

# HP NonStop JDBC Type 4 Driver

Data sheet



The HP NonStop JDBC Type 4 Driver is a high-performing standards-compliant driver providing remote access from Java clients to HP NonStop SQL/MX Release 2.0 MP and MX tables. NonStop JDBC Type 4 Driver is integrated with the features of the NonStop SQL/MX Database server and provides a highly available and scalable connectivity solution on HP Integrity NonStop NS-series servers and also on HP NonStop S-series servers.

## Key features and benefits

The NonStop JDBC Type 4 Driver provides a number of important benefits to Java™ application developers:

- Java Database Connectivity (JDBC) standards compliance
- Multi-tier deployments
- Database connectivity—highly configurable, scalable, and available
- Enhanced performance
- Binary Large Objects (BLOB)/Character Large Objects (CLOB) support

The NonStop JDBC Type 4 Driver provides a highly available and scalable connectivity solution to the Integrity NonStop server platform that is JDBC 3.0 compliant and supports J2EE features.

# The NonStop JDBC Type 4 Driver supports the goal of fast ROI while also minimizing application changes.

NonStop JDBC Type 4 Driver is JDBC 3.0 compliant and also supports the Java Platform 2, Enterprise Edition (J2EE) features such as statement pooling, the ability to call a stored procedure written in Java, use of embedded SQL in Java, and a thread-safe nonblocking behavior.

## JDBC standards compliance

The NonStop JDBC Type 4 Driver complies with JDBC 3.0 specifications and runs on all platforms supporting Java Development Kit (JDK) 1.4.1 or later. It also supports the JDBC application program interfaces (APIs) for connection pooling, statement pooling, and datasource. With the NonStop JDBC Type 4 Driver, an application can access both NonStop SQL/MP and NonStop SQL/MX tables. It also supports Data Definition Language (DDL) operations for NonStop SQL/MX tables. Refer to the HP NonStop JDBC Type 4 user manual for more information on topics such as supported and unsupported data types, data type mapping, and metadata calls.

The NonStop JDBC Type 4 Driver supports the portability goal of fast ROI while minimizing application changes. It enables applications written for a third-party JDBC 3.0 driver to be executed on the NonStop JDBC Type 4 Driver with just runtime configuration changes. An exception to this would be for applications that use vendor-specific SQL functions currently not supported by NonStop SQL/MX Release 2.0 Database.

## Support for NonStop SQL/MX Database features

The NonStop JDBC Type 4 Driver provides support for a number of NonStop SQL/MX Database-specific features, including

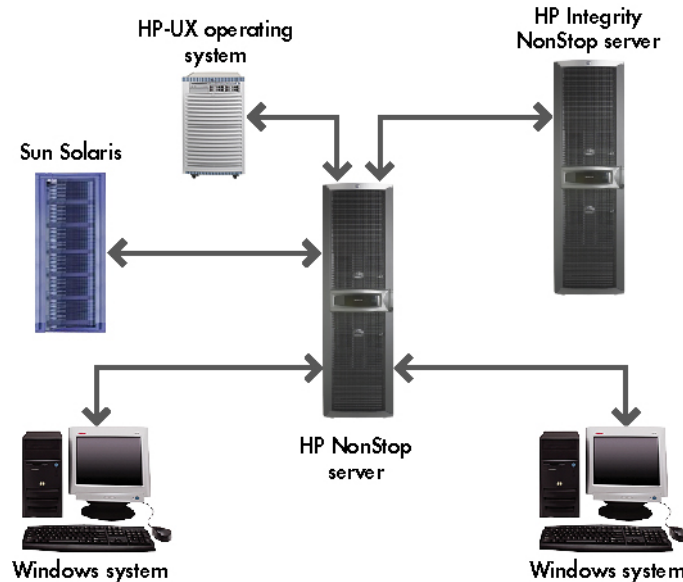
- *Dynamic SQL*: Supports all features of dynamic SQL with the advantage of no additional parsing and the benefits of statement caching. Supports full SQL pass-through for accessing NonStop SQL/MX Database grammar and functions.
- *Java Stored Procedures (SPJ)*: Supports execution of Java stored procedures. The Java class containing the SPJ should be present on the HP NonStop operating system, Mission Critical Operating Environment. Refer to the "CallableStatement" sample for the setup and execution in the HP NonStop JDBC Type 4 Driver user manual.
- *Database Metadata*: Supports all database metadata for both NonStop SQL/MX and NonStop SQL/MP tables.
- *Unicode support*: For internationalization, the driver provides support for unicode and 118.
- *Rowset support*: For high-volume loading, the driver uses an array binding (rowsets) feature that enables it to insert data at a faster rate.
- *BLOB/CLOB support*: JDBC type 4 driver supports the storage of BLOB/CLOB datatypes in NonStop SQL/MX Database. It uses Java's BLOB and CLOB interface classes as the bases for the API. Programmatic access conforms to the Java specifications. The storage is implemented in NonStop SQL/MX native tables.

