
Using Business Intelligence with Oracle's E-Business Suite

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Business Intelligence

What it is

Knowledge workers in an organization need to be able to access relevant, comprehensive information and analysis tools to make better business decisions that will help that organization gain a competitive advantage. This is Business Intelligence. Various other terms are associated with this field of technology like On-line Analytical Processing (OLAP) and Decision Support Systems (DSS), but Business Intelligence (BI) seems to be the favored term as of now. Other terms used in conjunction with BI include Data Marts and Data Warehouses. These two objects refer to the structures used to create the BI system. The Data Mart is a subset of the total corporate information base that answers a single business question. The Data Warehouse is the total corporate information base that answers many business questions. The tools that will be discussed in this paper fall under Oracle's Business Intelligence umbrella.

What it is not

Business Intelligence is not one single application or one companies set of applications. Instead, BI is the culmination of all of the systems an organization uses to supply its users with business information for making decisions. A data mart or data warehouse might be a part of the BI solution, but is usually not the whole of the solution. Many applications out in the market today fall under the BI description. Several of these products require other products to complete the BI solution. So a relational database or multidimensional database may be used to store the data, but there is usually some other type of application that is used to read the data, often there can be several different applications used for different business' focuses. Business Intelligence encompasses a large array of products and therefore, should not be limited to a single product.

Implementing A BI Solution

When a company decides to implement a Business Intelligence solution, there are several key steps to helping make it a success. Foremost, the top-level management has to support the project because they are the people who use the information that is gathered. The correct team has to be assembled, which should include people from the different levels that will be using the system. Many data warehousing implementations fail due to the size of the project, so we have found that implementing data marts to get the organization going leads to more successes. The data warehouse can still be the end result, but along the way there are deliverables that help the users feel comfortable. Along with that subset approach, the different areas of a company (like marketing, sales, and financial) will probably need different data to report on so it makes sense to compartmentalize. Carefully choosing a tool can help make the process go smoother. There are many tools out in the market that can offer you Business Intelligence solutions, so in the requirements gathering phase, it is important to clearly decide what

is a need versus what is a want. These hints are derived directly from having gone through many different BI implementations, but are offered just as guideline to the process.

Ralph Kimball has documented his assessment of what it takes to be ready for a data warehouse. These same ideas can be applied to getting ready for a BI solution. I am taking these summary points from Ralph Kimball's latest book, titled "The Data Warehouse Lifecycle Toolkit". The five critical success factors for a data warehouse or BI project are: Strong Business Manager, Vision, IS/Business Partnership, Current Analytic Culture, and Feasibility. Please note that the OLAP technology itself is generally not a significant factor in the success of a data warehouse, but that the process and methodology are of greater impact. In fact, having a strong business manager as a sponsor is the single biggest factor. The weight of this factor alone can be as high as 60% of the reason for success for failure. The sponsor must have considerable organizational clout—be active, vocal, and visible along with realistic expectations. His or her business vision must be clearly articulated. The vision should include revenue enhancement, not a cost savings opportunity. The attitude that "we cannot afford not to build a data warehouse" would be ideal. The IS/Business partnership is all about relationships—there must be a strong confidence in the existing reporting environment and IS should have the reputation for quick response to ad hoc queries. Attitudes like "we can't trust any numbers from our systems" do not bode well for a data warehouse project. The current analytic culture needs to be basing decisions on facts and figures, not "gut feel" decisions. An example of what I mean here is that "current reports are consistently re-keyed into spreadsheets for analysis and trending". Feasibility is defined as having experienced personnel (DBAs) available and quality data available. Attitudes like "reliable data won't be available until after ERP is implemented" is also not a valid starting point. Overall, the planning is the most important part to be successful.

Oracle Business Intelligence Tools

Overall Picture

Oracle offers many tools for the Business Intelligence market including databases, developer tools and applications. With the focus shifting to the Oracle 9i OLAP Services, many changes will be made in the next few months. For the purpose of this paper, we will not be discussing the 9i OLAP Services because it has not been released, but will instead focus on the older, established tools.

