

## ACCELERATE YOUR ORACLE DW WITH OLAP 11G

*Chris Claterbos, Vlamis Software Solutions, Inc.*  
[claterbos@vlamis.com](mailto:claterbos@vlamis.com)

### INTRODUCTION

When building business intelligence applications data is important, but the key piece is making the data easily accessible so that the end-user can use it to improve upon the business. Oracle Database 11g OLAP provide several new features that can used to enhance performance of Oracle-based data warehouses. In addition, while providing a complete summary management capability, they can add additional calculation capabilities. Views are automatically created that allow standard SQL to access the original data, as well as any additional measures. By placing the calculations in the database, all of your business rules and measures can be securely stored in the database. All of this content can be accessed with any application, including Oracle Business Intelligence Enterprise Edition, Oracle Application Express, Oracle Discoverer, BI Publisher, Oracle SQL Developer, as well as non-Oracle tools.

This presentation will describe the new features in Oracle 11g and the OLAP option and demonstrate how easy it is to improve existing datamarts and data warehouses using the OLAP option.

### **CAN YOU BENEFIT?**

Ask yourself these questions to see if the OLAP 11g can help your organization:

1. Does your organization use SQL-based business intelligence applications such as BusinessObjects, MicroStrategy, Cognos ReportNet or Oracle Business Intelligence Enterprise Edition?
2. Would business users benefit from significantly improved query performance and the ability to explore data sets, rather than being confined to predefined reports?
3. Would business users benefit from rich calculations – including those not easily defined in middle tier BI solutions – being embedded into the database and made available for query within BI applications?
4. Would business users benefit from more frequent updates of data sets? Would IT benefit from more efficient management of data sets?

If the answer to any of these questions is yes, then the OLAP option can improve your organizations business intelligence architecture.

### **ORACLE OLAP – WHAT IS IT?**

Businesses need to analyze their businesses in ways that decision makers at all levels can quickly respond to changes in the business climate. While a standard transactional query might ask, “How many bolts were sold last month?” An analytical query might ask, “How do sales in the Midwest for the last 3 months compare with the forecast? Now how does that compare to a year ago?”

Analytical queries require an online analytical processing (OLAP) solution. The Oracle provides comprehensive support for OLAP:

- The Oracle relational database management system (RDBMS) remains the most efficient and secure way to store your data. By developing a data warehouse, you can provide data in a form suitable for business analysis.
- The OLAP Option to the Oracle 10g/11g database is full featured multidimensional on-line analytical processing server fully embedded with the Oracle Database Enterprise Edition.
- Integration with the RDBMS core allows for SQL based access to the data.
- The Oracle BI Beans complements OLAP Services by providing pre-built Oracle JDeveloper or other Java development environments to build analytical applications, which can be deployed as either Java or HTML (“thin”) clients.

### **OLAP OPTION**

The Oracle OLAP Option provides the query performance and calculation capability of a multidimensional database. In addition, it provides a Java OLAP API that is appropriate for the development of internet-ready analytical applications.

Unlike other marriages of OLAP and RDBMS technology, Oracle 11g OLAP Services is not a thinly disguised multidimensional database using bridges to move data from the relational data store to a multidimensional data store. Instead, it is truly an OLAP enabled relational database.

The OLAP Option can be used to improve query performance, to add rich analytic content to business intelligence applications and to more efficiently maintain data sets that are used by business intelligence applications. The option's query performance optimizations – with most queries satisfied within a few seconds or less – enables business users to engage in ad-hoc exploration and analysis of data. The application developer are able to embed rich analytic content such as time series calculations, shares, indices, rankings and non-additive aggregation methods within the Oracle Database and make them available to virtually any SQL-based business intelligence application.

The Fast, incremental updates of data sets allow organizations to update data sets more often and more efficiently, providing business users with access to the most current data in the shortest amount of time possible.

Finally, the OLAP Option can be used as an alternative to table-based materialized views as a summary management solution, providing the benefits of improved query performance and fast, incremental update.

