Sadas Engine + QlikView: a case study

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SADAS ENGINE

Sadas Engine is a columnar DBMS for data warehousing able to store and manage huge quantities of data, with exceptional performances during the phases of ETL and enquiry: from 10 to 100 times faster than traditional DBs.

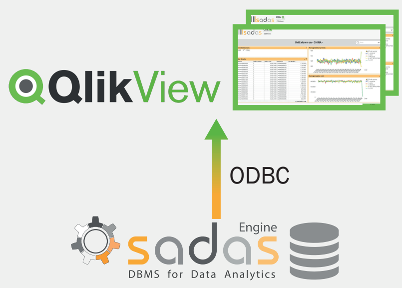
QLIKVIEW

QlikView is a Business Intelligence data discovery product for creating guided analytics applications and tailor-made dashboards. QlikView offers guided exploration, discovery and collaborative analytics for sharing insights.

THE CASE STUDY

The interaction between QlikView and Sadas Engine has been evaluated on a test DB (named **TPCH**) generated and populated by Sadas Engine for benchmarking purposes.

The same schema has been adopted and replicated in four different TPCH DBs of about 2, 4, 6 and 10 GB each, henceforth named TPCH-2, TPCH-4, TPCH-6 and TPCH-10 respectively. Upon this DB, a sample BI QlikView application has been developed.



Architecture of the test-case BI application: the application is connected to Sadas Engine via SADAS proprietary ODBC, and the db is accessed through SQL queries.

Test-case machine technical features	
Processor	Intel® Core i7-6700HQ @ 2.60 GHz (4-core)
RAM memory	8 GB
Operating system	Windows 10 64 bit

THE PROBLEM: QLIKVIEW ON DATA WAREHOUSES

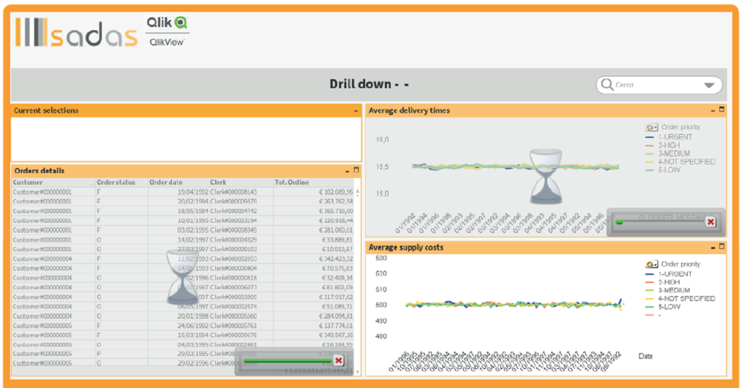
QlikView is wholly based on an in-memory data-store. In this way, it can refresh data in real time, allowing for immediate and interactive explorations. **But the strength of QlikView could also be its weakness**: when importing DBs of significant dimensions, the .qvw file can easily assume such a size as to seriously affect (or even prevent) the usability of the product.

On TPCH-2 and TPCH-4, QlikView efficiently deals with the full import of the DB, maintains good response times and smooth software usability. **On TPCH-6**, things become more critical: response times are dilated and the work load for the test machine gets higher. Finally, **on TPCH-10**, software usability is seriously compromised: the fast and interactive exploration of data is stressed to the limit, rendering times for charts and tables are even higher, and both the application and the operating system often encounter long annoying locks. This is because, when QlikView is busy rendering graphical objects, the physical limit of the memory can be reached and the RAM memory can be easily saturated, resulting in a drastic degradation of performance. This is true especially when filters are cleared and expressions need to be re-calculated on a large number of records.

Database instance	**Database size on disk [GB]**	**Number of records (millions)**	**Average response times**		
			Load data	**Chart/table redraw**	**Search widget response**
TPCH - 2	2.08	~15	3' 40 s	~1 s	~1 s
TPCH - 4	4.18	~34	8' 15 s	~4 s	~3 s
TPCH - 6	6.20	~50	12' 00 s	~15 s	~8 s
TPCH - 10	10.50	~86	20' 13 s	>30 s, with frequent and extended locks of the program (up to 10-15 minutes long)	~12 s

THE TRADITIONAL APPROACH: WIN-?

An immediate solution would be to increase the physical capacity of the machine (RAM memory). But this increase of resources would not be cost-free, and may not be sustainable all the same if compatibility with even bigger databases (e.g. 50-100 GB) is required.



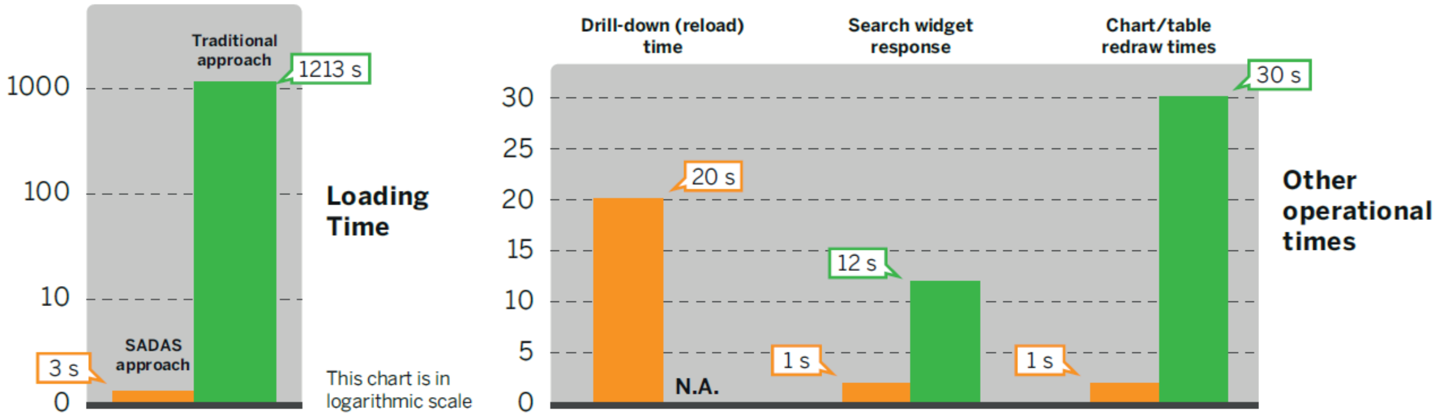
A "rendering lock" in QlikView while running on TPCH-10.

THE SADAS APPROACH: WIN-WIN

A close and synergic coupling of QlikView to Sadas Engine is sustainable and profitable. The QlikView application is re-arranged, so that it immediately contains the aggregated information presented on the main dashboard. In other words, Sadas Engine is directly responsible for extracting aggregated information, making the overall time for information extraction and loading in QlikView decrease.

Here is a comparison between the performances obtained on TPCH-10 with the "traditional" approach (full db import) and with the "SADAS" approach (aggregated information + drill-down "on-demand"). Results have been estimated averaging on several interactions with the QlikView application.

Database instance	Database size on disk [GB]	Number of records (millions)	Average response times traditional approach			Average response times Sadas approach		
			Load data	Chart/table redraw	Search widget response	Load data	Chart/table redraw	Search widget response
TPCH - 10	10.50	~86	20' 30 s	> 30 s + frequent **locks** (up to 10-15 min)	~12 s	**3 s**	**<1 s**	**<1 s**



Sadas Engine can also be integrated with QlikSense

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