Quest

Toad® Data Point 6.4.1

User Guide

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1

Introduction

About Toad Data Point

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Toad® Data Point is a multi-platform database query tool built for anyone who needs to access data, understand data relationships, and quickly produce reports.

With Toad Data Point, you can:

- Connect to almost any database or ODBC data source (see the Release Notes for a list of tested ODBC connections)
- Write SQL queries and join data across all platforms
- Automate and schedule frequent and repetitive tasks
- Streamline data collection
- Collaborate with team members
- Export data in a variety of file formats

Toad Data Point provides a full-featured Database Explorer, Query Builder, and Editor for the following databases:

- Oracle®
- SQL Server® and SQL Azure
- IBM® DB2® (LUW and z/OS)
- SAP® ASE, IQ, SQL Anywhere, and HANA
- Teradata®
- MySQL
- Snowflake®
- Databricks

Toad Data Point also provides querying and reporting functionality via the following provider types:

- ODBC
- Business Intelligence and NoSQL data sources
- Microsoft® Excel®
- Microsoft Access®

ODBC Connections

The purpose of the ODBC provider is to offer basic connection and querying capabilities to any database that supports an ODBC 3.0 or later driver. For a list of databases tested with the ODBC provider, see the System Requirements in the Release Notes. This form of connectivity allows connections to databases such as Netezza,

IBM iSeries, Ingres, and Vertica™. Because this form of connectivity is generic, it is not full-featured and may not be as robust as the fully-exploited providers for the other databases.

Business Intelligence and NoSQL Data Sources

Toad Data Point provides users with the ability to connect to non-traditional data sources, such as Business Intelligence and NoSQL sources. You can connect to these data sources and explore data and objects, query data, report results, and automate tasks.

The following data sources are supported:

Business Intelligence	Oracle Business Intelligence Enterprise Edition (OBIEE), SAP Business Objects™, Salesforce®, Microsoft SQL Server Analysis Services, Google Analytics™, OData, and SharePoint®
NoSQL	Azure Table Services, Cassandra™, Cloudera Impala, DynamoDB, HBASE™, Hive™, MongoDB™

Best Practices

Toad provides tools that help you succeed in your query and reporting goals. Many of these tools are considered Best Practices and are beneficial for individual users as well as managers. The following table describes the benefits of using Toad to improve Best Practices:

Best Practice	Benefit
One tool	Connect to any database type for basic query needs. Using one tool for all platforms makes it easier to learn and train others. Managers can create common files shared by all users. This ensures consistency for connections, queries, and reports.
Shared connections	Easily share connections between users by importing or exporting them.
Project management	Organize files and make them easily accessible to provide significant time savings. The Project Manager provides an easy way to group Database Diagrams, queries, and reports. It also provides the following useful features: • Create multiple projects to manage and track related tasks. • Double-click files in the project to quickly load them for review or execution. You can also add favorite web sites and directories. • Email files to colleagues or send them to your local network share. • Use the To-Do list to track items you need to complete.
Automation	Tasks that are frequently repeated can be automated and scheduled using Automation. You can schedule long running queries to execute during off-hours and can automatically export the results to Excel. You can also add these tasks to the Project Manager, and then double-click them to execute them. Automation offers an extension to your work day without you having to be there.
Database Diagram	Database schemas can be complex and difficult for new users to understand. The Database Diagram displays the database relationships between tables to reduce the learning curve. It also provides the following useful features: • Add notes to help users learn more about specific tables and columns. • Hide columns that are rarely used so users can focus on critical information. • Add manual relationships to commonly used joins in queries. • Save, share, or use Database Diagrams as a template for building queries.
Query Builder	Create complex queries visually using the Query Builder. You can also: • Reverse engineer a query from the Editor.

Best Practice	Benefit
	• Create a cross-connection query between different database providers, such as Oracle and DB2. • Add Lookup tables to a column for easy filtering. • Use bind variables to optimize a query. • Annotate tables, relationships, or the actual diagram with notes. • Save or share the query for future use. • Add Query Builder files to the Project Manager for easy access during your sessions.
Excel	Build Excel reports and share them with colleagues. The One Click Export feature offers options for quickly building Excel reports, including pivot tables for data manipulation. If you want data in an exported report to reflect changes to the database, you can use the One Click Export feature to export the underlying query with the report so it can be refreshed with the latest updates.
Share Files and Reports	Store files and reports in libraries that can be shared with colleagues. You can specify a directory on a network share to share these files with others.

Understand Toad's Workflow

Most reporting projects have a general flow throughout their lifecycle that requires you to understand your data sources, create queries, generate reports based on query results, and automate scripts for repetitive tasks.

- Understand—Successful queries begin with a clear understanding of the data source to which you connect. If you understand the data and the objects, as well as their relationships to one another, you can build informed queries that are effective and more optimized than you could without this understanding.
- Query—Queries are the most important, and often the most time-consuming, aspect of your project. Once you have a clear understanding of the data source, you can begin to create your query.
- Report—Data retrieved from a query frequently needs to be shared with colleagues or management in the form of a report, such as a pivot grid or chart.
- Automate—Queries and reports usually need to run on a daily, weekly, or monthly basis. With Automation, you can create a workflow that includes connecting to data sources, importing/exporting data, executing scripts, running queries, and building and distributing reports on a scheduled basis.

2

Connect

Create Amazon Redshift Connections

Toad Data Point allows you to create a connection to an Amazon Redshift database using ODBC connectivity.

Note: You must have Amazon Redshift ODBC driver 1.3.1.1000 (or later) installed before a native connection is created.

To install the Amazon Redshift ODBC Driver

Download and install the ODBC Driver from the Amazon Redshift Web site.

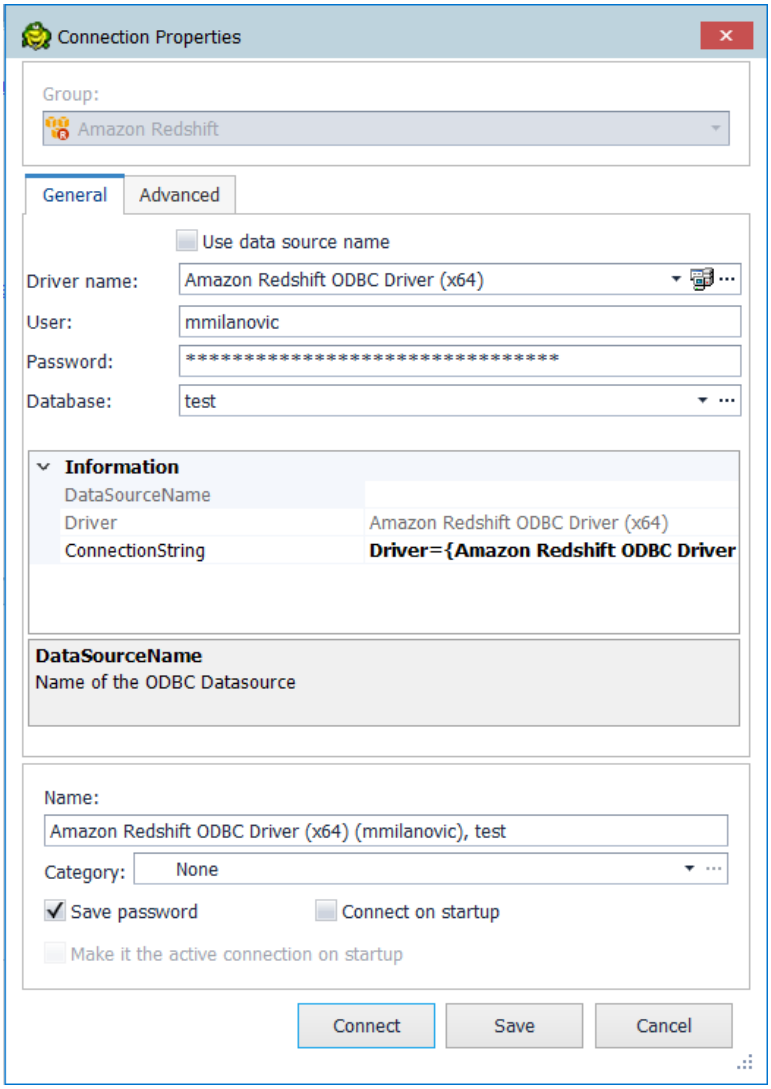
To create a new connection

1. Click on the **Connections** toolbar (ALT+F+N).
2. Select ***Amazon Redshift*** from the **Group** list box.
3. In the **Create New Connection** window configure the connection parameters.

General Tab	Description
Driver name	Uncheck the Use data source name checkbox and select Amazon Redshift (x64) Driver or Amazon Redshift ODBC Driver (x64) depending on the installed version.
User	Enter the username for your Amazon Redshift account.
Password	Enter the password for your Amazon Redshift account.
Database	Enter the name of the Database you would like to connect to or choose from the drop-down list.
ConnectionString	Add the connection string for the Redshift cluster in the ConnectionString field. Add the password string to the PWD= setting in the ODBC URL and paste the ODBC URL to the ConnectionString field: Driver={Amazon Redshift ODBC Driver (x64)};Server=<server>;Database=<database>;UID=<user>;PWD=<password>;Port=5439

4. Click **Connect** to save the connection and immediately connect to the database or click **Save** to save the

connection without connecting to the database.



Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

Create ODBC Connections

Toad Data Point allows you to create a connection to a database that supports an ODBC 3.0 or later driver. ODBC connectivity provides basic querying capability, but may not be as full-featured as a native connection in Toad. For a list of databases tested with the ODBC provider, see the Release Notes.

This form of connectivity allows connections to databases such as Netezza, IBM iSeries, Ingres, and Vertica.

Note: Distinct values are not available in Code Completion for ODBC connections.

DSN Architecture (Bitness) Must Match Toad

To create a successful ODBC connection, the architecture (bitness) of the driver in the specified DSN must match the architecture (bitness) of Toad. For example, 64-bit Toad requires an applicable 64-bit driver and 32-bit Toad requires an applicable 32-bit driver.

To create an ODBC connection

1. Click on the toolbar (ALT+F+N+O).
2. Select *ODBC Generic* from the **Group** list box.
3. **Use data source name**—Select to display data source names. Clear this check box if you want to display the driver names.
4. To create a data source to use in this connection, click in the **Data Source Name** field. Then click **Add**.
5. Select an ODBC driver from the list, and click **Finish**.

   Note: If creating an Oracle ODBC connection, select the ODBC driver provided by Oracle. The Microsoft ODBC for Oracle driver has less functionality than the driver provided by Oracle.
6. Specify the configuration properties required for the database in the Windows configuration dialog.

   Notes:

   - If you have an Oracle database with Unicode data, make sure to select *Force SQL_WCHAR Support* on the Workarounds tab of the windows Oracle ODBC Configuration dialog. If you do not, you will not be able to see the data.
   - If creating a MySQL ODBC connection to use in a cross-connection query, you must specify a database in the Windows MySQL ODBC Configuration dialog.
7. Specify the connection properties in the Create New Connection dialog. Review the following for additional information:

General	
Data source name	Select the driver or data source name you added in the previous steps.
User	Enter the user name to use when connecting.
Password	Enter the password to use when connecting. **Tip:** After connecting, you can set a master password to further secure your connection in **Tools | Options| Environment | Security**.
Database	Select a database or schema. Click to create a temporary connection and display available databases/schemas in the drop-down list.
Information	
Data Source Name	Displays the selected driver or data source name.
Driver	Displays the ODBC driver associated with the data source.
Advanced	
Default Table Column	Specify default options to use when creating a new table. **Column type**—Select the default data type to use when creating a table. **Column length**—For the selected column type, enter a default column length to use.
Advanced Options	**Block Cursor Size**—Specify the number of rows to return in a single fetch of data from the result set. **Disable multi-threading**—Multi-threading is disabled by default. Enable multi-threading only if supported by the driver. Multi-threading can improve performance, but can also result in unpredictable behavior if not supported by the driver. Default: *Selected*
Category	(Optional) Select an existing category or create a new one.

8. Click **Connect** to connect immediately while saving the connection information. Optionally, click **Save** to save the connection without connecting.

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

Tips for Working with ODBC Connections

Tip	Description
Filter DSN by bitness	To filter Data Source Names displayed in the New Connection dialog by the bitness of Toad, go to **Tools	Options	Database	ODBC**.
Cache object metadata	To cache object metadata for ODBC connections and retain it between sessions, go to **Tools	Options	Database	ODBC** and select to enable disk caching. Cached object metadata is retained until manually refreshed.
Refresh object metadata	To refresh object metadata for all ODBC connections, in the Object Explorer right-click an object and select **Refresh All**. Right-click an object and select **Refresh Schema** to refresh only objects in that schema.

ODBC Features

Feature	Description
Bypass schema/instance selection in SQL Editor	For ODBC connections, in the SQL Editor you can bypass selecting a schema/instance and specify this information through the script instead. This is useful if your script executes SQL against multiple schemas. To use this method, select **I will set schema/instance in the script** from the schema/instance drop-down list in the SQL Editor window. Then specify the schema/instance through your script. **Note:** When this option is selected, some code completion features, object actions, and object information tool tips are unavailable for this SQL Editor window.

Click here to view a video about creating connections in Toad Data Point

SingleStore ODBC Generic connection with Kerberos authentication and LDAP protocol

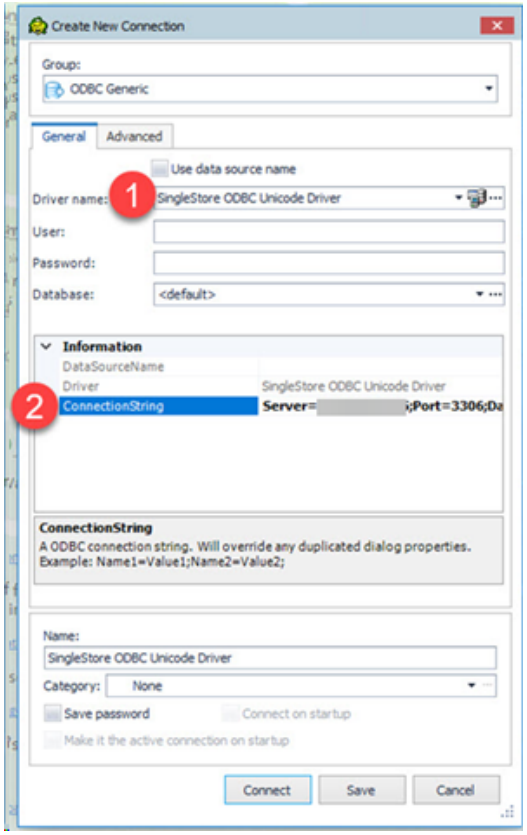
Toad Data Point supports connecting to SingleStore databases using the ODBC Generic connection option. This enhancement enables integration with SingleStore via Kerberos authentication and LDAP protocol, allowing users to leverage all functionalities available for Generic ODBC connections in Toad Data Point.

Setting Up the SingleStore ODBC Connection:

1. Select the SingleStore ODBC Unicode Driver (ensure the driver is installed and configured on your system)

2. Set the required parameters in the connection string. Below are the supported parameters:

Server	Specify the server address
Port	Set the appropriate port (e.g., 3306)
Database	Provide the database name
Authentication	Define the authentication method (e.g., KERBEROS)
KerberosServiceName	Specify the Kerberos service name (e.g., LDAP)
KerberosRealm	Include the Kerberos realm name (e.g., TEST.LOCAL)
KerberosHostname	Add the Kerberos hostname
LDAPUsername	Provide the LDAP username
SSLMode	Adjust according to your security needs (e.g., REQUIRED for SSL connections)



Example of a connection string:
Server=77.777.77.77;Port=3306;Database=sbox;Authentication=KERBEROS;KerberosServiceName=LDAP;KerberosRealm=TEST.LOCAL;KerberosHostname=DcSingleStore.test.local;LDAPUsername=testuser;SSLMode=REQUIRED;

Create Oracle Connections

You can create a new connection, or connect to an existing connection from the Create New Connection window.

Click here to view a video about creating connections in Toad Data Point

Tip: You can configure Toad Data Point to accept connection information from Toad for Oracle.

Client Connection or Direct Connection

You can connect to your database using a native Oracle database provider in Toad using one of the following methods:

Connection Method	Advantages	Disadvantages
Client connection Client tab—Uses an installed Oracle Client or Oracle Instant Client to establish a connection to the database from Toad.	Supports LDAP	Requires an Oracle client **Note:** Toad supports Oracle clients and Oracle Instant clients using version 9i or later.
Direct connection Direct Connect tab—Uses TCP/IP to connect directly to the database.	Does not require an installed Oracle Client Recommended for connecting to Oracle 8i databases	This method only supports common data types. Some advanced Oracle object types cannot be retrieved when connecting using this method. This method does not support LDAP. (To connect using LDAP, use the Client Connection method instead.) This method cannot be used in a cross-connection query.

Note: Quest recommends using one of the methods described in this table to connect to Oracle rather than an ODBC driver. Because ODBC connectivity is generic, it is not full-featured and may not be as robust as the fully exploited native database provider.

Configure the Oracle Instant Client

The Oracle Instant client installs only those files needed to connect to your database using OCI. Because this client does not write to the registry (no ORACLE_HOMES) or add to the environmental path, you must manually set environment variables so the client can be used with Toad.

To configure the Oracle Instant Client to work with Toad

1. Save the Oracle Instant Client files in any location on the computer where Toad is installed.
2. On your Windows desktop, right-click My Computer and select **Properties**.
3. Select the Advanced tab and click **Environment Variables**.
4. Click **New** under System Variables and complete the following:

Variable name	Variable Value
PATH	<*Path where Instant Client is installed*>;%PATH% For Example: C:\Program Files\OracleInstantClient;%PATH%
TNS_ADMIN	<*Path where tnsnames.ora file is installed*>

5. To use the Oracle Instant Client connection in a cross-connection query, you must also install an Oracle ODBC driver. (While the Oracle Client *full* install includes an ODBC driver, the Oracle Instant Client does not.)

Note: You cannot use an Oracle Direct Connection in a cross-connection query.

Create an Oracle Connection

To create an Oracle connection

1. Click on the toolbar (ALT+F+N).
2. Select *Oracle* from the **Group** list box.
3. Review the following for additional information:

Login Tab	Description
Database name	Select the alias to use when connecting. This list displays aliases from LDAP, as well as any local tnsnames.ora file. When you initially open the connection dialog, Toad retrieves the list of LDAP names from the LDAP server. Toad caches this list and displays it upon subsequent requests, within one Toad session. To refresh the list, click . **Note:** If you do not select a database, Toad uses the ORACLE_SID for the selected home. If an ORACLE_SID value does not exist and you do not specify a database, you cannot connect.
Password	Enter the password to use when connecting. **Tip:** After connecting, you can set a master password to further secure your connection in **Tools | Options| Environment | Security**.
Connect as	Select whether to connect as either SYSDBA or SYSOPER if you have the appropriate permissions. Otherwise, use the default.
Schema	Select a schema if you frequently work in a different schema than the one associated with your user name.
Explain plan table	(Optional) Specify the location of an existing explain plan table to use instead of Toad automatically creating one for you when you execute a statement. This is useful if you do not have necessary permissions to create explain plan tables or want to use an existing table.
Category	Select or create a category if you want to color code Editor tabs for a specific connection. This can help differentiate between development and production databases. You can also set an option to color code the Object Explorer pane and object editor windows (Create, Alter, Drop, etc.). Click here to view a video of this feature.
Save password	Select this check box if you plan to use this connection in a scheduled Automation script. **Note:** This option is disabled if Toad was installed with **Prohibit saving passwords** selected.
Oracle Client Tab	**Description**
Current home	Modify the Oracle home to use, if needed.
TNSNames Editor	Click this button to edit your local TNSNames file. **Tip:** You can press CTRL+F to open the Find/Replace window to locate entries in the TNS Names Editor. Pressing F3 locates the next entry that matches your criteria.
SQLNET Editor	Click this button to edit SQLNET.ORA parameters. Before editing this file, you should create a backup copy. See *SQLNET.ORA Profile Parameters* in the Oracle documentation for more information.

Direct Tab	Description
SID	Enter the ORACLE_SID value for the database. This value is specified in the registry under each installed home.
Advanced Tab	**Description**
ODBC driver	If an Oracle Client is installed, the default is the Oracle ODBC driver. If an Oracle Client is **not** installed, the default is the Microsoft Access ODBC driver. **Tip:** You can specify the ODBC driver to use for all connections for this database provider in **Tools | Options | Database | Oracle**.

4. Click **Connect** to connect immediately while saving the connection information. Optionally, click **Save** to save the connection without connecting.

Note: Go to **Tools | Options | Database | Oracle** to specify default options to use in Oracle connections.

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

Create Snowflake Connections

Toad allows you to create a native Snowflake connection, which provides you with a full-featured Object Explorer, Query Builder and SQL Editor.

Note: You must have a Snowflake ODBC driver 2.24.2 (or later) installed before a native connection is created.

To install the Snowflake ODBC Driver

Download and install the ODBC Driver from the Snowflake Web site.

To create a new connection

1. Click on the **Connections** toolbar (ALT+F+N).
2. Select ***Snowflake*** from the **Group** list box.
3. Enter the connection information in the **Create New Connection** dialog. Review the following for additional information:
4. Review the following for additional information:

General Tab	Description
Host	Enter the name of the server hosting the database to which you want to connect.
Authentication	There are five types of authentication that you can use to connect to Snowflake in Toad. The required Login fields will change according to the type of authentication you select. All the authenticators are located in a dropdown list: • Snowflake – User account authentication • SSO – Single Sign-On via external browser • OAuth – Token-based authentication • MFA - Multi-Factor Authentication

	• Key pair - JSON Web Token (JWT)
User	Enter the username for your Snowflake account
Password	Enter the password for your Snowflake account
Token	Enter your authentication token (Only visible when connecting via OAuth)
Private key path	Enter your Private key (Only visible when connecting via Key pair)
Passphrase	Passphrase is required only if the keys are encrypted (Only visible when connecting via Key pair)
Port	The default port number for Snowflake is 443
Optional	**A connection can be made without providing this information**
Role	Enter the user role that you would like to connect to
Warehouse	Enter the name of the Warehouse you would like to connect to
Database	Enter the name of the Database(s) you would like to connect to
Schema	Enter the name of the Schema(s) you would like to connect to

4. Click **Connect** to save the connection and immediately connect to the database.

   or

   Click **Save** to save the connection without connecting to the database.

Authentication Notes

When using SSO or MFA, there is a way to maintain continuous and secure connectivity without needing to enter login credentials for each connection attempt to Snowflake (as well as to prevent additional browser loading whenever a new module is started in Toad Data Point). To achieve this, check whether the correct parameters have been set in your account by executing the query below in your Snowflake cloud interface:

SHOW PARAMETERS IN ACCOUNT;

The output that will secure login credentials caching will have these values:

For SSO

allow_id_token = true;

For MFA

allow_client_mfa_caching = true;

If these values are set to false, then the following queries need to be executed:

For SSO:

ALTER ACCOUNT

SET allow_id_token = true;

For MFA:

ALTER ACCOUNT

SET allow_client_mfa_caching = true;

Note: If a Role or Warehouse isn't chosen, the default settings from the Snowflake User account will be applied (it is considered best practice that a user sets a default Role and a default Warehouse in their Snowflake user account).

Tip: It is strongly advised to use only the Snowflake user account authentication or Key Pair authentication when creating Automation scripts to avoid unnecessary workflow interruptions.

Limitations of Snowflake Native Connections

- Connecting to Snowflake through Programmatic SSO (Okta only) is not currently supported.
- Semi-structured data types can be used for storing and analyzing purposes in Snowflake connections, but are not supported in the Data Compare/Sync Wizard because Toad will not be able to generate valid sync scripts unless they are modified before execution
- At the moment, there is no support for Code Snippets in Snowflake connections
- Publishing Snapshots, Views, Automation scripts, and Workbooks to Toad Intelligence Central cannot be performed when using SSO, MFA, or OAuth authentication.
- Publishing Views and Snapshots is not supported when using Key Pair authentication.

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

Create SQL Server and SQL Azure Connections

You can create a new connection, or connect to an existing connection from the Create New Connection window. See "Troubleshoot SQL Server® Issues" on page 25 for more information about troubleshooting connection issues.

Click here to view a video about creating connections in Toad Data Point

Note: For SQL Azure connections:

- To be able to utilize majority of Toad functionality please grant VIEW DEFINITION on the SQL Azure databases you want to work with.
- You can login to Windows Azure Platform by selecting **Tools | Cloud Computing | SQL Azure Portal** and providing your credentials.
- Make sure that no Azure firewall rule restricts your IP address from having access to Azure server. See "Create and Alter Azure Firewall Rules" in the online help for more information.

To create a new connection

1. Click on the toolbar (ALT+F+N).
2. Select *Microsoft SQL Server* or *Microsoft SQL Azure* from the **Group** list box.
3. Review the following for additional information:

Login Tab	Description
Server name	Enter the name of the server to use when connecting.

	Click to display any servers running SQL Server that are currently active on the network. **Notes:** • For SQL Azure connections, enter InstanceName.database.windows.net in this field. • For named instances, enter the *MachineName\InstanceName* in this field.
Authentication	Select the type of authentication to use for this connection. • You can connect to an Azure SQL database with Active Directory authentication (either Active Directory Integrated Authentication or Active Directory Password Authentication). Client configuration is required. See https:// docs.microsoft.com/en-us/azure/sql-database/sql-database-aad-authentication-configure#configure-your-client-computers • You can also connect to an Azure SQL database with Active Directory Universal with MFA. **Note:** You cannot create a SQL Azure connection using Windows Authentication.
Password	Enter the password to use when connecting. **Tip:** After connecting, you can set a master password to further secure your connection in **Tools | Options| Environment | Security**.
Application ID	Enter the application ID located in App registrations in Azure Active Directory. (This is a mandatory field when connecting to Microsoft SQL Azure via MFA.)
Redirect URI	Enter the appropriate redirect URI.(This is an optional field when connecting to Microsoft SQL Auzre via MFA which can be left empty unless you have specific requirements for configuring the Redirect URI.)
Category	Select or create a category if you want to color code Editor tabs for a specific connection. This can help differentiate between development and production databases. You can also set an option to color code the Object Explorer pane and object editor windows (Create, Alter, Drop, etc.). Click here to view a video of this feature.
Encrypt connection	Select this option to enable encryption for the current connection provided that the certificate has been already installed on the server.
Advanced Tab	**Description**
Network protocol	Select one of the following: • Shared Memory • TCP/IP • Named Pipes **Note:** When establishing Named Pipes connection "Poll service status in connection list" option should be cleared.
Parameter Name/Value	You can add parameters to the connection. Toad includes the **Application Name** parameter with value *Toad Data Point* by default.
OBDC driver	Select an ODBC driver to use for this connection when creating cross-connection queries. **Tip:** You can specify the ODBC driver to use for all connections for this database provider in **Tools | Options | Database | SQL Server**.

4. Click **Connect** to save the connection and immediately connect to the database.

   or

   Click **Save** to save the connection without connecting to the database.

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

To import connections (including Central Management Server connections)

1. Click .
2. Specify the location where the connections currently reside.

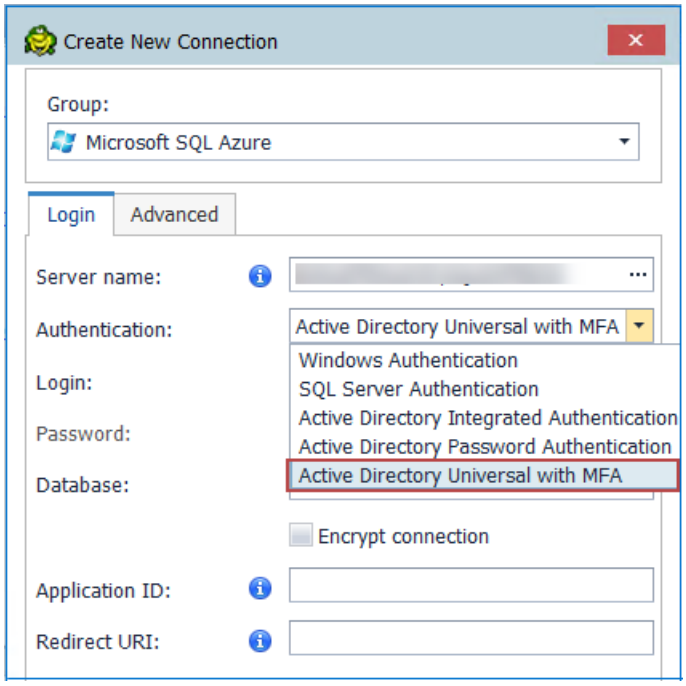
   Note: Review the following for additional information on CMS connections:

   - To import CMS connections, select a server from the list where the CMS is registered. The connection to this SQL Server instance should be created beforehand.
   - CMS is available beginning with Microsoft SQL Server 2008.
   - User should have an appropriate login (Windows Authentication and grant to connect to selected server are required) created on the server to which he connects via CMS.
3. Select the connections to be imported.

Microsoft SQL Azure Connections with Multi-factor Authentication

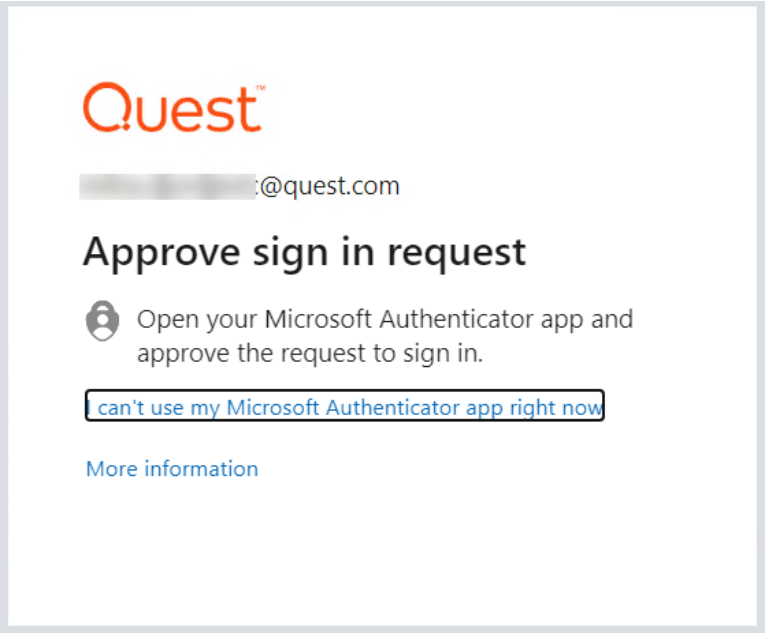
To create this type of connection to **Microsoft SQL Azure**, **Active Directory Universal with MFA** needs to be selected from the Authentication field dropdown.

The next step is to enter a user name which has been configured for multi-factor authentication and put in the appropriate App ID. After filling out the required information, click on **Connect**.



The step that follows will enable you to select a user from the list or add another one by clicking on **Use another account.**

After that, you will be prompted to enter your credentials and depending on the type of authentication that the account has been configured with, you will undergo an additional authentication step, such as the one in the image below.



After completing the final authentication step, a successful connection to **Microsoft SQL Azure** will be made.

Limitations of Microsoft SQL Azure connections with Multi-factor Authentication

- Publishing Snapshots, Views, Automation scripts, and Workbooks to Toad Intelligence Central cannot be performed when using Active Directory Universal with MFA type of authentication.

Create SharePoint Connections

Toad allows you to connect to SharePoint via OData service to view and query SharePoint lists as tables. Toad supports SharePoint 2010 and 2013. You can also create a connection to SharePoint Online.

Note: This feature is available in the Toad Data Point Professional Edition only.

To create a SharePoint connection

1. Click on the Connections toolbar (ALT+F+N).
2. Select *SharePoint* from the **Group** list.
3. Enter the connection information in the Create New Connection dialog. Review the following for additional information:

URL	Enter the full URL address to the SharePoint OData service endpoint for the SharePoint site to which you want to connect. The URL address should have the following format: http://<servername>/_vti_bin/listdata.svc
Authentication	Select the type of authentication to use for this connection. Toad offers two options: • Basic Authentication • Active Directory Universal with MFA

	The required login fields will be enabled or disabled according to the authentication type that is chosen.
Username	For SharePoint—Enter your Windows user name to use when connecting to this SharePoint site. For SharePoint Online—Enter the user name to use when connecting to this instance of SharePoint Online.
Password	Enter the password to use when connecting. **Tip:** After connecting, you can set a master password to further secure your connection in **Tools | Options| Environment | Security**.
SharePoint Online	Select this option if creating a connection to a SharePoint Online instance.
Category	(Optional) Select an existing category or create a new one.

Note: In NoSQL and Business Intelligence connections, Toad automatically saves the password in the connections.xml file as obfuscated text, as well as in Toad. To add additional password security, use Toad's Master Password feature.

4. Click **Connect** to connect immediately while saving the connection information. Optionally, click **Save** to save the connection without connecting.
5. Upon creating an initial connection, Toad automatically maps the data source objects. This process runs in the background, and until it is finished, you may experience a delay when attempting to access these objects.

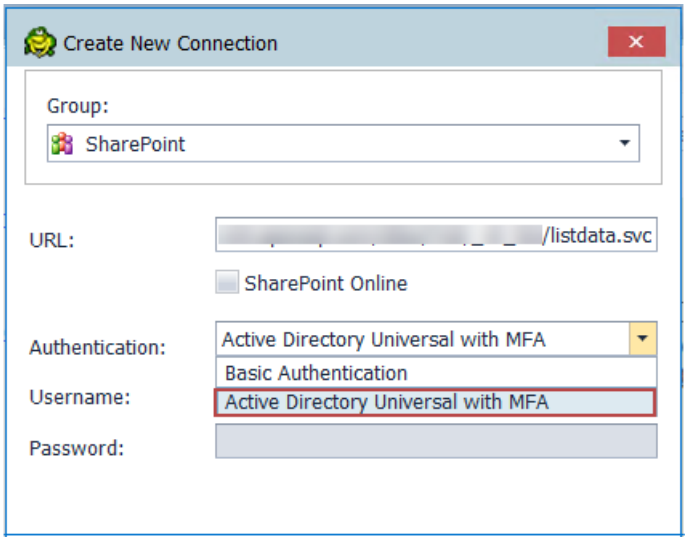
Tips:

- Connections are stored in the **connections.xml** file and can be found by clicking the *Application Data Directory* link in **Help | About**.
- You can specify a proxy server to use for Business Intelligence and NoSQL connections at **Tools | Options | Database | Data Services**.

SharePoint Connections with Multi-factor Authentication

To create this type of connection to **SharePoint**, **Active Directory Universal with MFA** needs to be selected from the Authentication field dropdown.

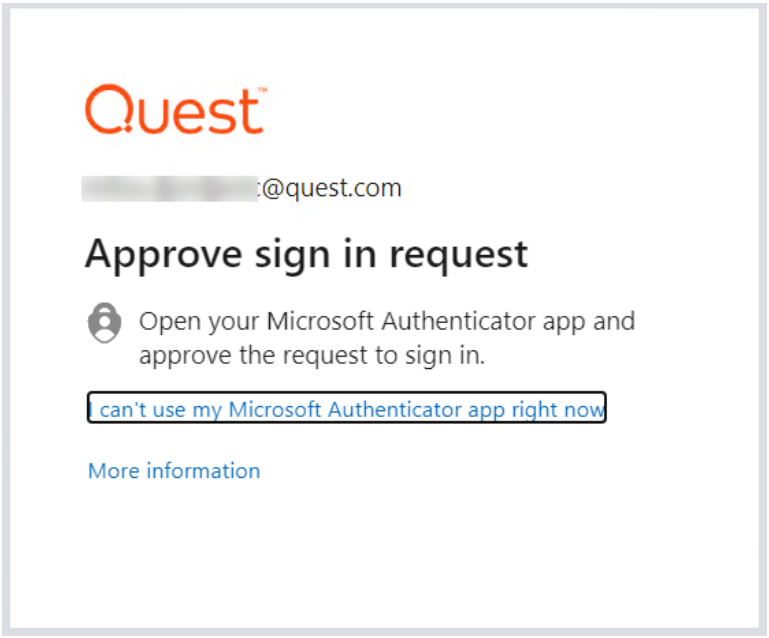
The next step is to enter a user name which has been configured for multi-factor authentication and click on **Connect**.



Toad Authentication Window will appear allowing you to select either **Windows Authentication** or **AzureADTrust** for the type of credentials which will be used for the connection.

The step that follows will enable you to select a user from the list or add another one by clicking on **Use another account.**

After that, you will be prompted to enter your credentials and depending on the type of authentication that the account has been configured with, you will undergo an additional authentication step, such as the one in the image below.



After completing the final authentication step, a successful connection to **SharePoint** will be made.

Limitations of SharePoint connections with Multi-factor Authentication

- Publishing Snapshots, Views, Automation scripts, and Workbooks to Toad Intelligence Central cannot be performed when using Active Directory Universal with MFA type of authentication.

- Setting a default **SharePoint** connection in **Tools|Options|Environment** is currently available only for Basic Authentication

Understand Toad Connections

Review this topic to learn about open database connections in Toad.

Toad Open Connections

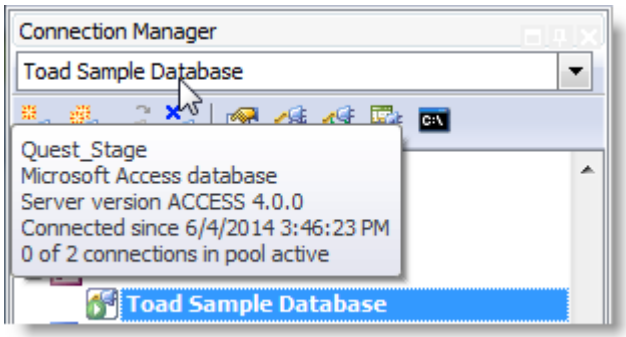
In Toad, an open connection in the Connection/Navigation Manager represents one or more actual connections to the database or data source. When you open a database connection in Toad:

- Toad creates an initial database connection for general use.
- Toad also creates a separate database connection for each Editor (the first time you execute a statement) and for each Data tab in the Database Explorer (the first time you select the tab and query data).

  The connection associated with the window (or tab) remains open until you close the window. If a window has an associated connection, but a statement is not currently executing, the connection is in an inactive state.

To view information for an open connection

- To view the number of actual database connections that exist for a Toad connection, including the number of active connections, place the cursor over the connection in the Connection/Navigation Manager pane or in the connection drop-down list.



To use the Background Processes pane

- When a statement is executing, a progress bar displays in the Status bar located at the bottom of the Toad application window. Click the executing progress bar to open the Background Processes pane.
- To cancel statement execution, use the Background Processes pane.

  Note: It is recommended that you cancel only your own processes, because terminating Toad activities could cause unexpected behavior.

Sharing a Connection Among Windows

You can instruct Toad to share an open connection among windows. In this way, the Editor windows and Data tabs can share the same connection when the connection is inactive.

To share a database connection among windows in Toad

1. Select **Tools | Options | Editor | General**.
2. Clear the checkbox for the **Use individual connection for each open editor** option.
3. When this option is not selected, Toad attempts to use a single connection for any new windows or query execution. For example, if you share a database connection, you can execute a query in the Editor, execute another query in a new Editor, and then select the Data tab from the same connection.

   If the single connection is in use when Toad attempts to execute it, the following occurs:

   - (DB2 and Oracle only) If your database supports executing multiple queries simultaneously on a shared connection, the query is placed in a queue and executes as soon as the current operation completes.
   - If your database does not support executing multiple queries on a shared connection, a dialog prompts you to either permanently associate the window with a new database connection, cancel the previous operation, or add the query to a queue until the current operation completes, and the execute it. If you place multiple queries in the queue, each one executes in the order that it was added to the queue.

Note: Although you can share a database connection, any commits apply to the selected window only.

Troubleshoot SQL Server® Issues

Connection Issues

Review the following solutions to help troubleshoot SQL Server connection issues in Toad.

Issue	Cause/Solution
Cannot specify a port number when connecting	Currently, Toad does not have a separate field for specifying a port number. **Solution:** You can connect if you know the port number for the instance by entering the following in the **Server name** field on the New Connection window: ServerName,Port or IPAddress,Port For example: 10.1.29.129,1234 (where 1234 is the port number of the instance)
Cannot connect to a remote instance in SQL Server 2005	Remote connections may not be enabled in SQL Server 2005. Also, named instances are configured to use dynamic ports and select an available port once the SQL Server Service starts. If you are connecting to a named instance through a firewall, configure the Database Engine to listen on a specific port, so that the appropriate port is opened in the firewall. **Note:** Remote connections are disabled by default in the Express and Developer editions of SQL Server 2005. **Solution:** To enable remote connections, see "How to configure SQL Server 2005 to allow remote connections" at: http://support.microsoft.com/kb/914277
"Path is not of a legal form" error message when connecting or	You attempted to migrate settings from a previous install of Toad to the current install, but the settings file (InitialSqlServer.Sql) for the previous install was either removed, moved, or corrupt.

Issue	Cause/Solution
"Could not find a part of the path C:\Program Files\Quest Software \Toad Data Point\Template\Scripts\ InitialSqlServer.Sql" error message when connecting	You may also receive this error if you installed Toad and migrated settings from a previous version, and later uninstalled the previous version. **Solution:** You must specify a valid location for the InitialSqlServer.Sql file in Toad. ***To specify a valid location*** 1. Open the SQL Server options page under **Tools | Options | Database | SQL Server**. 2. Specify the location for the new install's InitialSqlServer.Sql file in the **Run Script on new connection** field. By default, this file is located in the following directory: C:\Program Files\Quest Software\Toad Data Point *version* \Templates\Scripts **Note:** Clicking ... may result in a "Path not found error". If you receive this error, manually enter the location in the field.
Cannot establish Named Pipes connection	If you are trying to connect to the server using Named Pipes, "Poll service status in connection list" option should be cleared. **Solution:** 1. Open the options page under **Tools | Options | Database | General**. 2. Clear **Poll service status in connection list** checkbox.
Cannot access some functionality when working with Azure connection.	To utilize majority of Toad functionality VIEW DEFINITION grant is required for those databases you want to work with.

Create Databricks Connections

Toad allows you to create a native Databricks connection, which provides you with a full-featured Object Explorer, Query Builder and SQL Editor.

Note: You must have a Simba Apache Spark ODBC Connector 2.8.2 (or later) installed before a native connection is created.

To install the Simba Apache Spark ODBC Connector

Download and install the ODBC Connector from the Databricks Web site.

To create a new connection

1. Click on the **Connections** toolbar (ALT+F+N).
2. Select ***Databricks*** from the **Group** list box.
3. Enter the connection information in the **Create New Connection** dialog.
4. Review the following for additional information:

General Tab	Description

Host	Enter the server where the Databricks instance is hosted.
Authentication	Select the type of authentication to use for this connection. Toad offers two options: • Personal access token • OAuth 2.0 token
Port	The default port number is 443
HTTP Path	Enter the endpoint used to route queries to the appropriate cluster or resource.
Token	Enter your authentication token
Optional	**A connection can be made without providing this information**
Catalog	Enter the name of the Catalog you would like to connect to

4. Click **Connect** to save the connection and immediately connect to the database.

   or

   Click **Save** to save the connection without connecting to the database.

Notes:
The **Enable Query Result Download** checkbox, located in the **Advanced** tab, allows you to enable or disable the downloading of query results. Disabling this option can improve performance when working with large result sets.
To use Databricks native connections in Toad Data Point, Unity Catalog must be enabled in your Databricks workspace.

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

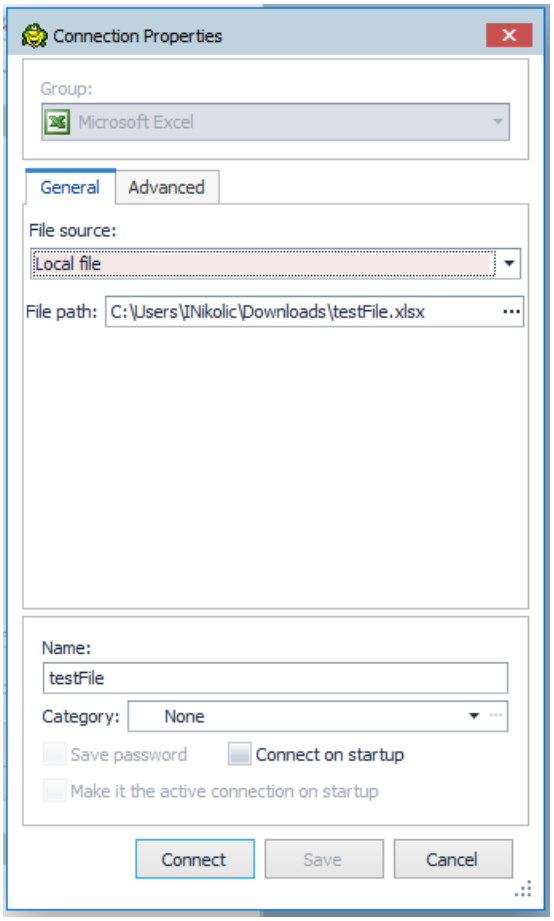
Create Excel Connections

Connecting to an Excel file is easy. To create the connection, simply open the Excel file from the Create New Connection dialog .

Create a connection to an Excel file stored locally

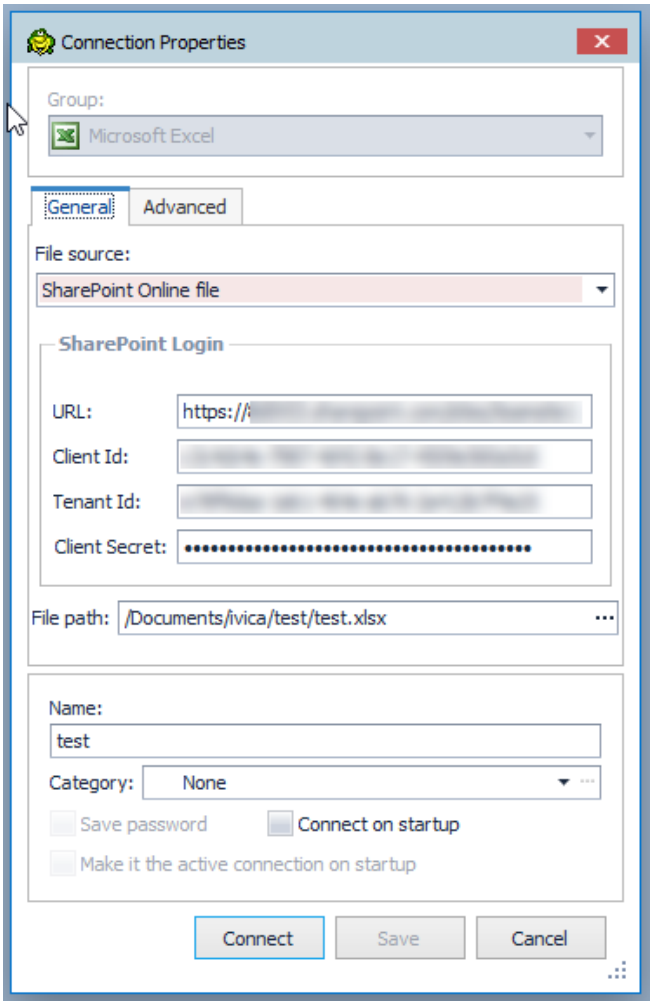
1. Click on the Navigation or Connection Manager toolbar.
2. Select *Excel* from the **Group** list.
3. From the General menu choose the Local File.
4. Browse to and select the Excel file.
5. Complete the Create New Connection dialog.
6. Click Connect to connect immediately while saving the connection information. Optionally, click Save to

save the connection without connecting.



Create a connection to an Excel file stored on SharePoint online

1. Click on the Navigation or Connection Manager toolbar.
2. Select *Excel* from the **Group** list.
3. From the General menu choose the File Source and select the SharePoint online file.
4. To successfully connect to your SharePoint account, you need to complete the SharePoint Login information, insert the SharePoint URL, Client ID, Tenant Id, Client Secret.
5. From the File path below, browse to and select the Excel file.
6. Complete the Create New Connection dialog.
7. Click Connect to connect immediately while saving the connection information. Optionally, click Save to save the connection without connecting.



NOTE: Before creating the connection, consider the following details

Review the following for additional information:

General Tab	Description
Category	Select a category if you want to color code your connection. **Tip:** The color is applied in the Connection Manager and other connection dialogs. You can also create a new category for your connection.
Advanced Tab	**Description**
Enable import mode	Select this checkbox to set IMEX=1 in the connection string, which converts intermixed data to text.
Show system tables	Select to display worksheets as system tables. Toad uses the worksheet name suffixed with a dollar sign ($).
Read-Only Connection	Open connection in read only mode.
Automatically create ranges	Select this option if you want Toad to automatically create named ranges. Toad creates one named range in each worksheet (unless the Toad name, AutoRange_ <worksheet name>, already exists).

