MIGRATING FROM BUSINESS OBJECTS TO OBIEE

KPI Partners is a world-class consulting firm focused 100% on Oracle's Business Intelligence technologies. The firm's core business involves the successful implementation of Oracle Business Intelligence and Hyperion EPM technologies.

KPI Partners' consultants have experience in migrating many customers from Business Objects to Oracle Business Intelligence. They follow a proven migration methodology and best practices tailored to the BI technologies and the customer environment.

Why Migrate from Business Objects to Oracle Business Intelligence Enterprise Edition (OBIEE)?

This is a question that many organizations ask themselves when budgets are tight and competition for resources is intense. After all, if it doesn't appear broken, don't fix it.

Based on our experience and feedback with customers across multiple industries, the most common reasons are:

1. Cost savings
2. Enhanced business value through new capabilities
3. Move towards a BI Center of Excellence

Cost Savings

In working with numerous customers, cost savings in moving from Business Objects to OBIEE are often achieved through:

Software Maintenance Costs
- What are the costs of the annual software maintenance contract?
- Are these costs projected to increase, particularly for older versions of software?

Software License Migration Costs
- Is the vendor charging license migration costs to move to their next generation product?

Upgrade Project Costs
- What is the cost of upgrading legacy BI products to newer versions?
- What is the cost of upgrading infrastructure (i.e. servers, databases) to support legacy BI software

Training Costs
- How much are we paying to train new end users?
- How much is being paid in IT training costs?

Why Migrate from Business Objects to Oracle BI?

Cost savings, enhanced business value through new capabilities and moving to a BI Center or Excellence are the three most common reasons.

Help Desk Costs
- How much can we save in help desk costs by having one BI tool?

Consulting Costs
- What would be the savings in consulting costs by not paying to maintain older BI tools and by using in-house IT staff
- What is the benefit of optimizing consulting costs by dealing with fewer vendors?

Software Support Costs
- What is the savings in support costs by migrating from a client/server tool to a web-based tool (no desktop installs required)?

Reduced Hardware Costs
- How much can we save by consolidating BI applications on common server infrastructure and by eliminating redundant servers

Enhanced Business Value Through New Capabilities

In addition to cost savings, moving from Business Objects to OBIEE can enhance business value through new capabilities that were either unavailable or difficult to implement in Business Objects. These include the following:

Guided Analytics
- Users have a configurable guided path to discovery of underlying issues. Legacy methods of drill down and drill across are antiquated

User Self Service
- Business Users do not have to wait on Business IT or Central IT for report creation
- IT can create complex reports faster and with less training

Alerts
- A key capability to push time sensitive information to users quickly (email, Blackberry, PDA, etc.) to facilitate better and more proactive decisions

Provide one Version of the Truth
- Unified metadata repository eliminates disparate metadata (i.e. separate universes per subject area) that results in multiple definitions of metrics and dimensional columns

Support for Cross Subject Area reporting
- It is much easier to do cross-subject area reporting in OBIEE as compared to Business Objects. True Analytics covers business processes (i.e. order-to-cash) that span subject areas.

Move Towards a BI Center of Excellence

Moving from Business Objects to OBIEE is often part of a larger strategic initiative to move to a BI Center of Excellence. The subject of BI Centers of Excellence is covered in detail in KPI Partners' whitepaper on ***BI Centers of Excellence***. OBIEE supports a BI Center of Excellence strategy since it was architected for the enterprise and has been adopted as the enterprise standard by companies such as Cisco, Union Pacific and many others. The remainder of the whitepaper will cover the process of moving from Business Objects to OBIEE and the technical best practices to minimize migration costs and maximize benefits.

Migration Process

The migration process from Business Objects to Oracle Business Intelligence Enterprise Edition (OBIEE) has 3 distinct phases:

1. the Environmental Audit Phase,
2. the Evaluation and Consolidation Phase
3. The Implementation Phase.

Environmental Audit Phase

The environmental audit phase is one of the most important in any product conversion in that it determines the initial scope of the project. During the audit phase, the following tasks should be completed:

1. Prepare a list of all reports that are currently housed on your production, development and QA systems.

2. Survey end users to determine what reports they are actually using. This should include reports that are both stored on the servers as above, as well as reports that are run from local environments. Business Objects' Auditor tool may be used for this assessment in the short term.

