



# **TIBCO® Data Virtualization**

## **Excelservices Adapter Guide**

Version 8.7.0 | October 2023

# Contents

---

<b>Contents</b>	<b>2</b>
<b>SharePoint Excel Services Adapter</b>	<b>4</b>
Getting Started	4
Basic Tab	5
Logging	7
Fine-Tuning Data Access	9
Troubleshooting	9
Using Kerberos	10
Changelog	11
Advanced Features	16
User Defined Views	17
SSL Configuration	19
Firewall and Proxy	20
Query Processing	20
Logging	21
SQL Compliance	24
SELECT Statements	25
SELECT INTO Statements	31
EXECUTE Statements	31
PIVOT and UNPIVOT	32
Data Model	33
OData API	34
REST API	35
Data Type Mapping	35
Connection String Options	36
Authentication	41
Connection	45

SSO .....	51
Kerberos .....	53
SSL .....	58
Firewall .....	60
Proxy .....	63
Logging .....	69
Schema .....	70
Miscellaneous .....	71
<b>TIBCO Product Documentation and Support Services .....</b>	<b>77</b>
How to Access TIBCO Documentation .....	77
How to Contact TIBCO Support .....	78
Release Version Support .....	78
How to Join TIBCO Community .....	79
<b>Legal and Third-Party Notices .....</b>	<b>80</b>

# SharePoint Excel Services Adapter

---

## SharePoint Excel Services Version Support

The adapter supports retrieving Excel data from SharePoint On-Premises through the REST API and through the OData API introduced in SharePoint 2013. Excel files must have the .xlsx format used in Excel 2007 and later.

**Note:** Microsoft has stated that they plan to sunset the Excel Services API for SharePoint Online in February 2022. Please consider migrating to the CData adapter for Excel Online for future access to your SharePoint data.

## SQL Compliance

The [SQL Compliance](#) section shows the SQL syntax supported by the adapter and points out any limitations.

# Getting Started

## Connecting to SharePoint Excel Services

[Basic Tab](#) shows how to authenticate to SharePoint Excel Services and configure any necessary connection properties. Additional adapter capabilities can be configured using the available [Connection](#) properties on the Advanced tab. The Advanced Settings section shows how to set up more advanced configurations and troubleshoot connection errors.

## Deploying the SharePoint Excel Services Adapter

To deploy the adapter, you can execute the server\_util utility via the command line by

1. Unzip the tdv.excelservices.zip file to the location of your choice.
2. Open a command prompt window.
3. Navigate to the <TDV\_install\_dir>/bin
4. Enter the server\_util command with the -deploy option:

```
server_util -server <hostname> [-port <port>] -user <user> -
password <password> -deploy -package <TDV_install_
dir>/adapters/tdv.excelservices/tdv.excelservices.jar
```

Note: When deploying a build of an existing adapter, you will need to undeploy the existing adapter using the `server_util` command with the `-undeploy` option.

```
server_util -server <hostname> [-port <port>] -user <user> -password
<password> -undeploy -version 1 -name ExcelServices
```

## Basic Tab

This section provides the details for connecting SharePoint On Premises.

### Connecting to a Workbook

Regardless of which edition of SharePoint you are using, set File to the Excel workbook. This path is relative to the following properties:

- Library: The Shared Documents library is used by default. You can use this property to specify another document library in your organization; for example, if you want to connect to OneDrive for Business, set this property to "Documents".
- Folder: You can use this property to specify a path to a subfolder in a library. The path is relative to the library name specified in Library.

### Connecting to Spreadsheet Data as Tables

The adapter detects the available tables based on the available objects in the underlying API.

The APIs surface different API objects; select the API based on the organization of your spreadsheets and your SharePoint version:

- **OData**: The OData API allows access to tables defined from Excel table objects (not ranges or spreadsheets), which you create by clicking **Insert > Table** in Excel. When connecting to the OData API, the adapter may not return any tables if you do not have table objects defined in your workbook. Set UseRESTAPI to true to connect to spreadsheets or ranges as tables.

- **REST:** The REST API enables access to tables defined from Excel table objects, ranges, and spreadsheets. This is the default API. Requesting a large number of rows from ranges and spreadsheets is restricted by the REST API, and the adapter limits the number of rows returned to 100 by default. The adapter also defaults to detecting column names from the first row; set Header to disable this.

With DefineTables additionally set, you can define tables based on ranges, using the Excel range syntax. A range that is too large will be restricted by the API.

See [Data Model](#) for more information on how the adapter detects tables and how to query them.

## Connecting to SharePoint On Premises

Set the Url to your server's name or IP address. Additionally, set SharePointVersion and the authentication values.

To authenticate to SharePoint OnPremise, set AuthScheme to the authentication type and set User and Password, if necessary.

**Note:** When connecting to SharePoint On-Premises 2010, you must set UseRESTAPI to true.

- **Windows (NTLM)**

This is the most common authentication type. As such, the adapter is preconfigured to use NTLM as the default; simply set the Windows User and Password to connect.

- **Kerberos**

Please see [Using Kerberos](#) for details on how to authenticate with Kerberos.

- **Forms**

This allows authentication through a custom authentication method, instead of Active Directory. To use this authentication type, set AuthScheme to FORMS and set the User and Password.

- **ADFS**

Set the AuthScheme to **ADFS**. The following connection properties need to be set:

- User: Set this to the ADFS user.
- Password: Set this to ADFS password for the user.
- SSOLoginURL: Set this to the WS-trust endpoint of the ADFS server.

The following SSOProperties are needed to authenticate to ADFS:

- RelyingParty: The value of the relying party identifier on the ADFS server for Sharepoint.

Below is an example connection string:

```
AuthScheme=ADFS;User=ADFSUserName;Password=ADFSPassword;SSOLoginURL=
https://<authority>/adfs/services/trust/2005/usernamemixed;SSO
Properties ='RelyingParty=urn:sharepoint:sp2016;';
```

## • Anonymous Access

Set the AuthScheme to **NONE** along with the URL.

## Logging

The adapter uses TDV Server's logging (log4j) to generate log files. The settings within the TDV Server's logging (log4j) configuration file are used by the adapter to determine the type of messages to log. The following categories can be specified:

- Error: Only error messages are logged.
- Info: Both Error and Info messages are logged.
- Debug: Error, Info, and Debug messages are logged.

The Other property of the adapter can be used to set Verbosity to specify the amount of detail to be included in the log file, that is:

```
Verbosity=4;
```

You can use Verbosity to specify the amount of detail to include in the log within a category. The following verbosity levels are mapped to the log4j categories:

- 0 = Error
- 1-2 = Info
- 3-5 = Debug

For example, if the log4j category is set to DEBUG, the Verbosity option can be set to 3 for the minimum amount of debug information or 5 for the maximum amount of debug information.

Note that the log4j settings override the Verbosity level specified. The adapter never logs at a Verbosity level greater than what is configured in the log4j properties. In addition, if Verbosity is set to a level less than the log4j category configured, Verbosity defaults to the minimum value for that particular category. For example, if Verbosity is set to a value less than 3 and the Debug category is specified, the Verbosity defaults to 3.

The following list is an explanation of the Verbosity levels and the information that they log.

- 1 - Will log the query, the number of rows returned by it, the start of execution and the time taken, and any errors.
- 2 - Will log everything included in Verbosity 1 and HTTP headers.
- 3 - Will additionally log the body of the HTTP requests.
- 4 - Will additionally log transport-level communication with the data source. This includes SSL negotiation.
- 5 - Will additionally log communication with the data source and additional details that may be helpful in troubleshooting problems. This includes interface commands.

## Configure Logging for the SharePoint Excel Services Adapter

By default, logging is turned on without debugging. If debugging information is desired, uncomment the following line in the TDV Server's log4j.properties file (default location of this file is: C:\Program Files\TIBCO\TDV Server <version>\conf\server):

```
log4j.logger.com.cdata=DEBUG
```

The TDV Server must be restarted after changing the log4j.properties file, which can be accomplished by running the composite.bat script located at: C:\Program Files\TIBCO\TDV Server <version>\bin. Note that reauthenticating to the TDV Studio is required after restarting the server.

Here is an example of the calls:

```
.\composite.bat monitor restart
```



All logs for the adapter are written to the "cs\_server\_dsrc.log" file as specified in the log4j properties.

**Note:** The "log4j.logger.com.cdata=DEBUG" option is not required if the **Debug Output Enabled** option is set to true within the TDV Studio. To set this option, navigate to **Administrator > Configuration**. Select **Server > Configuration > Debugging** and set the Debug Output Enabled option to **True**.

## Fine-Tuning Data Access

### Fine Tuning Data Access

To make it easier to access data in advanced integrations, you can use the following:

- TypeDetectionScheme: You can use this property to enable or disable automatic type detection based on the value specified in RowScanDepth.
- RowScanDepth: This property determines the number of rows that will be scanned to determine column data types.

## Troubleshooting

### Troubleshooting

#### 413 Request Entity Too Large

This error occurs when a workbook has too much data per row. Generally, solution to this error will be to make the Excel table smaller or to make the rows less dense.

However, setting the following connection properties will enable you to work around this limitation. **Note:** This workaround is only supported when using the **REST API**.

- DefineTables: Set this to the desired cell range in your sheet.
- Other: Set this to **PageSize=X** to determine the number of records that will be paged through at once. Each page should contain less than 100kb. Note that smaller page sizes also entail slower performance.

# Using Kerberos

This section shows how to use the adapter to authenticate using Kerberos.

## Kerberos

To authenticate to SharePoint Excel Services using Kerberos, set the following properties:

- AuthScheme: Set this to **NEGOTIATE**.
- KerberosKDC: Set this to the host name or IP Address of your Kerberos KDC machine.
- KerberosRealm: Set this to **the realm of the SharePoint Excel Services Kerberos principal**. This will be the value after the '@' symbol (for instance, EXAMPLE.COM) of the **principal value** (for instance, ServiceName/MyHost@EXAMPLE.COM).
- KerberosSPN: Set this to the service and host of the SharePoint Excel Services Kerberos Principal. This is the value prior to the '@' symbol (for instance, ServiceName/MyHost) of the principal value (for instance, ServiceName/MyHost@EXAMPLE.COM).