	Note: Toad does not overwrite the user defined named ranges. The Toad-created named ranges and the user defined named ranges are both visible in the Object Explorer after connecting. Deselect this option if the Excel file contains user defined named ranges and you do not want Toad to create additional named ranges. **Important:** If you deselect this option, and your Excel file does not contain named ranges, Toad is unable to create tables from your data. The feature is *selected* by default.
Hide named ranges	Select the named ranges to hide. **Note:** Named ranges are not displayed until after a connection is created (in the Connections or Connection Properties dialog). In Excel 2007 files, named ranges are not displayed for active connections.
Open in Excel	Click to open the selected file in Excel. This is useful if you want to modify your file or define named ranges before connecting.

Understand how Toad creates data tables from an Excel file

Toad uses Excel named ranges (regions) to define the data to include in a table. Therefore, any data that you want to display and easily query in Toad must be included in an Excel named range (region).

You can create named ranges using one of the following methods:

- Preferred method: You can ask Toad to automatically create named ranges when you create the connection to the Excel file. Toad creates one table from each worksheet and includes the contents of every formatted cell.
- If you do not want to include a worksheet's entire contents in one named range, or if a worksheet contains more than one table, then define the named ranges ahead of time in Excel.

To create a named range in Excel

1. In the Excel file, select the data that you want to include in the table (including column headings). Then define a named range.
    - » In Excel 2003, select **Insert | Name | Define**.
    - » In Excel 2007, right-click the data and select **Name a Range**.
2. Save your Excel file. In Toad, create a new connection to the file. In the New Connection dialog, deselect **Automatically create ranges**.

To allow Toad to automatically create named ranges

» When creating a new connection to the Excel file, in the New Connection dialog, select **Automatically create ranges**. Toad creates one named range for each worksheet and includes the contents of every formatted cell.

Tip: For an Excel file with an existing connection, in the Navigation Manger, right-click the file and select **Properties**. On the Advanced tab, select **Automatically create ranges**. Toad creates the named ranges the next time you reconnect to this file.

To hide named ranges

You can hide an Excel file's named ranges so that they do not display as tables in the Object Explorer.

1. In the Navigation Manager, right-click an Excel file connection and select **Properties**.

    Note: In Excel 2007 files, the connection must be inactive for the named ranges to display.
2. On the Advanced tab, select the named ranges to hide.

To view or modify connection properties

To view an Excel connection's properties, do one of the following:

- Right-click an Excel file connection in the Navigation or Connection Manager and select **Properties**.
- Select on the Connections toolbar to open the Connections dialog. Select the Excel file connection in the left pane to view the connection properties in the right pane.

Considerations and Limitations

Consideration/Limitation	Description
Excel 2016 64-bit or Office 365 64-bit	To successfully create a connection to an Excel file using Excel 2016 64-bit, the Microsoft Access Database Engine is required and might not have been included in the Excel installation. In addition, the architecture (bitness) of the engine must match the bitness of Toad. If using 64-bit Toad, the 64-bit version of Microsoft Access Database Engine is required. If using 32-bit Toad, the 32-bit version of Microsoft Access Database Engine is required. 1. You can download the 64-bit or 32-bit Microsoft Access Database Engine components at: https://www.microsoft.com/en-us/download/details.aspx?id=54920. 2. Be sure to select the appropriate version (64-bit or 32-bit) of the *AccessDatabaseEngine.exe* installer to match the bitness of Toad. **Note:** This requirement applies only to connections to Excel, not to the Toad functionality of importing/exporting to Excel.

Troubleshoot Excel

To troubleshoot Excel issues, see the following:

- See Troubleshoot Excel for more information about troubleshooting Excel connection issues.
- For a list of Excel file limitations from Microsoft, see Microsoft Excel specifications and limits.
- For special considerations when using Excel macro-enabled files, especially in Automation scripts, see Using Macro-Enabled Excel Files.

Click here to view a video about creating connections in Toad Data Point

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

Create CSV Connections

You can create a connection to a CSV or text file. Once a connection is made to one CSV or text file in a folder, Toad displays all CSV and text files located in the same folder as individual tables in the Object Explorer. In order for all files to display correctly as individual tables, all files must use the same delimiter.

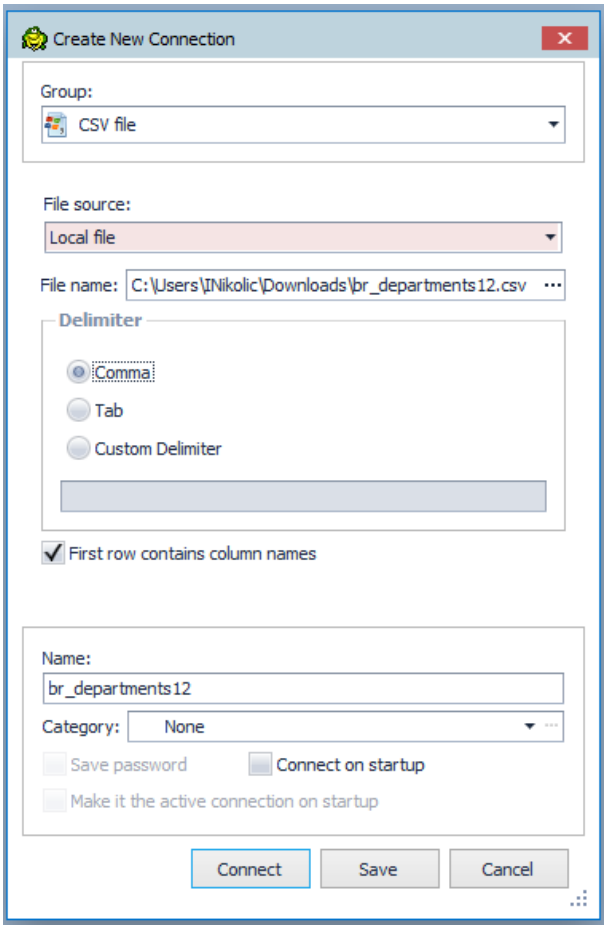
Create a connection to local stored CSV file

1. Click on the Navigation or Connection Manager toolbar.
2. Select *CSV file* from the **Group** list.
3. Browse to and select the CSV (or text) file.
4. Specify the connection properties.

Delimiter	Select the type of delimiter used in the CSV (or text) file. **Custom Delimiter**—If delimiter is not a comma or a tab, enter the delimiter used in the CSV (or text) file.
First row contains column names	Select this option to instruct Toad to read the first row as column names.
Name	Enter a custom name for the connection
Category	(Optional) Select an existing category or create a new one to color-code your connection.

5. Click **Connect** to save the connection and connect immediately. Click **Save** to save the connection without connecting.
6. When connected to the CSV or text file, you will notice the following:
    - All CSV and text files within the same folder as the connected file display as tables in the Object Explorer.
    - All files are read according to the delimiter and column header option specified for the connected file.
    - A Schema.ini file is added to the folder. This file sets the delimiter and column header option used to read all the files in the folder. The settings correspond to the last file to which a connection was made.

      For example, if you create a second connection in the same folder, all files are now read according to the delimiter and column header specified for that connection.
7. In summary:
    - When using this method to display multiple files as separate tables, place all files in one folder and use the same delimiter (and column header format) in each file.
    - When creating an individual connection to each file that uses a different delimiter, place each file in a separate folder.

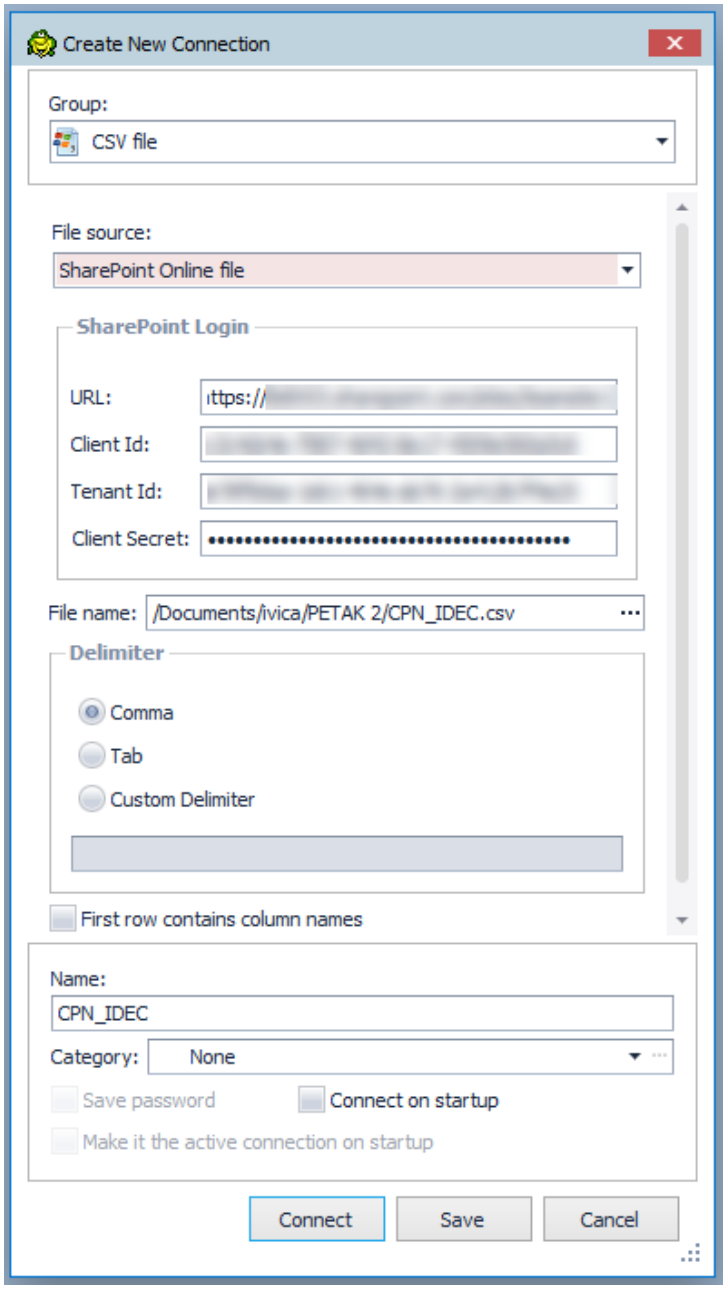


Create a connection to a CSV file stored on SharePoint online

1. Click on the Navigation or Connection Manager toolbar.
2. Select *CSV file* from the **Group** list.
3. From the File Source menu select the SharePoint online file.
4. To successfully connect to your SharePoint account, you need to complete the SharePoint Login information, insert the SharePoint URL, Client ID, Tenant Id, Client Secret.
5. Browse to and select the CSV file
6. Specify the connection properties.

Delimiter	Select the type of delimiter used in the CSV file. **Custom Delimiter**—If delimiter is not a comma or a tab, enter the delimiter used in the CSV file.
First row contains column names	Select this option to instruct Toad to read the first row as column names.
Name	Enter a custom name for the connection
Category	(Optional) Select an existing category or create a new one to color-code your connection.

7. Click **Connect** to save the connection and connect immediately. Click **Save** to save the connection without connecting.



Considerations and Limitations

Consideration/Limitation	Description
Excel 2016 64-bit or Office 365 64-bit	To successfully create a connection to a .csv file using Excel 2016 64-bit, the Microsoft Access Database Engine is required and might not have been included in the Excel installation. In addition, the architecture (bitness) of the engine must match the bitness of Toad. If using 64-bit Toad, the 64-bit version of Microsoft Access Database Engine is required. If using 32-bit Toad, the 32-bit version of Microsoft Access Database Engine is required.

Consideration/Limitation	Description
	1. You can download the 64-bit or 32-bit Microsoft Access Database Engine components at: https://www.microsoft.com/en-us/download/details.aspx?id=54920. 2. Be sure to select the appropriate version (64-bit or 32-bit) of the *AccessDatabaseEngine.exe* installer to match the bitness of Toad. **Note:** This requirement applies only to connections, not to the Toad functionality of importing/exporting to .csv.

Tip: Connections are stored in the connections.xml file and can be found by clicking the *Application Data Directory* link in **Help | About**.

3

Understand

Determine the Best Method to Locate Objects

Toad offers a number of features to assist you in locating objects. The following table provides guidelines based on typical use cases:

If you know the....	Use this...
Column name, but do not know the table name	Use Object Search
String of DDL for an object	
Dependency for an object	Uses and Used By tabs in the Database Explorer, and then drill-down to the object from there
Criteria for excluding objects	Filter feature in the Object Explorer

Object Explorer

You can view database objects for the current connection with the Object Explorer. This feature is useful for dragging and dropping database objects into an open Editor, Query Builder, or other document window. Right-click the objects in the Object Explorer to access additional features such as multiple tasks and actions.

To open the Object Explorer

1. Select **View | Object Explorer**.
2. Review the following for additional information:

Schema (first field)	Select the schema you want to view. You can filter the list of schemas that display. See "Filter Databases and Objects" on page 37 for more information.
Object Filter (second field)	You can quickly set a filter in this field. To do so, enter a name or partial name of an object and press ENTER. Any advanced object filters you set display in this field. You can also perform advanced filtering based on case sensitivity, statistics, or other options. See "Filter Databases and Objects" on page 37 for more information. **Tip:** You can enable an option to filter using regular expressions in **Tools | Options | Explorer | General**.

Note: For tables and views, the columns, data types, and comments display at the bottom of this window.

Tips:

- To navigate to a previously selected object, click . You can also click to move to the next selected object.
- To locate objects including procedures, functions, views, variable names and comments in an object's source code, use Object Search. See "Search for Objects" on page 42 for more information.
- To use a different method to select objects such as tabs, drop-downs, or a tree view, click .
- To generate reports, export data, create SQL statements, or send objects to the Project Manager, SQL Modeler, or Master Detail windows, right-click the objects and select an option.
- To open the Background Processes window and cancel a query, click the progress bar at the bottom of the window.

Filter Databases and Objects

Toad allows you to filter the list of databases or objects that display in the Object Explorer. You can use filters to reduce the number of databases and/or objects to work with.

Types of Filters

You can create a *Quick* filter by entering a search string in the object filter field. You can also use the Filter dialog (click) to choose additional filter options. If you use the Filter dialog, you can also name and save your filter.

Filter Type	Description	Behavior
Quick (unnamed)	Can be used to quickly filter objects for a single connection or schema. Create a Quick filter by entering a search string in the object filter field.	Applies to the current schema (or to objects in the current schema) only. Once applied, a Quick filter is in effect on that connection when you reconnect or relaunch Toad. Because Quick filters are not named, they cannot be applied to other connections by selecting from the filter list. You must recreate the Quick filter for each connection/schema.
Detailed (unnamed)	Use like a Quick filter, but add more detail by using the Filter dialog to enter filter criteria. Use this method to create an unnamed database filter.	-- same behavior as a Quick filter --
Named	Create and save named filters to reuse and to apply to other connections of the same data source type.	Once applied, a Named filter is in effect when you reconnect or relaunch Toad. Can be re-used on other connections of the same data source type (DBMS).

Note: If you rename a table that has a filter defined, it results in an orphaned filter. Orphaned filters are automatically removed unless you used a tool other than Toad to remove them.

Before Creating a Filter

A filter is associated with a specific list of objects from a specific database. Consider the following guidelines when setting filters:

- A filter applied to a set of objects such as tables in one specific database connection is not automatically applied to the list of objects in another database connection.
- A filter applied to a list of tables on one schema in the database is not automatically applied to the list of tables for a different schema in the same database.
- A filter set for a specific schema or object is applied when altering objects, using the SQL Editor, Master Detail Browser, etc., for that schema or object.

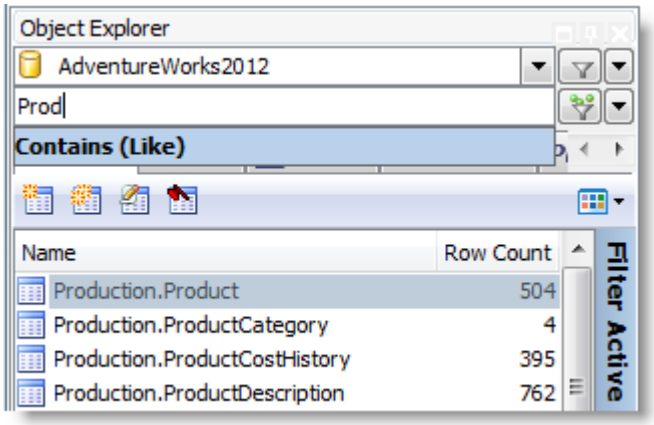
  Tip: To apply any currently-set filters to the code completion list in the editor, select the **Apply explorer filters** option in **Tools | Options | Editor | Code Completion**.

Create Filters

To create a Quick filter (objects only)

- Enter a search string to use for filtering in the object filter field (below the database field) in the Object Explorer.

  Note: As you enter a search string, the currently specified Search Condition displays in a blue banner below the object filter field. This Search Condition will be used in your filter. To change the Search Condition, click and select a different one from the Search Condition drop-down.



To create a Detailed filter

1. Click beside the database or object filter fields in the Object Explorer.
2. Specify criteria for the filter in the Properties tab. Review the following for additional information:

Search String	Enter a text string and search characters to use for filtering.
Search Condition	Select a search type to use in this filter. **Note:** You can set a default value for this field in **Tools	Options	Explorer	General**. If you don't specify a default value in Options, this field defaults to the search type you specified the last time you created or modified a filter (includes previous sessions).

	Tip: To include in your text string certain characters normally used in search logic, such as the underscore (_), use one of the following Search Conditions: • Contains (Exact) • Starts With (Exact) • End With (Exact)
Case Sensitive	In DB2 connections, this property is set to **True** by default.

3. To create custom SQL, select the SQL tab and then select the **Enable custom SQL** option. Modify the existing SQL. (The existing SQL reflects the criteria you specified in the Properties tab).
4. Select the Preview tab to review the list of databases or objects that are selected based on your filter criteria.

To create a Named filter

1. Click and create a Detailed filter (see above).
2. Enter a name for the filter and click . Creating a name for the filter allows you to use it on other database connections.

Creating a new Quick filter from a current filter

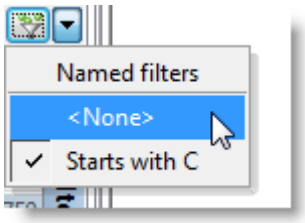
- If you apply a filter and then enter a search string into the object filter field *without* completely clearing the current filter in the field, the new search string is applied, as well as the properties specified for the old filter.
- If you apply a filter and then *completely clear* the object filter field before entering a new search string, all properties return to the default values.

  Note: The Search Condition also returns to the default value. This default is either the Search Condition you specified the last time you created or modified a filter or it is the new default you specified in Options.

Use Filters

To use Named filters

- To apply a Named filter, click the down-arrow beside and select the filter from the drop-down list.
- To clear a Named filter, click the down-arrow beside and select **<None>**.



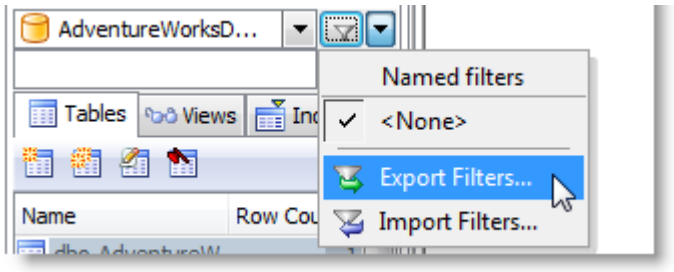
- To determine if a filter is applied, observe the filter icon.

Icon	Indicates
	No filter is applied (all databases/objects display).
	A filter is applied.

Import/Export Filters

You can export all named filters and you can export all filters defined for the current connection.

- To export Named filters or all filters defined for the current connection, click the down-arrow beside in the database field and select **Export Filters**.



- To import filters previously exported from Toad, click the down-arrow beside in the database field and select **Import Filters**. Browse to and select the filter file (.tfp) to import.

Tip: Click in the Database Explorer (Viewer) toolbar to clear all database, object, and data filters.

Tutorial: Understand a Table Using the Database Explorer

Scenario

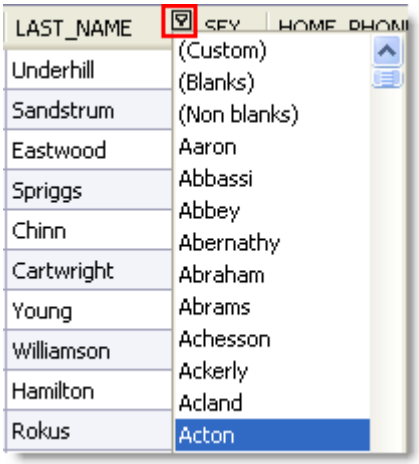
You need to build a query listing customers and want to know more about the table before writing the query.

Note: This exercise uses the Toad Sample Database. This connection does not have the relationship and script tabs. The tabs available can differ depending on the type of connection.

Note: This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

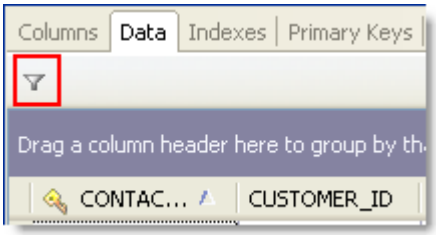
To understand a table using the Database Explorer

1. Connect to the Toad Sample (Access) database in the Navigation Manager.
2. Right-click the CONTACT table and select **View Details**.
3. View information for the following:
    a. Click the Indexes tab and view the index information.
    b. Click the Primary Keys and Foreign Keys tabs to view relationships.
4. Click the Data tab.
5. Place the cursor over the LAST_NAME column, click , and select *Acton*.



The only row that now displays is the one with Acton as the last name.

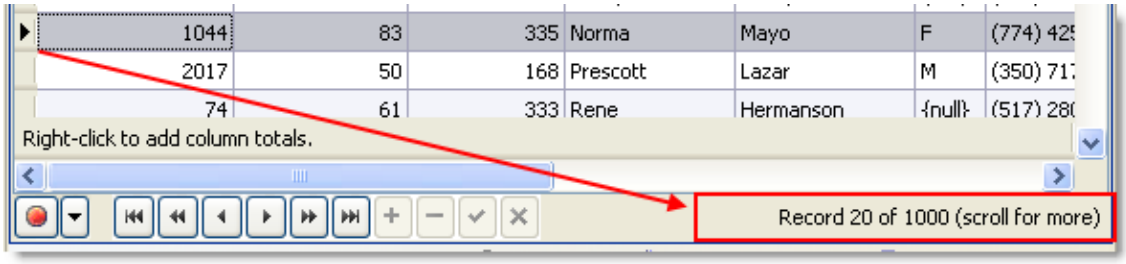
6. Click to the right of the LAST_NAME column again and select *All* to clear the filter.
7. Click the CONTACT_ID column to sort the rows in ascending or descending order.
8. Click in the top left of the Data tab.



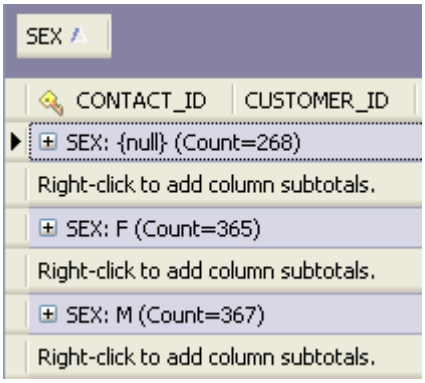
9. Create the following filter in the Where Clause tab:

   CONTACT_ID > 2000

   The filter string displays at the bottom on the grid. Click to remove the filter.
10. Select a row of data in the grid. Notice that the row number changes in the bottom right of the status bar:



11. Under the SEX column, right-click the area below the last row in the grid that says "Right-click to add column totals" and select **Count**. The total number of rows that have either a M or F value display.
12. Click to the right of the SEX column and select *F*. The count value updates based on the new filter.
13. Click to the right of the SEX column again and select *All* to clear the filter.
14. Select the SEX column header and drag it the area above the columns that says "Drag a column header here to group by that column":



You can expand each group to view the row data.

15. Switch the default view:
    a. Right-click within a group or row on the grid and select **Show | Card View**.
    b. Scroll through some records.
    c. Click **Customize** in the Card View window.
    d. Click **Filter** beside the ADDRESS_ID column and select *100*. Notice how the card view is filtered, but not the grid view.
    e. Close the Card View window.
16. Edit a row:
    a. Select a row in the FIRST_NAME column and edit the value.
    b. Press ENTER to update the row.
    c. Go to the BIRTH_DATE column and use the date picker to change the date.

       Each data type have an appropriate editor.

       Note: If you are using Oracle or a database that does not have auto commit on, you will need to press Commit at the left hand bottom of the window.
17. Update the number of rows in in the data:
    a. Select **Tools | Options | Database | General** from the menu.
    b. Enter 50 in the **Number of rows to initially fetch in data tab**.
    c. Click **OK**.
    d. Press F5 in the data grid. Notice the bottom right status bar now says "1 of 50 (scroll for more)".

       The option you set controls the number of rows fetched in the Data tab.
    e. Click the scrollbar and hold down to retrieve more.
    f. Right-click the grid and select **Read All Rows**.

Search for Objects

You can quickly locate an object rather than browsing through a list of objects in the Database Explorer orObject Explorer. Object Search locates the following:

- Names of objects for a string.
- Text in objects that include source code, which typically includes procedures, functions, triggers, data types, and views. However, the database provider determines which objects include source code.
- Variable names and comments in the object's source code.
- Column names for tables and views.

To search for objects

1. Click on the toolbar (F4).
2. Specify search criteria and click **Search**.

   Note: To append additional search results to the current search, click **Append** instead. If you click **Search**, new results replace the previous search results in the data grid.

Tips:

- To remove objects from the search results, right-click the objects in the data grid and select **Remove Items**. This is useful if you want to narrow the list of results to relevant objects.This does not remove the objects from your database.
- To create a DDL script from the search results, right-click the data grid and select **Create DDL Script**. You can then paste the results into the Editor.
- To perform any actions available for the object, such as creating, altering, dropping, exporting, and generating reports or SQL, right-click the results in the data grid and select an option.

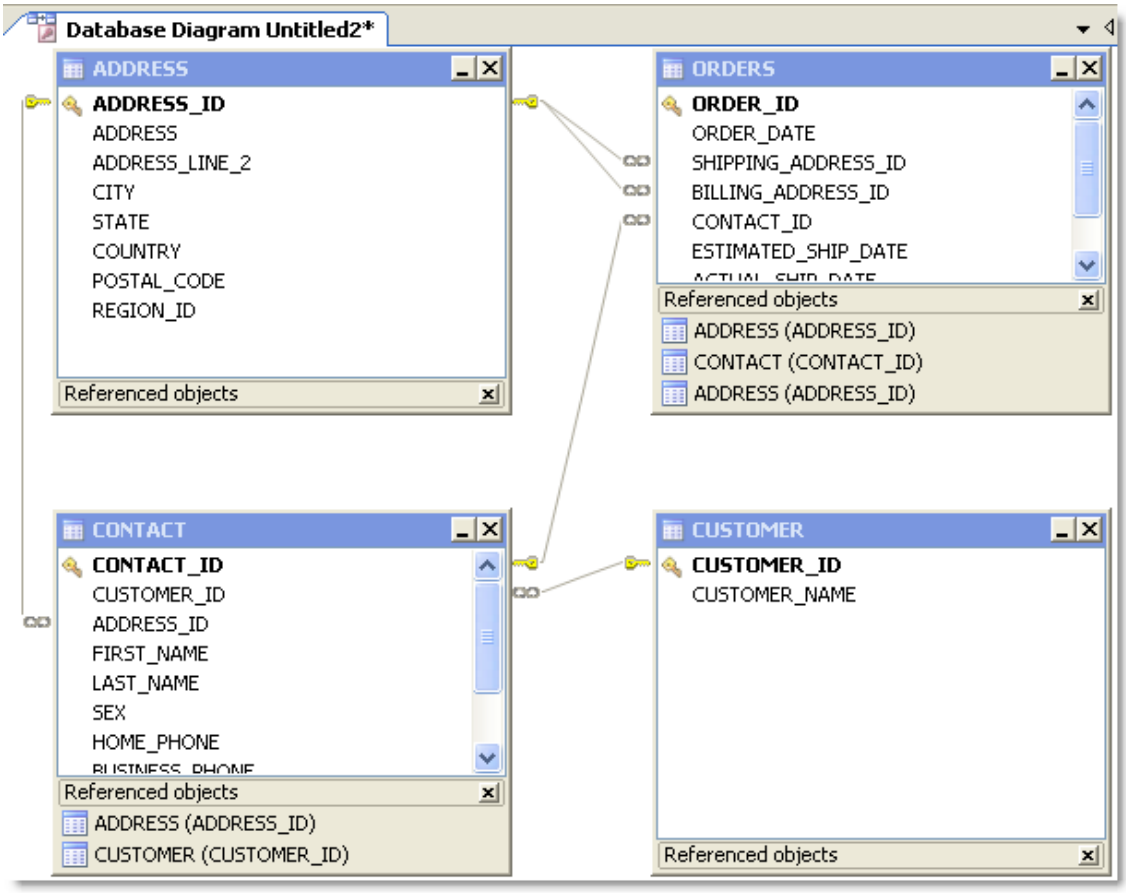
Tutorial: Create a Database Diagram to Use as a Query Template

Scenario

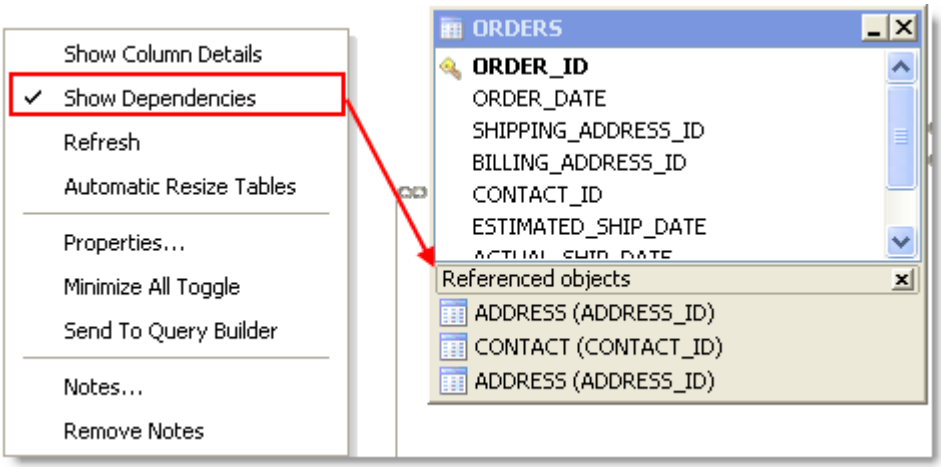
Your company creates several daily and weekly reports regarding customer sales. You need to create a Database Diagram that can be used as a template for these queries.

To create a Database Diagram to use as a query template

1. Connect to the Toad Sample (Access) database in the Navigation Manager.
2. Select **Tools | Diagram**.
3. Drag the CONTACT table in the Object Explorer to the Diagram pane.



4. Right click the Diagram pane and clear **Show Dependencies** to hide the Referenced Objects at the bottom of each table/view, as illustrated in the following screen capture.



5. Right-click the ORDERS table and select **Notes**.
6. Enter the following note in the window for other users:

   The shipping and billing ADDRESS_ID foreign key relations are not needed in most queries and should be hidden when building a query.

7. Because it is against company policy to display sex and a home phone number in reports, right click on each of these columns in the CONTACT table and select **Hide Column**.

   Tip: If you have a large number of columns you need to hide, you can right-click a table and select **Manage Hidden Columns** to quickly select them from a list.

8. Click **Add to Project** from the wizard bar at the bottom of the window and enter *DBDiagram_Test* asthe name for the file. This adds the file to the current project in the Project Manager under a Diagrams folder.
9. Close the Database Diagram window and open the Project Manager window.
10. Expand the Diagrams folder and double-click *DBDiagram_Test* to reload the file in a new Database Diagram window.
11. To share your project, hidden columns, and notes with colleagues, complete the following:
    a. Select **Tools | Options | Environment | Network Share**, and navigate to a shared drive where you want to store the Project Manager file.
    b. Select **Database | Cache** from the open Options window and set the following options:

Object An notation Cache	Description
Share object annotations	Select this checkbox and enter a shared drive location where users can access this file.
Share hidden column settings	Select this checkbox.

    c. Provide the location of the Network Share and Object Annotation Cache settings to colleagues who need to use this diagram.

Browse Data in Related Tables

Use the Master Detail Browser to browse data in parent tables and drill-down to data in related child tables. This is useful when you need to analyze or edit data. For example, suppose you need to view a list of all Nick's Flix stores and the inventory of comedy movies at each store. Using the Master Detail Browser, you specify the table that contains the list of stores as the parent table and specify the table that contains comedy movies as the child table to quickly locate comedies and analyze the inventory.

To browse tables using the Master Detail Browser

1. Select **Tools | Master Detail Browser** (ALT+T+A).
2. Drag one or more tables from the Object Explorer, Object Search, or Project Manager window to the Diagram pane at the top of the Master Detail Browser. Press CTRL+click to select multiple tables at once.

   Notes:

   - A line between tables indicates any existing relationships between the selected tables.
   - At least one parent table (table without any join arrows pointing to it) must be added to the window or an error message displays when returning results.
3. Join Columns.
4. Select the checkbox beside each column you want to include.

   Note: Any columns included in a join are automatically included in the results.
5. Click (F9) to retrieve data for the parent table initially. To view data in a child table, click + to the left of each row.

   or

   Click to retrieve data in the parent and child tables. If there is more than one child table, a tab displays for each child table.

6. From the data grid, you can:
    - Edit the data and commit your changes to the database.
    - Right-click the data grid and select **Send To | *option*** to add the data to a report, chart, or pivot grid.

Tips:

- Click to align tables and snap them to the grid.
- Select the parent table from the drop-down list in the toolbar to view data for a parent table if there are multiple parent tables.
- Click **X** on the table you want to remove in the Diagram pane to remove a table and any conditions (e.g., join, where clause) associated with the table.

4

Query

Tutorial: Visually Build a Query

The Query Builder enables you to create a query without writing or editing SQL statements. Even if you are familiar with SQL, the graphical interface makes it easier to create relationships and visualize the query.

Note: This procedure does not cover all of the possible steps of visually building a query. It only covers the steps required to build a query for the scenario. See Building Queries Visually for more information.

Scenario

Your company wants to improve its global sales, starting with countries where it has a customer base but generally low sales. You need to create a query that identifies countries with less than $500,000 in sales for each of the last four fiscal years.

Note: This scenario uses the SH (Sales History) sample schema that comes with Oracle 10g so you can follow the procedure.

To visually build a query based on this scenario

1. Connect to the database and select **Tools | Query Builder | Query Builder**.
2. Select the *SH* schema in the Object Explorer.
3. Drag the following tables from the Object Explorer to the Diagram pane: TIMES, SALES, CUSTOMERS, and COUNTRIES.

   Tips:

   - Select **Query Builder | Arrange Tables** (ALT+Q+A) to have Toad arrange the tables in the Diagram pane.
   - You can press CTRL and select a table, and then drag the table into the Editor pane. Click the list to create statements.
   - You can also press CTRL and select all of the tables in the Object Explorer, and then drag them into the Diagram pane. Toad automatically arranges the tables.
4. Add the following columns to the query by clicking each column:

Table	Column
COUNTRIES	COUNTRY_NAME
TIMES	FISCAL_YEAR
SALES	AMOUNT_SOLD

   Tips:

   - To view details for a table in the Diagram, click (F4). If a table is not selected, details for the last selected table display.

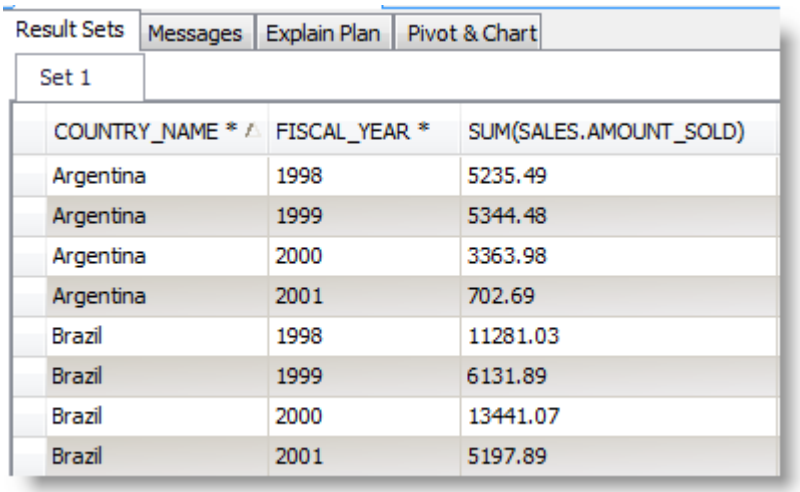
- To remove a column from the query, click or drag column off grid.

5. Complete the following steps to group the data and sum the sales:
    a. Select the **Group By** field in the COUNTRY_NAME column, and then click +. The **Group By** field is in the Criteria pane, which is below the Diagram pane.
    b. Select the **Group By** field in the FISCAL_YEAR column, and then click +.
    c. Select the **Aggregate Function** field in the AMOUNT_SOLD column and select *Sum*. This sums all of the sales per fiscal year per country.

    Note: If you select a group by clause or aggregate function for a column, the rest of the columns in the query must also have a group by clause or aggregate function.
6. Complete the following steps to select the fiscal year range:
    a. Select the **Where Condition** field in the FISCAL_YEAR column and click . The Where Condition window displays.
    b. On the **Form** tab, select *BETWEEN* in the **Operators** field.
    c. Select *1998* in the first **Constant** field.
    d. Select *2001* in the second **Constant** field and click **OK**.

    Note: The SH schema does not have current data. The 1998-2001 years provide the best data for the purposes of this scenario.
7. Complete the following steps to select countries with less than $500,000 in sales:
    a. Select the **Having Condition** field in the AMOUNT_SOLD column and click . The Having Condition window displays.
    b. On the **Form** tab, select < in the **Operators** field.
    c. Select *Sum* in the **Aggregate** field.
    d. Enter *500000* in the **Constant** field and click **OK**.
8. Select *Ascending* in the **Sort** field of the COUNTRY_NAME and FISCAL_YEAR columns.
9. Click Execute SQL.

    The query results display in the Results tab. See "View Result Sets" on page 73 for more information.



COUNTRY_NAME *	FISCAL_YEAR *	SUM(SALES.AMOUNT_SOLD)
Argentina	1998	5235.49
Argentina	1999	5344.48
Argentina	2000	3363.98
Argentina	2001	702.69
Brazil	1998	11281.03
Brazil	1999	6131.89
Brazil	2000	13441.07
Brazil	2001	5197.89

10. To save the query, right-click the Query Builder tab and select **Save File**.

    You can save a query and any results sets in a Toad editor file (.tef). This file format is useful for building scripts that have large result sets that you do not want to continue executing or for saving results when you have not finished building a script.

See Tutorial: Build a Subquery for a tutorial on creating a subquery.

Create Cross-Connection Queries

Use the Cross-Connection Query Builder or the Cross-Connection Editor to create a query that combines data from multiple, dissimilar databases. For example, you can create a query that joins managers from a SQL Server database to their employees in an Oracle database. (This is also often called a heterogeneous or cross-database query.) Toad uses an enhanced query engine to implement advanced execution processes that are specially designed to improve the performance of cross-connection queries.

Before creating a cross-connection query using an Oracle, Teradata or MySQL ODBC connection, please see the special considerations listed at the end of this topic.

Note: This feature is available in the Toad Data Point Professional Edition only.

To build a cross-connection query visually

1. Select **Tools | Build Query | Cross-Connection Query Builder**.

   Note: A blue banner along the right side of the Diagram pane indicates that you are in Cross-Connection Query mode.

2. Drag tables and views from the Object Explorer to the Diagram pane.
3. Complete the query in the same manner as you would a non-cross-connection query, but note the following exceptions.

Object Explorer Feature	In Cross-Connection Query Mode...
Options	Connection Treelist is the only view option available. In this option, connections, databases, tables, and views are displayed in a treelist in the Object Explorer window.
Filters	Filters are especially useful in cross-connection queries to reduce the number of objects displayed in the treelist in the Object Explorer window.

Note: Review the "Considerations and Limitations of Cross-Connection Queries" section below.

To compose a cross-connection query in the editor

1. Select **Tools | Edit | Cross-Connection SQL Editor**.

   Note: A blue banner along the right side of the Editor pane indicates that you are in Cross-Connection Query mode.

2. Compose the SQL statement in the same manner as you would a non-cross-connection query, but note the following exceptions.

SQL Editor Task	In Cross-Connection Query Mode...
Naming tables and views	To reference a table or view, you must use a cross-connection fully-qualified name. The format for a cross-connection fully-qualified name depends on the database. The following is an example using the SQL Server format: *<database connection string>.<database>.<schema>.<table>*

SQL Editor Task	In Cross-Connection Query Mode...
	'sqlserverconn'.database.dbo.table **Note:** For the *database connection string*, use the connection string displayed in the Navigation Manager window for each connection (or in the Name field in Connection Properties). **Tip:** Copy and paste a SQL statement from a single connection editor to a cross-connection editor and Toad automatically changes the syntax of the statement to include the cross-connection fully-qualified names.
Using alias names	You must use alias names for tables and columns in a cross-connection query.
Using code completion	In Cross-Connection Query mode, the scope of available options in code completion expands to include the databases, tables, and views for all the open database connections. **Tip:** To expand/collapse a database node in the code completion list, use CTRL+left arrow and CTRL+right arrow.

Tips:

- In a cross-connection code completion list, the selected database displays a descriptive tooltip containing database and connection information.
- Use the Database Diagram tool to create and save cross-connection relationships, and then send the tables with their relationships already created to the Query Builder.

Considerations and Limitations of Cross-Connection Queries

Review the following considerations and limitations before creating a cross-connection query.

Consideration/Limitation	Description
Performance concerns	A cross-connection query may take longer to execute than a query against a single database because result sets from each database are retrieved and combined to generate a single result set. In the Professional edition of Toad Data Point, the enhanced execution engine utilizes several optimizing techniques to improve the performance of cross-connection queries.
ODBC driver support	An ODBC driver can be selected for a single connection through each connection's Properties dialog or globally through **Tools | Options | Database**.
Using an Oracle connection in a cross-connection query	To use an Oracle connection in a cross-connection query, you must install an Oracle ODBC driver. **Note:** The Oracle Full Install client includes an ODBC driver. However, if you are using the Oracle Instant client (which may not include an ODBC driver), you may need to install an Oracle ODBC driver.
Oracle Direct Connection	You cannot use an Oracle Direct Connection in a cross-connection query.
Using a Teradata connection in a cross-connection query	To use a Teradata connection in a cross-connection query, you must install a Teradata ODBC driver.
Using a MySQL ODBC connection in a cross-connection query	To use a MySQL ODBC connection in a cross-connection query, you must specify a database for the connection.

Consideration/Limitation	Description
Result sets	You cannot edit result sets.
Oracle Long Data Type	Cross-connection query does not support Oracle long data types or Oracle LOBs.

Reverse Engineer Queries

One way to build a query is to begin adding columns and creating joins in the Query Builder, and then send the query to the editor to add more complex functionality, such as a UNION join. You can also send a query from the editor to the Query Builder. For example, you inherited a large query when an employee left and you need to edit it to resolve an issue. After looking at the query in the editor for some time, you still cannot decipher it. So, you right-click the statement and select **Send to Query Builder**. Now that you can visually see how the tables are referenced, you can identify and resolve the issue.

Considerations and Limitations in the Query Builder

Consider the following when reverse engineering a query using the Query Builder:

General	Description
Single statement support	The Query Builder only supports one statement at a time. If you add multiple statements to the Query tab, only the first statement is used. If you make any changes to the statement on the Diagram tab, the other statements are lost.
Quote identifiers	If you selected the **Quote Identifiers** checkbox in **Tools | Options | Database | General** and generate a query from the Query Builder in SQL Server, the query cannot be reverse engineered.
ODBC support	You must use ANSI SQL for the query.
Excel support	Copying a generated query and attempting to reverse engineer that query results in an error. This issue occurs because the parser defaults to Oracle syntax, which does not understand quotation marks for fully qualified object names. To avoid this issue, clear the **Use fully qualified object names** and **Use fully qualified column names** checkboxes in **Tools | Options | Database | Query Builder** or manually edit the query.
Non-ANSI joins (Oracle, SQL Server, and Teradata)	When sending a query from the Editor to the Query Builder, Toad automatically uses ANSI joins. If you use Where clause joins, click to disable ANSI joins. This converts the statement to the correct join.
Where Condition	**Description**
Where condition does not display in the Criteria grid after sending it to the Query Builder from the Editor	If you send a query that contains a Where condition from the editor to the Query Builder, it displays in a Global Where clause bubble on the Diagram pane instead of in the **Where Condition** field in the Criteria grid. You can double-click the Global Where Clause bubble in the Diagram pane or can click to edit it. You can also use the **Where condition** fields in the Criteria grid to add new Where conditions. Although they display in the grid, they are added to the Global Where clause in the Query tab.
Where condition created in the Criteria grid of the Diagram tab disappears	If you define a Where condition in the Criteria grid and edit any part of the query in the Query tab, the Where condition is removed from the Criteria grid and placed in a Global Where Clause bubble. You can double-click the Global Where Clause bubble in the Diagram pane or

	can click to edit it.
Having Condition	**Description**
Having condition does not display in the Criteria grid after sending it to the Query Builder from the Editor	If you send a query that contains a Having condition from the editor to the Query Builder, it displays in a Global Having clause bubble on the Diagram pane instead of in the **Having Condition** field in the Criteria grid. You can double-click the Global Having Clause bubble in the Diagram pane or can click to edit it. You can also use the **Having condition** fields in the Criteria grid to add new Having conditions. Although they display in the grid, they are added to the Global Where clause in the Query tab.
Having condition created in the Criteria grid of the Diagram tab disappears	If you define a Having condition in the Criteria grid and edit any part of the query in the Query tab, the Having condition is removed from the Criteria grid and placed in a Global Having Clause bubble. You can double-click the Global Having Clause bubble in the Diagram pane or can click to edit it.
Query Builder Diagram Tab	**Description**
Comments and code regions removed after making changes in the Diagram tab	When reverse engineering a statement from the editor or the Query tab and switching to the Diagram tab, if the statement contains a block comment or code region and you make a change in the Diagram tab, the comment or code region is removed from the statement.
Same column cannot be used in the criteria grid	You cannot use the same column more than once in the criteria grid. Even if you create a separate alias for the second use of the column, that column is created as a calculated field
Execute with different query in the Diagram and Query tabs	If the query in the Diagram tab is different than the query in the Query tab, executing the query executes the SQL in the Query tab instead of the Diagram.
Save with different query in the Diagram and Query tabs	The Query Builder saves both the statement and diagram in the same file. The contents of the statement and diagram can be different without losing changes.

To reverse engineer a query

1. Right-click a statement in the Editor, and select **Send to Query Builder**.See "About Editing SQL" on page 68 for more information.

   or

   Click in the Query Builder to send a statement to the Editor. Skip the remaining steps and continue to edit the query. See "About Editing SQL" on page 68 for more information.

   Troubleshooting: If the query cannot be modeled in the Diagram tab, a message displays and the statement opens in the Query tab. This usually occurs because the graphical diagram cannot support some functionality in the statement. You can view an explanation for this in the Output window or by hovering over the syntax with a red underline ( ) in the Query tab. To continue, correct the error and click to apply the change and open the Diagram tab.

2. Continue to build your query visually using the diagram.
3. Select the Query tab and make any additional edits. Indicators for an edited statement are as follows:

	Inserted lines

	Modified or removed lines
	Modified characters
Use the toolbar in the lower-right corner of the Query tab to modify the color used for each indicator.	

Caution: If you manually enter or update the statement in the Query tab, you must click to model the query in the Diagram tab. If you do not do this and make additional changes in the Diagram tab, any changes you made in the Query tab are lost.

