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Solution of the Data Load Issue in Business Intelligence Tools: QlikView Live Case Study

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Abstract. To stand in the marketplace it very essential to extract and deal with high-performance and usable data for every industry. The traditional ways are too slow and they are not suitable for the current scenario. This document gives knowledge about the new trends in technology which used for the benefit of business in terms of analysis and reporting. The document contains a live case study of the problem faced by an organization and a holistic evaluation of how to overcome it with the help of new technology. The primary objective of this case study is to minimize the ideal time for accessing and/or extracting files from different sources in the QlikView Platform.

Keywords: *Business Intelligence, Data Visualization, Data Analytics, Dashboards, QlikView Platform*

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1. Introduction

Nowadays data is everywhere but to get useful data from lots of unwanted data and to reach any analysis is a challenging task. Analysis and reporting from rough data in less time is very important and essential for every business to grow and stand in the present environment of competition. Data is composed of observable and recordable facts that are often found in operational or transactional systems. Data is useful only when it is presented as information and Information is an integrated collection of facts and is used as the basis for decision making. For analysis of the data and presenting the results in the form of good reporting by which management quickly reaches on decision making; we need some technique to perform this.

This requirement of business gives birth to the analysis of data which is part of Business Insights and Analytics for which we have a platform called QlikView. QlikView is a revolutionary platform that simplifies analysis for everyone. It is user-friendly and provides superfast in-memory analysis capabilities by dynamically integrating and presenting data from multiple data sources, or a single Excel or text file. QlikView files can be deployed to users on corporate networks or through sophisticated web-based portals and can be viewed in many different file types.

Information is the lifeblood of any organization. It is the foundation of knowledge, and knowledge is the basis for appropriate action. It can be a distinct competitive advantage. QlikTech provides fast, powerful, and affordable data analysis and reporting solutions, giving users clear insights and the ability to make better decisions across the enterprise. QlikView is a revolutionary platform that simplifies analysis for everyone. It is user-friendly and provides superfast in-memory analysis capabilities by dynamically integrating and presenting data from multiple data sources, or a single Excel or text file. [1]. Tripathi et al. presented comparative research in which they studied BI-related data analysis tools and found out how important data analytics tools are in the present times. They are being used more and more in almost all industries, so it is difficult to decide which tool is how effective. In the presented study, they suggested that Tableau is the most comprehensive analytics tool, while Microsoft Power BI and QlikView are better as compared to others [2].

Kiula et al. analyzed the health data records on the QlikView technology and Google Analytics they suggest that the digital record should be analyzed on QlikView for mitigation of the pursuant risks [3]. Lavanya et al. conducted a comprehensive review of data visualization tools. They studied the features, strengths, and weaknesses of data visualization and analysis tools. They said that with the help of various data tools, researchers and analysts can effectively present and analyze data, which helps in making better decisions [4]. In this order, Ozdemir et al.

conducted a comparison of business intelligence tools. They discuss that business intelligence tool files can be deployed to users on a corporate network or through a sophisticated web-based portal and they can be viewed in many different file types. Some of the more common analysis clients for QlikView files include Java objects, Internet Explorer plug-ins, and AJAX (Asynchronous JavaScript and XML) zero-footprint and Windows-based clients. QlikView analysis files can also be emailed just like a Word or Excel document and they can be secured in many different ways [5].

QlikView files are created using QlikView Desktop and are deployed and distributed using QlikView Server and QlikView Publisher. Users access the files with QlikView in various client types even on their smartphones by web browser. Chand et al. discussed the data analytics tools for decision-making. He acknowledged that patient records are very large and analyzing them to produce results is a very difficult task. Data analytics is the science of analyzing data to convert information into useful knowledge. Data visualization and analysis can be done easily using them. They analyzed that data analytics such as QlikView or others take too long time for data to be extracted and loaded [6]. It is very essential to minimize this time for better performance of such tools. Data Analytics is an upcoming technology and the rough data is constantly increasing, in such a situation fast access and analysis of data is very important.

QlikView is the most flexible business intelligence platform for transforming data into knowledge. It is a very popular tool due to its ability to aggregate, search, and visually analyze data. QlikView promotes unrestricted analysis of application data, helping users save time and make accurate decisions. It is easy to use by anyone with minimal knowledge, it delivers better data mining, in-depth analysis, and improved data visualization. It is more flexible, widely distributed, and practical than any other platform [7-8]. It brings a new level of analysis, insight, and value to existing data stores with a user interface that is clean, simple, and straightforward.

