Table of contents

About the Database Import Tool

The Database Import tool imports external ASCII files containing Log and Trend records directly into the Supervisor's archives. The main use is to make available data that has been previously exported using the Export function of a Maintenance Plan, but it could equally be used to import data generated by another system as long as it adheres to the correct format.

Before using the Database Import Tool you should take into account the following limitations and recommendations.

- It can only be used with archive units of the Historical Data Server (HDS).
- It can only be used with a database configured to use SQL Server.
- It is highly recommended that you configure an additional database in the Supervisor's archive configuration solely for use for the imported data. See the topic Configuring the Supervisors Archives when using the Database Import Tool.

The Database Import Tool has two modes of operation.

- Wizard mode. An interactive process using a wizard from which you can select the file location, period, database and table, and filter the records according to variable name.
- Express mode. Not interactive. A configuration file and command line switches are used to select the file location, period, database and table. The variable names cannot be selected (records for all variables are imported).

A reminder about exporting database records

Records are exported from the Supervisor's archives on a regular cycle using the Export task of a Maintenance Plan. Depending on how the Maintenance Plan has been configured, after the export the records might be purged removing them from the archives completely.

The export task provides various options for the configuration of the files that it generates. To allow for subsequent import, you must use a particular configuration in the Export tab of the Maintenance Task dialog.
Show picture

- Set the Export folder so that it will be accessible to the Import process.
- Select Text format.
- Select Include column headers.
- Enter DAT as the File name extension.
- Select semi-colon (';') as the Delimiter.

The data records must adhere to the correct format, otherwise they cannot be imported and the Database Import tool will display an error message.

The property Substitution string for null value must be left empty if you export data in text format in order to re-import it using the Database Import tool.

Configuring the Supervisor's Archives when using the Database Import Tool

The Database Import Tool imports data into a specific database and table selected either by the wizard or, if using express mode, the configuration file. If the data is imported into a database and table that is also being used by the Supervisor to record real-time data there are issues that must be considered.

- The accidental creation of doubloons. A doubloon occurs when there are two or more records for the same variable with an identical time-stamp.
- The import process has the option to purge all records before the import process starts. If used in error it could delete all existing records in the table without any way to recover them.
- Over-filling the database thereby stopping recording and/or triggering an unexpected purge (contingent purge).

To overcome these issues it is recommended that you import the data into a table specifically configured for that purpose.

How to configure the Supervisor's archives when importing Trend data

The following explanation assumes that you have already made the minimum configuration to record trend data. That is:

- A database with a trend table.
- An archive unit.
- Variables have been added to the archive unit's Trends folder with the Primary option selected. (Show picture).

> The Primary option determines from which table a Trend Viewer will get its data by default. You can force a Trend Viewer to get its data from an alternative table using the SCADA Basic instruction, HISTORY.

To configure the Supervisor's archives when importing Trend data:

