SQLWays™ White Paper

Database Migration Software

Ispirer Systems Ltd.

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Importance of Migration

Whenever it comes to corporate growth and optimization of business processes, poor efficiency of databases and applications that no longer correspond to the changing realities is a very common problem. In order to resolve this problem and increase the productivity of their information systems, companies resort to migration.

Although specific reasons to migrate may vary from business to business, in most cases these are:

- increased volume of data;
- increased number of users;
- total cost of ownership;
- database consolidation and integration.

Processing increased volume of data is a typical task faced by a growing company and it may become rather complex when the applied databases are getting out of use. The same problem appears with the increasing number of users of corporate databases. In this case the optimal solution for corporate management is to convert from obsolete to better performance databases distinguished by higher reliability and scalability.

Total cost of ownership (TCO) is also very important as choosing to migrate to a new database may largely reduce a company's costs related to the nature of the old database or its administration.

At the same time, as businesses grow, separate departments may start working with various applications that use different databases. In mergers and acquisitions the problem of simultaneously using different databases with high TCO stands even more sharply. The way out in such situation may be consolidating databases with the help of migration.

Also, when the used databases are not fully integrated with the available applications, it may be much more efficient to convert to a new database rather than develop a means of database integration or tailor databases to the requirements of specific applications.

Thus, migration becomes an extremely efficient method of reducing the complexity and improving the performance of information systems and saving in corporate costs.

However, the process of database migration is by far no means simple. On the contrary, a number of technical problems can make migration a rather complex task, associated with high expenses and extended time limits. Yet, the latest achievements of Ispirer Systems in the field of migration make it possible to avoid most, if not all, problems surrounding this process.

SQLWays - Optimal Migration Solution

In order to clearly understand how the product developed by Ispirer Systems provides a key to successful migration, it makes sense to take a detailed look at what is migrated and how difficult migration might be.

Every migrated database consists of a large number of database objects, including:

- tables that are combinations of rows and columns, in which the database information is stored,
- indexes, with the help of which one can quickly find the required data within the table,
- views, or virtual tables, that are used in SQL statements in the same way as tables,
- stored procedures and functions - programs containing a set of SQL and control statements, which are stored and executed on the database server, and
- triggers - stored database procedures defining actions that are performed in response to an insert, update or delete operation.

Let us look at the list of the most common problems accompanying the migration of some of these elements and see that SQLWays offers a distinct solution for each of them.

As far as the migration of tables is concerned, a serious problem is posed by the fact that table data types and their properties differ

from database to database, so the so-called 'mapping' procedure is required to convert these different types of data. Applying SQLWays, mapping is carried out automatically on both local (for each specific table) and global level (for all tables) and can be adjusted to the user's special requirements. Among the distinguishing features of SQLWays there is the so-called 'ranged mapping', which takes into account the different maximum lengths of compatible data types. Ranged mapping makes it possible to convert a data type of the source database to multiple data types of the target database, depending on the actual length of a table column.

It should be mentioned that SQLWays is capable of converting all table and column properties, such as NULL and identity properties, default values, primary and foreign keys, check and unique constraints and comments.

A rather widespread problem that is likely to be encountered during migration is that of 'reserved words'- a series of words that can be used for naming tables, columns and other database objects only with a number of limitations. Each database has its own set of such words, and sometimes names of certain objects cannot be converted due to the fact that they are used as reserved words in the target database. Since these reserved word conflicts may appear quite often, SQLWays is specially tailored to resolve them.

By the same token, SQLWays resolves the problem of identifiers. Identifiers (or names of tables, columns etc.) have different maximum length limitations and have to be changed wherever this or that identifier is met: in triggers, procedures etc. With the help of SQLWays, these names can be changed automatically or by the user, and the corresponding changes can be made in all the objects where these names are used. In short, SQLWays simplifies the process of renaming database objects to a great extent.

Another point in the migration cycle where SQLWays can be of great help is the import of data to the target database. With large volumes of data, this process can be extremely lengthy. Using high-performance loading tools provided by database vendors, SQLWays ensures the rapid loading of data, considerably reducing the time needed for import.

Among the advantageous characteristics of SQLWays should also be listed its ability to convert views. Views are based on SQL SELECT statement that has various dialects depending on this or that particular database. The wide variety of SQL dialects leads to the existence of a great quantity of statement structures, functions and expressions, which differ from each other considerably (thus, Outer Join syntax in Oracle is absolutely different from those in other databases). These differences are taken into account and efficiently tackled by Ispirer Systems' migration tool.

Yet, the most serious problem related to migration is considered to be the conversion of triggers, procedures and functions. For writing these objects, programmers use procedural SQL extensions, or procedural languages. Being extremely important for developing database applications, these languages are rather complex and not standardized. (Thus, Oracle uses the language PL/SQL and SQL Server - Transact-SQL.) Hence, in order to migrate the above-mentioned objects, one needs the full conversion of SQL extensions. SQLWays is capable of performing this sophisticated task, making the conversion of triggers, procedures and functions very easy.

Conclusion

Application and database migration is an important process required by a wide variety of companies willing to enhance their IT-infrastructure and increase their business efficiency.

Acquiring dire importance, migration can become a challenging task due to a number of accompanying technical problems. The process of solving these problems may be rather lengthy and exhausting.

Specially developed to facilitate migration, the software tool SQLWays performs it within a very short time, eliminating all the potential difficulties and dramatically reducing its cost. It easily converts all the database objects, including tables, views, stored procedures, functions and triggers.

Remarkably highly efficient, SQLWays can be rightfully called an optimal migration solution.

More information

For more information about SQLWays, please visit our website at http://www.ispirer.com/products or e-mail us at ispirer@ispirer.com.