4. Click to execute the query.

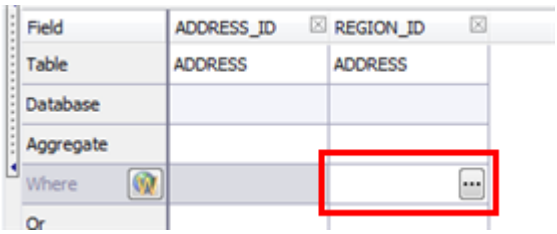
Tip: If you have multiple statements in the Editor and you want to send only one to the Query Builder, highlight the statement, then right-click it and select **Send to Query Builder**.

Tutorial: Build a Subquery

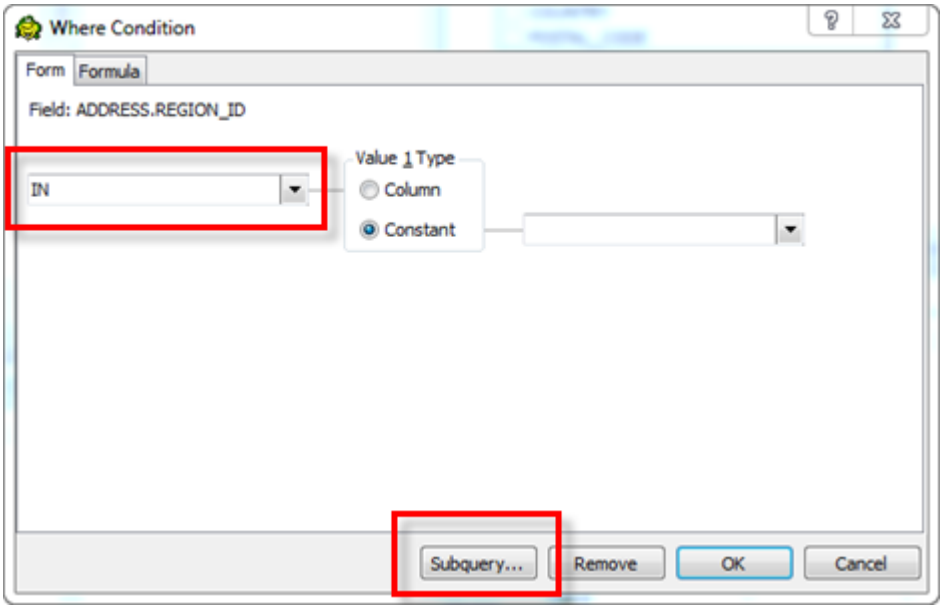
In this tutorial you will create a subquery to use to filter your selection of address IDs to only those addresses from specific regions.

To build a subquery

1. Connect to the Toad Sample (Access) database in the Navigation Manager.
2. Select **Tools | Query Builder | Query Builder.**
3. Drag the ADDRESS table to the Diagram pane.
4. Click these column names in the ADDRESS table to add the columns to the query:
   - ADDRESS_ID
   - REGION_ID
5. To add a subquery:
   a. Select the **Where** field in the REGION_ID column and click . The Where Condition editor displays.

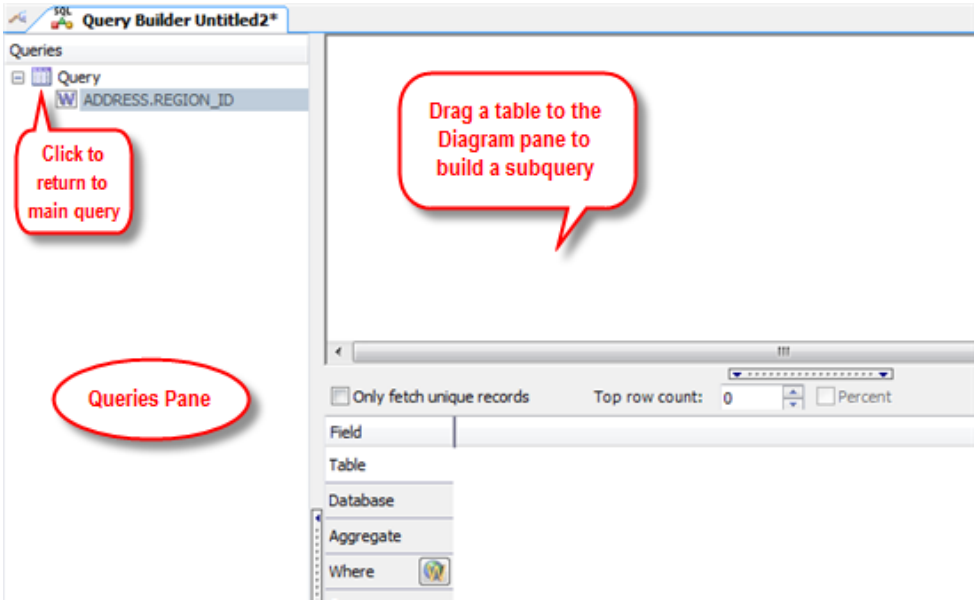


   b. Select the *IN* operator from the list, and then click **Subquery**.



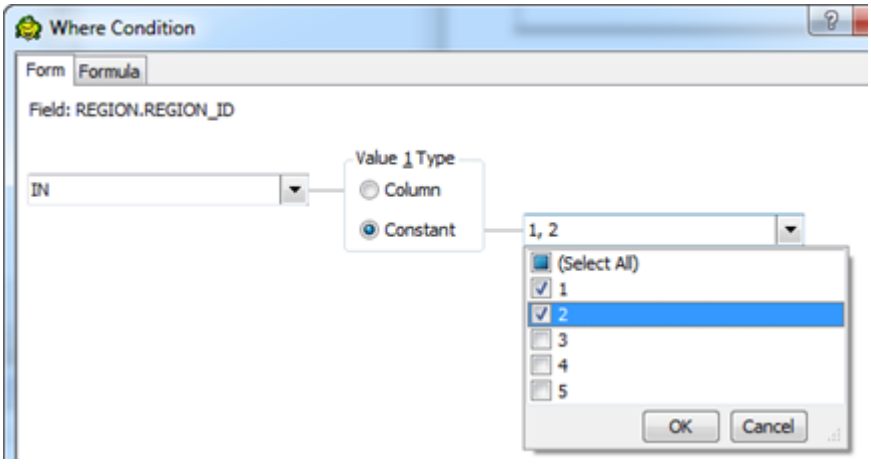
c. A child Query Builder window displays for you to use to build the subquery.

- The child (subquery) Query Builder window includes a Diagram pane, a Criteria pane, and a Queries pane for navigating back and forth between subqueries and the main query.

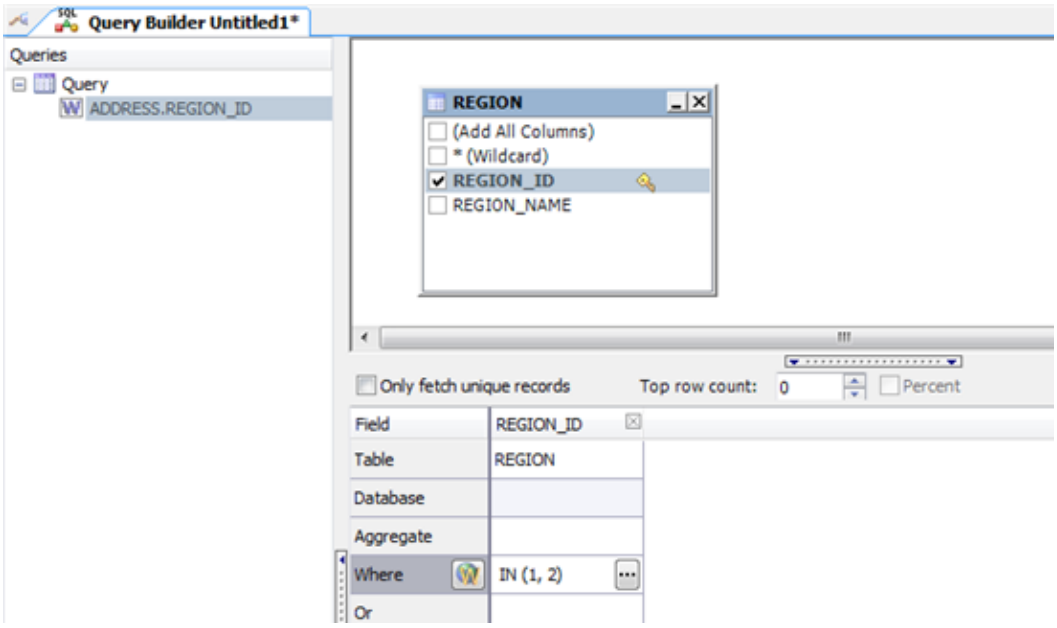


d. Drag the REGION table to the Diagram pane and select the REGION_ID column.

e. Select the **Where** field in the REGION_ID column and click ⋯. In the Where Condition editor, select the *In* comparison operator, select **Constant**, and select the values *1* and *2*.

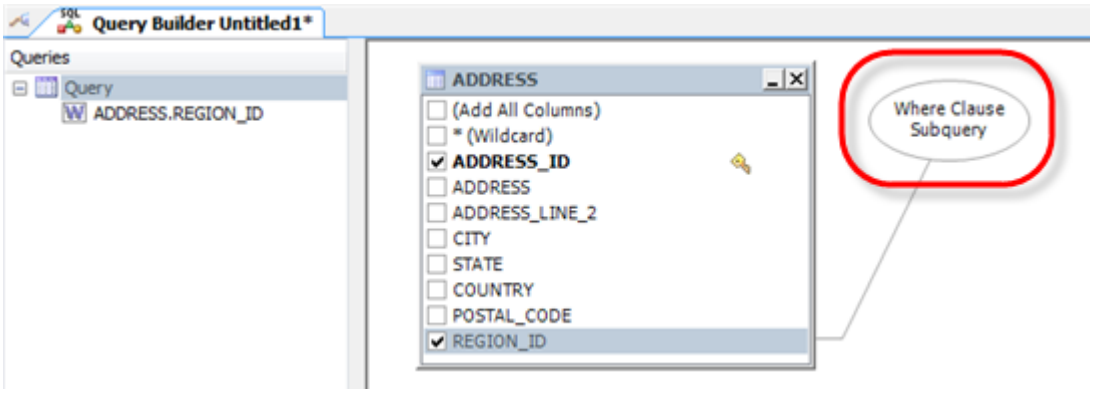


f. Your subquery window should look something like this:



g. Click Execute SQL to execute the subquery. Select the Results tab to review the result set for the subquery.

6. Click the Query node in the Queries pane to return to the main query window. A call-out in the main query Diagram pane indicates that the statement contains a subquery and identifies the column it is on. Hover over the call-out to view the subquery statement.



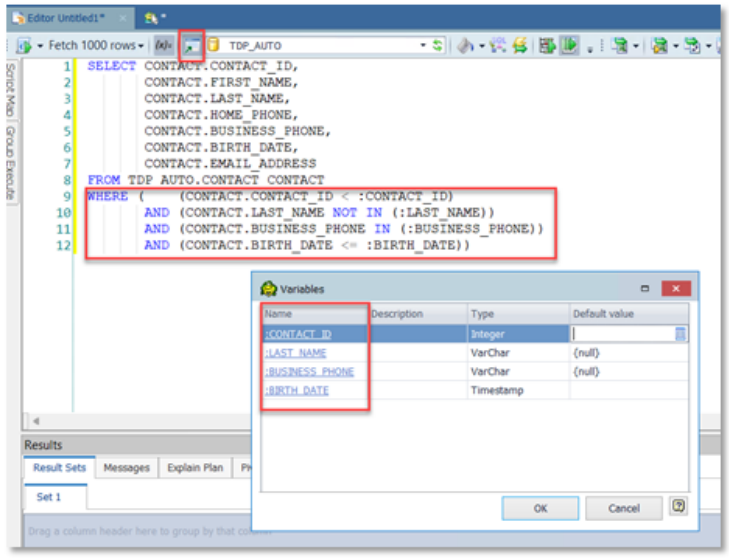
7. Click Execute SQL to execute the main query.

Using Bind Variables

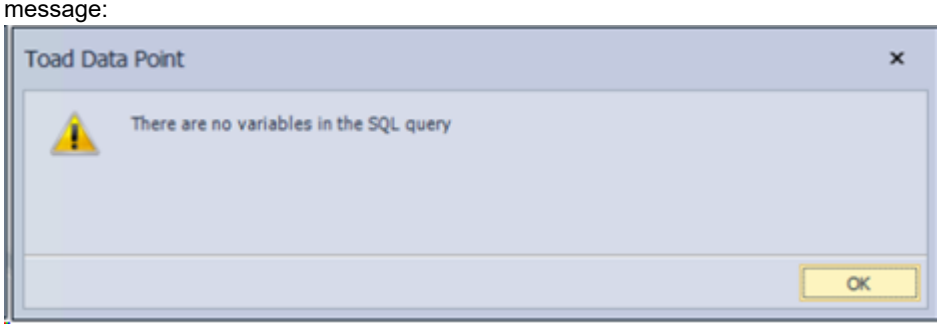
Toad supports the use of bind variables (bind parameters) in SQL statements. When you execute a statement containing a bind variable, Toad prompts you to enter a value.

Toad also allows you to specify a default value for the variable before the query is executed by using the Variables option. The default value can be specified by entering the value manually or by using advanced options to configure a list of specific values.

If bind variables are defined in the query, clicking on the Variables button will bring up a new window where all the variables present in the SQL script are listed.



If there are no variables in the SQL script, clicking on the Variables button will raise the following message:



Automation Scripts. To learn about entering variable values for Automation scripts at run time, see the *Set Variable* and *Send Email* activities in Use System Automation Activities.

Publish with Variables. To learn how to use variables when publishing to Intelligence Central, see Variables in Views/Scripts and Publishing to Intelligence Central

Note: A default value for each variable is required when publishing.

Toad supports the following bind variable formats:

- Colon (:*variable*)

  Example: SELECT * from employee WHERE user = **:user**;

- At symbol (*@variable*) in SQL Server connections

  Example: SELECT * from employee WHERE user = **@user**;
- Question mark *(?)* in applicable connections, such as ODBC

  Example: SELECT * from employee WHERE user = **?**;
- Dollar sign (*$*) in PostgreSQL connections

  Example: Select * from employee WHERE user = **$1**;

Toad also supports these variable formats:

- Double ampersand *(&&variable)* as a literal replacement SQL*Plus format in Oracle connections

  Example: SELECT * from employee WHERE user = **'&&user'**;

Notes:

- Avoid using the same symbol to represent a bind variable and statement delimiter in the same SQL statement.
- In the Editor, click (x)= to enable/disable binding variables in the SQL. When disabled, Toad does not scan SQL for parameters. This button is enabled (depressed) by default.

To set the default value(s) for the bind variable before the query is run

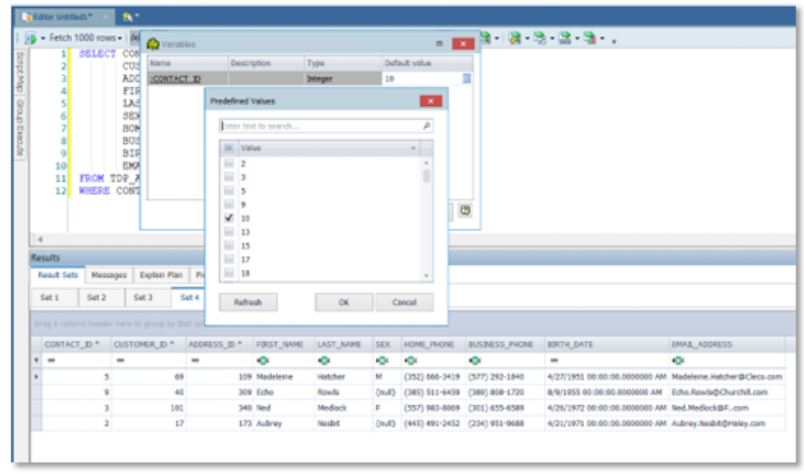
1. In the Editor, compose a query that contains bind variables.
2. Click on the Variables toolbar icon .

   Note: The Bind Variables dialog does not display if the bind variables option is disabled.
3. Enter the bind variable information. Review the following for additional information:

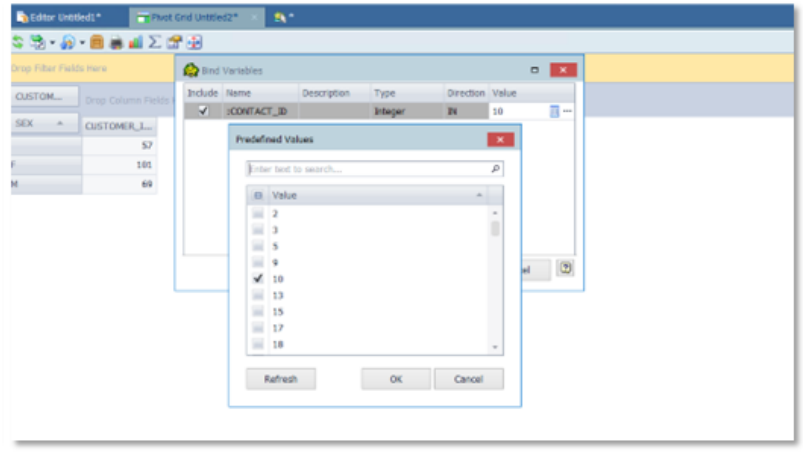
Name	Displays the variable name in the form of a clickable link that brings up the Define variable prompt values options for creating a list of predefined variable values.
Description	Enter the description.
Type	Select the data type for the variable from the drop-down list.
Default value	Specify the default value(s) that will be used every time the query is run by: ▪ Entering the value(s) for the variable manually ▪ Or selecting the value(s) from the predefined list by clicking on the button and choosing the particular value(s) Note: ◦ If a variable has been defined with an IN\NOT IN operator, multiple values can be entered by using the semicolon as a delimiter (each value needs to be separated by a semicolon). ◦ The predefined list of values list needs to be configured in the Define variable prompt values before using this option

Custom list of values for bind variables

Toad enables you to define a list of specific values that can be used for a bind variable in a query that has been created in the Query Builder or Query Editor.



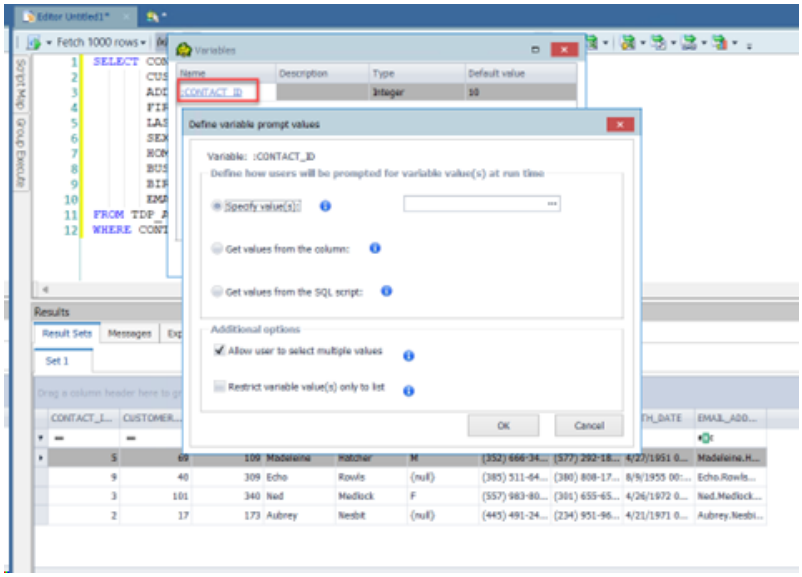
The selected values from the list can be changed at any point in time (before and during query execution) in Toad Data Point/Toad Workbook or Toad Intelligence Central (if the objects are published). This list of predefined values will be saved in the Query Builder or Query Editor file and transferred as a part of any downstream step available in Toad (Pivot, Transform and Cleanse, Dimensional View…).



The selected values from the list can be changed at any point in time (before and during query execution) in Toad Data Point/Toad Workbook or Toad Intelligence Central (if the objects are published).

To create a list of predefined variable values

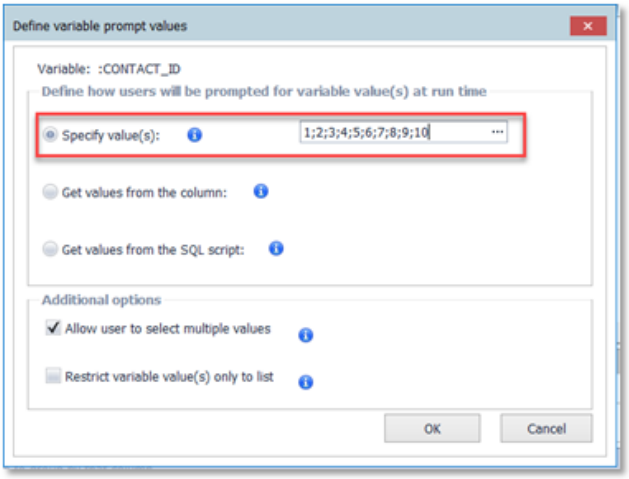
To access the options for creating a list of predefined variable values, click on the variable name link that will open the Define variable prompt values window.



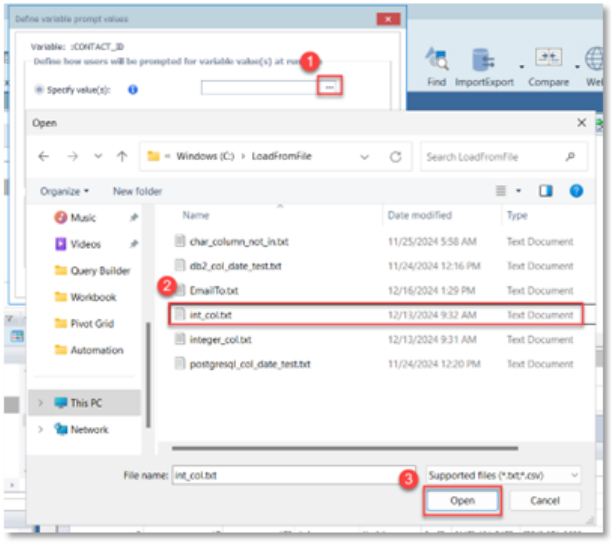
The following options for defining a list of variable values are available:

- Specify value(s)

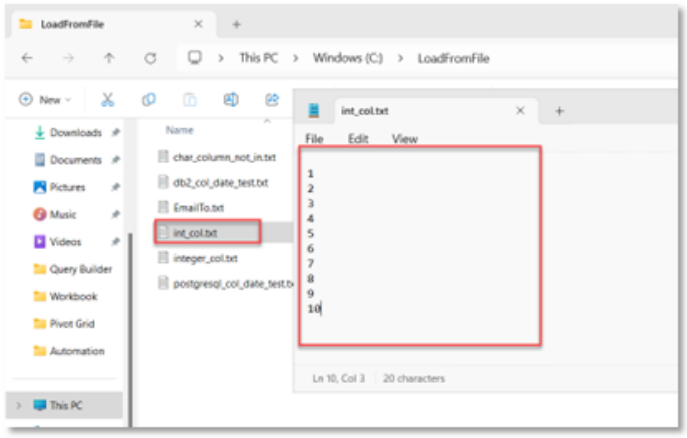
  This option enables you to define a list of variable values manually by entering multiple values separated by a semicolon.



Toad also allows you to load the variable values from a file by clicking on the ellipsis button (…) and selecting a specific .txt or .csv file.

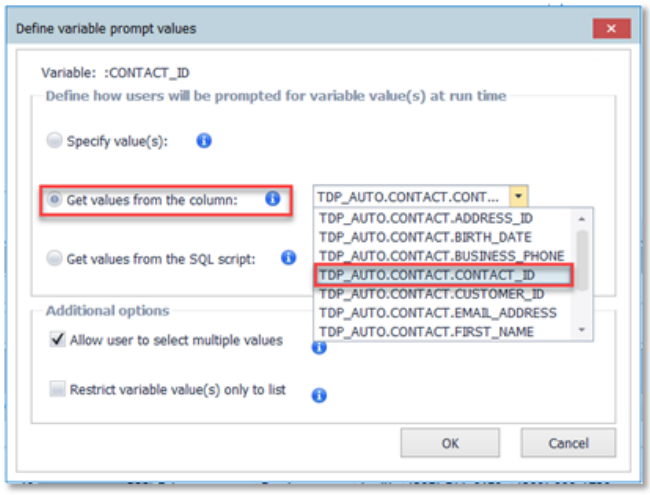


Note: Each value in the .txt or .csv file needs to be placed in a new line and no other delimiter should be specified.



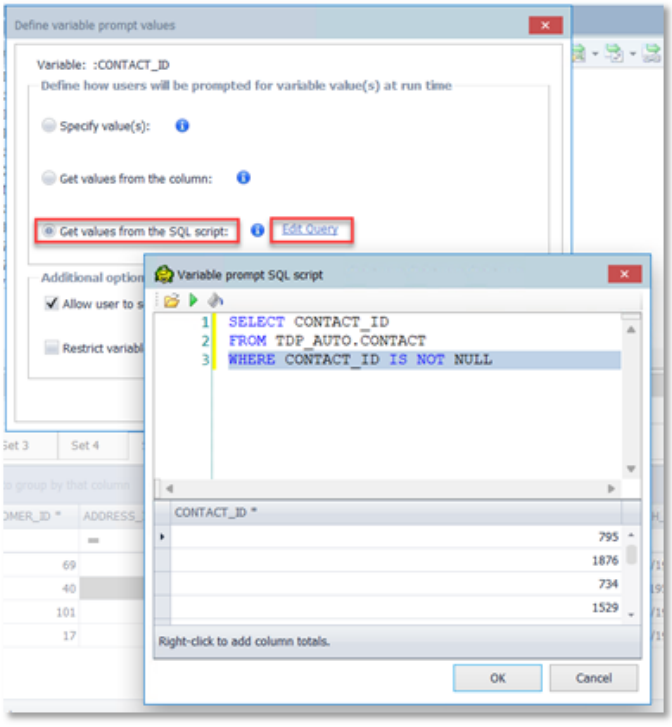
- Get values from the column

  This option enables you to create a predefined list of values that contains all the values from a particular column. The column is selected from the drop-down which lists all the columns defined in the query.

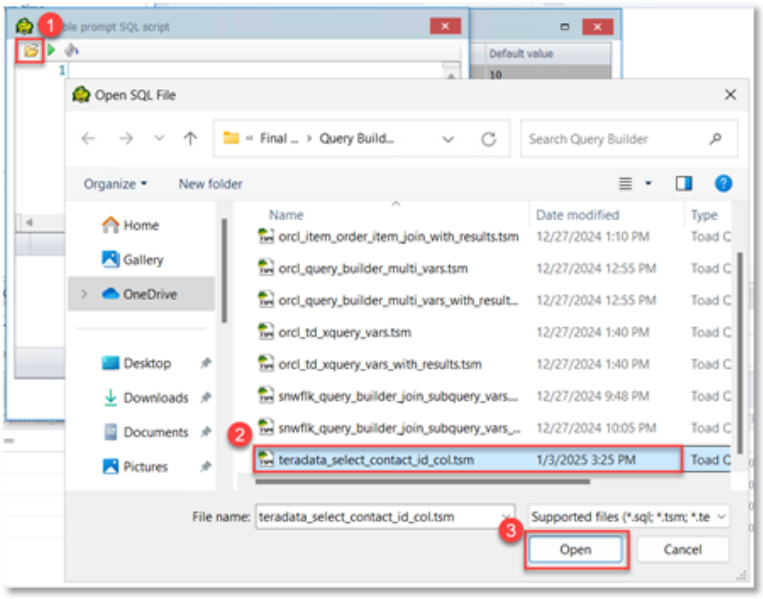


- Get values from the SQL script

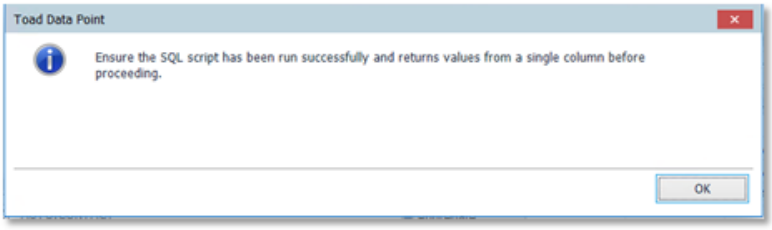
  Clicking on the Edit Query link will open a mini editor in the SQL Script Edit window. This option allows the user to specify a SQL query that will return a result set for a single column which will be used to populate the list of predefined variable values. After the query is specified, it needs to be run in the editor in order to populate the predefined values list.



  The query can be entered manually in the editor or it can be loaded from a Query Builder (.tsm) or SQL file (.sql, .tef) by using the Open button.



If the specified query returns a result set with more than one column, it will not be valid and the following message will be displayed (the same message will appear if the query is not run).



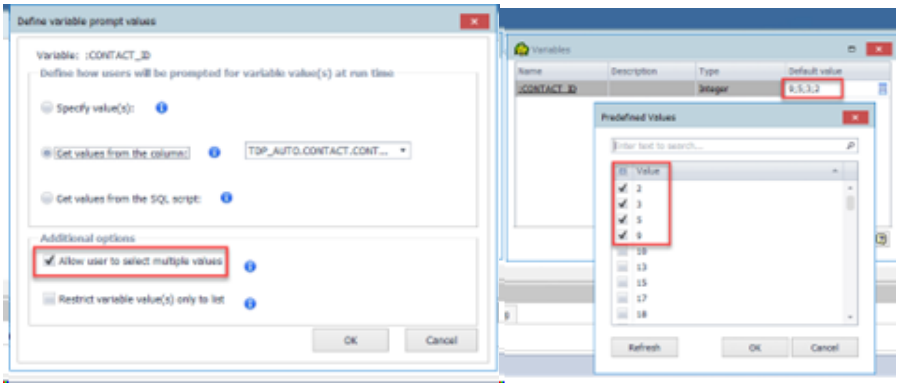
Additional Define variable prompt values options

The Define variable prompt values also provides additional options:

- Allow user to select multiple values – This option controls whether multiple values can be selected for a variable when using the IN/NOT IN operator.

  By default, this option is now deselected - only a single value can be chosen from the list and passed as the variable value.

  If this option is selected, users can select and pass multiple values for the variable.



  If this option is deselected, only a single value can be chosen from the list and passed as a variable value.

- Restrict variable value(s) only to list – This option enables the user to restrict the variable values to the predefined list which is created in the Define variable prompt values options. That means that the values cannot be entered manually and can only be selected from the predefined list of values.

Note on Default Option Behavior Changes:

- **In version 6.4:** The Allow user to select multiple values option was enabled (checked) by default.
- **Starting with version 6.4.1:** This option is now disabled (unchecked) by default for every variable.

Behavior by Version:

- **Toad Data Point 6.3 to 6.4.1:** All options remain unchecked by default.
- **Toad Data Point 6.4 to 6.4.1:** All option settings are preserved as they were prior to upgrade.

Toad Intelligence Central 6.4.1:

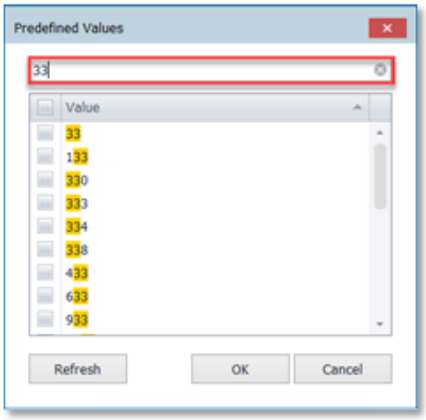
- Objects already published to Toad Intelligence Central are not affected by these changes.
- **Published with version 6.3:**
    - Allow user to select multiple values is unchecked by default.
    - Restrict variable value(s) only to the list cannot be changed.
- **Published with version 6.4:**
    - All option settings are preserved as they were in version 6.4.

Predefined Variable Value List

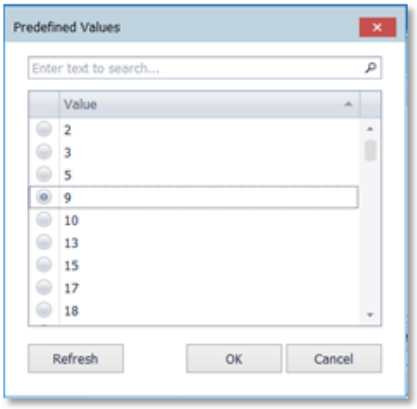
If the predefined list has been configured in the Define variable prompt values, it will be available in the Variables window within the Default value field, by clicking on the button.

When the button is clicked, it will open the Predefine Values window which contains:

- A Search box (field) that enables the user to search or filter for specific value(s)



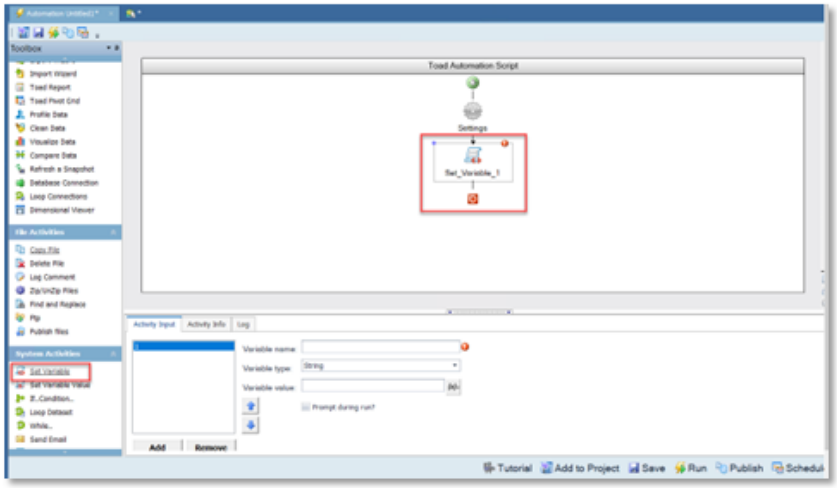
- The list of values that have been defined in the Define variable prompt values options. Depending on the settings that have been applied, the values will be displayed next to a checkbox (with the Allow user to select multiple values selected) that allows for the selection of multiple values (as shown in the image above) or next to a radio button (with the Allow user to select multiple values deselected), which allows for the selection of a single value.



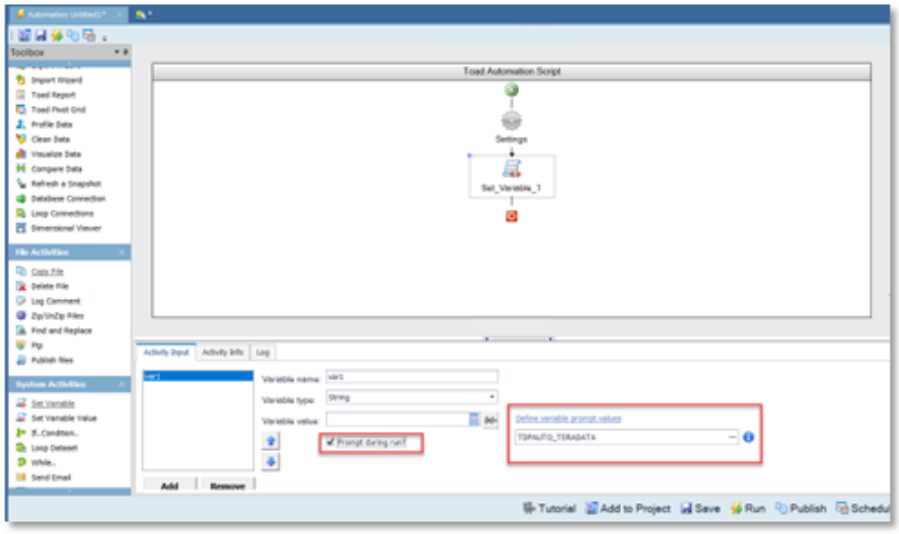
- The Refresh button which can be used to refresh the predefined list of values if they are obtained through Get values from the column or Get values from the SQL script options.

To use a list of predefined variable values in Toad Automation

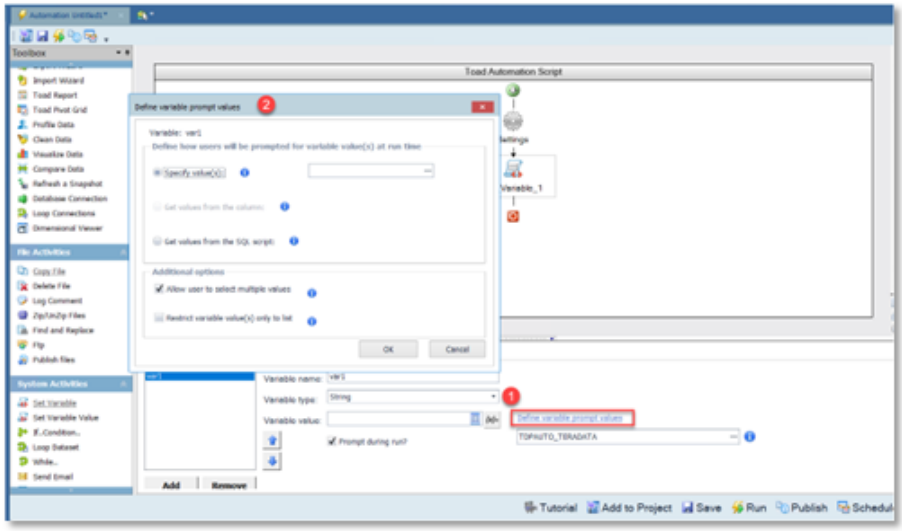
In Toad Automation, the options for creating a list of predefined variable values are available when using Set Variable from System Activities as an automation step.



To enable these options, the Prompt during run checkbox needs to be selected. After the checkbox is ticked, the Define variable prompt values link appears along with a field for selecting the connection that will be used to run the query that populates the list of predefined values for the specific variable.



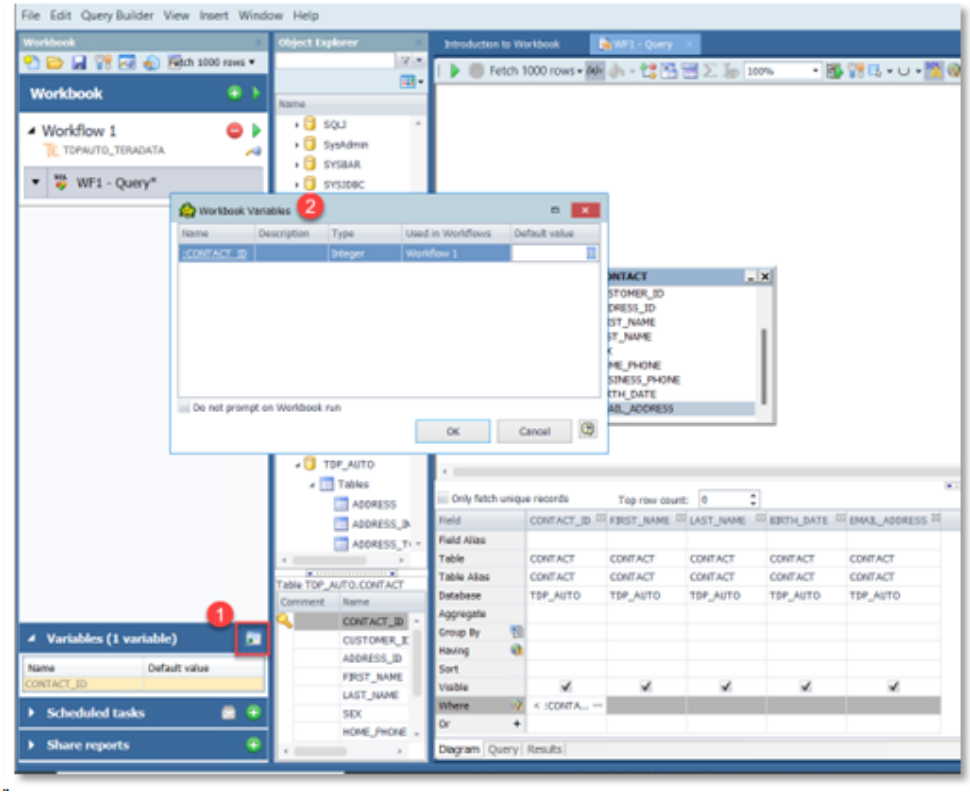
Clicking on the Define variable prompt values link opens a new window that contains options for defining a list of variable values.



The options and functionality are identical to those that are found in Toad Query Builder, Editor and Workbook with the exception of the Get values from the column option, which is not available in Toad Automation.

To use a list of predefined variable values in Toad Workbook

To access the options for defining a custom list of variable values in Toad Workbook, you need to click on the Variables button, which will open the Workbook Variables dialog.



Options and functionality for creating a list of predefined variable values match the ones found in the Query Builder and Query Editor.

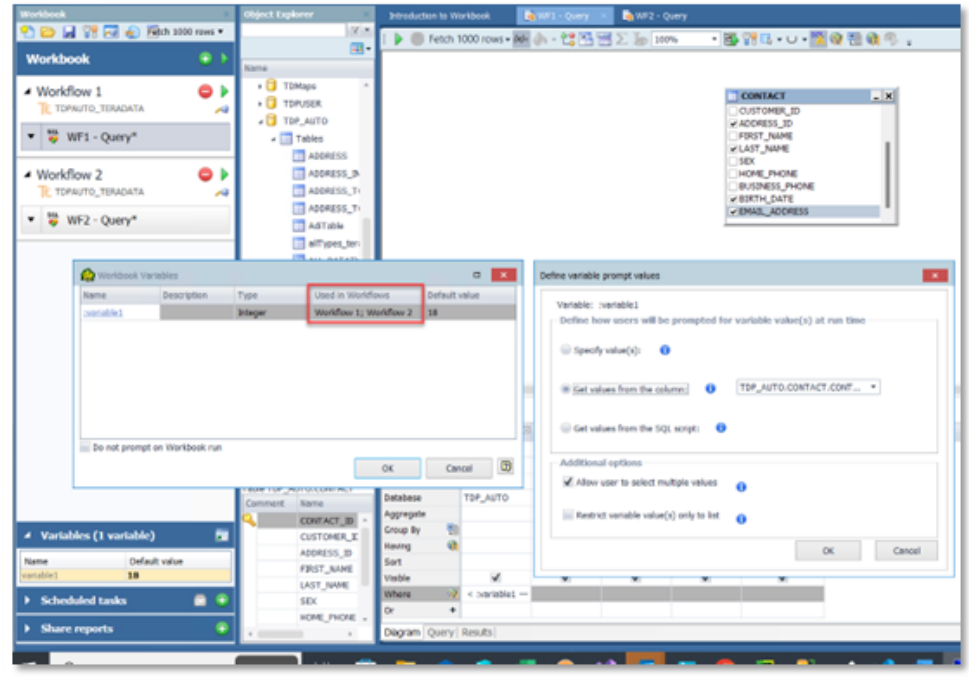
Workbook Variables defined with the same name

If a variable is defined in a specific Workbook Workflow with a custom list of predefined values, this list of variable values (and the option which is utilized to populate the list) will be used for any subsequent variables that are defined with the same name regardless of the Workflow that is currently selected or changes that have been made in the Workflow order.

For example – a variable is defined as variable1 in Workflow 2 and a predefined list of values has been created by using the option Get values from the column.

If another variable is defined with the same name (variable1) in Workflow 1, there will be only one variable present with that particular name in the Workbook Variables dialog, and the values that were initially defined in Workflow 2 will also be used in Workflow 1.

The Workbook Variables dialog contains information about all the Workflows that are using a certain variable in the Used in Workflows column.



To set a bind variable during query run time

1. In the Editor, compose and execute a query that contains bind variables. Toad immediately displays the Bind Variables dialog.

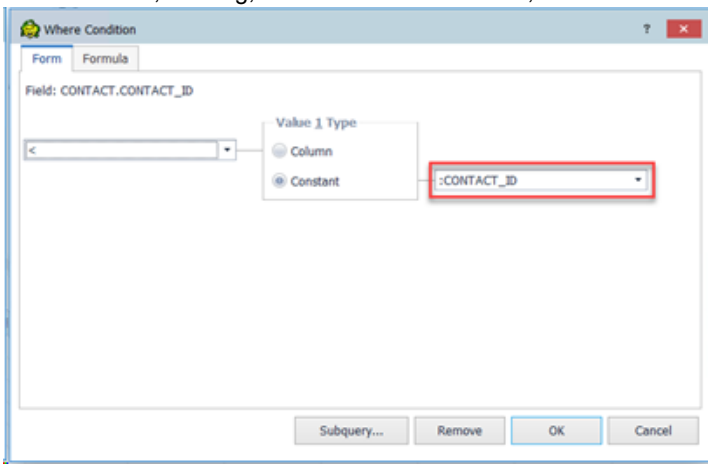
   Note: The Bind Variables dialog does not display if the bind variables option is disabled.

2. Enter the bind variable information. Review the following for additional information:

Include	An option for including\excluding a specific bind variable at run time. The include option is selected by default.
Name	Displays the name of the bind variable that has been defined in the query.
Description	Enter the description.
Type	Select the data type for the variable from the drop-down list.
Direction	Select the direction of variable from the list.
Value	Specify the values for the run by: ■ Entering the value(s) for the variable manually ■ Or selecting the value(s) from the predefined list by clicking on the button and choosing the particular value(s) ■ Or loading the values from a specific .txt or .csv file by clicking on the ellipsis (…) button and selecting the appropriate file. Note: ◦ If a variable has been defined with an IN\NOT IN operator, multiple values can be entered by using the semicolon as a delimiter (each value needs to be separated by a semicolon). ◦ If you selected a direction of OUT or RETURN, this value is ignored. ◦ If default values have not previously been set in the Variables option, this field will be populated with values that have been specified in the last run. ◦ If default values have previously been configured, any changes made will apply only for the current run. ◦ If the values for the run are loaded from a .txt or .csv file, each value in the .txt or .csv file needs to be placed in a new line and no other delimiter should be specified.

To use a bind variable in the Query Builder

- In the Where, Having, or OR Condition editor, enter the bind variable in place of a constant.



To store a value for a bind variable in a global variable

Toad allows you to store a value for a bind variable by defining a global variable. Then, when you execute a SQL statement containing that bind variable, Toad will not prompt you for a value. You can access this feature from the Project Manager or the Toad Views manager.

1. Click in the Project Manager or Toad Views Manager toolbar.
2. Enter a name and a value for the bind variable, and specify a data type.

Tip: After you store a bind variable, it is available to be used as a variable in Automation. The stored bind variables appear in the list of variables in the expression editors in various activities.

Note: Defining and using a custom list of values for bind variables is not supported for global variables.

Use Quote Function to Substitute a String at Run Time

In addition to supporting the use of bind variables, Toad also provides a way for you to easily substitute a string, such as a database name or table name, in your SQL statement at execution time. This method uses the **Quote()** function, one of Toad's built-in functions (known as Toad Script) for SQL statements. The Quote function can insert the value of a bind variable as a literal value before the statement is sent to the server. This is useful if you want to use bind variables in places where they are not allowed. See About Toad Script for more information.

For example, suppose you want to create the same table in several different databases, but you do not want to re-write the SQL statement for each database. You can use one statement that includes the Quote() function in place of the database name.

```
Create table {{Quote(:dbname)}}.NewTable as select * from dual
```

When you execute the statement, Toad prompts you to enter a string value in place of {{Quote(:dbname)}}. You then enter the database name.

To use the Toad Quote function to substitute a string at run time

1. Enter a SQL statement in the Editor.
2. Use the following syntax in place of the string that you want to substitute.

   ```
   {{Quote(:name)}}
   ```

   For example:

   ```
   Create table {{Quote(:name)}} as select * from dual
   ```
3. Execute the statement. The Bind Variable dialog opens.
4. Enter a string to use in place of :name and click **OK**.
5. Toad inserts the string (quoted if necessary) into the SQL statement and executes it.

Tip: See About Toad Script for more built-in functions that can be used in scripts that you execute in Toad.

Related Topics

About Editing SQL

About Editing SQL

The editor combines a powerful SQL and procedure editor into a single interface.

Notes:

- See "Editor Shortcut Keys" on page 70 for more information about keyboard shortcuts used in the Editor.
- Toad has implemented a large script mode to improve performance when opening files larger than 2 MB. By default, when you open a large file, some features such as word wrap, syntax highlighting, and the Script Map are disabled in the Editor. When a large script loads, a message indicates that you are in large script mode in the right margin of the Editor. You can cancel large script mode by clearing the option in **Tools | Options | Editor | General**.
- To show the Script Map, **Script Results** or **Group Execute** panes for the current Editor window select **Editor | Windows | <*pane*>**.

To edit SQL

1. Select **Tools | Edit | SQL Editor**.

   Note: You can query the worksheet from the Editor by entering a dollar sign ($) followed by a cell range to limit the results similar to the following statement:

   ```
   Select * from (MyWorksheet$A1:C10)
   ```

   You can also query the entire worksheet by entering a dollar sign ($) after the worksheet name; however, this returns empty rows and columns in the worksheet.