1. Add a trend table to the database. This table will be used as the destination for the Database Import Tool. Do not select the Set as default property.
2. Add an archive unit to the Archive Units folder and select the Read only property. This will inhibit the Supervisor recording via this unit.
3. Add the variables, which are to have imported trend records, to the Trends folder of the archive unit you have just created. Configure each entry so that it uses the trend table you have set up for imported records and do not select the Primary option. Each variable should now appear in two Trend folders, one that is attached to the Archive unit in which the Supervisor is recording, and the other in the Archive unit that is configured as read only. Show picture
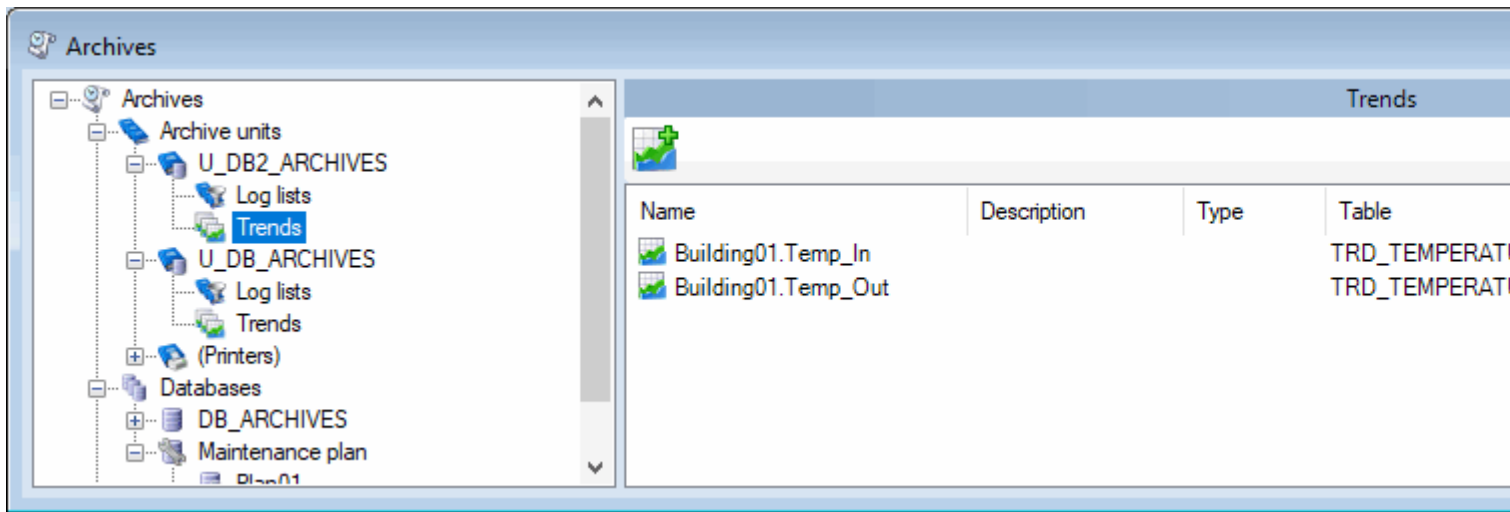
How to configure the Supervisor's archives when importing Log data

The following explanation assumes that you have already made the minimum configuration to record log data. That is:

- A database with a log table.
- An archive unit and log list with its destination pointing to the log table.

To configure the Supervisor's archives when importing Log data:

1. Add a Log Table to the database. This table will be used as the destination for the Log List that will be used for the Database Import Tool. Do not select the Set as default property.
2. Add an archive unit to the Archive Units folder and select the Read only property. This will inhibit the Supervisor recording via this unit. (If you have already added an archive unit with the Read only property set for importing trend data you can use this.)
3. Add a log list to the Log Lists folder of the archive unit you have just created. The log list should have the same name as the log list that was the source of the records to be imported but with a suffix (_IMP is suggested). For example if you want to import records previously exported from the log list LOGLIST1 you should create a Log List called LOGLIST1_IMP. Configure the Destination tab for the Log List so that it points to the Log Table you have just created.

The name of the Log List is included in each log data record.

In order to differentiate imported data, when log data is imported the Log List name can be automatically changed by adding a suffix. The imported data can then be accessed from a Log Viewer by associating it with a Log List of that name.

How to display imported trend records

By default, a Trend Viewer will display records from the trend table that has been selected as Primary. In order to force a Trend Viewer to display records from another table (in this case the one into which records have been imported) you must develop and run a small SCADA Basic program using the instruction HISTORY, mode TREND, sub-mode SETPRIMARY_UNIT. See the SCADA Basic help for detailed information.

How to display imported log data

To display imported log records, create a Log Viewer that is attached to the log list that was created for the imported records, for example LOGLIST1_IMP. You can dynamically change the Log List used by a Log Viewer using the SCADA Basic instruction LOGDISPLAY, mode LOGLIST.

There is the possibility of over-filling the database when importing records thereby stopping recording and/or triggering a contingent purge.

To avoid this a separate database should be created, containing only the Trend Table and Log Tables used for import.

Starting the Database Import Tool

The Database Import tool is installed by the Supervisor's Installation process, but it does not require the Supervisor to be running when you start it.

- In the Windows Start menu, select All Programs, then in the Supervisor's sub-folder select Tools. Database Import.

Modes

The Database Import Tool has two modes of operation.

- Wizard mode. The import is an interactive process using a wizard from which you can select the file location, period, database and table, and filter the records according to variable name. For details, see the book on Wizard Mode.
- Express mode. The import is not interactive. A configuration file and command line switches are used to select the file location, period, database and table. The variable names cannot be selected (records for all variables are imported). For details, see the topics Configuration File Format and Command Line Options.

