

Integrating Data Warehouse with OLAP Server

Jitendra Singh^{a*}, Shivani Sharma^b

^a Assistant Professor, Department of CSE, SRM University, Delhi NCR Campus, India

^b M.Tech (CSE), Department of CSE, SRM University, Delhi NCR Campus, India

Article Info

Article history:

Received April 03, 2014

Accepted May 02, 2014

Available online March 02, 2014

Keywords:

Data Warehousing,
OLAP,
OLTP,
Multidimensional Data,
Clustering

Abstract

Data warehouse is the collection of information gathered by the other resources. Basically Data warehouse is used to collect the data from the Data warehouse. This paper is used to combine the Data warehouse and On-Line analytical processing (OLAP) server and also compare the technology of On-Line transaction processing (OLTP) and On-Line analytical processing (OLAP). Data warehouse is also subjective and based on time and decision technology. The main component is Data warehouse and OLAP server with the comparison of OLTP. OLTP is used for recent data for transaction based. OLTP is not used for large amount of data, whereas OLAP technique is used for historical data. OLAP technique is used for globally and analytical based. Basically OLAP technique is used for multidimensional data.

© 2014 TUJEST. All rights reserved.

1. Introduction

A Data Warehouse is the "subject oriented", integrated, time variant, and collection of the large amount of data which may be used for multiple databases. In Database there are huge amount of data to handle the information. There are several definitions of data warehouse [1], but the following is most widely used "Data Warehouse is "subject oriented, time-variant, non-volatile, integrated collection of data used for decision making. Data Warehouse [2] is based on the decision support technology so that it is used to support the knowledge workers (executives, managers, salesman, business man etc). Data Warehouse is based on the real time business and business intelligence. Data Warehouse is the learning process describe the high level architectures. Data Warehouse is the integration of the learning objectives like extraction, transformation and load (ETL). Data Warehouse is the repository of the information where relational data and operational data is used to provide enterprise-wide, cleansed data in a standardized format. Operational processing (transaction processing) is used to store and manipulate data to support daily operations. Data Warehouse can consolidate and integrate information from internal and external resources. Data Warehouse is constructed by integrating multiple, heterogeneous data sources.

* Corresponding Author:

Jitendra Singh , e-Mail: jit@post.com

Table 1. Base and summery data store [6]

PID	1001
Product	Suit
Specification	Standard
Region	Noida
Year	2009
Sales	39999

Information is retrieved from the data. The organizations create, store and provide information data in its business context [6]. In this survey business is organized the multidimensional data to store the cuboid data. Because of the relational data time period and cost is very high in market and other related departments, so to avoid this problem. We survey the business and the market data, all the information is based on the multidimensional data.

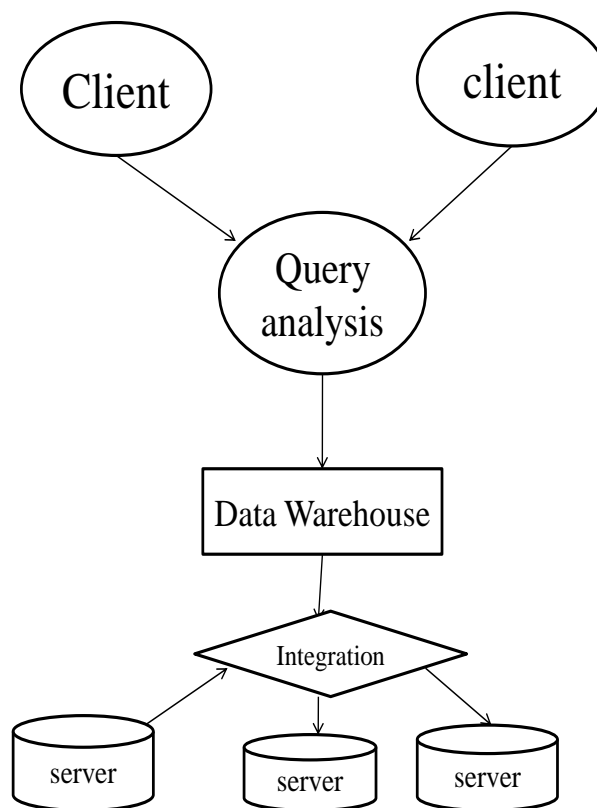


Figure 1. Simple Data Warehouse Process Flow Architecture

2. DATA WAREHOUSING

Data Warehouse is a collection of decision support technology aimed at enabling the knowledge worker (executives, manger, and analyst) to make better and good decision [4]. Now the question is "What is Warehouse" Warehouse is the collection of many tools and components like gathering resources, cleansing data, to collect and analysis the query and then monitoring it with the databases. Now another question is "Why a Warehouse?????" there are two approaches first one is the query driven and second one is warehouse itself. Figure 1 shows the simple Data Warehouse process flow architecture.

