

Evaluating Business Intelligence Offerings: Oracle and Microsoft



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Evaluating Business Intelligence Offerings: Oracle and Microsoft

Introduction

The purpose of this document is to provide an evaluation of the Business Intelligence ("BI") offerings of Microsoft and Oracle. The objective is to determine which vendor's BI suite is the better technology for creating a platform for building BI solutions within an enterprise. BI is a broad topic, covering many different functions (e.g., reporting and analysis) and technologies (e.g., data warehouse, OLAP, portal). Consequently, it was determined a feature checklist approach to the evaluation process would result in an unwieldy, overly long checklist and ultimately would not address the key considerations for selecting the superior vendor.

Choosing a BI suite is an important decision for an organization, one that will have an impact throughout the organization. The choice of a BI suite will affect people up and down the chain of command (senior management, analysts, and line managers) and across functional areas (sales, finance, and operations). This is the deployment side of BI, which specifies who needs what kind of information in which format. There is another important implication of choosing a BI suite: how the BI platform is managed. This is an IT function and is an important aspect of choosing a BI platform. BI is not always an ad-hoc serve yourself environment. Much of BI in an organization today is embedded in business processes and needs to be seamlessly integrated. This evaluation will look at all of these aspects of a BI platform.

This paper will analyze the key considerations for deciding on a BI offering and examine the strategy of each of the vendors: Microsoft and Oracle. Examining each vendor's strategy gives insights into how they got to where they are. It gives a perspective into the current state of their respective BI platforms and into the management and product direction. The strategy section is followed by a summary evaluation of the vendors.

While performance and scalability are important issues in evaluating BI products, this paper will not speak directly to this issue. A discussion of performance and scalability requires rigorous benchmarking, which is beyond the scope of this paper. There is no generally accepted test for either performance or scalability.

What is Business Intelligence

BI is a broad topic, covering many different functions (e.g., reporting and analysis) and technologies (e.g., data warehouse, OLAP, portal). An examination of the literature shows many varying definitions of BI. These definitions fall into two classes: a technical description of the components that make up a BI solution and an explanation of the business purpose of BI. A good definition of BI that encompasses both technical functionality and business purpose is the following: BI is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions. To effectively evaluate the offerings of BI vendors, how well an offering satisfies both sides of the equation must be examined.

BI applications include the activities of decision support systems (DSS), query and reporting, online analytical processing (OLAP), statistical analysis, forecasting, and data mining. Another way of phrasing this is that BI applications take data that is generated by the operations of an enterprise and translate that data into relevant and useful information for consumption by people throughout the enterprise.

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To deploy BI successfully throughout an enterprise requires a platform, not a hodgepodge of tools and technologies. As such a BI platform must be able to address all the BI needs of an enterprise. Gone are the days where BI was a point solution used by a limited set of highly trained analysts. In today's market, BI is pervasive throughout an enterprise and in many cases mission critical. As such, a BI platform must be able to address both the breadth and depth of the needs of an enterprise.

Key Considerations in Deciding on a BI Offering

Business decision makers must evaluate both the breadth and depth of a BI offering in order to make an appropriate decision on a BI offering. The breadth of a BI offering is a measure of how well the BI offering supports the different requirements of the BI stakeholders. The depth of a BI offering is a measure of its vertical integration, i.e., how well the BI offering enables a business to take raw data from a production system and transform it into relevant and useful information and then deliver this information to business users in the proper context.

There are many steps required to generate consumable BI from raw data and there are various BI stakeholders within an enterprise that have a vested interest in the process. IT professionals, application developers, and business users (who are also the consumers of BI) all play a role in the development of a BI solution. Business users define the business rules that determine how the raw data must be transformed. Application developers develop the processes for acquiring, consolidating, and presenting the raw data based on the business rules. IT professionals manage the processes, ensure availability, and enforce security.

Requirements of Business Users

Different types of business users have different requirements of a BI offering.

- Analysts – Analysts support managers with performance management analysis. Analysts require a powerful and interactive environment that allows them to create metrics and navigate the data in an ad-hoc setting. This type of user requires tools for analytics, statistics, predictive modeling, and advanced visualization.
- Managers – Managers at all levels need BI to assist them in making informed business decisions. This type of business user requires a friendly query environment that also supports the ability to generate ad hoc reports and delivery mechanisms that enable managers to disseminate information up and down the chain of command.
- Operations workers – Operations workers use BI as part of solving a larger issue. For example, as part of servicing a customer, a retail clerk might recommend other related products to a customer. This type of worker requires BI that is embedded in a production application, rather than consuming BI as part of a BI application.