Where the data files are stored

In either mode, one of the parameters is the location of the data to be imported. By default, files resulting from the Database Export process are held in a subfolder in the Supervisor's root folder: \Databases\Export. The structure is created automatically when the data files are first exported to the location. It contains one subfolder corresponding to each table. (Normally there are two, one for the trend table and one for the log table.) Show picture
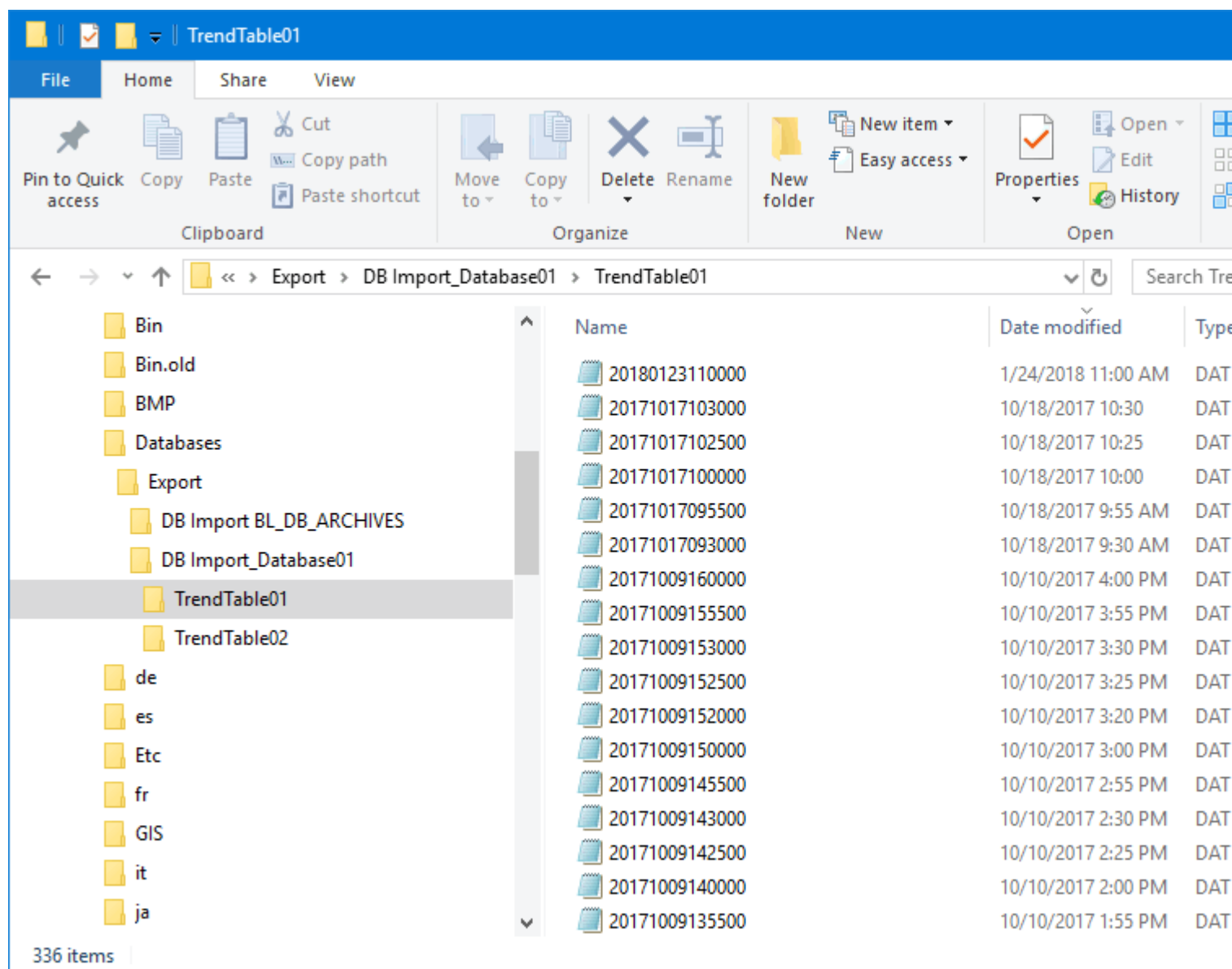
However in general the data files can be in any storage location that is accessible to the Supervisor for reading when the import process is run.

