



# **TIBCO® Data Virtualization**

## **HSQLDB Adapter Guide**

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# Contents

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# TDV HSQLDB Adapter

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## Introduction

This section explains the various connection and configuration options of the datasource HSQLDB as well as the capabilities:

[Datasource Configuration](#)

[Data Type Mappings](#)

[HSQLDB Function Support](#)

[References](#)

## Datasource Configuration

This section explains the connection properties that are defined while setting up a datasource.

## Basic Tab

The following table and the sections below lists and explains the connection properties that are in the Basic Tab of the New Data Source Window.

<a href="#">Datasource Name</a>	The name of the Datasource.
<a href="#">Host</a>	Name of the host machine or the host machine's IP address.
<a href="#">Port</a>	Port number for the data source to connect with the host.

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	The Port number for HSQLDB is 9001.
Database Name	Name or alias of the underlying data source. TDV Server uses this name to find and connect to the data source.
Login/User, Password	User name and password required to access the data source.
Pass-through Login	Flag to indicate whether pass-through login is enabled or not.
Transaction Isolation	The degree to which transactions are isolated from data modifications made by other transactions.

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## Datasource Name

The name of the data source.

## Data Type

string

## Default Value

""

## Host

Name of the host machine or the host machine's IP address.

## Data Type

string

## Default Value

""

## Port

The Port number

## Data Type

string

## Default Value

""

## Database Name

Name or alias of the underlying data source. TDV Server uses this name to find and connect to the data source.

## Data Type

string

## Default Value

""

## Login/User, Password

User name and password required to access the data source.

## Data Type

string

## Default Value

""

## Remarks

When the data source is used as a target for cache tables or data ship, the user must also have permission to create tables, execute DDL, and perform other required tasks. Refer to the individual data source descriptions for details.

## Transaction Isolation

The degree to which transactions are isolated from data modifications made by other transactions.

## Data Type

string

## Default Value

NONE

## Remarks

Valid values are:

- Read Uncommitted—Dirty reads, nonrepeatable reads, and phantom reads can occur.
- Read Committed—Nonrepeatable reads and phantom reads can occur.
- Repeatable Read—Only phantom reads can occur.
- Serializable—Dirty reads, nonrepeatable reads, and phantom reads are prevented.
- None

## Pass-through Login

Flag to indicate whether pass-through login is enabled or not.

## Data Type

string

## Default Value

""

## Remarks

Disabled (default)—This allows automated provisioning of a connection pool. Open connection threads can be used by authorized users after the validation query verifies connection status. If pass-through login is disabled, the Save Password check box is not available.

Enabled—A new connection to the data source uses the credentials supplied by the client when data is requested from that data source for the first time. Subsequent requests by the same user reuse the existing connection. When another user attempts to connect to a data source, a new connection is created.

See “Managing Security for TDV Resources” in the TDV Administration Guide for details.

## Advanced Tab

The following table and the sections below lists and explains the connection properties that are in the Advanced Tab of the New Data Source Window.

Connection URL Pattern	A template for generating a URL to connect to the physical data source.
Connection URL String	The URL string generated from the connection URL pattern with the connection information you provide.
JDBC Connection Properties	Lets you specify property-value pairs to pass to the JDBC data source
Connection Pool Maximum Size	Maximum number of connections (both active and idle) allowed for the data source. When the maximum is reached, new requests must wait until a connection is available.
Connection Pool Minimum Size	Minimum number of connections in the pool even when the pool is inactive.