2. Review the following to help enter SQL:
   - Code completion
   - Script Map
   - Code regions
   - Code snippets
   - Toad views
   - SQL recall
   - Add/remove application code
   - View Objects at Cursor
   - Macros to record keystrokes
3. Click to format the code.
4. Right-click a block of code in the Editor to see additional actions available in the context menu. For example, you can turn a line into comment, uppercase or lowercase it, surround with snippet, set numbered bookmark, collapse or expand nodes, send to Query Builder and etc. You can also right-click an object (e.g. a table) and manage it as if in the Object Explorer.
5. Hold Alt + left-click and drag to select vertical blocks of text in Editor.
6. Select the block of code in the Editor, and click to validate the syntax.

   Note: Toad undoes any changes to the object and data in the database after executing the script (notice that the Result Sets tab is empty). To modify the object and data, you need to execute the script.

7. Click **Fetch *n* rows** to specify the number of rows to initially retrieve when executing the query. You can set a default value for this option in **Tools | Options | Database | General**. See General Database Options .
8. Click to execute SQL on the current server or multiple servers at one time. In the Editor toolbar, the execute SQL buttons are grouped under . The button will retain the function of the last execute action for the active Editor window. If you switch to another Editor window, the button will change to reflect the last action for that window.
9. Select the block of code in the Editor and click to create a stored procedure. Stored Procedure creation dialog automatically recognizes procedure body and declared parameters.

Tips:

- Toad automatically saves a backup copy of any modified editor file in the Application Data Directory to avoid losing your work. When you restart Toad after an unexpected close, Toad checks the timestamp on the backup file against the original file, and opens the file that has the latest timestamp. The document recovery option is in **Tools | Options | Environment | General**.
- You can save the current connection, SQL script, executed results, filters, and group execute connections/results (if enabled) in a Toad editor file (.tef). This file format is useful for building scripts that have large result sets that you do not want to continue executing or for saving results when you have not finished building a script.
- Editor supports floating window mode.
- The script is automatically checked for syntax errors when executing current statement (F9), checking syntax, changing database, or refreshing the Script Map. The syntax errors are listed in the Script Results pane in the Messages tab.
- If you copy and paste a SQL statement from one editor window to another, Toad automatically rewrites the statement to match the syntax of the connection for the second editor window.

Configure Editor Options

You can specify options for the look and behavior of the SQL Editor by using the Toad Options dialog.

To configure Editor options

1. Select **Tools | Options**.
2. To specify one of the following options, select the corresponding page in the Options dialog.

Option Description	Page in Options Dialog
Display the tabs for the current connection only when using Tabbed windows	Select **Environment	Interface**
Change background color of the Editor	Select **Editor	General**
Use connection color as background color	Select **Editor	General**
Position Editor tab headers vertically	Select **Environment	Interface**
Set options to display line numbers, line modifications, and general text formatting	Select **Editor	General**
Specify options to automatically replace typed text with the correct substitution text	Select **Editor	Auto-replace**
Customize code formatting options including headers and layout characteristics	Select **Editor	Formatter**

Click here to view a video of this feature.

Editor Shortcut Keys

You can assign individual shortcut keys in Keyboard options. You can also customize Toad to use the shortcut keys of existing applications such as Toad for Oracle, SQL Navigator, or Query Analyzer in the Configuration Wizard (**Tools | Configuration Wizard**).

Caution! If you have some global access keys assigned, make sure that Toad shortcut keys do not coincide with them. When using such duplicating shortcut keys in Toad, the third party application commands, assigned globally, will be performed instead of ones assigned by Toad.

The following table describes the default shortcut keys in Toad.

Frequently Used Functions	Description
CTRL+PERIOD	Displays the code completion list
F9	Execute current statement
F5	Execute all statements, in order, one at a time
CTRL+MINUS	Comments the selected line
CTRL+SHIFT+MINUS	Uncomments the selected line
CTRL+J	Collapses all code regions
CTRL+M	Expands all code regions
ALT+PAUSE	Stops script execution
Bookmark	**Description**
CTRL+SHIFT+0-9	Sets a numbered bookmark at the selected line
CTRL+0-9	Goes to the numbered bookmark
Case	**Description**
CTRL+L	Converts the selected text to lowercase
CTRL+U	Converts the selected text to uppercase
Clipboard	**Description**
CTRL+C	Copies the selected text to the clipboard
CTRL+X	Cuts the selected text for pasting in the clipboard
CTRL+V	Pastes text from the clipboard
Code Completion	**Description**
CTRL+PERIOD	Displays code completion list
ENTER	Selects an item and close the code completion list
CTRL+SPACE	Selects an item without closing the code completion list
CTRL+<right arrow>	Expands a node in the code completion list
CTRL+<left arrow>	Collapses a node in the code completion list
Comment	**Description**
CTRL+MINUS	Comments the selected line
CTRL+SHIFT+MINUS	Uncomments the selected line
Cursor	**Description**
HOME	Moves the cursor to the beginning of the line
CTRL+HOME	Moves the cursor to the beginning of the file
END	Moves the cursor to the end of the line
CTRL+END	Moves the cursor to the end of the file
Debugger	**Description**
SHIFT+F12	Step from cursor
F7	Step into
SHIFT+F7	Step out
F8	Step over

F11	Run to breakpoint
F12	Run to cursor
CTRL+B	Set breakpoint
CTRL+W	Add watch at cursor
Delete	**Description**
BACKSPACE	Deletes the selected text (if text is selected); otherwise, deletes the previous character
CTRL+BACKSPACE	Deletes text to the beginning of the previous word
CTRL+SHIFT+DELETE	Deletes the entire script
Find and Replace	**Description**
CTRL+F	Finds text
F3	Finds the next occurrence of text
SHIFT+F3	Finds the previous occurrence of text
CTRL+G	Goes to line number
CTRL+I	Performs an incremental search
CTRL+SHIFT+I	Performs a reverse incremental search
Indent	**Description**
TAB	Indents the selected line
SHIFT+TAB	Outdents the selected line
Macros	**Description**
CTRL+SHIFT+R	Starts/Stops recording a macro
CTRL+SHIFT+P	Plays the recorded macro
Miscellaneous	**Description**
F4	Invokes objects search
F4+SHIFT	Describes the object next to the cursor
F6	Toggles between the Editor and Data Grid
CTRL+R	Show/hide Results pane
CTRL+D	Sends SQL to Query Builder
SHIFT+F8	Recalls the previous SQL statement
CTRL+↑	Scrolls up the window.
CTRL+↓	Scrolls down the window
<auto-replace token>+SPACE	Automatically replaces a misspelled word, inserts symbols, and expands text. **Note:** You can set autoreplace in **Tools | Options | Editor | Autoreplace**.
CTRL+SPACE	Displays the Code Snippets folder browser
<code snippet shortcut name>+CTRL+SPACE	Inserts the code snippet template
CTRL+DELETE	Sets the column value for the current cell to Null in the data grid

View Result Sets

The Result Sets tab displays a data grid for executed SQL statements and scripts that return data.

If you occasionally closed the Results pane, you can restore it by selecting **Editor | Windows | Script Results**.

Visual Inspection Grid

You can easily review all (or the selected Result sets) in one Result Sets tab. Left-click and hold Shift or Ctrl to select more than one Result sets of your script. Select All results to review all in one tab.

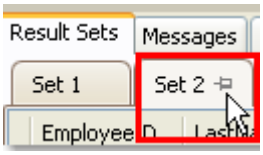
To enable view of all Result Sets in one Tab

- Check **Options | Database | Script results | Enable all results view**

Troubleshoot Data

- If you cannot edit data, click the red icon in the lower left corner of the grid, and then click **OK** on the window that displays. You do not need to edit fields in this window.
- By default, auto commit is enabled and any row changes you make are automatically submitted to the database. You can disable this option in **Tools | Options | Environment | Grid**.

Tips for Working with Data

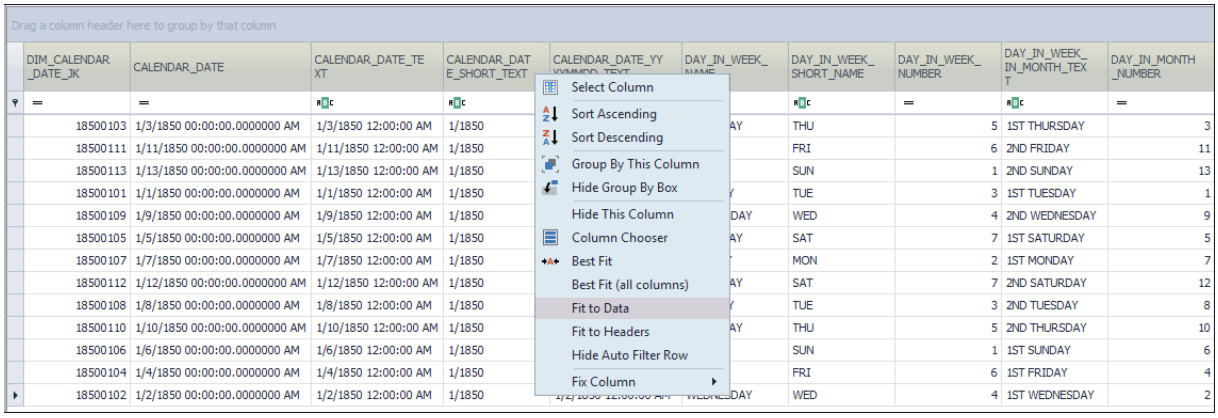
To...	Do this...
Pin a result set so it is not overwritten by a subsequent query in the Editor or Query Builder.	Click the push pin beside the result set: 
Set the value of a cell to null.	Press CTRL+DELETE.
Toggle between the Editor and Data Grid.	Press F6.
Add column or group summary values	Right-click the data and select **Show | Summary Footer Panel**. Then, right-click the Summary Footer Panel below the column you want to add a summary total to and select an option. If you have grouped columns using the Grouping panel (**Show | Group Panel**), you can also add a summary total to grouped records.
Apply a summary function to the data (Sum, Min, Max, Count, Avg).	Right-click below the column you want to apply the summary function (but above the Navigation toolbar) and select an option.
Show or hide columns of data.	Right-click a column heading in the data grid and select **Column Chooser**.

To...	Do this...
Display data in a report, pivot grid, or chart.	Right-click the data and select **Send To |*<option>***.
Compare differences between two data sets.	Right-click the data and select **Compare To**.
Display the data in a grid or card view; grid view is useful for viewing summary information at a glance; card view is useful for viewing information in greater detail.	Right-click a record and select **Show |Grid View** or **Card View**.
View multi-line text in the data grid as one-line text separated by spaces.	Right-click the data and select **Show | Multi-line Text as One-line**. When the option is cleared, only the first line of the multi-line text is shown. To see the full text hover a mouse over a data grid or expand it.

Fit to Data Option in Data Grid

The Fit to Data option in the Data Grid automatically resizes each column based on the length of its data values, rather than the column headers. This minimizes horizontal scrolling and maintains a clear view of the content, even in tables with long column names.

Fit to Data complements the existing Fit to Headers functionality, offering users additional flexibility in customizing their grid display.



Compare Differences in Data

You can compare result sets from the current editor or a different editor in the Database Explorer's Data tab or the editor's Result Sets without having to save one of the sets to a file.

Notes:

- If you want to synchronize data, use Data Compare instead of the Data Diff Viewer.
- You cannot modify files in the Diff Viewer at this time.

To compare differences in data

1. Right-click data in the Editor's result set or Database Explorer's Data tab and select **Compare To | *Set_number***.

   You can also save a result set and later use it as a historical comparison.

2. Review the differences.

   Tips:

   - To switch the contents of the left pane to the right pane, and the contents of the right pane to the left, click .
   - You can also open files to compare by clicking beside the drop-down list at the top of each pane.
   - You can show or hide tables that contain equal records, different records, etc., at any time using the toolbar.

Export Data with One Click Export

Use One Click Export to quickly export data to an Excel report. You can also export data and include a *linked query* in the file. A linked query lets you create a "live" Excel report that can be refreshed dynamically. Because a linked query contains the underlying SQL for a report, each time you refresh the report the query executes and retrieves the latest data. The dynamic nature of linked query reports makes them ideal for distribution to users who need to see changes to data on demand without waiting for new static reports to be distributed.

Click here to view a video of this feature.

Notes:

- Before you can export to Excel, the Primary Interop Assemblies (PIAs) for your version of Excel must be installed. Typically, the PIAs are installed automatically when you install Microsoft Office.
- Use the Export wizard if you need to specify column delimiters and advanced field options when exporting data.

To export data in one click

1. Select the range of data to export or click any row in a data grid to export all data.
2. Right-click the selected range or data grid and select **Quick Export**.
3. Select an export option. Review the following for additional information:

Icon	Option	Description
	Excel File	Export data to an Excel file. The file is automatically saved under a default name in the default export folder.

Icon	Option	Description
	CSV File	Export data to a CSV file (comma separated value file). The file is automatically saved under a default name in the default export folder.
	HTML File	Export data to an HTML file. The file is automatically saved under a default name in the default export folder.
	Excel Instance	Export data to an Excel instance. Data is copied to a clipboard, Excel is launched, and a worksheet is populated with data. You can save the worksheet under a name and folder you specify or save it in the default export folder.
	Excel Instance at active cell	Export data to an active cell in Excel. First open Excel and select a cell. Then select the **Excel Instance at active cell** option.
	Excel Pivot Table	Export data to an Excel pivot grid report. See the Excel documentation for information on creating a Pivot Table report with external data.
	Excel Pivot Table at active cell	Export data to an active cell for an Excel Pivot Table report. First open Excel and select a cell. Then select the **Excel Pivot Table at active cell** option.
	Excel Linked Query	Export the underlying query for data to Excel.
	Excel Linked Query at active cell	Export the underlying query for data to an active cell in Excel. First open Excel and select a cell. Then select the **Excel Linked Query at active cell** option.
	Excel Linked Query with pivot table	Export the underlying query for data to an Excel Pivot Table report. See the Excel documentation for information on creating a pivot grid report with external data.
	Excel Linked Query at active cell with pivot table	Export the underlying query for data to an active cell for an Excel Pivot Table report. First open Excel and select a cell. Then select the **Excel Linked Query at active cell with pivot table** option.
	Excel Column Chart	Export data to an Excel chart instance. Data is copied to the clipboard, Excel is launched, and a chart is created with the data. You can then modify the chart's design and save the Excel file.

Tip: To refresh data in a linked query report, click in Excel's External Data toolbar. This executes the underlying query for the report. See "Share Excel Linked Queries" on page 77 for more information about creating and using linked queries.

Note: If the window containing data does not have the focus when you select a One Click Export option, the following message displays: "Export did not find any results sets to process."

Tips:

- To specify a default export folder, go to **Tools | Options | Environment | Export**.
- To always open a Save File dialog when exporting using One Click Export, go to **Tools | Options | Environment | Export** and select the option. This allows you to always customize the file name.

Share Excel Linked Queries

You can use linked queries to create "live" Excel reports that can be refreshed dynamically. Because a linked query contains the underlying SQL for a report, each time you refresh the report the query is executed and the latest data is retrieved. The dynamic nature of linked query reports makes them ideal for distribution to users who need to see changes to data without waiting for scheduled updates or for new reports to be distributed.

Notes:

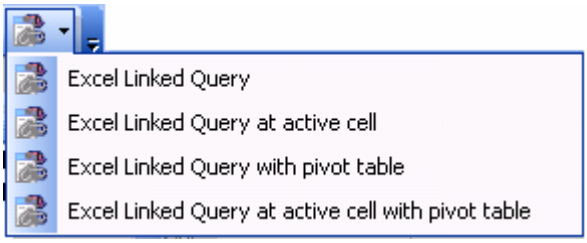
- Any user who opens an Excel linked query must have access to a user name and password for the queried database to refresh the data. If a user does not have access to the database, they can only see the original data in the spreadsheet.
- If the Excel linked query was created from an ODBC connection that uses a Data Source Name (DSN), the DSN must also exist on the computer where the Excel file is opened to refresh the data.

Scenario

You need to create an Excel linked query so that the Regional Sales Manager, can track whether the Sales Representatives in his region meet their monthly and quarterly goals. By providing a linked query, you only have to create the query once, and then the Regional Sales Manager can refresh the data at any time to view the latest sales information.

To create an Excel linked query

1. Connect to the database.
2. Create a query in the Query Builder or Editor.
3. Execute the query to display data results.
4. Select the result set and click one of the following options from the toolbar:



5. Save the Excel spreadsheet.
6. Email or upload the spreadsheet to a shared network folder to share it with colleagues.

To refresh data in an Excel linked query

1. Open the spreadsheet with the linked query in Excel. The original data from the query displays.
2. In Excel, select **Data | Refresh** to update the original data with the current data.
3. If prompted, enter a user name and password to connect to the database and refresh the data.

   or

   If the following error displays: "[Microsoft][ODBC Driver Manager] Data source name not found and no default driver specified", you must specify the DSN used by the query on your computer. Complete the following steps to resolve this issue:

   (Excel 2003)

a. Click **OK**.

b. Select the Machine Data Source tab, and then click **New**.

c. Use the wizard to select a **User Data Source** and create a DSN that points to the database.

d. Click **OK** to return to Excel and open an ODBC Driver Connect window.

e. Enter a user name and password to refresh the data.

Publish Data to Intelligence Central

About Publishing Data

You can use Toad Data Point to publish data to a Toad Intelligence Central (TIC) server in order to store and share data from remote data sources. Intelligence Central is like a federated server where you can store data from a variety of data sources. See About Toad Intelligence Central for more information.

Note: This feature is available in the Toad Data Point Professional edition only and requires access to a Toad Intelligence Central server.

For a video demonstration of this feature, please see Publishing to Intelligence Central.

What Data Sources You Can Publish From

You can publish data from any data source that you can connect to using Toad. Data sources that use native provider connections must also be ODBC-compliant.

What Type of Objects Can Be Published

Data can be published in the form of views, snapshots, and datasets. See Objects in Toad Intelligence Central for more information about these objects.

How Data is Published From Toad

You can publish data from any of the following: an object in the Object Explorer, a query statement in the Editor or Query Builder, or the data in a data grid.

Connectivity and Publishing

Toad Data Point uses three types of connectivity: native database provider connectivity, ODBC connectivity, and Data Services (Business Intelligence and NoSQL) connectivity. However, Toad Intelligence Central uses only ODBC and Data Services connectivity. If you publish data objects to a TIC server using a native database provider connection, the connection is converted to ODBC on the TIC server.

Before Publishing

If you are publishing data using a native provider or ODBC connection, the corresponding ODBC driver must exist on the TIC server. In addition, for native database connections other necessary client files must exist on the TIC server. To learn how to prepare the TIC server for publishing, see Prepare to Publish Data to Toad Intelligence Central.

Related Topics

Publish to Toad Intelligence Central

Prepare to Publish Data to Toad Intelligence Central

Toad Intelligence Central uses the following types of connectivity to make connections to remote data sources:

- Data Services (for Business Intelligence and NoSQL connections)
- ODBC (for native-provider and ODBC connections)

Because Intelligence Central uses ODBC connectivity, when data is published from a native-provider connection, Toad converts the connection to ODBC (if the database is ODBC-compliant). Before you can successfully publish data from a native-provider (or ODBC) connection, everything necessary to create the correct corresponding ODBC connection must be installed on the Intelligence Central server. This includes the corresponding ODBC driver for the database type, as well as any additional client files required for a correct ODBC connection.

If data is published from an ODBC connection, you must ensure that the DSN name on the Toad Data Point computer and the Intelligence Central server match.

Note: This feature is available in the Toad Data Point Professional edition only and requires access to a Toad Intelligence Central server.

Prepare ODBC Connections in Toad Data Point

If You Use ODBC Connectivity - Use System DSNs

If you plan to publish data objects from a remote database connection using ODBC connectivity in Toad Data Point, the ODBC connection must use a **System DSN**. This is required for compatibility with Intelligence Central, which uses only System DSNs.

To specify a System DSN for an ODBC connection

1. Open the ODBC Data Source Administrator by selecting **Start Menu | Control Panel**, and then select *ODBC* or *Data Sources (ODBC)*.
2. Select the System DSN tab and click **Add**.

   Note: You must configure a System DSN because TIC uses only System DSNs.
3. Then select the ODBC driver for the database to which you want to connect.
4. Configure the remaining settings.

Prepare the Intelligence Central Server

In order for Toad Data Point users to successfully publish data to Intelligence Central, the Intelligence Central server must have the same ODBC driver, DSN name, and necessary client files that exist on the Toad Data Point user's computer for each data source. These files are used by Toad Data Point to create the data source connection.

For the data source type you will be using, ensure that the necessary drivers and files are installed on the Intelligence Central server, and that they are the *same* as those installed on the Toad Data Point user's computer.

Install Toad Data Point

Ensure Toad Data Point is installed on the Toad Intelligence Central host computer. If you plan to schedule and run Automation scripts on Intelligence Central, Toad Data Point must be installed. Additional benefits of having Toad Data Point installed along-side Intelligence Central include the following:

- The ODBC drivers for MySQL and SAP ASE, IQ, SQL Anywhere, and HANA are included in the Toad Data Point installation. This will ensure that theses drivers are installed on the Intelligence Central server.
- You can easily use Toad Data Point to help debug any connectivity issues.

Beginning with Intelligence Central 3.0, when you install using the Toad Intelligence Central Server Installer, Toad Data Point is automatically installed.

For best results, ensure the version of Toad Data Point on the Intelligence Central host computer is the same (or later) as that used to create the Automation scripts.

Install Additional ODBC Drivers and Necessary Client Files

In addition to installing Toad Data Point, install these additional files if publishing from any of these data sources.

Publishing from Oracle Data Sources

To prepare the Intelligence Central server to receive published data objects from an Oracle database, please ensure that the following are installed on the TIC server:

- OCI client or Oracle client—Oracle Instant Client or standard Oracle client.
- Oracle ODBC driver—If using Oracle Instant Client, you must also install the Oracle ODBC driver. If using the standard Oracle client, the Oracle ODBC driver is included.
- Tnsnames.ora file

Publishing from DB2 Data Sources

To prepare the Intelligence Central server to receive published data objects from a DB2 database, please ensure that the following are installed on the TIC server:

- DB2 client
- DB2 ODBC driver
- DB2 catalog setup

Publishing from Teradata Data Sources

To prepare the Intelligence Central server to receive published data objects from a Teradata database, please ensure that the following are installed on the TIC server:

- Teradata .Net Data Provider
- Teradata ODBC driver. You can download a Teradata driver from http://www.teradata.com.

Ensure Correct DSN Name

Publishing from ODBC Connections

If you plan to publish objects from Toad Data Point using ODBC connectivity, the Intelligence Central DSN must match the DSN of the original connection used to publish the object.

Ensure the following are true about the Toad Data Point and Intelligence Central ODBC connections:

- Both connections must use a System DSN.
- The Intelligence Central ODBC data source must use the same DSN name as the Toad Data Point connection from which the object was published.

Configure SMTP Transmission for Automation

If you plan to run Toad Data Point Automation scripts that send email, the Intelligence Central server must be configured to support SMTP email transmission. For more information about preparing the Intelligence Central server for published Automation scripts, see Prepare to Publish Automation Scripts.

Install Microsoft Excel

If an Automation Script scheduled to execute on the Toad Intelligence Central server includes an instruction to run a macro in an Excel spreadsheet, then Microsoft Excel must be installed on the Toad Intelligence Central host computer. For more information about preparing the Intelligence Central server for published Automation scripts, see Prepare to Publish Automation Scripts.

Related Topics

Publish to Toad Intelligence Central

Publish to Toad Intelligence Central

Use the Publish to Intelligence Central dialog to publish data, Automation scripts, and Toad files to a Toad Intelligence Central server. Share data with others by publishing views, snapshots, and datasets. You can also share Automation scripts and Toad files for others to copy and/or modify.

To publish generic files, such as Excel files, see Publish Generic Files to TIC.

To publish misc resources, such as database connections or URLs, see Publish Other Toad Resources.

For additional information, see the following:

- Prepare to Publish Data to Toad Intelligence Central
- Prepare to Publish Automation Scripts
- About Toad Intelligence Central

For a video demonstration of this feature, please see Publishing to Intelligence Central.

Note: This feature is available in the Toad Data Point Professional edition only and requires access to a Toad Intelligence Central server.

To Publish to Intelligence Central

1. To publish data to Intelligence Central, use one of the following methods:
    - In the Object Explorer, right-click a table or view and select **Publish**.
    - In the Editor, right-click a SQL statement and select **Publish**.
    - In the Query Builder, right-click a SQL statement and select **Publish**.
    - From a data grid, right-click in the data grid and select **Send To | Publish Data**.
    - Select the **Publish to Intelligence Central** button in the main toolbar. See Select Data to Transform, Profile, Visualize, View, or Publish for more information.
2. To publish a Toad document, open the document in Toad and click **Publish File** in the Wizard bar.
3. In the Publish to Intelligence Central dialog, specify publishing options. Review the following for additional information:

Publishing Page/Options	Option Description
Destination Options	
Publish to Server	Select a Toad Intelligence Central server connection as the publishing destination. Click to review the connection properties for the selected TIC connection. **Note:** If publishing a view, snapshot, or dataset, the destination server must be licensed for Data Connectivity.
Destination Folder	Select the folder where you want to store the published object, or create a new folder.

Publishing Page/Options	Option Description
	• To create a new folder, click the drop-down arrow and then click **New Folder** or **New Secured Folder**. The availability of these actions depends on the parent folder selected and the server configuration. See Folders in Intelligence Central for more information. You must have publish privileges to a secured folder to publish to it. You must have manage privileges to a secured folder to create a subfolder. (Optional) Select a destination database. This feature is provided for third-party applications that access the underlying Intelligence Central databases directly. See "Destination Database in Toad Intelligence Central" on page 85 for more information. • To select or create a database, click . Select an existing database or create a new one.
Object Options	
Publish Type	Select the type of object you want to publish. If you are publishing a script or Toad document, the type is automatically selected. • Data object—See Data Objects in Toad Intelligence Central for object descriptions. • Automation script—See Publish Automation Scripts to Intelligence Central for additional help. • Toad document—See Publish Toad Documents to Intelligence Central for additional help. • Project Manager—See Publish Projects to Intelligence Central for additional help. **Note:** Data originating from an Excel file, Local Storage, or an Access database can only be published as a dataset. See "Publishing from Excel or Local Storage" on page 92 for more information.
Name	Create a name to display in the Object Explorer. For rules regarding duplicate names, see Rules for Duplicate Object Names. **Notes:** Only alpha and numeric characters and the underscore (_) are permitted in object names. A name cannot begin with an underscore. **Publish Detail**—(Dimensional View as Dataset only) Click the link to select which Dimensional Views to publish and to specify dataset names. **Overwrite Existing Object**—Select to overwrite an existing object with the same name. Select this option when re-publishing after editing a script or Toad document. **Append Data to Existing Object**—Select to append data to an existing dataset.
Description	(Optional) Enter an object description. The description displays in the Information tab of the Database Explorer.
Tags	(Optional) Add tags to use for filtering in the Object Explorer. Tags also display in the Information tab of the Database Explorer. a. Click **Add Tag** to add a tag. Then enter a new tag or click the drop-down arrow to select from existing tags. b. Press the **Tab** key to add additional tags.

Publishing Page/Options	Option Description
Sharing	Click the link to modify sharing (visibility) options. Review the following based on the folder to which you are publishing: **To a new or existing non-secured folder**—Specify object sharing options. See Specify Sharing and Manage Privileges for Objects for a description of sharing options and manage privileges. **To an existing secured folder**—If you do not have Manage privileges, sharing options are disabled. The object inherits the folder's sharing and manage privileges. **To a new secured folder**—The options you specify are applied to the folder and the object. Select the users to share, manage, and publish. See Secured Folders for more information. To save your changes, click **Apply** or . To revert to the default settings, click **Reset**.
Indexing Options (Dataset and Snapshot only)	Click the link to create an index. **Note:** If you take no action, no columns are indexed. See Create/Drop Index for a TIC Object for more information. To save your changes, click **Apply** or . To revert to the default settings, click **Reset**.
Authentication (View, Snapshot, Script, and Toad file only)	**For a Snapshot or View** Click the link to view or change authentication keys, or to enter a connection password. By default, Toad creates an Authentication key for the object and uses your user name and password to the remote data source (which is gathered from the connection used to publish the object). (View only) For a view, you can change the personal Authentication key to a shared Authentication key. Click the link to open the Authentication Settings page. Then do the following: a. Enter the user name and password (of an existing account) to be used as the shared credentials. b. Select **Share authentication**. This permits all TIC users to access this data source, even those without a personal login to the remote source. c. (Salesforce.com only) If you are creating an authentication key for a Salesforce.com data source using a security token, you must enter the token. See Create Salesforce Connections for more information. **Note:** For cross-connection queries, you can specify a personal Authentication key or a shared Authentication key for each data source separately. See User Authentication in Intelligence Central for more information. **For an Automation Script or a Toad File** Click the link to view the connection information for all connections in the script or file, or to enter a connection password. • If you did not save the connection password in the Connection Properties dialog, enter the password now. • If you did save the connection password, Toad automatically enters it.

Publishing Page/Options	Option Description
	To save your changes, click **Apply** or . To revert to the default settings, click **Reset**.
Variables (View and Script only)	Click **Default values** to specify a default value for any variable in the SQL or Automation script. **Note:** If you take no action, Toad uses existing (cached) values you specified in the Bind Variables dialog or in the script. If no values exist, you must specify before publishing. See "Variables in Views/Scripts and Publishing to Intelligence Central" on page 87 for more information.
Refresh Data (Snapshot only)	Click the link to schedule the initial snapshot creation and the refresh frequency. **Note:** If you take no action, the snapshot is populated immediately. • **Create Initial Snapshot**—Specify when to initially populate the snapshot with data. • **Schedule Recurring Refresh**—Specify a frequency at which Toad will automatically refresh the snapshot. See Snapshots in TIC for more information. To save your changes, click **Apply** or . To revert to the default settings, click **Reset**.
Scheduling (Script only)	Click the link to schedule script execution or to run the script immediately. **Test run the script after it is published**—Select to run the script once to test the database connections and the links to input files. **Note:** It is recommended that you test run your script when publishing to uncover any issues such as missing input files or connections that are not properly set up on the TIC server. See Publish Automation Scripts to Intelligence Central for more information. To save your changes, click **Apply** or . To revert to the default settings, click **Reset**.
Run Details (Script only)	Click the link to specify a user account to run the script. • **Specify user to execute automation script**—Select to specify a Windows user account. • **Use default user to execute automation script**—Select to use the default account—the account under which the Toad Intelligence Central App Server is currently running. See Publish Automation Scripts to Intelligence Central for more information.
Preview SQL	Click the link to preview the SQL statement.
Send email notification to shared users	Select to send a notification email to each user you specified on the Sharing settings page. After you publish the object, the email is generated and opens for you to review, edit, and send. See View Your Intelligence Central Notifications for more information about all types of notifications.

Important: To undo changes, click **Reset**. Then click to return to the Summary page.

4. Click **Publish** to publish the object.

   The dialog closes and the publishing process runs in the background.

5. After the object publishes successfully, a confirmation window displays and includes a link to the newly-published object. Click the link to open the object in the Database Explorer (Viewer).

   Note: In the event of an error during publishing, use the error message and the troubleshooting section to troubleshoot, or follow the instructions displayed in the error message.

   - See "Troubleshoot Publishing to Toad Intelligence Central" on page 92 for more information.
   - See Troubleshoot Scripts on Intelligence Central for more information.

Rules for Duplicate Object Names

Views, snapshots, and datasets: No two data objects can have the same name within the same folder, regardless of object type: view, snapshot, or dataset.

Toad documents: The name must be unique within a folder per Toad document type. For example, no two ER Diagrams in the same folder can have the same name, but an ER Diagram and a Query Builder file in the same folder can have the same name.

Automation scripts: A script name must be unique among scripts. No two scripts can have the same name within an Intelligence Central instance.

Compatibility with Intelligence Central Versions

- Publishing Automation scripts is supported in Toad Intelligence Central 2.2 or later.
- Publishing Toad documents and generic files is supported in Toad Intelligence Central 2.3 or later.

Tips:

- To publish without executing a query, right-click inside the Editor window or Query Builder Query pane containing the query and select **Publish**.
- You can automate the task of publishing data to Intelligence Central as a dataset by using the Execute Script activity in Automation. See "Use Database Automation Activities" on page 129 for more information.
- You can automate the task of refreshing snapshots in Intelligence Central by using the Refresh Snapshot activity in Automation. See "Use Database Automation Activities" on page 129 for more information.

Related Topics

Prepare to Publish Data to Toad Intelligence Central

User Authentication in Intelligence Central

Explore Toad Intelligence Central

Publish Other Toad Resources

Destination Database in Toad Intelligence Central

Note: This feature is available in the Toad Data Point Professional edition only and requires access to a Toad Intelligence Central server.

When publishing an object to Toad Intelligence Central, the Publishing dialog allows you to specify a destination database. This feature is provided for Toad Data Point users who provision data objects to those who can access Intelligence Central through a third party application, such as Qliktech or Tableau.

This feature allows the provisioner to store and organize objects into databases. Databases are used by the third-party-application user to locate and access stored objects.

Folders in Intelligence Central

The Publishing dialog allows you to select a folder or create a new folder when publishing an object to Toad Intelligence Central.

- **Toad Data Point**—Folders are visible to Toad Data Point users through the Object Explorer and are used by the Toad Data Point user to store, locate, and access objects.
- **Third Party Application**—The Intelligence Central folders are not visible to the Third Party application.

Databases in Intelligence Central

The publishing dialog allows you to select a database or create a new database when publishing an object.

- **Toad Data Point**—Databases are visible to Toad Data Point users through the Object Explorer. However, folders are the primary method used for organizing objects for Toad Data Point users. This is because folders are more-flexible and easily-customizable through the Object Explorer.
- **Third Party Application**— Databases are visible to a Third Party application through a MySQL connection to Intelligence Central and are used to store, locate, and access objects. Databases are the primary method of organizing objects since the Intelligence Central folders are not visible to the Third Party application.

Third-Party Connection to Intelligence Central

You can create a MySQL connection to Intelligence Central through a third-party application like Qliktech or Tableau. To learn how, see Third Party Connection To Toad Intelligence Central in the *Toad Intelligence Central Quick Start Guide*.

Tip: In Toad Data Point you can create a MySQL connection to Intelligence Central. The MySQL connection allows you to view the underlying MySQL databases in Intelligence Central. You might want to use this type of connection to view databases prior to provisioning.

Creating and Specifying Databases

When publishing an object to Intelligence Central, you can specify or create a database in which to store the object for users who will access it through a third-party application. Organizing objects into databases is important for these users because Intelligence Central folders are not visible to Third Party applications. See "Publish to Toad Intelligence Central" on page 81 for more information about publishing objects.

To select an existing destination database

1. In the Publish to Intelligence Central dialog, click next to the **Destination Folder** field.
2. Select an existing database.
    - By default, the destination database is the one associated with the selected folder. If you are creating a new destination folder, the database name defaults to the new folder name.
    - When no destination folder is selected, *published_objects* is the default database.

    Note: If you select an existing folder in the Publishing dialog without specifying an existing or new database, Toad stores the object in the database with the same name as the folder.

To create a new Intelligence Central database

1. In the Publish to Intelligence Central dialog, do one of the following:
    - If you selected an existing folder in the **Destination Folder** field, then click and enter a name for the new database.

- If you created a new folder, you can use the default database name or click and enter a new name for the database.

Note: If you create a new folder (or sub-folder) through the Publishing dialog without specifying an existing or new database, Toad creates a default database using the folder name. For a sub-folder, the database name is <*parent folder*>_<*sub-folder*>.

Viewing Databases

Third Party Application

When using a MySQL connection to Intelligence Central, the following databases which contain published objects are visible:

- User-defined databases—A database is created for each new destination database created through the Publish to Intelligence Central dialog.
- *folder name* database—Each time a new folder (or sub-folder) is created through the Publishing dialog without specifying an existing database, a default database is created using the folder name. This database contains each object originally assigned to that folder. Even if an object is moved to another folder through the Object Explorer, the object remains in the original database. For a sub-folder, the database name is <*parent folder*>_<*sub-folder*>.
- published_objects database—The "published_objects" database contains the objects in the "No folder assigned" folder.
- Legacy databases—If the Intelligence Central instance contains objects that were published using Toad Data Point 3.6 or earlier, a database was created for each data source (containing all objects published from that data source). See Explore Toad Intelligence Central for more information about datasource names. In addition, a database was created for each user and contains their published datasets (data_*username*).

Toad Data Point

In the Object Explorer, the Intelligence Central databases listed above are visible, as well as the following:

- *database/folder name* database—If you select an existing folder but do not use the default database and instead select a different database in the Publishing dialog when publishing an object, Toad creates a folder under the Databases node in the Object Explorer using the format *database/folder*.

Rules for Duplicate Object Names

Views, snapshots, and datasets: No two data objects can have the same name within the same folder, regardless of object type: view, snapshot, or dataset.

Toad documents: The name must be unique within a folder per Toad document type. For example, no two ER Diagrams in the same folder can have the same name, but an ER Diagram and a Query Builder file in the same folder can have the same name.

Automation scripts: A script name must be unique among scripts. No two scripts can have the same name within an Intelligence Central instance.

Variables in Views/Scripts and Publishing to Intelligence Central

Notes:

- This feature is available in the Toad Data Point Professional edition only and requires access to a Toad Intelligence Central server.
- This feature is supported in Intelligence Central 3.3 or later.

Toad allows you to publish Views and Automation scripts containing variables and then specify a default value for each variable during the publishing process. After publishing, you can modify the default value. For scripts, you can also provide a value at run time. The variables can be bind parameters or other types of variables, such as those supported in Automation scripts.

This feature allows data providers to publish views and Automation scripts with variables so that data consumers can change the variable values when they run the view or execute the script.

Object owners and users with Manage privileges can modify the default value (views and scripts). Any user with access to a script can enter a variable value at run time when manually executing. Scheduled scripts use the default value.

This feature applies to the following objects:

- **View.** SQL published as a view in which the SQL contains one or more variables (bind parameters or other variables)
- **Automation Script (Set Variable).** An Automation script containing a Set Variable activity. To enable this feature, the **Prompt during run** option must be selected in the activity. See **Set Variable** activity in Use System Automation Activities for more information.
- **Automation Script (Send Email).** An Automation script containing a Send Email activity. To enable this feature, the **Prompt** option must be selected in the activity. See **Send Email** activity in Use System Automation Activities for more information.

A Note About Datasets: Toad allows you to publish data as a dataset from SQL containing a variable. However, the cached value for the variable is used and you cannot edit this value after publishing. A cached value must exist before publishing. Execute the SQL to create a cached value.

Specify Default Value During Publishing

To specify a default value when publishing a view or script

1. When publishing one of the objects listed above, in the publishing dialog click **Default values** in the Variables field. See Publish to Toad Intelligence Central.
    - If you previously specified variable values, either through the Bind Variables dialog or through the script, Toad finds and enters those values.
    - If a predefined list of custom values has previously been defined in the Variables (Define variable prompt values) options, the values from that list will be available for selection.
    - If cached values are not found, you must specify values before publishing.

    Note: This option is enabled only for certain objects (listed above).
2. On the Bind Variables and Parameters page, enter a value for each variable listed.

Edit Default Value After Publishing

To edit the default value after publishing

1. Connect to the Intelligence Central server.
2. In the Object Explorer, right-click the published view or Automation script and select **View Details**.
3. Select the **Variables** tab. The default value is displayed.
4. Click to enter a new default value.
    - For a view, the new value will be used when the result set is returned.
    - For a script, the new value is used when the scheduled script is executed.

Tip: In the Object Explorer, select a view or script and click to edit the default value.

Prompt for Value at Run Time (Scripts)

When manually executing an enabled Automation script in Intelligence Central, Toad prompts the user for a variable value. Enabled scripts were created with the **Prompt** or **Prompt during run** option selected in the applicable Automation activity. See list of applicable objects above. Scheduled script execution uses the default value.

To enter variable values at run time

1. Connect to the Intelligence Central server.
2. In the Object Explorer, select a script and click to run it. Toad prompts you for a variable value. Enter the value. This value is used for this execution only. The default value remains unchanged.

Considerations and Limitations

Consideration/Limitation	Description
ODBC connections: Publishing view with variable is not supported	You cannot publish SQL containing a variable from an ODBC connection to Intelligence Central as a view. **Workaround:** You can publish SQL containing a variable from an ODBC connection to Intelligence Central as a *dataset*. The cached value for the variable is used and you cannot edit this value after publishing.
When inner view is located in another TIC instance	When publishing a view in which the source data is a view from another Intelligence Central instance, the variables in the inner (source) view are not included in the list of editable variables. For the inner view variables, the current default value is used.
Using published view in cross-connection query	When using a view (containing a variable) from Intelligence Central in a cross-connection query, you are not prompted for a variable value. The current default value is used.

Tip: The Web Console in Toad Intelligence Central 3.3 (or later) allows the user to enter a variable value at run time. In Toad Intelligence Central 4.3 (or later) the user can also modify a variable default value. See the Toad Intelligence Central Quick Start Guide for more information.

Related Topics

Manage Automation Scripts in Intelligence Central

Views in Intelligence Central

Considerations and Limitations when Publishing to Intelligence Central

Review the following considerations and limitations for publishing data to Toad Intelligence Central (TIC).

Consideration/Limitation	Description
Toad replaces native provider connection with ODBC	If you publish data using a native database provider connection, Toad converts that native connection to an ODBC connection on TIC. In order to

Consideration/Limitation	Description
connection	successfully publish from a database, you must have an ODBC driver for that database installed. Some ODBC drivers are included with your Toad installation and some (such as Teradata) are not. To see a list of included ODBC drivers and how to install those you need, see Prepare to Publish Data to Toad Intelligence Central.
ODBC drivers on Toad Intelligence Central must match publisher's	If you publish using an ODBC connection, the same ODBC drivers that Toad used when publishing your data object must also be installed on the Toad Intelligence Central server. This is required so that those same drivers can be used by others when they access your data objects via the server. See "Prepare to Publish Data to Toad Intelligence Central" on page 79 for more information.
DSN on TIC must match publisher's	If you publish using an ODBC connection, the same DSN that Toad used when publishing your data object must also be installed on the Toad Intelligence Central server.
Use System DSNs	If you publish using an ODBC connection, when using the ODBC Data Source Administrator to select a DSN for an ODBC driver, **you must select a System DSN**. Toad Intelligence Central runs as a system service and therefore has access only to the System DSNs.
Specify ODBC drivers for a specific TIC connection	You can specify the ODBC drivers to use when publishing to an Intelligence Central instance. You can do this for each Intelligence Central connection. To specify ODBC drivers: 1. Right-click the Intelligence Central connection and select Properties. 2. On the Advanced tab, specify the ODBC drivers to use. **Note:** Specify an ODBC driver to use only if you are having difficulty publishing from that particular database to the TIC instance.
Publishing from an Oracle connection	When publishing from an Oracle native provider connection, Toad is using an OCI client, an ODBC driver, and the tnsnames.ora file. All three of these components must exist on the client computer and on the TIC server to successfully publish an object from an Oracle connection to TIC. The Oracle alias names in the tnsnames.ora file on the TIC server must match those in the client's tnsnames.ora file. If you encounter an error when publishing from Oracle, one of these components may be contributing to an incorrect connection. Please see Troubleshoot Publishing to Toad Intelligence Central for help resolve Oracle issues that involve these components.
Unsupported Oracle timestamp data types	Advanced timestamp data types, such as TIMESTAMP_WITH_LOCAL_TIME_ZONE and TIMESTAMP_WITH_TIME_ZONE, are not supported in published objects. Oracle TIMESTAMP is supported.
Publishing from a DB2 connection	When publishing from a DB2 native provider connection, Toad is using a DB2 client, an ODBC driver, and the DB2 catalog. All three of these components must exist on the client computer and on the TIC server to successfully publish an object from a DB2 connection to TIC.
Publishing from Excel or from an Access or Local Storage database	You can publish data to Intelligence Central from these sources, but only as a dataset, not as a snapshot or view. See "Publishing from Excel or Local Storage" on page 92 for more information.
Publishing from a localhost connection	You cannot publish data (as a view or snapshot) from a local database (or Intelligence Central) connection defined as **localhost**. This restriction also applies when publishing Toad documents containing a connection and Automation scripts containing a connection.

Consideration/Limitation	Description
	Workaround: Define the connection using the data source IP address or network name instead of localhost.
Publishing from a SQL Server connection using Windows Authentication	You cannot publish from a SQL Server connection that uses Windows Authentication. In addition, you cannot publish from a SQL Server connection if you select a publishing key that uses Windows Authentication. Intelligence Central cannot authenticate the SQL Server Windows Authentication account for a user who is not currently logged in on the Intelligence Central server.
Publishing from a SQL Server connection using SQL Server Authentication	To successfully publish from a SQL Server connection that uses SQL Server Authentication, the SQL Server user account must have **db_datareader** privileges and the **view** permission.
Publishing from a connection using Windows Authentication	You cannot publish from a database connection that uses Windows Authentication. For example, you cannot publish from an Oracle connection or an SAP HANA connection that uses Windows Authentication. To publish successfully, publish from a connection that uses database user name and password.
Publishing a cross-connection query - use unique aliases	If you publish a view or a snapshot from a cross-connection query, it is strongly recommended that you ensure that all aliases are unique within the entire SQL.
WITH clause limitations	To successfully publish a view or snapshot from SQL containing a WITH clause, ensure the SQL adheres to the following: • Use only a standard name when naming the *common table expression* • A *common table expression* cannot have an alias • The entire SQL can contain only one WITH clause • A *common table expression* cannot be defined using a statement that contains the name of another *common table expression* **Note:** Here the term *common table expression* also refers to subquery factoring (Oracle) or any other type of named subquery block.
BLOBs are not supported	When publishing an object that contains a binary large object (BLOB) data type column, the BLOB data type column will **not** be included in the published object.
Hive data sources, changing authentication key type	If you create a Hive data source from a non-SSH Hive connection, you cannot change the authentication key to an SSH-type authentication key or vice versa. To change the authentication key to SSH (or vice versa), you must recreate the data source.
FULL OUTER JOIN not supported	Intelligence Central does not support full outer joins at this time. Use UNION instead.

Related Topics

Publish to Toad Intelligence Central

Troubleshoot Publishing to Toad Intelligence Central

Publishing from Excel or Local Storage

Data originating from an Excel file, Local Storage, or an Access database can be published to Toad Intelligence Central (TIC), but only as a dataset because these data sources are unmappable.

To publish from an unmappable data source to Intelligence Central

1. Launch the Publish to Intelligence Central dialog. See "Publish to Toad Intelligence Central" on page 81 for more information.
2. In the **Publish Type** field, *Dataset* is the only option available.
3. Specify the remaining publishing options.
4. When finished, click **Publish** to publish the data as a new dataset in TIC.

Publishing a Cross-Connection Query Containing an Unmappable Data Source

You can publish a cross-connection query that includes a connection to an Excel file, Local Storage, or an Access database. The data from the cross-connection query is published as a data object in TIC. In addition, the data from the Excel file, Local Storage, or Access database is published separately to TIC as a new dataset, and is used by the main published object.

Data in the Dataset Is Static

The main object in TIC does not contain a link to the original Excel file, Local Storage database, or Access database. If data changes in one of these original sources, the change is not reflected in either the main object in TIC or in the dataset in TIC.

Dataset Sharing/Visibility

The same sharing options you specify for the main object are applied to the dataset.

Note: If all connections in the cross-connection query are from Excel, Local Storage, or Access, then the data is published as a dataset only.

Related Topics

Publish to Toad Intelligence Central

Datasets

About Data Sources

Troubleshoot Publishing to Toad Intelligence Central

Use this section to troubleshoot publishing errors.

To troubleshoot issues when publishing an Automation script, see Troubleshooting Automation Script Publishing.

Issue or Error Message	Solution or Workaround
Google Analytics or Salesforce - expired access/refresh token	**Error Msg:** "Invalid data source definition: 400 Bad Request: Invalid_ grant (expired access/refresh token)" This error may occur if the connection's authentication token is expired. **Solution:** In the Publishing dialog, click the Authentication link, then click **Reauthorize** to re-enter your credentials and grant access to Toad.

