Business Intelligence

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ABSTRACT

Business Intelligence (BI) is a terminology representing a collection of processes, tools and technologies helpful in achieving more profit by considerably improving the productivity. This will help to improve the business process. In this system, we have to collect information from the user and generate the report by using SQL SSAS and SSRS. The input is collected in the database. Then the data is analyzed and the report will be generated and produced to the clients needed format after that they will take decision easily. A company has implemented a BI system to analyze the customer interests and policy requirements enabling them to promote particular policies in the near future. This system will increase the pace of the analysis process on their requirements. This will be helpful for prediction process in business decision making.

Keywords: Business Intelligence, SqlServer Reporting Service, Sql Server Analysis Service.

1 Introduction

BI (Business Intelligence) is important for businesses to understand their products, how each of the products are being perceived by their customers and monitoring/measuring business goals. With the evolution of technology, the Information Technology community can now place more importance and time analyzing and understanding data, rather than spending the time building, configuring and setting up systems and networks; Business Intelligence tools are important for understanding data while ultimately analyzing and understanding business goals, monitoring internal performance, measuring results and measuring customer satisfaction. The different BI tools are cognos software, oracle BI, Microsoft BI. The Microsoft BI components   are: SQL Server Integration Services (SSIS), SQL Server Analysis Services (SSAS), SQL Server Report Services (SSRS). Client applications communicate with Analysis Services using XML for Analysis (XMLA) over TCP IP or HTTP. Analysis Services provides an XMLA listener component that handles all XMLA communications between Analysis Services and its clients.
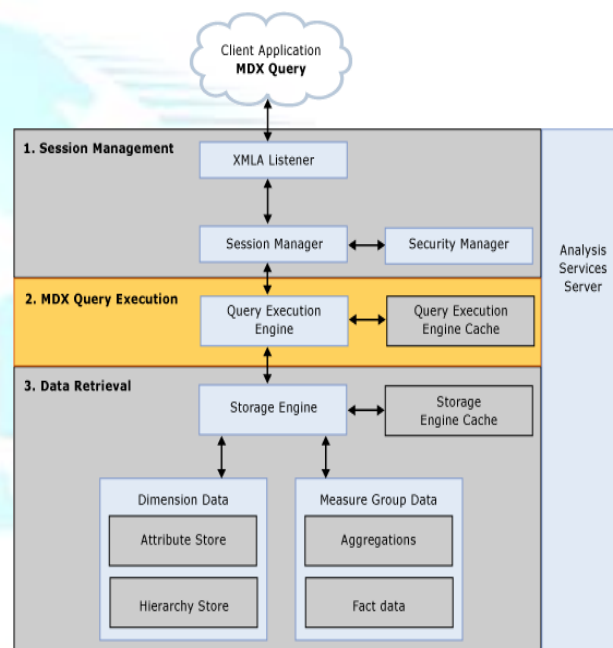

Fig.1Communications between Analysis Services and its clients

SSAS cubes allow fast access to cross sections of large amounts of data; millions of rows, Dimensions are an important aspect of SSAS cubes. Cubes are rows of data aggregated by a chosen fact across dimensions, Dimensions are what internally aggregate and cross section large amounts of data based on the selected fact. One of the most important dimensions is time. Data is regularly rolled up throughout standard measures of time: fiscal years, annually, monthly, daily, weekly, and quarterly. Aggregated dimensions, a SSAS cube, are what make it possible to query information in a quick amount of time, usually seconds. The importance of a cubing and analysis tool is imperative in analyzing large amounts of data with various slices/dimensions.

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2 Storage Modes

The Analysis Services provides various storage modes: multidimensional OLAP (termed MOLAP), hybrid OLAP (HOLAP), and relational OLAP (ROLAP). MOLAP provides the fastest query performance; however, it typically involves some degree of data latency.

2.1 Rolap

Relational OLAP tools extract data from relational databases. Using complex SQL statements against relational tables, ROLAP is able to create multidimensional views on the fly. ROLAP tends to be used on data that has a large number of attributes, where it cannot be easily placed into a cube structure. Browsing is very slow in ROLAP.

2.2 Molap

This is the traditional mode in OLAP analysis. In MOLAP data is stored in form of multidimensional cubes and not in relational databases. It provides excellent query performance and the cubes are built for fast data retrieval. All calculations are pre-generated when the cube is created and can be easily applied while querying data. Cube browsing is the fastest when using MOLAP. This is so even in cases where no aggregations have been done. The data is stored in a compressed multidimensional format and can be accessed quickly than in the relational database.

2.3 Holap

It is combine the strengths of the MOLAP and ROLAP.

3 Problem statement

The existing Information System has been operational using OLTP for several years now. All operational and tactical reports are being generated from the OLTP system apart from few regular MIS reports. The OLTP has limitations for generating analysis based on aggregation. Analyzing the existing data by using OLTP is highly time consuming. Hence forecasting and prediction is more complex using OLTP, thus development of a decision support system. As a result a BI analysis was thought of and the project initiated.

4 Design

SqlServer Analysis Service (SSAS), is used to analyze the data from the database. Then the data source is selected from the database from that to select the corresponding tables. Then the dimension and fact tables are selected from the database. A cube consists of measures based on one or more fact tables and dimensions based on one or more dimension tables. Dimensions are based on attributes, which are mapped to one or columns in the dimension tables or views in the data source view, and then hierarchies are defined from these attributes. Then we can design table relationship from one table to another table in the same data source, relationship from one table to itself, as in a parent-child relationship and relationship from one table in a data source to another table in a different data source. The management people can easily view the report for decision making by using SqlServer Reporting Services. To collect the data from the OLAP database in Sqlserver Analysis service, for generate the report. The Report service provide the report in the form of client side and server based side reports. Cube structure is made by star schema. All the dimension tables are referring to the fact table.
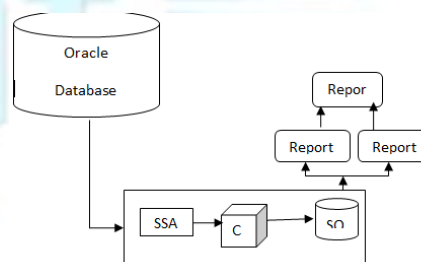

Fig.2 Analysis

SSIS (Sql Server Integration Service), is no need for cleaning the data, because those data are already cleaned ones. A dimension table will refer to a fact table, not by interacting directly. One dimensional table will refer to another and so on until a fact table is located. Such a situation is termed as "Snow Flake Schema".

4 Conclusion

BI technology is used to make the decision clearly at the earlier stage for the management people. Business Intelligence tools are important for understanding the business using the behaviour of data while ultimately analyzing and understanding business goals, monitoring internal performance, measuring policy results and introduce the new policy for people. The cube data is retrieved from the OLAP, and then the data is modified by using the MDX query.

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