Business users of all types want to reduce their dependence on IT, but still have confidence in the numbers, have advanced analytics, superior query performance, and access to timely information in the format and delivery mechanism of their choice, whether through a portal, a spreadsheet, or email. Satisfaction of these business user requirements enables BI to truly become mission

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critical, fulfilling the promise of BI, and providing businesses with competitive advantage in the global marketplace.

Requirements of Application Developers

Application developers must be able to develop the variety of BI application types required by business users that are essential to enable enterprises to obtain competitive advantage in the global marketplace. The range of capabilities that a BI offering needs to support is as varied as the BI applications required by enterprise business users. BI applications such as sales analysis need to be able to handle large data sets (terabyte) with very long lists of dimension members (in the millions). Other BI applications must support complex calculations for the derivation of key performance indicators or financial reporting modeling. Other BI applications merge BI analytics with data collection for budgeting, planning, and forecasting. Still other BI applications require very low data latencies for use in business activity monitoring applications to create real time BI. The BI applications developer requires a BI offering that is capable of supporting this entire range of BI applications.

In an enterprise today, BI is frequently embedded in business processes that support operations workers and needs to be seamlessly integrated into existing applications, and then easily extended as new BI needs are discovered. Application developers must be able to use existing skill sets, reuse code and components, and leverage existing applications and infrastructure to be able to meet the increasing need for BI that can be easily maintained and extended without requiring new skill sets. A crucial factor for the productivity of application developers is having a single development environment that allows them to work on all aspects of BI, from the data to the analytics to the user interface using a single development language, and that supports team development.

Further, application developers must be able to easily extend BI applications using third party tools and technologies where necessary. These third party products must integrate existing BI applications, rather than operate parallel to the platform. This requirement is an acceptance of the fact that there is no perfect product in the market. A BI offering might fulfill most of an enterprise's needs, but there are always a few cases where requirements cannot be met with the existing offering. Extensibility offers a safety valve in such cases.

Requirements of IT Professionals

IT professionals require a BI offering that enables them to deliver mission critical BI; namely a BI solution that is highly available, reliable, and secure. IT professionals require a back-end solution that is fault-tolerant and scalable; that supports change control and scriptable deployment; and that enables them to leverage their existing resources and skill sets while building on the current IT platform and infrastructure. Furthermore, IT professionals must be able to deliver real time or near real time data to business users with minimal degradation in query performance.

Summary of Key Considerations

The scope of BI uses is large enough that trying to meet all of the needs discussed above with a portfolio of stand-alone tools is inefficient, costly, and ultimately ineffective. Yet in order to provide leverage, the BI offering must have a consistent manner of accomplishing tasks while integrating with the existing infrastructure. This consistency will result in reduced training cost for business users, application developers, and IT professionals; shorten development time for new applications and enhancements; and result in greater acceptance by business users.

In summary a BI offering must:

- ⇒ Support the end-to-end building of a BI application, from data source to the presentation of information



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- ⇒ Encompass the diverse business user needs of analysts, managers and operations workers
- ⇒ Provide a solution for the varied application areas such as finance, sales, and production.
- ⇒ Address the needs of various BI stakeholders in the enterprise: business users, application developers, and IT professionals.

Comparing the BI Strategies of Oracle and Microsoft

Oracle entered the BI marketplace through the purchase of Express in 1995. Since then they have struggled to integrate this technology into their RDBMS and have shown little BI vision. They have, however, established themselves as a leading RDBMS for data warehousing while partners and other vendors provided the BI front end functionality. With the release of 10g, Oracle has attempted to reinvigorate their BI presence. New products, better integration and off the shelf BI applications are all evidence of this effort. Oracle's strategy is to be the single vendor for BI, particularly for those clients with an existing commitment to Oracle.

Microsoft entered the BI market in 1997 with a high-performance BI server offering and pursued a strategy of moving forward based on an open architecture that supports both Microsoft and third-party developer and end user tools compatible with the BI server offering. Not only has the Microsoft BI server proved to be a solid base upon which to integrate other BI product offerings, but Microsoft's technology base reflects a more modern architecture than the decades old Express product. The Microsoft architecture reflects Microsoft's strategic focus on a wide audience of IT professionals, developers, and end users.

