



# **TIBCO® Data Virtualization**

## **Drill Adapter Guide**

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# Contents

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# TDV Drill Adapter

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## Introduction

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

[Datasource Configuration](#)

[Apache Drill Data Source Limitations](#)

[Data Type Mappings](#)

[Apache Drill 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="#">Data source Name</a>	The name of the data source.
<a href="#">Schema</a>	Name or alias of the underlying data source.
<a href="#">Complete Connection URL</a>	A URL to connect to the physical data source.

---

## String

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### Login

User name and password required to access the data source. 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.

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### Pass-through Login

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

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### Authentication Type

The type of authentication used by the data source.

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## Data source Name

The name of the data source.

## Data Type

string

## Default Value

""

## Schema

Name or alias of the underlying data source.

## Data Type

String

## Default Value

""

## Remarks

None

## Complete Connection URL String

A URL to connect to the physical data source.

## Data Type

String

## Default Value

“”

## Remarks

TDV does not validate modifications. The data source adapter might not validate changes. Refer to the datasource specific connection properties section for details.

## Login

The login name used to authenticate the data source connection,

## Data Type

string

## Default Value

“”

## Remarks

None

## Password

The password used to authenticate the data source connection,

## Data Type

string

## Default Value

""

## Remarks

## 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.

## Authentication Type

Indicates the type of authentication used by the data source.

## Data Type

String

## Default Value

BASIC

## Remarks

Following are the available Authentication types:

BASIC

KERBEROS

NTLM

NEGOTIATE

See the *TDV Administration Guide* for more information about Kerberos authentication.

## 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.

Transaction Isolation	The degree to which transactions are isolated from data modifications made by other transactions.
Connection Attributes	Lets you specify property-value pairs to pass to the data source.
Connection Pool Minimum Size	Minimum number of connections in the pool even when the pool is inactive.



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 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 Checkout Procedure	A procedure that returns a valid SQL statement that can be used to initialize the connection.
Connection Checkout Timeout	Time that a connection doing a checkout can remain idle without being dropped.
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 source driver doesn't support query timeout	Select or clear the check box. If cleared, specify an Execution timeout value in seconds
Execution Timeout	The number of seconds an execution query on the data source can run before being canceled.
Execute SELECTs in separate transactions from INSERTs and UPDATEs	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.
String Comparison Parameters	Multiple Parameters that can be set to control String manipulation by the data source.

## 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

## Connection Attributes

Lets you specify property-value pairs to pass to the data source. For example:

```
bootPassword=key attribute
```

```
collation=collation attribute
```

```
dataEncryption=true attribute
```

```
drop=true attribute
```

```
encryptionKey=key attribute
```

```
encryptionProvider=providerName attribute
```

```
encryptionAlgorithm=algorithm attribute
```

```
failover=true attribute
```

## Data Type

String

## Default Value

“”

## 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.

## Data source driver doesn't support query timeout

Select or clear the check box. If cleared, specify an Execution timeout value in seconds.

### Data Type

Bool

### Default Value

True

### 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 in separate transactions from INSERTs and UPDATEs

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.

## Connection Checkout Timeout

Time that a connection doing a checkout can remain idle without being dropped.

## Data Type

Numeric

## Default Value

45

## Remarks

None

## String Comparison Parameters

Following flags can be used to manage the rules of the string comparison.

Case sensitivity mismatch between TDV and data source can be ignored	Check to ignore case mismatches.
Ignore trailing space mismatches between TDV and the data source	Check to ignore trailing spaces.
Honor trailing spaces for string comparison	Check to honor trailing spaces.
Case insensitive string comparison	Ignore case.



# Apache Drill Data Source Limitations

if the CAST function uses any non-table column as an argument, then the database returns an empty result set through JDBC. Non-table columns are for example, NULL or string literal.

For example, it is best to rewrite the following query:

```
select cast(null as varchar) a13
```

```
from /shared/postgreDrill/DRILL/"postgres.ga"/all_datatype_1k as table1
```

As:

```
select cast(null as varchar) a13, id
```

```
from /shared/postgreDrill/DRILL/"postgres.ga"/all_datatype_1k as table1
```

## Data Type Mappings

### Apache Drill to TDV Data Types

The following table shows the mapping from Apache Drill to TDV data types.

Apache Drill Data Type	TDV Data Type
ANY	LONGVARCHAR
BIGINT	BIGINT
BIGSERIAL	BIGINT

Apache Drill Data Type	TDV Data Type
BINARY	BINARY
BINARY_DOUBLE	DOUBLE
BINARY_FLOAT	REAL
BIT	CHAR
BOOL	BOOLEAN
BOX	VARCHAR
BPCHAR	CHAR
BYTEA	BLOB
CHAR	CHAR
CHARACTER	CHAR
CHARACTER_VARYING	VARCHAR
CID	CHAR
CIDR	VARCHAR
DATE	DATE
DATETIME	TIMESTAMP
DOUBLE	DOUBLE
DOUBLE_PRECISION	DOUBLE
FLOAT	REAL
FLOAT4	REAL