## Retrieve the Kerberos Ticket

You can use one of the following options to retrieve the required Kerberos ticket.

## MIT Kerberos Credential Cache File

This option enables you to use the MIT Kerberos Ticket Manager or kinit command to get tickets. Note that you do not need to set the User or Password connection properties with this option.

1. Ensure that you have an environment variable created called **KRB5CCNAME**.
2. Set the **KRB5CCNAME** environment variable to a path pointing to your credential cache file (for instance, C:\krb\_cache\krb5cc\_0 or /tmp/krb5cc\_0). This file is created when generating your ticket with MIT Kerberos Ticket Manager.
3. To obtain a ticket, open the MIT Kerberos Ticket Manager application, click **Get Ticket**, enter your principal name and password, then click **OK**. If successful, ticket information appears in Kerberos Ticket Manager and is stored in the credential cache file.

4. Now that you have created the credential cache file, the adapter uses the cache file to obtain the Kerberos ticket to connect to SharePoint Excel Services.

As an alternative to setting the **KRB5CCNAME** environment variable, you can directly set the file path using the KerberosTicketCache property. When set, the adapter uses the specified cache file to obtain the Kerberos ticket to connect to SharePoint Excel Services.

## Keytab File

If the **KRB5CCNAME environment variable has not been set**, you can retrieve a Kerberos ticket using a Keytab File. To do so, set the User property to the desired username and set the KerberosKeytabFile property to a file path pointing to the keytab file associated with the user.

## User and Password

If both the **KRB5CCNAME** environment variable and the KerberosKeytabFile property have not been set, you can retrieve a ticket using a user and password combination. To do this, set the User and Password properties to the user/password combination that you use to authenticate with SharePoint Excel Services.

## Cross-Realm

More complex Kerberos environments may require cross-realm authentication where multiple realms and KDC servers are used (e.g., where one realm/KDC is used for user authentication and another realm/KDC is used for obtaining the service ticket).

In such an environment, set the KerberosRealm and KerberosKDC properties to the values required for user authentication. Also set the KerberosServiceRealm and KerberosServiceKDC properties to the values required to obtain the service ticket.

# Changelog

## General Changes

Date	Build Number	Change Type	Description
12/14/2022	8383	General	<b>Changed</b> <ul style="list-style-type: none"> <li>Added the Default column to the sys_procedureparameters table.</li> </ul>
09/30/2022	8308	General	<b>Changed</b> <ul style="list-style-type: none"> <li>Added the IsPath column to the sys_procedureparameters table.</li> </ul>
08/17/2022	8264	General	<b>Changed</b> <ul style="list-style-type: none"> <li>We now support handling the keyword "COLLATE" as standard function name as well.</li> </ul>
05/24/2022	8179	SharePoint Excel Services	<b>Changed</b> <ul style="list-style-type: none"> <li>Changed provider name to Microsoft Sharepoint Excel.</li> </ul>
05/26/2022	8140	SharePoint Excel Services	<b>Removed</b> <ul style="list-style-type: none"> <li>The SharePointEdition connection property has been removed due to Microsoft no longer supporting the Excel Services API over SharePoint Online.</li> </ul>
12/01/2021	8005	SharePoint Excel Services	<b>Deprecated</b> <ul style="list-style-type: none"> <li>Connection properties related to SharePoint Online (SharePointEdition) are deprecated and will be sunset alongside Microsoft's sunsetting of the Excel Services REST API, scheduled for February 28th, 2022.</li> </ul>
09/02/2021	7915	General	<b>Added</b> <ul style="list-style-type: none"> <li>Added support for the STRING_SPLIT</li> </ul>

			table-valued function in the CROSS APPLY clause.
08/07/2021	7889	General	<b>Changed</b> <ul style="list-style-type: none"> <li>Added the KeySeq column to the sys_foreignkeys table.</li> </ul>
08/06/2021	7888	General	<b>Changed</b> <ul style="list-style-type: none"> <li>Added the new sys_primarykeys system table.</li> </ul>
07/23/2021	7874	General	<b>Changed</b> <ul style="list-style-type: none"> <li>Updated the Literal Function Names for relative date/datetime functions. Previously relative date/datetime functions resolved to a different value when used in the projection vs te predicate. Ie: SELECT LAST_MONTH() AS lm, Col FROM Table WHERE Col &gt; LAST_MONTH(). Formerly the two LAST_MONTH() methods would resolve to different datetimes. Now they will match.</li> <li>As a replacement for the previous behavior, the relative date/datetime functions in the criteria may have an 'L' appended to them. Ie: WHERE col &gt; L_LAST_MONTH(). This will continue to resolve to the same values that previously were calculated in the criteria. Note that the "L_" prefix will only work in the predicate - it not available for the projection.</li> </ul>
07/08/2021	7859	General	<b>Added</b> <ul style="list-style-type: none"> <li>Added the TCP Logging Module for the logging information happening on the</li> </ul>

TCP wire protocol. The transport bytes that are incoming and ongoing will be logged at verbosity=5.			
06/16/2021	7837	SharePoint Excel Services	<b>Added</b> <ul style="list-style-type: none"> <li>Added support for PingFederate identity provider in SharePoint Online SOAP schema.</li> </ul>
04/23/2021	7785	General	<b>Added</b> <ul style="list-style-type: none"> <li>Added support for handling client side formulas during insert / update. For example: UPDATE Table SET Col1 = Concat(Col1, " - ", Col2) WHERE Col2 LIKE 'A%'</li> </ul>
04/23/2021	7783	General	<b>Changed</b> <ul style="list-style-type: none"> <li>Updated how display sizes are determined for varchar primary key and foreign key columns so they will match the reported length of the column.</li> </ul>
04/16/2021	7776	General	<b>Added</b> <ul style="list-style-type: none"> <li>Non-conditional updates between two columns is now available to all drivers. For example: UPDATE Table SET Col1=Col2</li> </ul> <b>Changed</b> <ul style="list-style-type: none"> <li>Reduced the length to 255 for varchar primary key and foreign key columns.</li> <li>Updated implicit and metadata caching to improve performance and support for multiple connections. Old metadata caches are not compatible - you would need to generate new metadata caches if you are currently using</li> </ul>

			<p>CacheMetadata.</p> <ul style="list-style-type: none"> <li>• Updated index naming convention to avoid duplicates</li> <li>• Updated and standardized Getting Started connection help.</li> <li>• Added the Advanced Features section to the help of all drivers.</li> <li>• Categorized connection property listings in the help for all editions.</li> </ul>
04/15 /2021	7775	General	<p><b>Changed</b></p> <ul style="list-style-type: none"> <li>• Kerberos authentication is updated to use TCP by default, but will fall back to UDP if a TCP connection cannot be established</li> </ul>
04/13/2021	7773	SharePoint Excel Services	<p><b>Changed</b></p> <ul style="list-style-type: none"> <li>• The OneLogin method we used previously has been deprecated by OneLogin. We have updated our design to use the latest version of the OneLogin API, which now requires a separate OAuthClientId and OAuthClientSecret associated with your OneLogin app to be passed in through SSOProperties. The APIKey that was formerly passed in through SSOProperties for OneLogin is removed.</li> </ul>
04/01/2021	7761	SharePoint Excel Services	<p><b>Deprecated</b></p> <ul style="list-style-type: none"> <li>• The UseSSO connection property is deprecated. You should select the preferred SSO scheme directly from the AuthScheme property instead.</li> <li>• The URNAddress is deprecated. This property is used inside the</li> </ul>

---

SSOProperties and it should be specified when authenticating to ADFS on Sharepoint On-Premise. Instead RelyingParty should be used as in other drivers.

---

## Advanced Features

This section details a selection of advanced features of the SharePoint Excel Services adapter.

### User Defined Views

The adapter allows you to define virtual tables, called *user defined views*, whose contents are decided by a pre-configured query. These views are useful when you cannot directly control queries being issued to the drivers. See [User Defined Views](#) for an overview of creating and configuring custom views.

### SSL Configuration

Use [SSL Configuration](#) to adjust how adapter handles TLS/SSL certificate negotiations. You can choose from various certificate formats; see the [SSLServerCert](#) property under "Connection String Options" for more information.

### Firewall and Proxy

Configure the adapter for compliance with [Firewall and Proxy](#), including Windows proxies and HTTP proxies. You can also set up tunnel connections.

### Query Processing

The adapter offloads as much of the SELECT statement processing as possible to SharePoint Excel Services and then processes the rest of the query in memory (client-side).

See [Query Processing](#) for more information.



## Logging

See [Logging](#) for an overview of configuration settings that can be used to refine CData logging. For basic logging, you only need to set two connection properties, but there are numerous features that support more refined logging, where you can select subsets of information to be logged using the [LogModules](#) connection property.

## User Defined Views

The SharePoint Excel Services Adapter allows you to define a virtual table whose contents are decided by a pre-configured query. These are called *User Defined Views*, which are useful in situations where you cannot directly control the query being issued to the driver, e.g. when using the driver from a tool. The User Defined Views can be used to define predicates that are always applied. If you specify additional predicates in the query to the view, they are combined with the query already defined as part of the view.

There are two ways to create user defined views:

- Create a JSON-formatted configuration file defining the views you want.
- DDL statements.

### Defining Views Using a Configuration File

User Defined Views are defined in a JSON-formatted configuration file called *UserDefinedViews.json*. The adapter automatically detects the views specified in this file.

You can also have multiple view definitions and control them using the [UserDefinedViews](#) connection property. When you use this property, only the specified views are seen by the adapter.

This User Defined View configuration file is formatted as follows:

- Each root element defines the name of a view.
- Each root element contains a child element, called **query**, which contains the custom SQL query for the view.