A more in-depth look at each vendor's strategy follows in the two sections below.

A Historical Overview of the BI Offerings of Oracle

Oracle significantly entered the BI marketplace in 1995 with the purchase of IRI's Express product. Express was the oldest of all the BI products and was originally developed in the early 1970's by a group of market research professors from MIT. Express was the market leader for many years and was a very successful tool used to build custom market research, sales analysis and financial analysis and reporting systems. During the late 80s and early 90s IRI started developing BI Applications. Two of these BI applications, Sales Analyzer and Financial Analyzer accounted for much of the sales of the Express product through the early to mid 90's.

Oracle's stated goal in buying Express was to integrate the Express features/concepts into the relational database. Since the purchase, Oracle has struggled to achieve this goal.

In 2002 Oracle announced Oracle OLAP 9i. In this release Oracle renamed Express and it became known as OLAP Server. Express was enhanced and partially integrated into the relational environment. However, virtually no front-end tools could access OLAP Server. The BI applications, Sales Analyzer and Financial Analyzer, were not updated to work with this new release, essentially ending the lifecycle of these products.

While Oracle's BI offerings have been losing market share for many years, Oracle's relational database has seen strong growth during this same time. Oracle has a large installed base of customers using Oracle's relational database to support their BI applications. These applications use non-Oracle BI tools such as Cognos, Business Objects, and MicroStrategy for the front-end while the data is stored in an Oracle database.

In late 2004, Oracle recommitted itself to the BI marketplace with its newest release called Oracle 10g. From a BI perspective, the most striking aspect of Oracle 10g is its integration of the OLAP engine. OLAP Server no longer exists as a separate entity and Oracle's OLAP functionality is



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now referred to in the documentation as Oracle OLAP, an option to Oracle 10g. Oracle 10g has better integration between the relational database and Oracle OLAP. There is better metadata sharing between components resulting in more seamless operation. Significant product enhancements for Oracle OLAP, Warehouse Builder and Discoverer are included in 10g. New products such as the Spreadsheet Add-in have also been introduced with 10g.

To further their positioning Oracle has packaged several products together into a product called Oracle Business Intelligence 10g. Oracle Business Intelligence 10g includes:

- Discoverer – relational and OLAP data access/query tool
- Spreadsheet Add-in – OLAP data access from within Excel
- Warehouse Builder – ETL tool to design and deploy BI applications
- Beans – Java components to help build custom BI applications
- Reports Services – enterprise reporting

This packaging better showcases and removes some of the confusion as to which Oracle tools are required to build and support a BI application.

Oracle has additionally focused on BI Applications. These applications leverage their BI tools to provide out-of-the-box functionality. The most significant of these applications are:

- EPB – Enterprise Planning and Budgeting
- DBI Daily Business Intelligence – reporting and analysis applications directly tied to the Oracle Financials modules
- Balanced Scorecard – Key performance indicators

Starting with their strengths in the relational database, improving their ETL processing, integrating the OLAP features, adding new analytical tools and offering BI applications, Oracle is positioning itself to be a customer's single vendor for BI especially for customers with an existing commitment to the Oracle relational database.

A Historical Overview of the BI Offerings of Microsoft

Microsoft entered the BI marketplace in 1997 with the release of SQL Server 7. There were two aspects to Microsoft's initial foray into BI. The first aspect was OLAP Services, which was based on technology that Microsoft acquired from Panorama Software. The second aspect was Data Transformation Services (DTS), a data integration tool. OLAP Services was well-received because it lowered the cost of entry for analytics and raised the bar for performance and scalability in a multidimensional database. Microsoft's decision to enter the BI market with a database rather than an end-user BI tool has provided a strong base from which to integrate end-user products while offering performance capabilities unattainable in competing end-user BI tools that relied on third-party, back-end server technology for performance.

In conjunction with its release of OLAP Services, Microsoft released the OLEDB for OLAP specification that became a de facto multidimensional database access standard even before the SQL Server 7 shipped. This standard evolved into the XML for Analysis (XML/A) standard, which has been adopted by a wide variety of server and client tool vendors. There are now many client and server products in the market that have adopted XML/A, which provides a robust platform with a variety of choices for developers and end-users alike.

In 2000, Microsoft released SQL Server 2000. In this release, OLAP Services was renamed Analysis Services. Its feature set was broadened, scalability was increased and data mining capabilities were added to make Analysis Services ready for enterprise deployment.