2.1. CHARACTERISTICS OF DATA WAREHOUSING

- Subject – oriented
- Integrated
- Time-variant
- Non –volatile
- Real- time
- Client based and server based integration
- Relational data model
- Multi-dimensional data model
- Web – based data
- Meta data

2.2. ARCHITECTURE

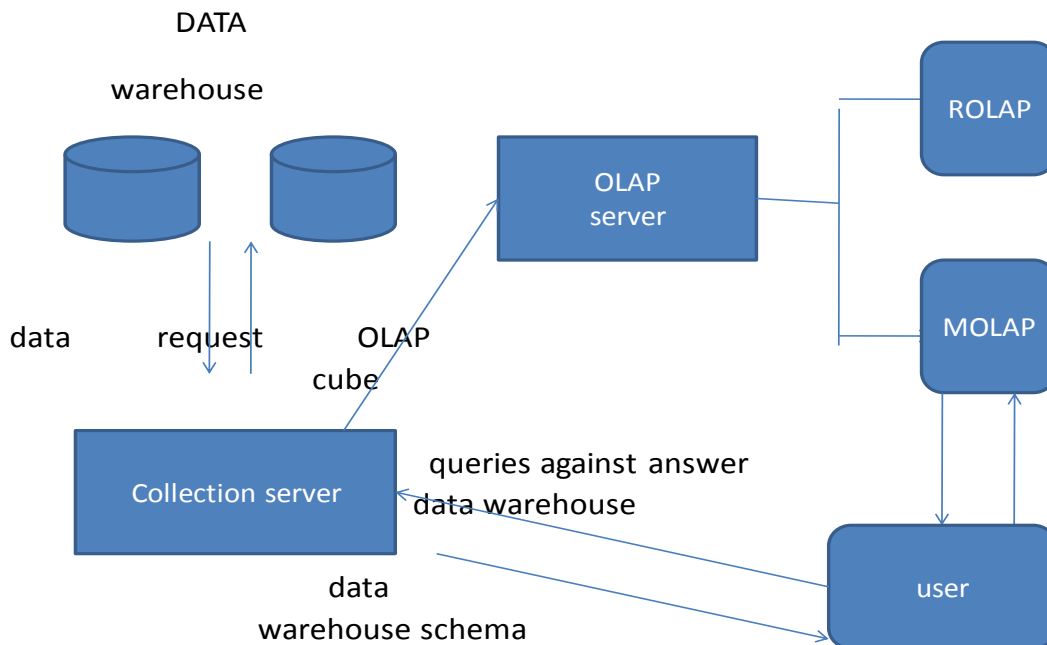


Figure 2. Integrated Architecture

2.3. DATA WAREHOUSES

- **Enterprise Data Warehouse (EDW)** – It is used to collect all the information of the organization. Basically collects all information about the various subjects like customers, products, sales, personnel that span whole organization. It is one of the best information services. EDW manipulates data from the multiple resources. EDW provide best and secure information to the customers and other departmental users.
- **Operational data store (ODS)** - Operational data store only used for specific information. Operational data warehouse is designed to support only transaction based data like (insert, update, delete). It is only used for current data. Operational data is used to store garbage data or raw data stream.
- **Knowledge support system (DSS)** - It is also called decision support system which is used to provide the knowledge into the multiple resources. It helps to support the executives, workers, managers, and other related enterprises.

2.4. ON-LINE TRANSACTION PROCESSING (OLTP)

In On-Line Transaction Processing user can transact the data from the database using (insert, update, and delete). OLTP [2] only use current and operational data which is used in day-to –day business work. Traditional system require that user switch from their Data Warehouse front –end to another data entry program [3]. It is one of the applications that supports and manage only transactions.

ON-LINE ANALYTICAL PROCESSING (OLAP)

OLAP stands for On-Line Analytical Processing in which only consolidation data is used. OLAP is used for large amount of data at a Time. It is used to analysis the historical data or used for complex query.

OPERATIONS IN OLAP

There are various operations in OLAP which is mainly used and essential in Data Warehouse and OLAP server: OLAP Operations include roll- up, drill down, slicing and dicing. Whereas roll up is used to increasing the high level aggregation, drill down decreasing the level of aggregation, slicing and dicing is used for selection and projection [4].

MULTIDIMENSIONAL DATA MODEL (MDDM)

As the name implied Multidimensional Data Model is a dimensional model. In the multidimensional data model large amount of data can be store at a time. It provides a mechanism to store data and to help the users.

OLAP SERVER

Relational OLAP- Traditionally Relational OLAP is used which is involved in many operations. Relation OLAP is the dimensions based model. ROLAP method is only used for only relational database. Relational database is a set of database which consists of fact and dimensions.