3. Set up an audit mechanism to determine the actual usage of each report in production. An audit table should be maintained to log usage information in a document repository**.**

4. Review the audit log and the list of reports with business users to determine which reports should be:
    a. Migrated to OBIEE
    b. Deleted due to lack of use and obsolescence
    c. Kept in Business Objects in the short because they are too problematic to move

Evaluation/Consolidation/Enhancement Phase

After the list of reports to be migrated is prepared, an OBIEE expert should work with business users to determine which reports can be evaluated, consolidated and enhanced. This phase can take place for a number of reasons and has a number of benefits:

- Features such as prompts, parameters and flexible formatting can allow multiple similar reports to be consolidated into fewer, more robust reports. For example, consider two separate reports - Expenses by Region and Expenses by Cost Center. These two reports can be consolidated into a single Expense Report with prompts for Region and Cost Center – or any other subdivision in your hierarchy. This capability is possible with Business Objects, but most likely not done because legacy reports are typically created by different teams at different times.

- Consolidation can also provide similar reports to different user communities with different access privileges. These reports can be designed as a single report with data access rules that are defined in the OBIEE metadata layer so that each user or user group can only access their own data.
- The migration process is an ideal time to lower the cost of ownership of Business Intelligence Applications. Consolidation of reports creates fewer reports to maintain, greater ease of maintenance and flexibility, and the ability to more closely control how information is delivered. .
- This phase is an excellent time to deliver new capabilities to users to enhance business value and user experience. For example, the Business Objects portal has limited dashboard capabilities that lead to limited information for end users, and reports are often "lost". The OBIEE dashboard is extremely easy to create and change, can house many types and views of reports, can provide in-place drill down and guided analytics to greatly enhance user visibility very quickly on a non-scheduled basis.
- OBIEE reports can be "pushed" to end users using Oracle Delivers to provide relevant information to users via the web, email, Blackberry, iPhone, PDAs, pagers, etc. on an as-needed basis using predefined business rules. This alleviates users spending time going through reports that contain no timely and actionable information.
- OBIEE also provides for metadata consolidation. Whereas Business Objects applications typically have one universe per star schema, OBIEE allows for a single metadata repository that contains all star schema information. This allows for all conformed dimensions to have a single consistent definition. In addition, a single metadata repository enables cross-star schema reporting without any manipulations – such as linking universes. This allows visibility into the entire business across all business areas.
- The majority of end users typically consume information in the same way each time. However, OBIEE users are free to easily create new, or modify existing reports. The OBIEE Answers product is an easy, flexible tool that allows users to select subject areas, time frames and data relevant to their jobs and quickly create Ad Hoc reports for their individual consumption.

KPI Partners' Conversion Methodology contains best practices templates for each phase of the conversion process in order to minimize costs and maximize business value.

Before discussing implementation best practices, it is important to understand the technical differences between Business Objects and OBIEE, and best practices on how to address these differences.

Technical Migration Best Practices

There are 4 areas that need to be considered when migrating from Business Objects to OBIEE:

1. Reports and Dashboards
2. Metadata Layer
3. Data Model and Performance
4. Architecture

Reports and Dashboards

There are a number of differences between the reporting and dashboard capabilities of Business Objects and OBIEE which need to be taken into consideration when migrating environments from Business Objects to OBIEE (See **Table 1** on the following pages).

Table 1: Reporting Differences between Business Objects and OBIEE, and Migration Best Practices

	Business Object 5.x/6.x Capability	OBIEE Capabilities
1	BO reports contain actual data set and the report results. This means that a single query can be run and multiple reports can be built off that query.	OBIEE reports contain only the result set and not the data set. Multiple reports can be built from the same query using View Selectors, prompts and other techniques because the result set *is* cached. However, this needs to be thought through at report design time and is not a workaround for a bad data model or a poorly designed database.
2	BO supports complex calculations in the reporting layer.	In OBIEE, it is recommended to push as many calculation logic to the metadata layer in order to have a single version of the truth. Very complex calculations are available. However, expectations of BO end users who are accustomed to creating complex calculations in individual BO reports need to be managed.

