

TIBCO Spotfire® Clinical Graphics

Connector for SAS Installation and Administration Guide

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INSTALLING AND CONFIGURING THE TSCG CONNECTOR FOR SAS

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OVERVIEW

This section describes the TSCG/SAS Macro Connector package and installation requirements.

Installation requires a series of steps to allow the macros to function within the local SAS environment as well as the replacement of an XML file on the TSCG server.

- System Requirements**
- SAS version 8 or later.
 - TIBCO Spotfire Clinical Graphics Server, version 2.0 or later.

Note
SAS macros do not work against a TSCG server that has authentication enabled.

Environment Requirements

TSCG Connector for SAS requires the presence of a folder for which both the SAS and Spotfire S+ processes have read and write permissions. This folder is used for passing items between the two processes. This folder can be placed on a drive local to either of the processes, or it can be on a network share.

You must insert into the following two locations in the SAS macro library configuration file information (**tscg_configuration.xml**, discussed in detail later) for accessing the folder in the shared location:

- The entry for the path as the SAS machine knows it
- The location for the path as the Spotfire S+ process knows it.

This configuration design provides for greater flexibility, such as supporting environments with mixed operating systems. Items in the specified folder are managed automatically by the SAS macro library, but there may be instances where a crashed SAS session cannot remove its subfolders and files.

- Package Contents**
- This package includes the following items:
- Macro library and configuration file.

- Override parameter list.
- Documentation.
- Examples.

INSTALLING THE TSCG CONNECTOR FOR SAS

Note

Your local SAS administrator is the only person with permissions to accomplish the following tasks. To install the TSCG Connector for SAS, work with your local SAS administrator for assistance and guidance within your particular environment.

TSCG Connector for SAS contains

- A library of standard SAS macros. You can find these macros and examples in **TSCG_HOME/sas**.
- A single XML configuration file, which controls the operation of the SAS macro library. This configuration file, **tscg_configuration.xml**, must be edited during deployment. It provides the macros with details, such as the name and port number of your TSCG server.
- An XML file for managing graph elements during runtime. This file is installed on the TSCG server.

Install and Configure the Macros

To deploy TSCG Connector for SAS, the SAS administrator must:

1. Copy the macros and examples to a location on your network where all users can have read access to them.

Note

We recommend the files are write-protected and/or maintained in a version control system.

2. Edit **tscg_configuration.xml**. (See the section Configuring the TSCG Connector for SAS on page 6 and the comments in the file.)
3. Add the macro location to **sasautos**.

Confirm the Installation

To confirm the proper installation and operation of the macros within your environment, run a SAS job calling the **tscg_validation** macro. For a sample program, see **validate.sas** in the examples folder:

```
%tscg_configuration;  
  
%tscg_validate;
```

The output from **validate.sas** should be similar to the output shown below:

```
WebDAV is running...  
  
...  
  
Spotfire Statistics Services is running...  
  
...  
  
S-PLUS library "graphlet" is loaded in position 15...  
  
...  
  
S-PLUS library "gom" is loaded in position 2...  
  
...  
  
S-PLUS library "tscg" is loaded in position 14...
```

If this job does not execute properly, you can turn on additional debugging information either by editing the default value in the **tscg_configuration.xml** file, or by inserting the following line immediately following the call to the `tscg_configuration` macro in your copy of the **validate.sas** program:

```
%let tscg_debug = 1;
```

If this job executes without errors, the TSCG-SAS connector installation is able to communicate with the TSCG Server, and you can try to execute a plot using the `scatterplot.sas` program in the examples folder.

The **scatterplot.sas** example creates a scatter plot using the fuel dataset (created in the example file). The variable `weight` is used for the X axis, the variable `mileage` is used for the Y axis, and the variable `type` is used for grouping. The output (a **PNG** file) is created in the path specified for `outputFile` (in this case, **C:\Scatterplot.png**).

CONFIGURING THE TSCG CONNECTOR FOR SAS

The parameters that you must set in the **tscg_configuration.xml** file for your site include:

- tscg_server
- tscg_port
- tscg_commonPathSAS
- tscg_commonPathSPLUS

All other parameters can be left at their default values. The table below lists each of the parameters, along with a brief description of its purpose and default value.

Note that you must select a location for which both the SAS process and Spotfire S+ process have read and write access. This location is used for sharing information between the two processes. On Windows, in addition to read/write access, you must also specify modify access. Additionally, you must ensure that the SAS user has read and write access to the specified share. For any files created as part of the SAS process you must ensure that the Spotfire Statistics Services has read and write access, and vice versa. By default, this might not be the case. For example, on Linux[®], directories and files created by SAS are owned by the user running SAS, and by default the Spotfire Statistics Services might not have appropriate access to the files.