In 2002, Microsoft released SQL Server Accelerator for BI (SSABI), a rapid application development tool for the Microsoft technology stack. Unlike other rapid application development products on the market at the time, SSABI generated the relational and multidimensional

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schemas based on a metadata description rather than relying on a fixed schema tailored to an application.

In early 2004, Microsoft released Reporting Services, a managed reporting solution. Reporting Services is a component of SQL Server 2000 and completed Microsoft's BI server offerings. With Reporting Services, Microsoft introduced Report Definition Language (RDL), an XML grammar to describe the layout and query information of a report. Reporting Services broke with the tradition of monolithic reporting servers by separating report definition from report rendering. This architecture opened Reporting Services to third party enhancements and application development customization. Furthermore, Reporting Services reports can be automatically generated from business processes and report output can be integrated seamlessly into custom applications with a unique look and feel.

In 2005, Microsoft released SQL Server 2005, substantially re-architecting major components of its BI offering.

- Integration Services, which replaced DTS, provides a better paradigm for managing ETL and brings greater scalability.
- Analysis Services has a new data model (the Unified Data Model or "UDM") that allows for a more realistic business view of data with an improved approach to creating calculations and managing key performance indicators ("KPIs"). Analysis Services also adds support for real time or near real time querying without a dramatic degradation in query performance.
- Reporting Services adds Report Builder, an ad-hoc report creation and modification tool, and a graphical MDX query builder. These features give developers and power users the capability to generate reports without knowing SQL or MDX.

In SQL Server 2005, the development and management tools are based on Visual Studio 2005, which gives the product line a greater integration with .NET, provides support for team development, enhances debugging capabilities, and improves productivity by leveraging existing skill sets among application developers and IT professionals. Further evidence of the integration with Visual Studio 2005 is the introduction of reporting controls that can be embedded within applications to easily embed SQL Server Reporting Services into applications.

Microsoft's BI strategy of starting with the back-end analytical engine and moving forward to support end-users has resulted in a broad BI offering that is architected to support a myriad of both Microsoft and third-party developer and end-user tools.

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Evaluation

On the surface both Microsoft and Oracle seem to have similar product offerings in their BI product suites. Both suites have breadth. Both support the different functional requirements of a varied audience. Management can see their KPIs, analysts can perform ad-hoc queries, and statisticians can perform data mining. Both suites have depth. Both have products that take the raw data and transform it into relevant and useful information. These products include the database platform, ETL processing and control, BI server, business rules and report generation.

The following table shows the depth of each product suite in a side by side comparison.

Component	Oracle 10G	SQL Server 2005
Extract, transformation, and load	Oracle Warehouse Builder (OWB)	Integration Services
Relational data warehouse	Oracle 10G relational database	SQL Server 2005 relational database
Multidimensional database	Oracle 10G Enterprise with OLAP option	SQL Server 2005 Analysis Services
Data mining	Oracle 10g Enterprise with Oracle Data Mining option (ODM)	SQL Server 2005 Analysis Services
Managed reporting	Oracle reports does not work with OLAP	SQL Server 2005 Reporting Services
Ad hoc query and analysis	Oracle BI Discoverer Plus, Discoverer Portlet Provider, Discoverer Viewer	Microsoft Office products (Excel, Office Web Components, Data Analyzer, SharePoint Portal)
Database development tools	Oracle Warehouse Builder (OWB), Analytic Workspace Manager, Discoverer Administrator, Oracle Workflow	SQL Server 2005 Business Intelligence Development Studio
Database management tools	Enterprise Manager, Analytic Workspace Manager, Oracle Workflow	SQL Server 2005 SQL Server Management Studio

Figure 1 - Side by Side Comparison

The integration of these products within the BI suites differs dramatically, however. Each product in Oracle has its own front-end with a different look and feel. Each product has its own set of supporting metadata. Each product is a separate installation. Until recently each product was purchased separately as well. While the Oracle products perform all the necessary functions, they do not work together seamlessly.