The basis of Oracle's Business Intelligence in the past has been on Express server, the multidimensional database. There are several tools that can be used with the Express server including: Express Objects, Express Analyzer, Oracle Financial Analyzer (OFA), and Oracle Sales Analyzer (OSA). Discoverer and Reports are the other two tools under Business Intelligence. Both can use the Express Server but more commonly use the RDBMS (Relational Database). The architecture of the Oracle BI tools is show below (Figure 1). All of these tools will be further detailed with the emphasis on the two applications, OFA and OSA, due to their inherent ability to integrate with Oracle's E-Business Suite.

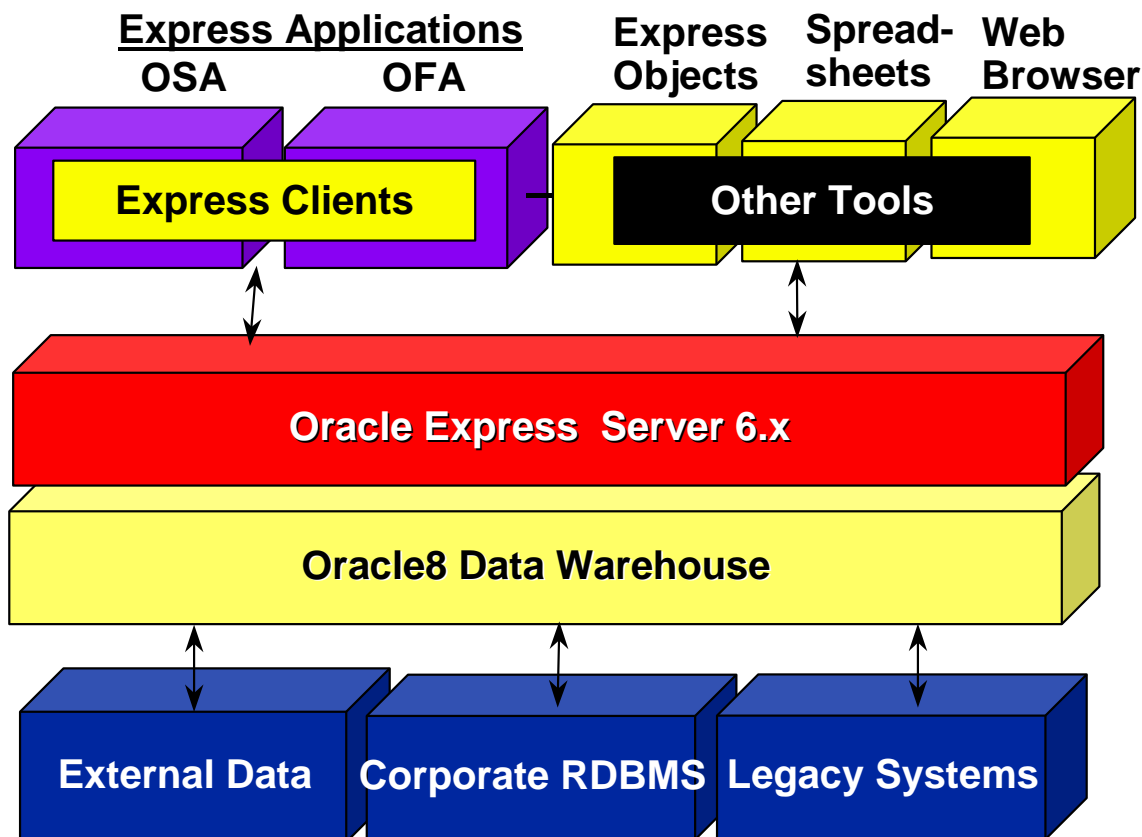


Figure 1

The Products

Express server is the database engine that maintains most of the data used by Oracle's BI tools. Express is a multidimensional database engine that uses a unique caching scheme to manage the data. The multidimensionality of the database makes it very efficient in maintaining and analyzing data that users need to make better business decisions. Because users think of their data in a multidimensional view, Express allows for this approach to naturally take place using dimensions and hierarchies. Users then have the capability to drill-down and pivot their dimensions to help with analysis of the data. Often multidimensionality is compared to a spreadsheet but with more dimensions than just the row and column, this may help some people relate dimensions to how they would view data. In order to talk to the Express engine, there is a specialized procedural language that is required, which can be a disadvantage. Express requires other custom developed applications or pre-built applications to read the data.