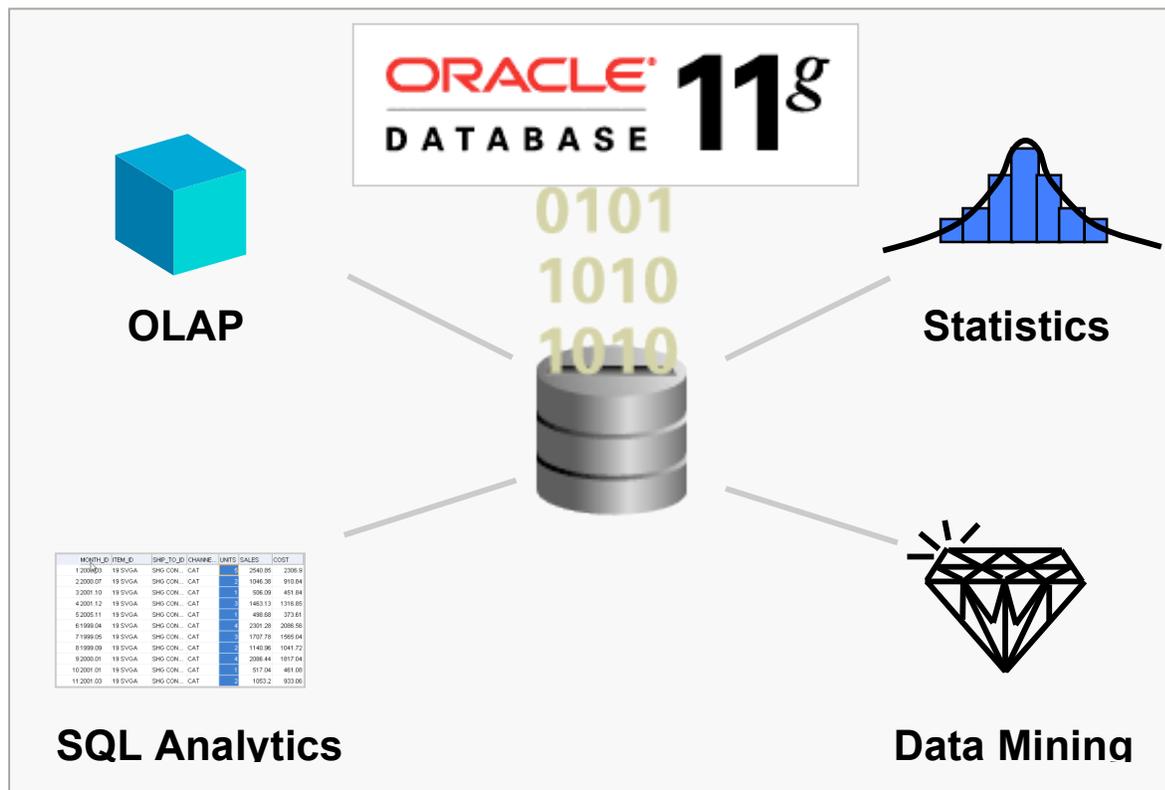


Figure 1. Oracle 11g Strategy for DW

### MATERIALIZED VIEWS – THE NEW WAY!

One of the techniques employed in data warehouses to improve performance is the creation of summaries, or aggregates. Materialized Views are a special kind of aggregate view which improves query execution times by pre-calculating expensive joins and aggregation operations prior to execution, and storing the results in a table in the database. For example, a table may be created which would contain the sum of sales by region and by product. This is approach requires that a materialized view (summary view) be created for each possible combination of dimension level. The results could mean creation of a very large number of materialized views. Such views require time to create and maintain.