For example:

```
{
  "MyView": {
    "query": "SELECT * FROM Account WHERE MyColumn = 'value'"
  }
}
```

```

    },
    "MyView2": {
        "query": "SELECT * FROM MyTable WHERE Id IN (1,2,3)"
    }
}

```

Use the UserDefinedViews connection property to specify the location of your JSON configuration file. For example:

```

"UserDefinedViews",
"C:\\Users\\yourusername\\Desktop\\tmp\\UserDefinedViews.json"

```

## Defining Views Using DDL Statements

The adapter is also capable of creating and altering the schema via DDL Statements such as CREATE LOCAL VIEW, ALTER LOCAL VIEW, and DROP LOCAL VIEW.

### Create a View

To create a new view using DDL statements, provide the view name and query as follows:

```
CREATE LOCAL VIEW [MyViewName] AS SELECT * FROM Customers LIMIT 20;
```

If no JSON file exists, the above code creates one. The view is then created in the JSON configuration file and is now discoverable. The JSON file location is specified by the UserDefinedViews connection property.

### Alter a View

To alter an existing view, provide the name of an existing view alongside the new query you would like to use instead:

```
ALTER LOCAL VIEW [MyViewName] AS SELECT * FROM Customers WHERE
TimeModified > '3/1/2020';
```

The view is then updated in the JSON configuration file.

## Drop a View

To drop an existing view, provide the name of an existing schema alongside the new query you would like to use instead.

```
DROP LOCAL VIEW [MyViewName]
```

This removes the view from the JSON configuration file. It can no longer be queried.

## Schema for User Defined Views

User Defined Views are exposed in the **UserViews** schema by default. This is done to avoid the view's name clashing with an actual entity in the data model. You can change the name of the schema used for UserViews by setting the UserViewsSchemaName property.

## Working with User Defined Views

For example, a SQL statement with a User Defined View called *UserViews.RCustomers* only lists customers in Raleigh:

```
SELECT * FROM Customers WHERE City = 'Raleigh';
```

An example of a query to the driver:

```
SELECT * FROM UserViews.RCustomers WHERE Status = 'Active';
```

Resulting in the effective query to the source:

```
SELECT * FROM Customers WHERE City = 'Raleigh' AND Status = 'Active';
```

That is a very simple example of a query to a User Defined View that is effectively a combination of the view query and the view definition. It is possible to compose these queries in much more complex patterns. All SQL operations are allowed in both queries and are combined when appropriate.

# SSL Configuration

## Customizing the SSL Configuration

By default, the adapter attempts to negotiate SSL/TLS by checking the server's certificate against the system's trusted certificate store.

To specify another certificate, see the [SSLServerCert](#) property for the available formats to do so.

## Firewall and Proxy

### Connecting Through a Firewall or Proxy

#### HTTP Proxies

To connect through the Windows system proxy, you do not need to set any additional connection properties. To connect to other proxies, set [ProxyAutoDetect](#) to false.

In addition, to authenticate to an HTTP proxy, set [ProxyAuthScheme](#), [ProxyUser](#), and [ProxyPassword](#), in addition to [ProxyServer](#) and [ProxyPort](#).

#### Other Proxies

Set the following properties:

- To use a proxy-based firewall, set [FirewallType](#), [FirewallServer](#), and [FirewallPort](#).
- To tunnel the connection, set [FirewallType](#) to TUNNEL.
- To authenticate, specify [FirewallUser](#) and [FirewallPassword](#).
- To authenticate to a SOCKS proxy, additionally set [FirewallType](#) to SOCKS5.

## Query Processing

### Query Processing

CData has a client-side SQL engine built into the adapter library. This enables support for the full capabilities that SQL-92 offers, including filters, aggregations, functions, etc.

For sources that do not support SQL-92, the adapter offloads as much of SQL statement processing as possible to SharePoint Excel Services and then processes the rest of the query in memory (client-side). This results in optimal performance.

For data sources with limited query capabilities, the adapter handles transformations of the SQL query to make it simpler for the adapter. The goal is to make smart decisions based on the query capabilities of the data source to push down as much of the computation as possible. The SharePoint Excel Services Query Evaluation component examines SQL queries and returns information indicating what parts of the query the adapter is not capable of executing natively.

The SharePoint Excel Services Query Slicer component is used in more specific cases to separate a single query into multiple independent queries. The client-side Query Engine makes decisions about simplifying queries, breaking queries into multiple queries, and pushing down or computing aggregations on the client-side while minimizing the size of the result set.

There's a significant trade-off in evaluating queries, even partially, client-side. There are always queries that are impossible to execute efficiently in this model, and some can be particularly expensive to compute in this manner. CData always pushes down as much of the query as is feasible for the data source to generate the most efficient query possible and provide the most flexible query capabilities.

## More Information

For a full discussion of how CData handles query processing, see [CData Architecture: Query Execution](#).

# Logging

Capturing adapter logging can be very helpful when diagnosing error messages or other unexpected behavior.

## Basic Logging

You will simply need to set two connection properties to begin capturing adapter logging.

- Logfile: A filepath which designates the name and location of the log file.
- Verbosity: This is a numerical value (1-5) that determines the amount of detail in the log. See the page in the Connection Properties section for an explanation of the five levels.
- MaxLogFileSize: When the limit is hit, a new log is created in the same folder with the date and time appended to the end. The default limit is 100 MB. Values lower than 100 kB will use 100 kB as the value instead.

- **MaxLogFileCount:** A string specifying the maximum file count of log files. When the limit is hit, a new log is created in the same folder with the date and time appended to the end and the oldest log file will be deleted. Minimum supported value is 2. A value of 0 or a negative value indicates no limit on the count.

Once this property is set, the adapter will populate the log file as it carries out various tasks, such as when authentication is performed or queries are executed. If the specified file doesn't already exist, it will be created.

## Log Verbosity

The verbosity level determines the amount of detail that the adapter reports to the Logfile. Verbosity levels from 1 to 5 are supported. These are described in the following list:

1	Setting <u>Verbosity</u> to 1 will log the query, the number of rows returned by it, the start of execution and the time taken, and any errors.
2	Setting <u>Verbosity</u> to 2 will log everything included in <u>Verbosity</u> 1 and additional information about the request.
3	Setting <u>Verbosity</u> to 3 will additionally log HTTP headers, as well as the body of the request and the response.
4	Setting <u>Verbosity</u> to 4 will additionally log transport-level communication with the data source. This includes SSL negotiation.
5	Setting <u>Verbosity</u> to 5 will additionally log communication with the data source and additional details that may be helpful in troubleshooting problems. This includes interface commands.

The Verbosity should not be set to greater than 1 for normal operation. Substantial amounts of data can be logged at higher verbosity levels, which can delay execution times.

To refine the logged content further by showing/hiding specific categories of information, see LogModules.

## Sensitive Data

Verbosity levels 3 and higher may capture information that you do not want shared

outside of your organization. The following lists information of concern for each level:

- Verbosity 3: The full body of the request and the response, which includes all the data returned by the adapter
- Verbosity 4: SSL certificates
- Verbosity 5: Any extra transfer data not included at Verbosity 3, such as non human-readable binary transfer data

### Best Practices for Data Security

Although we mask sensitive values, such as passwords, in the connection string and any request in the log, it is always best practice to review the logs for any sensitive information before sharing outside your organization.

## Java Logging

When Java logging is enabled in Logfile, the Verbosity will instead map to the following logging levels.

- 0: Level.WARNING
- 1: Level.INFO
- 2: Level.CONFIG
- 3: Level.FINE
- 4: Level.FINER
- 5: Level.FINEST

## Advanced Logging

You may want to refine the exact information that is recorded to the log file. This can be accomplished using the LogModules property.

This property allows you to filter the logging using a semicolon-separated list of logging modules.

All modules are four characters long. **Please note that modules containing three letters have a required trailing blank space.** The available modules are:

- **EXEC:** Query Execution. Includes execution messages for original SQL queries, parsed SQL queries, and normalized SQL queries. Query and page success/failure messages appear here as well.
- **INFO:** General Information. Includes the connection string, driver version (build number), and initial connection messages.
- **HTTP:** HTTP Protocol messages. Includes HTTP requests/responses (including POST messages), as well as Kerberos related messages.
- **SSL :** SSL certificate messages.
- **OAUT:** OAuth related failure/success messages.
- **SQL :** Includes SQL transactions, SQL bulk transfer messages, and SQL result set messages.
- **META:** Metadata cache and schema messages.
- **TCP :** Incoming and Ongoing raw bytes on TCP transport layer messages.

An example value for this property would be.

```
LogModules=INFO;EXEC;SSL ;SQL ;META;
```

Note that these modules refine the information as it is pulled after taking the Verbosity into account.

## SQL Compliance

### SELECT Statements

See [SELECT Statements](#) for a syntax reference and examples.

See [Data Model](#) for information on the capabilities of the SharePoint Excel Services API.

### EXECUTE Statements

Use EXECUTE or EXEC statements to execute stored procedures. See [EXECUTE Statements](#) for a syntax reference and examples.

### Names and Quoting



- Table and column names are considered identifier names; as such, they are restricted to the following characters: [A-Z, a-z, 0-9, \_:@].
- To use a table or column name with characters not listed above, the name must be quoted using double quotes ("name") in any SQL statement.
- Strings must be quoted using single quotes (e.g., 'John Doe').

## SELECT Statements

A SELECT statement can consist of the following basic clauses.