Selecting the Import Source and Period

The first step of the Database Import wizard is to complete the Import Source Configuration dialog. Show picture

1. In <u>Source Directory</u>, identify the folder that contains the data to be imported. You can enter its path in the box or use the browsing button to select it. If you are importing records created by the Supervisor's export process they will be located in a folder with the following pattern:
    <Supervisors root folder>\Databases\Export*<Project name>_<Database name>**<Database table name>*
2. Use the left-hand calendar and the <u>Start time and date</u> box to set the start of the period. The <u>Today</u> button selects the current date.
3. Use the right-hand calendar and the <u>End time and date</u> box to set the end of the period. Click on <u>Next</u> to continue.

Navigating the calendars

By default, each calendar opens with the current month displayed and the current day highlighted.

*   Use the arrows on either side of the month name to display the previous or next month.
*   Click on the title to display the months in a year. Click again for the years in a decade (e.g. 2000-2009) and again to list the decades in a century.
*   Click on a listed entry to open that period: decade, again for year, then month.

Import Filter

The Import filter dialog allows you to select the data to import.

- If you are importing Trend records it will display a list of variables that have records within the date-time range you have specified. Show picture
- If you are importing Log records it will display the names of any Log Lists that have records within the date-time range you have specified.
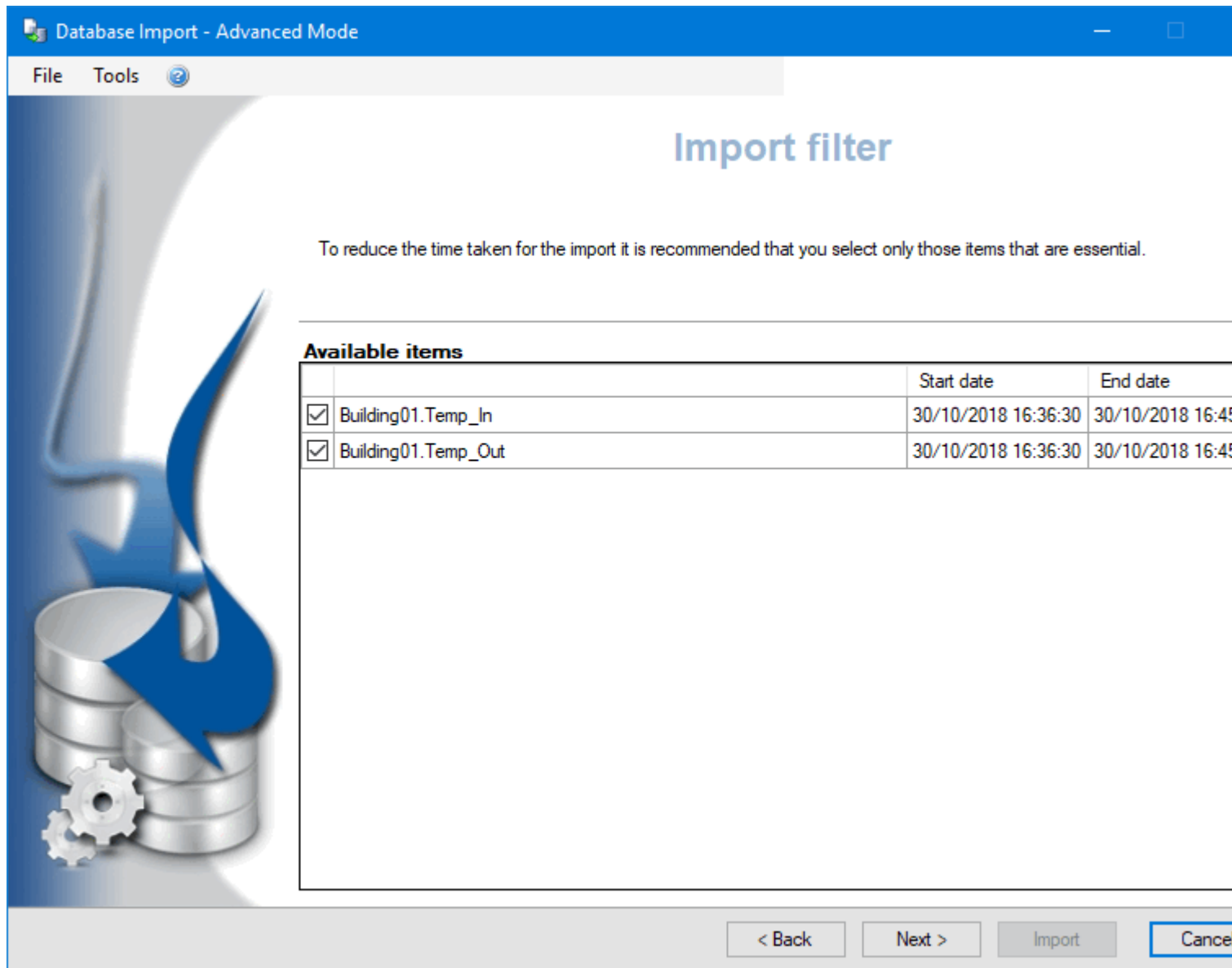
Each row contains the name of a variable (or Log List) and the period for which data has been found. You can sort the list in ascending or descending order by clicking the header of any column.

