Optimization of Response speed of Acemap

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Motivation

Faster, smoother and better

01 02 03 04

Huge Database

- Our database, which is Microsoft ” mag” database, contains more than 100 million papers

Various Map

- More than 2200 affiliations and more than 22000 topic have their own map in our system

User-friendly

- the response speed of our system is relatively slow so that it has a bad influence on the user experience

01

Introduction

Window Function and PostgreSQL

02

03

04

Features

PostgreSQL is an object-relational database with additional "object" features with an emphasis on extensibility and standards compliance

PostgreSQL

the support for the array and json, the scripts in server side like Python and R. And PostgreSQL have some advanced characteristic to improve the database's performance like Window function.

advantage

Window Function

window function performs a calculation across a set of table rows that are somehow related to the current row

Usage

Use of a window function does not cause rows to become grouped into a single output row

Need

The query of the users of our system always need search for massive data,

01 02

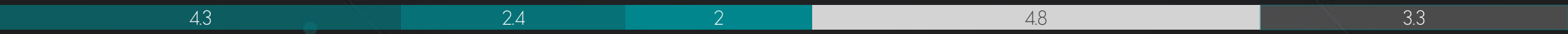
Methods

How to accomplish my work

03 04

MySQL To PostgreSQL

- Difference of the data type
- Establish a new PostgreSQL
- Configuration file of connection
- Dump file to store data to the PostgreSQL database

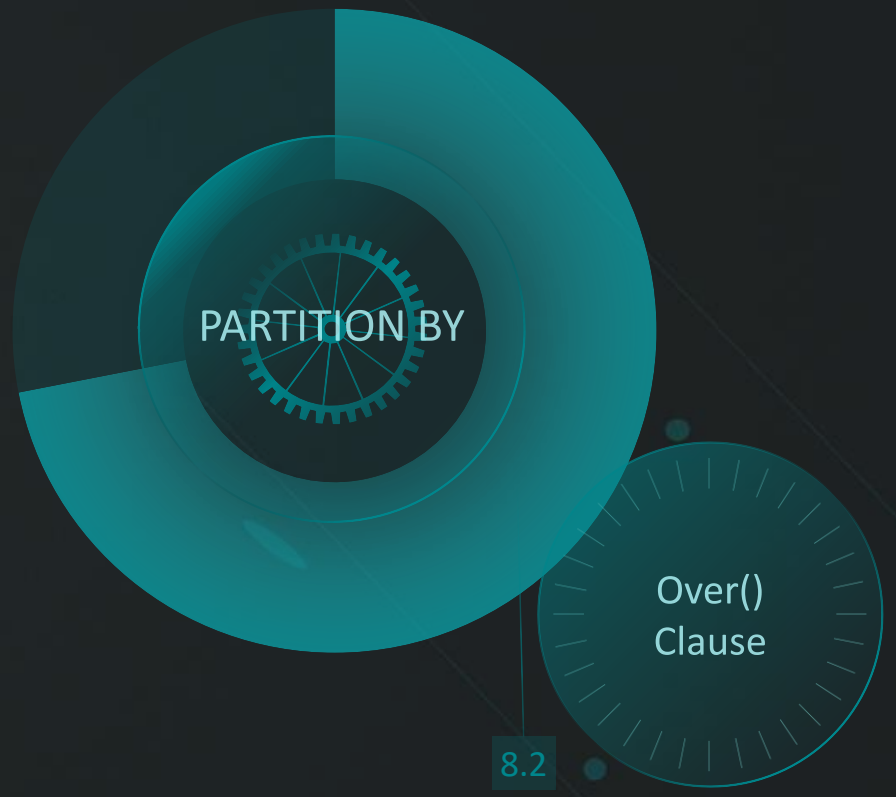


Rewrite SQL with Window Function

With the window function, the new query focus on the specific tasks with a large number of author. For some special query, window function can obviously improve the speed of response.