- SELECT
- INTO
- FROM
- JOIN
- WHERE
- GROUP BY
- HAVING
- UNION
- ORDER BY
- LIMIT

## SELECT Syntax

The following syntax diagram outlines the syntax supported by the SharePoint Excel Services adapter:

```
SELECT {
  [ TOP <numeric_literal> ]
  {
    *
    | {
      <expression> [ [ AS ] <column_reference> ]
      | { <table_name> | <correlation_name> } .*
    } [ , ... ]
  }
  [ INTO csv:// [ filename= ] <file_path> [ ;delimiter=tab ] ]
```

```

{
  FROM <table_reference> [ [ AS ] <identifier> ]
}
[ WHERE <search_condition> ]
[
  ORDER BY
  <column_reference> [ ASC | DESC ] [ NULLS FIRST | NULLS LAST ]
]
[
  LIMIT <expression>
  [
    { OFFSET | , }
    <expression>
  ]
]
}
<expression> ::=
  | <column_reference>
  | @ <parameter>
  | ?
  | COUNT( * | { [ DISTINCT ] <expression> } )
  | { AVG | MAX | MIN | SUM | COUNT } ( <expression> )
  | NULLIF ( <expression> , <expression> )
  | COALESCE ( <expression> , ... )
  | CASE <expression>
    WHEN { <expression> | <search_condition> } THEN { <expression> |
NULL } [ ... ]
    [ ELSE { <expression> | NULL } ]
    END
  | <literal>
  | <sql_function>
<search_condition> ::=
  {
    <expression> { = | > | < | >= | <= | LIKE | AND | OR } [
<expression> ]
  } [ { AND | OR } ... ]

```

## Examples

1. Return all columns:

```
SELECT * FROM Account
```

2. Rename a column:

```
SELECT "Name" AS MY_Name FROM Account
```

3. Cast a column's data as a different data type:

```
SELECT CAST(AnnualRevenue AS VARCHAR) AS Str_AnnualRevenue FROM Account
```

4. Search data:

```
SELECT * FROM Account WHERE Industry = 'Floppy Disks'
```

5. The SharePoint Excel Services APIs support the following operators in the WHERE clause: =, >, <, >=, <=, LIKE, AND, OR.

```
SELECT * FROM Account WHERE Industry = 'Floppy Disks';
```

6. Return the number of items matching the query criteria:

```
SELECT COUNT(*) AS MyCount FROM Account
```

7. Sort a result set in ascending order:

```
SELECT Id, Name FROM Account ORDER BY Name ASC
```

## Predicate Functions

### CEILING(value)

Returns the value rounded up to the nearest whole number (no decimal component).

- **expression:** The value to round.

### CONCAT(string\_expr1, string\_expr2)

Returns the string that is the concatenation of string\_expr1 and string\_expr2.

- **string\_expr1:** The first string to be concatenated.
- **string\_expr2:** The second string to be concatenated.

## DAY(datetime\_date)

Returns the integer that specifies the day component of the specified date.

- **datetime\_date:** The datetime string that specifies the date.

## ENDSWITH(string\_expression, string\_suffix)

Returns true if string\_expression ends with string\_suffix, otherwise returns false.

- **string\_expression:** The string expression to search within.
- **string\_suffix:** The string suffix to search for.

## FLOOR(value)

Returns the value rounded down to the nearest whole number (no decimal component).

- **value:** The value to round.

## HOUR(datetime\_time)

Returns the integer that specifies the hour component of the specified time.

- **datetime\_time:** The datetime string that specifies the time.

## INDEXOF(string\_expression, string\_search)

Returns the index location where string\_search is contained within string\_expression.

- **string\_expression:** The string expression to search within.
- **string\_search:** The search value to locate within string\_expression.

## LENGTH(string\_expression)

Returns the number of characters of the specified string expression.

- **string\_expression:** The string expression.

## MINUTE(datetime\_time)

Returns the integer that specifies the minute component of the specified time.

- **datetime\_time:** The datetime string that specifies the time.

## MONTH(datetime\_date)

Returns the integer that specifies the month component of the specified date.

- **datetime\_date:** The datetime string that specifies the date.

## REPLACE(string\_expression, string\_search, string\_replace)

Returns the string after replacing any found string\_search values with string\_replace.

- **string\_expression:** The string expression to perform a replace on.
- **string\_search:** The string value to find within string\_expression.
- **string\_replace:** The string value replace and string\_search instances found.

## ROUND(value)

Returns the value to the nearest whole number (no decimal component).

- **value:** The value to round.

## SECOND(datetime\_time)

Returns the integer that specifies the second component of the specified time.

- **datetime\_time:** The datetime string that specifies the time.

## STARTSWITH(string\_expression, string\_prefix)

Returns true if string\_expression starts with string\_prefix, otherwise returns false.

- **string\_expression:** The string expression to search within.
- **string\_prefix:** The string prefix to search for.

## SUBSTRINGOF(string\_expression, string\_search)

Returns true if string\_expression contains string\_search, otherwise returns false.

- **string\_expression:** The string expression to search within.
- **string\_search:** The value to search for.

## TOLOWER(string\_expression)

Returns the string\_expression with the uppercase character data converted to lowercase.

- **string\_expression:** The string expression to lowercase.

## TOUPPER(string\_expression)

Returns the string\_expression with the lowercase character data converted to uppercase.

- **string\_expression:** The string expression to uppercase.

## TRIM(string\_expression)

Returns the string\_expression with the leading and trailing whitespace removed.

- **string\_expression:** The string expression to trim.

## YEAR(datetime\_date)

Returns the integer that specifies the year component of the specified date.

- **datetime\_date:** The datetime string that specifies the date.

## SELECT INTO Statements

You can use the SELECT INTO statement to export formatted data to a file.

### Data Export with an SQL Query

The following query exports data into a file formatted in comma-separated values (CSV):

```
boolean ret = stat.execute("SELECT Id, Name INTO 'csv://c:/Account.txt'
FROM 'Account' WHERE Industry = 'Floppy Disks'");
System.out.println(stat.getUpdateCount()+" rows affected");
```

You can specify other file formats in the URI. The following example exports tab-separated values:

```
Statement stat = conn.createStatement();
boolean ret = stat.execute("SELECT * INTO 'Account' IN
'csv://filename=c:/Account.csv;delimiter=tab' FROM 'Account' WHERE
Industry = 'Floppy Disks'");
System.out.println(stat.getUpdateCount()+" rows affected");
```

## EXECUTE Statements

To execute stored procedures, you can use EXECUTE or EXEC statements.

EXEC and EXECUTE assign stored procedure inputs, referenced by name, to values or parameter names.

### Stored Procedure Syntax

To execute a stored procedure as an SQL statement, use the following syntax:

```
{ EXECUTE | EXEC } <stored_proc_name>
{
  [ @ ] <input_name> = <expression>
} [ , ... ]
<expression> ::=
  | @ <parameter>
  | ?
  | <literal>
```

## Example Statements

Reference stored procedure inputs by name:

```
EXECUTE my_proc @second = 2, @first = 1, @third = 3;
```

Execute a parameterized stored procedure statement:

```
EXECUTE my_proc second = @p1, first = @p2, third = @p3;
```

## PIVOT and UNPIVOT

**PIVOT** and **UNPIVOT** can be used to change a table-valued expression into another table.

### PIVOT

PIVOT rotates a table-value expression by turning unique values from one column into multiple columns in the output. PIVOT can run aggregations where required on any column value.

### PIVOT Syntax

```
"SELECT 'AverageCost' AS Cost_Sorted_By_Production_Days, [0], [1], [2],
[3], [4]
FROM
(
SELECT DaysToManufacture, StandardCost
FROM Production.Product
) AS SourceTable
PIVOT
(
AVG(StandardCost)
FOR DaysToManufacture IN ([0], [1], [2], [3], [4])
) AS PivotTable;"
```

### UNPIVOT

UNPIVOT carries out nearly the opposite to PIVOT by rotating columns of a table-valued expressions into column values.



## UNPIVOT Sytax

```
"SELECT VendorID, Employee, Orders
FROM
(SELECT VendorID, Emp1, Emp2, Emp3, Emp4, Emp5
FROM pvt) p
UNPIVOT
(Orders FOR Employee IN
(Emp1, Emp2, Emp3, Emp4, Emp5)
)AS unpvt;"
```

For further information on PIVOT and UNPIVOT, see [FROM clause plus JOIN, APPLY, PIVOT \(Transact-SQL\)](#)

## Data Model

The adapter supports retrieving Excel data from SharePoint On-Premises through the REST API and through the OData API introduced in SharePoint 2013. Excel files must have the .xlsx format used in Excel 2007 and later.

**Note:** Microsoft has stated that they plan to sunset the Excel Services API for SharePoint Online in February 2022. Please consider migrating to the CData adapter for Excel Online for future access to your SharePoint data.

The adapter can detect the tables in your workbook based on the following:

- **Spreadsheets**
- **Excel tables**
- **Ranges**

The following sections provide more details on the available API objects.

### Dynamic Metadata Querying

Through dynamic metadata querying, any changes you make in Excel, such as adding an Excel table or spreadsheet or modifying columns, are reflected when you reconnect.

### Configuring Table Detection

The OData API and REST API (the default) each surface different API objects. Select which API to use based on how your workbook is organized and your SharePoint Excel Services

version.

## Connecting to Excel Tables

The [OData API](#) surfaces only the Excel tables you defined in your spreadsheets with Insert -> Table.

## Connecting to Spreadsheets, Ranges, and Excel Tables

If you need to access data outside of Excel tables, set [UseRESTAPI](#) to true; the REST API enables access to spreadsheets, ranges, and Excel tables as database tables.

See [REST API](#) for more information on executing SQL to spreadsheets and ranges.

## Supported APIs by SharePoint Version

The following table shows which APIs are available for each SharePoint version:

SharePoint Version	Available APIs
SharePoint Online	REST or OData
SharePoint On-Premises 2016	REST or OData
SharePoint On-Premises 2013	REST or OData
SharePoint On-Premises 2010	REST

## OData API

When using the OData protocol, you can access only data defined within Excel tables in the spreadsheet, which you create by clicking Insert -> Table in Excel.

Therefore if you have data outside a table object, this data cannot be retrieved using the OData API. Thus you may see a case where no tables are returned. This is a function of the OData API and you may want to look at using the REST API in such a case.

## REST API

When you are using the REST API, you can select data from the following tables:

- Spreadsheets in the workbook
- Excel table objects
- Ranges you specify in DefineTables

### Resolving Name Collisions

When one or more tables have the same name, the adapter uses the following precedence in decreasing order to resolve the collision: ranges -> Excel tables -> sheets.

