

DATA SYNCHRONIZATION FACILITY

The SQL/Data Synchronization Facility (**SQL/DSF**) assists DB2/VSE database administrators in managing **distributed** database environments. In such environments, it must be ensured that the distributed tables remain in a consistent state.

The following SQL/DSF facilities help database administrators in achieving this goal:

Synchronization

Propagates changes performed on DB2/VSE tables to other databases.

Transfer

Transfers tables between different databases.

Compare

Compares tables in different databases.

Conditional transfer

Transfers a table to the target database, when a table compare results in mismatch.

All SQL/DSF functions are performed from the DB2/VSE environment.

They operate on DB2/VSE databases or database platforms that can connect to DB2/VSE, using the DRDA protocol. For the synchronization function however, the source database **must** be DB2/VSE.

The table transfer and compare functions perform using **VSE subtasks**: no disk or tape storage is required during their operation.

SQL/DSF functions can be invoked :

- Using a VSE JCL jobstream.
- Using the **RULES** file of the SQL/DSF **Synchronization Scheduler**.

Table Synchronization

Synchronization propagates table changes from the DB2/VSE source database to another DB2/VSE or any other database platform that can connect to DB2/VSE. Synchronization is a cost-effective alternative for a complete table copy, as it applies only the INSERT, DELETE and UPDATE statements executed in the source database.

Data Capturing

Synchronization implies that the source table changes have been captured in the source database. The capturing function is performed by the **SQL/Auditing Facility**, a program product available from Software Product Research.

All SQL statements, both dynamic and compiled, are captured, regardless of their origin.

Synchronization Method

The log of the SQL/Auditing Facility contains the full text of all SQL statements captured in the DB2/VSE server. Synchronization consists in executing these statements against the target database.

Synchronization Performance

Since SQL/DSF uses the **captured statement** for synchronization (and not the DB2/VSE log), an SQL statement that alters multiple rows will be synchronized in a single transaction.

Using SQL/DSF for data restore

Since the audit log and audit log archives contain, in executable format, all SQL statements that altered the table, the archives can be considered as incremental backup files. Consequently, the synchronization function can be used to incrementally restore a DB2 table from an audit log or archive.

Table Transfer

The transfer function copies all rows of a designated table to the target table in another database. At the user's choice, transfer will replace or append to the target. It is also possible to transfer a **subset** of the source table to the target.

Table Compare

The function compares all rows of a named table with the table in the designated target database and prints the contents of the mismatching rows.

Conditional Table Transfer

The conditional transfer function is a combination of the compare and the transfer functions. A conditional transfer compares both tables and initiates a transfer when the compare results in a mismatch.

The SQL/DSF Scheduler

SQL/DSF provides the **SQLDSFS** Scheduler program to assist an installation in setting up a **DataSync Server** environment. Using the Scheduler, most synchronization tasks can be automated.

The SQL/DSF Scheduler processes table synchronizations and transfers **automatically** and **chronologically**, as recorded in its **RULES** file.

SQL/DSF and IBM DataProp compared

- SQL/DSF is a specialized propagator for DB2/VSE. It cannot synchronize changes performed on tables other than DB2/VSE. DataProp has a wider scope.
- SQL/DSF can synchronize directly to a DB2/VSE target. This is not possible using DataProp apply.
- SQL/DSF uses a **statement-based** synchronization method, while DataProp operates at the data level, using the DB2/VSE log. As a result, SQL/DSF will more efficiently synchronize SQL statements that alter multiple rows.
- SQL/DSF can be used for **Data Restore**.
- Since SQL/DSF executes entirely in the DB2/VSE environment, its setup and operations are simpler than DataProp.

Prerequisites

- VSE/ESA Version 2 Release 2 or later
- DB2/VSE Version 6 or later
- SQL/Auditing Facility, a program product available from Software Product Research.

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