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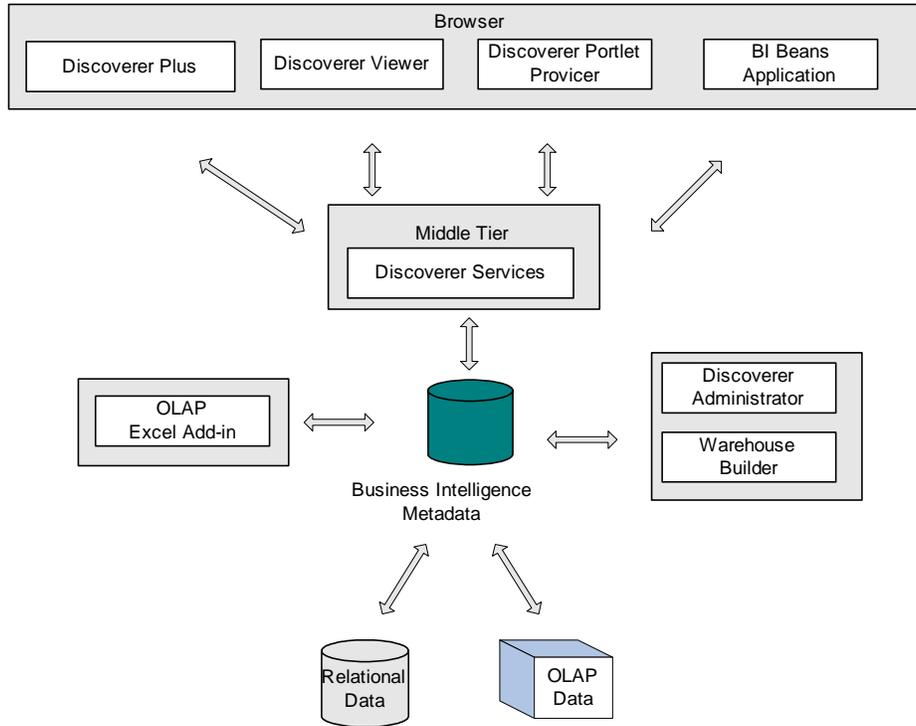


Figure 2 - Oracle BI Architecture

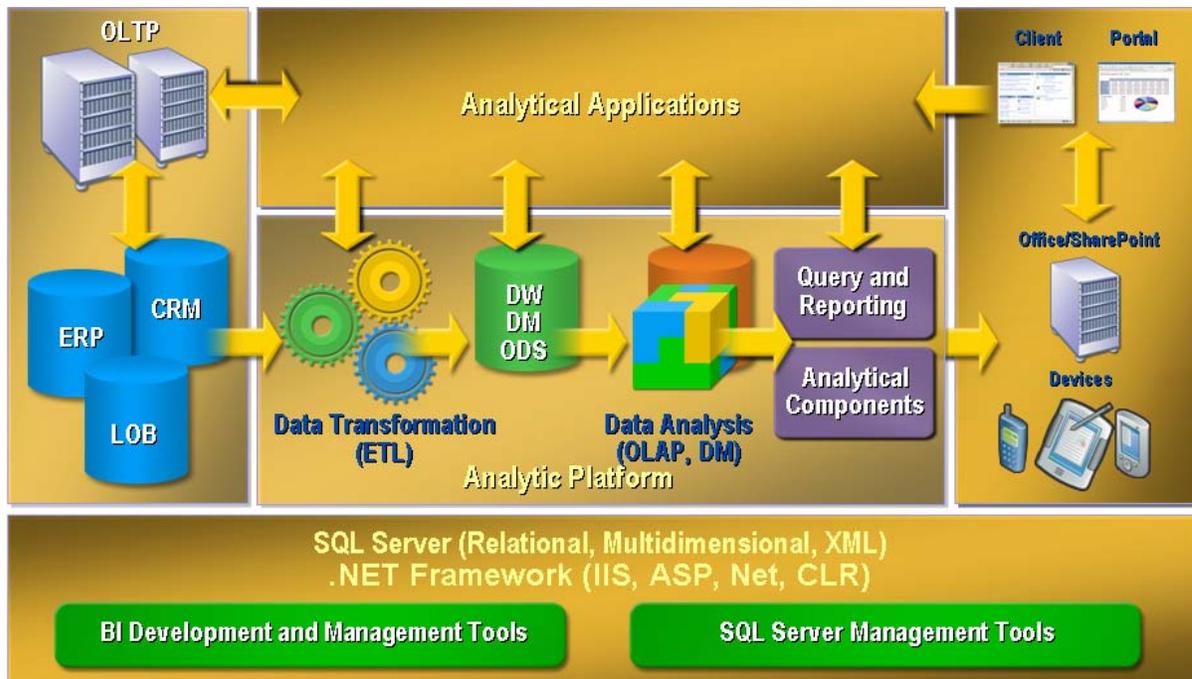


Figure 3 - Microsoft BI Architecture

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With the release of SQL Server 2005, Microsoft has created a backbone of integrated BI server components. Integration Services manages the flow of data in or out of a BI system and across components of the BI system. Data is easily mapped between the relational environment and Analysis Services. Reporting Services can access relational data as easily as data in Analysis Services. The strong integration of SQL Server with Visual Studio gives the application developer a unified environment for creating and maintaining BI applications across the entire suite. In addition with pivot tables and Excel Add-In for Analysis Services, Excel becomes an integral part of a BI application.

