IP21 SimApi User Guide

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1 Introduction

This document is the user guide for the **IP21 SimApi** from Sartorius Stedim.

It connects to an AspenTech IP21 data source through ODBC. It does not connect to IP21 Batch, there is a separate SimApi called **IP21 Batch SimApi** for that, available on the web site mentioned below.

For a detailed list of changes in different versions of this SimApi, see the **Version Info.txt** file that comes with the installation.

This SimApi can be used by Easy Analytics, SIMCA, or SIMCA-online.

For more information on available SimApis, see www.umetrics.com/simapi.

1.1 Features

- ODBC connection string authentication with a user name and password or Windows authentication.
- Customizable set of tables to expose through the SimApi.
- Reading process data, current and historical.
- Write back from SIMCA-online: historical process data to the ODBC data source.
- Supports both numerical and text data for tags.
- Reads interpolated historical data by default. This can be changed per tag so read raw data is used instead.
- Support for multiple instances of the SimApi. Used to connect to multiple IP21 data sources from the same SIMCA-online server. Also see umetrics.com/kb/multiple-instances-same-simapi-simca-online-server

Note that this SimApi reads only continuous process data, it does not handle batch data or discrete data.

1.1.1 Customizable set of tables

This SimApi by defaults reads from the IP21 tables IP_AnalogDef and IP_DiscreteDef. If additional data tables should be exposed through the SimApi you can use the ExtraTables setting, see **Error! Reference source not found.** on how to configure this.

Text tags are configured in the IP_TextMap in the AspenTech system, this map can be included in the ExtraTables settings in the configuration file by adding IP_TextDef. Note the difference in the name between the actual name and the setting name in the configuration, map vs def.

1.1.2 Text Tags

Text tags are supported by this SimApi, but to be able to read historical text data each text tag must be identified in the XML file.

1.1.3 Read raw data instead of Interpolated data

Historical data is interpolated by default by the SimApi. This means that an estimated value will be returned depending on the sample time. This is explained in more detail in the SIMCA-online Technical Guide http://www.umetrics.com/kb/simca-online-technical-guide.

If you don't want this behaviour, such as for tags that must have an exact value, this can be configured per tag using the <readrawvaluetag> setting. Configuring tags in this section will force the SimApi to read raw values (last know good value) for those tags[1].

2 Prerequisites

In order for the IP21 SimApi to work with your database you must install the ODBC drivers for AspenTech IP21. Refer to the documentation provided from AspenTech. Sartorius Stedim does not provide these drivers.

2.1 Configure ODBC Data Sources

The data source should be configured as a System DSN in the ODBC Data Sources control panel in Windows.

Note that there are two versions of this tool on 64-bit Windows: one for 32-bit applications and one for 64-bit[2].

[1] Technical, the SimApi will add **STEPPED=1** in the SQL query that asks for historical data.

[2] On 64-bit Windows you can start the 32-bit ODBC Data Sources program by launching it manually from the

In the ODBC configuration wizard for SQL Server you can select how to authenticate users (log in):

- **SQL Server Authentication** which means that the database is authenticating users using a user name and password. This username and password can be given in the ODBC wizard, or in the configuration file by filling in the credentials dialog as part of the configuration (see below).
- **Windows authentication** Windows authentication means that the user account (typically in Active Directory) of the program using the SimApi is used to connect to the database. This user account needs to have appropriate rights in the database.

Windows authentication with a SIMCA-online server means that the service account of the SIMCA-online Server service is used (LocalSystem by default, but can be changed to a specific account by the administrator, see The SIMCA-online Technical Guide for more information).

Windows Authentication with SIMCA means that the user account of the person that is running SIMCA will be used.

Verify the connection to the database with the Test Data Source button at the end of the ODBC configuration wizard. As noted above, for Window Authentication this tests with your own user account, and not necessarily with the SIMCA-online service account.

2.2 Write back

In order for write back to work the correct permissions must be set in the ODBC data source.

Writing continuous process data from SIMCA-online (from continuous configurations, the batch evolution level or from Control Advisor) are supported. Batch data is not supported.