For example: MyTable is in DefineTables and there is also an Excel table with the same name in the workbook. The definition specified within DefineTables overrides the Excel table.

### Selecting from Spreadsheets

To select data from a spreadsheet, specify the spreadsheet name in the FROM clause. By default, the first row is used to determine column names. You can set Header to false to disable automatic column name detection.

The data range is A1:Z100. To specify a different range, use DefineTables.

### Selecting from Excel Tables

To select data from an Excel table object, specify the table name in the FROM clause. These are the tables you create by clicking Insert -> Table in Excel.

### Selecting from Ranges

You can use the standard Excel format to define ranges; map the range to a table name in DefineTables.

## Data Type Mapping

## Data Type Mappings

The adapter maps types from the data source to the corresponding data type available in the schema. The table below documents these mappings.

SharePoint Excel Services (OData V3)	SharePoint Excel Services (OData V4)	CData Schema
Edm.Binary	Edm.Binary	binary
Edm.Boolean	Edm.Boolean	bool
Edm.DateTime	Edm.DateTimeOffset	datetime
Edm.Double	Edm.Double	double
Edm.Guid	Edm.Guid	guid
Edm.Int32	Edm.Int32	int
Edm.String	Edm.String	string
Edm.TimeOfDay	Edm.TimeOfDay	time

## Connection String Options

The connection string properties are the various options that can be used to establish a connection. This section provides a complete list of the options you can configure in the connection string for this provider. Click the links for further details.

For more information on establishing a connection, see [Basic Tab](#).

## Authentication

Property	Description
<a href="#">AuthScheme</a>	The scheme used for authentication. Accepted entries are

	NTLM,Basic,Digest,Forms,None,Negotiate,ADFS.
URL	The base URL for a site or site collection.
User	The username of the account used to authenticate to the server.
Password	The password of the account used to authenticate to the server.
SharePointVersion	The version of the SharePoint server to which you are connecting.
STSURL	The URL of the security token service (STS) when using Single Sign On (SSO).
UseNTLMV1	Determines whether the driver will attempt to connect with NTLMv1 or NTLMv2 (default).

## Connection

Property	Description
DefineTables	Define the tables within a spreadsheet.
File	The name of the Excel file to which to connect.
Folder	The folder containing the workbook specified by the File property.
Header	Indicates whether the first row should be used as a column header when using the REST API.
Library	The Document Library to which to connect.
IgnoreCalcError	Indicates whether to ignore errors that occurred during the calculation.
MaxRows	Limits the number of rows returned rows when no aggregation or group by is used in the query. This helps avoid performance issues at design time.

<a href="#">TypeDetectionScheme</a>	Determines how to determine the data type of columns.
<a href="#">UseRESTAPI</a>	Whether or not the REST API is used for retrieving data.

## SSO

Property	Description
<a href="#">SSOLoginURL</a>	The identity provider's login URL.
<a href="#">SSODomain</a>	The domain of the user when using single sign-on (SSO).
<a href="#">SSOProperties</a>	Additional properties required to connect to the identity provider in a semicolon-separated list.

## Kerberos

Property	Description
<a href="#">KerberosKDC</a>	The Kerberos Key Distribution Center (KDC) service used to authenticate the user.
<a href="#">KerberosRealm</a>	The Kerberos Realm used to authenticate the user.
<a href="#">KerberosSPN</a>	The service principal name (SPN) for the Kerberos Domain Controller.
<a href="#">KerberosKeytabFile</a>	The Keytab file containing your pairs of Kerberos principals and encrypted keys.
<a href="#">KerberosServiceRealm</a>	The Kerberos realm of the service.
<a href="#">KerberosServiceKDC</a>	The Kerberos KDC of the service.
<a href="#">KerberosTicketCache</a>	The full file path to an MIT Kerberos credential cache file.

## SSL

Property	Description
<a href="#">SSLServerCert</a>	The certificate to be accepted from the server when connecting using TLS/SSL.

## Firewall

Property	Description
<a href="#">FirewallType</a>	The protocol used by a proxy-based firewall.
<a href="#">FirewallServer</a>	The name or IP address of a proxy-based firewall.
<a href="#">FirewallPort</a>	The TCP port for a proxy-based firewall.
<a href="#">FirewallUser</a>	The user name to use to authenticate with a proxy-based firewall.
<a href="#">FirewallPassword</a>	A password used to authenticate to a proxy-based firewall.

## Proxy

Property	Description
<a href="#">ProxyAutoDetect</a>	This indicates whether to use the system proxy settings or not. This takes precedence over other proxy settings, so you'll need to set ProxyAutoDetect to FALSE in order use custom proxy settings.
<a href="#">ProxyServer</a>	The hostname or IP address of a proxy to route HTTP traffic through.
<a href="#">ProxyPort</a>	The TCP port the ProxyServer proxy is running on.

<a href="#">ProxyAuthScheme</a>	The authentication type to use to authenticate to the ProxyServer proxy.
<a href="#">ProxyUser</a>	A user name to be used to authenticate to the ProxyServer proxy.
<a href="#">ProxyPassword</a>	A password to be used to authenticate to the ProxyServer proxy.
<a href="#">ProxySSLType</a>	The SSL type to use when connecting to the ProxyServer proxy.
<a href="#">ProxyExceptions</a>	A semicolon separated list of destination hostnames or IPs that are exempt from connecting through the ProxyServer .

## Logging

Property	Description
<a href="#">LogModules</a>	Core modules to be included in the log file.

## Schema

Property	Description
<a href="#">Location</a>	A path to the directory that contains the schema files defining tables, views, and stored procedures.

## Miscellaneous

Property	Description
<a href="#">IncludeNavigationParentColumns</a>	Indicates if navigation parent columns should be included on navigation views.



Other	These hidden properties are used only in specific use cases.
RowScanDepth	The maximum number of rows to scan to look for the columns available in a table.
ShowEmptyRows	Indicates whether or not the empty rows should be pushed when UseRESTAPI = true.
Timeout	The value in seconds until the timeout error is thrown, canceling the operation.
UserDefinedViews	A filepath pointing to the JSON configuration file containing your custom views.

## Authentication

This section provides a complete list of the Authentication properties you can configure in the connection string for this provider.

Property	Description
AuthScheme	The scheme used for authentication. Accepted entries are NTLM,Basic,Digest,Forms,None,Negotiate,ADFS.
URL	The base URL for a site or site collection.
User	The username of the account used to authenticate to the server.
Password	The password of the account used to authenticate to the server.
SharePointVersion	The version of the SharePoint server to which you are connecting.
STSURL	The URL of the security token service (STS) when using Single Sign On (SSO).
UseNTLMV1	Determines whether the driver will attempt to connect with NTLMv1 or NTLMv2 (default).

## AuthScheme

The scheme used for authentication. Accepted entries are NTLM,Basic,Digest,Forms,None,Negotiate,ADFS.

### Possible Values

NTLM, Basic, Digest, Forms, None, Negotiate, ADFS

### Data Type

string

### Default Value

"NTLM"

### Remarks

Together with [Password](#) and [User](#), this field is used to authenticate against the server. NTLM is the default option. Use the following options to vccselect your authentication scheme:

- NTLM: Set this to use your Windows credentials for authentication.
- Basic: Set this to use HTTP Basic authentication.
- Digest: Set this to HTTP Digest authentication.
- Forms: Set this to use Forms authentication.
- Negotiate: If [AuthScheme](#) is set to Negotiate, the adapter will Negotiate an authentication mechanism with the server. Set [AuthScheme](#) to Negotiate if you want to use Kerberos authentication.
- ADFS: Set this to use Single Sign-On authentication with ADFS.
- None: Set this to use anonymous authentication.

## URL

The base URL for a site or site collection.

## Data Type

string

## Default Value

""

## Remarks

The following are examples of valid URLs:

- <http://server/SharePoint/>
- <http://server/Sites/mysite/>
- <http://server:90/>

The provider will use URL to derive URLs for other calls to the server.

## User

The username of the account used to authenticate to the server.

## Data Type

string

## Default Value

""

## Remarks

Together with [Password](#), this field is used to authenticate to the SharePoint OnPremise specified in [Url](#).

## Password

The password of the account used to authenticate to the server.

## Data Type

string

## Default Value

""

## Remarks

Together with [User](#), this field is used to authenticate against the server;.

## SharePointVersion

The version of the SharePoint server to which you are connecting.

## Possible Values

SharePoint 2013, SharePoint 2010

## Data Type

string

## Default Value

"SharePoint 2013"

## Remarks

Accepted entries are SharePoint 2013 and SharePoint 2010.

## STSURL

The URL of the security token service (STS) when using Single Sign On (SSO).

## Data Type

string

## Default Value

""

## Remarks

This property only needs to be set when using Single Sign On with a local Active Directory Federation Services (ADFS).

## UseNTLMV1

Determines whether the driver will attempt to connect with NTLMv1 or NTLMv2 (default).

## Data Type

bool

## Default Value

false

## Remarks

Determines whether the driver will attempt to connect with NTLMv1 or NTLMv2 (default).

## Connection

This section provides a complete list of the Connection properties you can configure in the connection string for this provider.

---

Property	Description
----------	-------------

---

DefineTables	Define the tables within a spreadsheet.
File	The name of the Excel file to which to connect.
Folder	The folder containing the workbook specified by the File property.
Header	Indicates whether the first row should be used as a column header when using the REST API.
Library	The Document Library to which to connect.
IgnoreCalcError	Indicates whether to ignore errors that occurred during the calculation.
MaxRows	Limits the number of rows returned rows when no aggregation or group by is used in the query. This helps avoid performance issues at design time.
TypeDetectionScheme	Determines how to determine the data type of columns.
UseRESTAPI	Whether or not the REST API is used for retrieving data.

## DefineTables

Define the tables within a spreadsheet.

