Progress® DataDirect®

USING OPENACCESS SDK TO EXPOSE ERP DATA

Highlights

- Query multiple databases as if they were one system
- Apps continue to work no matter how underlying systems change
- Users work with real information, not hard-tounderstand code logic
- Process queries on any platform

Introduction

Are you happy with your existing reporting solution for your ERP system? Do you need to easily create reports using tools like Crystal Reports, Brio, Impromptu, Microsoft Access, and others? Do you need to quickly analyze data using tools like Microsoft Access, Excel, Brio, and others?

Do you need to isolate your reports and applications from changes in the underlying ERP system due to version upgrades, customization and/or data relocation?

Do you want to use a business view (meaningful table and column names) of your data during report creation?

ERP systems store their data in relational databases like Microsoft SQL Server, Oracle, and others. This data is stored in complex schema that consists of hundreds of tables and thousands of columns. Each site in turn can customize their ERP system through changes in how the data is stored, addition of fields, and other customization. This makes it difficult to supply general purpose reporting tools. Writing applications that go directly to the database schema has limitations:

- Users need to understand how the data is stored in the database – relations.
- The table/column names can be very cryptic – F1001.
- The data may be stored in physically different databases of the same or different kinds – requiring distributed query processing.
- Data conversion and look-ups are not possible because of the use of a single querym limit imposed by most reporting and analysis tools.
- Security and other business logic cannot be enforced.

Features of an Ideal Solution for Accessing ERP Data

1. **ODBC Compliant -** To provide read access to your application data from off-the-shelf commercial tools like Microsoft Access, Crystal Reports, Brio, Excel, ADO, ADO.NET and hundreds of other applications. Options to support OLE DB and JDBC as required.

2. **Flexibility –** Work with site-specific implementation of the ERP system. This means the tables and columns displayed to the user are based on the current meta-data at the site.

3. **User Friendly –** ERP systems store data in hundreds of tables and thousands of columns whose names are cryptic. Using more meaningful names for the tables and columns makes it easier for the user to work with your custom implementation of the ERP system at the customer's site. This means the tables and columns displayed to the user are based on the current meta-data.

4. **Data Location Independence –** Support the distribution of data and meta-data in two or more databases. Reports and applications built to the logical layer exposed by the custom ODBC driver remain unchanged even when the physical layout of the data changes.

5. **Database Independence –** Provide support for the databases your ERP system supports – Oracle, SQL Server, AS/400, etc. and any data encoding used for storing dates and numeric values.

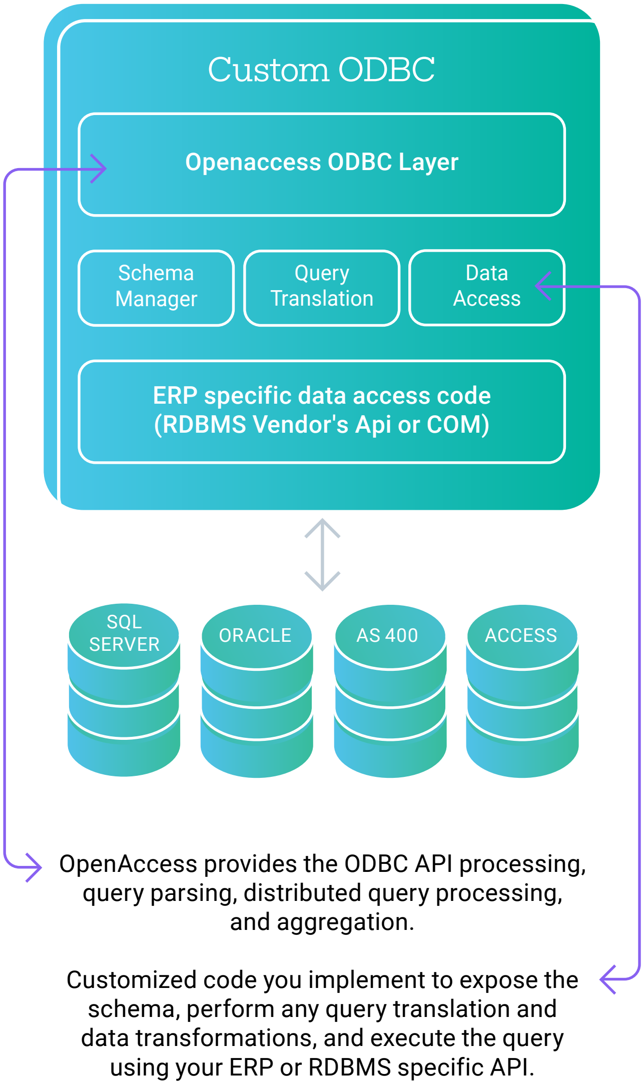
6. **Performance –** Take full advantage of your data source's SQL engine and client/server protocol.

7. **Platform Independence –** Allow the distributed query processing to occur on any server platform – including Solaris, AIX, Linux, HP-UX, NT, and others.

8. **Quick Time-To-Market –** Quickly get a functional ODBC driver out to customers based on proven technology.

Quickly Implement a Solution to Expose ERP Data to End-User Applications

Progress® DataDirect® OpenAccess™ SDK provides the framework and pre-built components to quickly allow one or more data source (s) to be exposed as a single logical data source that behaves like a SQL compliant RDBMS database with standardized APIs that include ODBC, OLE DB and JDBC (see Figure 1).