Issue or Error Message	Solution or Workaround
"Data source name not found" error msg when using ODBC connectivity	**Error Msg:** "Invalid data source definition: Data source name not found and no default driver specified" **Solution 1:** TIC uses only System DSNs. Make sure that you have specified a **System DSN** and not a User DSN. **Solution 2:** The DSN on the TIC server must match the DSN you are using. Ensure that the DSN installed on the TIC server is the same as the one you are using to publish. **Note:** This only applies when the connection you are publishing from uses ODBC connectivity.
missing MySQL ODBC driver on TIC	You are missing the MySQL ODBC driver. You can download the driver from the following site: http://dev.mysql.com/downloads. Use MySQL ODBC driver versions 3.51 or 5.0.
missing Teradata ODBC driver on TIC	You are missing the Teradata ODBC driver. You can download the driver from the following site: http://www.teradata.com. In addition to the Teradata ODBC driver, you must also install the Teradata .Net Provider.
missing driver on TIC	The Intelligence Central server you are publishing to is missing the matching ODBC driver. Install the required ODBC driver listed in the error message, or contact the administrator responsible for the Intelligence Central server. You might also want to specify an ODBC driver to use when publishing from this database type to this particular TIC server. **To specify an ODBC driver** 1. In the Navigation Manager, right-click the Intelligence Central connection and select **Properties**. 2. Select the Advanced tab and then select an ODBC driver (from the drop-down list) to use for that database type. **Note:** Specify an ODBC driver to use only if you are having difficulty publishing from that particular database to the TIC instance.
General problems publishing from an Oracle connection	**General issue:** The Microsoft-supplied ODBC driver for Oracle is included in a standard Windows install and has limited functionality. To insure that the TIC server is using the *Oracle ODBC driver* instead of the Microsoft-supplied driver, you can specify a driver to use when publishing to that TIC instance. **Suggestion:** Specify driver to use when publishing. 1. Right-click the TIC connection in the Navigation Manager and select **Properties**. 2. Select the Advanced tab. Open the drop-down list next to Oracle and select the Oracle ODBC driver.
ORA: 1242	**General issue:** The TIC TNS names file may have a data service name that does not match the name in the TNS names file on the publishing workstation. **Suggestion:** Modify one of the files to ensure the names match.
"The ODBC driver does not support the data type."	The Oracle ODBC driver does not support subtracting from TIMESTAMP. This is a known Oracle ODBC issue. If attempting to publish SQL such as the following: Select Date_Col, Timestamp_Col - sysdate from Table remove "Timestamp_Col - sysdate."

Issue or Error Message	Solution or Workaround
"Out of sort memory" error	**Error Msg:** "Out of sort memory, consider increasing server sort buffer size." This error might be encountered when attempting to publish a query or when querying a published snapshot/view containing a GROUP BY or ORDER BY clause. **Solution 1:** Add “ORDER BY NULL” to the end of the query. **Solution 2:** Increase the value of the sort_buffer_size variable by adding "sort_buffer_size=2M" to the Intelligence Central configuration file found here: C:\Program Files\Quest Software\Toad Intelligence Central\datahub.cnf
Columns with the same name	**Error Msg:** "Duplicate column name '<*column name*>'. Add a differentiating column alias." Your query includes two columns with the same name and the columns do not have unique aliases. **Solution:** Add unique alias names for the columns.
"Incorrect key file" error msg	**Error Msg:** "Incorrect key file for table 'C:\WINDOWS\TEMP\<*myi file name*>'; try to repair it." **Solution:** The server is low on disk space. Increase available disk space.
Specified key was too long	**Error Msg:** "Specified key was too long; max key length is 1000 bytes" This error may occur if you selected columns to index on the Indexing Options tab (applies to snapshots and datasets only). There is a limitation in the TIC database: The maximum index size (key length) is 1000 bytes.

Related Topics

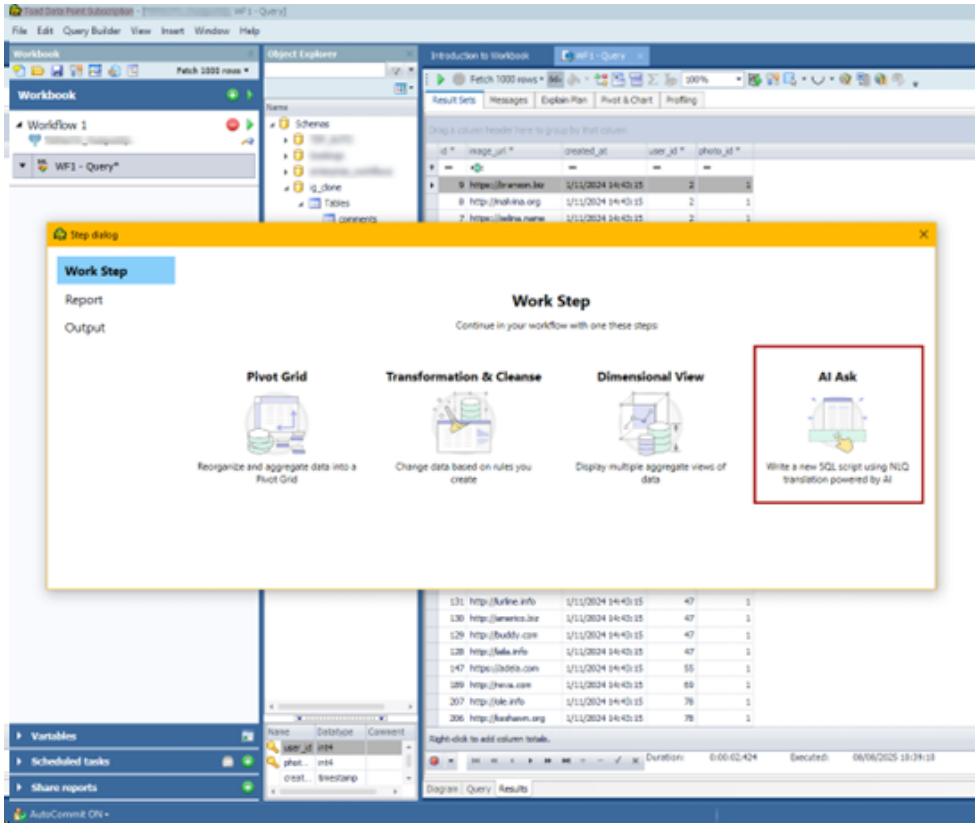
Troubleshooting Automation Script Publishing

Publish to Toad Intelligence Central

AI Ask – Enhanced Data Querying with AI

AI Ask is available to users with a Toad Data Point Pro AI Subscription license. This feature streamlines data querying within Toad Workbook by allowing users to submit questions in natural language, automatically generating the corresponding SQL and displaying the results.

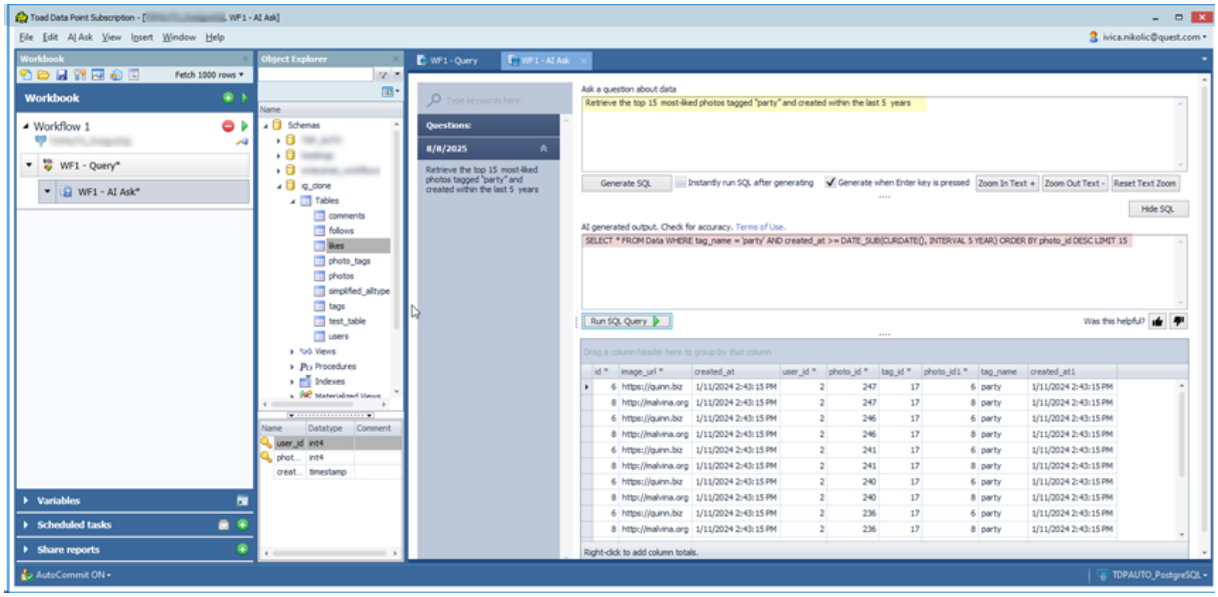
AI Ask is accessible as a Work Step only after Query step within Toad Workbook.



Overview
With AI Ask, users can type questions about their data in plain English. The tool automatically interprets these questions, generates the relevant SQL, and returns the results, making data analysis more intuitive—even for users with limited SQL experience.

Key Features

- **Intuitive Query Builder:** The left panel displays all submitted questions, organized by day. Users can manage their queries efficiently, including deleting individual questions as needed.
- **Streamlined Question Management:**
    - **Search:** Quickly locate specific questions using the search functionality.
    - **Daily Grouping:** Easily track and manage queries with automatic daily organization.
- **User Interface:** The right panel consists of three adjustable sections:
    1. **Question Input:** Enter questions about your data.
    2. **Generated SQL:** View the SQL automatically generated for each query.
    3. **Results Display:** See the results for each query in a resizable window.
- **Seamless Integration:**
    - **Question History:** Selecting a question from the left panel loads the question, SQL, and results in the right panel.
    - **Persistent Storage:** All questions and generated SQL are stored within the workbook file for future reference.



Note:For instructions on enabling this feature, refer to the Knowledge Base.

Report

Tutorial: Create a Toad Data Report

Use the Data Report Designer to design reports visually. Stored in .tdr files, data reports are "live" reports that can be refreshed dynamically. What makes them dynamic is that they contain the underlying queries for report data sets. Each time a data report is opened, its query runs and the latest data is retrieved. The dynamic nature of data reports makes them ideal for distribution to users who need to see changes to data without waiting for scheduled updates or for new reports to be distributed.

The process of creating a data report has the following steps:

- Step 1: Run the Toad Data Report Wizard
- Step 2: Update Fields
- Step 3: Use Styles to Format the Report Appearance
- Step 4: Update Bands and Add Controls

Note: This procedure does not cover all of the possible steps of creating a data report. It only covers the steps required to create a report for the scenario. See About Designing Toad Data Reports for more information.

> Scenario
>
> Your company wants to improve its global sales, starting with countries where it has a customer base but averages low sales. You created a query that displays countries with less than $500,000 in sales per fiscal year, but now you need to create a report to help represent and evaluate the results. The data should be grouped per country and show the total and average sales for each country. In addition, you want the report to look similar to the rest of the company's documents, which use specific colors and fonts.
>
> **Note:** This scenario uses the data generated in Visually Build a Query.

Step 1: Run the Toad Data Report Wizard

The Toad Data Report wizard creates an initial layout of the report based on options you select, including what columns to include, whether to group data, and the basic style.

To run the wizard

1. Right-click the data grid in the Results tab and select **Send To | Data Report Designer**. The Toad Report Designer displays.
2. Select *Standard Report* and click **Next**.
3. Click to include all columns in the report and click **Next**.
4. Select COUNTRY_NAME and click , and then click **Next**. This groups the data by the country name so that each country is listed as a heading and its sales per year display below it.

   Tip: You can create a secondary group by selecting another column and clicking again. A secondary group is not appropriate for this scenario, but it would be if the data included regions in each country or fiscal quarters. You would need to make the region or fiscal quarter a secondary group for the data to be organized appropriately.
5. Select the **Sum** and **Avg** checkboxes for the SUM(SALES.AMOUNT) row, and then click **Next**. These options calculate the sum and average sales amount for each country.
6. Select *Outline 1* and click **Next**.

   Tip: The Outline and Align Left options are good choices if you grouped the data.
7. Select *Casual* and click **Next**.

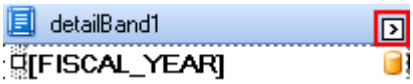
8. Enter *Countries with Sales Less Than $500,000* in the **Report Title** field, and then click **Finish**. The initial report layout displays in the Report window with the information grouped under bands.
9. Click **Preview** to see what the report looks like in print. Previewing the report makes it easier to see how the bands and their content display in the printable report.

Step 2: Update Fields

You can move, rename, and update the category of a field.

To update the fields

1. Complete the following steps to update the field category:
    a. Select the *FISCAL_YEAR* field in detailBand1.
    b. Click ▷ directly above the field.

    c. Click ⋯ by the **Format String** field.
    d. Clear the **Prefix** field and click **OK**.
2. Double-click the following fields and enter their new name:

Field	Band	Name
FISCAL YEAR	groupHeaderBand2	Fiscal Year
SUM(SALES.AMOUNT_SOLD)	groupHeaderBand2	Sales Amount
Avg	groupFooterBand1	Average

3. Select the following fields one at a time and make them wide enough to see the full text: **Sum** (groupFooterBand1), **Average** (groupFooterBand1), and **Grand Total** (reportFooterBand1).
4. Select the following fields one at a time and drag them to the one inch mark on the ruler: **Sum**, **Average**, and **Grand Total**.
5. Right-click the *COUNTRY NAME* field (not the *COUNTRY_NAME* field on the right) in groupHeaderBand1 and select **Delete**.

    Note: The *COUNTRY NAME* field is a label that precedes the *COUNTRY_NAME* field value. If you preview the report before you delete the *COUNTRY NAME* field, the country displays as 'COUNTRY NAME Argentina'. It is clear that Argentina is the country name, so this field is redundant.
6. Select the *COUNTRY_NAME* field and drag it to align with the report title.
7. Select the *COUNTRY_NAME* field and make it three inches wide to accommodate long country names.

Step 3: Use Styles to Format the Report Appearance

The Data Report Designer uses styles to format different objects and kinds of data. Once you define a style, you can apply it to similar fields to create a consistent and easy-to-update design.

To create, update, and apply styles

1. Complete the following steps to update the report title style:
    a. Select the **Styles** field in the Properties pane.
    b. Click ⋯. The Styles Editor window displays.
    c. Select *Title*.
    d. Select the **Foreground Color** field, and then select *MidnightBlue* in the Web tab.

Note: All colors in this scenario are from the Web tab.

e. Select the **Font** field and click . The Font window displays.

f. Select *22* in the **Size** field and click **OK**.

2. Complete the following steps in the Styles Editor window to create and define four new styles:

a. Click four times in the Styles Editor window to create four new styles.

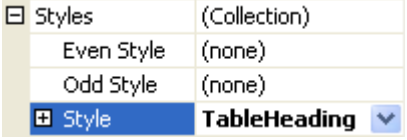
b. Set the following properties for the new styles:

First Style	**Properties**
Name	OddRow
Background Color	WhiteSmoke
Border Color	MidnightBlue
Borders	Bottom
Font	Tahoma, 10pt
Second Style	**Properties**
Name	EvenRow
Border Color	MidnightBlue
Borders	Bottom
Font	Tahoma, 10pt
Third Style	**Properties**
Name	TableHeading
Background Color	MidnightBlue
Font	Tahoma, 10pt, bold
Foreground Color	White
Fourth Style	**Properties**
Name	CountryName
Font	Tahoma, 14pt, bold
Foreground Color	Black

3. Complete the following steps to apply the new styles:

a. Expand the **Styles** field in the Properties pane.

b. Select *TableHeading* in the **Style** field (under **Styles**) for the **Fiscal Year** and **Sales Amount** fields in groupHeaderBand2.



c. Set the following fields for *[FISCAL_YEAR]* and *[SUM(SALES.AMOUNT_SOLD)]* in detailBand1:

Field	Property
Even Style	EvenRow
Odd Style	OddRow

d. Select the *COUNTRY_NAME* field in groupHeaderBand1 and then select *CountryName* in the **Style** field.

Step 4: Update Bands and Add Controls

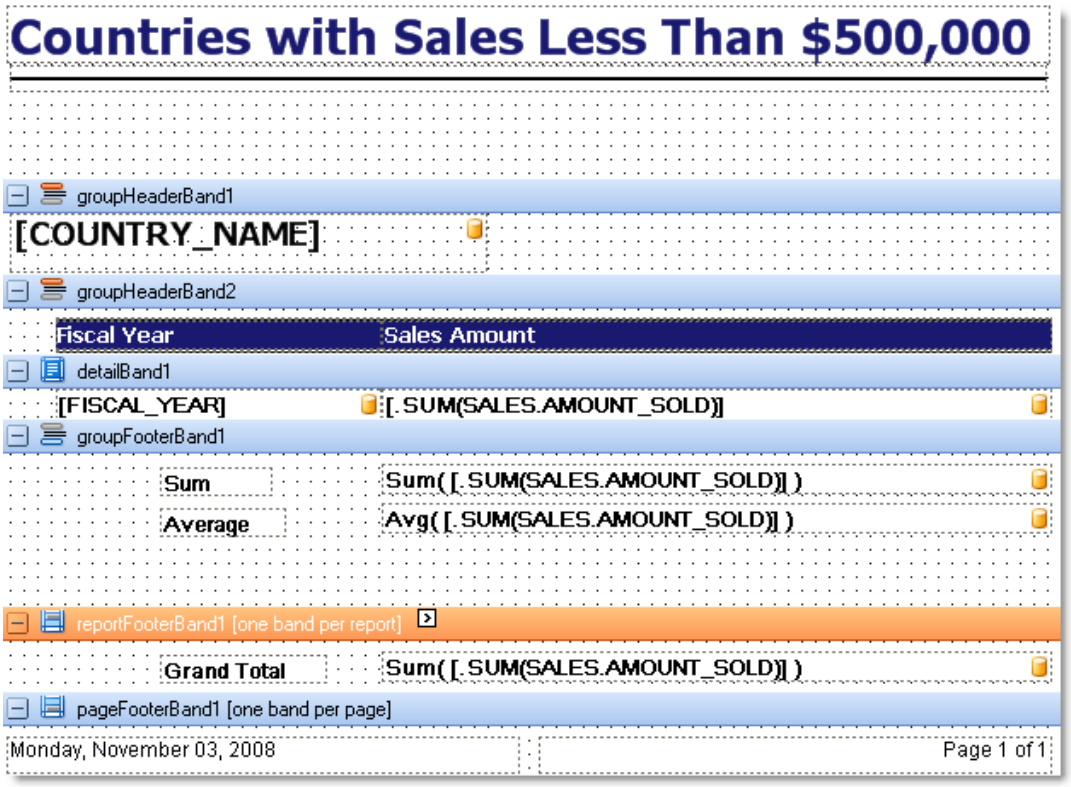
Bands group the information layout in the report and you can add controls to include additional tables, images, fields, and other items in the report. For the scenario, you will expand bands, delete a band, and add a control.

1. Right-click pageHeaderBand1 and select **Delete**.
2. Complete the following steps to add a line under the report title:
   a. Select the groupHeaderBand1 and move it down half an inch.

      Tip: It is helpful to expand a band before adding controls to give you plenty of room in which to work.

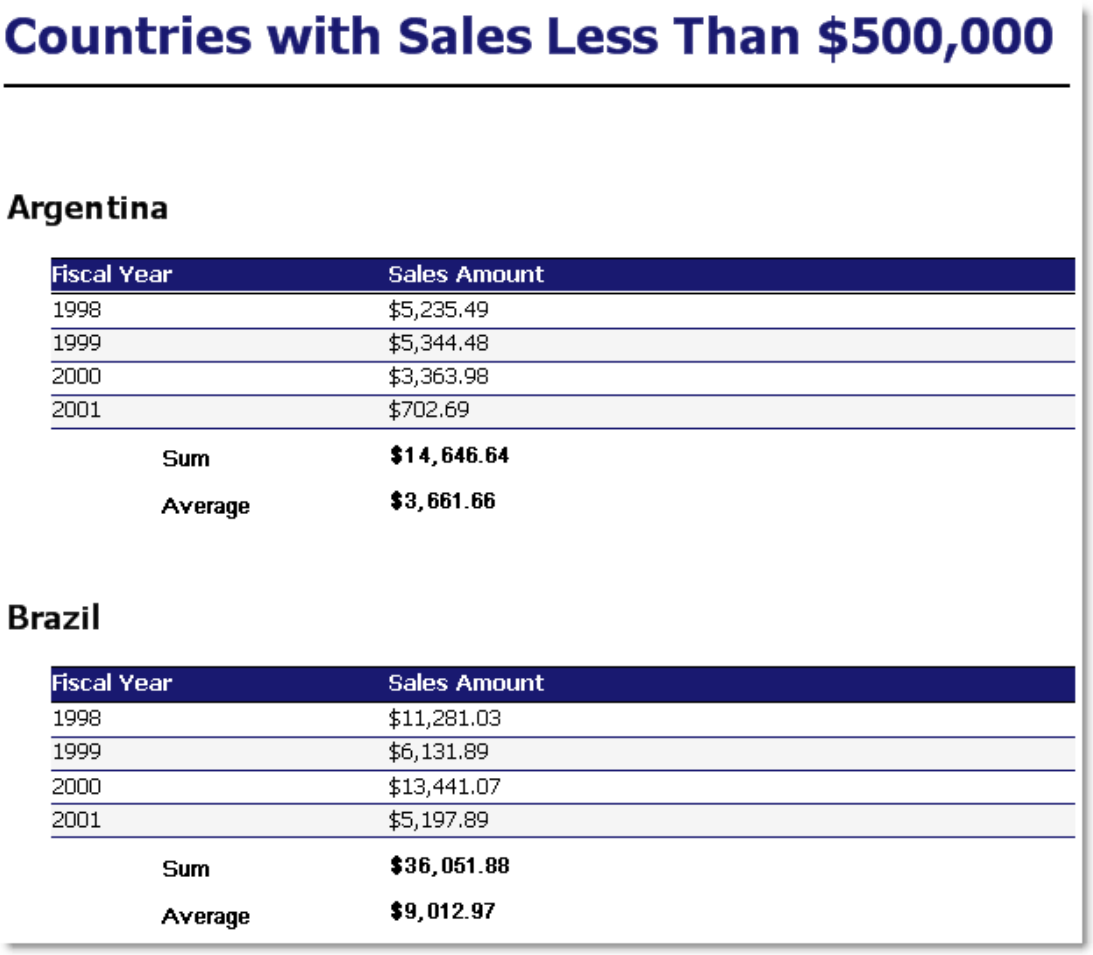
   b. Drag *Line* from the Toolbox into reportHeaderBand1.
   c. Expand it to the width of the page.
   d. Drag and position it directly below the report title.
   e. Enter *2* in the **Line Width** field in the Properties pane.
3. Select reportFooterBand1 and drag it down half an inch. This adds white space between the country information.

   The Data Report Designer displays with the following layout:



4. Click **Preview**.

The print preview displays with the following layout:



Countries with Sales Less Than $500,000

Argentina

Fiscal Year	Sales Amount
1998	$5,235.49
1999	$5,344.48
2000	$3,363.98
2001	$702.69
Sum	$14,646.64
Average	$3,661.66

Brazil

Fiscal Year	Sales Amount
1998	$11,281.03
1999	$6,131.89
2000	$13,441.07
2001	$5,197.89
Sum	$36,051.88
Average	$9,012.97

5. To save the report, right-click the Data Report Designer tab and select **Save File**.

Manage Reports

About Managing Reports

Use the Report Manager to create and organize data reports, add existing Toad or Excel reports, or generate reports.

To create a report

1. Select **Tools | Reports | Report Manager** from the menu.
2. Right-click a folder and select **Create Report**.
3. Complete the wizard and design the report.
4. Save the report.
5. To add the report to the Reports Manager window:
    a. Navigate to the open Reports Manager window.
    b. Right-click the folder where you want to add the report, and select **Add Existing Report**.

To generate an existing report

1. Select **Tools | Reports | Report Manager** from the menu.
2. Double-click the existing report.
3. Review the following for additional information:

Direction	Select the direction of variable from the list.
Value	Enter the value of the variable. **Note:** Enter a percent (%) in this field to generate all values.

Tips:

- To add an existing Toad or Excel report to the Report Manager, right-click the Report Manager window and select **Add Existing Report**.
- To send a Toad or Excel report via email or to a shared folder or other location, right-click the report, select **Send To**, and then select an option.
- To share reports with other users, specify a shared network directory in Network Share Options (**Tools | Options | Environment | Network Share**).

DB2 Reports

The following reports are available from the Reports Manager (**Tools | Reports | Reports Manager**).

Report Name	Description
Activity	Lists and describes activity reports that the Activity Monitor for the current DB2 for LUW database uses. This report also lists the switches required to gather data for a specific activity report. Toad uses the AM_BASE_RPTS table function to generate this report.
ADMIN_LIST_HIST_V82	Displays information from the database history table for the DB2 for LUW database partition to which Toad is currently connected. Toad uses the ADMIN_LIST_HIST table function to generate this report.
Database Partitions	Shows information about each database partition on the current DB2 for LUW database. Toad uses the DB_PARTITIONS function to gather this information from db2nodes.cfg.
DB Manager Config Info	Lists the database manager configuration parameters and their values defined for the current DB2 for LUW database.
HEALTH_CONT_HI	Shows the current "health" status of all containers that tablespaces in the current DB2 for LUW database use. Toad uses the HEALTH_CONT_HI table function to generate this report.
HEALTH_CONT_HI_HIS	Shows a "health" history for all containers that the tablespaces in the current DB2 for LUW database use. Toad uses the HEALTH_CONT_HI_HIS table function to generate this report.
HEALTH_CONT_INFO	Identifies the containers that tablespaces in the current DB2 for LUW database use and lists the highest current alert status for each container. Toad uses the HEALTH_CONT_INFO table function to generate this report.
HEALTH_DB_HI	Shows the "health" status of the current DB2 for LUW database, including its highest current alert status. Toad uses the HEALTH_DB_HI table function to generate this report.
HEALTH_DB_HI_HIS	Shows the "health" history of the current DB2 for LUW database. Toad uses the HEALTH_DB_HI_HIS table function to generate this report.
HEALTH_DB_HIC	Shows the "health" status of objects in the current DB2 for LUW database. Toad uses the HEALTH_DB_HIC table function to generate this report.s
HEALTH_DB_HIC_HIS	Displays a "health" history for objects in the current DB2 for LUW database. Toad uses the HEALTH_DB_HIC_HIS table function to generate this report.
HEALTH_DB_INFO	Shows the highest current alert status for the current DB2 for LUW database. Toad uses the HEALTH_DB_INFO table function to generate this report.
HEALTH_DBM_HI	Shows the "health" status for the current DB2 for LUW instance. Toad uses the HEALTH_

Report Name	Description
	DBM_HI table function to generate this report.
HEALTH_DBM_HI_HIS	Shows a "health" history at the database manager level for the current DB2 for LUW instance. Toad uses the HEALTH_DBM_HI_HIS table function to generate this report.
HEALTH_DBM_INFO	Shows the highest current alert status for the current DB2 for LUW instance. Toad uses the HEALTH_DBM_INFO table function to generate this report.
HEALTH_TBS_HI	Shows the "health" status of all tablespaces in the current DB2 for LUW database. Toad uses the HEALTH_TBS_HI table function to generate this report.
HEALTH_TBS_HI_HIS	Shows a "health" history for tablespace in the current DB2 for LUW database. Toad uses the HEALTH_TBS_HI_HIS table function to generate this report.
HEALTH_TBS_INFO	Shows the highest current alert status for each tablespace in the current DB2 for LUW database. Toad uses the HEALTH_TBS_INFO table function to generate this report.
Index Statistics	Displays statistics for the indexes under the current schema for the DB2 for LUW database and flags those indexes that need reorganization. Toad uses the REORGCHK_IX_STATS procedure to generate this report.
Installed DB2 Products	Lists the DB2 for LUW 9 products currently installed on your system. Toad uses the ENV_GET_PROD_INFO table function to generate this report. Products can include the following: RTCL DB2 Run-Time Client CONSV DB2 Connect Server (any edition) CONPE DB2 Connect Personal Edition
Installed DB2 Products_V82	Lists the DB2 for LUW 8 products currently installed on your system. Toad uses the ENV_GET_PROD_INFO table function to generate this report. Products can include the following: • ADCL DB2—Application Development Client • ADMCL DB2—Administration Client • CONEE DB2—Connect Enterprise Edition, DB2 Connect Unlimited Edition, or DB2 Connect Application Server Edition • CONPE DB2—Connect Personal Edition • CUBE DB2—Cube Views • DLM DB2—Data Links Manager • ESE DB2—Enterprise Server Edition • EXP DB2—Express Edition or DB2 Express Edition processor option • GSE DB2—Spatial extender • PE DB2—Personal Edition • QP DB2—Query patroller • RTCL DB2—Run time client • WM DB2—Warehouse Manager • WSUE DB2—Workgroup Server Unlimited Edition
Instance Information_V82	Lists details about the current DB2 for LUW instance. Toad uses the ENV_GET_INST_INFO table function to generate this report.
Recommendations for Activity Reports	Provides recommendations (in English) for the various activity reports that the activity monitor uses. Toad uses the AM_BASE_RPT_RECOMS table function to generate this report.
SNAP_GET_CONTAINER _V82	Displays information and statistics about each container that tablespaces in the current DB2 for LUW 8 database use. To generate this report, Toad uses the SNAP_GET_CONTAINER table function to retrieve information from the tablespace_container logical data group.
SNAP_GET_DB_V82	Lists information and statistics captured for the current DB2 for LUW 8 database. To gen-

Report Name	Description
	erate this report, Toad uses the SNAP_GET_DB table function to retrieve information from the database and detail_log logical data groups.
SNAP_GET_DYN_SQL_V82	Lists statistics and information about the dynamic SQL statements executed against the current DB2 for LUW 8 database use. To generate this report, Toad uses the SNAP_GET_DYN_SQL table function to retrieve information from the dynsql logical data group.
SNAP_GET_TAB_V82	Lists information and statistics about the tables in the current DB2 for LUW database 8. To generate the report, Toad uses the SNAP_GET_TAB table function to retrieve information from the table logical data group.
SNAP_GET_TBSP_PART_V82	Lists information and statistics for the database partitions that make up each tablespace in the current DB2 for LUW 8 database. To generate this report, use the SNAP_GET_TBSP_PART table function to retrieve information from the tablespace_nodeinfo logical data group.
SNAP_GET_TBSP_V82	Lists information and statistics for each tablespace in the current DB2 for LUW 8 database. To generate the report, Toad uses the SNAP_GET_TBSP table function to retrieve information from the tablespace logical data group.
SNAPSHOT_AGENT_V82	Lists the agents working for the various applications connected to the current DB2 for LUW 8 database. To generate the report, Toad uses the SNAPSHOT_AGENT function to retrieve information from the application snapshot, especially from the agent logical group.
System Information_V82	Displays information about the operating system in which the current DB2 for LUW 8 database operates and about the CPUs configured on this operating system. Toad uses the ENV_GET_SYS_INFO table function to generate this report.
Table Statistics Column View	Displays statistics for the tables under the current schema in the DB2 for LUW database and flags those tables that need reorganization. Toad uses the REORGCHK_TB_STATS procedure to generate this report.
Table Statistics	Displays statistics for the tables under the current schema in the DB2 for LUW database and flags those tables that need reorganization. Toad uses the REORGCHK_TB_STATS procedure to generate this report.

MySQL Reports

The following reports are available from the Reports Manager (**Tools | Reports | Reports Manager**).

Report Name	Description
Help Topic	Displays the first 10 rows of the mysql.help_topic table.

ODBC Reports

The following reports are available for the Toad Sample Database in the Reports Manager (**Tools | Reports | Reports Manager**):

Report Name	Description
Customer orders	Displays customer orders for contact IDs less than 10 from the Toad sample database. It is an example of master detail display using a single result set.
Customer list	Displays a list of customers from the Toad sample database.
Items to order	Displays items in stock that have a quantity of less than 50 and should be reordered from the Toad sample database.

Oracle Reports

The following reports are available from the Reports Manager (**Tools | Reports | Reports Manager**).

Cluster Reports

Report Name	Description
Clusters	Displays cluster information, including the cluster type, definitions, storage parameters, and affected tables.

Other Reports

Report Name	Description
Invalid objects	Displays any invalid objects for the selected schema and includes a subtotal of all invalid objects for that owner.
Loads into shared pool	Displays packages that have been loaded five or more times, into the Oracle shared pool. **Note:** You must have DBA privileges for this report.
Non-system objects in SYSTEM tables	Displays any objects in the SYSTEM tablespace that are not owned by SYSTEM.
Oracle initialization parameters	Displays the values for all parameters defined in the PFILE for the selected user.
Tablespaces near capacity	Displays tablespaces that over 90% full, and do not have the autoextend feature enabled.
Total shared pool reload stats	Displays the number of times objects in the shared pool were reloaded. **Note:** You must have DBA privileges for this report.
User hit ratios	Displays the buffer cache hit ratio users and includes consistent gets, blocked gets, and physical reads.
User resource usage	Displays values for resource usage such as CPU used and SQL*Net roundtrips for each user.

Sequence reports

Report Name	Description
Sequences	Displays the sequences that are within 10% of the maximum value. Any sequences that do not have a maximum value set, or those that cycle are excluded from the report.
Sequences near max	Displays the sequences that are within 10% of the maximum value. Any sequences that do not have a maximum value set, or those that cycle are excluded from the report.

Stored Program Reports

Report Name	Description
Arguments of stand-alone stored programs	Displays any parameters required for the selected stored procedure.
Object type bodies	Displays the body or source code for a selected object.
Object types	Displays the type of objects owned by a user, including whether the objects are valid and when they were created or last modified.
Package bodies	Displays the body or source code for a selected package
Package spe-cifications	Displays specifications for a selected package, including whether it is valid and when it was created or last modified.
Stand-alone stored programs	Displays the source code for a stored program, including the type of program and the last time DDL was generated.
Stored functions	Displays a list of stored functions for a selected owner.
Stored object with source	Displays a list of all stored programs including their source.
Stored procedures	Displays the source for stored procedures for a selected owner.

Synonym Reports

Report Name	Description
Synonyms	Displays information for each synonym, including the owner, table owner and name, and the DB link.

Table Reports

Report Name	Description
Indexes	Displays details for the index definition, storage parameters, and columns included in the index.
Non-indexed tables	Displays any tables that have not been indexed for the selected database.
Table comments	Displays any comments for the selected table.
Tables & columns	Displays all columns for a selected table, including the maximum transactions, used/free blocks, free lists and groups, min/max extents, and columns included in this index.
Tables & indexes	Displays any indexes for a selected table, including the status, uniqueness, and columns included in the index.

Trigger Reports

Report Name	Description
Triggers & columns	Displays triggers for a selected table, including the trigger event, status, WHEN clause, and columns associated with the trigger.

User-defined Reports

Report Name	Description
Sample	Displays a sample user report based on a **select * from dual** query.

View Reports

Report Name	Description
View comments	Displays any comments for the selected view.
Views & columns	Displays all columns for a selected view, including the query and columns included in the view.

SQL Server Reports

The following reports are available from the Reports Manager (**Tools | Reports | Reports Manager**).

DBA Reports

Report Name	Description
All jobs	Displays all scheduled SQL Server jobs and the job owner, organized by server.
Backup history	Displays the backup start date, type, and device used for the backup for a specified database for a set number of days.
Backup status	Displays the database name, date of the last backup, days since the last backup, and the type of backup performed.
Current lock report	Displays any locks on the server, including the database name, object or index name, type of lock, resource, mode, and status.

Report Name	Description
Database configuration options	Displays configuration options for each database on the specified server.
Database settings	Displays any common options and their values for all the databases on your server.
Database user details	Displays the user name, roles, objects, granted/denied status, and column permissions for each database.
Display errors	Displays a log file without entries for log backups. This is useful when you have a number of log backup entries and you need to locate non-backup errors.
Drive space usage	Displays space for all databases on the server, including free space, space used, maximum size, and growth type.
Foreign key sequence	Displays tables in the order you can either populate or delete from them without violating any foreign key constraints. Objects with the lowest wave number indicate that they can be deleted with the fewest number of foreign key references. Objects with the highest wave number should be populated first.
Index description	(SQL Server 2000 only) Displays all indexes for the current database sorted by table. Index information includes whether it is clustered, unique, index keys, and the index size. run frequency, and the maximum duration.
Job details	(SQL Server 2000 only) Displays all SQL Server jobs, including whether they are scheduled, enabled, start date and time,
Row count for tables with clustered index	Displays the number of rows for all tables on a server that contain a clustered index.
Total rows and space used	Displays the total number of rows and space used for each table or view in the current database, including the reserved rows, unused rows, and index size. This report is sorted in descending order by reserved rows.
User permissions	Displays users permissions, grouped by role name and object type.

Other Reports (SQL Server 2005 only)

Report Name	Description
Configuration change history	Displays a history of all sp_configure and Trace Flag Changes recorded by the default trace.
Schema change history	Displays a history of all committed DDL statement executions recorded by the default trace.

Table Reports

Report Name	Description
Indexes	Displays index information for a selected table, including whether the index is clustered, unique, ignores duplicate keys, allows page/row locks, and a list of indexed columns.
Non-indexed tables	Displays any tables that have not been indexed for the selected database.
Table constraints	Displays any check constraints for a selected table, including whether the constraint is enabled, valid data, and affected columns.
Table extended properties	Displays any extended properties for a selected table.
Table relationships	Displays any foreign key constraints for a selected table, including whether the constraint is enabled, referenced tables, and referenced keys.
Tables and columns	Displays all columns for a selected table, including the data type, default value, whether it allows null values, and for SQL Server 2005 any extended properties.
Tables and indexes	Displays any indexes for a selected table, including the name, columns included in the index, and whether it is unique or clustered.

User-defined Reports

Report Name	Description
Stored procedures	Displays stored procedures for a selected database, including their status, status, replication information, schema version, statistics, and procedure text.

Publish and Share Reports

Toad provides multiple ways to publish and share information with your business community. Use the following methods to publish and share information from the Project Manager, Reports Manager, and Automation.

- Email reports and files, including Database Diagrams, Query Builder queries, SQL scripts, and results for reports, queries, and scripts.
- Share reports and files in a central location such as the Toad shared folder.
- Add reports and files to a ZIP folder or file.
- Publish reports and files to Toad Intelligence Central

You can use the following methods to publish and share information:

To email from...	**Do this...**
Automation	Drag the Send Email activity to the Automation workflow and attach files as needed. The email is sent when the automation script executes.
To publish to a central location from...	**Do this...**
Project Manager, Reports Manager	Right-click a report or file and select **Send To | Toad Shared**. The file is sent to the Toad shared folder specified in **Tools | Options | Environment | Network Share**.
Automation	Drag the Copy File activity to the Automation workflow. Specify the file to copy or move and a destination folder. This can be any folder, including the Toad shared folder, or a network folder. The file is copied or moved when the automation script executes.
To send to a zip file...	**Do this...**
Automation	Drag the Zip File activity to the workflow. Add reports and files to the Zip file and specify a file name with a .zip extension. The ZIP file can then be emailed with the Send Email activity or copied with the Copy File activity.
To publish to Intelligence Central from...	**Do this...**
Project Manager, Reports Manager	Right-click a file and select **Send To | Publish File**.
Automation	Drag the Publish Files activity to the Automation workflow. Add reports and files created previously in the script or add other existing files.

Tips:

- To export a Toad report to a file that can be read by other applications, double-click a report in the Reports Manager, click in the Report Preview window, select a file format, and add the file to a project. Share or publish the file using the Project Manager functions.
- To capture report results in a file, add the Toad Report automation activity. This activity runs a Toad report and saves the results in a file format you select. Share or publish the file using the Automation functions.
- To execute and save a query in a file, add the Select To File automation activity. This activity runs a query or SQL script and exports the results to an Excel spreadsheet. Share or publish the spreadsheet using the Automation functions.

6

Automate

Getting Started with Automation

Summary

This tutorial helps you get started with Automation by giving you an overview of the Automation module and then guiding you through the process of creating a basic script.

In this tutorial you will learn:

- How to use the Automation window
- How to create a basic script using the Select to File activity
- How to test and run a script
- How to schedule a script
- How to create a template for reusing an Automation activity

Watch a video version of this tutorial: Getting Started with Automation.

Note: The Automation module is disabled if Toad was installed with the **Prohibit saving passwords** option selected.

Introduction

Toad provides an Automation utility that allows you to easily script database activities and schedule them using the windows scheduler. In this way, database tasks can be automated to save you time. Toad Automation can increase your productivity by allowing you to automate tasks that you perform repeatedly.

The Benefits of Using Automation

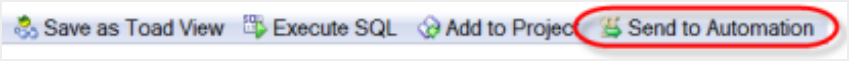
- Automating repeatable tasks allows you to be more productive and increases your efficiency.
- Toad Automation scripts are very flexible and extensible, allowing you to customized them to your needs.
- You can create and use variables in Automation scripts. Variables allow you to make your scripts flexible and to customize your scripts to different audience and company needs.
- You can incorporate a variety of templates into Automation scripts. Using templates in your scripts can help you get the most out of automating your tasks. Templates include: Microsoft Excel® files, Export Wizard templates, or Toad Report templates. You can even create an Automation activity template allowing you to reuse an activity.
- There is no limit to the number of tasks you can include in an automation script.
- Toad Automation scripts are conveniently scheduled and run by the Windows scheduler. You can track and manage your scheduled scripts using Toad or the Windows Scheduler interface.

* Did You Know *

Opening the Automation Window

There are several ways to open an Automation window.

- To build a script from scratch, use one of the following methods to open an Automation window:
  - Select **Tools | Automation**.
  - Click the **Automate** button in the main toolbar.
  - Click **Automation** in the Launch window.
- To build a script incorporating your current workflow, use the following steps:
  1. In the Query Builder or Editor, build or enter your SQL statement.
  2. Click **Send to Automation** in the Wizard bar.

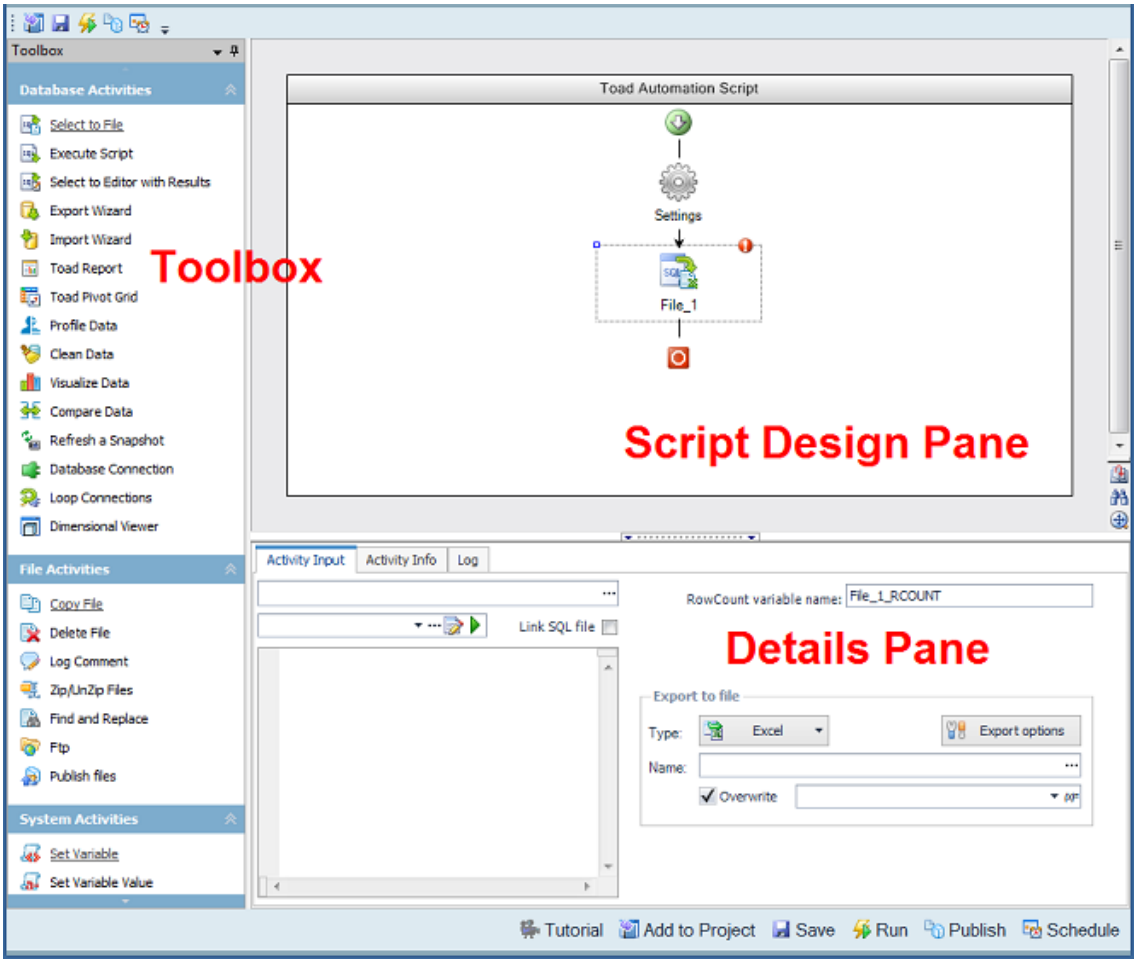
     

     Toad sends your SQL to the Automation Tutorial (Guided Tour) which opens in a separate window.
  3. Select a task and complete the wizard.
  4. After you click **Finish** in the wizard, an Automation window opens containing your new script. The script incorporates your SQL statement and the settings you specified in the wizard.

The Automation Window

1. To get started with Automation, open an Automation window by selecting **Tools | Automation**.

   The Automation window consists of a Toolbox pane (along the left side of the window), a design pane (top half of the window), and a details pane (bottom half of the window).



Toolbox—Stores the Automation activities. Click an activity in the Toolbox to add it to the script design pane. Activities are listed by category: Database, File, or System.

Script Design Pane—Graphically displays the script as a workflow. Use the script design pane to build an Automation script. Drag an activity to the design pane to add the activity to a script.

Note: You must drag the activity to an *Add Activity* icon in the Automation workflow. When you see the activity's icon displayed in the workflow, release the mouse button.

Details Pane—Displays an activity's settings. Click an activity in the design pane to display its configurable settings in the details pane. Use the details pane to specify the settings for each activity in the script.

2. In the Toolbox, find the Database Activities group. Single-click the **Select to File** activity to add it to the script design pane.
3. With the Select to File activity still selected in the script design pane, view the details pane. The details pane allows you to configure settings for the selected activity. The input fields change depending on which activity is currently selected in the design pane.

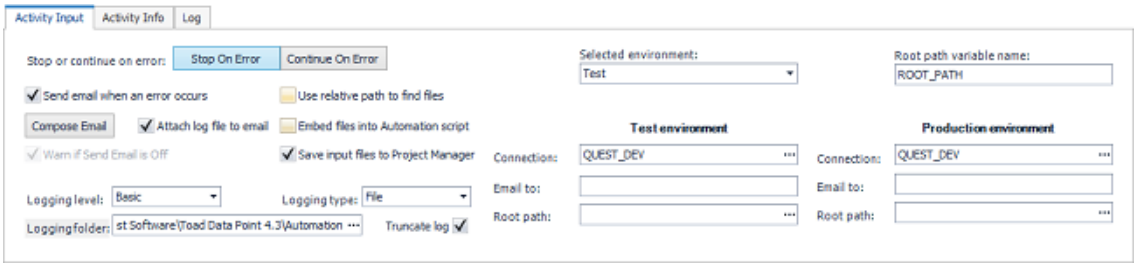
   Note: The Activity Input tab is the tab where you will specify most of an activity's settings.

4. Click next to the Select to File activity. Toad uses this icon to indicate that more information is required to complete the activity. Click or hover over the icon to display the missing information. Use this icon to help you determine which input fields are required.

   Note: This icon is also used to indicate a validation error, for example, when referencing a variable that has not been created yet.

5. Now click the **Settings** icon in the design pane. The details pane changes to display input fields for the script's settings. You can use this area to specify script error handling, logging level, and run environment

settings.



6. Click the **Stop on Error** button, if not already selected. This instructs the script to stop if an error is encountered.

