

Liberty/JDBC Driver

Achieve True Platform Independence

With The First Pure Java Level 3

Driver For Every MultiValue (Pick) DBMS.

JDBC Driver at a Glance

Liberty/JDBC Driver is a pure Java Level 3 driver providing a platform independent interface from any Java-enabled environment to any MultiValue database. Liberty/JDBC expedites three new types of development:

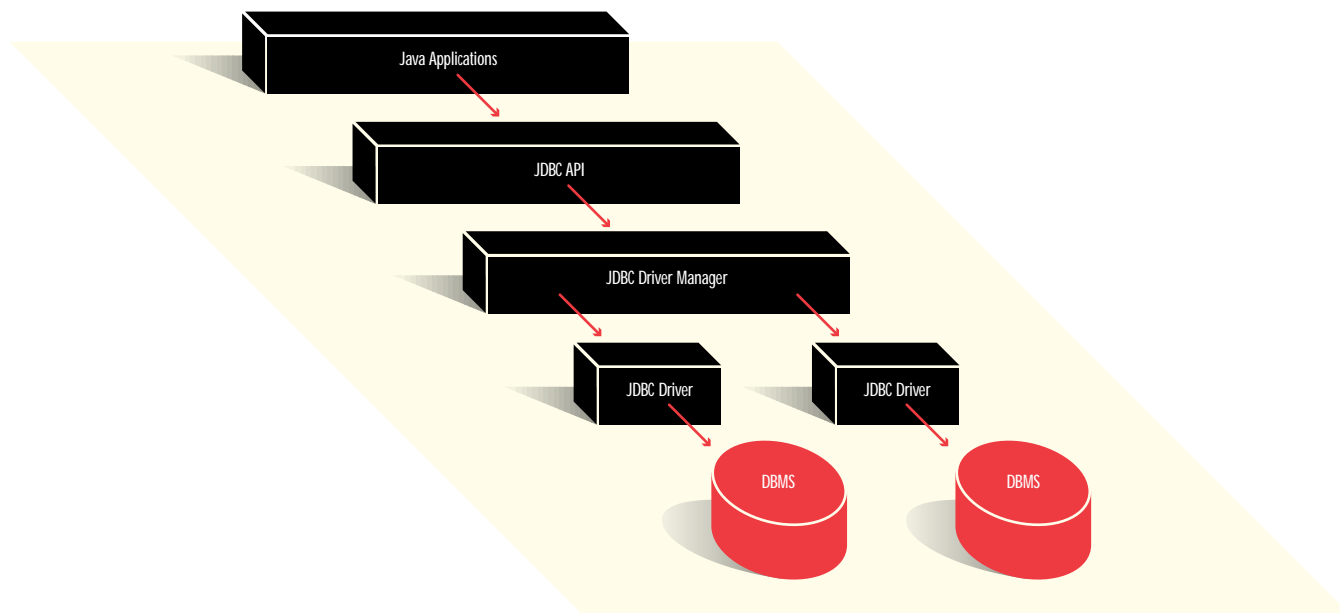
- *MultiValue data-aware Java applets within Web browsers.*
- *MultiValue data access from Java-aware non-Intel clients.*
- *Replication between MultiValue and relational databases.*

Liberty/JDBC brings Java's "write once, run everywhere" economy of application development and maintenance to any MultiValue system which supports TCP/IP socket connections. This includes not only UNIX and Windows NT-based systems, but also unhosted systems running PicLAN/IP.

Liberty/JDBC opens vast possibilities for Web-enabled applications, capitalizing on freely-available Java-capable browsers such as Netscape Navigator, Microsoft Internet Explorer (from 3.02), and Opera (release 4). Java support is also available in application suites such as Lotus Notes.

With Liberty/JDBC, the developer enjoys the full capabilities of object-oriented programming without concern for database

Liberty JDBC Driver



syntax. This permits shifting development work from trained Pick programmers to Java-literate, entry-level technicians. The driver implements the translation between the Java-aware client and your database, and also establishes and manages the connection—or pathway—to the database.

Unlike some products, Liberty/JDBC is a pure Java driver, not a bridge to an ODBC driver. It is the product of Liberty Integration's pioneering work in network connectivity software. Liberty has a customer base of more than 400 installations of its Liberty/ODBC Driver for MultiValue databases.

JAVA, THE PHENOMENON

Introduced by Sun Microsystems in 1995, Java is a pivotal technology capturing mindshare and development dollars on a broad range of fronts. Forrester Research noted, in early 1997, that 62% of the Fortune 1000 already used Java, while 42% of them expected it to play a **strategic role** in the companies within the year. *Byte*

magazine recently reported that 74% of its readers who had evaluated Java were already using or planning to use Java soon.

The validity of the Java model is underscored by IT executives asserting 7:1 cost savings on major mission-critical development projects. Reports of developers achieving 4:1 productivity improvements when moving from C++ to Java are not unusual.

The overall Java strategy includes:

- JDBC, database connectivity facility
- Java, a programming language
- Javascript, a scripting language
- JavaOS, an operating system

Widely recognized as a language for enhancing the World Wide Web experience, Java is actually a wide-reaching enabling technology for development of platform-independent applications. Since the original scope of the Java concept included suitability for embedded

systems and thin clients, it is, like the MultiValue DBMS, highly efficient. Its design also mirrors key principles of the MultiValue model: offering economical, efficient delivery of information to users without compromising security considerations.

Perhaps the biggest revolution spawned by Java is its role as the operating system for the network computers, a.k.a, "thin clients." These devices are streamlined systems that exploit network servers for much of their processing power, storage, and administration. This new paradigm is a natural complement to the MultiValue DBMS, offering broad platform support and unmatched economies of implementation. It retains the advantages of the dumb terminal, while adding support for local processing and enhanced user interfaces.