1. De-select any items that are not required, by removing the tick against it.
2. If you are importing Log records enter a Log List suffix (lower right corner of the dialog). This is appended to the Log List names as they are imported. The standard suffix is _IMP. You must have a corresponding Log List configured in the Supervisor otherwise you will be unable to view the data once it is imported.
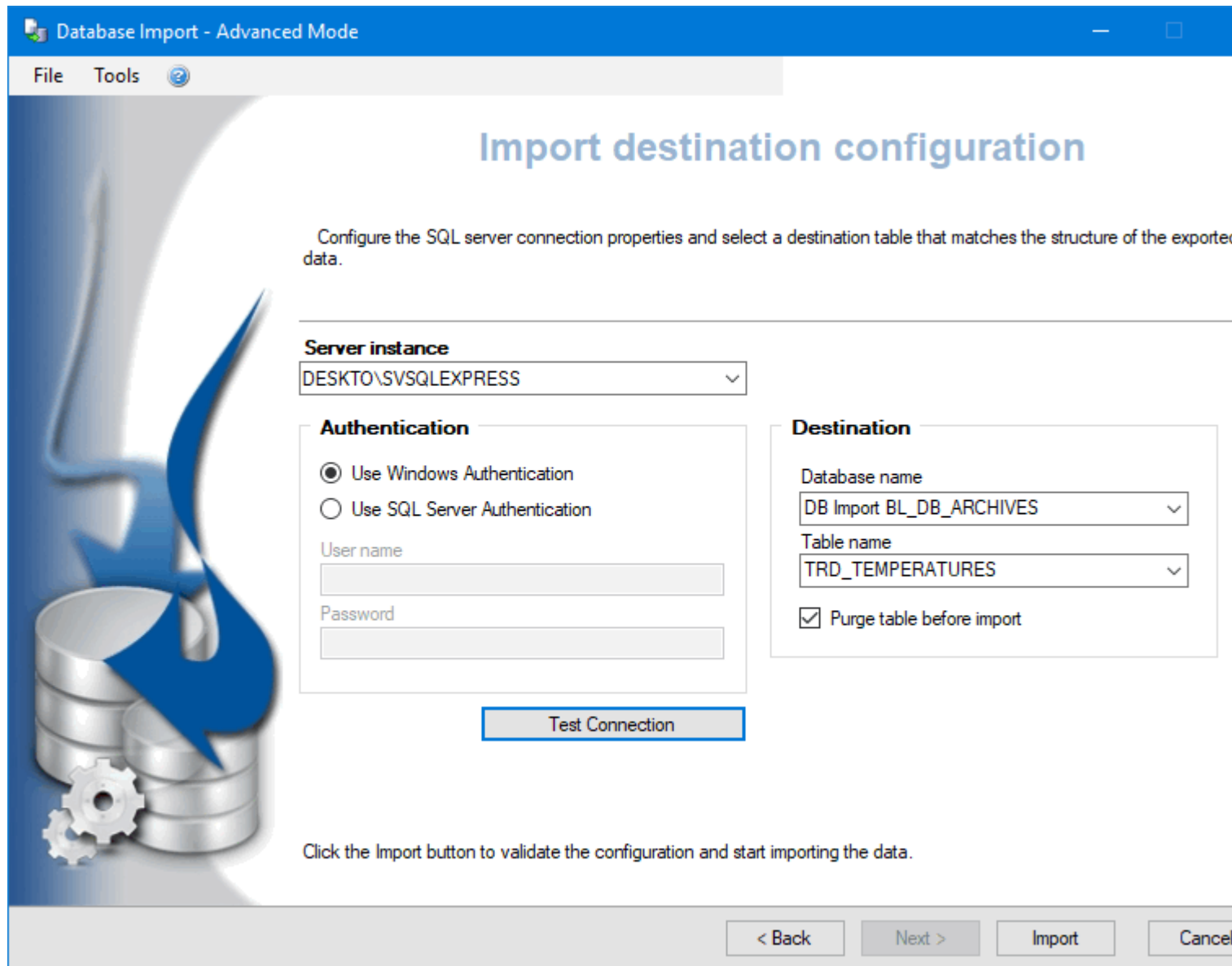3. Click on Next to continue.