3	Good ability to control look and feel of reports and dashboards	OBIEE has many capabilities in this area through the use of style sheets. These capabilities are not always well documented. Please consult KPI Partners for best practices documentation. JavaScript can be added to reports and dashboards in Answers. As of OBIEE 10.1.3.3, BI Publisher also supports the use of Flash templates for a Web 2.0 feel.
4	BO dashboards are less sophisticated and more difficult to set up	OBIEE has more functional dashboards they are significantly easier to create.
5	Reports are filtered by defining User filters or by modifying Column filters	Global prompts can filter all the reports on the dashboards. Several other types and levels of prompts deliver more functionality in this area with OBIEE.
6	BO supports multiple data providers in a single report	OBIEE supports a single criterion in a report, but multiple SQL statements can be generated by the OBIEE server based on the metadata design – which can access many concurrent data sources. This approach is much easier for the end user.
7	Contexts are supported in BO. This makes it easy for the end user to know which tables/columns go with which other table/columns.	Similar functionality is achieved in OBIEE by having separate presentation subject areas. A report can only reference a single subject area, but this is not an issue if the OBIEE presentation catalog is carefully designed to group like table and columns that are applicable to a particular report or area.
8	Need to create separate reports for columns having mixed granularity with overlapping dimension columns	Level based measures needs to be defined for report with columns at different level of granularity e.g. YTD, QTD, MTD. More functionality in OBIEE.
9	BO has the ability to create pixel perfect reports with fine control of placement of objects	Oracle Answers provides control over placement but if you need very precise, pixel-perfect control, BI Publisher provides this capability. It also leverages OBIEE's common metadata layer which keeps all reporting consistent and organized.

10	BO can utilize spreadsheet style, report level calculations	With OBIEE, we recommend pushing as many calculations as possible away from the reporting level. This serves multiple purposes: • Define as many calculations as possible in the metadata layer as this gets to one version of the truth and simplifies report creation for everyone • Pre-calculating via ETL is faster and more consistent • Leveraging Oracle's database analytic functions in OBIEE 10.1.3.3 (if using Oracle database) is inherently fast • BI Publisher and Oracle's BI Office leverage Excel and use the common metadata model for consistency
11	BO provides additional charting options?	• Determine the business purpose of the BO chart and find an equivalent OBIEE chart – there are many to choose from • Consider breaking a single chart into two as this tends to make information easier to understand • Utilize BI Publisher or Oracle BI Office and leverage Excel • For all other requirement, additional charts can be exposed through a charting engine API

Metadata Layer

Business Objects' metadata layer is called a Universe. In OBIEE, it is called the Metadata Repository. Both technologies store their metadata in a file format. The richness of OBIEE's Metadata Repository is often a surprise to Business Objects' developers who are accustomed to putting their business logic in each report in the reporting layer - and not in optimal development of the Business Objects universes.

Table 2 below gives a detailed review of the differences between OBIEE's Metadata Repository and Business Objects' Universes, and provides recommended best practice to address these differences.

Table 2: Metadata Differences between Business Objects and OBIEE, and Migration Best Practices

	Business Objects	OBIEE
1	The security model in 5.x /6.x requires synchronizing users between external systems and BO repository. Separate BO Supervisor tool required.	Leverage OBIEE's security architecture to easily connect to security providers (i.e. LDAP, OID, ADS, etc.) without having to synchronize users. OBIEE has an excellent row/column level security model. Security is administered within the common Administration Tool.

2	BO requires many universes, with each universe having fewer tables, makes individual subject areas more user friendly	Many universes with fewer tables may seem simpler, but management, upkeep and updating can become unmanageable. With OBIEE, Presentation Areas (subject areas) are individual representations of tables and columns within the Metadata Repository. You can have unlimited Presentation Areas in the OBIEE environment - have multiple, single-subject areas for less savvy users, or larger and more complex areas for power users. There is no one-size-fits-all design of the presentation area.
3	BO server supports multiple Universe files. This makes parallel development easier but also results in inconsistency between shared objects like dimensions	OBIEE supports a single metadata repository (.rpd) with multiple presentation areas which share common dimensions. This makes parallel development more challenging but results in consistency in the use of shared objects such as conformed dimensions.
4	BO has inner or outer joins defined in physical layer	OBIEE can *only* do inner joins in physical layer. Outer joins must be defined in the business model layer. OBIEE can provide cross database, and other, joins in the physical layer. Much more functionality in OBIEE.
5	BO has no limits on level of nesting of folders in universe	OBIEE is limited to one level of nesting in Presentation Area. BO has more functionality with this concept, but a well designed presentation layer design can mitigate this issue.
6	BO hierarchies can be customized by the user	With OBIEE, drill-down hierarchies are predefined. However, many separate navigation paths can be easily predefined in the Metadata Repository based on user requirements. This simplifies report creation and ensures that users drill to meaningful information.
7	No business model metadata layer in BO. Business logic is merged into physical and presentation layers.	In OBIEE, most business logic is defined in the Metadata Repository which results in much easier change management.
8	BO supports native database functions directly	OBIEE supports native database functionality as well but through the use of EVALUATE function. Additionally, through the use of the BI Server and Metadata Repository, queries generated by OBIEE will use native database commands and controls specific to the database being used and its release level.
9	BO supports shortcut joins	OBIEE supports shortcut joins through the use of alias tables.