Java's platform independence means that the same applications can run on every kind of device: network computer, PC, Macintosh, UNIX machine, NC, X terminal, set-top box,

PDA, AS400, OS/2 system, cellular phone, and smart appliances. Information and software reside mainly on servers and are delivered to clients on demand.

The practical appeal of Java is enhanced by its suitability for incremental adoption at far lower cost than older technologies. Due to its platform independence, Java can be implemented across the established infrastructure, leveraging existing systems such as legacy mainframes, midrange computers and PCs. In contrast to recent revolutions in computing, Java does not require companies and VARs to abandon past investments. Java provides a cost-effective means of updating proven applications without abandoning core functionality.

The Java-based, network-centric model offers a strikingly simple alternative to application bloatware that feeds the mounting megahertz and memory demands endemic to PCs. In the Java model, most computing resources are maintained on servers operated by experts. Users just plug in to the convenient, reliable, economical Java "utility" and do what they need to do.

Java, The Language

Like Pick/Basic, Java is a general purpose programming language that compiles its source code into platform independent bytecodes (pseudocode) structured for easy parsing. At execution, Java bytecodes are interpreted into machine code using an interpreter (Java virtual machine) on the host machine (PC, workstation, browser, server, etc.). The Java API ensures that there are no implementation-dependent aspects of the language, explicitly specifying the size of data types and arithmetic behavior.

Java is an object oriented language with

constructs similar to C++. Its easily changed code and multithreading make Java suitable for full-blown application development. It can also be used to embed programs ("applets") in World Wide Web pages. These applets are transmitted over the Internet to the user's personal computer, where they execute. High visibility early implementation of these capabilities have included Web pages featuring animation, interactive games, and other flashy objects.

Java Security

This technology allows client application support with full security on any client with a Java-enabled browser. A browser applet is restricted to socket connections back to the originating system, preventing accidental or intentional unauthorized data access. The strict limits on applet functionality also prevent execution of native CPU code.

Java includes many security features such as strong memory protection, encryption and signatures, rules enforcement and run-time verification. For instance, using Java Computing removes the possibility that—either maliciously or inadvertently—memory locations outside the boundaries of the program can be read or corrupted. Java also supports the use of powerful encryption technology to verify that an applet came from an authorized source and has not been modified. Java also provides a run-time verification system that ensures that applets downloaded to the client cannot violate the integrity of the environment.

JDBC Acceptance

Java's built-in networking classes greatly enhance its suitability for deployment of Intranet and Extranet applications. Java was developed with

the network in mind. Unlike C and C++, it includes extensive network functionality in the core of the language, allowing the application developer to concentrate more on users' needs than on detailed network code.

JDBC has been endorsed by:

- Borland International, Inc.
- Dun & Bradstreet
- IBM (for DB2, Domino server)
- Informix software, Inc.
- Intersolv
- OpenLink Software
- Oracle Corporation
- SAS Institute, Inc.
- The Santa Cruz Operation
- Sybase, Inc.
- Visigenic Software, Inc.

Benefits of JDBC

Java Database Connectivity:

- Provides a standard way to access relational data from Java applications and applets.
- Is patterned after ODBC, Microsoft's C-based standard for accessing and maintaining relational databases.
- Is an API for using low-level JDBC drivers.
- Is an API for creating the low level drivers which effect the database connections and transactions with data sources.
- Is based on the X/Open SQL Call level Interface (CLI) definition of how client/server interactions are implemented for database systems.

LIBERTY/JDBC DRIVER

Liberty/JDBC Driver for MultiValue databases defines every aspect of making data-aware Java applications for the network.

Features include:

- Pure Java level 3, platform-independent driver for MultiValue DBMSs.
- Support for string, date, time, integer, decimal, and other Java data types.
- Support for INSERT, UPDATE, and DELETE.
- Can be used from Java servlets.
- Supports Liberty Web Publisher for MultiValue server-side components.

Liberty/JDBC is compatible with the following MultiValue databases: General Automation's mv.BASE, mv.ENTERPRISE, Mentor Operating Environment, Mentor PRO, R91, Power95, PC/OS, Alpha Micro Pick64, Sequoia OA, SEQUOIApro; uniVerse, PI/Open, Unidata; Advanced Pick, D3, R83; Reality/X, Ult-Plus, jBase, Sanyo/Icon, and others.

Liberty Integration's experience certifying its ODBC drivers for MultiValue and relational databases with hundreds of Windows-based applications is your assurance that Liberty/JDBC is built on a foundation of knowledge.

Limitations

- The MultiValue server must support TCP/IP sockets (Telnet, PicLAN/IP).
- A Java 1.02 (or higher) compliant virtual machine is required. The virtual machine on the server runs as a Java application (executable).
- When called from a browser, Java applets are constrained by the Java "sandbox" limitations and the configuration of your browser. The MultiValue database must be accessible by a socket connection on the system where the Web server resides. For example, mvWorkstation and Microsoft Internet Information Server would run on the same Windows NT system, or Apache and Unidata on the same UNIX system.
- A valid Liberty/ODBC client and the Liberty Administrator are required to map MultiValue database files. The Liberty Administrator functionality has not been ported to Java at this time.

About Liberty

Liberty Integration Software, Inc., a subsidiary of General Automation, Inc., develops software products that let MultiValue compliant (Pick) databases work with popular client environments. Liberty, which has become synonymous with Open Database Connectivity (ODBC), offers a full suite of enterprise connectivity products and services.

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