ETL

Oracle's ETL offering is Oracle Warehouse Builder (OWB). Oracle Warehouse Builder is positioned as a graphical tool to design, build and load an Oracle data warehouse. In its design environment, OWB works with metadata about data warehouse objects rather than operating on the physical objects themselves. The runtime environment creates the physical objects from the metadata catalogs. OWB has a full set of ETL transformations and mappings including third party hooks for specialized ETL processing.

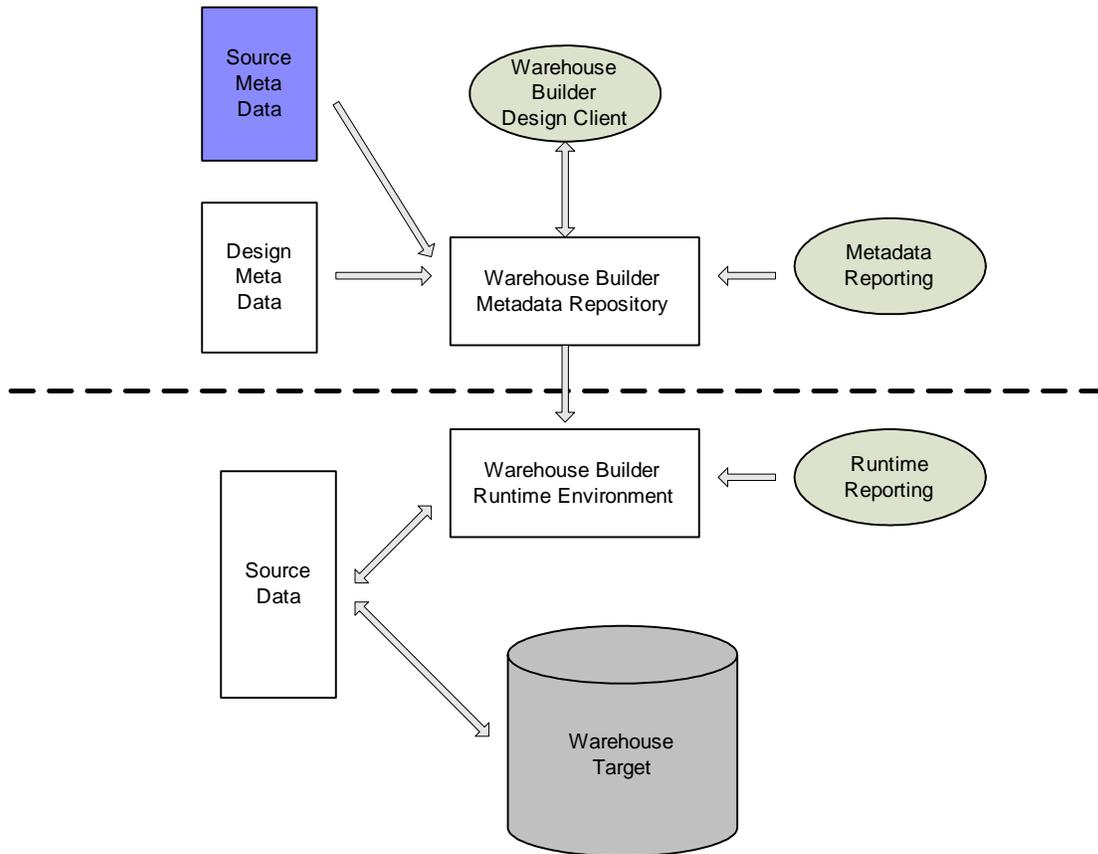


Figure 4 - ETL: Oracle Warehouse Builder

This OWB approach brings several life cycle benefits such as change management, version comparisons, and scheduled rollouts of changes. These benefits come with several significant issues. The first issue is that there is often a lag of several releases before new features (like materialized views) in the underlying relational database are supported in OWB. The second issue is that a full commitment is required to receive the benefits of OWB. All changes to the data

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warehouse should be made in OWB. Changes made outside of OWB become very challenging to OWB since they are not reflected in the metadata repository. This makes further use of OWB much more difficult. Another issue is that the ETL processing features can only be programmed against tables for which OWB has metadata information. This limits OWB's use as a more general ETL tool for both existing applications and those not created with OWB.