This case study highlights challenges faced by Business organizations in processing data load and refreshing it efficiently involving huge data volumes and maintaining the robustness of solutions. The study also details challenges with current data loading architecture, possibilities of alternative approaches, and what works best to improve data load and refresh scenarios in the current Business Intelligence environment involving very huge data [9-10]. The implemented solution and its benefits to a BI tool are detailed in this case study as well as the scope of implementation across organization teams involved in similar requirements.

QlikView is based on the use of flat data loaded in the live memory. The data stored in RAM are retrieved and prepared from a script defined by the user (in pseudo-SQL language). This technique, which is called in memory, can significantly reduce the volume of data (rate of about 10) whilst ensuring the uniqueness of the data fields. When creating a QlikView project, the very first step is to load data within the application. This step is crucial because it determines the structure of the database that will be created within QlikView.

2. Problem Statement

To optimize the monitoring of our deal and order studies, our team requires a centralized application, available to all, which provides a better view of deals and orders and assists in the planning, forecasting, shipments, and delivery of orders after winning the deals. The application should be handy and users can easily access the live data even when they are not in the office. This application must also meet the safety requirements of confidential data which will give a better view to users with all sorts of Metrics, Charts, Tables, and Graphs. In the current solution, the QlikView Dashboard was designed in a way to extract data from multiple sources and require data load to be repeated multiple times in a short time. As in QlikView data is loading in RAM so it will take a lot of time to load the data from any source and after loading we need to perform calculations and analysis and generate lots of metrics. Below are the overall problem statements:

a. Consolidation of data which is coming from different data sources.
b. Provide reporting to users on their mobile, so that they can use them anywhere, anytime.
c. Share reports with end users via the Internet and to create end-user groups and set access restrictions.
d. Create and customize the dashboard with QlikView which will give current calculations according to live data.
e. Demonstrate, with an example, how helpful the indicators are to Deal Planners, sales team, channel users, and management for scheduling deals and better view of orders and tracking them.
f. Faster loading, analysis, and calculation of data and generate reports for more than 50 Metrics.

3. Remedies

We have selected the QlikView platform to develop the Dashboards which provide better solutions for all the above problems and are supported by Smartphones and we could provide reports with the help of web-based features of QlikView. We have developed the application in QlikView and created 7 different dashboards with more than 10 metrics in each dashboard for in-depth analysis of their business, according to their requirements separately for each user group and provided access according to their business group and restricted them only to

that particular Dashboard like Sales, Channel Partners, Managements, Users, etc. The challenges and issues of RAM were resolved by enhancing the application architecture which was achieved by introducing new layers before loading the data in final Dashboards by using QVDs and the concept of loading data from different data sources.

First, we have created a layer that exports the data from different tables of the SQL server and loaded the same in one of the QVD by using the below scripts.

OLEDB CONNECT TO [Provider=SQLOLEDB.1; Persist Security Info=True; User ID = DPTUSER; Initial Catalog = DPT; Data Source = GVV11589.austin.hpicorp.net, 2048; Use Procedure for Prepare = 1; Auto Translate = True; Packet Size = 4096; Use Encryption for Data = False; Tag with column collation when possible = False] (XPassword is DFeNaJVONLbKGZdNGTNSDfD);

We have introduced another layer to load the data from Excel and text files and save them in the form of QVDs by the below script. Here vOfflinePath is a variable that gives the path to that particular Excel file and * represents any character after Top Retail, so it loads all the file's offline path which starts with Top Retail.

[$(vOfflinesPath)Top Retail.xlsx] (OOXML, embedded labels, the table is a tablet);*

Then we loaded the data in the final QlikView Dashboard from more than 20 QVDs, in the script vPath layer is a variable for the path that is giving QVD's path.

FROM$(v_path_layer_1_transactional_qvd)$(v_string_layer_1_transactional_qvd)MAPPING_MONTHS.qvd (QVD);

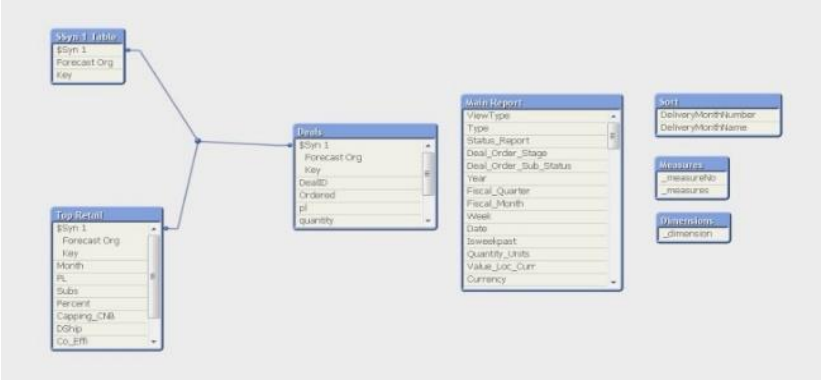

Figure 1. The data model behind QVD's

For metrics, tables, graphs, and charts we have introduced another layer by creating a new separate Excel file that consists of all formulas used to analyze the data. We have introduced variables for each formula and used those variables in QlikView DB instead of a huge complex expression, which gives faster speed to the dashboard to complete the calculation by saving its RAM.