Express Objects is an object-oriented tool that can be used to create custom applications that sit on top of the Express server. Express Objects has all of the object-oriented functionality like inheritance, encapsulation, and polymorphism. Express Analyzer is used to extend applications developed using Express Objects. Analyzer allows users to do ad-hoc analysis of the data. Unfortunately, these tools seem to be at the end of their life-cycle as Oracle tools and will not be supported in the future.

Discoverer is an ad-hoc query tool that can be used to analyze data on the fly from Oracle's relational database. The tight integrations with Oracle databases simplifies security, scalability, data access, and metadata creation. Discoverer can also be tightly integrated with Oracle Reports, Oracle Express products, and Oracle Designer. Using drill-down and pivoting in Discoverer gives users a powerful tool for exploring data. A disadvantage of

Discoverer lies in the need for users to know the underlying database structures. Overall, Discoverer is a great tool for exploring data when no concrete parameters are defined.

Oracle Reports allows users to create complex reports from Oracle's relational or multidimensional databases. The unlimited data formatting and high-quality presentation makes this tool very useful for report writing. Typically end-users only view the reports while developers create the reports, which can be a disadvantage. For custom reporting needs, this is the tool to use.

The final two products are the applications, Oracle Financial Analyzer (OFA) and Oracle Sales Analyzer (OSA). Both are pre-built applications that reside on top of the Express server. Both allow for drill-down and pivoting, use of hierarchies, custom measures, limited formatting on reports, and efficient data capture. Oracle Financial Analyzer caters to the financial reporting needs of a company while Oracle Sales Analyzer caters to the sales and marketing reporting needs of a company. Both have pre-built calculations that fit their specific area. Though both products seem the same from the outside, the insides are completely different.

Oracle Financial Analyzer has a distributed approach in using Express, which gives users the autonomy to create and manipulate their own scenarios of data. The ability to write data back to the database is a big positive for OFA. This ability allows for creating budgets and forecast directly in OFA. A unique reporting feature is the ability to create asymmetric reports. Oracle integrates OFA with the Oracle General Ledger from the E-Business Suite.

Oracle Sales Analyzer has a server-centric approach for the Express databases, therefore, making it a read-only application. The nice feature on OSA is the ability for end-users to create custom measures and aggregates that can be used in reporting. OFA also offers custom measures (FDIs), but knowledge of the Express language is required. OSA has the ability to be deployed in any OLAP mode: ROLAP, MOLAP, and HOLAP. Though OSA does not integrate tightly into any of the modules of the E-Business Suite, it can still be used for analysis by those modules by loading the data through flat-files or with the relational approach.

Integration with E-Business Suite

OFA

Using the GL Link to load data into OFA from the General Ledger tightly integrates the two applications. When designing OFA, it is important to carefully plan how the Segments from the General Ledger will map to the Dimensions of OFA. Though the number of dimensions allowed is quite large, the practical guide is to not have more than five to seven dimensions. Because the GL Link creates the structures in OFA, the maintenance and planning have to occur in the General Ledger. There can be customizations written using the Express language if this is not suitable, but the maintenance then becomes somewhat more difficult. The main issue for a successful OFA implementation is to carefully design the underlying structures.

Unfortunately, the way the GL Link loads data from the General Ledger into OFA is not as efficient as required by some companies, therefore, custom loaders can be written to maintain the data separately from the Link. Also, because the GL Link is not exposed to OFA, it is difficult to diagnose and fix issues resulting from loading structures or data. Though there are some negative sides to the Link, the positives are that the transition of data from the GL into OFA can be done smoothly, Budget data can be written back to the GL so that the data can be captured at a summary level, and in newer versions, there is a drill-back to detail capability. Overall, OFA is tightly integrated with the Oracle General Ledger giving users the ability to easily analyze their financial data.

OSA

Though OSA is not tightly integrated with any of the modules of the E-Business Suite, it is still a viable application to use for analysis of that data. OSA allows for data to be loaded using Relational OLAP (ROLAP), Hybrid OLAP (HOLAP), or Multidimensional OLAP (MOLAP). So OSA data can be stored in Oracle's relational or multidimensional databases. The data from the Sales and Marketing modules can be exported into a flat-file using the flat-file loaders or into tables using Relational Access Administrator/Relational Access Manager (RAA/RAM) so that OSA can be used to analyze the data. Though there is no direct integration with the E-Business Suite, OSA can still be used by E-Business Suite users to analyze data from the data warehouse.