### Data Type

string

### Default Value

""

### Remarks

This property is used to define the ranges within a spreadsheet that will appear as tables, when using the REST API. The value is a comma-separated list of name-value pairs in the form [Table Name]=[Sheet Name]![Range]. Table Name is the name of the table you want

to use for the data and will be used when issuing queries. Sheet Name is the name of the sheet within the spreadsheet and Range is the range of cells that contain the data for the table.

Here is an example DefineTables value:

DefineTables="DefinedTable1=Sheet1!A1:N25,DefinedTable2=Sheet2!C3:M53"

Note: If the name of a defined table is the same as one returned by default (e.g. same name as a worksheet), the defined table will replace the default table.

## File

The name of the Excel file to which to connect.

### Data Type

string

### Default Value

""

### Remarks

The name of Excel file to which to connect (including the extension ".xlsx"). The file must exist.

## Folder

The folder containing the workbook specified by the File property.

### Data Type

string

### Default Value

""

## Remarks

The full, hierarchical path of the subfolder in a [Library](#) where the [File](#) can be found. For example if the [File](#) is located in a folder called "SubFolder" within the folder called "BaseFolder", the property will be set to "/BaseFolder/SubFolder/".

## Header

Indicates whether the first row should be used as a column header when using the REST API.

## Data Type

bool

## Default Value

true

## Remarks

If true, the first row will be used as a column header. Otherwise, the pseudo column names A, B, C, etc. will be used.

Note: This property is only used when [UseRESTAPI](#) is 'True'.

## Library

The Document Library to which to connect.

## Data Type

string

## Default Value

""



## Remarks

This property indicates the name of the Document Library containing the Excel file. If no library is specified, the "Shared Documents" library will be used.

If you wish to connect to OneDrive for Business, set this property to "Documents".

Note:

If the language of your SharePoint site is not English, set this property to the name of the library for the corresponding language.

Here are some steps to get the value:

1. Go to your SharePoint site collection.
2. Go to the document library page.
3. Click on Settings menu.
4. Click on the Library settings on the settings menu.
5. Under the List Information section, there is a flag "Web Address".

For example, the address is "https://Your SharePoint Site/subSites/.../subSites/Documents partages/Forms/AllItems.aspx" if the language of SharePoint site belongs to the French. And the value "Documents partages" is the name of the library for the corresponding language.

## IgnoreCalcError

Indicates whether to ignore errors that occurred during the calculation.

### Data Type

bool

### Default Value

true

## Remarks

IgnoreCalcError defaults to false. If IgnoreCalcError is set to true, the provider will ignore any errors that occur due to formula calculation. If this happens, the formula result may be unreliable, but other data will be accurate.

## MaxRows

Limits the number of rows returned rows when no aggregation or group by is used in the query. This helps avoid performance issues at design time.

## Data Type

string

## Default Value

"-1"

## Remarks

Limits the number of rows returned rows when no aggregation or group by is used in the query. This helps avoid performance issues at design time.

## TypeDetectionScheme

Determines how to determine the data type of columns.

## Possible Values

None, RowScan

## Data Type

string

## Default Value

"RowScan"

## Remarks

None	Setting <u>TypeDetectionScheme</u> to None will return all columns as the string type.
RowScan	Setting <u>TypeDetectionScheme</u> to RowScan will scan rows to heuristically determine the data type. The <a href="#">RowScanDepth</a> determines the number of rows to be scanned.

## UseRESTAPI

Whether or not the REST API is used for retrieving data.

### Possible Values

False, True

### Data Type

string

### Default Value

"True"

## Remarks

Whether or not the REST API is used for retrieving data. SharePoint 2010 must use the REST API. In SharePoint versions after 2010, both the REST API and OData API are available.

Use the REST API to access spreadsheets and ranges as tables as well as table objects. The OData API enables access to only table objects.

See [Data Model](#) for more information on querying spreadsheets organized in different ways.

## SSO

This section provides a complete list of the SSO properties you can configure in the connection string for this provider.

---

Property	Description
<a href="#">SSOLoginURL</a>	The identity provider's login URL.
<a href="#">SSODomain</a>	The domain of the user when using single sign-on (SSO).
<a href="#">SSOProperties</a>	Additional properties required to connect to the identity provider in a semicolon-separated list.

---

## SSOLoginURL

The identity provider's login URL.

### Data Type

string

### Default Value

""

### Remarks

The identity provider's login URL.

## SSODomain

The domain of the user when using single sign-on (SSO).

### Data Type

string

## Default Value

""

## Remarks

This property is only applicable when using single sign-on ([UseSSO](#) is set to true) and if the domain of the [User](#) (e.g. user@mydomain.com) is different than the domain configured within the SSO service (e.g. user@myssodomain.com).

This property may be required when using the ADFS services.

## SSOProperties

Additional properties required to connect to the identity provider in a semicolon-separated list.

## Data Type

string

## Default Value

""

## Remarks

Additional properties required to connect to the identity provider in a semicolon-separated list. is used in conjunction with the [SSOLoginURL](#).

SSO configuration is discussed further in .

## Kerberos

This section provides a complete list of the Kerberos properties you can configure in the connection string for this provider.

---

Property	Description
<a href="#">KerberosKDC</a>	The Kerberos Key Distribution Center (KDC) service used to authenticate the user.
<a href="#">KerberosRealm</a>	The Kerberos Realm used to authenticate the user.
<a href="#">KerberosSPN</a>	The service principal name (SPN) for the Kerberos Domain Controller.
<a href="#">KerberosKeytabFile</a>	The Keytab file containing your pairs of Kerberos principals and encrypted keys.
<a href="#">KerberosServiceRealm</a>	The Kerberos realm of the service.
<a href="#">KerberosServiceKDC</a>	The Kerberos KDC of the service.
<a href="#">KerberosTicketCache</a>	The full file path to an MIT Kerberos credential cache file.

## KerberosKDC

The Kerberos Key Distribution Center (KDC) service used to authenticate the user.

### Data Type

string

### Default Value

""

### Remarks

The Kerberos properties are used when using SPNEGO or Windows Authentication. The adapter will request session tickets and temporary session keys from the Kerberos KDC service. The Kerberos KDC service is conventionally colocated with the domain controller.

If Kerberos KDC is not specified, the adapter will attempt to detect these properties automatically from the following locations:

- **KRB5 Config File (krb5.ini/krb5.conf):** If the KRB5\_CONFIG environment variable is set and the file exists, the adapter will obtain the KDC from the specified file. Otherwise, it will attempt to read from the default MIT location based on the OS: *C:\ProgramData\MIT\Kerberos5\krb5.ini* (Windows) or */etc/krb5.conf* (Linux).
- **Java System Properties:** Using the system properties *java.security.krb5.realm* and *java.security.krb5.kdc*.
- **Domain Name and Host:** If the Kerberos Realm and Kerberos KDC could not be inferred from another location, the adapter will infer them from the configured domain name and host.

**Note:** Windows authentication is supported in JRE 1.6 and above only.

## KerberosRealm

The Kerberos Realm used to authenticate the user.

### Data Type

string

### Default Value

""

### Remarks

The Kerberos properties are used when using SPNEGO or Windows Authentication. The Kerberos Realm is used to authenticate the user with the Kerberos Key Distribution Service (KDC). The Kerberos Realm can be configured by an administrator to be any string, but conventionally it is based on the domain name.

If Kerberos Realm is not specified, the adapter will attempt to detect these properties automatically from the following locations:

- **KRB5 Config File (krb5.ini/krb5.conf):** If the KRB5\_CONFIG environment variable is set and the file exists, the adapter will obtain the default realm from the specified file. Otherwise, it will attempt to read from the default MIT location based on the OS: *C:\ProgramData\MIT\Kerberos5\krb5.ini* (Windows) or */etc/krb5.conf* (Linux)
- **Java System Properties:** Using the system properties *java.security.krb5.realm* and *java.security.krb5.kdc*.

- **Domain Name and Host:** If the Kerberos Realm and Kerberos KDC could not be inferred from another location, the adapter will infer them from the user-configured domain name and host. This might work in some Windows environments.

**Note:** Kerberos-based authentication is supported in JRE 1.6 and above only.

## KerberosSPN

The service principal name (SPN) for the Kerberos Domain Controller.

### Data Type

string

### Default Value

""

### Remarks

If the SPN on the Kerberos Domain Controller is not the same as the URL that you are authenticating to, use this property to set the SPN.

## KerberosKeytabFile

The Keytab file containing your pairs of Kerberos principals and encrypted keys.

### Data Type

string

### Default Value

""

### Remarks

The Keytab file containing your pairs of Kerberos principals and encrypted keys.



## KerberosServiceRealm

The Kerberos realm of the service.

### Data Type

string

### Default Value

""

### Remarks

The KerberosServiceRealm is the specify the service Kerberos realm when using cross-realm Kerberos authentication.

In most cases, a single realm and KDC machine are used to perform the Kerberos authentication and this property is not required.

This property is available for complex setups where a different realm and KDC machine are used to obtain an authentication ticket (AS request) and a service ticket (TGS request).

## KerberosServiceKDC

The Kerberos KDC of the service.

### Data Type

string

### Default Value

""

### Remarks

The KerberosServiceKDC is used to specify the service Kerberos KDC when using cross-realm Kerberos authentication.

In most cases, a single realm and KDC machine are used to perform the Kerberos authentication and this property is not required.

This property is available for complex setups where a different realm and KDC machine are used to obtain an authentication ticket (AS request) and a service ticket (TGS request).

## KerberosTicketCache

The full file path to an MIT Kerberos credential cache file.

### Data Type

string

### Default Value

""

### Remarks

This property can be set if you wish to use a credential cache file that was created using the MIT Kerberos Ticket Manager or kinit command.

## SSL

This section provides a complete list of the SSL properties you can configure in the connection string for this provider.

---

Property	Description
<a href="#">SSLServerCert</a>	The certificate to be accepted from the server when connecting using TLS/SSL.

---

## SSLServerCert

The certificate to be accepted from the server when connecting using TLS/SSL.

## Data Type

string

## Default Value

""

## Remarks

If using a TLS/SSL connection, this property can be used to specify the TLS/SSL certificate to be accepted from the server. Any other certificate that is not trusted by the machine is rejected.