Microsoft's SQL Server Integration Services takes a different approach. SSIS is a fully functional, enterprise ETL platform. SSIS can be used against both data warehouse applications as well as other types of database applications. SSIS supports data movement and transformations both to and from heterogeneous data sources, including sources such as RSS feeds and destinations such as SQL Server Reporting Services. SSIS has a full set of ETL transformations and mappings including third party hooks for specialized ETL processing plus its own set of pre-built functions such as fuzzy matching.

Compared to Oracle OWB, Microsoft's SSIS has a slightly narrower focus, not concerned with the warehouse design step, but has a much broader application within an organization and a much deeper set of functionality to meet those application requirements.

OLAP

A legacy of Oracle's Express purchase is that there are BI features in both the relational database, and in Oracle OLAP. The relational database contains commands like dimension, rollup, cube and model. Oracle OLAP supports these same features. The relational database supports aggregate management through the use of materialized views. Oracle OLAP supports aggregate management through the use of aggregation maps. The relational database has many new BI functions such as lead, lag, rank and ratio. Oracle OLAP has its own set of mathematical, statistical and financial functions. This duplication of functionality has caused quite a lot of confusion about which features to use when building a BI application using Oracle. Consequently there is also much confusion over Oracle's long term BI strategy. Will additional SQL features be added into the relational database at the expense of Oracle OLAP? Will Oracle OLAP exist several years from now?

With Microsoft there is no confusion over the BI server strategy. Analysis Services has been and continues to be the core BI analytic platform. Strong new features such as the Unified Dimensional Model calculation scripts have further enhanced the capabilities and flexibility of Analysis Services. Other features such as Data Source Views and Intellicube have made the product even easier to configure and implement. Integrated analysis tools such as Data Mining and Key Performance Indicator Support extend the analytic capabilities.

Metadata

Metadata is a key component of any BI platform. Without the metadata, a database is just a collection of tables and columns without any business context. In Oracle each product has its own set of metadata that is stored in SQL tables. These catalogs are not automatically maintained when changes to structures are made but instead Oracle's front-end applications maintain the structures and metadata through PLSQL calls to metadata catalog functions. It is possible to make structure changes to objects that are not reflected in these catalogs. If this situation occurs then the front-end tools cease to function correctly.

Microsoft, on the other hand, has a unified and integrated view of metadata. Data Source Views describe the schema of the source data. Report Builder puts the schema in context and allows navigation through the information. The Unified Dimensional Model adds the business perspective and supports metrics and key performance indicators. Any tool or application can take advantage of the metadata to provide the relevant view of the information to appropriate users.

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Reporting

Oracle's Enterprise Reporting solution is named Oracle Reports. Oracle Reports provides access to multiple data sources such as SQL tables, OLAP, XML files and text files. It supports delivery in many formats including text files, PDF files, XML and HTML. There are many delivery options including bursting, e-mailing reports and integration with OracleAS Portal. Oracle Reports can create many different types of reports including tabular, matrix, mailing labels, etc.

There are currently several issues with Oracle Reports. The first issue is that the 10g version of Oracle Reports has not yet been released. Current use requires version 9i. Secondly, the use of Oracle Reports requires the licensing of both Oracle Developer Suite and Oracle Application Server. In addition, Oracle Workflow is also probably required in most sites in order to schedule report runs. Oracle Reports is by no means a standalone application product.

Microsoft's Enterprise Reporting solution is named Reporting Services. Reporting Services provides access to multiple data sources such as SQL tables, Analysis Services cubes, XML files and text files. It supports delivery in many formats including text files, PDF files, Excel, XML and HTML. There are many delivery options including bursting, e-mailing reports, and integration with SharePoint. Reporting Services can create many different types of reports including tabular, matrix, mailing labels, etc.