ROLAP IMPLEMENT THROUGH TABLE

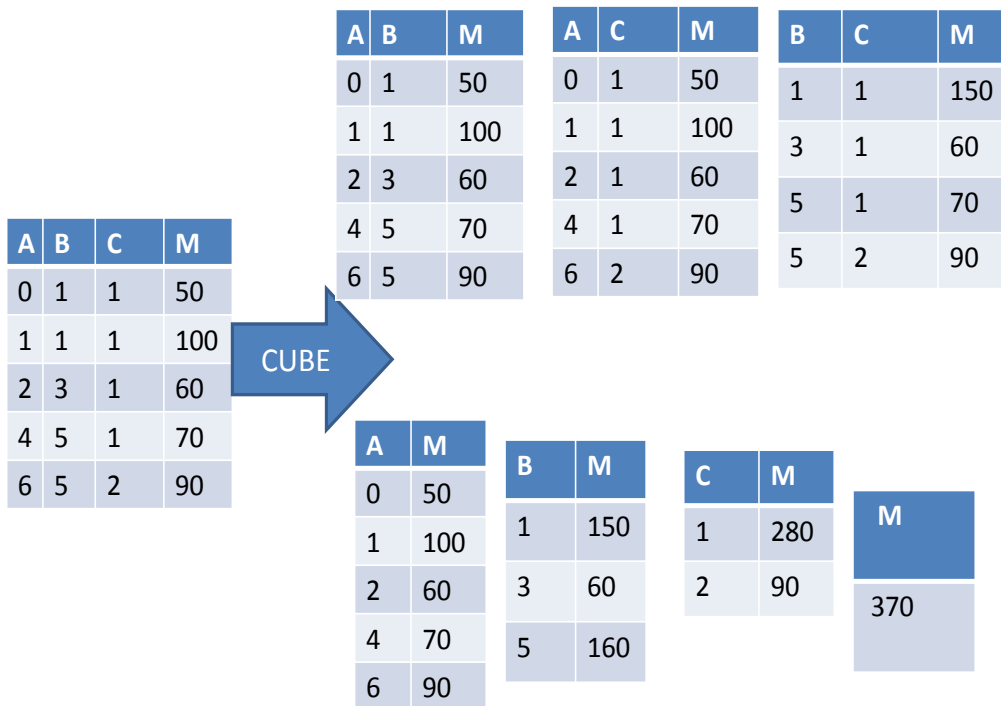


Figure 3: ROLAP implementation in OLAP server [5]

3. CONCLUSION

In this paper, we have discussed about the Data warehouse as the collection of information collected from the other resources. We have compared the technology of On-Line transaction processing (OLTP) and On-Line analytical processing (OLAP). OLTP is used for recent data for transaction based. OLTP is not used for large amount of data, whereas OLAP technique is used for historical data that can be used for globally and analytical based multidimensional data. In this paper we have proposed how to integrate data with OLAP server. OLAP server is based on the multidimensional data model. Server is the web application server that we use in this paper to analyze and performed better results for customers, users, and other bank officers. Because in Relational data model only current data is used which is only suitable for colleges and department only, but in multidimensional data model we analyze the data in the historical model. Integrated Data Warehouse provides the data collection and transformed the data.

REFERENCES

- [1] Reddy G. S., Srinivas R., Rao P. C., & Rikkula S. R., (2010). Data Warehousing, Data Mining, OLAP and OLTP Technologies are essential elements to support decision-making process in Industries. *International Journal on Computer Science and Engineering*, Vol. 02(9). pp 2865-2873
- [2] Srivastava J., & Chen P. Y., (1999). Warehouse Creation- A Potential Roadblock to Data Warehousing. *IEEE Transactions on Knowledge and Data Engineering*, Vol. 11(1). pp 118- 126
- [3] Jarke, M., Quix,C., Bles, G., Lehmann, D., Michalk, G., & Stierl, S., (1999). Improving OLTP Data Quality Using Data Warehouse Mechanisms. *Proceedings of the 1999 ACM SIGMOD International Conference on Management of Data. SIGMOD '99*. pp 536-537
- [4] Surajit Chaudhuri, S., & Dayal, U. (1997). An Overview of Data Warehousing and OLAP Technology. *ACM Sigmod'97*, 517-525
- [5] Morfonios, K., Konakas, S., Ioannidis, Y., and Kotsis, N. (2007). ROLAP implementations of the data cube. *ACM Comput. Surv.* 39, 4, Article 12 (October 2007), <http://doi.acm.org>.
- [6] Sharma N., & Gupta S. K. (2012). Design and Implementation of access the contents in the Data Warehouse. *International Journal of Information Technology and Knowledge Management*, Vol. 6(1), pp. 61-64.