Connection Pool Idle Timeout	Number of seconds that a connection can remain idle without being dropped from the pool when there are more than the minimum number of connections.
Maximum Connection Lifetime	The number of minutes that a connection that was returned to the pool persists if there are more open connections than the minimum pool size.
Connection Validation Query	A data-source-specific query that the TDV query engine sends to see if the data source connection is valid. This query is executed every time a connection is checked out from the pool. Enter a query that returns quickly.
Execution Timeout	The number of seconds an execution query on the data source can run before being canceled.
Execute SELECTs Independently	Lets a SELECT statement be executed using a new connection from the connection pool, and committed immediately after completion. INSERT, UPDATE, and DELETE statements are executed using the same connection as part of the transaction.
Connection Checkout Procedure	A procedure that returns a valid SQL statement that can be used to initialize the connection.
Supports Star Schema	Check only if this data source supports very large predicates and very large cardinalities for star schema semijoins.
Max Source Side Cardinality for Semi Join	See the documentation for semijoins and the TDV Administration Guide for more information.
Min Target to Source Ratio for Semi Join	Sets the minimum target-to-source ratio of cardinality for semijoins. Refer to the TDV Administration Guide for more information.
Max Source Side of Semi Join To Use OR Syntax	See the documentation for semijoins and the TDV Administration Guide for more information.



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<b>Enable Native Data Loading</b>	Lets the data source use its proprietary functionality to optimize performance.
<b>Collation Sensitive</b>	TDV does not use the SORT MERGE join algorithm if any data source involved in the join is marked Collation Sensitive.
<b>Concurrent Request Limit</b>	Works with the Massively Parallel Processing engine configuration parameters to control the amount of parallelization for the queries for a particular data source.

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## Connection URL Pattern

A template for generating a URL to connect to the physical data source.

## Data Type

string

## Default Value

jdbc:<DATA SOURCE>//<HOST>:<PORT>/<DATABASE\_NAME>

## Remarks

TDV does not validate modifications at the time of configuration. The data source adapter might not validate changes.

## Connection URL String

The URL string generated from the connection URL pattern with the connection information you provide.

## Data Type

string

## Default Value

“”

## Remarks

This string is used by the JDBC adapter to connect to the physical data source. This field cannot be edited. For details, see the section “Connecting through JDBC Adapters” in the *TDV Administration Guide*.

## JDBC Connection Properties

Lets you specify property-value pairs to pass to the JDBC data source.

## Data Type

string

## Default Value

“”

## Remarks

Click to add custom connection properties for any JDBC data source. Commonly used properties are populated with default values. Use the Add Argument button to specify other properties and values.

TDV does not validate property names. Some data source adapters ignore invalid property names or values; others return an error.

The driver properties specify connection timeout settings required by specific drivers. To avoid leaving connections open indefinitely, specify properties explicitly for your data source.

## Connection Pool Maximum Size

Maximum number of connections (both active and idle) allowed for the data source. When the maximum is reached, new requests must wait until a connection is available.

## Data Type

Numeric

## Default Value

100

## Remarks

If the maximum number of connections is in use when a request comes in (even with pass-through authentication), the new request is blocked and queued until a connection is available or the Connection Pool Idle Timeout is reached.

If no connection was made available within the specified timeout, a check is made for an available connection by the same user. If none is available, the least recently used connection for another user is dropped and a new connection is opened.

Studio reuses pooled connections if they continue to be valid after changes (such as connection name), but JDBC requests are forced to use new connections if any part of the data source connection configuration has changed.

## Connection Pool Minimum Size

Minimum number of connections in the pool even when the pool is inactive.

## Data Type

Numeric

## Default Value

0

## Remarks

When a connection has been idle, a validation query is used to verify whether an open connection is still valid just prior to submission of a request. If the connection is invalid, the connection is discarded and another is used.

## Connection Pool Idle Timeout

Number of seconds that a connection can remain idle without being dropped from the pool when there are more than the minimum number of connections.

### Data Type

Numeric

### Default Value

30

## Maximum Connection Lifetime

The number of minutes that a connection that was returned to the pool persists if there are more open connections than the minimum pool size.

### Data Type

Numeric

### Default Value

30

## Remarks

The duration is calculated from connection creation. Default value is 60 minutes. Set a smaller value if the pool is likely to run out of connections. Be sure to add a validation query. Set a larger value if you want the connections to be held for a longer period. Set a value of 0 to keep connections alive indefinitely.