10	BO Universe cannot access multiple databases	OBIEE Metadata Repository can access many different databases and data sources and allow these sources to be integrated into a common repository from which the Presentation Areas are defined for reporting.
11	BO can support transactional schemas	OBIEE can support transactional schemas, but this requires a greater modeling effort and presents more complexity. – as it does with any reporting tool including BO. With OBIEE, it is recommended to utilize ETL or database technologies (i.e. materialized views) to create star schema-like structures at the data level. This typically makes end user reporting easier and results in much improved performance.
12	BO has the ability to join two Universes at the report level	The Universe is an antiquated approach to data warehousing. OBIEE does not require the development of individual Universe structures to report against. OBIEE utilizes its Metadata Repository which can produce many Presentation Areas that use multiple star schemas with conformed dimensions. It is much easier for end users, and greatly reduces metadata maintenance since all changes need only be made in one place, one time.
14	BO support for aggregate tables is cumbersome and unpredictable	Many of BO customer's data models lack aggregate tables as a result of the difficulty level of manually creating and maintaining them. However, they are necessary to achieve expected performance levels. OBIEE's architecture allows for easy creation, population and maintenance of aggregate table structure.
15	Shared filters can be created in metadata layer	Shared filters can easily be created in OBIEE's Answers. These filters are stored for all users in common tables.

Data Model and Performance

Migrating from Business Objects to OBIEE may require some changes to the data layer. This is due to the fact that OBIEE was designed to leverage the increasing power of databases to a greater degree than legacy products like Business Objects. This can mean changes to the data model itself. OBIEE was designed to report from best-practice star schema structures as they are more conducive to achieving performance ideals. Business Objects can report from transactional structures more easily, but the downside of this is slower query performance as well as a limitation on the richness of the reporting and analysis that can be performed.

These differences are described in **Table 3** on the next page.

Table 3: Metadata Differences between Business Objects and OBIEE, and Migration Best Practices

	Business Objects	OBIEE
1	BO has little to no reliance on the capabilities of the database	OBIEE relies on leveraging the inherent BI capabilities of the database(s). Therefore, database performance is an important aspect of OBIEE's overall Business Intelligence approach. The benefit to this is better availability of real time information and greater application scalability.
2	BO queries return and save the data result set to the report itself. Calculations and other data manipulation are done after queries are returned.	Returning and saving queried data to an individual report can mask poor data models and database design. OBIEE pushes more calculations to the database. Time needs to be built into a migration project to review the data model and its suitability for OBIEE. This may mean additional ETL work to make the data model more star schema-like. In addition, it is extremely important to properly configure database setup and tuning, indexes, star joins, aggregate tables, etc. This up-front work will pay off as it allows the BI applications to scale to many more users
3	BO customers do more scheduled reporting.	If a customer only uses scheduled reports, it can also mask data model and database issues because results sets are cached with each report. OBIEE definitely allows for scheduling and caching reports, but customers also typically implement reports and dashboards that are run against the database in real time (again, increasing expectations on the database). This allows for more current data and for true ad hoc analysis.

Architectural Differences

The most profound architectural difference between Business Objects and OBIEE is that Business Objects was designed in the 1980s around a client/server architecture whereas OBIEE was designed in the 1990s around a web-based architecture. Business Objects has been gradually ported to the web, but significant functionality differences remain between the Business Objects thick client (Desktop Intelligence - Desk) and the Business Objects Web client (Web Intelligence).

These differences are described on the next page in **Table 4**.

