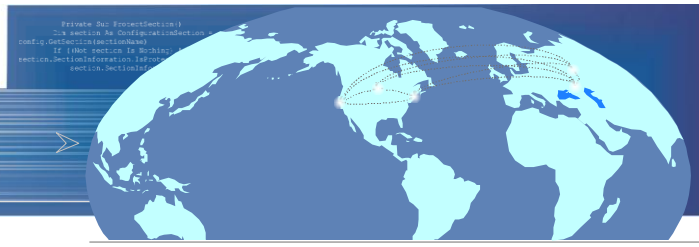

Database Synchronization Tool Development Experience

Our developers in Russia have worked for the last 10 years to develop a set of database synchronization tools.

Developers and administrators of distributed IT systems use our database synchronization tools to provide configuration, administration and one- and two-way synchronization of data between servers, personal computers, mobile and embedded databases, with the ability to synchronize between databases of different vendors.

Our database synchronization tools:

- Create distributed information networks;
- Maintain the server workload balance;
- Enhance the reliability of the system by backup copying;
- Facilitate data warehousing;
- Facilitate mobile user support.

Database Synchronization Tools

Server Workload Balance

It is possible to connect additional servers to a main database server to distribute a workload too heavy for a single server. A database synchronization tool ensures that the additional servers mirror the main server: all data modification operations are carried out on the main server and then the database synchronization tool sends the data to the additional server.

For example, all OLTP applications use the main server for maximum authority and reliability; applications responsible for information search and reporting can use the additional servers. Additional servers may be easily added connected to this configuration as needed. This system is well suited for information analysis software, search complexes and Web sites with high workload: applications intensively querying a database.

Data Warehousing

Very often, in addition to actual data, the entire history of changes is needed. At the same time, it is not possible to store obsolete data on the main server, since it slows down the system's performance. Database synchronization tools ensure that the obsolete data is not mirrored to production servers, but data deleted in production is preserved in historical databases.

Enhancing the System's Reliability

For downtime-critical systems, our database synchronization tools offer a solution providing uninterrupted database operation in case of failure. Two identical servers are connected using two-way synchronization, with the same table subscription rules for both nodes.

In this case, the data modified on one server is transferred to the other server immediately. In case of failure on one server, the downtime-critical application may continue working with the remaining server. After restoring the main server, all changes made on the remaining server during this time are synchronized back to the main server; when it "catches up", it can be restored to active operation.

Mobile User Support

In many organizations, employees must work with applications installed on their notebooks and pocket computers. In such cases, they connect to the local network regularly (e.g. at the end of day) and exchange information with the main server. Our database synchronization tools support a variety of protocols allowing many different types of mobile devices and computers to operate with intermittent connections. Furthermore, our database synchronization tools can be integrated with the corporate directory tree, simplifying the administration of the system and allowing the users to download only necessary information.

Technical Characteristics

Main capabilities of Database synchronization tool:

- Data synchronization between databases of different vendors, allowing an arbitrary topology of connections between synchronized databases.
- Filtering of synchronized data, allowing synchronization of only those columns or rows that satisfy a particular condition.
- One- and two-way synchronization of data for specified tables.
- Detecting and resolving record conflicts. The database synchronization tools implement conflict resolution rules to maintain data integrity when the same data is modified on different servers.
- Multiple record identification modes to synchronize a table to another table with a surrogate primary key.
- Table synchronization conditions, are used for data selection during synchronization, may be stored as objects in the external directory tree for efficient maintenance.
- After failures, synchronization is restored automatically. The database synchronization tools perform a full synchronization of the databases if packages are lost or the database is restored using a backup copy.

Supported platforms and databases:

For Windows 2000/XP	• Oracle 8 and greater; • MS SQL Server 7, MS SQL Server 2000; • DB2; • Sybase 7; • MySQL 4.x
For Windows CE	• Yes
For Linux platforms	• Yes; • MySQL 4.x • Oracle 8 and greater.

Data exchange methods:

Data exchange between the nodes may be performed using one of the supported protocols: TCP/IP, HTTP/HTTPS, E-mail, File and ActiveSync.

- TCP/IP is a general purpose protocol. It is used in corporate networks, and is the most reliable, rapid and convenient. This is your first choice for synchronization, if possible.
- HTTP/HTTPS is slower and less reliable, but it may be more convenient for mobile clients working via Proxy servers.
- E-MAIL is synchronization package exchange by e-mail;
- FILE is exchange between the nodes using files;
- ActiveSync is a protocol for working with Windows CE.

The database synchronization tools use an XML structure based on the SyncML format, the de-facto standard for mobile device synchronization. The UTF-8 encoding supports national encodings and provides portability between different platforms. The database synchronization tools also support synchronization of binary data stored in BLOB fields in the database.