The Import Filter dialog also has a context (right click) menu with the following commands.

- Select all
- Deselect all
- Invert selection

Selecting the Destination Table

The next step is to complete the Import Destination Configuration dialog. It enables the import process to connect to the data server that contains the table into which the data is to be imported. Show picture.


1. In the Server Instance drop-down box, select the data server that contains the table.
2. In the Authentication section, select the mode of authentication for access to the server as either Windows Authentication or SQL Server Authentication. The latter requires a User name and Password.
3. Click on the Test Connection button. A dialog confirms whether the connection is made. That must occur to enable the next step.
4. In the boxes of the Destination section, type in the Database Name and the Table Name for the destination table.
5. The option Purge Table Before Import enables you to delete any previous contents of contents of the destination database before the import takes place.
6. Click on the Import button to proceed with the import.

⚠ Make sure you select the correct type of table when importing records. The wizard does not differentiate between them at this stage and you will get an error if you try to import log records into a trend table (or vice-versa)

⚠ If you tick the Purge Table Before Import option ALL DATA in the selected table will be PERMANENTLY DELETED before the import.

Completing the Database Import

The final stage uses the import process dialog which is displayed while the data are imported. Show picture
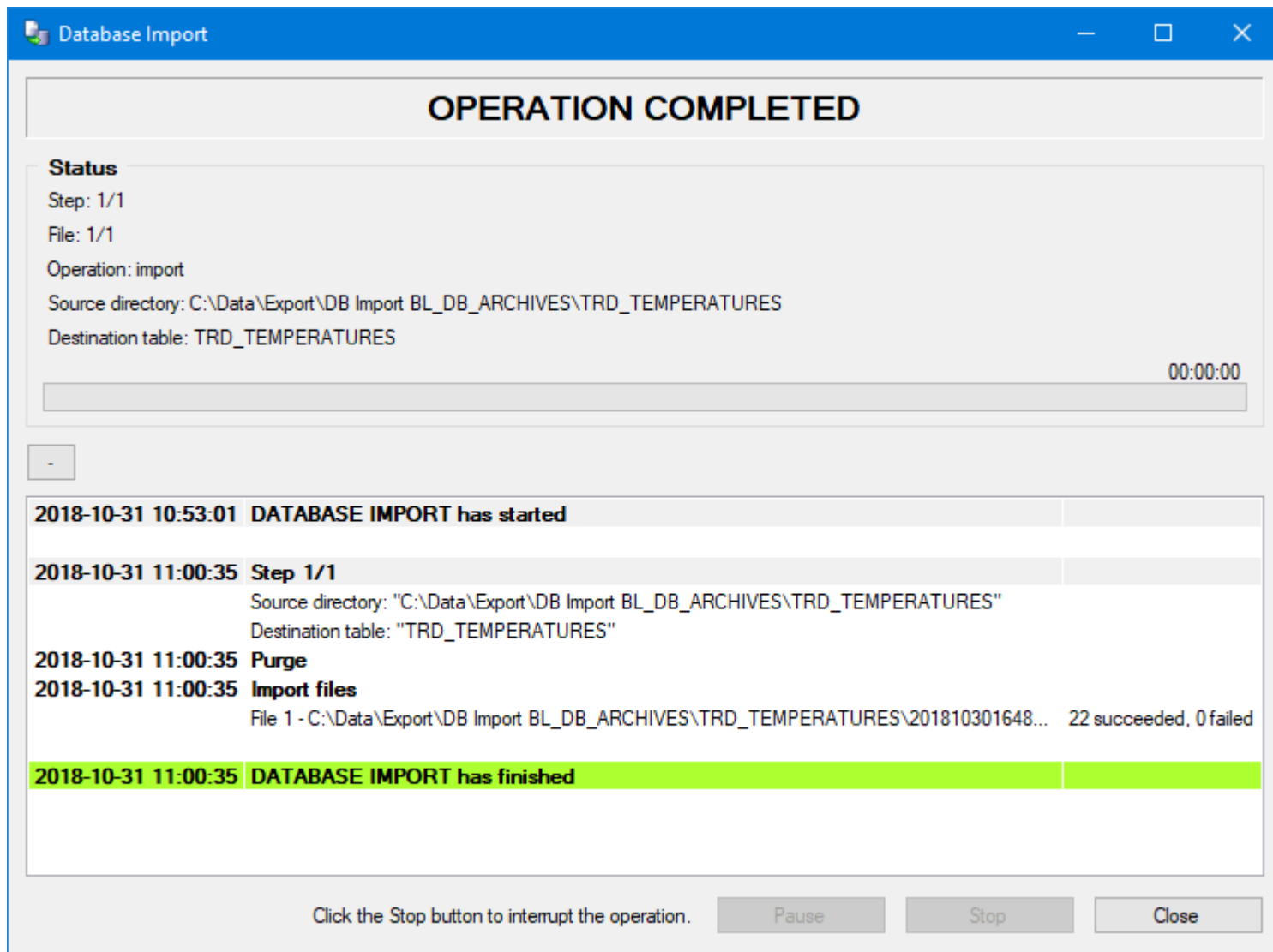
It shows a summary of the import parameters (source folder, destination table and number of files imported from). A progress bar is displayed with the duration of importing shown above it.