Apache Drill Data Type	TDV Data Type
FLOAT8	DOUBLE
INET	VARCHAR
INT	INTEGER
INT2	SMALLINT
INT4	INTEGER
INT8	BIGINT
INTEGER	INTEGER
INTERVAL	INTERVAL_DAY_TO_SECOND
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

Apache Drill Data Type	TDV Data Type
INTERVAL_SECOND	INTERVAL_SECOND
INTERVAL_YEAR	INTERVAL_YEAR
INTERVAL_YEAR_TO_MONTH	INTERVAL_YEAR_TO_MONTH
LINE	VARCHAR
LONG	CLOB
MACADDR	VARCHAR
NUMBER	DECIMAL
NUMERIC	NUMERIC
OID	BLOB
PATH	VARCHAR
POINT	CHAR
REAL	REAL
ROWID	VARCHAR
SERIAL	INTEGER
SMALLDATETIME	TIMESTAMP
SMALLINT	SMALLINT
TEXT	CLOB
TIME	TIME
TIMESTAMP	TIMESTAMP

Apache Drill Data Type	TDV Data Type
TIMESTAMPZ	TIMESTAMP
TIMETZ	TIME
TINYINT	TINYINT
UROWID	VARCHAR
UUID	CHAR
VARBIT	VARCHAR
VARCHAR	VARCHAR
VARCHAR2	VARCHAR
XID	INTEGER
XML	XML

## Apache Drill Cache Mapping

The data type mappings for caches stored in files are shown in the table. .

Data Type	Native Type
BIGINT	BIGINT
BINARY	BYTEA
BIT	SMALLINT
BLOB	BYTEA
BOOLEAN	BOOLEAN

<b>Data Type</b>	<b>Native Type</b>
CHAR	CHAR(&l)
CLOB	TEXT
DATE	DATE
DECIMAL	DECIMAL(&p, &s)
DOUBLE	DOUBLE_PRECISION
FLOAT	REAL
INTEGER	INTEGER
INTEVAL_DAY	VARCHAR(30)
INTERVAL_DAY_TO_HOUR	VARCHAR(30)
INTERVAL_DAY_TO_MINUTE	VARCHAR(30)
INTERVAL_DAY_TO_SECOND	VARCHAR(30)
INTERVAL_HOUR	VARCHAR(30)
INTERVAL_HOUR_TO_MINUTE	VARCHAR(30)
INTERVAL_HOUR_TO_SECOND	VARCHAR(30)
INTERVAL_MINUTE	VARCHAR(30)
INTERVAL_MINUTE_TO_SECOND	VARCHAR(30)
INTERVAL_MONTH	VARCHAR(9)
INTERVAL_SECOND	VARCHAR(30)

Data Type	Native Type
INTERVAL_YEAR	VARCHAR(9)
INTERVAL_YEAR_TO_MONTH	VARCHAR(12)
NUMERIC	NUMERIC(&p, &s)
REAL	REAL
SMALLINT	SMALLINT
TIME	TIME
TIMESTAMP	TIMESTAMP
TINYINT	SMALLINT
VARBINARY	BYTEA
VARCHAR	VARCHAR(&l)
XML	XML

## Apache Drill Function Support

TDV supports the following types of functions for Apache Drill:

[Apache Drill Aggregate Function Support](#)

[Apache Drill Character Function Support](#)

[Apache Drill Conversion Function Support](#)

[Apache Drill Conditional Function Support](#)

[Apache Drill Date Function Support](#)

[Apache Drill Numeric Function Support](#)

[Apache Drill Binary Function Support](#)

[Apache Drill Analytic Function Support](#)

[Apache Drill Push Only Function Support](#)

[Apache Drill Encryption Function Support](#)

[Apache Drill Phonetic Function Support](#)

[Apache Drill XML Function Support](#)

## Apache Drill Aggregate Function Support

TDV supports the aggregate functions listed in the table below for Apache Drill

Apache Drill Aggregate Function	Notes
AVG	
COUNT	
COVAR_POP	
COVAR_SAMP	
MAX	
MIN	

## Apache Drill Character Function Support

TDV supports the character functions listed in the table below for Apache Drill.

Apache Drill Character Function	Notes
ASCII	
BIT_LENGTH	



Apache Drill Character Function	Notes
BTRIM	
CHARACTER_LENGTH	
CONCAT	
DIFFERENCE	
INITCAP	
INSTR	
ISUTF8	
LENGTH	
LOCATE	
LOWER	
LPAD	
LTRIM	
OCTET_LENGTH	
QUOTE_IDENT	
QUOTE_LITERAL	
REPEAT	
REPLACE	
RPAD	
RTRIM	

Apache Drill Character Function	Notes
SOUNDEX	
SPACE	
STRPOS	
POSITION	
SUBSTR	
SUBSTRING	
TRIM	
TRIMBOTH	
TRIMLEADING	
TRIMTRAILING	
UPPER	

## Apache Drill Conversion Function Support

Apache Drill Conversion Function	Notes
CAST	
FORMAT_DATE	
HEX_TO_BINARY	

Apache Drill Conversion Function	Notes
PARSE_DATE	
PARSE_TIME	
PARSE_TIMESTAMP	
TO_BITSTRING	
TO_DATE	
TO_HEX	
TO_NUMBER	
TO_TIMESTAMP	
TO_TIMESTAMP_TZ	

TDV supports the conversion functions listed in the table below for Apache Drill.

