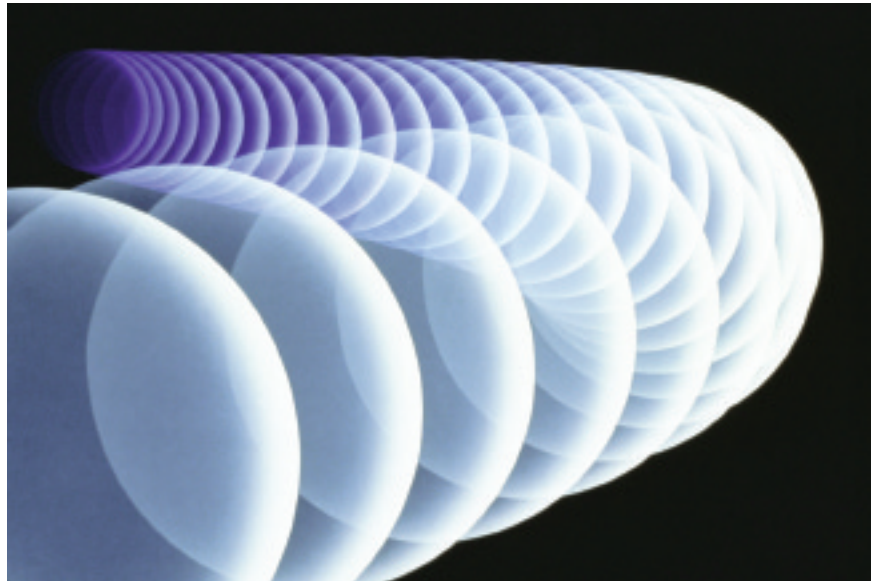


IBM UniData

Highlights

- **Standards-compliant, cross-platform extended relational database management system**
- **Intuitive, efficient querying with nested UniData® SQL**
- **Highly flexible application development environment with UniBasic**
- **Interoperability with a wide range of complementary tools for data access and application development**
- **Small footprint, embedded database with GUI tool based on Java™ technology, for low-cost administration.**



With an attractive price-performance ratio and rich functionality, UniData is an asset you can count on for your mission-critical data management needs.

Unify your business information with UniData

Whether you need to create a cost-effective foundation for new application development or enhance the functionality of your legacy systems, IBM UniData is the extended relational data management solution for you. With standards-compliant, cross-platform technology at its core, and a highly flexible, integrated application development environment, UniData is powerfully equipped for today's complex business computing needs.

Intuitive querying

If you're looking for intuitive and rapid querying capabilities, look no further. UniData SQL is a nested implementation of the ANSI structured query language (SQL). UniData provides extensions for transparently navigating SQL's native nested data structures. These extensions, combined with SQL capabilities that intelligently recognize data structures, provide a simpler and more efficient query language compared with other non-nested SQL implementations.

Create powerful, transaction-intensive applications

For example, you may want to obtain a list of customers who ordered a particular part number. If your data is stored in a traditional relational database, the following SQL statement would be required:

```
SELECT c.cust_no
FROM customers c,
     customer_orders x, orders o
WHERE c.cust_no = x.cust_no AND
      x.part_no = o.part_no AND
      o.part_no = "P001"
```

In comparison, the extended relational database capabilities of UniData provide a more intuitive SQL statement to obtain the same list:

```
SELECT cust_no
FROM customers
WHERE part_no = "P001"
```

UniData also includes UniQuery, an easy-to-use, English-like query language that provides the ability to create meaningful ad hoc database queries without having to understand underlying database structures. UniQuery allows users to easily query selected data and quickly develop customized reports on the fly.

Delivering high value at low cost

A small-footprint, embeddable database with a Java technology-based GUI administration tool and automatic table-space management, UniData lowers the cost of administration, delivering value for your money.

A feature-rich database, UniData offers a number of file structures, including hashed files for faster file access and dynamic files for automatic file sizing. Direct I/O provides high-performance data access, and UniData triggers allow for the automatic enforcement of business rules.

Advanced transaction management options are another UniData feature. And with automatic roll forward and roll back, journaling/transaction logging and full recovery of files, UniData offers a high-availability environment for your mission-critical applications.

Flexible application development environment

UniBasic, UniData's unique application development environment, enables you to create powerful, transaction-intensive applications. UniBasic compiles to byte-code, allowing you to develop once and deploy across any platform for which a UniData virtual machine (VM) is available. UniBasic supports rapid prototyping and full navigation of nested data structures. With its own data access commands

and full SQL and C language interfaces, UniBasic offers a wide range of flexible development choices. Comprehensive terminal and printer I/O commands, an array of string and matrix-handling commands and numerous flow control structures make complex programming jobs manageable and cost-effective.

C language interfaces

Sharing functions, programs and data between application code and underlying system-level code is essential for any developer designing applications for a modern computing environment. CallBasic allows programmers to work in C and take advantage of higher-level UniBasic capabilities. With CallBasic you can write C applications that access UniData and combine C routines with UniBasic subroutines.