   Note: You can also enable or disable the **Stop on Error** option for each individual activity. If you know that a particular activity will have an error, you can disable the **Stop on Error** option for just that activity. This option is located on the Activity Info tab for each activity.

7. In addition to selecting the **Stop on Error** option, enabling the **Send email when error occurs** and **Attach log file to email** options is also preferred. This can be very useful if your script encounters an error. Enabling your script to send an email notification *on error*, as well as *on success*, helps you to feel confident that your processes are running as expected.

   If you choose to enable these options, you must specify email settings. To specify email settings, click the **Compose Email** button.

8. Keep this Automation script window open, and proceed to the next section.

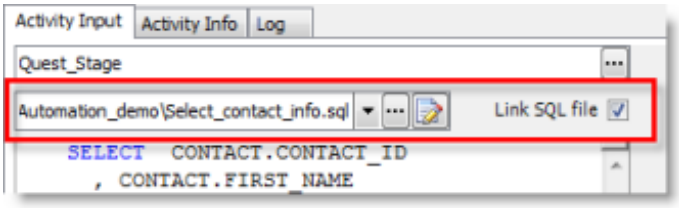
Create a Basic Script

1. If you kept the previous Automation window open, you will have a basic script consisting of one activity, the Select to File activity. Click on the Select to File activity in the design pane.
2. In the Activity Input tab, in the first text box, select a database connection, or use the default. The default database connection for each database activity is always the currently-active open connection. To select a different database connection, click ... and browse to a different connection.

   Note: If you schedule a script to run against a password-protected database for which you did *not* save the password in Toad, the script will error. To save the password, right-click the connection in the Connection/Navigation Manager and select **Properties**. Enter the password and select the **Save Password** option.

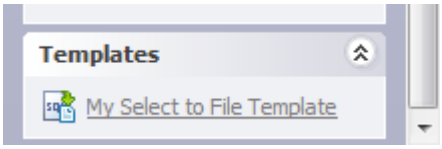
   Tip: For Snowflake connections, it is considered best practice to use only the Snowflake user account authentication when creating Automation scripts to avoid unnecessary workflow interruptions.

3. Now select an input. Most activities require an input, and in the Select to File activity the input is a SQL statement. You can input a SQL statement using one of the following methods:
   - Manually enter a SQL statement in the editor box (deselect the **Link SQL file** option).
   - Click ... to browse to and select a SQL file.
   - Select **Link SQL file**, then click ... to browse to and select a SQL file. This option retains a link to the SQL file.
   - Click to open the SQL file (you previously selected) in the Editor where you can modify the SQL.
   - Select **Link SQL file**, then click the drop-down list to select a file from the currently open project in the Project Manager.



4. After selecting or entering your SQL statement, select an output. Select **Excel** in the **Type** field in the Export File section.
5. Click ... in the **Name** field and select a location and enter a name for your new Excel file.
6. You can also add a suffix to the file name. In the suffix field, click the drop-down to select a datetime stamp, or click (x)= to build an expression. You can use this method to add a variable or a custom datetime stamp. Appending a datetime stamp to the file name allows you to create a unique file with each script execution.
7. You now have a complete activity, with input, output, and database connection specifications. You can save and reuse this activity in other scripts by saving the activity as a template. To do this, right-click the activity (after configuring all the settings) and select **Save As Template**. Enter a name for your template and click **OK** to save it.

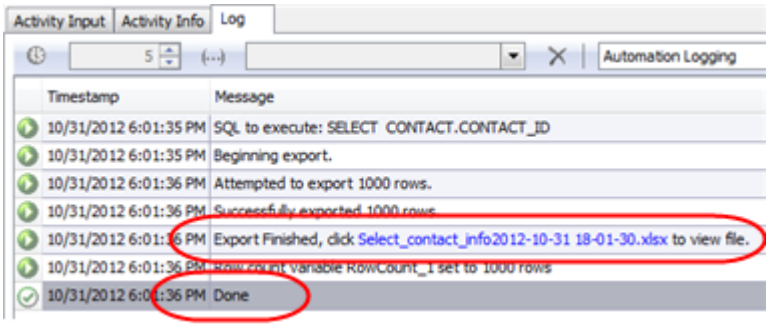
   Your template now appears in the Toolbox in the Templates category.



8. Keep the Automation script window open and proceed to the next section.

Test and Run Your Script

1. To test your script, click **Run** in the Wizard bar.
2. Toad will prompt you to save your script (if you have not already done so). In the Save As dialog, select a location, enter a file name, and click **Save**.
3. Toad then validates your entries and compiles the script. If these processes are successful, the script runs.
4. While the script is running, Toad displays your script's execution progress in the Log tab. The message "Done" indicates script execution is finished.



5. When a script produces an output file, a hyperlink to the output file is included in the Log. If your script ran successfully, click the output file hyperlink to view the new Excel file created by your script.
6. Click the **Settings** icon to return to the script's settings.

7. If you require a more detailed Log, you can change the logging level. In the Settings Activity Input tab, select *Verbose* from the Logging level drop-down list to create a more detailed log.

   Note: If you want to change the location of the Log file, select a new location in the **Logging folder** input field.

8. Toad allows you to specify both a Test database connection and a Production database connection for each script. Toad also allows you to specify which connection to run your script against when the script executes. Both of these settings are made in the script's settings. This feature allows you to easily test your script in a test environment before running your script in the production environment.

   To specify a test and a production database, make the selections in the Connection text box under **Test environment** and **Production environment** in the Settings Activity Input tab. To select which of these databases to run your script against, select *Test* or *Production* from the **Select environment** drop-down list.

9. Click the Select to File activity to return to its settings. Then select the Activity Info tab.

10. If you remember from the overview of the Automation window, Toad allows you to enable or disable each activity in a script. This can be helpful when building a script, as it allows you to test one particular activity at a time by disabling the other activities.

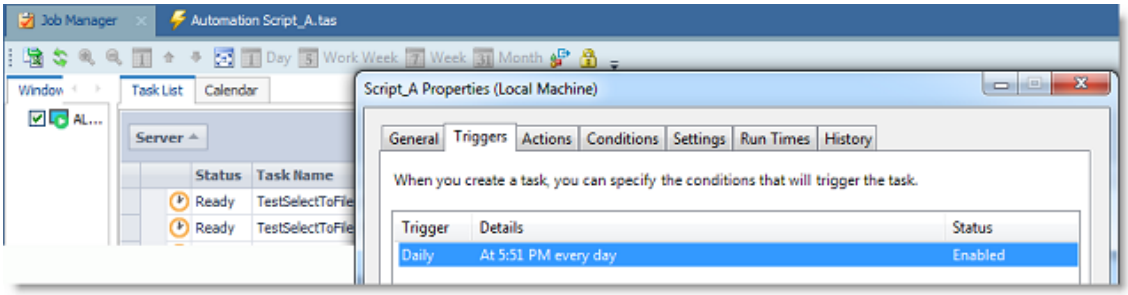
    In the Activity Info tab, click **Disabled** to disable the Select to File activity. Notice that the activity now appears shaded in the design pane. To enable the activity again, click **Enabled**, or right-click the activity in the design pane and select **Enabled**.

Schedule Your Script

Once you have thoroughly tested your script, you can schedule it.

1. To schedule your script, click **Schedule** in the Wizard bar.

2. The Job Manager window opens and a task properties dialog displays. The task properties dialog is pre-populated with the information required to run your script as a scheduled task. You only need to schedule it. (The Job Manager uses the Windows Scheduler.)



3. To schedule the script, select the Triggers tab. Then select the scheduling trigger and click **Edit**. In the Edit Trigger dialog, ensure that the *On a schedule* trigger type is selected. Then specify a frequency, start time, interval, etc.

4. Click **OK** to save your schedule. Click **OK** to save and close the task properties dialog.

5. Your task (script) is now listed in the Task List in the Job Manager. Double-click your task in the list to open the task properties dialog again where you can make modifications, such as re-scheduling or changing the script location. Use the Task List to review the status of your tasks (scheduled scripts).

6. By default, the scheduled task runs under your Windows account. If you change your Windows password, you may also need to update the password in your scheduled task (depending on your version of Windows). Click and select the task to update. Click **OK** and then enter your password when prompted.

7. After upgrading to a new version of Toad, you must migrate the scheduling tasks to the newer version. See "Upgrade Automation Scripts and Scheduling Tasks" in the online help for more information.

8. **Script Execution and Status.** When Toad is in the process of executing a scheduled script, you will see the Toad icon in the lower right corner of the Windows taskbar. To check the status of your scheduled scripts, open the Job Manager (**Tools | Administer | Job Manager**) and select the Task List.

Now you have learned how to increase your productivity by using Toad Automation to handle your repetitive reporting and deployment tasks!

Automate Exporting to Excel Reports

Summary

This tutorial walks you through the process of automating the task of exporting query results to simple Excel reports. You will create three different, and very useful, simple Excel reports.

In this tutorial you will learn:

- How to use Automation to export query results to Excel
- How to use the Select to File activity in Automation
- How to automate an Excel report that appends a new worksheet with each execution
- How to automate an Excel report that uses multiple queries to produce multiple worksheets

Watch a video version of this tutorial: Automate Exporting Data to Excel.

Introduction

After creating a result set in Toad, you may need to send the results to your end users. The easiest way to create a report containing query results is to export the data to an Excel file by right-clicking the data grid and selecting **Quick Export | File | Excel File**. This action creates a basic Excel spreadsheet containing the result set from the data grid.

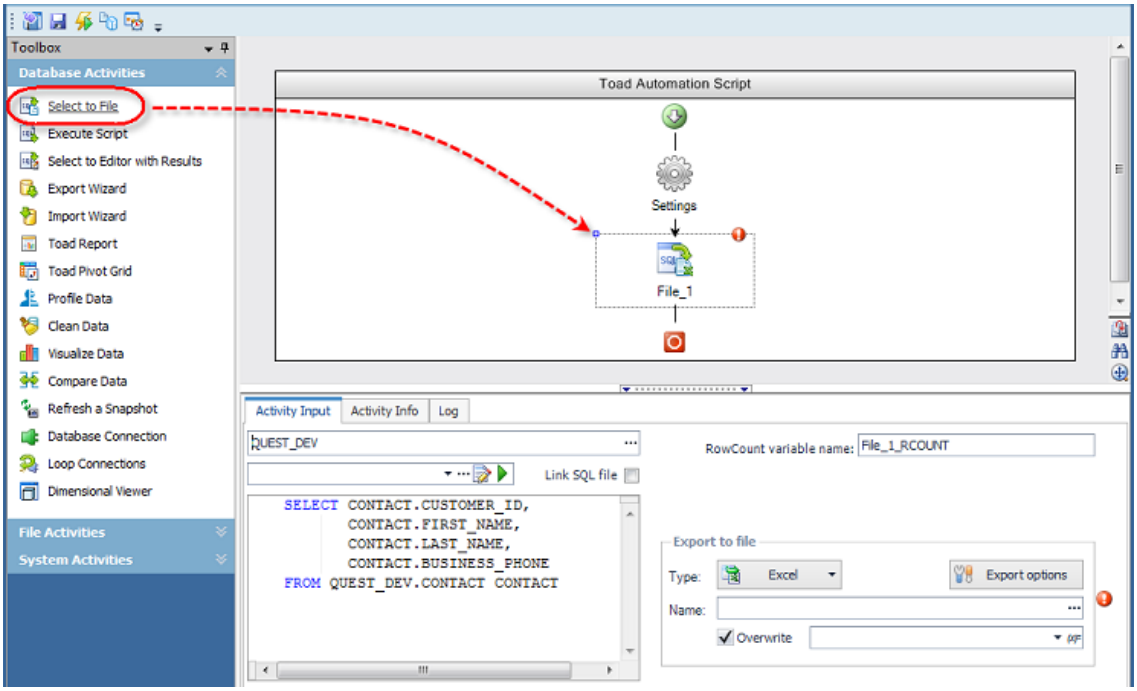
If you want to create more than a basic spreadsheet and automate the process, Toad Automation helps you build a variety of Excel reports, from simple worksheets to complex and attractive Excel reports.

In this introduction to automating Excel reports, you will learn how to automate the process of exporting data to a variety of simple Excel reports.

Note: To learn how to get started with Automation, see Getting Started with Automation.

Create a Simple Excel Report

1. Select **Tools | Automation**.
2. Click the **Select to File** activity in the Database Activities pane of the Toolbox, or drag the activity from the Toolbox to the Automation design window.



3. When the **Select to File** activity is selected in the design window, the Activity Input tab displays. Select a database connection in the first text box or use the default (the default is the currently-active open connection).
4. Then select a SQL file or enter a SQL statement using one of the following methods:
   - Manually enter a SQL statement in the editor (deselect the **Link SQL file** option).
   - Click ... to browse to and select a SQL file.
   - Select **Link SQL file**, then click ... to browse to and select a SQL file.
   - Click to open the SQL file (you previously selected) in an editor where you can modify the SQL.
   - Select **Link SQL file**, then click the drop-down list to select a file from the currently open project in the Project Manager.
5. Select **Excel** in the **Type** field in the Export to File section.
6. Click ... in the **Name** field to select a location and enter a name for your new Excel file, or you can select an existing file.

   Note: To specify more-detailed options for the Excel file, click the **Export options** button.
7. (Optional) You can choose to create a unique file by adding a suffix. In the suffix field, click the drop-down to select a datetime stamp, or click (x)= to build an expression.
8. Select **Overwrite** if you want to overwrite the file.

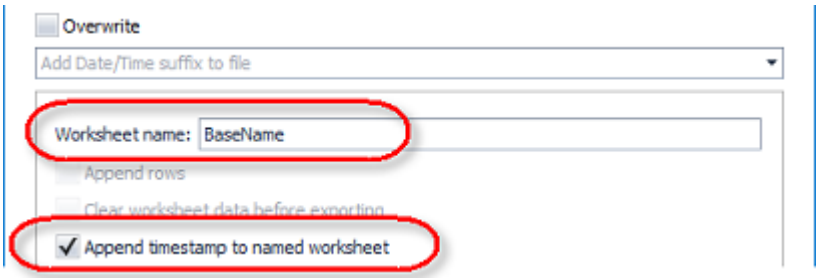
   Note: If you did not add a suffix, you can deselect **Overwrite** to append a new worksheet to the Excel file with each script execution.
9. To save your Automation script, click **Save** in the Wizard bar. Then select a location and file name for your script.
10. To test your script, click **Run** in the Wizard bar.
11. After the script executes, the Log tab displays. Click the hyperlink in the Log to view the Excel file.
12. To learn how to schedule your Automation script, see Schedule Your Script.

That was simple, wasn't it. Now move on to the next example to learn how to create a slightly more complex Excel report.

Create a Multi-Page Excel Report Using One Query

Suppose you want to create a new report each week from the same query while retaining the previous week's results. In this case, you want to append each week's results as a new worksheet to a single Excel file. This is an excellent option if you want to compare the results each week (or each day, month, etc.) to see how the data is changing. (And Toad has several data compare features in the application to let you do that.)

1. Select **Tools | Automation** to open a new Automation window.
2. Click the **Select to File** activity in the Toolbox to add it to the Automation design window.
3. Select a database connection.
4. Select a SQL file or enter a SQL statement using one of the methods described in the first example.
5. Select **Excel** in the **Type** field in the Export to File section.
6. In the **Name** field, click to select a location and enter a name for your file.
7. Leave the suffix field blank (adding a date/time suffix could create a new file with each script execution and this is not the objective of this example).
8. Deselect **Overwrite** (you do not want to overwrite the file).
9. Now click **Export options**. The Export options dialog opens.
10. In the **Worksheet name** field, enter a name to be used as the base worksheet name.
11. Select **Append timestamp to named worksheet**. This will append the date and time (that the data was exported) to the base worksheet name. Click **OK** to save your settings and close the dialog.



12. Click **Run** to save and run your script.
13. Open the Excel file by clicking the link in the Log tab. Notice that the new worksheet's name includes the base name you specified suffixed with the timestamp.
14. Run the script a second time and open the file. A new worksheet with a new timestamp was added to the Excel file.

The output of this script is one Excel file containing multiple worksheets. Each worksheet contains a result set from one execution of the script. And each worksheet name records the date and time the result set was exported.

Create a Multi-Page Excel Report Using Multiple Queries

Another variation of the multi-page Excel report is to export the results of multiple queries. Each worksheet in the Excel file will be populated with the result set of a different query. This can be accomplished by using a SQL file that contains multiple SQL statements as the input file.

1. To start, open a new Automation window.
2. Click the **Select to File** activity to add it to the design window.
3. Select a connection.
4. Select a SQL file or enter a SQL statement using one of the methods described in the first example. However, this time use a file that contains multiple SQL statements (or enter multiple statements in the editor).
5. Select **Excel** in the **Type** field in the Export to File section.
6. Click ... in the **Name** field to select a location and enter a name for your new Excel file.
7. Click **Export options** and make sure the **Worksheet name** field is blank.

   Note: If the Worksheet name field is not blank, your script will export both result sets into the named sheet, and the second result set will overwrite the first.
8. Selecting to overwrite the existing file or to add a date/time suffix to the file name is optional in this example.
9. Click **Run** to save and run your script.
10. Open the new file by clicking the link in the Log tab. Notice that the file contains a separate worksheet for the result set of each query.

The output of this script is one Excel file containing multiple worksheets. Each worksheet contains the result set of a different query.

Automation script support for CSV and Excel files stored on the SharePoint Online server

Toad Data Point 6.4.1 introduces a new capability: the ability to export data directly to Excel or CSV files stored on a SharePoint Online Server - as part of your Automation script.

This enhancement is supported in the following Automation script steps:

- **Select to File**
- **Export and Import Wizard**
- **Pivot** (Note: Excel Pivot and Excel Pivot View export formats are not supported)
- **T&C**
- **Dimensional Viewer**

For most of these steps (except Export and Import Wizard steps, where export settings are defined in the template), you have access to the Export to file option. This allows you to export data from that step to various file formats, including Excel and CSV.

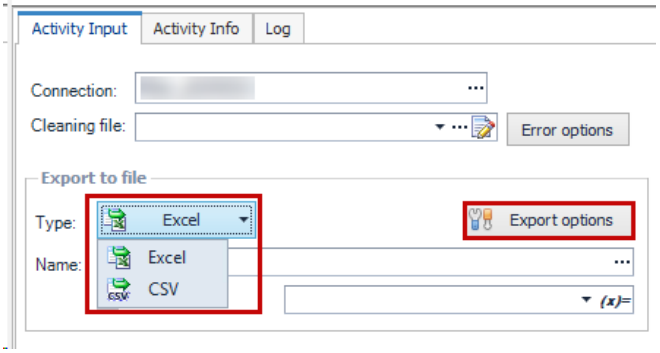
Previously, Automation scripts could only export data to files saved locally. With this update, you can now export directly to SharePoint Online, making it easier to collaborate and centralize data access.

How to Export to SharePoint Online

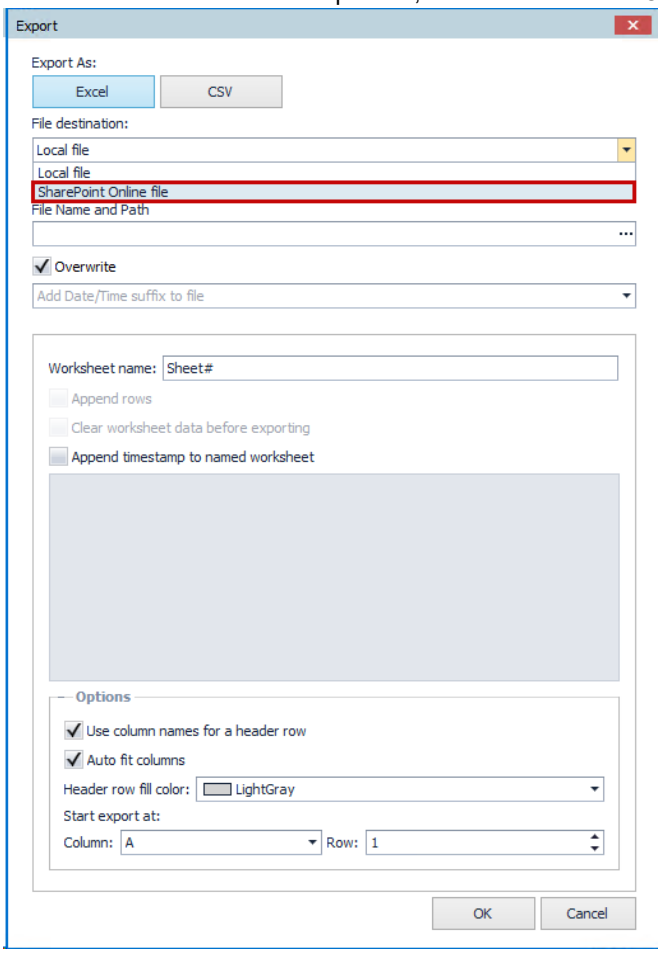
To export data from an Automation step (e.g., Pivot Grid, Clean Data, or Dimensional Viewer):

1. In the Activity tab, under the Automation step, choose your desired file format (Excel or CSV) from the Type drop-down

2. Open the Export options dialog



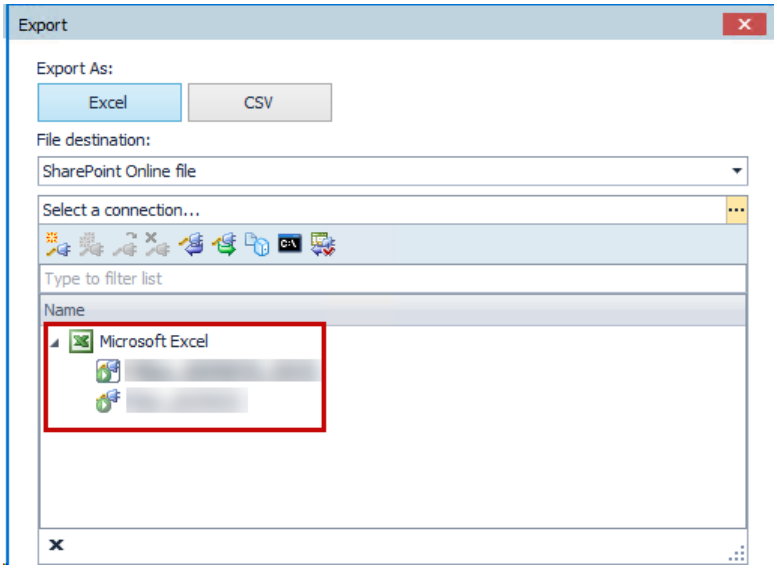
3. From the File destination drop-down, select SharePoint Online file



4. Select or create a SharePoint Online Server connection
   Note: Based on the chosen Output format, only connection to that type will be listed – if it is Excel selected, only the Excel connections will be listed.

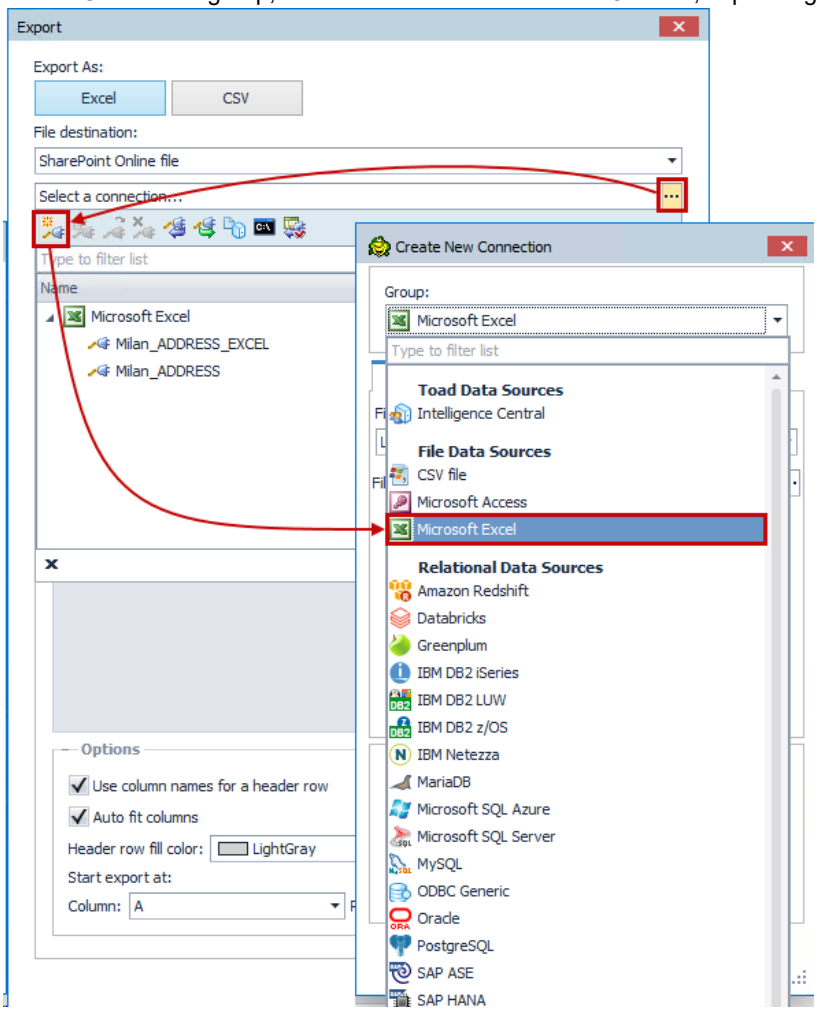
   If you have an existing SharePoint Online Server connection:

   • Click the Eclipse button (...) in the Select a connection field
   • Choose your connection from the list

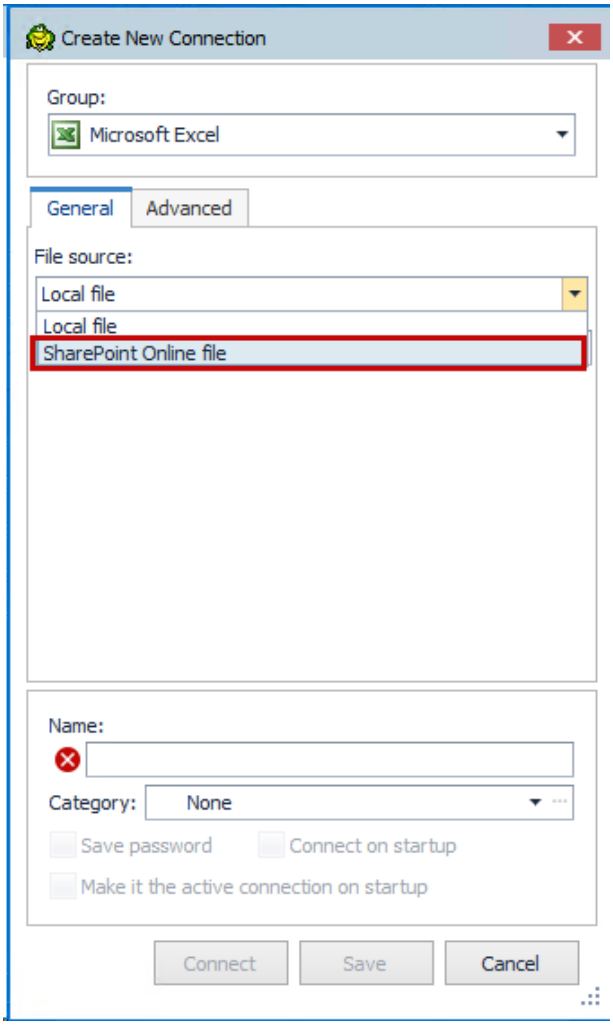


If you need to create a new connection:

- Click Create to open the Connection dialog
- In the Connection group, select either Microsoft Excel or CSV file, depending on your export format

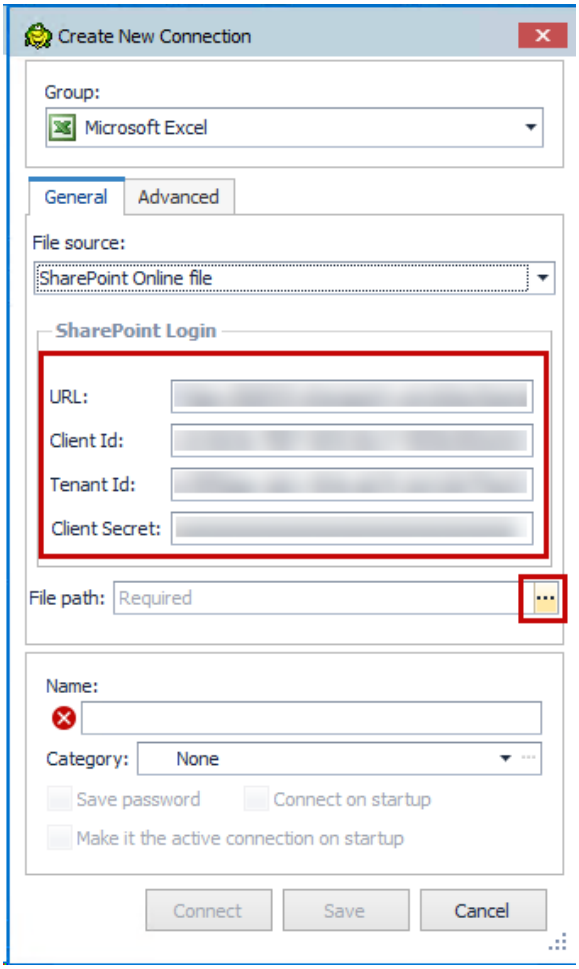


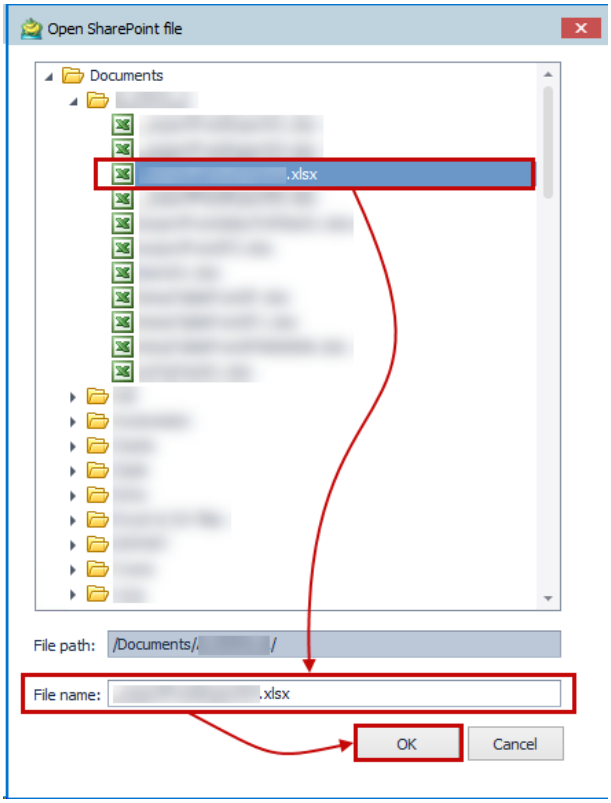
- In the File source drop-down, choose SharePoint Online file



• Fill in the required connection parameters:
o SharePoint URL
o Client Id
o Tenant Id
o Client Secret

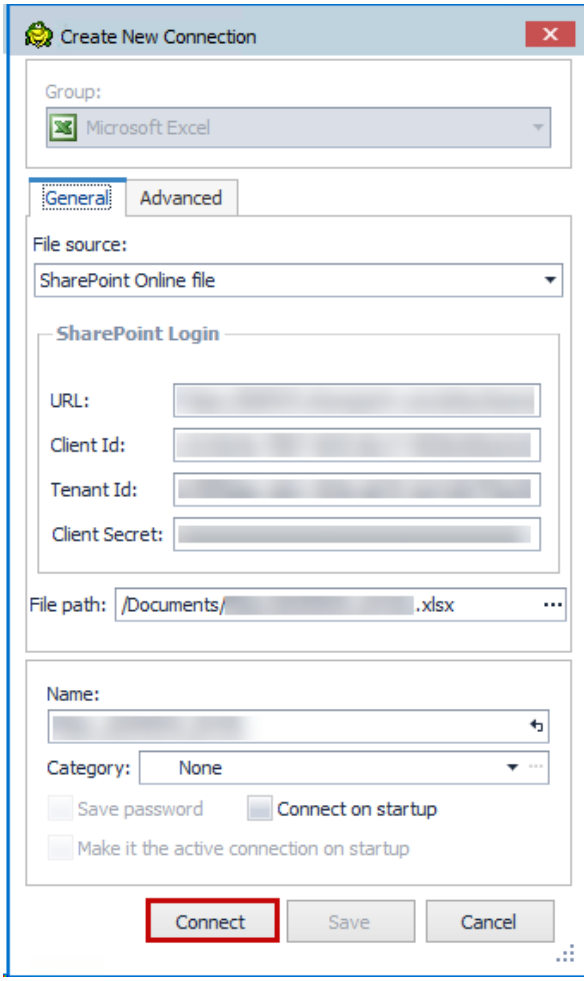
• Select a file from the SharePoint Online Server





Note: Since the Excel connection is selected, only Excel files will be listed. If you choose the CSV connection, only the CSV files will be listed.

• Click Connect



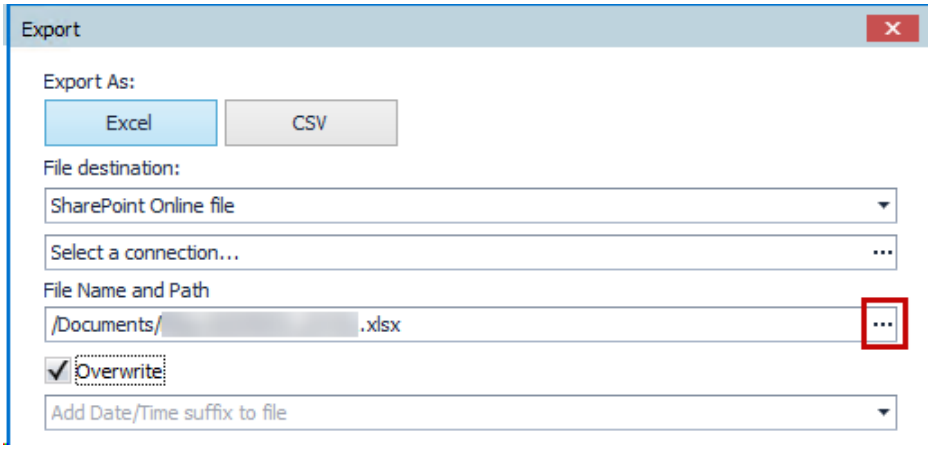
Your new connection is automatically saved and will appear in the Navigation or Connection Manager tab for future use.

Note: A file must be specified to establish the connection, but you can change it or create a new one in the Export dialog.

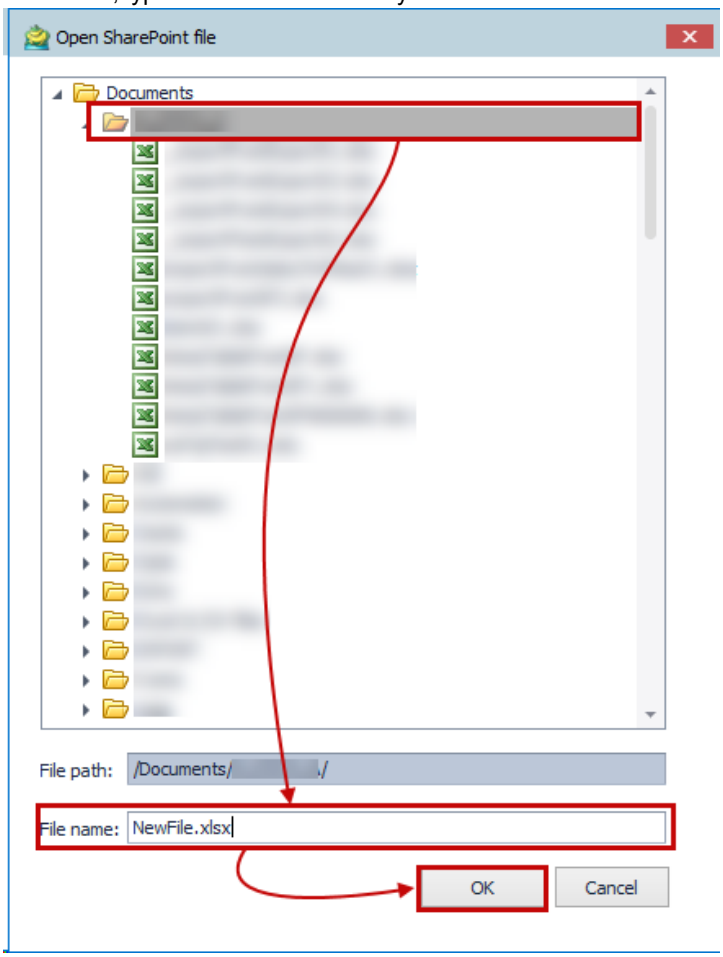
5. Specify an Excel or CSV file to export your data

   After a successful connection, you'll be back in the Export dialog. You can:
   o Choose an existing file on the SharePoint Online Server (already specified through connection, or you can choose a different one), or
   o Create a new file directly from this interface

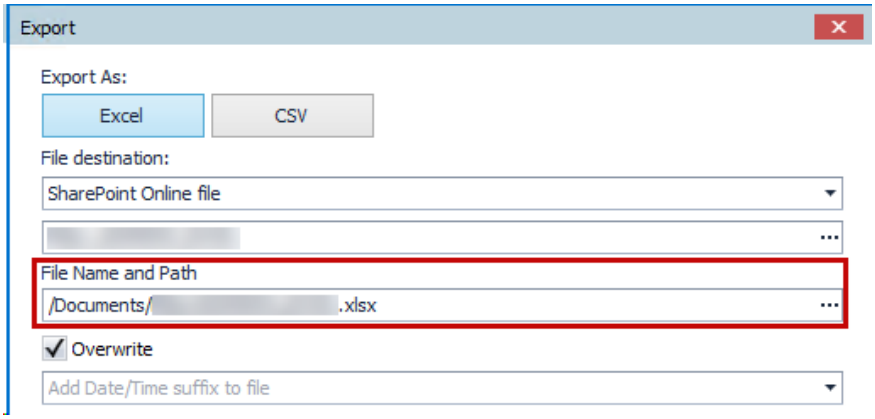
   To create a new file:
   • Click the Eclipse button at the end of the File Name and Path field



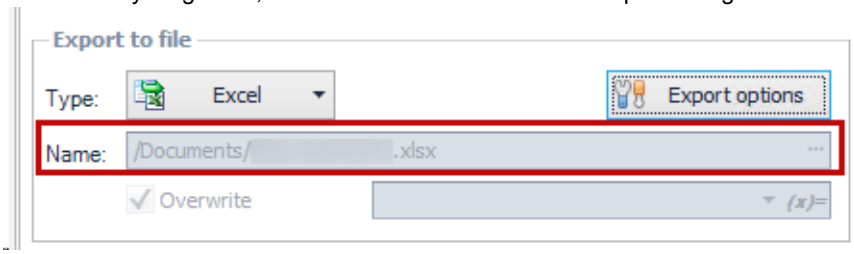
• Select folder where you want to save an Excel or CSV file on SharePoint Online Server and in the File name field, type the desired name for your new file



• Click OK to proceedr your new file
• The chosen file will be written in the File Name and Path in the Export dialog:



• When everything is set, click the OK button to close the Export dialog.



Note: When exporting data to an Excel or CSV file stored on SharePoint Online Server, the file path will be greyed out as a distinct difference between locally stored files.

Now you can continue with the automation script activities.

Schedule A Script

See Schedule Your Script to learn how to schedule the Automation script.

Automate Tasks

Use Automation to schedule a single script to run reports and queries, save results in Excel spreadsheets, and distribute results to the business community via email. You can schedule scripts that perform long-running tasks to run when database activity is light.

You can also use variables in automation scripts. With variables, you can update information that may be different each time you run the script, such as the department name, revenue, fiscal quarter, or product name. See "Using Variables in Automation" on page 146 for more information.

For example, assume you are an analyst at Nick's Flicks movie rentals. You need to run inventory and movie rental reports on a daily basis and distribute them to managers of the inventory department. Using Toad, you can create an automation script that runs the reports, exports them to Excel spreadsheets, and emails the spreadsheets to the inventory department everyday at 2:00 AM.

Troubleshooting: You must surround a variable name with the # sign (for example, #sleep#).

Notes:

- Automation scripts are compatible with the version of Toad in which they are created.
- The Automation module is disabled if Toad was installed with the **Prohibit saving passwords** option selected.

To automate tasks

1. Select **Tools | Automation**.
2. Click **Settings** (icon) in the script design window and specify script settings. Enter settings in the bottom pane. Review the following for additional information:

Activity Input Tab	
Stop or continue on Error	Select **Stop On Error** to stop the script if an error occurs.
Send email when error occurs	Select this option to send an email on script error. If selected, you must also click **Compose Email** to compose the email message and to edit the **Email Server Settings**. **Note:** When you specify the error email settings, Toad saves your settings and uses them in all subsequent automation scripts.
Use relative path to find files	Select to convert all local file paths to relative paths in all activities in the script (network file paths remain unchanged). This is useful if you want to share your automation scripts with colleagues or place them on a shared network. Toad makes the change the next time you run or save the script. If you deselect this option later, the script reverts back to the original absolute paths. **Note:** Toad deselects this option when publishing a script to Intelligence Central.
Embed files into Automation script	Embeds Toad input files into the script. This makes it easier to share the script with colleagues. **Important:** To use this option, *deselect* it, build your script, select input files, then *re-select* this option. This allows Toad to collect and save the input file paths. This option embeds Data Compare, Data Cleansing, Visualization, Pivot Grid, Toad Data Report, and Import/Export template files. Scripts used by the Run Automation Script activity are also embedded, as are SQL query files used as input by an Import/Export template. **Important:** Files linked using the **Link to File** option in the Select to File, Execute Script, and Select to Editor with Results activities are **not** embedded [.sql, Editor (.tef), and Query Builder (.tsm) files)]. Toad embeds the files the next time you run or save the script. If necessary, at a later time you can deselect this option and then re-establish links to the original files. **Note:** Toad selects this option when publishing a script to Intelligence Central.
Truncate log	Select to overwrite the log file each time the script runs.
Selected environment	Use this area to specify a "test" database connection and a "production" database connection and then easily switch between the two. • **Test**—Select to run your script in test mode using the database connection and other settings you specified under **Test environment**. • **Production**—Select to run your script in production mode using the database connection and other settings you specified under **Production environment**. **Note:** The **Connection** field under both environments defaults to the currently-active open connection. **Variable names** • **Root path**—Enter a variable name or use the default name. Then use this variable name in your script wherever you want to apply the path defined under **Root path** in either the Test settings or the Production settings. The path that is applied depends on which environment (*Test* or *Production*) is selected at the time the script is executed. • **Run mode**—Enter a variable name or use the default name. The value assigned to this variable is either *Test* or *Production*, based on the environment selected at the time the script is executed.

Activity Info Tab	
Name	Enter a script name.

3. To build a script, single-click an activity in the Toolbox, or drag an activity from the Toolbox to the Automation script design window. Repeat this process to add additional activities to your script.

   Note: You must drag the activity to , then release the mouse button after you see the activity's icon replace .

4. Click an activity in your script workflow in the design window and then specify the activity's properties in the details pane (bottom pane). Repeat this process for each activity in your script. For a step by step tutorial on building an Automation script, see Getting Started with Automation.

   See the following topics for details about each activity and its properties:

   - Use Database Automation Activities
   - Use File Automation Activities
   - Use System Automation Activities

   Tip: You can save an activity and its settings as a template to reuse in other scripts. Right-click the activity in the design window and select **Save As Template**. After you create the first template, a Templates toolbox displays.

   Note: Click **Settings** in the design window at any time to go back and review the Automation script settings.

5. When you finish building your script, select one of the following actions from the Automation toolbar or the Wizard bar:

Add to Project	Add an automation script to the current project in the Project Manager. The script is automatically placed in the project's Automation Scripts folder.
Save	Save an automation script (.tas) in a folder on a local or network drive.
Run	Run an automation script before scheduling it. The script executes once and the execution log is displayed in the Log window. Resolve any problems that cause activities to fail, or disable failed activities before scheduling the script. **Tips:** • Press F5 to run the automation script. • To view the script log, select the Log tab or select **View | Output**.
Publish	Publish script to Toad Intelligence Central.
Schedule	Schedule an automation script in the Job Manager. You can schedule a script to execute once or to run periodically at a defined interval. See "Execute and Schedule Automation Scripts" on page 150 for more information.

Important: To rename an Automation script file, do so through Toad (**File | Save File As**), not through Windows Explorer. Renaming a script file using Toad ensures that log files are created correctly and properly synced with their scripts.

Tips:

- Double-click an activity in the script design window to open the Activity Properties pane in a format used in earlier versions of Toad.
- Right-click within the script design window and select **Print Script** to print the script's workflow diagram.

Use Database Automation Activities

You can use the following activities in automation scripts.

Note: When building an automation script, you must have the appropriate connections open for database activities.

Tip: You can save an activity and its settings as a template to reuse in other scripts. Right-click the activity in the design window and select **Save As Template**. After you create the first template, a Templates toolbox displays.

Activity	Description
Select to File	Execute an existing SQL script, Query Builder file, or Editor file and export the results to an Excel, HTML, or CSV file. 1. Select a database connection. 2. Select a SQL file or enter a SQL statement. • Click the drop-down list to select a file from the currently open project in the Project Manager. • Click to browse to and select a SQL file. • Click to open the SQL file in the Editor where you can modify the SQL file. • Enter a SQL statement in the editor. You must first deselect the **Link SQL file** option. 3. RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information. 4. Export File Type—Select an export file type. 5. Export File Name—Click to select a file location and enter a file name. To use a variable as a suffix, enter the hash symbol before and after the variable name (#VariableName#). 6. Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click to select a variable or build a new suffix using the expression editor. 7. Overwrite—Select to overwrite the file. If you did not add a suffix to the file name, you can deselect Overwrite to append a new worksheet to the Excel file with each script execution. 8. Export Options—Click to specify more export options. • Worksheet name—Enter a worksheet name. For an existing file, select the worksheet from the list. **Overwrite** must be *deselected* to display the list. To add a worksheet to an existing file, select *Append worksheet* from the list and enter a new name. • Append rows—Select to append to the selected worksheet. • Start export at—Enter the column and row position at which to begin the export. **Tip:** After exporting your file, you can use a subsequent activity in your script to email the report, to zip the report in a zip folder, or to copy the report to another location.
Execute Script	Execute an existing SQL script, Query Builder file, or Editor file. You can save the results of the script in a variable or export the results to Local Storage or an Intelligence Central dataset. 1. Select a database connection. 2. Select a SQL file or enter a SQL statement.