The '+/-' button [-] below that lets you view or hide the lower panel.

1. Check the summary information. If anything is wrong, you can use the Pause button to suspend the process or Stop to exit from it.
2. The title shows the status of the process ('PERFORMING OPERATION' or 'OPERATION COMPLETED').
3. The lower pane shows a log of the actions performed. Check that a purge took place if required and that the contents of all selected files were imported successfully.

🛑 If you stop the import process, some of the data records may already have been imported.

ℹ️ The actions of purging and importing are separate so even when some or all of the data record imports fail, a purge will have already taken place if you specified it.
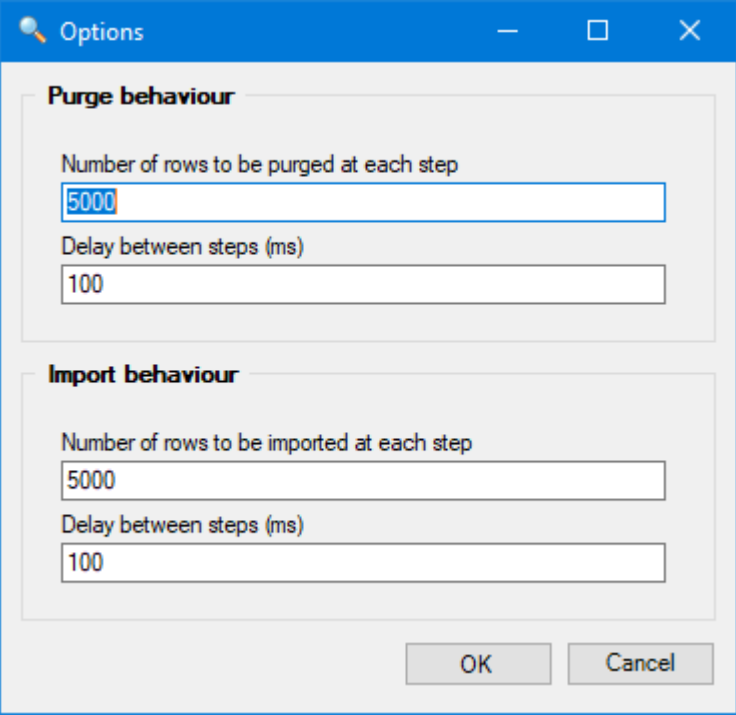
The Database Import Options

The behavior of the Database Import tool can be configured using two options from the menu bar displayed in each dialog. Any changes that are made are remembered and used next time the tool is started.