## Multi-tier deployments

With the NonStop JDBC Type 4 Driver you are assured of a flexible architecture for reaching the NonStop SQL/MX Release 2.0 Databases (both NonStop SQL/MP and NonStop SQL/MX tables), enabling transparent access to the scalability and availability of the NonStop servers.

**Figure 1**

Hybrid environment where NonStop JDBC Type 4 Driver can be deployed



The NonStop JDBC Type 4 Driver can be deployed in Java client/server and J2EE application server environments across heterogeneous client environments (desktops and servers) to connect to Integrity NonStop servers and NonStop servers (see figure 1).

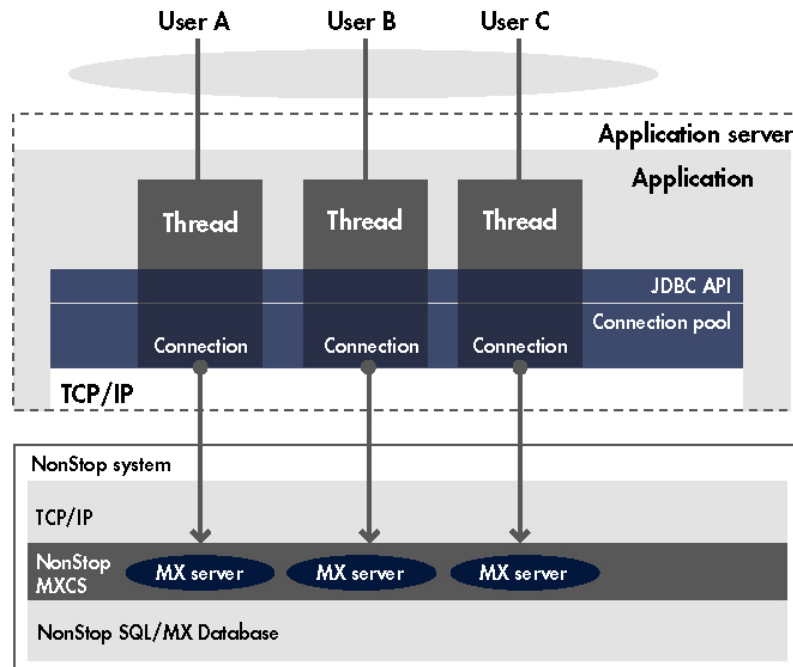
The NonStop JDBC Type 4 Driver integrates seamlessly with network-centric distributed frameworks such as J2EE. However, the driver can enable NonStop SQL/MX Database participation in a global transaction only if the co-coordinating transaction manager supports last agent optimization, where NonStop SQL/MX Software is the only non-XA resource manager in the global transaction. For example, both BEA WebLogic Server 8.1 and IBM WebSphere 5 application server support last agent optimization. Refer to the BEA WebLogic Server 8.1 “Last Agent Optimization” sample in the HP NonStop JDBC Type 4 Driver user manual for the setup and execution details.

## Database connectivity—highly configurable, scalable, and available

The NonStop JDBC Type 4 Driver provides scalable, persistent connectivity services that can be configured to use either conventional TCP/IP or HP Parallel Library TCP/IP Software. NonStop JDBC Type 4 Driver connections can be configured via the DriverManager, DataSource (can be registered with a naming service), or PooledDataSource (can be registered with a naming service). Both methods can provide connection pooling.

Popular tools such as Eclipse and JBuilder can be used for rapid development, deployment, and debugging of NonStop JDBC Type 4 Driver-based applications. HPjtune, JMeter, and Optimizelt can be used for measuring and optimizing the driver applications.

**Figure 2**  
Multi-tier environment



The NonStop JDBC Type 4 Driver delivers enterprise-strength data connectivity through its unique common server-side architecture. The HP NonStop MX Connectivity Services (NonStop MXCS) can be thought of as an “SQL gateway,” in that it connects the client’s Java application with the NonStop SQL environment. The SQL servers can be configured as persistent processes with a choice of processor distribution, leveraging the NonStop MXCS configuration. NonStop MXCS installation is streamlined, and configuration across clients can be remotely managed via NSM/web.

Figure 3 shows how NonStop JDBC Type 4 Driver, the Integrity NonStop server, and NonStop SQL/MX Release 2.0 Database architecture support persistent scalable services on the Integrity NonStop server while increasing the number of concurrent and connected users for large-scale demands.

