



TIBCO® Data Virtualization

DataDirect Mainframe Adapter Guide

Version 8.7.0 | October 2023

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TDV DataDirect Mainframe Adapter

Introduction

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

[Datasource Configuration](#)

[Obtain and Install Drivers for DataDirect Mainframe](#)

[Data Type Mappings](#)

[DataDirect Mainframe 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.

Datasource Name	The name of the Datasource.
Host	Name of the host machine or the host machine's IP address.

Port	The Port number.
DBMS Type	<p>DataDirect SQL access keyword that specifies the means by which the adapter accesses the data. Most of the storage schemes listed below do not allow or are not optimized for SQL push. To use more than one DBMS type, create more data source connections in Studio.</p> <p>Supported DBMS type values are:</p> <ul style="list-style-type: none"> • ADABAS—A very fast transaction processing mainframe database. • DATA—May be used to access both VSAM and sequential files. • DB2—Provides the broadest coverage of SQL-99 functionality, and the most efficient SQL push to the DataDirect Mainframe. Requires a database name. • IMSDB—Provides access to multi-dimensional databases. Appearance of query results differs from conventional relational database results. • VSAM—A read-only storage system. • VSAM/CICS—Transaction processing data system for on-line and batch systems that allows both read and write access.
Database Name	Name or alias of the underlying data source. TDV Server uses this name to find and connect to the data source.
Plan	Data isolation plan. The default value, SDBC1010, specifies cursor stability. Other values specify repeatable reads, read stability, or uncommitted reads. See the <i>Shadow RTE Client/adapters Installation and Administration Guide</i> for more information.
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.

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

""

DBMS Type

DataDirect SQL access keyword that specifies the means by which the adapter accesses the data. Most of the storage schemes listed below do not allow or are not optimized for SQL push. To use more than one DBMS type, create more data source connections in Studio.

Supported DBMS type values are:

- ADABAS—A very fast transaction processing mainframe database.
- DATA—May be used to access both VSAM and sequential files.
- DB2—Provides the broadest coverage of SQL-99 functionality, and the most efficient SQL push to the DataDirect Mainframe. Requires a database name.
- IMSDB—Provides access to multi-dimensional databases. Appearance of query results differs from conventional relational database results.
- VSAM—A read-only storage system.
- VSAM/CICS—Transaction processing data system for on-line and batch systems that allows both read and write access.

Data Type

String

Default Value

ADABAS

Remarks

None

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

""

Plan

Data isolation plan. The default value, SDBC1010, specifies cursor stability. Other values specify repeatable reads, read stability, or uncommitted reads. See the *Shadow RTE Client/adapters Installation and Administration Guide* for more information.

Data Type

String

Default Value

SDBC1010

Remarks

None

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.

Enable Native Data Loading	Let the data source use its proprietary functionality to optimize performance.
Collation Sensitive	TDV does not use the SORT MERGE join algorithm if any data source involved in the join is marked Collation Sensitive.
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.

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

Let 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.

Obtain and Install Drivers for DataDirect Mainframe

The TDV Server must have the Shadow JDBC adapter: scjd12.jar.

To obtain and install JDBC drivers for DataDirect Mainframe

1. The Shadow JDBC adapter is available in the DataDirect Shadow Client installation directory:

```
<Shadow_install_dir>/NeonSystems/Shadow/jdbc/
```

2. Paste a copy of scjd12.jar into the following TDV Server directory:

```
<TDV_install_dir>/conf/adapters/system/datadirect_mainframe/lib
```

3. Restart the TDV Server.

Refer to the Installation guide for more details about the supported versions.

Data Type Mappings

DataDirect Mainframe to TDV Data Types

The following table shows the mapping from DataDirect Mainframe data types to TDV data types.

Data Direct Mainframe Data Type	TDV Data Type
BINARY	BINARY
CHAR	CHAR

Data Direct Mainframe Data Type	TDV Data Type
CLOB	CLOB
DATE	DATE
DECIMAL	DECIMAL
DOUBLE	DOUBLE
FLOAT	FLOAT
INTEGER	INTEGER
LONGVARBINARY	BLOB
LONGVARCHAR	CLOB
MIME	BLOB
NUMERIC	NUMERIC
SMALLINT	SMALLINT
TIMESTAMP	TIMESTAMP
VARBINARY	VARBINARY
VARCHAR	VARCHAR

DataDirect Mainframe Function Support

TDV supports the following types of functions for DataDirect Mainframe:

- [DataDirect Mainframe Aggregate Function Support](#)
- [DataDirect Mainframe Character Function Support](#)
- [DataDirect Mainframe Conditional Function Support](#)

- [DataDirect Mainframe Conversion Function Support](#)
- [DataDirect Mainframe Date Function Support](#)
- [DataDirect Mainframe Numeric Function Support](#)
- [DataDirect Mainframe XML Function Support](#)

DataDirect Mainframe Aggregate Function Support

TDV supports the aggregate functions listed in the table below for DataDirect Mainframe.