Table 4: Architectural Differences between Business Objects and OBIEE, and Migration Best Practices

	Business Objects	OBIEE
1	BO 5.x and 6.x are primarily a client server applications ported to the web	OBIEE was designed for the web from day one. BO has both thick client reporting and web reporting (WebI) and there is a significant difference in functionality between the two. This means increased training and deployment costs. It also means that complex thick client reports (DeskI) cannot be ported to the web.
2	BO can be used to store snapshots of data since the report contains the data	In OBIEE this can be accomplished by saving the report data to Excel, CSV, or some other data format. This can be easily automated using Oracle BI Delivers.
3	Response time for saved BO reports is very quick because data is saved with the reports.	OBIEE can do this with scheduling caching reports just as with BO. This can either be done manually, or schedule through Oracle BI Delivers.

Implementation Phase

Implementation is the phase during which one wants to minimize costs and maximize the benefits of the conversion process. To achieve this objective, it is essential to have an implementation team that is familiar with the following:

- Intermediate level knowledge of Business Objects
- Expert level knowledge of OBIEE
- Knowledge and experience with migration projects and methodologies
- Knowledge of data warehousing concepts

Based on differences between Business Objects and OBIEE as discussed in this paper, the following implementation best practices naturally follow:

1. Involve the DBA and ETL teams as core members. Set expectations that ETL and database changes may be required.
2. Design for performance. See KPI Partners' OBIEE Performance presentation for more detailed info.
3. Document existing Universe metrics, aggregation, and all rules and get user sign-off
4. Design user friendly Presentation Areas. Decide early in the project cycle what user needs are with respect to Answers vs. Dashboard. Separate, simplified Presentation Areas can be created for all users, including ad-hoc, based on the same business model
5. Develop report and dashboard standards for OBIEE with users and get their sign off. This not only minimizes development rework, but also involves users in designing the new user interface and will set expectations on changes to be made. KPI Partners has a Dashboard Standards template that is part of the methodology to make this easier for customers.
6. Strategize on alternatives for BO unique features.

In particular, Implementation teams need to plan carefully for the following BO "features" that may be more difficult to migrate:

1. Complex BO reports that use multiple data providers (SQL) in single report.
2. Universe to Universe Links
3. Printer friendly, pixel perfect reports
4. Short cut joins in BO metadata/Universe
5. BO Universe Saved Prompts
6. BO Universes designed specifically for transactional systems
7. BO Universe presentation tables that support multiple sub-levels.

Implementation Steps

Since OBIEE is a metadata-centric technology that uses the Metadata Repository, the following development chronology is a recommended best practice based on KPI Partners' experience with multiple migration projects.

Step 1: Analyze Universe and reports together, develop a logical design

Step 2: Identify and document all Dimensions, Facts, Relations, Calculations, Report Metrics and Metadata Metrics

Step 3: Create single/multiple business models based on Step 2

Step 4: Develop Presentation Subject Areas for reports and ad hoc analysis (optional)

Step 5: Consolidate reports based on OBIEE feature set

Step 6: Document and develop alternate reports and strategies for unique BO features

Step 7: Validate OBIEE reports and KPIs against Business Objects reports

Step 8: Tune performance through caching and database tuning

Step 9: Train users

Case Studies and Customer Success

KPI Partners has proven success in migrating Business Objects applications to the OBIEE architecture for many customers. Some examples are provided below.

Telecommunications Company

KPI Partners completed over 20 migration projects for this customer. One prototypical project is presented here. The goal of the project was to migrate a set of BO based HR reports to OBIEE. HR reports are unique in that they typically contain data security restrictions to ensure that compensation and identity information, like SSN, is only available to authorized personnel.

- Project goal: Migrate 300 Business Objects HR reports and 6 complex universes to OBIEE
- Source data model: Data Warehouse with some normalization
- Time Taken: 10 weeks
- Implementation Team: 2 on-site and 4 off-shore developers

Financial Services Company

This Financial Services company was using a hosted implementation of Business Objects. This was costing them more than an in-house implementation would have, and was not giving them the functionality and business agility that they needed.

- Project goal: Migrate 80 Business Objects reports and 5 universe to OBIEE
- Source Data Model: Data Mart (Star Schema)
- Time Taken: 5 weeks
- Implementation Team: 2 on-site developers

Conclusion

Moving from Business Objects to Oracle Business Intelligence can result in a multitude of benefits for a customer including cost savings, increased business value and the strategic benefits of a BI Center of Excellence. To realize these benefits at the lowest possible cost and disruption to end users, it is important to follow a migration methodology and technical best practices developed through experience on multiple Business Objects to OBIEE migration projects. This white paper has presented a proven methodology and a set of technical best practices as well as two case studies of customers that have achieved the success they were after when they moved from Business Objects to Oracle Business Intelligence.