OpenAccess provides the ODBC API processing, query parsing, distributed query processing, and aggregation.

Customized code you implement to expose the schema, perform any query translation and data transformations, and execute the query using your ERP or RDBMS specific API.

Figure 1: OpenAccess Framework for Custom ODBC Driver

OpenAccess components provide the ODBC, JDBC, or OLE DB APIs, SQL parsing, distributed query processing, aggregation, and a client/ server protocol (if required). These components interact with the Interface Provider code that is implemented for a specific ERP system. The Interface Provider code implements the schema management, any required query translation, security, and the execution of the query against the data source.

End users query the data sources as if they were a single database using SQL through ODBC, OLE DB or JDBC. Queries are parsed and executed against each of the data sources in real-time and then the results are combined into a single result set and sent back to the client.

The ODBC driver developed using OpenAccess SDK can enforce all the business rules, data conversions, security, and data configurations supported by your ERP system.

The ODBC driver can be developed to make use of an existing API supported by the ERP system or to go directly to the database(s) where the data is stored. In either case the user is exposed a logical view of the data that shows meaningful names for the table names and columns.

With OpenAccess SDK, the amount of custom code required is minimal. OpenAccess handles all the ODBC related issues and handles all distributed joins where required. The custom code, which we refer to as the Interface Provider (IP), consists of the implementation of a data access module, a schema management module, and a translation layer. The schema manager module is responsible for using your meta-data to expose a schema. OpenAccess is shipped with a data access module for working with Oracle, SQL Server, Microsoft Access, and AS/400 through the vendor's ODBC connectivity.

Case Study – ODBC Driver for Oracle ERP System

The EnterpriseOne product from Oracle (formerly OneWorld from JD Edwards) is an example of an ERP system that has many of the characteristics addressed at the beginning of this use case. Unity Enterprise Solutions used OpenAccess SDK to implement an ODBC driver that can support the use of the Object Configuration Manager tables (meta-data) for exposing the schema and for accessing the data. This product is being marketed as jdeDirect ODBC driver.

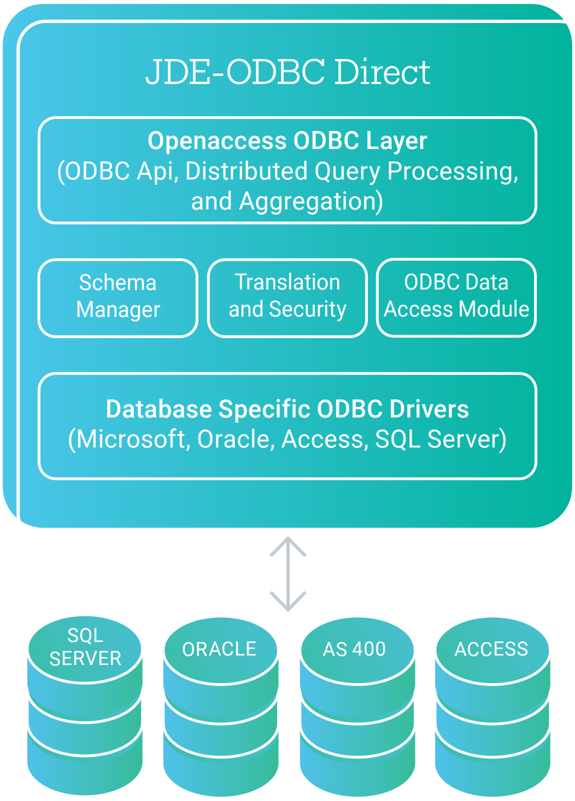

JDE-ODBC Direct
Openaccess ODBC Layer
(ODBC Api, Distributed Query Processing, and Aggregation)
Schema Manager
Translation and Security
ODBC Data Access Module
Database Specific ODBC Drivers
(Microsoft, Oracle, Access, SQL Server)
SQL SERVER
ORACLE
AS 400
ACCESS

Figure 2: Architecture for ERP-ODBC Direct Implementation

The architecture chosen for this application was a local implementation in which the OpenAccess ODBC component runs on the desktop and uses the ODBC drivers for Oracle, SQL Server, AS/400, and Microsoft Access to perform the actual data access. The Schema Manager module was designed to read the OCM and use it to expose the tables and columns for the selected user and environment.

The Schema Manager module was custom implemented to understand the Oracle EnterpriseOne data dictionary and to provide this information to the OpenAccess layer. The Data Access module used was the ODBC module that comes standard with OpenAccess. The translation layer was implemented to support row-based security and user defined codes. In Figure 2 below the orange colored components are provided with OpenAccess SDK. The RDBMS vendors supply the white colored components. The aqua colored box represents the code custom written to adapt OpenAccess to EntepriseOne schema management.

Your Development Effort

1. Design and code the schema manager (15 days)
2. Enhance the data access module as required (10 days)
3. Do your QA (5 days)
4. Package up for distribution (2 days)

Expected time of completion: **32 man days**
Expected time for working prototype: **5 days**

Conclusion

This use case provides an overview and details of using OpenAccess SDK to implement a custom ODBC driver for your ERP system. OpenAccess also supports the development of OLE DB, JDBC, and .NET drivers. All three standards are based on consuming the IP that is developed to adapt your data source to OpenAccess. So if you use OpenAccess to implement ODBC, it's just a matter of linking with the OLE DB flavor of OpenAccess to get OLE DB, and linking with the JDBC flavor of OpenAccess to get JDBC – no code changes.

About Progress

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