Activity	Description
	• Click the drop-down list to select a file from the currently open project in the Project Manager. • Click to browse to and select a SQL file. • Click to open the SQL file in the Editor where you can modify the SQL file. • Enter a SQL statement in the editor. You must first deselect the **Link SQL file** option. 3. Save result set in variable—Enter a name for the result variable, which contains a data table with the results of the execution script. **Tip:** You can use the result variable with the Loop Dataset activity. See "Use System Automation Activities" on page 141 for more information. 4. Local Storage—To export the results to Local Storage, select a database and a new or existing table (or snapshot). 5. Intelligence Central—To export the results to Intelligence Central as a dataset, click **Publishing Wizard** and specify your publishing options. Review the following for additional information: • RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information. • Overwrite existing dataset—Select to overwrite an existing dataset with the same name.
Select to Editor with Results	Execute an existing SQL script or Query Builder query and save it and any results sets in a Toad editor file (.tef). This file format is useful for building scripts that have large result sets that you do not want to continue executing or for saving results when you have not finished building a script. 1. Select a database connection. 2. Select a SQL file or enter a SQL statement. • Click the drop-down list to select a file from the currently open project in the Project Manager. • Click to browse to and select a SQL file. • Click to open the SQL file in the Editor where you can modify the SQL file. • Enter a SQL statement in the editor. You must first deselect the **Link SQL file** option. 3. Result saved in Editor file—You can select an Editor file from an open project or browse to select a file. Click to edit the selected file. **Tip:** You can use a variable in this field by entering the hash symbol before and after the variable name (#VariableName#). 4. Append results—Select to include the result set in the Editor file. Review the following for additional information: • RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the

Activity	Description
	activity. See "Using Variables in Automation" on page 146 for more information. • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click to select a variable or build a new suffix using the expression editor.
Export Wizard	Export data from databases, tables, views, or a query into a CSV, Excel, or other file. Review the following for additional information: • Export template—You can select an existing template, edit an existing template, or create a new template. **Tip:** You can use a variable in the file name to select an *existing* template file by entering the hash symbol before and after the variable name (#VariableName#). • Use Automation Connection—Select this option to use the connection associated with the Export Wizard activity. Clear the checkbox to use the connection associated with the export template. • RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information.
Import Wizard	Import data from a CSV, Excel, or other file into a new table or append to an existing table. You can also import data from one database to another. Review the following for additional information: • Import template—You can select an existing template, edit an existing template, or create a new template. **Tip:** You can use a variable in the file name to select an *existing* template file by entering the hash symbol before and after the variable name (#VariableName#). • Use Automation Connection—Select this option to use the connection associated with the Import Wizard activity. Clear the checkbox to use the connection associated with the import template. • RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information.
Toad Report	Use this activity to open a Toad Data Report (executing the query) and then export the results to a file using the layout specified in the Toad Data Report. Several export file formats are available, including PDF, HTML, and Excel. You can also select multiple Toad Data Reports and export the results to a single file. **Note:** You must create a Toad Data Report file (.tdr) before you can select it using this activity. Review the following for additional information: • Select a connection to execute the Toad Data Report query against. • Add Reports—Click to browse to and select one or more Toad Data Report files (.tdr). Click the arrow and select **From Project Manager** to add the reports in the currently-open project. • Edit Report—Click to edit the selected report. • RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information. • Export file—Enter a name and select a file type and location for your export file. You can use a variable in this field by entering the hash symbol before and after

Activity	Description
	the variable name (#VariableName#). • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click (x)= to select a variable or build a new suffix using the expression editor. **Note:** In most cases, the script uses the connection you specify in this activity. However, when a Toad Data Report contains a cross-connection query, the cross-database connection in the report takes precedence. For more information about Toad Data Reports: • Watch Automation and Toad Data Reports (video).
Toad Pivot Grid	Open an existing Toad Pivot Grid file, execute the query, and export the data to Excel or other file format, Local Storage, or Intelligence Central. **Note:** You must create a Toad Pivot Grid file (.tpg) before you can select it using this activity. Review the following for additional information: 1. Select a connection to execute the Toad Pivot Grid file against. 2. Select an existing Toad Pivot Grid file. You can browse for a file or select from the currently-open project. Click to edit the selected pivot file. 3. Export to file—Select a file type and enter a file name and location for your export file. You can use a variable in this field by entering the hash symbol before and after the variable name (#VariableName#). • To export to an Excel pivot table, select **Excel Pivot**. • Click **Export Options** to specify Excel file options. 4. Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click (x)= to select a variable or build a new suffix using the expression editor. 5. RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information. 6. Export to—Select one of the following: • Local Storage—To export pivoted data to Local Storage, select a database and a new or existing table. • Intelligence Central—To export pivoted data to Intelligence Central as a dataset, click **Publishing Wizard** and specify your publishing options.
Profile Data	Automate data profiling tasks. This activity profiles data from a selected query and exports a report containing the profiling results. 1. Select a database connection. 2. Select a SQL file or enter a SQL statement. • Click the drop-down list to select a file from the currently open project in the Project Manager. • Click to browse to and select a SQL file. • Click to edit the selected file. • Enter a SQL statement in the editor.

Activity	Description
	3. To specify options for the profiling task, click **Profiling Options**. 4. Create Report—(Required) Select a location, select a file format, and enter a file name for the exported report (PDF, HTML, etc). 5. Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click to select a variable or build a new suffix using the expression editor. 6. Export Data Profiling File—(Optional) Select a location and enter a file name for the Toad Profiling Report file (.tpr). **Note:** You cannot attach this file in subsequent activities in the script. See Data Profiling for more information.
Clean Data	Automate data transformation and cleansing tasks. This activity opens an existing Toad Data Cleansing file, performs the transform and cleansing tasks on the current result set, and exports the modified data to a file, Local Storage, or Intelligence Central. 1. Connection—Select a database connection. 2. Cleaning file—Select a Toad Data Cleansing file or edit an existing file using one of the following methods: • Click the drop-down list to select a file from the currently-open project in the Project Manager. • Click to browse to and select a file. • Click to edit the selected file. 3. Error options—Click to specify error options. 4. Select one of the following actions: • Export to a file—Select a file, or select a location and enter a new file name. You can use a variable in this field by entering the hash symbol before and after the variable name (#VariableName#). • Local Storage—To export to Local Storage, select or create a database. Then select or create a snapshot or table to receive the modified data. • Intelligence Central—To export the results to Intelligence Central, click **Publishing Wizard** and specify your publishing options. Review the following for additional information: • RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information. • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click to select a variable or build a new suffix using the expression editor. See Transform and Cleanse Data for more information.
Visualize Data	Open an existing Toad Data Visualization file (.tdv), refresh the chart, and export contents as a report. Select from a number of output file formats, including PDF and Excel. • Data Visualization document—Select an existing Toad Data Visualization file. • Output file—Select a file location, file name, and file type for your output file. You can use a variable in this field by entering the hash symbol before and after the

Activity	Description
	variable name (#VariableName#). • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click (x)= to select a variable or build a new suffix using the expression editor. See Visualize Data for more information.
Compare Data	Open a Toad Data Compare project (.dcp) and export the contents as a summary report and detailed object reports. Select from a number of output file formats for the summary report, including PDF and Excel. • Data Compare Project—Select an existing Toad Data Compare project file. • Summary Report—Select a file location, file name, and file type for the comparison summary report file. • Object reports folder—Select a destination folder for the detailed object comparison reports generated by the activity. • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click (x)= to select a variable or build a new suffix using the expression editor. • Generate sync script—Select a location and enter a file name to generate a synchronization script. Click to configure options for the synchronization script. • Execute script—Select to execute the generated script. • Compare result variable—Enter a variable name or use the default. This variable is assigned a value of *True* or *False* based on the results of the data comparison. See Create Data Comparisons for more information.

Refresh a Snapshot	Use this activity to refresh a snapshot in Local Storage or in Toad Intelligence Central (TIC). This action will update the snapshot to reflect the current data in the source table.
	Select one of the following:
	• Local Storage
	  • Database—Select the database containing the snapshot to refresh.
	  • Snapshot—Select the snapshot to refresh.
	• Intelligence Central
	  • Select a destination—Select the TIC connection containing the snapshot to be refreshed.
	  • Datasource—Select the data source in TIC containing the snapshot to refresh.
	  • Snapshot—Select the snapshot to refresh.

Database Connection	In previous versions of Toad, the Database Connection activity was required in order to specify database connection details. In the current version of Toad, you can specify the database connection details within each applicable activity, eliminating the need to use the Database activity. You may continue to use the Database activity if you prefer. **Note:** The database connection specified for the Database Connection activity takes precedence over the connection specified for the individual activity.

<table>
<tr><th>Activity</th><th>Description</th></tr>
<tr><td>Loop Connections</td><td>Loops through multiple connections and executes the activities you specify. Add as many activities as you want to the loop. The Loop Connections activity can have more than one branch.
Select connections to loop through—Click Add Connections to select one or more connections to loop through.
Connection description variable—Enter a new name for the variable or use the default name. The connection description variable is a SQL-type variable comprised of one row containing the connection information for the current connection.
Use the following column names to gather connection information from the connection description variable. The exact content of each column depends on the provider type.<table><tr><th>Column Name</th><th>Description</th></tr><tr><td>DescriptionLong</td><td>Description of the connection details.</td></tr><tr><td>ProviderType</td><td>Provider type such as SQLServer, Oracle, or SAP ASE.</td></tr><tr><td>HostName</td><td>Hostname or instance for the connection.</td></tr><tr><td>UserName</td><td>User name.</td></tr><tr><td>TrueUserName</td><td>If the connection supports and uses Windows authentication (e.g., SQL Server connection) this column contains the current Windows Logon name as: domain\username (e.g., "PROD\bgates"). Otherwise, if database authentication is used, it contains the same as the UserName column.</td></tr><tr><td>Database</td><td>Default Database context for the connection.</td></tr></table>
Next, add activities to the loop to execute for each connection in the connection list.
Note: The connections you specify in the Loop Connections activity take precedence over any connection specified in an individual activity.</td></tr>
<tr><td>Dimensional Viewer</td><td>Open an existing Dimensional View file, execute the query, and export the data to Excel, Local Storage, or Intelligence Central.
Select an existing Dimensional View file.
Export to file—To export data to Excel or .csv, select a file type, a file location, and a file name. Click Export Options to specify export options. In the Export dialog, each tab represents a view.
Worksheet name—Enter a worksheet name. For an existing file, select the worksheet from the list. Overwrite must be deselected to display the list.
To add a worksheet to an existing file, select Append worksheet from the list and enter a new name.
Append rows—Select to append to the selected worksheet.
Start export at—Enter the column and row position at which to begin the export.
Export to:
Local Storage—To export data to Local Storage, select a database.
Intelligence Central—To publish the data to Intelligence Central as a</td></tr>
</table>

Activity	Description
	dataset, click **Publishing Wizard** and specify your publishing options. See Dimensional Viewer for more information.

Notes:

- To disable an activity, right-click the activity in the design window and select **Disabled**. This is helpful if you want to disable an activity while testing other activities.
- The **Stop on Error** option for each activity allows you to select whether to stop or continue execution if Toad encounters an error during that activity.
- To prevent an error in one activity from causing a failure at the script level, clear the **Generate Error** check box (Activity Info tab) for that activity.
- Select the Log tab to review a script's execution log.
- In the **Suffix** field, the drop-down list includes two predefined suffixes (Date and DateTime). The list also includes any suffixes you have created and saved since installing Toad. To delete a suffix from the list, select the suffix, click (x)=, delete the suffix in the **Expression** field, and click **OK**.
- Automation does not support positional parameters denoted by a question mark.
- For each applicable activity, you can specify the database connection in the activity's properties. The default connection is the currently-active open connection.
- The connection associated with an activity takes precedence over the connection information in a report or SQL script, unless the report or SQL script information is a cross-connection query.

Use File Automation Activities

You can use the following activities in automation scripts.

Tip: You can save an activity and its settings as a template to reuse in other scripts. Right-click the activity in the design window and select **Save As Template**. After you create the first template, a Templates toolbox displays.

Activity	Description
Copy File	Copy or move one or more files to another location (for example, to a shared folder where they can be accessed by your business community). Review the following for additional information: • Source file—Select the file to copy. In this field, you can also use the asterisk (*) and question mark (?) wildcard characters, as well as variables, in the file name to help you select one or more files (in the same directory) to copy. To use this method: 1. Specify the file directory by browsing to and selecting one of the files. 2. Then modify the file name in the **Source file** field using wildcard characters and/or variables. • Copy to folder—Select the destination folder into which you want to copy or move the file or files. • Copy name—To rename the copied or moved file, enter a new name. **Note:** This field is only applicable when copying a single source file. • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click (x)= to select a variable or build a new suffix using the expression editor.

Activity	Description
	• Delete source file—Select to *move* the file from the source folder to the destination folder. Deselect to *copy* the file to the destination folder. • Retry—Specify the number of times to retry the copy action if an error or timeout occurs. • Wait—Specify the number of seconds to wait between retries.
Delete File	Delete one or more files from one or more specified locations. You can also use this activity to delete files that are created previously in the script. Files to delete—Click **Add Files** to select one or more files to delete. In the File Collection Editor, do one or both of the following: • To delete files created previously in the script, select a file in the left pane and click **Add**. **Note:** When a file name is displayed for selection in the left pane, any variable names that are used in the file name are visible (#MyVariable#), but suffixes are not visible. • To select other existing files, click ⋯ to browse to and select the files. In this field, you can also use the asterisk (*) and question mark (?) wildcard characters, as well as variables, in the file name to help you select one or more files (in the same directory) to delete. To use this method: 1. Specify the file directory by browsing to and selecting one of the files. 2. Then modify the file name in the Files to Delete pane using wildcard characters and/or variables. **Note:** As an example of using wildcards and variables, using the file name MonthlyReport_#var#*.xls, where #var# is Feb, would delete all reports whose file name *begins* with "MonthlyReport_Feb" in the same directory.
Log Comment	Writes a comment to the scripts's log. Log message—Enter the text of the comment you want to insert into the log when this activity executes.
Zip/Unzip Files	Create a zip file (compressed folder) and add files to it. You can add files created previously in the script to the zip file. Use this activity to zip multiple files and then attach the zip file to an email using the Email activity. You can also use this activity to unzip a zip file. Review the following for additional information: **Zip Tab** • Archive name—Select a location and name for the zip file. You can use a variable in this field by entering the hash symbol before and after the variable name (#VariableName#). • Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click (x)= to select a variable or build a new suffix using the expression editor. • Password—Enter a password if you want to password protect the zip file. • Hide password—Select this option to mask password during input. • Encryption—Select whether to create a zip file without encryption (Standard) or to encrypt the zip file. **Note:** If you encrypt the zip file, you must have a zip utility that can support 128-bit or 256-bit decryption.

Activity	Description

	• Zip all files in this directory—Select a directory. All files in the directory will be added to the zip file. You can use both this field and the **Source files** field to select files to add to the zip file.
	• Source files—Click **Add Files** to select one or more files to add to the zip file. In the File Collection Editor, do one or both of the following:
	  • To add files created previously in the script, select a file in the left pane and click **Add**.
	  Note: When a file name is displayed for selection in the left pane, any variable names that are used in the file name are visible (#MyVariable#), but suffixes are not visible.
	  • To select other existing files, click ... to browse to and select the files.
	  In this field, you can also use the asterisk (*) and question mark (?) wildcard characters, as well as variables, in the file name to help you select one or more files (in the same directory) to add. To use this method:
	  1. Specify the file directory by browsing to and selecting one of the files.
	  2. Then modify the file name in the Files to Archive pane using wildcard characters and/or variables.
	Unzip Tab
	• Archive name—Select a zip file.
	• Password—If password-protected, enter the password.
	• Extract to folder—Select a location to extract the files to.
	To learn how to use the Zip/Unzip Files activity, see the following:
	• Automation and the Zip Activity (video)

Find and Replace	This activity opens one or more files and performs find and replace actions inside the files. You can write the results to a different location and file name.
	Review the following for additional information:
	• Find/Replace—You can have multiple Find/Replace tasks within one activity. You can specify a different source file, save file, and action for each Find/Replace task.
	• Source file—Select the file in which to perform the find and replace action for the selected Find/Replace task.
	  In this field, you can also use the asterisk (*) and question mark (?) wildcard characters in the file name to help you select one or more files (in the same directory). To use this method:
	  1. Specify the file directory by browsing to and selecting one of the files.
	  2. Then modify the file name in the **Source file** field using the wildcard characters.
	• Find—Enter the content to find.
	• Replace with—Select the type of replacement content: a value, contents from a file, or a variable value.
	• Set value—Enter the replacement value, select the replacement variable, or select a file containing replacement content.
	• Save file—Select a location and file name.
	  The source file is selected by default.

Activity	Description
	• Suffix—Select a suffix to append to the file name. Select from the list of existing suffixes, or click to select a variable or build a new suffix using the expression editor. **Note:** Use drag and drop or up/down arrows to change the order of multiple Find/Replace tasks in one activity. To learn how to use the Find and Replace activity, see the following: • Automate Find and Replace (video)
FTP File	Upload or download one or more files using an FTP or SFTP connection. Review the following for additional information: • Select an FTP connection—Select an FTP connection or define a new connection. **Note:** You can define a new connection prior to using the FTP activity by selecting **View | FTP Connections**. • Transfer ONLY if—Select this option to set conditions for FTP transfer, and then select a condition from the list. If you select this option, the FTP activity only runs if the condition you specify is met. ◦ Local directory exists—Select this option to transfer only if a local directory exists, then browse to and select the directory. ◦ Local file exists—Select this option to transfer only if a local file exists, then enter the name of the local file. ◦ Remote directory exists—Select this option to transfer only if a remote directory exists, then browse to and select the directory. ◦ Remote file exists—Select this option to transfer only if a remote file exists, then enter the name of the remote file. • Define Operations—Click to specify the files and other options for the FTP upload or download task. Review the following for additional information: ◦ Operation—Select *Upload* or *Download*. ◦ Use file mask—Select this option if you want to select files by using a file mask. Then specify file mask filtering options in the File Mask fields at the bottom of the page. ◦ Move files—Select this option to *move* the files from the source location to the target location instead of copying them. • Retry—Specify the number of times to retry the FTP connection if it fails. • Wait—Specify the number of seconds to wait between retries. To learn how to use the FTP activity, see the following: • Automate FTP Upload and Download (video)
Publish Files	Publish one or more files to Intelligence Central. You can select files created by previous activities in this script or other existing files. Review the following for additional information: Files to Publish—Click **Manage Files** to select files created previously in this script or to browse for other files to publish. In the **File Collection Editor** do one or both of the following: • Select one or more previously-created files in the left pane and click **Add**. • Click and then browse to select an existing file.

Activity	Description
	Publishing Options—Click **Publishing Wizard** to select an Intelligence Central connection and specify publishing options. See Publish to Toad Intelligence Central for more information.

Notes:

- To disable an activity, right-click the activity in the design window and select **Disabled**. This is helpful if you want to disable an activity while testing other activities.
- The **Stop on Error** option for each activity allows you to select whether to stop or continue execution if Toad encounters an error during that activity.
- To prevent an error in one activity from causing a failure at the script level, clear the **Generate Error** check box (Activity Info tab) for that activity.
- Select the Log tab to review a script's execution log.
- In the **Suffix** field, the drop-down list includes two predefined suffixes (Date and DateTime). The list also includes any suffixes you have created and saved since installing Toad. To delete a suffix from the list, select the suffix, click (x)=, delete the suffix in the **Expression** field, and click **OK**.
- Automation does not support positional parameters denoted by a question mark.

Tips:

- For activities in which you can add a suffix to the output file, click (x)= to build a suffix using the expression editor.
- You can use the expression editor to select a variable created in a previous activity or select one of your stored bind variables.

Use System Automation Activities

You can use the following activities in automation scripts.

Tip: You can save an activity and its settings as a template to reuse in other scripts. Right-click the activity in the design window and select **Save As Template**. After you create the first template, a Templates toolbox displays.

Activity	Description

Set Variable	Automation variables are a powerful tool that can greatly extend your scripts by adding flexibility and customization. You can use variables to represent and store data that may be different each time the script executes. Variables can be used with almost every Automation activity.
	Use this activity to define one or more variables.
	Review the following for additional information:
	• Variable name—Enter a name for the variable. When you use the variable name later in the script, for example in a file name or in an expression, surround the variable name with the hash symbol (#MyVariable#).
	• Variable type—Specify a variable type.
	  • SQL—Select *SQL* if you plan to use the result set of a query as the variable value.
	  • DateTime—See Using Variables in Automation for more information about date variables.
	• Variable value—Enter a value or click (x)= to build an expression.

Activity	Description
	• If you click to build an expression, select from the list of variables, operators, and functions. Click a category in the left pane to display a list of items in the right pane. Double-click an item to add it. Click **Test** to test the expression. • If you selected *SQL* as the variable type, the variable value options expand to allow you to specify a query. Select a database connection, then select a SQL file or enter a SQL statement. Toad uses the result set of the query as the value for your variable. See "Using Variables in Automation" on page 146 for more information about SQL type variables. • Prompt during run—Select this option to instruct Toad to prompt for a new variable value during manual execution. The new value is used for the current execution only. The *default value* specified in **Variable value** remains unchanged. The *default value* is used for a scheduled script. • Add—Click to specify an additional variable/value pair. Use Up and Down buttons to reorder list. • Define variable prompt values – This option is used for creating a custom list of variable values. It is enabled by selecting the Prompt during run checkbox. After the checkbox is ticked, the Define variable prompt values link appears along with a field for selecting the connection that will be used to run the query that populates the list of predefined values for the specific variable. To learn more about variables, see the following: • Using Variables in Automation • Automation and Variables (video)
Set Variable Value	Use this activity to assign a new value to a variable previously defined in the current script or current activity. You can assign a new value to any variable type, except SQL. Review the following for additional information: • Variable name—Select a previously-defined variable. • Variable type—Displays the variable type of the selected variable. • Variable value—Enter a new value or click to build an expression. • Add—Click to select an additional previously-defined variable. See Variable Scope in *Using Variables in Automation* to learn more about how to use this activity with the Set Variable activity.
If..Condition..	Execute one or more activities if a condition you specify evaluates to true. You can add several branches to the If Condition activity to simultaneously evaluate more than one condition. To learn how to use the If Condition activity, see the following tutorial: • Using the If Condition in Automation (video) Use the expression editor to build an expression that evaluates a condition. Typically this includes a variable (user-defined or built-in). • Expression—Build your expression by selecting from the list of variables, operators, and functions. Click a category in the left pane to display a list of items in the right pane. Double-click an item to add it. Click **Test** to test the expression.

Activity	Description
	This activity can have one or more branches. To delete a branch, select it and press **Delete**. To add a branch, right-click the activity (the outside loop) and select **Add Branch**. If you have multiple conditions, they do not have to be mutually exclusive. Multiple branches can be true. To learn more about variables, see the following: • Using Variables in Automation • Automation and Variables (video)

Loop Dataset	Loops through each row in a dataset and performs the activities you specify. The dataset is the result set of a query you provide (the driving query) and is stored in the dataset variable. Add as many activities as you want to the loop. The Loop Dataset activity can have more than one branch.
	Tip: You also have the option to select any SQL-type variable created in a previous activity to use as the dataset variable. Activities that create SQL-type variables include Execute Script, Set Variable, or Loop Dataset.
	To learn how to use the Loop Dataset activity, see the following tutorial:
	• Automation and the Loop Dataset Activity (video)
	Review the following for additional information:
	• Dataset variable—Enter a new name for the dataset variable or use the default name.
	• Select dataset variable—(Optional) You can select one of the SQL-type variables created in a previous activity to use as the dataset variable.
	• Connection—Select a connection.
	• SQL script file—Select a SQL file to use as the driving query. After the script executes, the result set of the driving query is stored in the dataset variable.
	  • Click the drop-down list to select a file from the currently open project in the Project Manager.
	  • Click to browse to and select a SQL file.
	  • Click to open the SQL file (you just selected) in the Editor where you can modify the SQL.
	Note: Click to preview the query results.
	• Link SQL file—Select to link the SQL script file you selected in the previous step.
	• SQL script—Enter a SQL statement to use as the driving query (if you did not select a SQL file).
	• RowCount variable—Enter a name for the row count variable or use the default. The value assigned to this variable equals the number of rows returned from the activity. See "Using Variables in Automation" on page 146 for more information.
	Tip: In the Loop Dataset, you can use the following format to filter data from the dataset variable when referencing it: <*dataset variable name*>.<*filter parameter*>.
	Example: Loop_data_1_SQL.region_id, where region_id is a column name

While..	The While activity runs a loop while a condition you specify is true. The activity ends when the condition becomes false, or when the activity completes the selected number of loops. Each loop executes the activities you specify. To learn how to use the While activity, see the following tutorial:

Activity	Description
	• Using the While Loop in Automation (video) Use the expression editor to build an expression that evaluates a condition. Typically this includes a variable (user-defined or built-in). • Expression—Build your expression by selecting from the list of variables, operators, and functions. Click a category in the left pane to display a list of items in the right pane. Double-click an item to add it. Click **Test** to test the expression. • Loop—Enter the number of times to loop the activity. If the condition never becomes false, Toad ends the activity after this number of loops. The default is *10*. This activity can have one or more branches. To delete a branch, select it and press **Delete**. To add a branch, right-click the activity (the outside loop) and select **Add Branch**. If you have multiple conditions, they do not have to be mutually exclusive. Multiple branches can be true. To learn more about variables, see the following: • Using Variables in Automation • Automation and Variables (video)
Send Email	Use this activity to distribute reports produced by previous activities in the script or to send notification of script execution status. **Note:** To use this activity, an SMTP service must be running. Review the following for additional information: • From—Enter your email address or click ··· to auto-populate this field with your email address. **Note:** If you encounter a security alert message from your email application, and you want to use this auto-populate feature, grant Toad access (at least temporarily). • To—Enter an email address or click ··· to auto-populate this field with your email address. • Prompt—Select to convert the **To** field to a variable and instruct Toad to prompt for a new variable value during manual execution. The new value is used for the current execution only. The *default value* specified in **To** remains unchanged. The *default value* is used for a scheduled script. • Email Server Settings—Click this button to specify your SMTP email server settings. • Server—Enter the address of your SMTP email server or click ··· to auto-populate this field. If Toad is unable to auto-populate this field, contact your email administrator for the SMTP email server address. **Note:** The email server setting automatically defaults to that specified in the script's Settings (click the Settings icon and then click the **Compose Email** button). • User name / Password—If a non-SSL connection requires authentication, enter credentials. If using a secure connection, enter credentials, select **Use Secure connection** and select SSL or TLS. • Subject, Body—Enter a subject line and enter text for the body of your email. • Add Attachments—Click to add files created by this script or to browse for other files to add as attachments. In the **File Collection Editor** do one or both of the following: • Select one or more previously created files in the left pane and click **Add**.

Activity	Description
	• Click and browse to select an existing file. In this field, you can also use the asterisk (*) and question mark (?) wildcard characters, as well as variables, in the file name to help you select one or more files (in the same directory) to add. To use this method: 1. Specify the file directory by browsing to and selecting one of the files. 2. Then, in the File Collection Editor, modify the selected file name (in the right pane) using wildcard characters and/or variables. • Use file for body—Select a file to use as the body of the email. This is useful if you want to include report contents in the body of the email instead of as an attached file. For example, in the Select to File activity you can select HTML as the output file format, and then use this HTML file as the body of the email. In another scenario, you can use a form letter as the body of your email. Create a form letter template and then customize the file with the Find and Replace activity. **Note:** In the **To**, **CC**, **Subject**, and **Body** fields: You can use a variable in this field by entering the hash symbol before and after the variable name (#VariableName#). To learn more about how to use email in an Automation script, see the following: • Automation and Email (video)
Run Program	Run a program with optional command-line arguments. Review the following for additional information: • Program—Select a batch file (.bat) or executable (.exe) file. • Arguments—Enter command-line arguments. You can also enter a variable, such as #sleep# in this field. **Note:** If you want to run a macro in Access, enter *databasename* /x *macroname* in this field. For example, if you have a macro that beeps and runs in your Northwind database, you would enter *Northwind 2007.accdb /x beep.* • Run directory—Select the directory to change to, when running the program. • Run style—Select the window state for the program when it runs. • Verb—Enter verbs used when running the program, such as "Print". • Wait for program to exit—Select this option to pause if there is an error. Select duration of wait time in minutes. • Return code variable—Enter a variable name or use the default name. You can use this variable with the If Condition activity. Return code (exit code) values of 16384 (4000 hex) or larger do not generate a script error in this activity. Other return code values do. This allows you to use your program to generate a custom return code value in this range and use it in subsequent activities without generating a script error. **Note:** If the script opens a command-line window, you must manually close the window once the script completes.
Run Automation Script	Run another automation script in your current automation script. Review the following for additional information: • Automation script—Select an automation script (.tas file). • After selecting a script, click to open the child script in a new window. • Return code variable—Enter a variable name or use the default name. The return code variable is a built-in variable. After the child script executes, the return code

Activity	Description
	value is stored in this variable. Return code values are: ◦ 0 = Successful execution ◦ 999 = An error occurred during execution ◦ 111 = An error occurred, but you selected continue on error. You can use this variable with the If Condition activity.
Pause	Stops an activity for a specified number of seconds before continuing. This is useful, for example, if you are using parallel activities and need to pause one branch while waiting for results or the complete execution of another branch. For an example of how to use the Pause activity in an Automation script, see the following: • Using the While Loop in Automation (video)
Group Activities	Use this activity to group and organize two or more activities together.
Throw Error	Use this activity to generate an error and add a custom error message to the script execution log. Select **Stop On Error** to stop the script after the error is logged. This option is independent of the global Stop/Continue on Error option specified in script Settings or the Stop on Error option in the Activity Info tab. This activity generates a script exit code of 555.
Parallel	Run two or more activities in parallel. After adding the activity to the design window, hover over the activity to display a drop-down list of view options. View Parallel—Normal view. View Cancel Handler—Select to add cancel handler activity. View Fault Handlers—Select to add fault handler activity. This activity can have one or more branches. To delete a branch, select it and press **Delete**. To add a branch, right-click the activity (the outside loop) and select **Add Branch**.

Notes:

- To disable an activity, right-click the activity in the design window and select **Disabled**. This is helpful if you want to disable an activity while testing other activities.
- The **Stop on Error** option for each activity allows you to select whether to stop or continue execution if Toad encounters an error during that activity.
- To prevent an error in one activity from causing a failure at the script level, clear the **Generate Error** check box (Activity Info tab) for that activity.
- Select the Log tab to review a script's execution log.
- In the **Suffix** field, the drop-down list includes two predefined suffixes (Date and DateTime). The list also includes any suffixes you have created and saved since installing Toad. To delete a suffix from the list, select the suffix, click (x)=, delete the suffix in the **Expression** field, and click **OK**.
- Automation does not support positional parameters denoted by a question mark.

Using Variables in Automation

Automation variables are a powerful tool that can greatly extend your scripts. Variables can add flexibility and customization. Variables can be used in almost every Automation activity.

Watch Using Variables in Automation for a video demonstration of this feature.

How to Create Variables

User-Defined Variables

You can use the Set Variable activity to create user-defined variables. See "Use System Automation Activities" on page 141 for more information.

Built-In Variables

Several Automation activities create variables by default. The following built-in variables are created by Automation activities.

- RowCount variable— This integer type variable is created by several activities. The value assigned to this variable is the number of rows returned by the query in the activity.
- Return code variable— This integer type variable is created by the Run Automation Script and the Run Program activities. The variable value is assigned based on the execution status of the script or program.
- Built-in SQL type variables—The Loop Dataset and Execute Script activities create a SQL type variable which is used to store the result set of a query. The Loop Connections activity creates a SQL type variable with only one row containing connection information.
- Activity Result variable—This variable captures the result of each activity's execution. If an error occurs, it captures the error message. The name of this variable is _ACTIVITY_RESULT.

The Automation script creates the following built-in variables.

- Root path variable—This string type variable is created by the script. The value assigned to this variable is the path you specified in the **Root path** field in either the Test environment or the Production environment area in script Settings. The path that is applied depends on which environment (*Test* or *Production*) is selected at the time the script is executed.
- Run mode variable—This string type variable is created by the script. The value assigned to this variable is either *Test* or *Production*, depending on the environment selected in the script Settings at the time the script is executed.

How to Use Variables

Where to Use Variables

The following are some examples of where you can use a variable (built-in or user-defined) in an Automation script.

- In the file name of a file exported by an activity.
- In the suffix appended to a file name.
- In an expression used in the While or If Condition activities.
- In a SQL statement as a bind variable for filtering data.
- In a SQL statement as a bind variable in an Import or Export template.

How to Use a Variable

To express the value of a variable, surround the variable name with hash symbols (#), for example *#myvar#*. The following are some examples of how variables might be used.

```
#myvar#_report.xlsx

Report_#Dept_Name#.xlsx

#File_1_RCOUNT# > 0
```

It is important to remember that when a variable is expressed, the variable value is substituted as text in place of the variable name (#myvar#). The only exception is when you use a variable as a bind variable in a SQL statement.

To use a variable as a bind variable in a SQL statement, use the following syntax format (regardless of what the address_id column type is):

SELECT * FROM contact WHERE address_id = :myvar

You can also use the Automation variable here as text substitution, but in this case single quotes might be required (because it is a text substitution) depending on the column type in the WHERE clause.

For example, if last_name is a character column, use the following syntax (single quotes are required):

SELECT * FROM contact WHERE last_name = '#myvar#'

If address_id is a non-character column, use the following syntax:

SELECT * FROM contact WHERE address_id = #myvar#

How to Use a String Variable in a Comparison Expression

When comparing a string variable to a string value in an expression, always surround the variable name and the string value with single quotes, for example:

'#myvar#' = 'Dog'

About SQL Type Variables

SQL type variables are created in two ways:

- You can create user-defined SQL type variables using the Set Variable activity.
- A built-in SQL variable is created by the Loop Dataset activity, the Execute Script activity, and the Loop Connection activity.

If you ask just for the variable value of a SQL type variable, Toad returns the value from the first row and column of the result set. However, you can filter by column using this syntax:

<variable name>.<column name>.

For example, Region.Region_Name returns the first value (first row) in the column Region_Name.

Dataset/SQL Variable - Special Format for Filtering

You can use the following syntax format to filter data from the dataset variable (or any SQL type variable):

<dataset variable name>.<filter parameter>

Example: Loop_data_1_SQL.region_id, where region_id is one column in the dataset variable

For example, use this format in a SQL statement (in a Select to File activity) to select and export data based on each region_id value in the dataset variable. The statement is executed with each loop of the Dataset activity.

SELECT * FROM address WHERE address.region_id = :Loop_data_1_SQL.region_id

SELECT * FROM address WHERE address.region_id = #Loop_data_1_SQL.region_id#

Bind Variables

You can store global bind variable/value combinations in Toad . After storing a global bind variable, that variable is available to use in Automation. Your stored global bind variables appear in the list of variables in the expression editor of applicable activities.

How to Create and Use Date Variables

In Automation scripts, a common use case is to create a variable to be used later in the script in a SQL statement (such as in the Select to File activity). When creating a variable for a date value, there are two variable types to choose from in the Set Variable activity: *String* or *DateTime*. The type you choose depends on how the value is to be used in the SQL.

- If the SQL expects a string value, use the *String* variable type.
- If the SQL expects a date/time value, use the *DateTime* variable type.

How to Define a Date Variable

	In the Set Variable Activity	
Example SQL	**Variable Type**	**Valid Values**

`SELECT * FROM contact`
`WHERE birth_date < to_date(:var_date, 'YYYY-MM-DD')`
`and CONTACT_ID < 20`
	String	'2017-7-7'

`SELECT * FROM contact` `WHERE birth_date < :var_date and CONTACT_ID < 20`	*DateTime*	To_date ('2017-07-07', 'YYYY-MM-DD') '2017-7-7'

Using a String. For a *String* variable type, surround the date value in single quotes. This ensures that date delimiters, such as the dash (-) or forward slash (/), do not cause Toad to interpret the value as an expression.

'2017-7-7' is treated as a string

2017-7-7 is evaluated to 2003

Variable Scope

When you are building an Automation script that uses a variable, it is important to understand the variable's scope of visibility. This section describes the concept of variable scope in Automation scripts.

Terms and Definitions

Term	Definition
Container	Let's define a container as any one of the following: • The script itself • An activity that contains other activities (like the Group, While, or Loop Dataset activities) • A branch of an activity (for example, a branch in the If Condition activity)
Levels	Suppose that a script is composed of nested containers. Each container is a different level with respect to variable scope. Level 1—The outermost container is the script itself. The script is comprised of activities. The script and its activities in the main workflow comprise the first level. Level 2—Some activities can contain other activities. "Container activities" (such as the Loop Dataset) are at the second level. Level 2 is nested below level 1. Level 3—Container activities can contain branches. A branch within a container activity is the third level. Level 3 is nested below level 2. And so on, until we get to the innermost level.
Container Activity	A container activity is an activity that contains other activities. The Loop Dataset, Group, If Condition, While, and Parallel activities are container activities.
Set Variable Activity	Use this activity to define a variable.
Set Variable Value Activity	Use this activity to assign a *new* value to a previously-defined variable.

Scope Rules

Basically, the scope of a variable includes all activities subsequent to the variable-defining activity AND either at or nested below the level at which the variable is defined.

The following are the rules for variable scope.

- **Use a variable in an expression**—You can use a previously-defined variable in an expression in an activity if the following are true:
  - The expression activity is subsequent to the variable-defining activity
  - AND the expression activity is at the same level or at a level nested below the variable-defining activity
- **Reassigning a variable value**—You can reassign the value of a variable (except a SQL type variable) at any point within the variable's scope. This task is accomplished using the Set Variable Value activity. See "Use System Automation Activities" on page 141 for more information.

  Once a variable value is reassigned, the new value applies to activities subsequent to the original Set Variable activity AND either at the same level or nested below the level of the original Set Variable activity.

  Example: You can use the Set Variable Value to turn a previously-defined variable into a counter (var=var+1) in the Loop Dataset activity.
- **Define a new variable with the same name**—You can redefine a new variable with the same name, but only within an activity that is nested one or more levels below the variable-defining activity. For example, if you defined a variable in the main workflow of your script (first level), you can define a new variable with the same name within a container activity (second level). The scope of this variable value is restricted to that container activity.

  You *cannot* define a new variable with the same name at the same level as the original.

Additional Examples to Illustrate Scope

- Run Automation Script activity—This activity is used in an Automation script (the parent script) in order to execute another Automation script (the child script). However, a variable defined in the parent script cannot be used in the child script.
- Loop Dataset activity—This activity is a container activity and can contain other activities, including a Set Variable activity. However, a variable defined in a Set Variable activity within the Loop Dataset cannot be used outside the Loop Dataset.

Execute and Schedule Automation Scripts

You can execute automation scripts on demand from the Automation window or the Project Manager. You can also schedule scripts to run on a recurring basis at a specific time. For example, schedule a script that performs long-running tasks to run when database activity is light.

When you schedule a script in Toad, the Job Manager creates a Windows scheduling task. Scheduled scripts run in batch mode. If using another scheduling application, specify "`-batch=true`" in the command. This executes the script in non-visual (batch) mode. See the procedure below.

To execute a script from the Automation window

1. Click **Run** in the Wizard bar. The script is compiled and executes immediately.
2. To view the script's execution log, select the Log tab.

3. If you want to schedule the script, first resolve any problems that caused activities to fail or disable failed activities. An activity can be disabled from its Activity Info window.

   Tip: To execute a script from the Project Manager, right-click the script and select **Execute**.

To schedule an automation script

1. With a script open in Automation, click **Schedule** in the Wizard bar. A Windows Scheduler task is created for the script and a task properties dialog opens.
2. To schedule the script, select the Triggers tab. Select the scheduling trigger for this task and click **Edit**.
3. In the Edit Trigger dialog, specify scheduling details. Click **OK** to save your changes and close the dialog.
4. To run the script when you are not logged on, in the General tab select **Run whether user is logged on or not**. Then enter your Windows credentials when prompted.
5. When finished, click **OK** to save your changes and close the task properties dialog. For detailed information about the task properties dialog, see "Schedule Windows Tasks" in the online Help.

Note: To run a scheduled script against a password-protected database, the password must be saved in the Connection Properties dialog.

To execute a script in batch mode

- To start Toad and execute a script in batch mode (non-visual mode), enter the following command and arguments:

  <*path to the toad.exe application*> -batch=true "<*path to Automation script*>"

  For example:

  C:\Program Files\Quest Software\Toad Data Point 6.4.1\toad.exe -batch=true "<*path\scriptfilename.tas*>"

Notes:

- Automation scripts are compatible with the version of Toad in which they are created. To learn how to upgrade your scripts and migrate scheduled tasks that were created in a previous version of Toad, see "Upgrade Scripts and Scheduled Tasks" in the online Help.
- The Automation module is disabled if Toad was installed with the **Prohibit saving passwords** option selected.

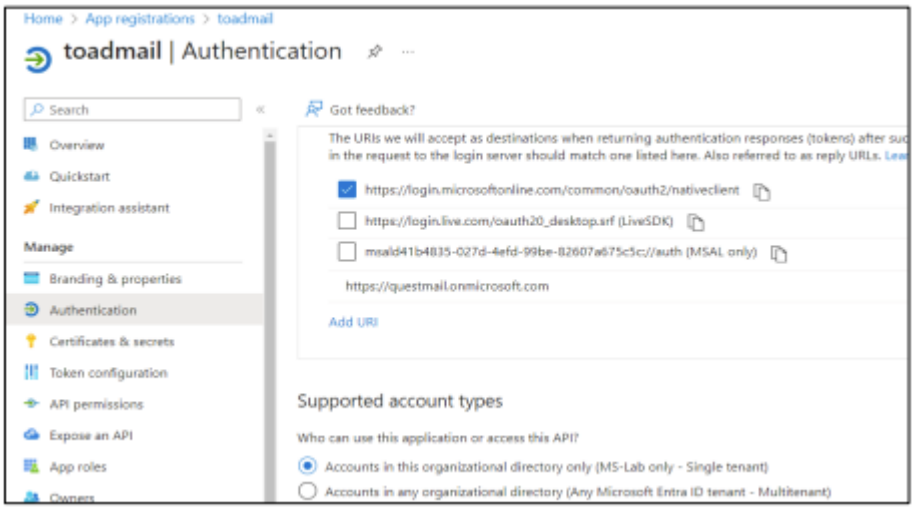
How to configure Toad to use Auth for sending SMTP Emails

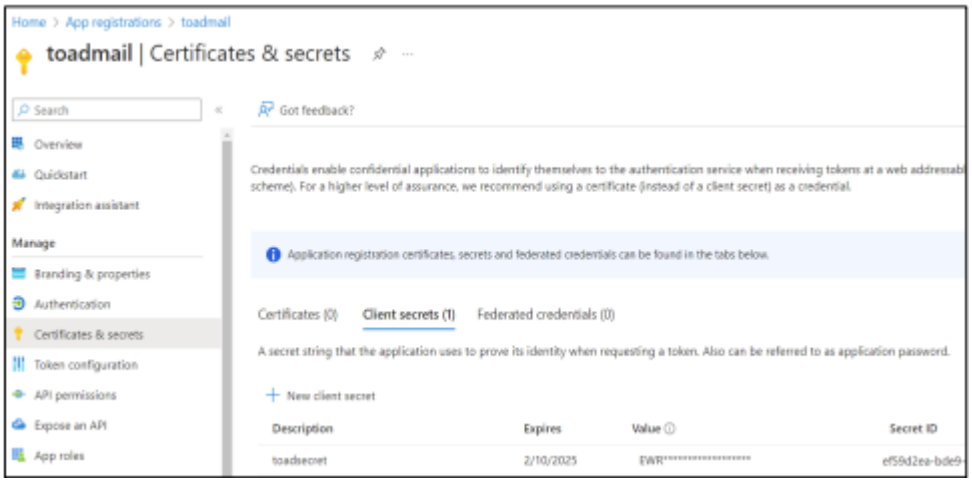
To configure Toad to use SMTP Emails, we need to get the main data from the following third parties:

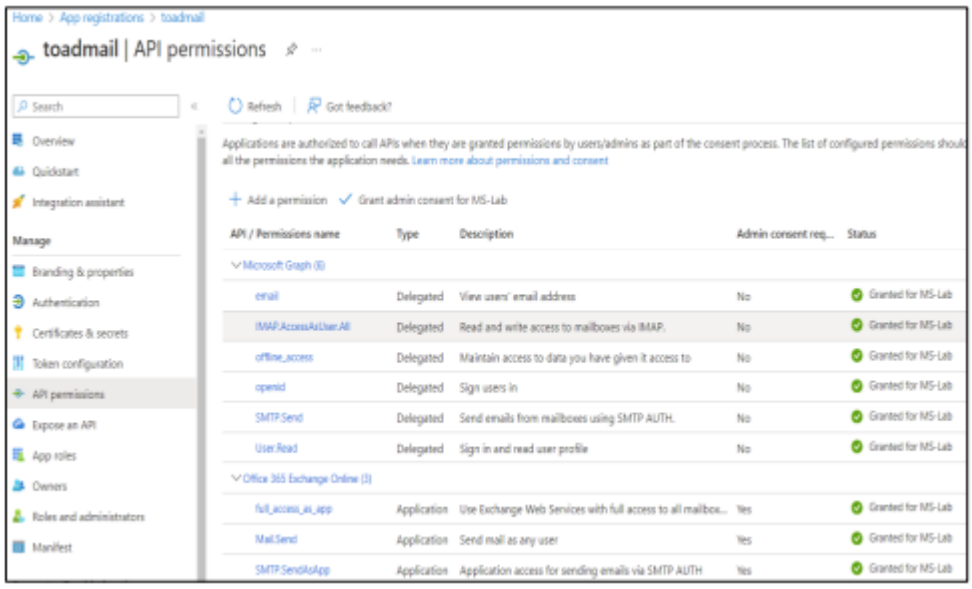
- *Azure Portal* where we register our application
- *O365 Admin Center* with at least one O365 License E5 where we register the O365 user
- *Microsoft Exchange* to configure our settings at a higher level

Configuration Steps:

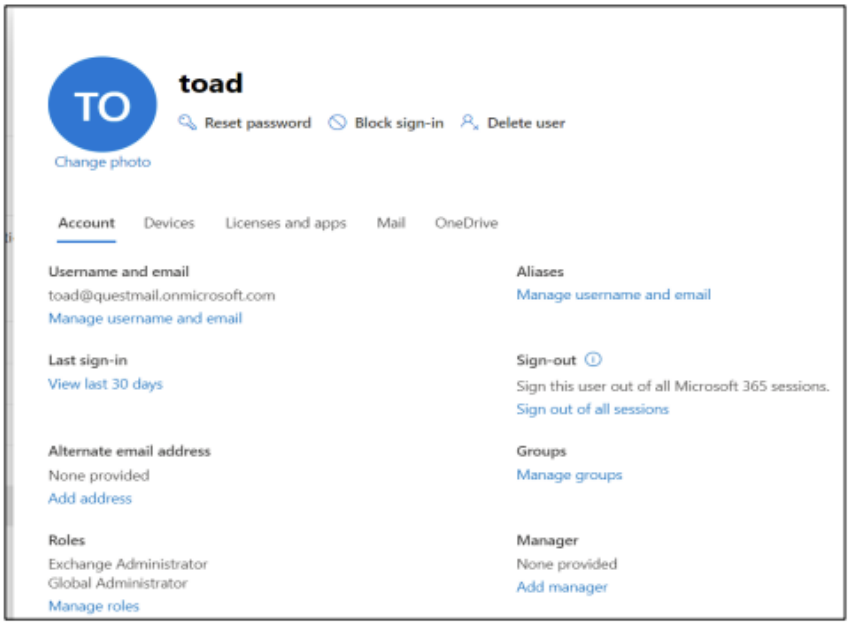
1. First, we register our application in **Azure Portal | App Registration**.

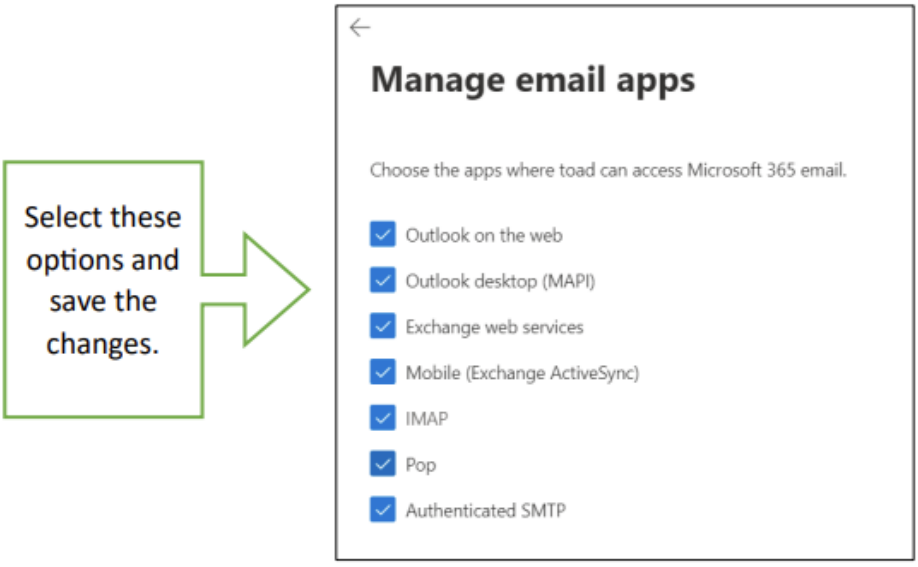




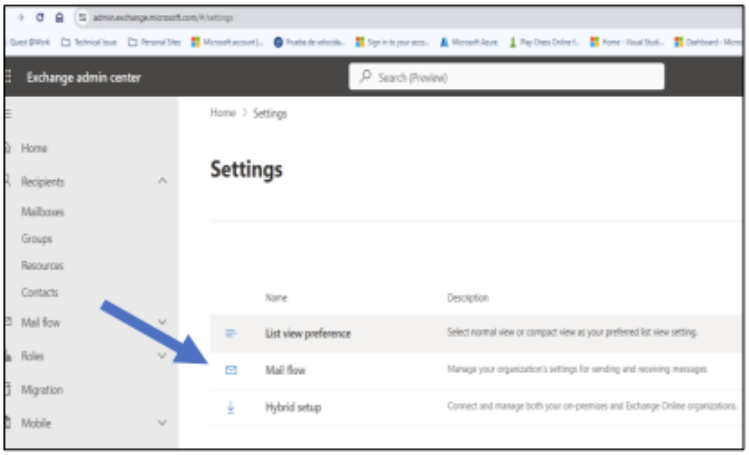


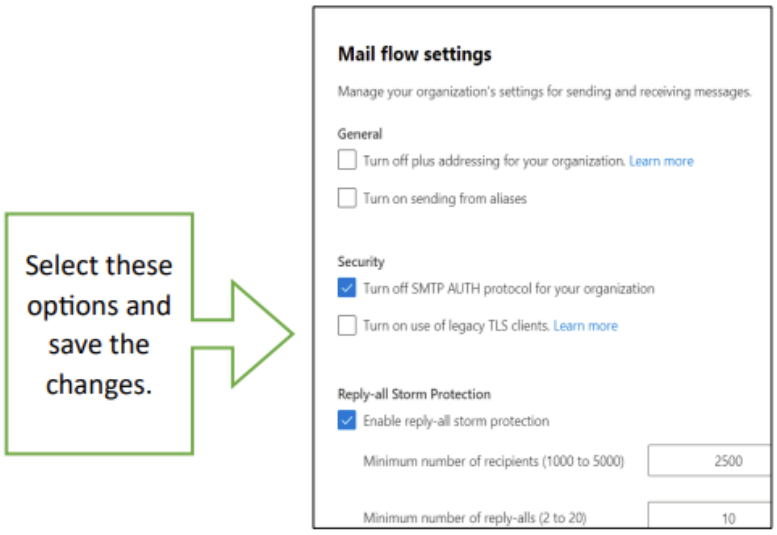
2. In the **O365 Admin Center**, let's go to create the user (toad in this case) that will use the application.





