

ISAM TO SQL MIGRATION

Enabling ISAM-based Applications to work with relational databases without source level changes

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Introduction

The objective of this white paper is to familiarize the reader with Merteck Data Systems' product offering, BTR2SQL, a set of data migration tools and high-performance database drivers that allow quick and efficient migration of applications developed around Pervasive Software's Btrieve® transactional engine to an SQL Server backend.

Background

The Internet revolution has underscored the importance of making data available reliably and at a high speed to an ever-growing user base. Corporations continue to consolidate their data into single, corporate-wide databases so that information about its customers, products, and market can be easily extracted and manipulated and at the same time allow customers and their mobile workforce to update and retrieve information anytime, anywhere. These new, data-intensive demands of today's businesses requires a database server that is robust, is scalable, gives excellent response time in extracting and manipulating data, has great disaster recovery features and above all provides excellent security features and guarantees 24X7 availability.

"IDC estimates that SQL-based relational databases hold a 90% market share. In the Windows market, Oracle and Microsoft combined have 80% of the market"

Relational or SQL (Structured Query Language) based databases from companies such as Oracle®, Microsoft®, IBM® and others meet these criteria. Indeed the features of these databases, combined with the marketing might of the "software heavyweights" have helped make relational database engines a de facto standard in the business application market.

Companies using or developing applications written around the transactional engines of Btrieve and Pervasive.SQL®, which utilize the Index Sequential Access Method (ISAM) or transactional approach to data storage and retrieval, find that moving their applications to the industry-leading SQL database engines presents significant challenges. There are two obvious migration paths; 1) rewriting entire applications written around the transactional paradigm to support a relational approach using SQL or set paradigm 2) write a new application from scratch. Both require significant resources and time and may not be feasible for many companies.

The Merteck Approach

Merteck offers a third option to handle this migration issue that is both flexible and cost-efficient. Merteck's BTR2SQL product offering allows developers to deploy their applications with Btrieve and Pervasive.SQL engines as well as with an SQL backend without requiring recompilation or code rewrite. This means that an application currently working exclusively with Btrieve or Pervasive.SQL engines will be able to work with an SQL database server in very little time, following just a few easy steps! Over 9,000 companies on five continents have saved millions of dollars by using data migration tools and high-performance database drivers offered by Merteck Data Systems.

A Case for Relational Databases

The case for relational databases can be made on two fronts.

First, the relational model for data storage and retrieval has proven to be superior at handling large amounts of data and turning that data into useful information without requiring special programming techniques. The reason for that superiority is the Structured Query Language (SQL). This relatively simple language allows complex data manipulation using only a few simple commands.

Second, because of that superiority and simplicity as well as the standardization of the SQL language, almost all major software providers support SQL-based backend through Open Database Connectivity (ODBC), OLEDB or native programming interfaces. Companies switching to a SQL database not only get a robust, more efficient enterprise-wide data solution, but they also get access to a variety of tools and applications that work seamlessly with these SQL databases.

Dilemma for Developers and Users

Issues Facing Corporate Users

To meet the stringent demands placed on database servers due to data consolidation, corporate users of database applications want the power, scalability and reliability offered by industry leading relational database engines. Corporations who have their data scattered over disparate databases often face difficulties in using business analysis, reporting and other business tools that are crucial from a corporate perspective.

In many cases, companies may already be using an SQL-based database with newer applications, yet still have some applications that use Btrieve and Pervasive.SQL engines. This lack of standardization often presents integration issues to the IT department. Applications can be modified or rewritten to support a single corporate database standard. However, this can be an expensive and time-consuming option.

In an effort to consolidate data quickly, companies may be willing to pull the plug on their existing applications and opt for an off-the-shelf solution that integrates well with mainstream database engines. But adopting a new application is more than just buying a piece of software and installing it. IT departments have to contend with implementing the new product, testing it, rolling it out to select users, further testing, Q&A, and, finally, deploying it. And then there is the cost associated with retraining end-users on the new software.

Issues Facing Developers

Developers face two hurdles in the SQL-standardizing market. First, their already established customers often want the ability to run their applications on a mainstream database server. Second, to expand their customer base, these developers need to find new customers. Since 90% of the customers buying database servers chose an SQL-based solution, it is imperative that application developers who are looking to attract new customers support RDBMS database servers.

These hurdles have left the developers using Btrieve and the transactional engine of Pervasive.SQL with only one option: roll up their sleeves and learn to program with SQL and potentially re-code thousands of lines of code to accommodate the set-based paradigm of SQL. Not an easy task!

Mertech's Solution

Recognizing the enterprise demand for SQL-based relational databases and the hurdles that developers supporting transactional engines must overcome to work with industry leading databases, Mertech has created a family of middleware applications designed to:

"Mertech's solution allows the developer to still effectively program with Btrieve® API, thus using the same source-base for both Btrieve® and MS SQL Server backend"

- Alleviate the costs associated with migrating applications working against existing transactional data sources to SQL-based relational databases
- Provide developers with a cost-effective, efficient, and platform independent solution to use their existing code with SQL-based relational databases
- Create the opportunity for the developer to leverage existing applications with an SQL backend immediately
- Accomplish all of the above without compromising the stability or speed of the application

Mertech accomplishes these objectives with a family of high-performance database drivers designed to translate calls made to the Btrieve, Pervasive.SQL transactional API into SQL statements that work with the target SQL-backend. These database drivers replace the existing Btrieve's dynamic link libraries and effectively intercept and relay application commands to the SQL data source as optimized, efficient SQL statements.