## Apache Drill Conditional Function Support

TDV supports the conditional function listed in the table below for Apache Drill.

Apache Drill Conditional Function	Notes
IFNULL	
ISNULL	
ISNUMERIC	
NULLIF	

Apache Drill Conditional Function	Notes
NVL	

## Apache Drill Date Function Support

TDV supports the date functions listed in the table below for Apache Drill.

Apache Drill Date Function	Notes
CLOCK_TIMESTAMP	
COALESCE	
CURRENT_DATE	
CURRENT_TIME	
CURRENT_TIMESTAMP	
DATE_ADD	
DATE_SUB	
DATE_PART	
DAY	
DAYNAME	
DAYS	
DAYS_BETWEEN	
DB_TIMEZONE	

Apache Drill Date Function	Notes
EXTRACT_DAY	
EXTRACT_MONTH	
EXTRACT_YEAR	
EXTRACT_HOUR	
EXTRACT_MINUTE	
EXTRACT_SECOND	
FROM_UNIXTIME	
GETUTCDATE	
MONTH	
MONTHNAME	
MONTHS_BETWEEN	
NOW	
TIME_SLICE	
TRUNC	
TZ_OFFSET	
TZ_CONVERTOR	
UNIX_TIMESTAMP	
UTC_TO_TIMESTAMP	
YEAR	

## Apache Drill Numeric Function Support

Apache Drill Numeric Function	Notes
ABS	
ACOS	
ASIN	
ATAN	
CBRT	
CEILING	
CEIL	
COS	
COT	
DEGREES	
DENSE_RANK	
EXP	
FACTORIAL	
FLOOR	
LOG	
LOG10	
MOD	

Apache Drill Numeric Function	Notes
E	
POWER	
POW	
SQRT	
RADIANS	
RANDOM	
ROUND	
SIGN	
SIN	
PI	
SUM	
TAN	

TDV supports the numeric functions listed in the table below for Apache Drill.

## Apache Drill Binary Function Support

Apache Drill Binary Function	Notes
BIT_STRING_TO_BINARY	
BITCOUNT	

Apache Drill Binary Function	Notes
INT1AND	
INT1NOT	
INT1OR	
INT1SHL	
INT1SHR	
INT1XOR	
INT2AND	
INT2NOT	
INT2OR	
INT2SHL	
INT2SHR	
INT2XOR	
INT4AND	
INT4NOT	
INT4OR	
INT4SHL	
INT4SHR	
INT4XOR	
INT8AND	



Apache Drill Binary Function	Notes
INT8NOT	
INT8OR	
INT8SHL	
INT8SHR	
INT8XOR	

TDV supports the binary functions listed in the table below for Apache Drill.

## Apache Drill Analytic Function Support

Apache Drill Analytic Function	Notes
CUME_DIST_ANALYTIC	
FIRST_VALUE	
LAG	
LAST_VALUE	
LEAD	
NTILE	
PERCENT_RANK	
PERCENTILE	
PERCENTILE_APPROX	

Apache Drill Analytic Function	Notes
RANK	
REGR_AVGX	
REGR_AVGY	
REGR_COUNT	
REGR_INTERCEPT	
REGR_R2	
REGR_SLOPE	
REGR_SXX	
REGR_SXY	
REGR_SYY	
ROW_NUMBER	

TDV supports the analytic functions listed in the table below for Apache Drill.

## Apache Drill Push Only Function Support

Apache Drill Push Only Function	Notes
FIND_IN_SET	
GET_JSON_OBJECT	

Apache Drill Push Only Function	Notes
JSONPATH	
PARSE_URL	
REGEXP	
REGEXP_EXTRACT	
REGEXP_REPLACE	
RLIKE	
TEST	

TDV supports the push only functions listed in the table below for Apache Drill.

## Apache Drill Encryption Function Support

Apache Drill Encryption Function	Notes
HASHMD2	
HASHMD5	
HASHSHA1	
HASHSHA	

TDV supports the encryption functions listed in the table below for Apache Drill.

## Apache Drill Phonetic Function Support

Apache Drill Phonetic Function	Notes
NYSIIS	
DBL_MP	
PRI_MP	
SCORE_MP	
SEC_MP	

TDV supports the phonetic functions listed in the table below for Apache Drill.

## Apache Drill XML Function Support

Apache Drill XML Function	Notes
XMLATTRIBUTES	
XMLCOMMENT	
XMLCONCAT	
XMLDOCUMENT	
XMLELEMENT	
XMLFOREST	

Apache Drill XML Function	Notes
XMLNAMESPACES	
XMLPI	
XMLQUERY	
XPATH	
XMLTEXT	
XSLT	

TDV supports the XML functions listed in the table below for Apache Drill.

## Drill Specific Properties

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

Schema	Name or alias of the underlying data source.
--------	--

## 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</i></b>

Capabilities	Section
<b><i>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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