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Direct Access to Mainframe Data vie Standard Interfaces

tcACCESS is the comprehensive integration solution for mainframe users who want to integrate mainframe data in their data virtualization or SOA solution.

Application Areas

- Data virtualization: Presentation of data from different sources and systems as virtual data source
- Data integration from mainframe to LUW based applications, e.g. Office applications such as MS-EXCEL, MS-Word, MS-ACCESS, OpenOffice and LibreOffice via ODBC/JDBC
- ODBC/JDBC access to diverse IBM mainframe data from web applications and web application servers
- Re-Engineering of 3270 user interfaces
- Mainframe application modernization
- SOA integration of mainframe data and applications
- Direct access to mainframe data from cloud and Hadoop platforms with Apache Sqoop or Apache Spark
- Easy and efficient upload and download of mainframe data, e.g. to MS-EXCEL, MS-ACCESS or reporting tools

Highlights

- Direct access to ODBC/JDBC resources or Oracle and DB2 LUW databases from batch or online applications on the mainframe
- All data is accessed with an SQL syntax
- Easy implementation into a mainframe application via an API
- Bidirectional and transaction-oriented processing
- Synchronous and asynchronous processing is supported
- The mainframe application is always informed about the result of the access (return code or message)
- Efficient processing, even of big data volumes

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Overview of tcACCESS Performance Features

- Comprehensive relational view on IBM mainframe data sources such as DB2, VSAM, IMS/DB, DL/I, Adabas, IDMS/DB, Datacom/DB, etc.
- ODBC/JDBC driver/server access (read/write) to IBM mainframe data without programming from client-server, web and SOA applications and also from Cloud and Hadoop platforms
- Support of Joins for the access to various data sources in one SQL query, e.g. VSAM and IMS/DB
- Substitute for complex middleware solutions; Simple call of mainframe programs from client-server (LUW) and web applications via existing APIs
- Easy relational access with CICS/IMS programs to data sources in an LUW environment such as Oracle, DB2 LUW, Sybase, MySQL, etc.
- Support of stored procedures for easy calls to existing business logic (mainframe programs) from client-server (LUW) or web applications and also from cloud or Hadoop platforms
- Existing SAF interface: Mainframe security (e.g. RACF, TOP SECRET, ACF2) also works with the "new technologies"
- The SSL protocol is available for a secure data transfer
- Automatic SQL optimization with dynamic limitation of the processor load in the z/Systems environment
- The tcACCESS Global Language Pack allows for the SQL engine to additionally use multibyte and doublebyte code tables. Therefore, all characters can be used for SQL statements and the returned data. UTF-8 encoding is also supported.

Why tcACCESS?

- Quick reaction to new requirements in the field of analytics and reporting through direct access
- Integration through standard interfaces like ODBC and JDBC drastically reduces or even nullifies the programming effort for data integration across systems
- Significant time savings for data integration in heterogeneous system environments
- Quick use of mainframe data with new technologies
- High responsiveness to new requirements
- No mainframe know-how necessary for working with mainframe data
- Less coordination effort in projects across systems
- No investment in middleware necessary
- Ideal use of all resources
- No training effort
- Avoids redundancies
- Automation instead of manual intervention
- More security and independence through standardisation instead of individual solutions
- No limitation in the mainframe environment regarding the integration of new technology

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Features

Automatic Identification of Data Structures in Copybooks

- ✔ COBOL
- ✔ PL/I
- ✔ ASSEMBLER
- ✔ RPG

Virtual Tables for

- ✔ OCCURS
- ✔ OCCURS DEPENDING ON
- ✔ Multiple Fields (Adabas)
- ✔ Periodic Groups (Adabas)

Refined Techniques for all Features

- ✔ Automatic recognition of redefinitions for e.g. record types
- ✔ Automatic analysis of IMS/DLI PSB and DBD for determining the ideal access strategy
- ✔ Wizard supports graphical applications
- ✔ Manual changes are possible during the data import
- ✔ Supply of the META data to the global tcACCESS dictionary

The existing data structures are presented to the user in a relational view in the dashboard as result of the data mapping.

Integration of Environments with tcACCESS

With tcACCESS, IBM mainframe data can be easily and directly accessed and API managed mainframe applications can be used in combination with client-server, web, cloud, and Hadoop technologies – without any mainframe know-how and programming effort.

Virtualization of data is a flexible approach to data integration in order to quickly access business data from different systems. This way, the quickly changing requirements in analytics and business intelligence or reporting are realized while avoiding redundant data storage and the related expenses for data replication and data consolidation.