With this solution, Mertech has successfully provided both corporate users and developers the most cost-effective and efficient method to work with SQL databases. Apart from significant cost and time savings, developers can use this efficient solution to make their applications "database independent" – they can deploy the same application using Btrieve® engines, transactional engines of Pervasive.SQL engines or with an SQL backend. No source code changes are needed!

BTR2SQL

The BTR2SQL™ product bundle is comprised of a GUI migration tool and high-performance Index Sequencing Database Connectivity (ISDBC) drivers. The GUI migration tool handles migration of existing Btrieve file structures and data to an SQL backend, creating the required tables and indexes.

The BTR2SQL GUI migration tool is a standard Windows® application that runs on the 32-bit or 64-bit versions of the Microsoft Windows operating system. BTR2SQL is an integral part of the product bundle and is included with the purchase.

The database driver dlls work with the Pervasive runtime and handle all client/server connection and database operations.

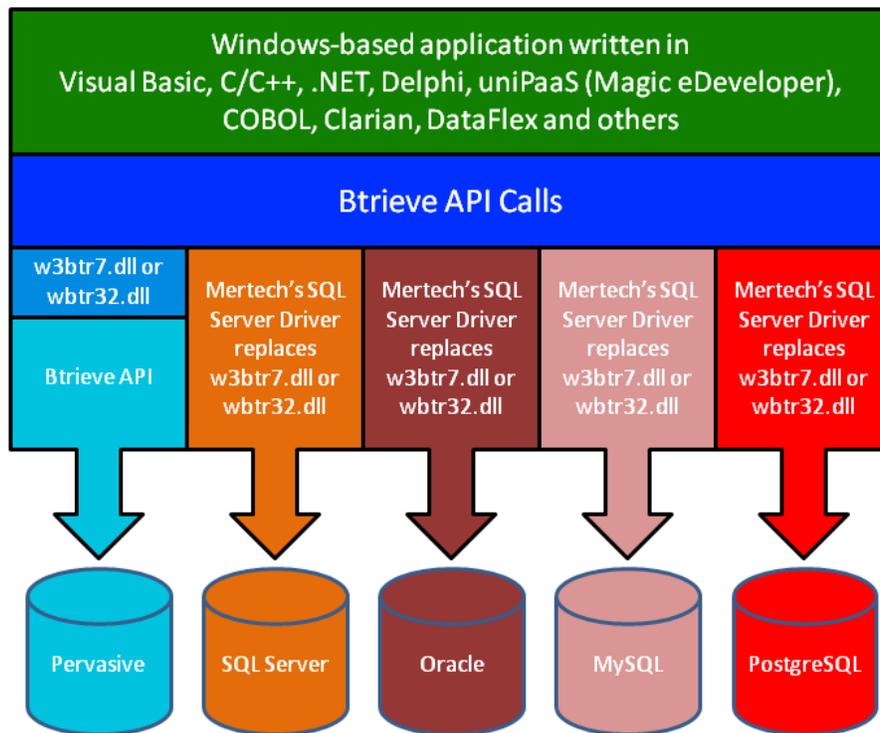


Illustration 1: Application Layers

Mertech' ISDBC Driver for MS SQL Server

Mertech's ISDBC™ driver for MS SQL Server® uses an OLEDB programming interface for communicating and accessing the MS SQL Server database. This is a direct connection to the server and doesn't require any ODBC drivers or DSN entries.

Mertech's driver supports MS SQL Server 2005 and higher.

Mertech's ISDBC Driver for Oracle

Mertech's ISDBC driver for Oracle uses Oracle Call Interface (OCI) for communicating and accessing the Oracle® database. This is a direct connection to the Oracle server through Oracle's network interface SQL*Net®.

The driver supports Oracle version 9.x and higher.

Mertech's ISDBC Driver for MySQL

Mertech's ISDBC driver for MySQL® uses the MySQL C programming interface for communicating and accessing the MySQL database. This is a direct connection to the server and doesn't require any ODBC drivers or DSN entries.

The driver supports MySQL version 5.1 and higher.

Mertech's ISDBC Driver for PostgreSQL

Mertech's ISDBC driver for PostgreSQL® uses the PostgreSQL C programming interface for communicating and accessing the PostgreSQL database. This is a direct connection to the server and doesn't require any ODBC drivers or DSN entries.

The driver supports PostgreSQL version 9.1 and higher.

Benefits of Using Mertech's Solution

Mertech's ISDBC drivers for SQL-based relational databases provide a number of critical benefits for both businesses and developers.

Benefits to Developers

- Cut down implementation time — run existing application against SQL-based relational databases immediately
- Continue to program in a familiar environment — because no changes are required to the source code, the developer can continue to program in Btrieve using their existing development tools and then deploy on multiple databases
- Open doors to new markets— With Mertech's approach, the developer will be able to continue to support Btrieve-based applications and still have the flexibility to offer solutions both for Btrieve and SQL-based relational databases
- Speed and reliability—every developer is concerned about the speed and efficiency of applications. With Mertech's high-performance drivers, all translated functions are optimized to work as effectively as possible with an SQL-based backend

Benefits to Corporate Users

- Easy Migration— the fact that the Btrieve-based applications can work concurrently with SQL-based relational databases and Btrieve databases ensures that customers and employees won't be severed from the data while the migration moves forward
- Corporate wide data consolidation—with the scalability provided by SQL-based relational databases, data from Btrieve files can now be moved to a single corporate wide database
- Faster reporting by using Crystal Reports or other reporting tools directly with SQL-based relational databases
- Integration with other applications—access data from other applications
- Zero retraining cost — users can continue to use familiar applications

Contact Information

If you would like to know more about Mertechn's products, please visit our website www.mertechndata.com or contact us at:

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