Reporting Services uses Visual Studio as its development environment. The use and support of the XML-based Report Definition Language (RDL) has enabled many Microsoft partners (ProClarity, Panorama) to publish their reports through Reporting Services. Reporting Services, rather than requiring many platforms in order to work, provides the platform for enterprise reporting for an organization.

Query

Oracle's primary query tool is called Discoverer Plus. Discoverer can report independently against both OLAP data and relational data sources. Discoverer provides basic query style reports with drill down, rotation and good dimension selection capabilities.

When working against relational data, an End User Layer (EUL) must have been created by a Discoverer Administrator. The EUL is a metadata layer which describes the data available in the relational tables. When reporting against OLAP data then the metadata catalog in the OLAP analytic workspace is used instead. The product architecture is shown in the following diagram.

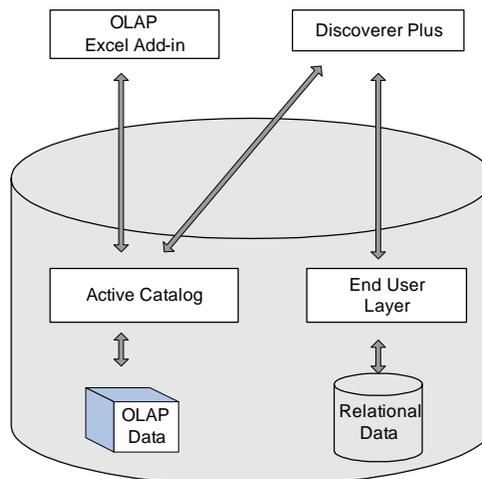


Figure 5 - Oracle Query Architecture

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Oracle provides no standard query language to the OLAP data and catalog and there is no published guide to the EUL. This limits the accessibility of the data to just the Oracle tools.

Microsoft's strategy for query has been one of open standards and many tools. At the foundation is the use of the industry standard XML/A for querying OLAP data. Combined with MDX, a structured query language, accessing data in Microsoft is very straightforward.

Microsoft provides many front-end tools which access their data. These include pivot table services, an Excel add-in and Office Web Components for integration into Microsoft Office and SharePoint. In addition, Microsoft partners have developed front-end tools that provide many alternatives for the Microsoft customer.

Real-Time Analytics

There are features within the Microsoft platform that provide support for moving BI into new uses. Proactive Caching gives system support for real time BI. By building support for this right into the engine, Microsoft allows real time BI applications to be built more easily and with greater reliability.

The Oracle relational database has several features that support real time data warehousing such as change data capture and fast refresh materialized views. Oracle OLAP however requires a batch driven load/refresh process. Therefore supporting real time BI with Oracle would require significant custom development and the solution would not have the same capabilities as with Microsoft's built in support for real time BI.

Partners

An important measure of the strength of a platform is the number of partners that have decided to use that platform to build commercial products. Oracle has many partners for its relational database platform. Many of these partners are BI vendors such as Business Objects and Cognos. Interestingly, these partners rely solely on the relational database and do not integrate with Oracle OLAP. In fact, short of a few small consulting companies, no vendor has built products based on Oracle OLAP except for Oracle. What this means is if Oracle customers wish to integrate Oracle OLAP functionality with their BI tool of choice, they cannot. Simply stated, the choice is either the BI partner tool or the Oracle OLAP features.

There is a large array of partners that have aligned with Microsoft BI. Compare this to Oracle which has no partners aligned with Oracle OLAP. This clearly reveals the strength of the Microsoft platform. These Microsoft partners run the gamut from analytical tools (such as ProClarity and Panorama) to query tools (such as Business Objects and Cognos) to Excel add-ins (such as IntelligentApps and XLCubed) to analytical applications (such as OutlookSoft and GEAC) to programming components (such as eBlocks and ChartFX). The use of open standards such as OLEDB, XML/A, and RDL gives the partner community a rich set of capabilities that allow them to extend the platform easily.

About Symmetry Corporation

Symmetry Corporation is a recognized expert in the design, development and implementation of advanced business intelligence solutions for Fortune 1000 companies and software vendors. BI is our sole focus and has been for nearly 20 years. A Microsoft Certified Gold Partner for BI, Symmetry is a longstanding member of the Microsoft BI Partner Advisory Council and a key contributor to the SQL Server Accelerator for BI (SSABI). Symmetry also created ADAPT, the first database design methodology developed specifically for multidimensional database applications, based on sound OLAP design principles. For more information, visit Symmetry's web site at <http://www.symcorp.com> or call (415) 453-7966.