DataDirect Mainframe Aggregate Function	Notes
AVG	BLOB, CLOB, and string-type arguments not supported.
COUNT	BLOB and CLOB arguments not supported.
MAX	LONGVARCHAR argument can cause an exception; BLOB and CLOB arguments not supported.
MIN	LONGVARCHAR argument can cause an exception; BLOB and CLOB arguments not supported.
SUM	BLOB and CLOB arguments not supported.

DataDirect Mainframe Character Function Support

TDV supports the character functions listed in the table below for DataDirect Mainframe.

DataDirect Mainframe Character Function	Notes
CONCAT	LONGVARCHAR arguments not supported.
LENGTH	
LOWER	
POSITION	
REPLACE	
RTRIM	
SPACE	
SUBSTRING	
TRIM	
UPPER	

DataDirect Mainframe Conditional Function Support

TDV supports the conditional function listed in the table below for DataDirect Mainframe.

DataDirect Mainframe Conditional Function	Notes
NULLIF	NULL not supported; BLOB, CLOB, LONGVARCHAR_FOR_BIT_DATA, LONG_VARCHAR arguments not allowed.

DataDirect Mainframe Conversion Function Support

TDV supports the conversion functions listed in the table below for DataDirect Mainframe.

DataDirect Mainframe Conversion Function	Notes
CAST	
FORMAT	
PARSE_TIMESTAMP	
TO_CHAR	
TO_DATE	
TO_NUMBER	
TO_TIMESTAMP	

DataDirect Mainframe Date Function Support

TDV supports the date functions listed in the table below for DataDirect Mainframe.

DataDirect Mainframe Date Function	Notes
CURRENT_DATE	
CURRENT_TIME	
CURRENT_TIMESTAMP	
DAY	

DataDirect Mainframe Date Function	Notes
MONTH	
YEAR	Version >8, or DB2 XML Extender enabled.

DataDirect Mainframe Numeric Function Support

TDV supports the numeric functions listed in the table below for DataDirect Mainframe.(PI is not supported.)

DataDirect Mainframe Numeric Function	Notes
ABS	
ACOS	
ASIN	
ATAN	
CEILING	
COS	
COT	
DEGREES	
EXP	
FLOOR	
LOG	

DataDirect Mainframe Numeric Function	Notes
POWER	
RADIANS	
ROUND	
SIN	
SQRT	
TAN	

DataDirect Mainframe Specific Properties

This section describes the connection properties that are specific to the DataDirect Mainframe data source.

Port	<p>Port number for the data source to connect with the host.</p> <p>The Port number for DataDirect Mainframe is 1200.</p>
Connection URL Pattern	<p>Keywords are:</p> <ul style="list-style-type: none"> • APNA—Application name for SQL grouping. • CPFEX—Catalog prefix for DB2 or non-DB2 resources. • DBTY—DBMS type. • HOST and PORT—Network name or IP address, and port number. • SUBSYS—DB2 database names.

	<ul style="list-style-type: none"> • TRLT—Turns off truncation for strings greater than 20 characters. • DTFM—Date format to standard ODBC/ISO format: yyyy-mm-dd
Database	For DB2 DBMS types, name of the underlying data source. For other DBMS types, enter NONE.
DBMS Type	<p>DataDirect SQL access keyword that specifies the means by which the adapter accesses the data. Most of the storage schemes listed below do not allow or are not optimized for SQL push. To use more than one DBMS type, create more data source connections in Studio.</p> <p>Supported DBMS type values are:</p> <ul style="list-style-type: none"> • ADABAS—A very fast transaction processing mainframe database. • DATA—May be used to access both VSAM and sequential files. • DB2—Provides the broadest coverage of SQL-99 functionality, and the most efficient SQL push to the DataDirect Mainframe. Requires a database name. • IMSDB—Provides access to multi-dimensional databases. Appearance of query results differs from conventional relational database results. • VSAM—A read-only storage system. • VSAM/CICS—Transaction processing data system for on-line and batch systems that allows both read and write access.
Plan	Data isolation plan. The default value, SDBC1010, specifies cursor stability. Other values specify repeatable reads, read stability, or uncommitted reads. See the <i>Shadow RTE Client/adapters Installation and Administration Guide</i> for more information.

DataDirect Mainframe XML Function Support

TDV supports the XML functions listed in the table below for DataDirect Mainframe.

The XML functions can be used only if all DB2 data sources of version 8 or earlier have DB2 XML Extender enabled.

DataDirect Mainframe XML Function	Notes
XMLATTRIBUTES	
XMLCOMMENT	
XMLCONCAT	
XMLDOCUMENT	
XMLELEMENT	
XMLFOREST	
XMLNAMESPACES	
XMLPI	
XMLQUERY	
XMLTEXT	

References

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

Capabilities	Section
Query Engine	User Guide, Chapter <i>TDV Query Engine</i>

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

TIBCO Product Documentation and Support Services

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.

How to Join TIBCO Community

TIBCO Community is the official channel for TIBCO customers, partners, and employee subject matter experts to share and access their collective experience. TIBCO Community offers access to Q&A forums, product wikis, and best practices. It also offers access to extensions, adapters, solution accelerators, and tools that extend and enable customers to gain full value from TIBCO products. In addition, users can submit and vote on feature requests from within the [TIBCO Ideas Portal](#). For a free registration, visit [TIBCO Community](#).

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