IBM

IBM DB2 Universal Database for OS/390

Highlights

Delivers object-relational support with large-object data types, user-defined functions and triggers

***Helps you conduct e-business more effectively***

Enhances application performance and availability

Increases database and query capacity

Enables you to manage your database environment more easily

For the first time, support for the same object-relational extensions introduced with the IBM DB2® Universal Database™ servers for UNIX® and PC systems has been extended to the IBM OS/390® platform. DB2 Universal Database for OS/390 features performance improvements for utilities, faster application processing, better query performance, greater capacity, more built-in functions and improved management capabilities.

Now, you can benefit from the performance, availability, reliability and capacity of DB2 for OS/390 and the object-relational data storage and query access features of DB2 Universal Database.
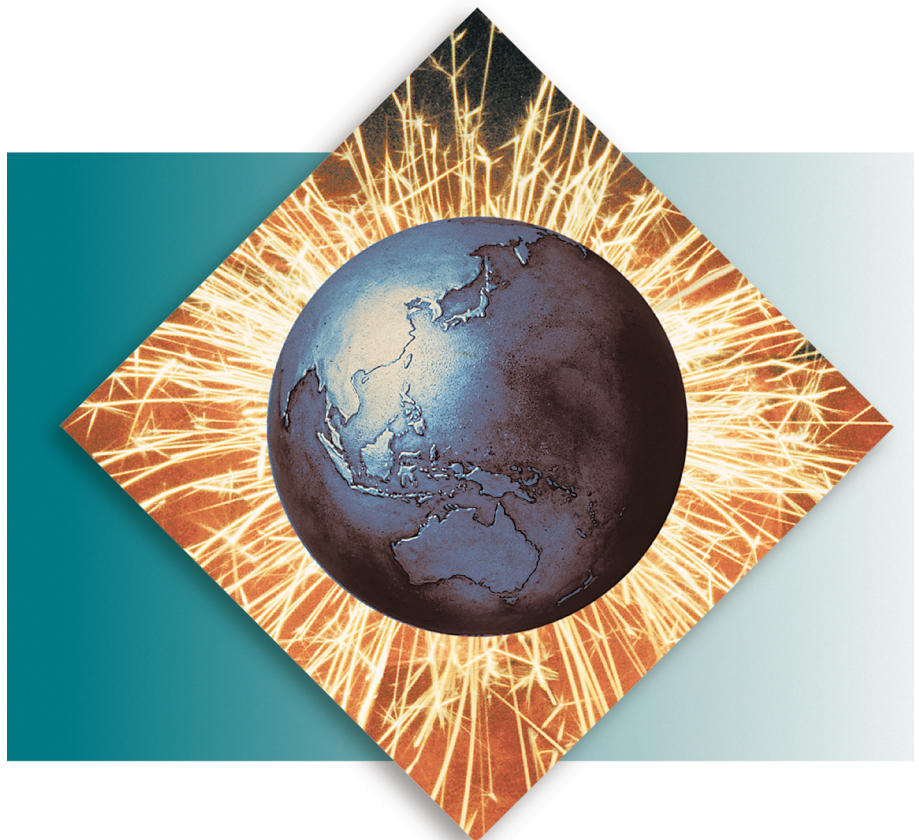
e-business

Building competitive advantages

Efficient management of large objects

Today, more and more companies conduct increasingly broad sets of transactions and deploy applications using Internet technology. The explosive growth of e-business worldwide requires data management software that can handle new and larger objects with enhanced efficiency and precision. DB2 meets these requirements.

Three new data types allow you to define and store large multimedia objects in DB2 tables:

- BLOB, a binary large object

- CLOB, a character large object

- DBCLOB, a double-byte character large object.

DB2 Extenders™ allow you to easily develop custom multimedia applications for these new data types, with support for audio, video, image and text applications.

In addition, DB2 Universal Database supports user-defined data types (UDTs). These distinct types share their internal representation with existing data types. You can use UDTs to enforce business rules and to make business application modeling more efficient.

You can also create user-defined functions (UDFs) with DB2 Universal Database. Like built-in functions, UDFs can extend the capabilities of Structured Query Language (SQL). In addition, you have the option of writing a UDF in any of several programming languages. Combined with UDTs, UDFs are powerful tools for capturing and enforcing business rules through the database, instead of in the application program logic.

DB2 provides many built-in functions as well as a dozen sample UDFs to enhance your query capability across all DB2 Universal Database operating systems whether you are running on OS/390, UNIX, Windows® or another platform.

The new triggers in DB2 Universal Database bring application logic into your databases. A trigger defines a set of actions that are executed when a specific SQL data change operation occurs on a specified base table. This enables you to:

- Enforce transitional business rules

- Update summary data in one table automatically when certain changes occur in another

- Initiate actions outside the database based on specific changes within it.

Better support for e-business

Organizations worldwide are making Java™ technology the foundation of their e-business strategies. DB2 Universal Database makes it possible to enhance Java applications with static SQL, resulting in better performance, manageability and authorization control. DB2 Universal Database supports static SQL through Structured Query Language for Java (SQLJ)—SQL that is embedded in the Java programming language. DB2 offers:

- Application portability across platforms and database management systems

- Strong typing, with compile and bind-time schema

- Authorization checking of static SQL.

Other network computing enhancements

High-volume distributed applications, such as those involving the Internet, can benefit from thread management called Connection Pooling. Using new type 2 threads, applications can connect but use much less storage per thread. Also, connections can be re-used, thereby reducing thread overhead at transaction boundaries. This will provide for more and faster distributed connections to DB2 Universal Database.