This property can take the following forms:

Description	Example
A full PEM Certificate (example shortened for brevity)	-----BEGIN CERTIFICATE----- MIICHTCCAe4CAQAwDQYJKoZIhvd.....Qw == -----END CERTIFICATE-----
A path to a local file containing the certificate	C:\cert.cer
The public key (example shortened for brevity)	-----BEGIN RSA PUBLIC KEY----- MIGfMA0GCSq.....AQAB -----END RSA PUBLIC KEY-----
The MD5 Thumbprint (hex values can also be either space or colon separated)	34a929226ae0819f2ec14b4a3d904f801c
The SHA1 Thumbprint (hex values can also be either space or colon separated)	bb150d

If not specified, any certificate trusted by the machine is accepted.

Certificates are validated as trusted by the machine based on the System's trust store. The trust store used is the 'javax.net.ssl.trustStore' value specified for the system. If no value is specified for this property, Java's default trust store is used (for example, JAVA\_HOME\lib\security\cacerts).

Use '\*' to signify to accept all certificates. Note that this is not recommended due to security concerns.

## Firewall

This section provides a complete list of the Firewall properties you can configure in the connection string for this provider.

---

Property	Description
<a href="#">FirewallType</a>	The protocol used by a proxy-based firewall.
<a href="#">FirewallServer</a>	The name or IP address of a proxy-based firewall.
<a href="#">FirewallPort</a>	The TCP port for a proxy-based firewall.
<a href="#">FirewallUser</a>	The user name to use to authenticate with a proxy-based firewall.
<a href="#">FirewallPassword</a>	A password used to authenticate to a proxy-based firewall.

### FirewallType

The protocol used by a proxy-based firewall.

#### Possible Values

NONE, TUNNEL, SOCKS4, SOCKS5

#### Data Type

string

#### Default Value

"NONE"

## Remarks

This property specifies the protocol that the adapter will use to tunnel traffic through the [FirewallServer](#) proxy. Note that by default, the adapter connects to the system proxy; to disable this behavior and connect to one of the following proxy types, set [ProxyAutoDetect](#) to false.

Type	Default Port	Description
TUNNEL	80	When this is set, the adapter opens a connection to SharePoint Excel Services and traffic flows back and forth through the proxy.
SOCKS4	1080	When this is set, the adapter sends data through the SOCKS 4 proxy specified by <a href="#">FirewallServer</a> and <a href="#">FirewallPort</a> and passes the <a href="#">FirewallUser</a> value to the proxy, which determines if the connection request should be granted.
SOCKS5	1080	When this is set, the adapter sends data through the SOCKS 5 proxy specified by <a href="#">FirewallServer</a> and <a href="#">FirewallPort</a> . If your proxy requires authentication, set <a href="#">FirewallUser</a> and <a href="#">FirewallPassword</a> to credentials the proxy recognizes.

To connect to HTTP proxies, use [ProxyServer](#) and [ProxyPort](#). To authenticate to HTTP proxies, use [ProxyAuthScheme](#), [ProxyUser](#), and [ProxyPassword](#).

## FirewallServer

The name or IP address of a proxy-based firewall.

### Data Type

string

### Default Value

""

## Remarks

This property specifies the IP address, DNS name, or host name of a proxy allowing traversal of a firewall. The protocol is specified by [FirewallType](#): Use [FirewallServer](#) with this property to connect through SOCKS or do tunneling. Use [ProxyServer](#) to connect to an HTTP proxy.

Note that the adapter uses the system proxy by default. To use a different proxy, set [ProxyAutoDetect](#) to false.

## FirewallPort

The TCP port for a proxy-based firewall.

### Data Type

int

### Default Value

0

## Remarks

This specifies the TCP port for a proxy allowing traversal of a firewall. Use [FirewallServer](#) to specify the name or IP address. Specify the protocol with [FirewallType](#).

## FirewallUser

The user name to use to authenticate with a proxy-based firewall.

### Data Type

string

### Default Value

""

## Remarks

The [FirewallUser](#) and [FirewallPassword](#) properties are used to authenticate against the proxy specified in [FirewallServer](#) and [FirewallPort](#), following the authentication method specified in [FirewallType](#).

## FirewallPassword

A password used to authenticate to a proxy-based firewall.

## Data Type

string

## Default Value

""

## Remarks

This property is passed to the proxy specified by [FirewallServer](#) and [FirewallPort](#), following the authentication method specified by [FirewallType](#).

## Proxy

This section provides a complete list of the Proxy properties you can configure in the connection string for this provider.

Property	Description
<a href="#">ProxyAutoDetect</a>	This indicates whether to use the system proxy settings or not. This takes precedence over other proxy settings, so you'll need to set ProxyAutoDetect to FALSE in order use custom proxy settings.
<a href="#">ProxyServer</a>	The hostname or IP address of a proxy to route HTTP traffic through.

<b>ProxyPort</b>	The TCP port the ProxyServer proxy is running on.
<b>ProxyAuthScheme</b>	The authentication type to use to authenticate to the ProxyServer proxy.
<b>ProxyUser</b>	A user name to be used to authenticate to the ProxyServer proxy.
<b>ProxyPassword</b>	A password to be used to authenticate to the ProxyServer proxy.
<b>ProxySSLType</b>	The SSL type to use when connecting to the ProxyServer proxy.
<b>ProxyExceptions</b>	A semicolon separated list of destination hostnames or IPs that are exempt from connecting through the ProxyServer .

## ProxyAutoDetect

This indicates whether to use the system proxy settings or not. This takes precedence over other proxy settings, so you'll need to set ProxyAutoDetect to FALSE in order use custom proxy settings.

### Data Type

bool

### Default Value

true

### Remarks

This takes precedence over other proxy settings, so you'll need to set ProxyAutoDetect to FALSE in order use custom proxy settings.

NOTE: When this property is set to True, the proxy used is determined as follows:

- A search from the JVM properties (**http.proxy**, **https.proxy**, **socksProxy**, etc.) is performed.
- In the case that the JVM properties don't exist, a search from



**java.home/lib/net.properties** is performed.

- In the case that `java.net.useSystemProxies` is set to `True`, a search from **the SystemProxy** is performed.
- In Windows only, an attempt is made to retrieve these properties from the **Internet Options** in the **registry**.

To connect to an HTTP proxy, see [ProxyServer](#). For other proxies, such as SOCKS or tunneling, see [FirewallType](#).

## ProxyServer

The hostname or IP address of a proxy to route HTTP traffic through.

### Data Type

string

### Default Value

""

### Remarks

The hostname or IP address of a proxy to route HTTP traffic through. The adapter can use the HTTP, Windows (NTLM), or Kerberos authentication types to authenticate to an HTTP proxy.

If you need to connect through a SOCKS proxy or tunnel the connection, see [FirewallType](#).

By default, the adapter uses the system proxy. If you need to use another proxy, set [ProxyAutoDetect](#) to `false`.

## ProxyPort

The TCP port the ProxyServer proxy is running on.

### Data Type

int

## Default Value

80

## Remarks

The port the HTTP proxy is running on that you want to redirect HTTP traffic through. Specify the HTTP proxy in [ProxyServer](#). For other proxy types, see [FirewallType](#).

## ProxyAuthScheme

The authentication type to use to authenticate to the ProxyServer proxy.

## Possible Values

BASIC, DIGEST, NONE, NEGOTIATE, NTLM, PROPRIETARY

## Data Type

string

## Default Value

"BASIC"

## Remarks

This value specifies the authentication type to use to authenticate to the HTTP proxy specified by [ProxyServer](#) and [ProxyPort](#).

Note that the adapter will use the system proxy settings by default, without further configuration needed; if you want to connect to another proxy, you will need to set [ProxyAutoDetect](#) to false, in addition to [ProxyServer](#) and [ProxyPort](#). To authenticate, set [ProxyAuthScheme](#) and set [ProxyUser](#) and [ProxyPassword](#), if needed.

The authentication type can be one of the following:

- **BASIC:** The adapter performs HTTP BASIC authentication.
- **DIGEST:** The adapter performs HTTP DIGEST authentication.
- **NEGOTIATE:** The adapter retrieves an NTLM or Kerberos token based on the

applicable protocol for authentication.

- **PROPRIETARY:** The adapter does not generate an NTLM or Kerberos token. You must supply this token in the Authorization header of the HTTP request.

If you need to use another authentication type, such as SOCKS 5 authentication, see [FirewallType](#).

## ProxyUser

A user name to be used to authenticate to the ProxyServer proxy.

### Data Type

string

### Default Value

""

### Remarks

The [ProxyUser](#) and [ProxyPassword](#) options are used to connect and authenticate against the HTTP proxy specified in [ProxyServer](#).

You can select one of the available authentication types in [ProxyAuthScheme](#). If you are using HTTP authentication, set this to the user name of a user recognized by the HTTP proxy. If you are using Windows or Kerberos authentication, set this property to a user name in one of the following formats:

```
user@domain  
domain\user
```

## ProxyPassword

A password to be used to authenticate to the ProxyServer proxy.

### Data Type

string

## Default Value

""

## Remarks

This property is used to authenticate to an HTTP proxy server that supports NTLM (Windows), Kerberos, or HTTP authentication. To specify the HTTP proxy, you can set [ProxyServer](#) and [ProxyPort](#). To specify the authentication type, set [ProxyAuthScheme](#).

If you are using HTTP authentication, additionally set [ProxyUser](#) and [ProxyPassword](#) to HTTP proxy.

If you are using NTLM authentication, set [ProxyUser](#) and [ProxyPassword](#) to your Windows password. You may also need these to complete Kerberos authentication.

For SOCKS 5 authentication or tunneling, see [FirewallType](#).

By default, the adapter uses the system proxy. If you want to connect to another proxy, set [ProxyAutoDetect](#) to false.

## ProxySSLType

The SSL type to use when connecting to the [ProxyServer](#) proxy.