Conversely, CallC allows application developers working in UniBasic to call the C language, permitting UniBasic applications to access UNIX® system calls, existing libraries of C code and Microsoft-compatible dynamic link library (DLL) files.

Interoperability for easy access

UniData provides powerful, flexible options for interoperability and can be accessed by tools such as Visual Interdev, VB, VC++, Delphi or any ODBC, ActiveX or OLEDB tool or any Java technology-based integrated development environment (IDE).

It also supports:

- *UniData ODBC drivers—Level 2 compliant*
- *InterCall—C API to allow high-speed, native access from Microsoft® Windows® or UNIX clients*
- *UniObjects—ActiveX-based high-speed native interface*
- *UniObjects for Java—Native Java API*
- *UniOLEDB—UniData OLEDB provider.*

New in UniData Version 5.2

UniData Version 5.2 offers a host of new features for enhanced interoperability, performance, data integrity, application development and administration.

- **Server-to-server interoperability.** *Utilizing the IBM U2 common middle-ware infrastructure, UniData now offers BCI, the UniBasic SQL Client Interface that allows seamless access from Basic to any ODBC-compliant database. BCI allows a UniData*

application to access and update Microsoft SQL Server, Oracle, IBM DB2® Universal Database™ or any other relational database system.

In today's Web environment, interoperability must include the ability to communicate with or even drive Web-based applications from your application. With Version 5.2, UniData offers the CallHTTP interface that supports the level 1.1 HTTP protocol, including URL encoding, multipart formats and redirection. CallHTTP includes API functions to provide application logging. The UniBasic Socket API provides the ability to interact with an application running on another machine through the sockets interface. The Socket API enables you to write distributed UniBasic applications by supporting both server and client interfaces that can cooperate on tasks through efficient, easy-to-implement socket communication.

- **Performance and data integrity.** *UniData Version 5.2 offers significant performance enhancements by optimizing the internal use of indexes. UniQuery automatically uses all indexes possible to evaluate complex selection criteria, performing logical comparisons for the most efficient selection of your data subset. The “guide” file management tool supports*

parallel online analysis, increasing performance and providing the flexibility to carry out file maintenance at any time, without requiring exclusive access. UniData Version 5.2 also includes guide_ndx, a tool for analyzing the integrity of index files.

- **Development environment.** *UniDebugger is a graphical IDE that interfaces with UniBasic and its debugger, providing a Microsoft Windows workspace with multiple windows to show the source code, application, breakpoints, watched variables and any messages from the debugging session. The UniDebugger editor provides full-screen, cut-and-paste and keyword color-coding. The debugging interface allows you to set break and watch points, execute line by line or step into and over subroutines.*

UniBasic and UniDebugger have been enhanced to be case insensitive, allowing keywords and debugging commands to be entered in lower and upper case. UniBasic also includes functions to sort dynamic arrays, investigate the contents of the command stack and set environment variables.

- **Administration and file management.** *UniData's file management facilities have been enhanced to*

release unused space back to the file system upon merging of data groups. UniData Version 5.2 also allows file management tools to evaluate synonyms to determine file location. Several data dictionary positions have also been reserved for user-defined purposes. To enhance your ability to load data in bulk even when you do not know the optimal file size, you can now create a file and pre-allocate multiple overflow blocks.

- **Support and performance analysis.** UniData Version 5.2 offers several tools for support and performance analysis. The `PORTSTATUS` command displays a user's resource usage, including environment control language (ECL) as well as Basic call stack information and open file lists. The `TANDEM` command allows administrators to view or control an end user's terminal session in the UNIX environment. UniData Version 5.2 provides the ability to collect and display user session statistics with the `ENABLE/DISABLE` and `LISTUSERSTATS` commands.

Other enhancements in UniData

Version 5.2

In addition to the above enhancements, UniData 5.2 also offers:

- *Configurable interpretation of two-digit year input*
- *Enhanced RFS support for very large sites*
- *Combined `SAVE/GETLIST` command*
- *Simpler script automation of `udt` commands.*

Additional tools for UniData

- *RedBack[®]—multi-threaded, rules-based application server for building and delivering e-commerce solutions for OLTP*
- *MITS—native online analytical processing (OLAP) tool optimized for use with MultiValued databases for gathering, managing, distributing and analyzing data for improved strategic and tactical decision-making*
- *SB+—a 4GL development environment for host-based, client/server applications*
- *SBClient—the SB+ client component of a client/server solution that brings GUI features to host-based applications*
- *wIntegrate—a tool for GUI application revitalization and desktop integration*
- *COBOL Direct Connect—middleware to allow COBOL applications to use UniData as their data store, providing standards-based open access through any SQL-based tool as well as the full suite of IBM U2 tools.*

Hardware and software requirements

The UniData relational database solution runs on major uniprocessor and SMP-based hardware platforms. It can run on Microsoft Windows NT[®]/2000, Linux[®] and UNIX. UniData requires a suitable mass media device such as a CD-ROM drive.

For more information

Please contact your IBM marketing representative or an IBM Business Partner, or call 1-800 331 1763 within the U.S. Also, visit our Web site at ibm.com/software/data/u2



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