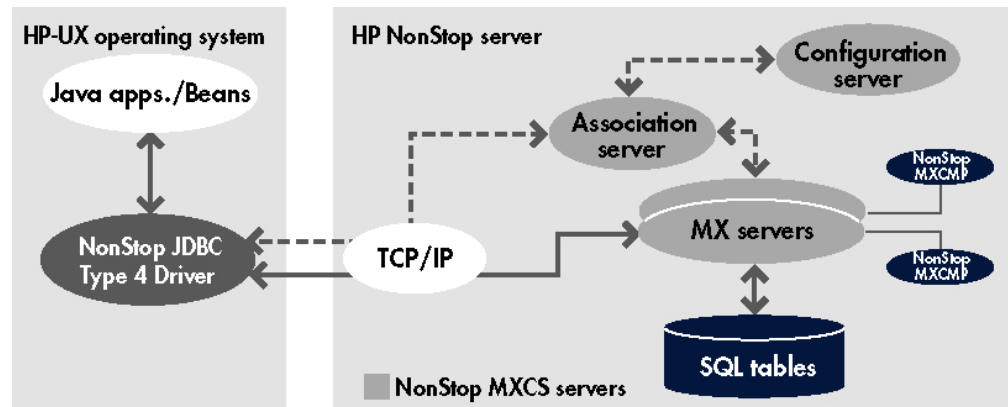
NonStop MXCS ensures support for increased loads, avoiding the poor performance and downtime often associated with moving to demanding environments such as e-business. Automatic management of pools of configured server instances supports both connection and resource caching, greatly improving the runtime access environment.

NonStop MXCS supports the following options via command line or the user interface (NSM/web):

- Creation and management of NonStop SQL/MX services and server-side data sources
- Live, configurable monitoring and persistent event tracing

- Control functions to start and stop NonStop SQL/MX services
- Mapping of server data sources to client data sources via driver properties

Figure 3  
Scalable database connectivity services



NonStop JDBC Type 4 Driver supports the Integrity NonStop system attributes of failover detection and automatic recovery. The service survives any component failure without client or administrator intervention. Applications can resume their access immediately for most failures and within seconds for more significant failures.

Data integrity is always guaranteed with NonStop SQL/MX and HP NonStop Transaction Management Facility (NonStop TMF) Software, whether the application is configured in a two-tier architecture or in a multi-tier architecture.

Additionally, single failures affect, at most, a single connection; that is, all other application connections remain unaffected by the failure of one application connection. Service availability recovers automatically, with no impact on existing connections.

## Enhanced performance

The NonStop JDBC Type 4 Driver has been optimized to provide excellent performance when compared to other Type 3 or 4 drivers connecting to NonStop SQL/MX Software.

There are three different types of optimizations possible with NonStop JDBC Type 4 Driver:

- Uses NonStop MXCS TCP protocol, and the performance is therefore significantly faster than JDBC-Open Database Connectivity (ODBC) bridge drivers. NonStop MXCS TCP protocol has been optimized and tuned for very fast data access.
- Provides a number of extensions to JDBC to provide performance improvements such as prefetch rows, batch INSERTS and UPDATES to the server, and Query column defines.
- Provides and supports connection pooling/statement caching.
- Rowsets (array binding support)
- Improved tracing/error logging

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## Technical specifications

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### System requirements

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#### Software

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|-----------------------------|--|
| Software on NonStop servers | Minimum: NonStop operating system, Release Version Update (RVU) G06.23 or later for NonStop S-series servers, and RVU H06.03 for Integrity NonStop NS-series servers is required |
| Supported databases         | NonStop SQL/MX Database Release 2.0 or later<br>NonStop MXCS   |
| Software on client          | JDK 1.41 or later  |

#### Supported client platforms\*

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Microsoft® Windows® 2000 or Windows XP  
HP-UX 11i v1 and v2  
Red Hat Enterprise Linux®, version 2.1  
SUSE Linux Enterprise Server 8 (United Linux 1.0)  
Sun Solaris 8  
NonStop operating system, RVU G06.23 or later

\* Refer to the product softdocs for the latest platforms.

## Ordering information

| Part number                                   | Description                   |
|---|-------------------------------|
| <b>HP Integrity NonStop NS-series servers</b> |                               |
| HSJ82V1                                       | HP NonStop JDBC Type 4 Driver |
| <b>HP NonStop S-series servers</b>            |                               |
| SJ82V1  | HP NonStop JDBC Type 4 Driver |

## For more information

For more information about HP NonStop JDBC Type 4 Driver, visit [www.hp.com/go/nonstop](http://www.hp.com/go/nonstop).

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