## Connection Validation Query

A data-source-specific query that the TDV query engine sends to see if the data source connection is valid. This query is executed every time a connection is checked out from the pool. Enter a query that returns quickly.

## Data Type

string

## Default Value

""

## Remarks

If this query returns a non-error result, the data source connection is considered valid. If this query fails, the connection is discarded and a new connection is checked out from the available pool.

No one SELECT statement works with all data sources. To verify that TDV is running and that it can connect to the data source, devise a query against a published table from that data source.

## Enable Native Data Loading

Lets the data source use its proprietary functionality to optimize performance.

## Data Type

Bool

## Default Value

True

## Remarks

See the User Guide, Chapter About Data Source Native Load Performance Options” for more details,.

## Collation Sensitive

TDV does not use the SORT MERGE join algorithm if any data source involved in the join is marked Collation Sensitive.

## Data Type

Bool

## Default Value

False

## Remarks

None

## Concurrent Request Limit

Works with the Massively Parallel Processing engine configuration parameters to control the amount of parallelization for the queries for a particular data source.

## Data Type

Numeric

## Default Value

0

## Remarks

None

## Execution Timeout

The number of seconds an execution query on the data source can run before being canceled.

## Data Type

Numeric

**Default Value**

0

**Remarks**

None

**Execute SELECTs Independently**

Lets a SELECT statement be executed using a new connection from the connection pool, and committed immediately after completion. INSERT and UPDATE statements are executed using the same connection as part of the transaction.

**Data Type**

Bool

**Default Value**

True

**Remarks**

None

**Connection Checkout Procedure**

A procedure that returns a valid SQL statement that can be used to initialize the connection.

**Data Type**

string

**Default Value**

""

## Remarks

The signature of the initialization procedure should be:

```
(IN ds_name VARCHAR, OUT sqlText VARCHAR)
```

Give the full path to the procedure in the Connection Check-out Procedure box.

## Max Source Side Cardinality for Semi Join

See the documentation for semijoins and the TDV Administration Guide for more information.

## Data Type

Numeric

## Default Value

""

## Remarks

None

## Max Source Side of Semi Join To Use OR Syntax

See the documentation for semijoins and the TDV Administration Guide for more information.

## Data Type

Numeric

## Default Value

2147483647



## Remarks

None

## Min Target to Source Ratio for Semi Join

Sets a minimum ratio to trigger use of semi join optimization.

## Data Type

Numeric

## Default Value

""

## Remarks

None

## Supports Star Schema

Check only if this data source supports very large predicates and very large cardinalities for star schema semijoins.

## Data Type

Bool

## Default Value

False

## Remarks

Refer to the section Star Schema Semijoin in the User Guide, for more information.

# Data Type Mappings

## HSQLDB Database to TDV Data Types

This section provides the data type mappings from HSQLDB to TDV data types.

<b>HSQLDB Data Type</b>	<b>TDV Data Type</b>
TINYINT	TINYINT
SMALLINT	SMALLINT
INT	INTEGER
BIGINT	BIGINT
NUMERIC	DECIMAL
DECIMAL	DECIMAL
BOOLEAN	BOOLEAN
REAL	DOUBLE
FLOAT	DOUBLE
DOUBLE	DOUBLE
CLOB	CLOB
CHAR	CHAR
CHARACTER	CHAR
CHARACTER_VARYING	VARCHAR

HSQLDB Data Type	TDV Data Type
VARCHAR	VARCHAR
CHARACTER_LARGE_OBJECT	LONGVARCHAR
LONGVARCHAR	LONGVARCHAR
BINARY	BINARY
VARBINARY	VARBINARY
BLOB	BLOB
DATE	DATE
TIME	TIME
TIMESTAMP	TIMESTAMP

## HSQLDB Cache Mapping

The data type mappings for caches stored on HSQLDB areas follows.