DB2 Universal Database contains several features for the management of stored procedures:

• SQL procedure language for stored procedures—an element of the Persistent Stored Modules (PSM) SQL specification

• Improved data transfer

• Support for nested calls for stored procedures and UDFs

• Ease of management of stored procedures by using standard commands, such as CREATE, DROP and GRANT.

Several features—large objects (LOBs), UDTs, UDFs and built-in functions—can be used with Call Level Interface (CLI), a callable SQL interface that increases the portability of applications by enabling them to become independent of any one database vendor's programming interface. DB2 Universal Database also extends DB2 Open Database Connectivity (ODBC) to support the new universal database functions.
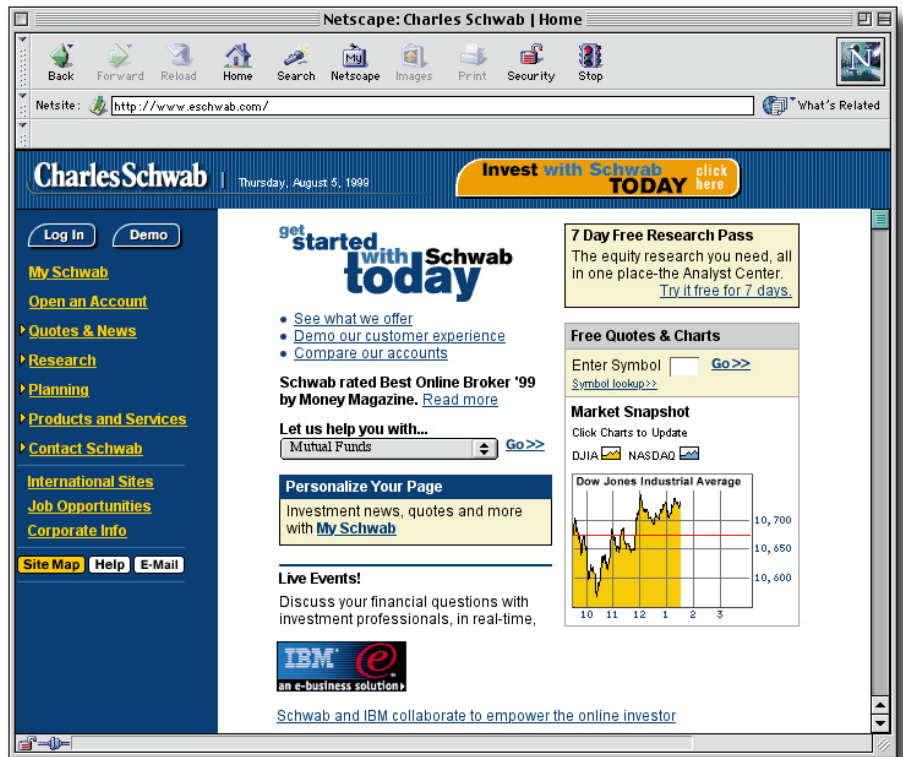
Charles Schwab handles more than four million stock trade transactions per hour using DB2 Universal Database for OS/390 to power its online e-business.

Improved performance and availability

DB2 Universal Database enables you to rebalance partitions by altering the partitioning key values while you continue to run applications that access data unaffected by the rebalance.

The new and improved utilities also enable you to:

• Reduce backup and recovery time

• Rebuild indexes and tablespaces simultaneously

• Sort, build and rebuild indexes and index keys in parallel.

DB2 delivers improved query performance with its enhancements to complex queries and parallel queries on non-partitioned tables. Enhancements include:

• Better workload balancing in a Parallel Sysplex® cluster

• Faster join and outer join processing

• Enhanced star join processing.

Data sharing allows you to maintain your data in one place and to access it from two or more separate DB2 subsystems. Enhancements to the data sharing function make your data sharing subsystems more reliable. You can duplex group buffer pools by writing to the primary and secondary group buffer pools at the same time. In the rare event that the primary group buffer pool fails, DB2 can recover quickly by switching over to the secondary group buffer pool. More caching options for the data sharing coupling facility can reduce its overhead and improve performance.

Scalability to meet future needs

With DB2 Universal Database, you can ensure that your databases and data management applications continue to grow as your organization grows. In addition to having increased tablespace capacity to 16 TB, DB2 also enables you to put buffer pools in data spaces. This capacity allows you to use up to 2 GB of virtual storage for each of your 64 buffer pools, dramatically increasing the amount of storage that can be used to cache data pages.

Easier management of your database environment

DB2 Universal Database administration is greatly enhanced with the DB2 Management Tools Package. This feature combines the existing workstation tools—Visual Explain, DB2 Installer and Estimator—with two tools new to Version 6. Stored Procedure Builder lets you develop and deploy stored procedures from a visual development environment on your workstation. DB2 Control Center brings the ease of administration of DB2 Universal Database on UNIX, Windows and IBM OS/2® to DB2 Universal Database for OS/390.

Using the DB2 Management Tools Package, you can install or migrate your DB2 database; plan for new application growth; analyze application performance; develop, test and deploy stored procedures and manage your DB2 systems on multiple platforms.

Several functions and features of DB2 Universal Database for OS/390 enable you to manage your DB2 environment more easily:

- Predictive governing enables you to determine when a query is likely to reach processing limits

- EXPLAIN lets you populate a new table, which gives you an estimate from DB2 of how much processing resource is needed for any SQL statement, dynamic or static

- Data set input/output (I/O) activity, previously available only in output from a DISPLAY BUFFERPOOL command, is now available in traces, both in batch reporting and online monitors

Power your e-business solutions with DB2, a universal database for today that will take your organization into the next century.

For more information

Contact your IBM marketing representative or IBM authorized software reseller or visit our Web site at *www.ibm.com/software/data/db2/os390*.

IBM®

Tivoli *ready*

Cluster**Proven**