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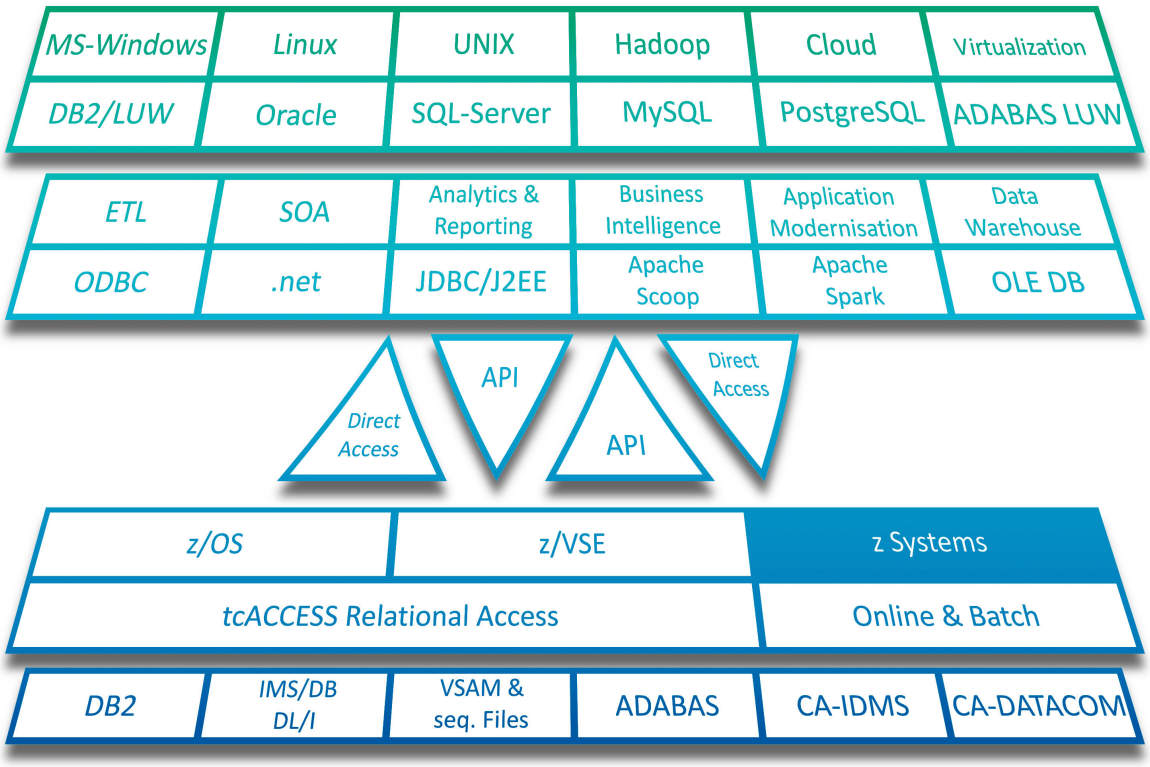
The Operating Principle

tcACCESS allows the user or programmer to access not only DB2, but also all non-relational mainframe sources such as VSAM, DL/I, IMS/DB, Adabas[1], Datacom/DB[2], IDMS/DB, etc. with standard SQL commands.

A tcACCESS "driver" enables read and write access to mainframe data via standard interfaces like ODBC, JDBC/J2EE or via .NET, C, C++, C#, OLE DB and Apache Sqoop or Apache Spark from a client/server application (LUW), a web server, or cloud environment.



1 Adabas is a system of the Software AG.

2 Datacom/DB, IDMS/DB are systems of Computer Associates.
All other mentioned data management systems are systems of the IBM Corporation.

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Step 1 – Data Mapping: Intelligent Import Functions for any Data Structures

The data structures have to be specified in order to address the mainframe data via SQL – from a relational view – with the help of tcACCESS. Comfortable mapping functions are available to do so.

tcACCESS automatically identifies the structures of mainframe data with the help of copybooks and saves them in a separate repository. All fields and their properties (numeric, alphanumeric, packed, binary, etc.) from the data are displayed in the tcACCESS dashboard.