3. In **Exchange Admin Center | Settings**, make sure the Mail Flow has the settings below at the organization level.





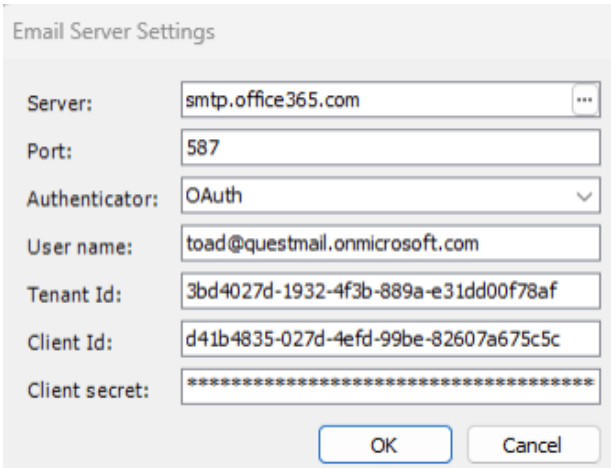
4. At this point, **Microsoft Documentation** states that the application registered has to interface and use the SMTP server.

   This refers to the setting from the **MS Entra ID | Enterprise Application registration**, NOT from App Registration. To do this it's necessary to run these PowerShell commands in the order below:

   NOTE: *The OBJECT_ID is the Object ID from the Overview page of the Enterprise Application node (Azure Portal) for the application registration. It is not the Object ID from the Overview page of the App Registrations node. Using the incorrect Objec ID will cause an authentication failure.*

```
New-ServicePrincipal -AppId d41b4835-027d-4efd-99be-82607a675c5c -ObjectId
779826e8-397c-4c74-b3a5-c874c82ed4af    <-- This is the Object_ID from
Enterprise Application

Add-MailboxPermission -Identity "toad@questmail.onmicrosoft.com" -User
d41b4835-027d-4efd-99be-82607a675c5c -AccessRights FullAccess

Get-ServicePrincipal | fl

Set-CASMailbox -Identity toad@questmail.onmicrosoft.com -
SmtpClientAuthenticationDisabled $false

Get-CASMailbox -Identity toad@questmail.onmicrosoft.com | Format-List
SmtpClientAuthenticationDisabled
```

5. In **Toad Data Point** (this example), let's set the email server specification (TenantID, ObjectID, and Secret_key).



Even if there is something small issue to define, the email is sent and received in my inbox.

Import/Export Wizard support for CSV and Excel files stored to SharePoint Online server

Toad Data Point 6.4.1 introduces the ability to import or export data directly from and to SharePoint Online Server using the Import/Export Wizard.

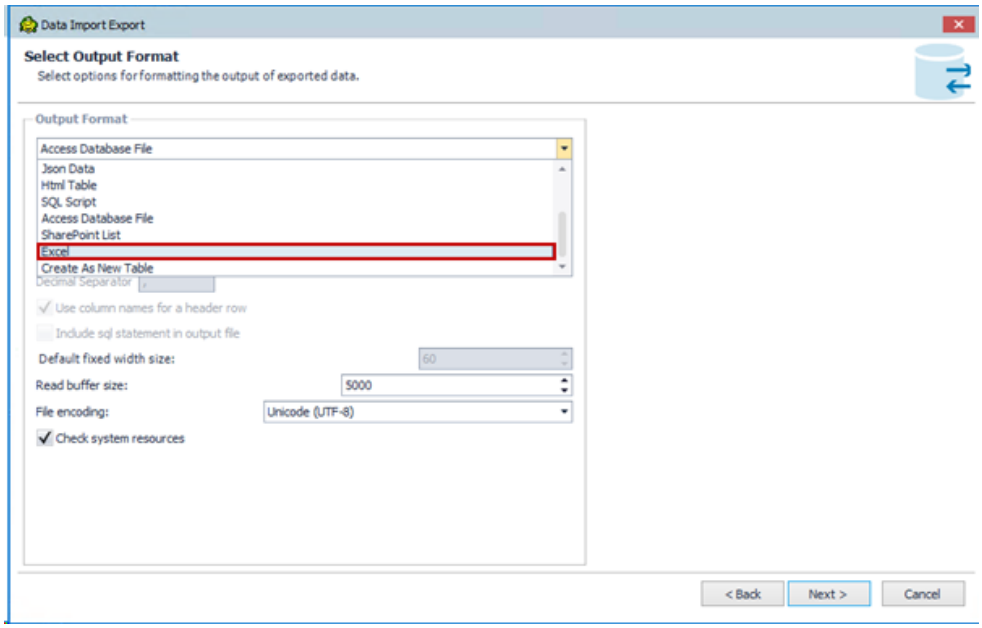
Exporting data to SharePoint Online Server (CSV or Excel files)

This guide walks you through exporting data to CSV or Excel files stored on SharePoint Online Server.

1. Launch the Export Wizard

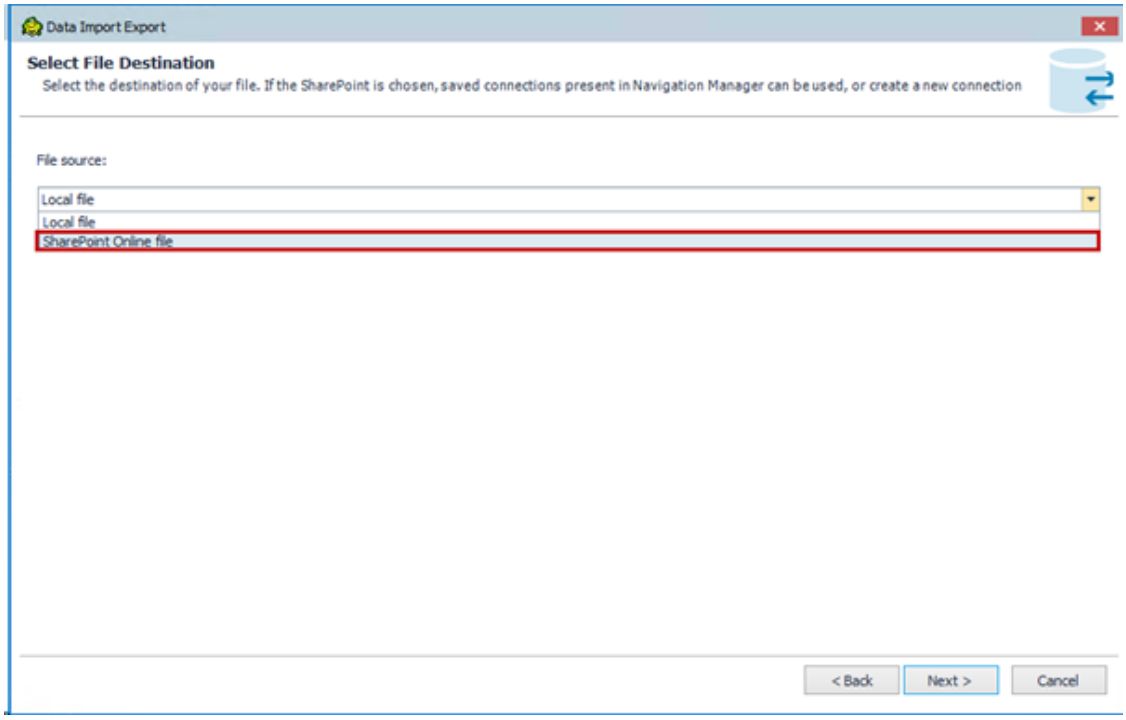
2. Select Output Format

    • Choose either Comma Separated Values (CSV) or Microsoft Excel as your output format



3. Choose a SharePoint Online file option in the Select File Destination step

    • From the File Sources drop-down list, select SharePoint Online file

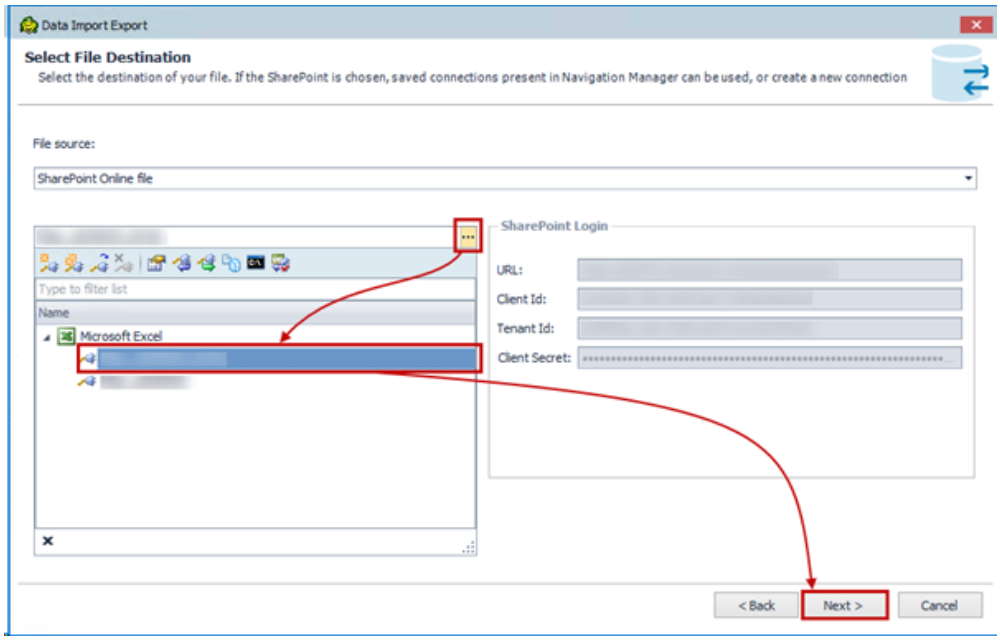


4. Select or create a SharePoint Online Server connection

Note: Based on the chosen Output format, only connection to that type will be listed – if it is Excel selected, only the Excel connections will be listed.

If you have an existing SharePoint Online Server connection:

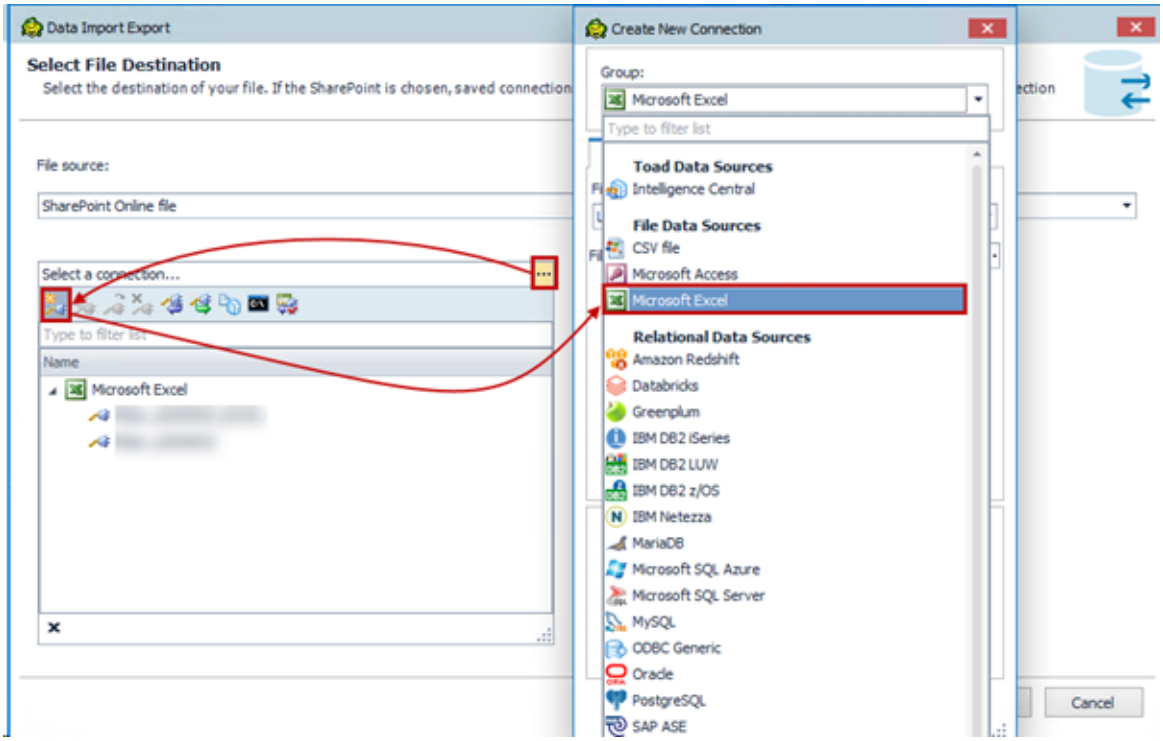
- Click the Eclipse button (...) in the Select a connection field
- Choose your connection from the list
- Click Next to continue



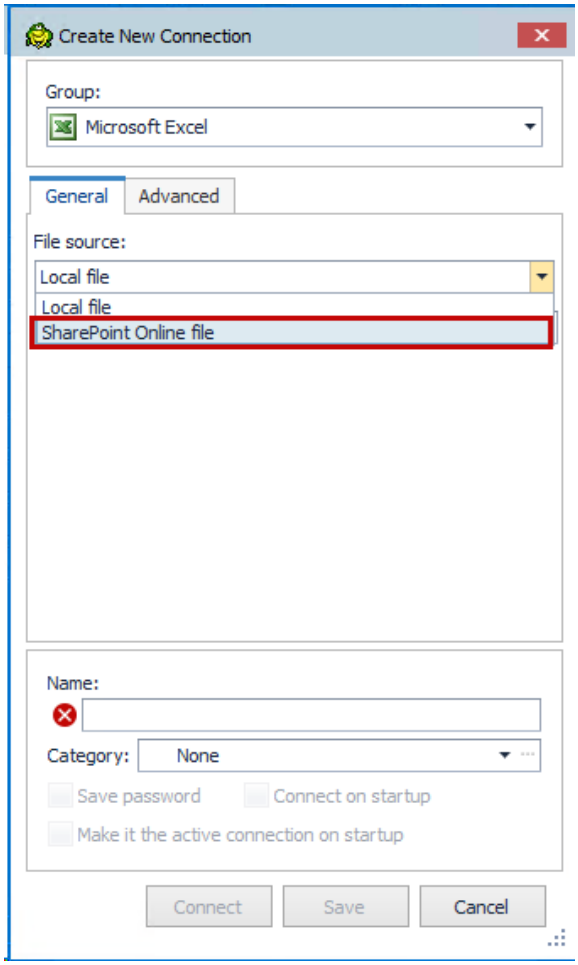
If you need to create a new connection:

- Click Create to open the Connection dialog

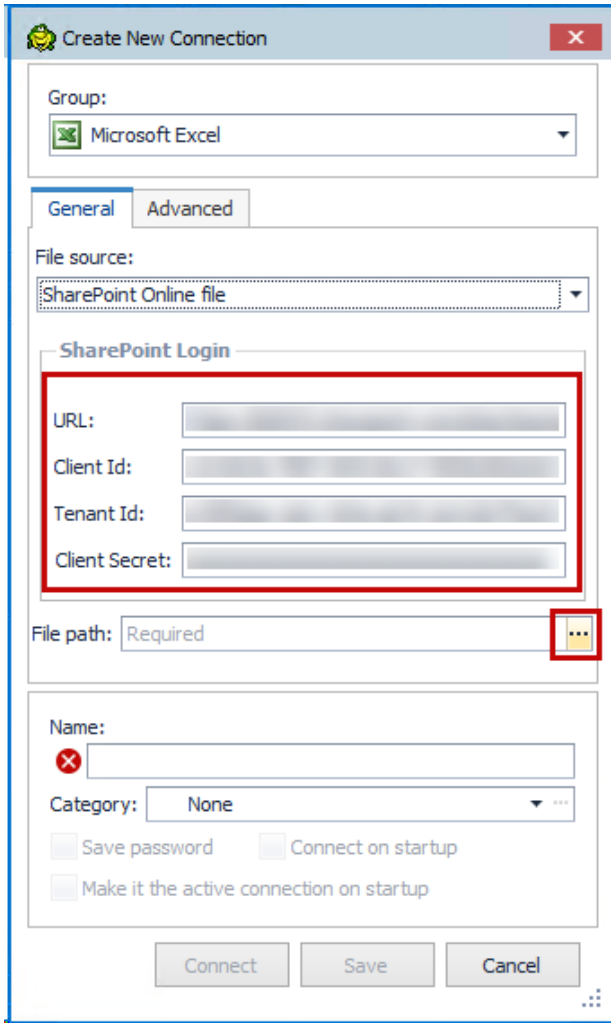
• In the Connection group, select either Microsoft Excel or CSV file, depending on your export format

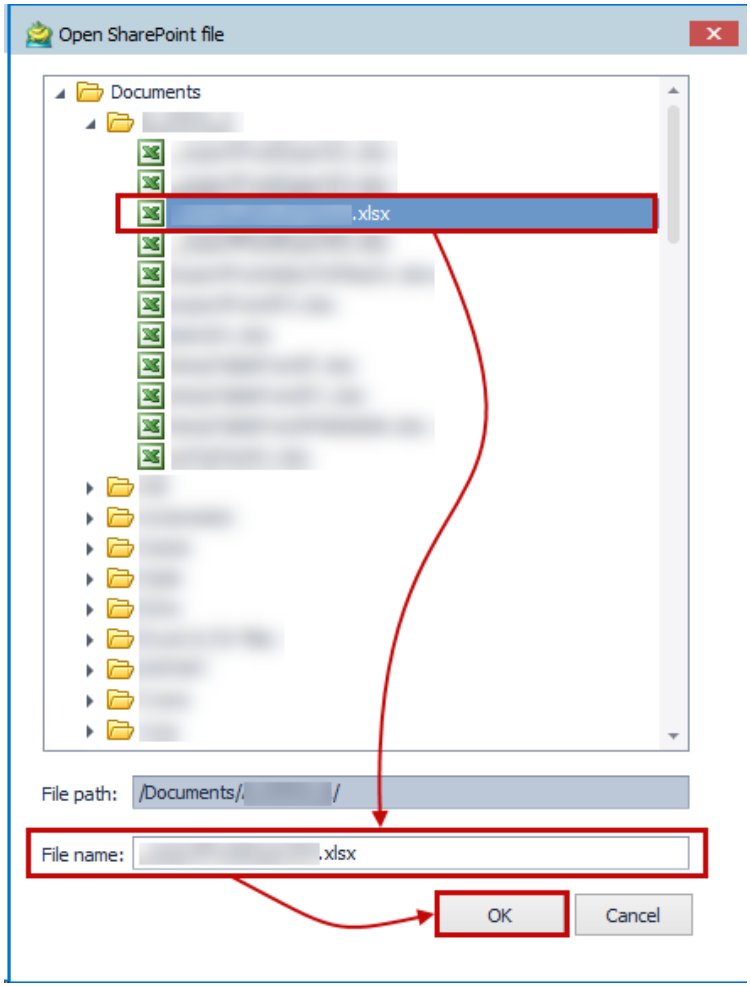


• In the File source drop-down, choose SharePoint Online file



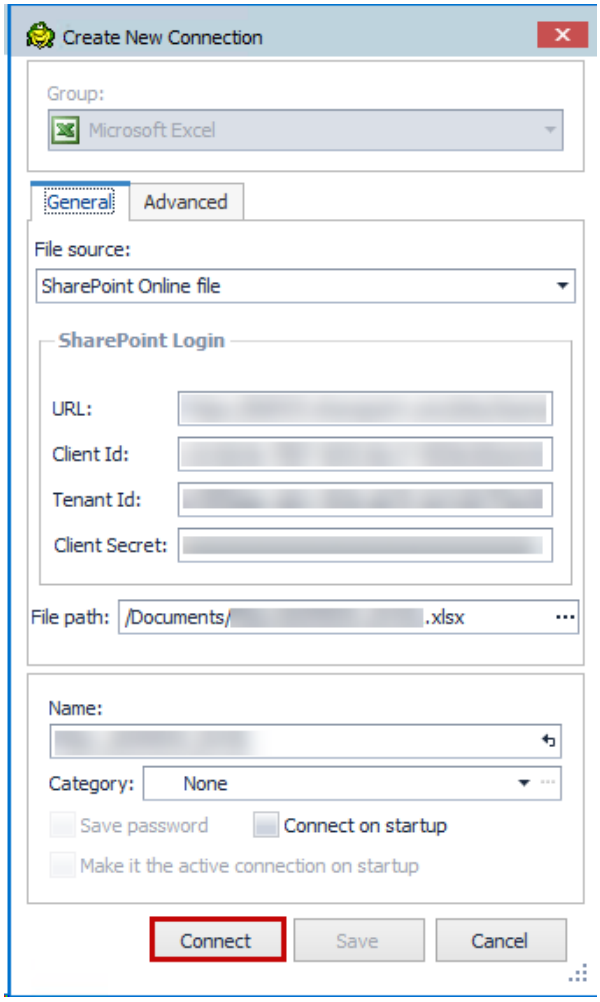
- Fill in the required connection parameters:
    - o SharePoint URL
    - o Client Id
    - o Tenant Id
    - o Client Secret
- Select a file from the SharePoint Online Server


Create New Connection
Group:
Microsoft Excel
General
Advanced
File source:
SharePoint Online file
SharePoint Login
URL:
Client Id:
Tenant Id:
Client Secret:
File path:
Required
Name:
Category:
None
Save password
Connect on startup
Make it the active connection on startup
Connect
Save
Cancel



Note: Since the Excel connection is selected, only Excel files will be listed. If you choose the CSV connection, only the CSV files will be listed.

- Click Connect



Your new connection is automatically saved and will appear in the Navigation or Connection Manager tab for future use.

Note: A file must be specified to establish the connection, but you can change it or create a new one in the next step, the Select Output Options step.

5. Specify an Excel or CSV file to export your data

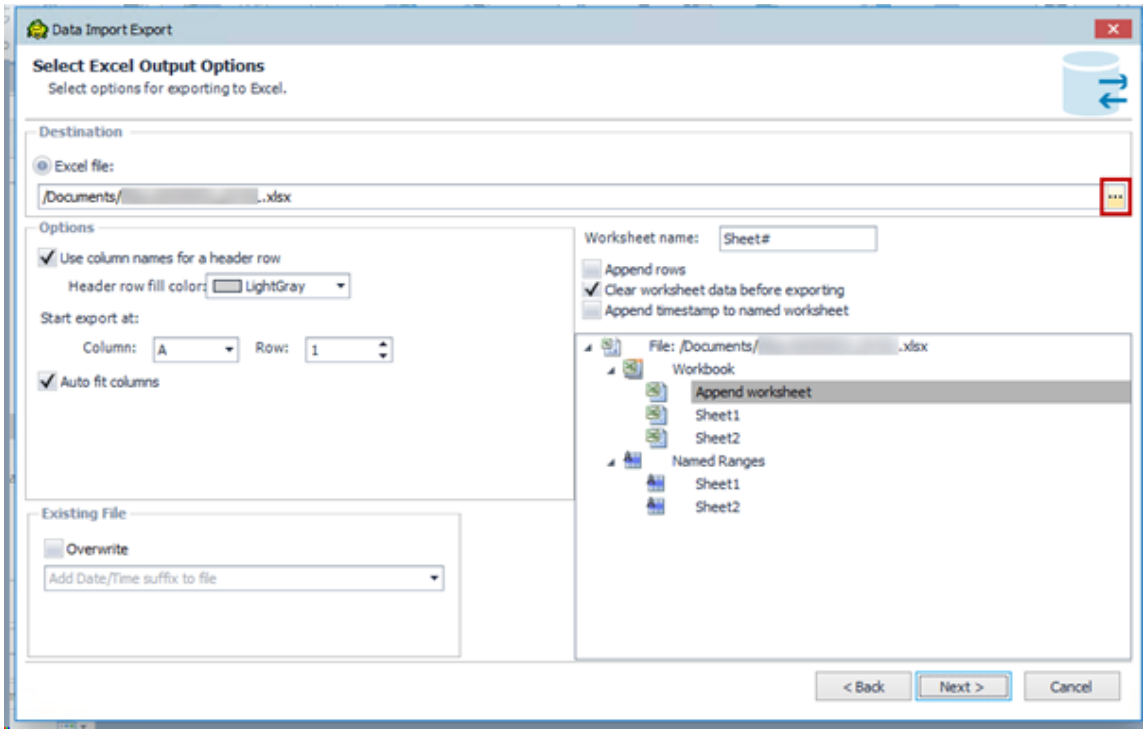
After a successful connection, you'll reach the Select Output Options step. You can:

o Choose an existing file on the SharePoint Online Server (already specified through connection, or you can choose a different one) or

o Create a new file directly from this interface

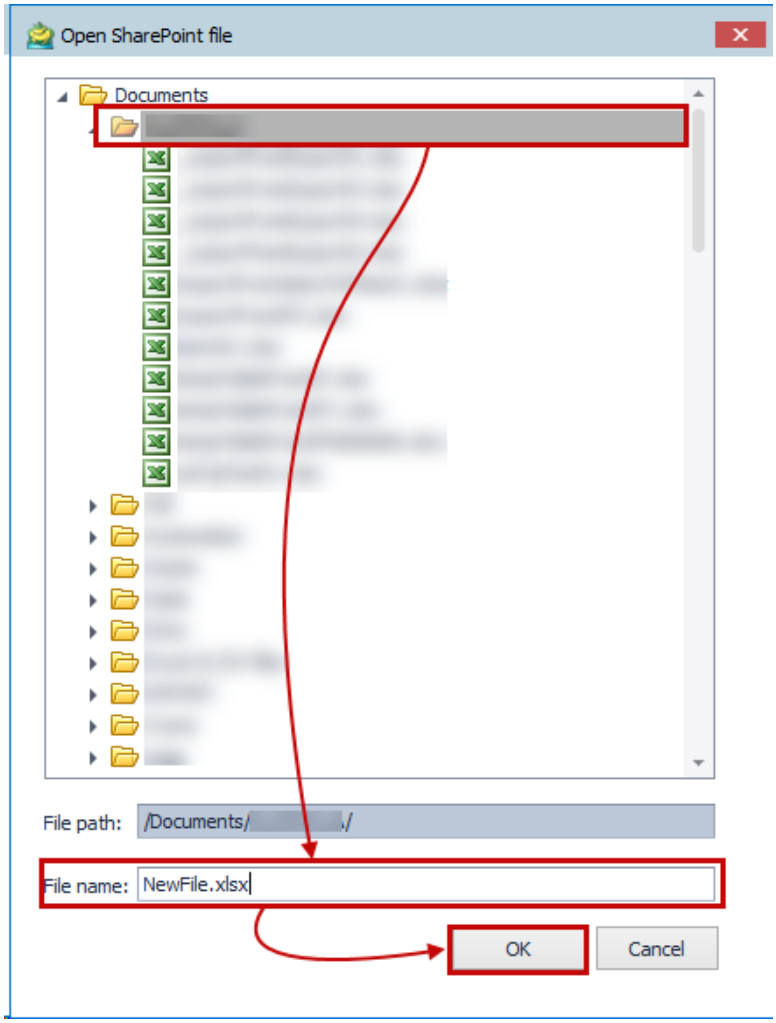
To create a new file:

1. Click the Eclipse button at the end of the Excel file field



2. Select folder where you want to save an Excel or CSV file on SharePoint Online Server and in the File name field, type the desired name for your new file

3. Click OK to proceed



4. The data will be exported into this new file on SharePoint Online Server

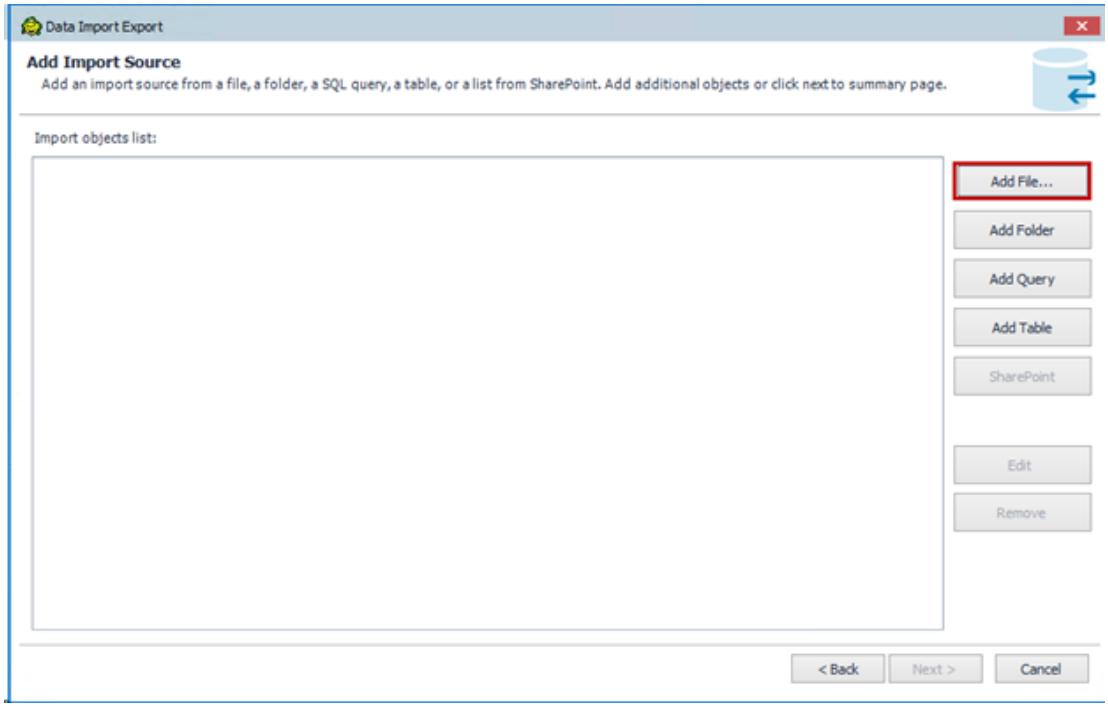
Continue through the wizard to finalize and complete your data export.

Importing data from SharePoint Online Server (CSV or Excel files)

This guide walks you through importing data from CSV or Excel files stored on SharePoint Online Server.

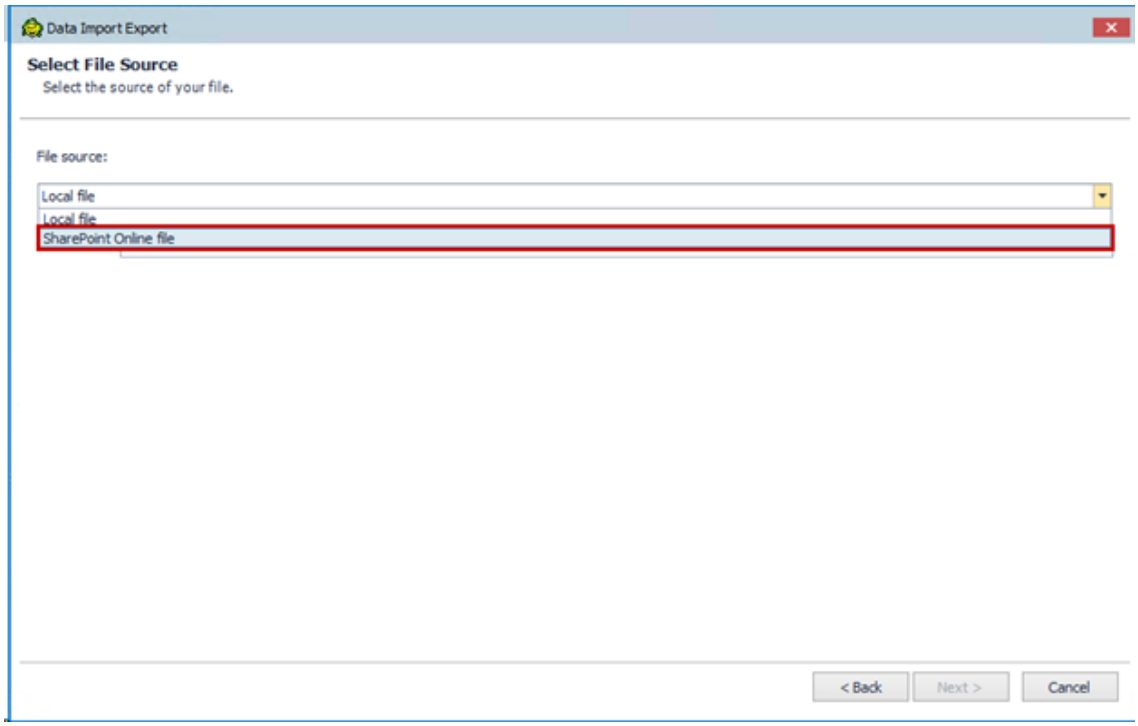
1. Launch the Import Wizard

2. Select Add file option



3. Choose a SharePoint Online file option in the Select File Source step

- From the File Sources drop-down list, select SharePoint Online file

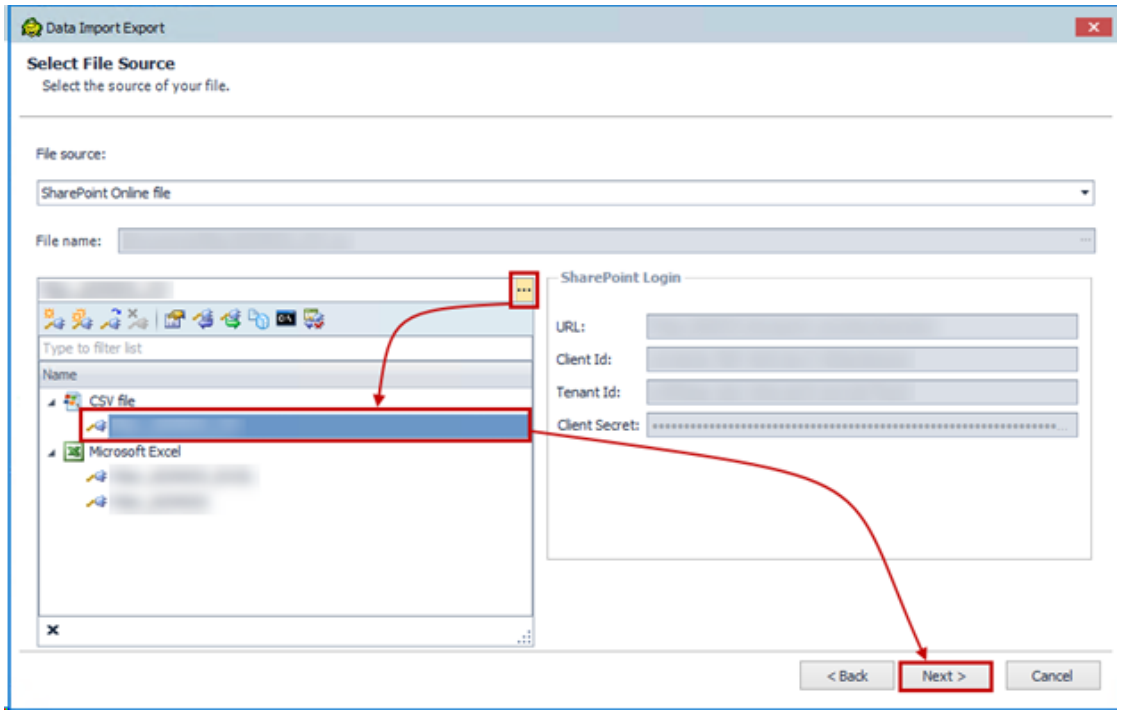


4. Select or create a SharePoint Online Server connection

If you have an existing SharePoint Online Server connection:

- Click the Eclipse button (...) in the Select a connection field
- Choose your connection from the list

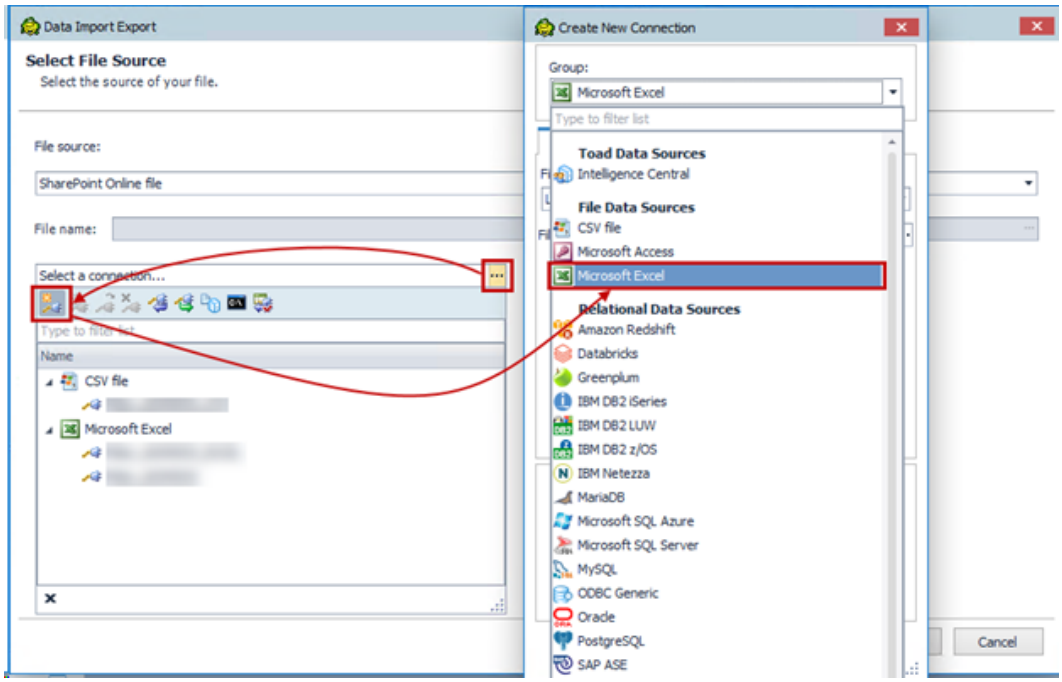
• Click Next to continue



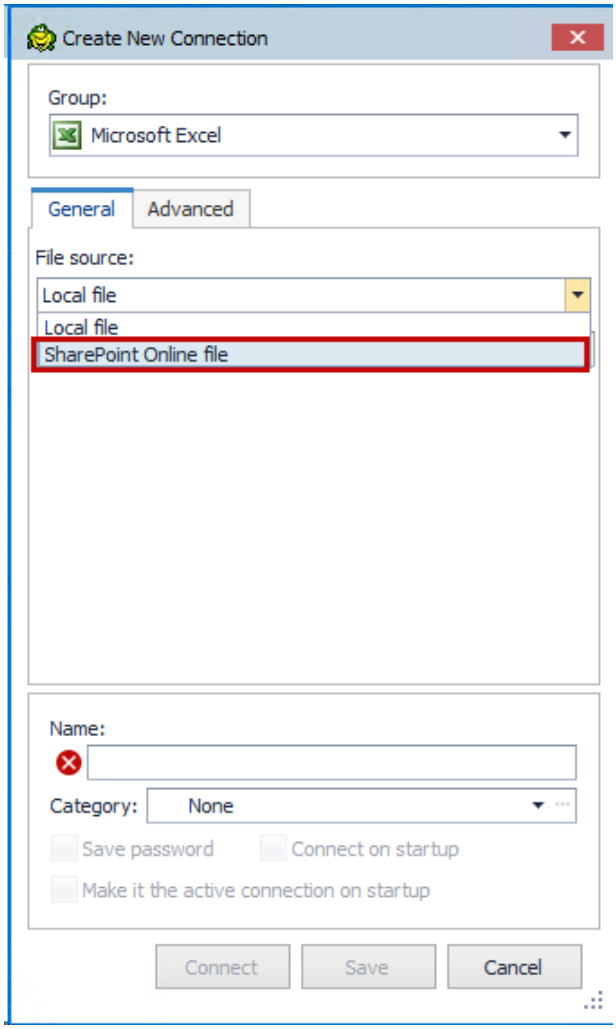
If you need to create a new connection:

• Click Create to open the Connection dialog

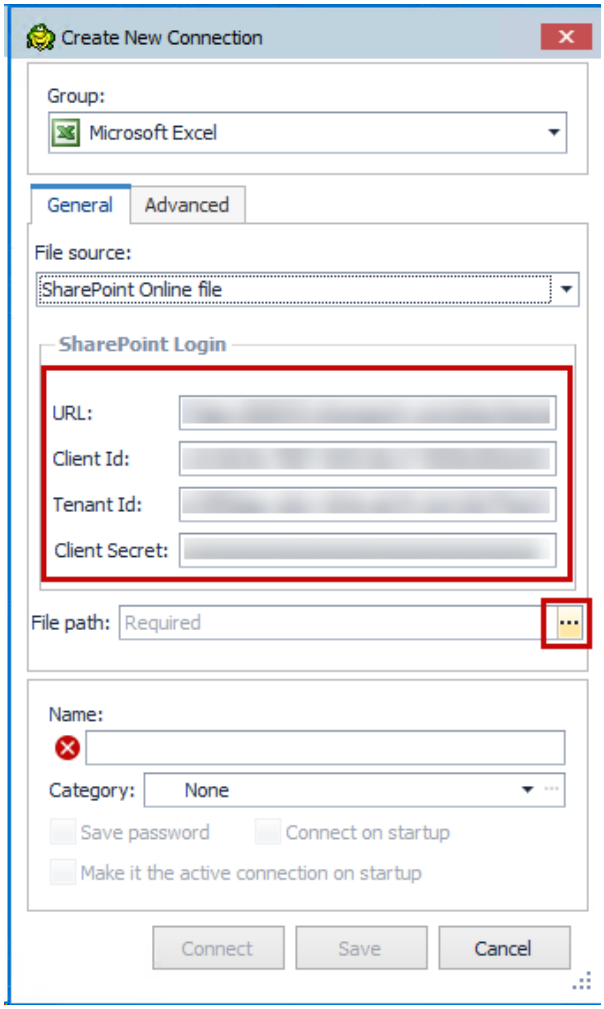
• In the Connection group, select either Microsoft Excel or CSV file, depending on your export format

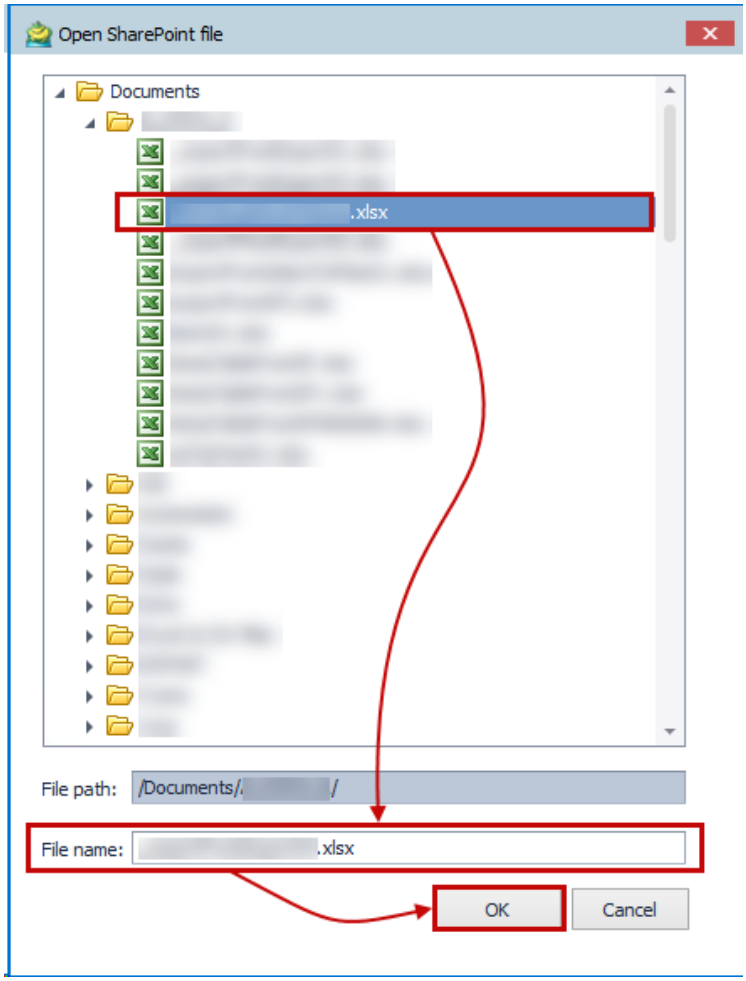


• In the File source drop-down, choose SharePoint Online file

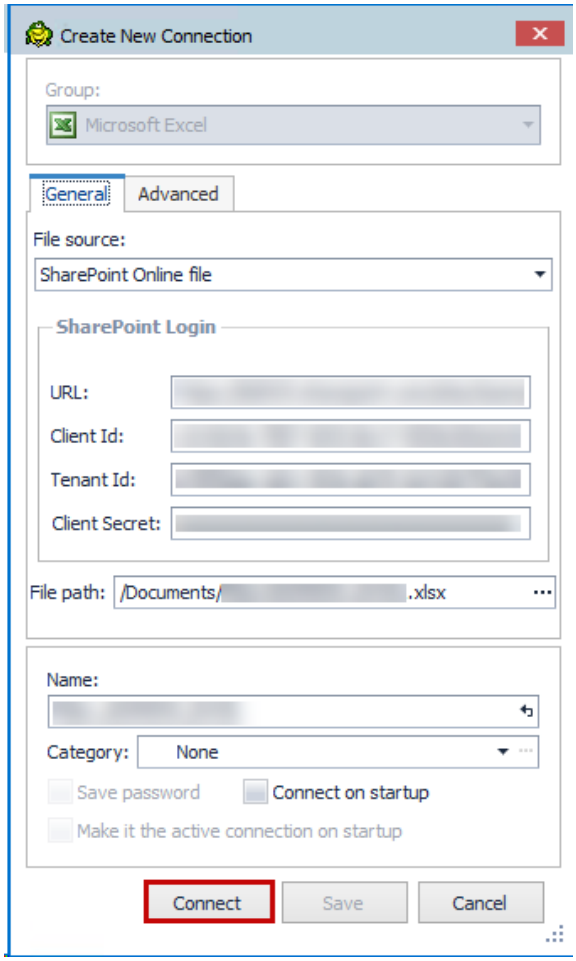


- Fill in the required connection parameters:
    - o SharePoint URL
    - o Client Id
    - o Tenant Id
    - o Client Secret
- Select a file from the SharePoint Online Server


Create New Connection
Group:
Microsoft Excel
General
Advanced
File source:
SharePoint Online file
SharePoint Login
URL:
Client Id:
Tenant Id:
Client Secret:
File path:
Required
Name:
Category:
None
Save password
Connect on startup
Make it the active connection on startup
Connect
Save
Cancel



• Click Connect



Your new connection is automatically saved and will appear in the Navigation or Connection Manager tab for future use.

Continue through the wizard to finalize and complete your data import.

No matter if you export or import data, once done, your data will be available in the specified database - ready to share, analyze, or integrate.

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- Submit and manage a Service Request
- View Knowledge Base articles
- Sign up for product notifications
- Download software and technical documentation
- View how-to-videos
- Engage in community discussions
- Chat with support engineers online
- View services to assist you with your product

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