Data Type	Native Type
BIGINT	BIGINT
BIT	SMALLINT
BOOLEAN	BOOLEAN
CHAR	CHAR(length)
CHAR_PROMOTE	CLOB
CLOB	CLOB

Data Type	Native Type
DATE	DATE
DECIMAL	NUMERIC(precision, scale)
DECIMAL_PROMOTE	BIGDECIMAL
DOUBLE	DOUBLE PRECISION
FLOAT	REAL
INTEGER	INTEGER
INTERVAL_DAY	INTERVAL DAY
INTERVAL_DAY_TO_HOUR	INTERVAL DAY TO HOUR
INTERVAL_DAY_TO_MINUTE	INTERVAL DAY TO MINUTE
INTERVAL_DAY_TO_SECOND	INTERVAL DAY TO SECOND
INTERVAL_HOUR	INTERVAL HOUR
INTERVAL_HOUR_TO_MINUTE	INTERVAL HOUR TO MINUTE
INTERVAL_HOUR_TO_SECOND	INTERVAL HOUR TO SECOND
INTERVAL_MINUTE	INTERVAL MINUTE
INTERVAL_MINUTE_TO_SECOND	INTERVAL MINUTE TO SECOND
INTERVAL_MONTH	INTERVAL MONTH
INTERVAL_SECOND	INTERVAL SECOND
INTERVAL_YEAR	INTERVAL YEAR
INTERVAL_YEAR_TO_MONTH	INTERVAL YEAR TO MONTH

Data Type	Native Type
NUMERIC	NUMERIC(precision, scale)
NUMERIC_PROMOTE	BIGDECIMAL
REAL	REAL
SMALLINT	SMALLINT
TIME	TIME
TIMESTAMP	TIMESTAMP
TINYINT	SMALLINT
VARCHAR	VARCHAR(length)
VARCHAR_PROMOTE	CLOB
XML	LONGVARCHAR

## HSQLDB Function Support

TDV supports the following types of functions for HSQLDB DB:

- [HSQLDB Aggregate Function Support](#)
- [HSQLDB Binary Function Support](#)
- [HSQLDB Conversion Function Support](#)
- [HSQLDB Date Function Support](#)
- [HSQLDB Numeric Function Support](#)
- [HSQLDB String Function Support](#)

## HSQLDB Aggregate Function Support

TDV supports the aggregate functions listed in the table below for HSQLDB.

HSQLDB Aggregate Function	Notes
AVG	
CORR	
COUNT	
COVAR_POP	
COVAR_SAMP	
MAX	
MIN	
SPACE	
STDDEV	
STDDEV_POP	
STDDEV_SAMP	
SUM	
VAR_POP	
VAR_SAMP	
VARIANCE	

## HSQLDB Binary Function Support

TDV supports the binary functions listed in the table below for HSQLDB

<b>HSQLDB Binary Function</b>	<b>Notes</b>
INT1AND, INT2AND, INT4AND, INT8AND	
INT1NOT, INT2NOT, INT4NOT, INT8NOT	
INT1OR, INT2OR, INT4OR, INT8OR	
INT1XOR, INT2XOR, INT4XOR, INT8XOR	

## HSQLDB Conversion Function Support

TDV supports the conversion functions listed in the table below for HSQLDB

<b>HSQLDB Conversion Function</b>	<b>Notes</b>
CAST	Maximum VARCHAR length: 2147483647
TO_CHAR	

## HSQLDB Date Function Support

TDV supports the date functions listed in the table below for HSQLDB

<b>HSQLDB Date Function</b>	<b>Notes</b>
COALESCE	
CURRENT_DATE	
CURRENT_TIME	

<b>HSQLDB Date Function</b>	<b>Notes</b>
CURRENT_TIMESTAMP	
DATE_ADD	
DATE_SUB	
DATEDIFF	
DAY	
EXTRACT	
FROM_UNIXTIME	
MONTH	
NOW	
TIMEOFDAY	
TO_DATE	
TO_TIMESTAMP	
UNIX_TIMESTAMP	
UTC_TO_TIMESTAMP	
YEAR	