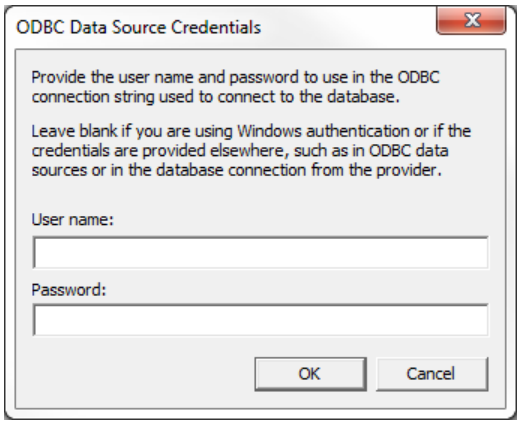
The IP21 SimApi first checks if there already is any data available for the time point the write back should be for. If no data exist for the time point for the specified tag, an INSERT INTO is done to write the data to the ODBC data source (IP21 server). If data already exists an UPDATE is done to write the data to the ODBC data source (IP21 server).

3 Installation and setup

Refer to the **SimApi Guide** located at umetrics.com/simapi for how to install and setup this SimApi.

3.1 SimApi specific configuration

1. Click the Configure-button. This shows the following dialog:



2. If your database is using database authentication in ODBC. The user name and password is stored encrypted in the configuration file.
3. On the other hand, if you are using Windows Authentication you can leave user name and password blank.
4. When you click OK the SimApi creates the default XML configuration file (if it already existed, all settings remain, and only the username and password is updated if you changed it). Complete the settings in configuration in the XML file using a text editor.
5. Start the SIMCA-online server service, verify it starts (if not look for errors in the SimApi log files and update the XML configuration file to correct any errors). Use a SIMCA-online client and use Extract on the File-tab to test that the SimApi works as expected.

SysWow64-folder, typically C:\Windows\SysWOW64. If you just start ODBC Data Sources from the start menu in 64-bit Windows 7 it will launch the 64-bit version.

6. If you want to configure multiple instance of this SimApi, then repeat the above steps and use unique names for each instance. Tip: copy and paste settings from the XML configuration file for the first instance to the second instance XML-file and use those settings as the starting point.

3.2 The XML Configuration File

The XML configuration file is a text file, it can be edited with Notepad for example, although it might be easier with a text editor that understands XML, such as Notepad++. The file has the following settings

Log file specific settings	**Explanation**
LogFileSize	The maximum allowed size of the log file before the file is truncated.
LogLevel	The higher the value the more information is printed to the log file. Maximum value is 4 and minimum value is 0. `(0=Critical, 1=Error, 2=Warning, 3=Information, 4=Debug)`.
Connection specific settings	
DSN	Data Source Name as set up in the Windows **ODBC Administrator** tool. See 2.1 above.
Credentials	The user name and password for the database (if applicable) encrypted. Both are configured in the Credentials configuration dialog that is displayed when configuring the SimApi.
QueryTimeout	The time before a query or connection to the database will time out and fail.
Configuration settings	
MaxTextSize	Specifies the maximum number of characters that should be read for text tags. Default is 80 characters. If a string is longer than this limit, it will be truncated when read by the SimApi.
AllowLongTagNames	From version 7.3 InfoPlus.21 AspenTech allows 256 character tag names. By default only the first 24 characters will be displayed. By setting this option to "1" long tag names will be fetch and used. `<setting key="AllowLongTagName" value="1" />` Default value is "0", not used, only 24 characters will be used causing longer tag names to be truncated which will lead to no data being fetch for those tags.
ExtraTables	Additional tables where the SimApi should look for data apart from IP_AnalogDef and IP_DiscreteDef. Separate multiple tables with the pipe ('|') character. Example with two additional tables `<setting key="ExtraTables" value="Table1|Table2" />`

TextTag	Any tag that reads text data should be configured in this section. One <TextTag> element for each tag. This must be done in order to read historical data for a text tag otherwise only current data will be available.
	`<TextTags>`
	`<TextTag Table="IP_TextDef" Tag="Batch ID" />`
	`  <TextTag Table="IP_TextDef" Tag="Phase Trigger" />`
	`</TextTags>`

ReadRawValueTag	Interpolated historical values are read for all tags by default, if read raw should be used instead for a tag it must configured in this section. There should be one <readrawvaluetag> element for each tag:
	`<readrawvaluetags>`
	`<readrawvaluetag Table="IP_AnalogDef" Tag="Phase1 Trigger" />`
	`  <readrawvaluetag Table="IP_AnalogDef" Tag="Phase2 Trigger" />`
	`</readrawvaluetags>`

4 Support

This SimApi is developed by Sartorius Stedim Data Analytics. For support, please visit https://umetrics.com/support