Two of the required configuration parameters specify the paths to these locations: one for the path for the SAS process and one for the path for the Spotfire S+ process. These two parameters allow the paths to be specified differently for each process. For example, you could have SAS running on Windows, with the common path referenced using a mapped drive letter, while Spotfire S+ is running on Unix and the common path is referenced using a UNC path name. In some cases, the path may be the same for both processes. This is certainly the case if SAS and Spotfire S+ are both running on the same machine.

Table 1.1: *TSCG Connector for SAS parameter options.*

Parameter Name	Description	Default Value
tscg_server	Server to be used for TSCG requests. Required.	localhost
tscg_port	Server port to be used for TSCG requests. Required.	8080
tscg_pollInterval	Polling interval, in seconds, for checking the status of TSCG requests. Can be changed, but too small a value can adversely affect performance.	15
tscg_timeout	Timeout wait, in HH:MM:SS format, for TSCG job completion. If this limit is reached without the TSCG server either returning a graph or an error, the SAS job logs an error indicating the timeout was reached and continues.	00:15:00
tscg_CommonPathSAS	The location of a path to which both SAS and TSCG (Spotfire S+) can read and write as referenced by the SAS machine. Required.	c:\tscgshare
tscg_CommonPathSPLUS	The location of a path to which both SAS and TSCG (Spotfire S+) can read and write as referenced by the TSCG server. Required.	c:\tscgshare

Table 1.1: *TSCG Connector for SAS parameter options. (Continued)*

Parameter Name	Description	Default Value
tscg_parmSet	<p>Name of a temporary SAS dataset to hold name-value pairs of run-time parameters for TSCG requests.</p> <p>Recommend changing only if the default name conflicts with another item within your SAS environment.</p>	tscg_parmset
tscg_http	<p>Name of a temporary SAS dataset to hold HTTP responses from TSCG server.</p> <p>Recommend changing only if the default name conflicts with some other item within your SAS environment.</p>	tscg_url
tscg_verboseLog	<p>Name of verbose log files.</p> <p>Do not change this value unless the name for the verbose log files was changed during TSCG server configuration.</p>	verbose.log
tscg_outputFormat	<p>Default output format for graphics.</p> <p>May be changed, if desired. Valid choices include JPG, EPS, WMF, PDF and PNG</p>	PDF
tscg_debug	<p>Optional flag to include debug information in SAS log.</p> <p>Can be 0 (False) or 1 (True).</p> <p>Recommend changing only if requested to by TIBCO Support.</p>	0

Table 1.1: TSCG Connector for SAS parameter options. (Continued)

Parameter Name	Description	Default Value
tscg_ods	<p>Flag to indicate if SAS Output Delivery System is in use. If so, the graphic returned by the TSCG server is displayed within the current SAS session via SAS PROC REPORT.</p> <p>Can be 0 (False) or 1 (True).</p> <p>Can be changed, or you can change within a specific SAS job by explicitly setting the global macro value.</p>	0
tscg_keepSScript	<p>Flag to indicate if the Spotfire S+ script (SSC file) from the TSCG server should be retained at job completion.</p> <p>Can be 0 (False) or 1 (True).</p>	0
tscg_ScriptInLog	<p>Flag to indicate if the Spotfire S+ script from the TSCG server should be inserted into the SAS log.</p> <p>Can be 0 (False) or 1 (True).</p>	0
tscg_keepJobSpec	<p>Flag to indicate if TSCG job specification XML file should be retained at job completion.</p> <p>Can be 0 (False) or 1 (True).</p>	0
tscg_StyleSetName	Variable for style set name.	<none>
tscg_ThemeFileName	Variable for theme file name.	<none>
tscg_DefaultTheme	Name of a TSCG theme to apply as a default.	DEFAULT

UNDERSTANDING THE TSCG/SAS INTEGRATED SYSTEM

This section describes a simple TSCG/SAS system, and how it works to process SAS macros and produce TSCG graphs.

Environment For the following example, the environment is shown in Figure 1.1.