FROM $(v_path_Data) Formula.xlsx (OOXML, embedded labels, the table is Formula)

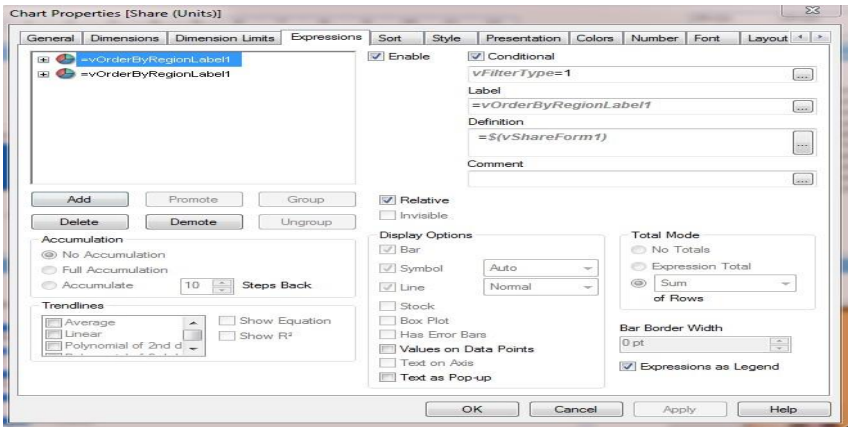

Figure 2. The Variable using from formula file instead of a huge expression

Figure 3. In-depth complete analysis of the data loaded after QVD's in the Qlik View Dashboard

The time summary based on job execution shows in relevance to the solution the time taken to complete the loads. Although there is no evidence to show performance w.r.t. previous data load, the current data load is based on a volume of 200 million per metric and we have more than 50 metrics.

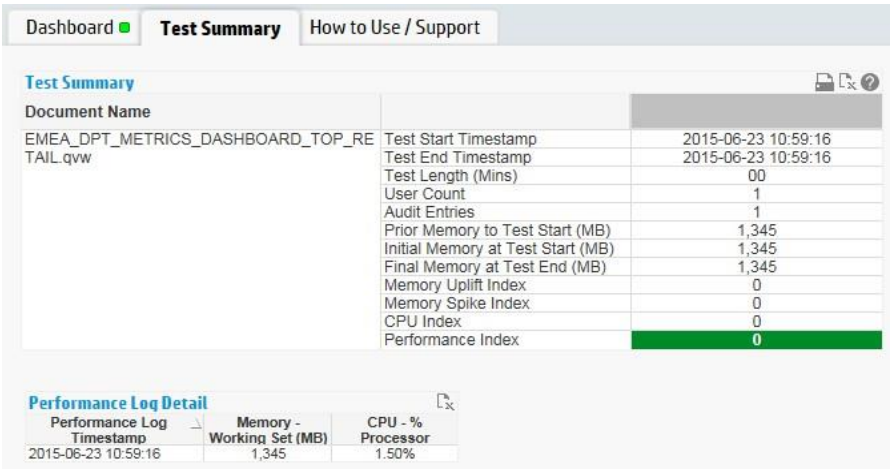

Figure 4. The summary of the data load with performance Index

4. Conclusions

Analyzing data manually is a tedious task. QlikView has made data analysis a simple task but the growing unorganized data and/or extracting rough data is a big task for any analytical tool. A lot of time is wasted in loading and removing the file and reloading it, as we see in the above case study. The solution has been implemented in some projects and is currently in production. This solution loaded many files from different data sources quickly and made them useful for the solution. The solution has already resulted in visible benefits in terms of improved performance, less maintenance effort, flexibility to users, and enhanced Business experience. There is an immense scope for implementing this concept and solution for a big level in which we are using a simple Excel approach and data loading from different sources which needs better on-time analysis and facing challenges in maintaining the robustness and stability of the applications. The solution would require minimal changes to architecture to make to business ready.

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