Example: Find the number of SCI references to an author

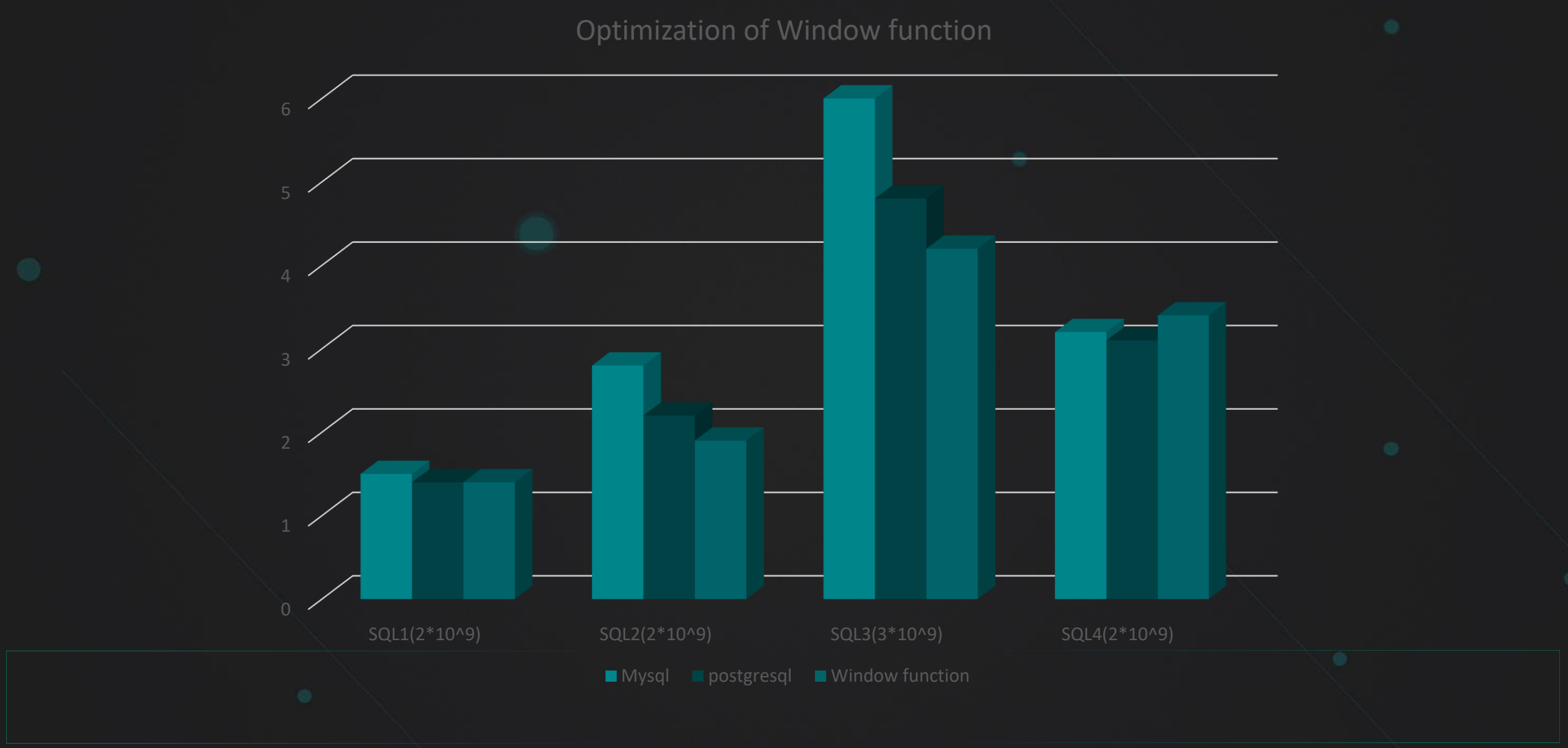
Old query to New query



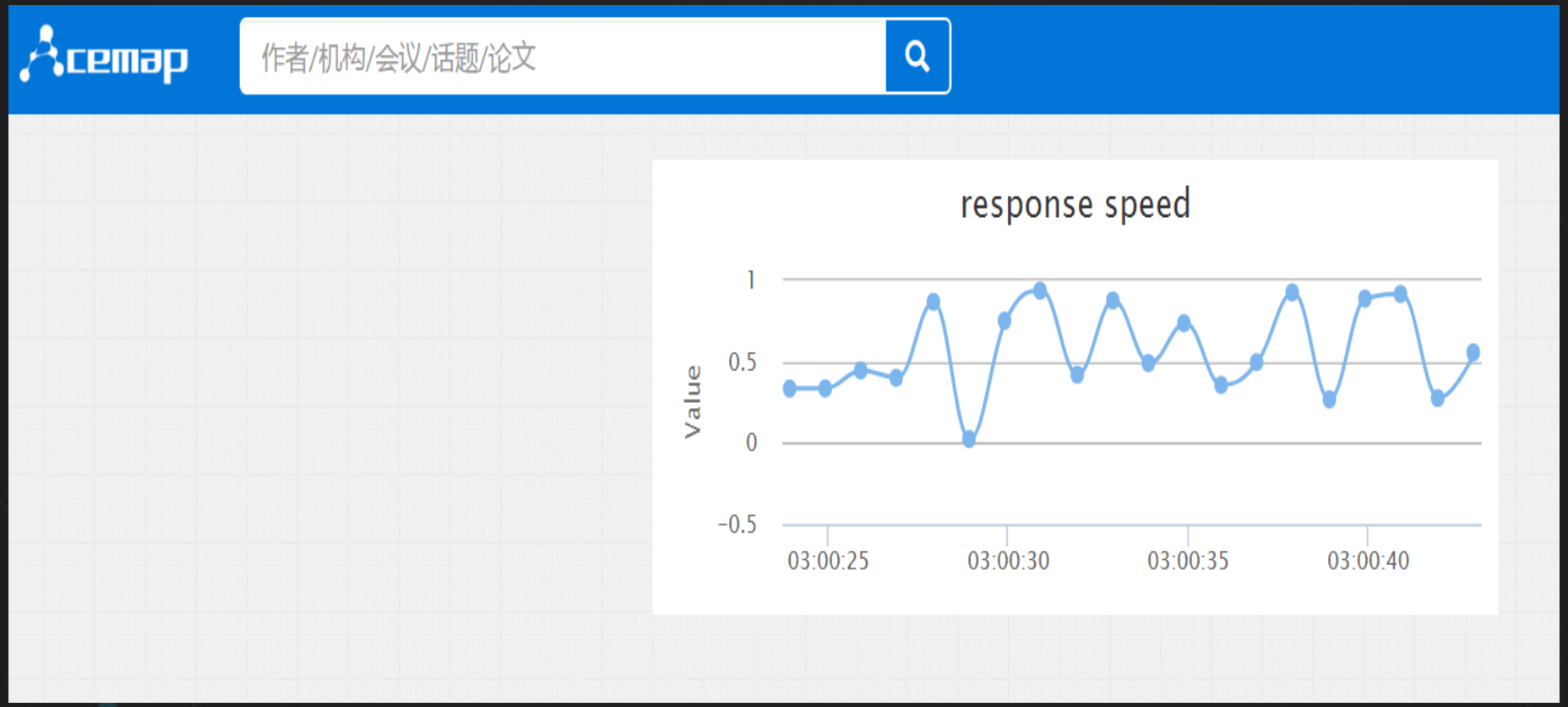
01 02 03

Experiment 04

The performance of my work


Optimization of Window function
6
5
4
3
2
1
0
SQL1(2*10^9)
SQL2(2*10^9)
SQL3(3*10^9)
SQL4(2*10^9)
Mysql
postgresql
Window function

Real Time Monitor



Thank You For Watching