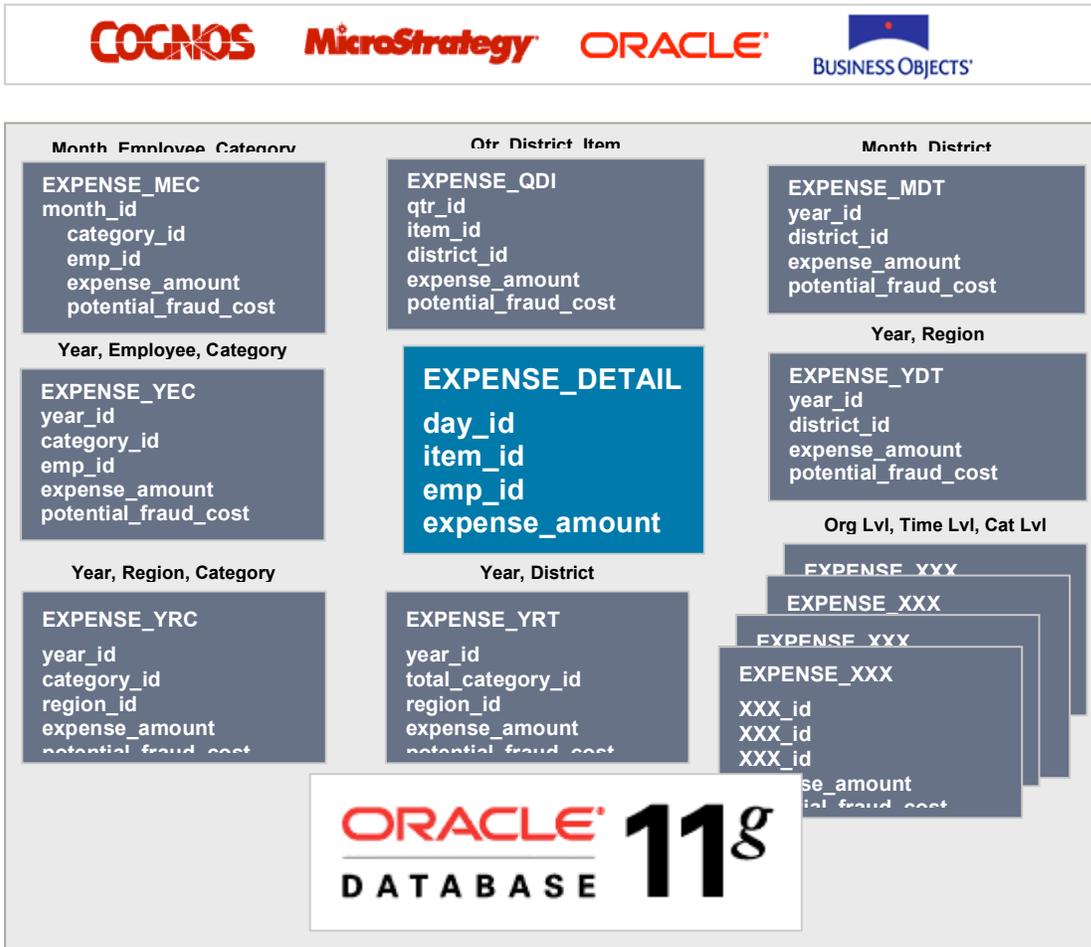


Figure 2. Traditional MV Architecture

In Oracle 11g the OLAP option has even more integration with the database kernel and as a result the materialized view engine has been linked with OLAP to allow the OLAP cubes to be used with the query rewrite processor. The results mean that a single materialized view can be used in the place of hundreds of materialized views. Furthermore, the 11g refresh engine has also been integrated with OLAP so that the refreshing of the materialized view using the conventional methods that DBAs used today will cause the OLAP cubes to be updated. As a result, less time is spent crafting specialized materialized views, optimizing warehouse storage, indexes and statistics. The major benefit is that the query performance using these Cube Organized Materialized Views is significantly faster than any other query optimizer has ever done before.