## HSQLDB Numeric Function Support

TDV supports the numeric functions listed in the table below for HSQLDB



HSQLDB Numeric Function	Notes
ABS	
ACOS	
ASIN	
ATAN	
CEIL	
CEILING	
COS	
DEGREES	
EXP	
FLOOR	
LN	
LOG	
PI	
POW	
POWER	
RADIANS	
RANDOM	
ROUND	
SIN	

<b>HSQLDB Numeric Function</b>	<b>Notes</b>
SQRT	
TAN	

## HSQLDB String Function Support

TDV supports the string functions listed in the table below for HSQLDB

<b>HSQLDB String Function</b>	<b>Notes</b>
ASCII	
CONCAT	
LCASE	
LENGTH	
LOWER	
LPAD	
LTRIM	
REPLACE	
RPAD	
RTRIM	
SPACE	
SUBSTR	
SUBSTRING	Some data type

HSQLDB String Function	Notes
	combinations are not supported.
TRIM	
UCASE	
UPPER	

## References

Refer to the following Guides for further details about the capabilities of the data source:

Capabilities	Section
Query Engine	User Guide, Chapter <b><i>TDV Query Engine Optimizations</i></b>
Data ship	User Guide, Chapter <b><i>Data Ship Performance Optimization</i></b>
Caching	User Guide, Chapter <b><i>TDV Caching</i></b>
Performance Optimization	User Guide, Chapter <b><i>Performance Tuning</i></b>
TDV Massively Parallel Processing Engine	User Guide, Chapter <b><i>Configuring the TDV MPP Engine</i></b>
Kerberos	Administration Guide Chapter <b><i>Configuring Kerberos</i></b>

# TIBCO Product Documentation and Support Services

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For information about this product, you can read the documentation, contact TIBCO Support, and join the TIBCO Community.

## How to Access TIBCO Documentation

Documentation for TIBCO products is available on the [TIBCO Product Documentation](#) website, mainly in HTML and PDF formats.

The [TIBCO Product Documentation](#) website is updated frequently and is more current than any other documentation included with the product.

## Product-Specific Documentation

The following documentation for this product is available on the [TIBCO® Data Virtualization](#) page.

- **Users**
  - TDV Getting Started Guide
  - TDV User Guide
  - TDV Web UI User Guide
  - TDV Client Interfaces Guide
  - TDV Tutorial Guide
  - TDV Northbay Example
- **Administration**
  - TDV Installation and Upgrade Guide
  - TDV Administration Guide
  - TDV Active Cluster Guide
  - TDV Security Features Guide
- **Data Sources**

TDV Adapter Guides

TDV Data Source Toolkit Guide (Formerly Extensibility Guide)

- **References**

TDV Reference Guide

TDV Application Programming Interface Guide

- **Other**

TDV Business Directory Guide

TDV Discovery Guide

- *TIBCO TDV and Business Directory Release Notes* Read the release notes for a list of new and changed features. This document also contains lists of known issues and closed issues for this release.

## How to Contact TIBCO Support

Get an overview of [TIBCO Support](#). You can contact TIBCO Support in the following ways:

- For accessing the Support Knowledge Base and getting personalized content about products you are interested in, visit the [TIBCO Support](#) website.
- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to [TIBCO Support](#) website. If you do not have a user name, you can request one by clicking **Register** on the website.

## Release Version Support

TDV 8.5 is designated as a Long Term Support (LTS) version. Some release versions of TIBCO® Data Virtualization products are selected to be long-term support (LTS) versions. Defect corrections will typically be delivered in a new release version and as hotfixes or service packs to one or more LTS versions. See also

[https://docs.tibco.com/pub/tdv/general/LTS/tdv\\_LTS\\_releases.htm](https://docs.tibco.com/pub/tdv/general/LTS/tdv_LTS_releases.htm).

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