SQL Migration Toolkit & Test Framework (SQL MTTF)

Management Summary

Migrating an application developed for one database to another database is not an easy task, especially when the application is built using proprietary database languages such as Sybase Transact-SQL or MS-SQL Server Transact-SQL. The conventional approach is to migrate (rewrite) the code of the application objects, but this is a high-risk and resource intensive task that requires deploying large teams and spending long hours in manual, tedious migrations with unpredictable migration results.

SuadaSoft's **SQL Migration Toolkit & Test Framework (SQL MTTF)** provides a solution for migration from Transact-SQL databases to the IBM DB2 database, and a framework to automate Unit and Integration testing to validate the migrated data and application objects. It allows our customers to eliminate human error and automate up to 98% of the conversion of the data structures and data itself like Tables, Indexes, UDTs,… but also the application object like UDFs, Stored Procedures and Triggers. Automation reduces the migration time and risks and increases the quality significantly.

Why migrate from Sybase or MS-SQL to DB2?

Benefits of migrating from Sybase or MS-SQL to DB2 are:

- Performance, Scalability, Reliability: As IT systems continue to evolve and expand beyond their traditional boundaries, the complexity of the database engine must grow at a fast pace to meet these requirements and form the core of a true corporate "information server" seamlessly integrating traditional and new data types.
- License cost savings
- Operational cost savings: The cost of database administration can greatly exceed the cost of the database software and hardware. DB2 includes numerous autonomic features that free IT staff from many administrative tasks (Self-Tuning Memory Management)
- Uncertainty of continued development and support due to the database vendor's strategic decisions and/or conflicting interests while DB2 is and will remain IBM's flagship.

SQL MTTF Features

- Conversion of data structures from Sybase ASE and MS SQL Server to IBM DB2
- Data transformation and migration from Sybase ASE and MS SQL Server to IBM DB2
- SQL application objects conversion from Sybase ASE and/or MS SQL Server to IBM DB2
- Capture production workload and replay on target databases
- Work with production data and production executions
- Capturing execution results for examination purposes.
- Provide detailed reports and data on changed data by DB application objects and triggers.
- Undo data changes made by R/W applications and triggers.
- Detailed comparison between application executions on source and target database.

Architecture and Supported Platforms

SQL MTTF is entirely developed in Java (JDK 1.6, update 27 or above) allowing it to run on a wide variety of operating systems (Windows, Solaris, AIX, Red Hat Enterprise Linux, SUSE Linux).

Migrations from Sybase (12 & 15) and MS-SQL (2008, 2008 R2 & 2012) to DB2 (9.7 & 10) are supported.

Contact

Interested?
Want more information?

Contact us via sales@suadasoft.com

The Migration process

The main component of the **Migration Toolkit** is the Translation Engine, which is based on ANTLR (ANother Tool for Language Recognition), a widely used a language parser/lexer using Lex/Yacc technology. The Translation Engine parsers the Transact SQL code based on a Grammar, builds an Abstract Syntax Tree (AST) and finally re-generates DB2 SQL code.

The Core Translations engine is surrounded by a number of Java tools to retrieve meta data from the database repositories and perform numerous tasks like compiling and creating objects in the target database and reporting on results and problems.
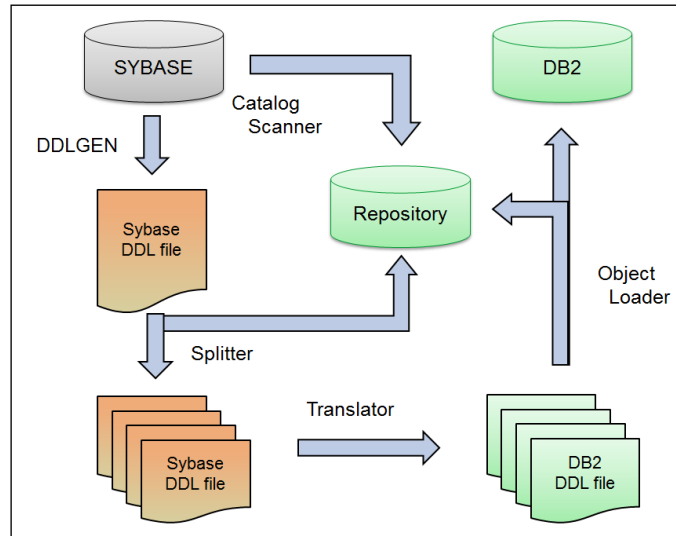
A first step consists of the migration of the Tables, UDTs and Indexes, which are translated and created in the target DB2 database, followed by the conversion and loading of the data itself. The second phase is an iterative process of translation & loading of the application objects (Views, Stored Procedures, Triggers, UDFs). The ObjectLoader serves as a first 'validation' of the translation: Each application object is loaded ('compiled') in the DB2 database. The load results are stored in the MTTF repository database and are used for reporting.

The Testing process

The **Test Framework** provides for an automated and repeatable testing system. In a first step, the database transactions on the source production system are captured during a certain period of time and saved as separate test cases.

The test cases are then executed against both the Sybase database and the DB2 database. Meanwhile, the database changes on both sides are captured and written in a separate LOG database.

After each test case, the Test Framework compares both the returned results and the database changes between source and target.
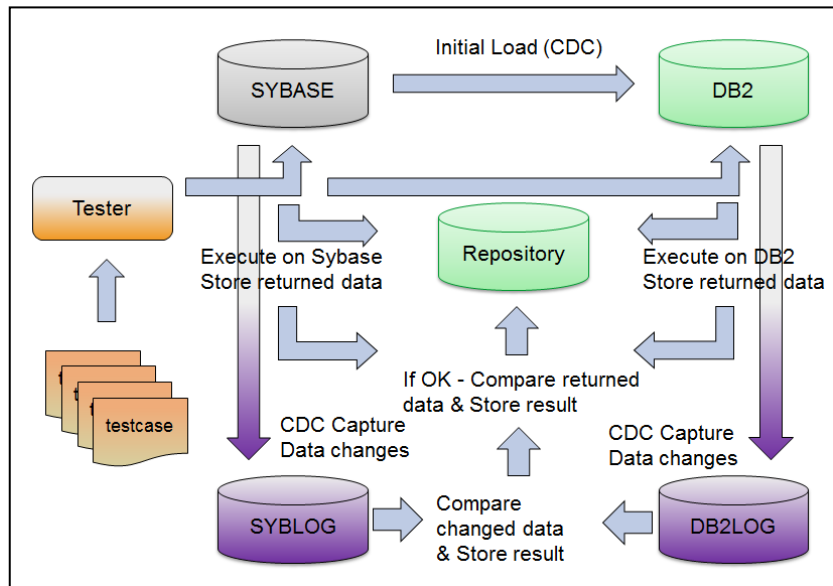
If the results are the same, both database systems are 'in sync' then the next test case will be executed. If the results are different however, the databases are no longer 'in sync', meaning that subsequent dependent test cases are bound to fail. In this case, the test Framework will 're-sync' the databases and prepare for the next test case by performing a roll back/roll forward action on the target database. The incorrect changes on the target database are rolled back and the expected changes from the source are rolled forward on the target database. The results of the compare, roll back and roll forward operations are stored in the MTTF repository database and are used for reporting.