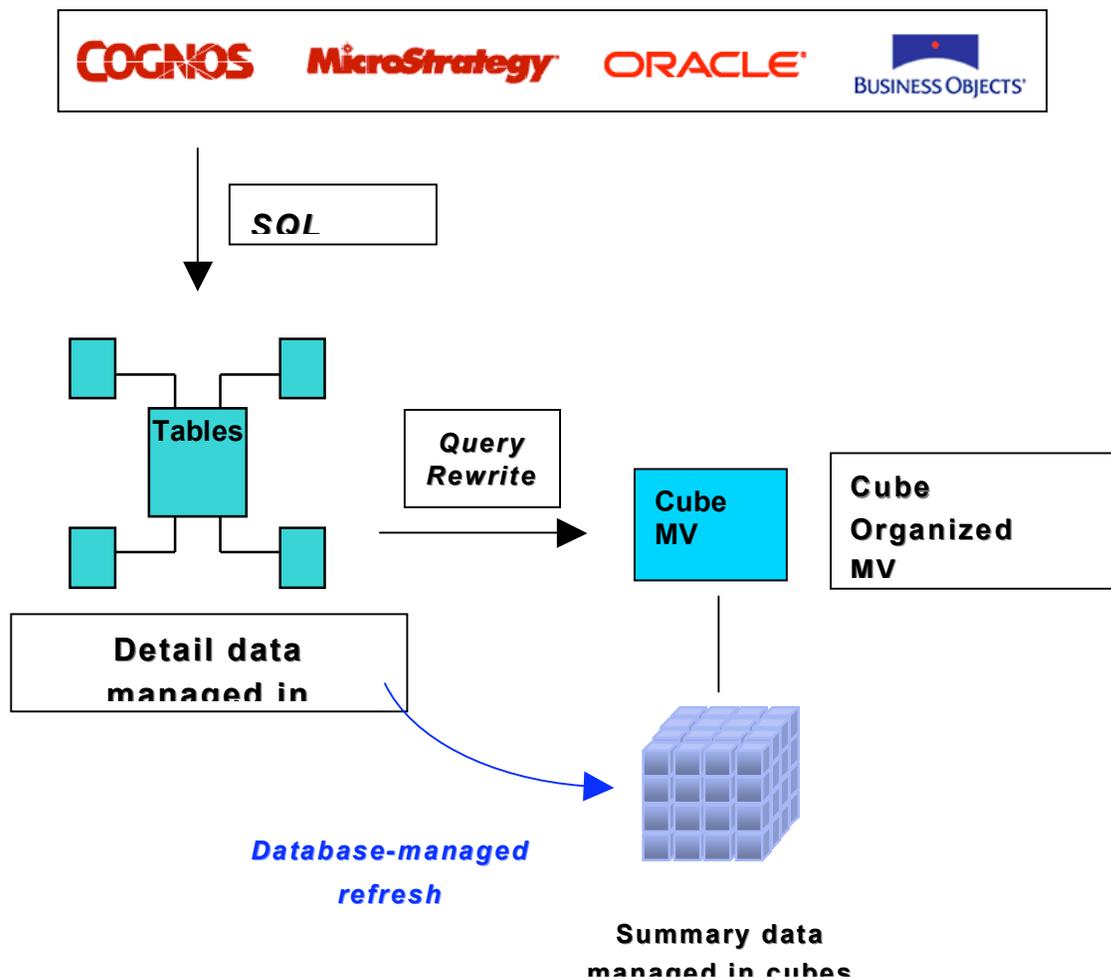


Figure 3. Cube Organized Materialize Views

### SQL ACCESS

In addition to the query rewrite features, it is now easier than ever before to access the OLAP data with SQL. In previous version of Oracle OLAP it has always been possible to create SQL Views to access the OLAP data. But crafting the views and making them perform well has required a DBA with special knowledge and skill. With 11g this is a thing of the past. When a dimension or cube is created the views necessary to access the data is automatically created. These views are immediately available as a standard view in the schema that owns the OLAP data. Using these views anyone with SQL knowledge can report any data they want. Since the data is already summarized at all levels of aggregation query performance is significantly faster.

With standard SQL access to the data it is now possible to use any SQL base reporting or query tool to access the analytic data.

### CONCLUSION

There are many advantages to embedded an OLAP server within the Oracle Database:

- It runs within the same Oracle instance; there is no separate instance to install or manage. There is no separate server computer. It allows your organization to leverage the servers, Oracle DBAs and developers it already has.

- OLAP cubes are stored in Oracle Data Files, just like any other data type of the database. Use the same backup and restore procedures that you already use.
- OLAP data is safe and secure in the Oracle Database. OLAP data is secured with Oracle object and data security features, just like other data in the Database.
- The OLAP Option is fully compatible with scalability and high availability features such as Real Application Clusters and Grid Computing.
- OLAP cubes and dimensions are easily queried with SQL, allowing to you extend the investment in the business tools and applications you already have. This allows the development teams to leverage their valuable skills and provide more comprehensive mission critical solutions to meet the needs of all the users.

The result is quite simple – better business decisions due to more informed decision-makers.