- Select Startup Language - Select the language to be used in the wizard's dialogs. The change of language is operational from the next time the tool is started.
- Options - Open the Options dialog, as below.

The Options dialog

You can introduce periods of inactivity in the purging and importing processes. These periods are necessary to prevent a large purge and/or import from monopolizing the CPU.

- Specify the number of rows (records) to be purged/imported followed by a delay before the next purge/import activity. Show picture

The default setting is 5,000 rows followed by a delay of 100 ms.

Command Line Options

When using Express mode of Database Import you add several arguments to the command line used to start the Database Import tool. The arguments replace information that would have been supplied by the wizard. Some of the arguments also require a parameter string.

Argument	String	Mandatory	Meaning
/F	<filename>	Yes	This causes the import to start in Command Line mode rather than starting the wizard. <filename> identifies the configuration file to use. See Configuration file format.
/C	-	No	Automatically closes the Import dialog when the import process is complete.
/S	<start_time>	Yes	The starting date and time for selecting data to import. See information on data and time format below.
/E	<end-time>	Yes	The ending date and time for selecting data to import. See information on the date and time format below.
/L	<language>	No	To display the dialog using a particular language. If this is omitted, the default language is used.
/R	<suffix>	No	To specify and add a suffix to the log file name.
/?	-	No	To display a Help pop-up for the syntax of the command line.

> ⓘ Any string containing a space must be enclosed in quotation marks, for example: "19-01-2009 12:00:00"

Example

```
DBimport.exe /S="01/02/2009 00:00:00" /E="02/02/2009 00:00:00" /L=FR /F=C:\conf.xml /C
```

Date and time format

The string representing the date and time can take the following forms.

- A string with a date and a time component.
  Example: 25/01/2009 17:35:00
- A string with a date but no time component.
  Example: 17/12/2008
- A string that includes time zone information and conforms to the ISO 8601 time format.
  Example: 2008-11-01T19:35:00.0000000Z
- A string that includes the GMT designator and conforms to the RFC 1123 time format.
  Example: Sat, 01 Nov 2008 19:35:00 GMT
- A string that includes the date and time along with time zone offset information.
  Example: 03/01/2009 05:42:00 -5:00

> ⓘ The time and date can be in any format supported by the .Net Framework class library method DateTime.Parse.

Configuration File Format

The file used with the Database Import Tool when used in Express mode is in XML format. For those familiar with XML and with access to an XML editor the Schema is provided below. For those not familiar with XML it is possible to take the example shown below, copy and paste it into a text editor, carefully make the changes required and save it as a file with a .XML extension.

The configuration file defines an import task in the following terms.

- Source directory - The folder containing the files to be imported.
- Destination connection string - The SQL connection string including the SQL Server name, database name and table name.
- Purge task - To purge or not purge the table before import.

A single configuration file can define one import task or several.

Example of a Configuration file

The following is a picture of a sample configuration file as displayed in a web browser. Show picture

```
<?xml version="1.0" ?>
<!-- DB Import : Express mode configuration file  -->
<ExpressModeConfiguration>
  <ImportElements>
    <ImportElement>
      <Source Directory="C:\Program Files\SV 8.2\Databases\Export\DB_IMPORT_DB1\TRENDTABLE1' />
      <Destination ConnectionString="Data Source=.\SQLEXPRESS; Initial Catalog=DB_IMPORT_DB1;
        Integrated Security=True; Persist Security Info=False" TableName="TRENDTABLE2' />
      <Tasks Purge="True" />
    </ImportElement>
  </ImportElements>
</ExpressModeConfiguration>
```

- To retrieve a copy of the file click here and save the file when prompted. The file must be unzipped before it can be used.

The configuration file in the example above will cause a purge of the destination table followed by an import.

From source folder	To database table
C:\Program Files\SV ...\Databases\Export\DB_IMPORT_DB1\TRENDTABLE1	DB_IMPORT_DB1\TRENDTABLE2

Schema

If you want to generate the configuration file using an XML editor it must comply to the following schema: Show picture