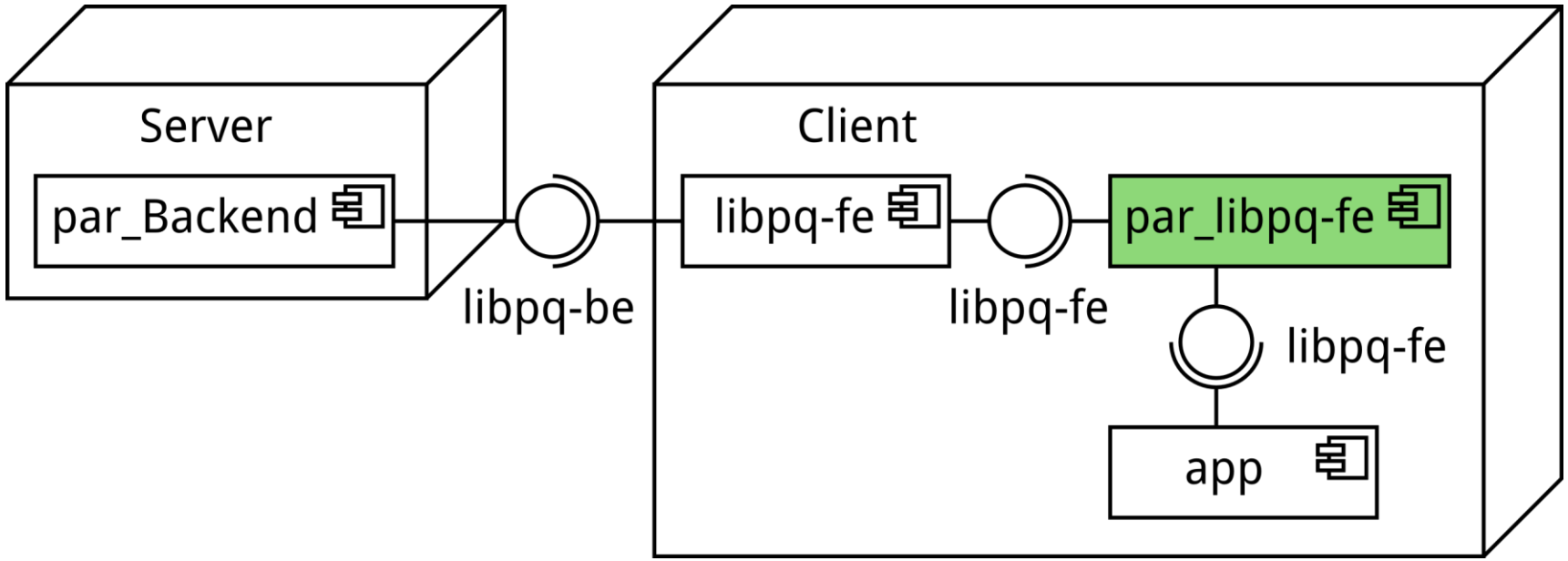
Exchange Operator Architecture



Parallelizer



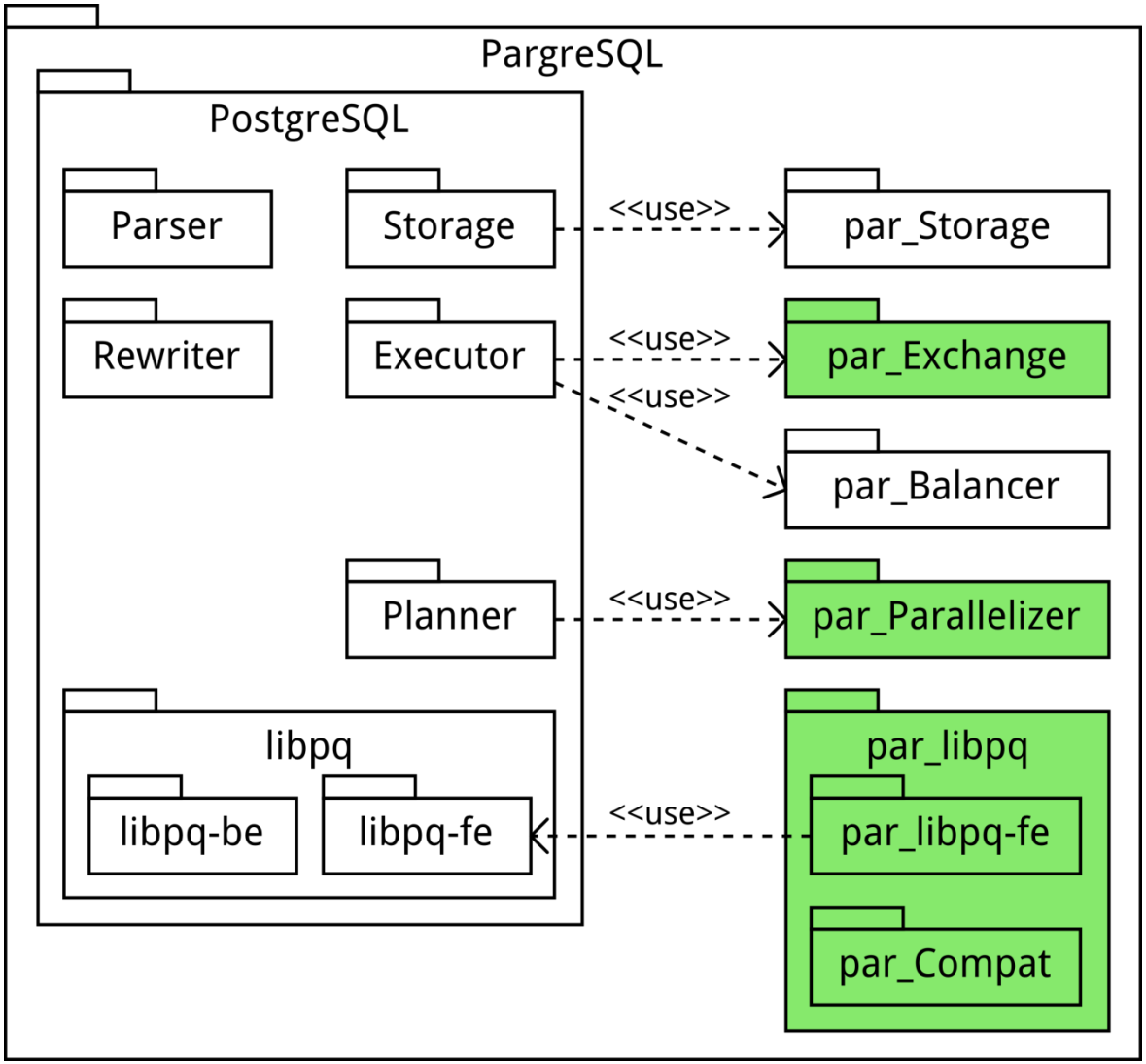
Client Side Changes



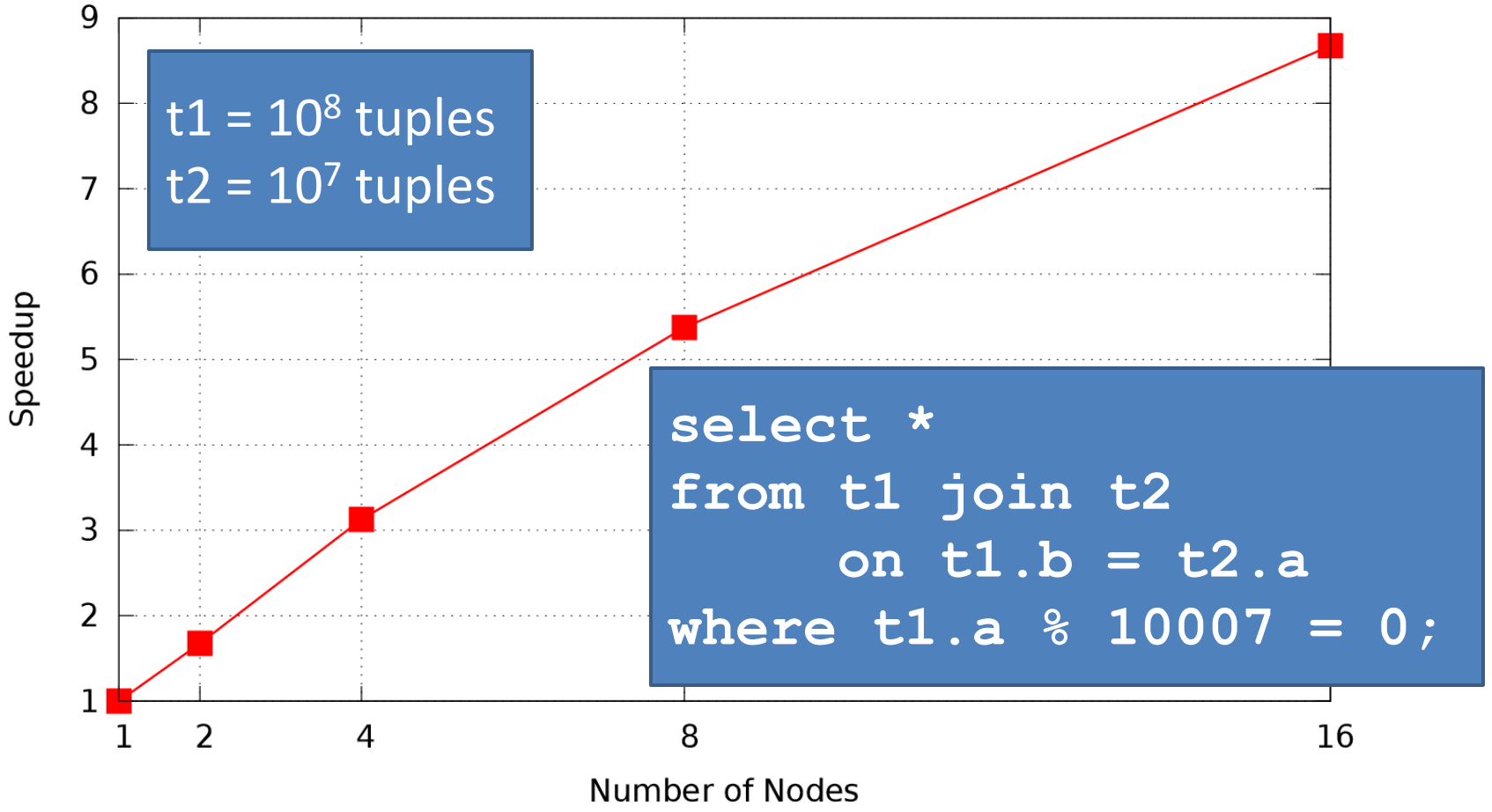
Transparency for the Application

```
#define PGconn par_PGconn
#define PQconnectdb(X) par_PQconnectdb()
#define PQfinish(X) par_PQfinish(X)
#define PQstatus(X) par_PQstatus(X)
#define PQexec(X,Y) par_PQexec(X,Y)
```

Current Results



Experiments



Future Research Directions

- load balancing
- data updates
- transactions
- fault tolerance

Thank you

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Related Work

- Extending PostgreSQL
  - Native XML type support [10]
  - Adding data types to support HL7 medical standard [4]
  - Image-handling extensions [3]
  - Integration with the Semantic Web [8]
- Adoption for parallel processing
  - Middleware for parallel processing with PostgreSQL (ParGRES, GParGRES) [9, 5]
  - MapReduce + PostgreSQL (HadoopDB) [1]

Contribution

- Embedding partitioned parallelism into open source relational DBMS PosrgreSQL