Through the relational view on non-relational mainframe data, the coordination effort between the divisions of the different IT systems is reduced to a minimum. tcACCESS includes an "SQL engine" on the mainframe, so the data can be addressed from a relational view. The structure information of the existing data has to be specified to tcACCESS in order to use the SQL engine. There are comfortable mapping functions available to do so. Identified data structures can be modified through "redefines" as necessary.

tcACCESS includes the DBD and PSB modules in the analysis for the easy creation of IMS/DB or DL/I table definitions. The information about key fields and segment dependencies contained in the DBD and PSB modules are automatically included in the SSA that is to be used. It is not necessary to enter the definitions manually.

Data dictionaries (e.g. Adabas Predict) can be evaluated with tcACCESS for Adabas and CA-Datacom/DB. All fields in the database and their properties are displayed. Naturally, "multiple" fields, "periodic group fields", descriptors, and sub- and superdescriptors are considered as well. Adjusting or redefining the fields is possible at any time during the import.

For CA-IDMS, the SCHEMA data is evaluated and all information that is necessary for the consideration of the relations within the database is provided.

Step 2 – After the Data Mapping

Easy ODBC/JDBC, .NET or OLE DB access to mainframe data is now possible from any client-server or web application. The desired tcACCESS driver simply has to be assigned to the application.

ODBC/JDBC Driver Support for the Following Data Sources

- ✔ VSAM & sequential files
- ✔ DL/I
- ✔ IMS/DB
- ✔ Datacom/DB
- ✔ IDMS/DB
- ✔ Adabas

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Stored Procedure Support: Calling Existing Mainframe Programs

Already existing application logic can be used for data accesses that require a special processing logic because of the task. This is implemented via API. This function is called tcACCESS stored procedures. Therefore, existing business logic on the mainframe can be easily called with the help of tcACCESS as middleware from any non-mainframe based application (Linux, UNIX, Windows, cloud, Hadoop).

Data Exchange vie Integrated Upload and Download Functions

Additionally to the direct access to mainframe data, the data can be quickly uploaded to LUW, cloud and Hadoop systems via tcACCESS; It can also be transferred to the mainframe from there.

Revision Safety and Security

There are comprehensive tcACCESS monitoring functions available to secure the revision safety of all data movements. The tcACCESS security or an already existing mainframe security (SAF interface) makes sure that users can only access data according to their authorization.

Supported Environments:

IBM mainframe:	IBM z/OS, z/VSE, z/VM, Linux for z/Systems, LinuxONE
LUW environment:	Microsoft Windows 7/8/8.1/10, MS-Windows Server 2003-2016, HP UNIX, AIX, Solaris SPARC, Linux, all platforms with Java
Supported Connections:	Mainly TCP/IP, also the protocols TN3270, SNA, LU6.2 (APPC), LU2 (3270 terminal emulations)

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Direct SQL Access with Mainframe Programs to Data in Distributed Environments (LUW)

tcACCESS Open System Transparency

tcACCESS also offers direct access from the mainframe to data sources that reside on MS Windows, Linux or UNIX systems and can be addressed via ODBC/JDBC or directly called with Oracle and DB2 LUW. Data in an LUW environment can be processed by online programs (CICS, IMS/DC, etc.) as well as batch programs.

The tcACCESS Open System Transparency for mainframe programs provides true real-time integration, because it is not necessary to synchronize the mainframe and open system data sources.

Joins

With tcACCESS it is possible to edit data in the LUW environment (e.g. DB2, MS SQL Server, Oracle, ODBC/JDBC) from the mainframe; That data can even be processed together with any kind of mainframe data (e.g. DB2, VSAM, IMS/DB, Adabas, etc.) through SQL syntax (Joins).

Features

The tcACCESS Open System Transparency solution for the access from the mainframe to data in the open system environment is characterized by its easy implementation and excellent performance. There are also no special requirements for the network topology.

A special highlight is the support of Joins of mainframe data and data in the open systems environment.

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B.O.S. Software Service und Vertrieb GmbH...

...has been successfully positioned in the international market for more than 25 years and is among the worldwide leading software providers of integrated solutions in heterogeneous system environments with IBM mainframe architectures. - Beyond Traditional Data Integration

We provide comprehensive integration solutions for all requirements:

tcACCESS – Cross-system direct access to data and applications

tcVISION - Cross-system data exchange
IBM mainframe integration through efficient data exchange via batch procedures (ETL) and in real-time on the basis of changed data.

Treehouse Software, Inc.
2605 Nicholson Road, Suite 1230 • Sewickley, PA 15143 USA
Phone: 724.759.7070 • Fax: 724.759.7067 • Web: http://
www.treehouse.com