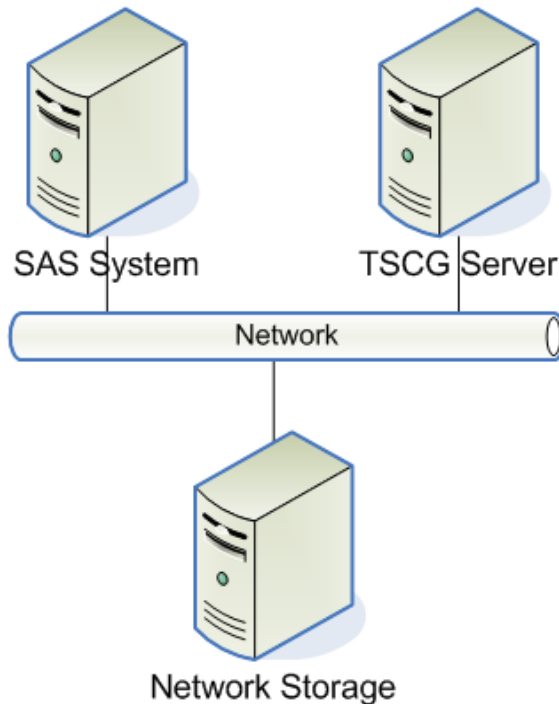


Figure 1.1: *TSCG/SAS Environment.*

This environment consists of:

- A machine running SAS, which can be a desktop running a single-user version of SAS, or a shared server used for production jobs;
- A TSCG server.
- Persistent storage (diagrammed as a network attached device in Figure 1.1) but can be on the SAS or TSCG system.

The general case involves a shared location on the network storage that both the SAS process and the TSCG process can read and write to. In the simplest case, the environment can run both SAS and TSCG on the same machine with the shared location on a local drive.

Note

Because the SAS and TSCG systems can be different operating systems, they can refer to the shared location differently. For example, SAS can be running on a Windows machine using a mapped drive such as **P:\CommonArea**, while TSCG is running on a UNIX or Linux machine and references the same area using a UNC pathname, such as **/netshare/CommonArea**.

The SAS job writes its intermediate artifacts (temporary copy of data, graph job specification XML file, and so on) to this shared area for consumption by TSCG. TSCG creates its outputs for SAS (graph output, Spotfire S+ script, and so on) in this shared area. All of these items are written into a folder named using the current user, job name, and process ID. At the end of the job, SAS cleans up the files and folders created in this area, leaving only the user-level subfolder.

Storage

The typical storage protocol is as follows:

- Items SAS needs are stored on network shares.
- Macro sources are stored in a central, public location as read-only files under version control
- Code and data are stored in a location organized by project with access controlled by group permissions. (Often, code and data are maintained under version control too.)

Job Execution

When a job executes, the following steps occur:

1. SAS reads and begins executing the SAS code.
2. The SAS code invokes macros, as needed.
3. The SAS code loads the data, as needed.
4. The SAS code writes information to the common area where the TSCG server can access it.
 - a. SAS checks to see if the current user has a subfolder within the common area. If not, SAS creates it.

- b. SAS creates a subfolder within the current user's subfolder named based upon the currently-executing job plus the current SAS process ID.
 - c. SAS writes a graph job specification as an XML file into the subfolder for the job.
 - d. SAS copies the data to the subfolder for the job.
5. The SAS code makes an HTTP call to the TSCG server to create a graph using the graph job specification file in the common area.
6. The TSCG server reads the information from the current job subfolder in the common area.
 - a. The graph job spec XML is read.
 - b. The data are loaded.
7. The TSCG server writes information back to the current job subfolder in the common area.
 - a. Any requested output graphs are saved.
 - b. If requested, the Spotfire S+ script is copied.
8. SAS copies the output artifacts to their final locations.
 - a. Graphs are copied.
 - b. If requested, the XML graph job spec is copied.
 - c. If requested, the Spotfire S+ script is copied.
 - d. The verbose log is inserted into the SAS log, unless it is not requested.

- e. The current job subfolder and its contents are deleted from the common area.

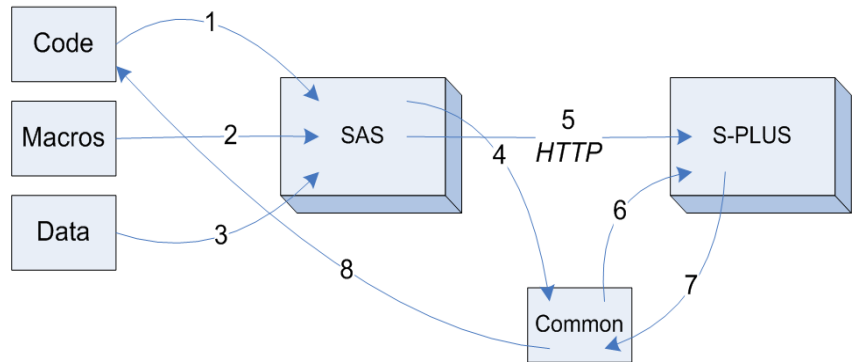


Figure 5.1: *SAS/TSCG job processing.*

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