## Possible Values

AUTO, ALWAYS, NEVER, TUNNEL

## Data Type

string

## Default Value

"AUTO"

## Remarks

This property determines when to use SSL for the connection to an HTTP proxy specified by [ProxyServer](#). This value can be AUTO, ALWAYS, NEVER, or TUNNEL. The applicable values are the following:

<b>AUTO</b>	Default setting. If the URL is an HTTPS URL, the adapter will use the TUNNEL option. If the URL is an HTTP URL, the component will use the NEVER option.
<b>ALWAYS</b>	The connection is always SSL enabled.
<b>NEVER</b>	The connection is not SSL enabled.
<b>TUNNEL</b>	The connection is through a tunneling proxy. The proxy server opens a connection to the remote host and traffic flows back and forth through the proxy.

## ProxyExceptions

A semicolon separated list of destination hostnames or IPs that are exempt from connecting through the ProxyServer .

### Data Type

string

### Default Value

""

### Remarks

The [ProxyServer](#) is used for all addresses, except for addresses defined in this property. Use semicolons to separate entries.

Note that the adapter uses the system proxy settings by default, without further configuration needed; if you want to explicitly configure proxy exceptions for this connection, you need to set [ProxyAutoDetect](#) = false, and configure [ProxyServer](#) and [ProxyPort](#). To authenticate, set [ProxyAuthScheme](#) and set [ProxyUser](#) and [ProxyPassword](#), if needed.

## Logging

This section provides a complete list of the Logging properties you can configure in the connection string for this provider.

---

Property	Description
<a href="#">LogModules</a>	Core modules to be included in the log file.

---

## LogModules

Core modules to be included in the log file.

### Data Type

string

### Default Value

""

### Remarks

Only the modules specified (separated by ';') will be included in the log file. By default all modules are included.

See the [Logging](#) page for an overview.

## Schema

This section provides a complete list of the Schema properties you can configure in the connection string for this provider.

---

Property	Description
<a href="#">Location</a>	A path to the directory that contains the schema files defining tables, views, and stored procedures.

---

## Location

A path to the directory that contains the schema files defining tables, views, and stored procedures.

## Data Type

string

## Default Value

"%APPDATA%\\CData\\Microsoft SharePoint Excel Data Provider\\Schema"

## Remarks

The path to a directory which contains the schema files for the adapter (.rsd files for tables and views, .rsb files for stored procedures). The folder location can be a relative path from the location of the executable. The Location property is only needed if you want to customize definitions (for example, change a column name, ignore a column, and so on) or extend the data model with new tables, views, or stored procedures.

If left unspecified, the default location is "%APPDATA%\\CData\\Microsoft SharePoint Excel Data Provider\\Schema" with **%APPDATA%** being set to the user's configuration directory:

Platform	%APPDATA%
Windows	The value of the APPDATA environment variable
Mac	~/Library/Application Support
Linux	~/.config

## Miscellaneous

This section provides a complete list of the Miscellaneous properties you can configure in the connection string for this provider.

Property	Description
<a href="#">IncludeNavigationParentColumns</a>	Indicates if navigation parent columns should be included on navigation views.
<a href="#">Other</a>	These hidden properties are used only in specific use cases.
<a href="#">RowScanDepth</a>	The maximum number of rows to scan to look for the columns available in a table.
<a href="#">ShowEmptyRows</a>	Indicates whether or not the empty rows should be pushed when UseRESTAPI = true.
<a href="#">Timeout</a>	The value in seconds until the timeout error is thrown, canceling the operation.
<a href="#">UserDefinedViews</a>	A filepath pointing to the JSON configuration file containing your custom views.

## IncludeNavigationParentColumns

Indicates if navigation parent columns should be included on navigation views.

### Data Type

bool

### Default Value

true

### Remarks

When [NavigationPropertiesAsViews](#) is set to true, this property controls if parent columns from the navigation property will be displayed or not on the view. It may be worth displaying them in order to take advantage of being able to filter based on information about the parent.



When set to false, the primary keys of the parent will still be displayed to allow for joining back to the parent, but other other columns will not be.

## Other

These hidden properties are used only in specific use cases.

### Data Type

string

### Default Value

""

### Remarks

The properties listed below are available for specific use cases. Normal driver use cases and functionality should not require these properties.

Specify multiple properties in a semicolon-separated list.

## Integration and Formatting

DefaultColumnSize	Sets the default length of string fields when the data source does not provide column length in the metadata. The default value is 2000.
ConvertDateTimeToGMT	Determines whether to convert date-time values to GMT, instead of the local time of the machine.
RecordToFile=filename	Records the underlying socket data transfer to the specified file.

## RowScanDepth

The maximum number of rows to scan to look for the columns available in a table.

## Data Type

int

## Default Value

50

## Remarks

The columns in a table must be determined by scanning table rows. This value determines the maximum number of rows that will be scanned.

Setting a high value may decrease performance. Setting a low value may prevent the data type from being determined properly, especially when there is null data.

## ShowEmptyRows

Indicates whether or not the empty rows should be pushed when UseRESTAPI = true.

## Data Type

bool

## Default Value

true

## Remarks

If true, the empty rows will be pushed at the output when [UseRESTAPI](#) = true.

## Timeout

The value in seconds until the timeout error is thrown, canceling the operation.

## Data Type

int

## Default Value

60

## Remarks

If Timeout = 0, operations do not time out. The operations run until they complete successfully or until they encounter an error condition.

If Timeout expires and the operation is not yet complete, the adapter throws an exception.

## UserDefinedViews

A filepath pointing to the JSON configuration file containing your custom views.

## Data Type

string

## Default Value

""

## Remarks

User Defined Views are defined in a JSON-formatted configuration file called *UserDefinedViews.json*. The adapter automatically detects the views specified in this file.

You can also have multiple view definitions and control them using the UserDefinedViews connection property. When you use this property, only the specified views are seen by the adapter.

This User Defined View configuration file is formatted as follows:

- Each root element defines the name of a view.
- Each root element contains a child element, called **query**, which contains the custom SQL query for the view.

For example:

```
{
  "MyView": {
    "query": "SELECT * FROM Account WHERE MyColumn = 'value'"
  },
  "MyView2": {
    "query": "SELECT * FROM MyTable WHERE Id IN (1,2,3)"
  }
}
```

Use the UserDefinedViews connection property to specify the location of your JSON configuration file. For example:

```
"UserDefinedViews",
"C:\\Users\\yourusername\\Desktop\\tmp\\UserDefinedViews.json"
```

# 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](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](#).

# Legal and Third-Party Notices

---

SOME TIBCO SOFTWARE EMBEDS OR BUNDLES OTHER TIBCO SOFTWARE. USE OF SUCH EMBEDDED OR BUNDLED TIBCO SOFTWARE IS SOLELY TO ENABLE THE FUNCTIONALITY (OR PROVIDE LIMITED ADD-ON FUNCTIONALITY) OF THE LICENSED TIBCO SOFTWARE. THE EMBEDDED OR BUNDLED SOFTWARE IS NOT LICENSED TO BE USED OR ACCESSED BY ANY OTHER TIBCO SOFTWARE OR FOR ANY OTHER PURPOSE.

USE OF TIBCO SOFTWARE AND THIS DOCUMENT IS SUBJECT TO THE TERMS AND CONDITIONS OF A LICENSE AGREEMENT FOUND IN EITHER A SEPARATELY EXECUTED SOFTWARE LICENSE AGREEMENT, OR, IF THERE IS NO SUCH SEPARATE AGREEMENT, THE CLICKWRAP END USER LICENSE AGREEMENT WHICH IS DISPLAYED DURING DOWNLOAD OR INSTALLATION OF THE SOFTWARE (AND WHICH IS DUPLICATED IN THE LICENSE FILE) OR IF THERE IS NO SUCH SOFTWARE LICENSE AGREEMENT OR CLICKWRAP END USER LICENSE AGREEMENT, THE LICENSE(S) LOCATED IN THE “LICENSE” FILE(S) OF THE SOFTWARE. USE OF THIS DOCUMENT IS SUBJECT TO THOSE TERMS AND CONDITIONS, AND YOUR USE HEREOF SHALL CONSTITUTE ACCEPTANCE OF AND AN AGREEMENT TO BE BOUND BY THE SAME.

This document is subject to U.S. and international copyright laws and treaties. No part of this document may be reproduced in any form without the written authorization of TIBCO Software Inc.

TIBCO, TIBCO logo, TIBCO O logo, ActiveSpaces, Enterprise Messaging Service, Spotfire, TERR, S-PLUS, and S+ are either registered trademarks or trademarks of TIBCO Software Inc. in the United States and/or other countries.

Java and all Java based trademarks and logos are trademarks or registered trademarks of Oracle Corporation and/or its affiliates.

All other product and company names and marks mentioned in this document are the property of their respective owners and are mentioned for identification purposes only.

This software may be available on multiple operating systems. However, not all operating system platforms for a specific software version are released at the same time. See the



readme file for the availability of this software version on a specific operating system platform.

THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

THIS DOCUMENT COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE PERIODICALLY ADDED TO THE INFORMATION HEREIN; THESE CHANGES WILL BE INCORPORATED IN NEW EDITIONS OF THIS DOCUMENT. TIBCO SOFTWARE INC. MAY MAKE IMPROVEMENTS AND/OR CHANGES IN THE PRODUCT(S) AND/OR THE PROGRAM(S) DESCRIBED IN THIS DOCUMENT AT ANY TIME.

THE CONTENTS OF THIS DOCUMENT MAY BE MODIFIED AND/OR QUALIFIED, DIRECTLY OR INDIRECTLY, BY OTHER DOCUMENTATION WHICH ACCOMPANIES THIS SOFTWARE, INCLUDING BUT NOT LIMITED TO ANY RELEASE NOTES AND "READ ME" FILES.

This and other products of TIBCO Software Inc. may be covered by registered patents. Please refer to TIBCO's Virtual Patent Marking document (<https://www.tibco.com/patents>) for details.

Copyright © 2002-2023 Cloud Software Group, Inc All Rights Reserved.