

# SAP connector

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# Introduction

The AuraQuantic platform includes a wide range of mechanisms that allow the integration or connection with external systems, in order to facilitate the centralized management of any company as much as possible. Among these mechanisms are the "Connectors". One of them, the "SAP Connector", allows the integration of external data managed by SAP in AuraQuantic, for its latter use or modification and inclusion in the company's processes. This data, once it has been treated in the platform, can then be sent back to SAP.

This document will explain how to configure a connector to communicate with SAP in a bidirectional way.

Due to the nature of this connector, this document is directed at AuraQuantic administrators who have all the necessary information and knowledge about the SAP environment with which they are going to integrate and the BAPI structures that they will work with.

The reader must have access to the platform structure options for creating and managing connectors, and know how to configure the different elements available in a class of processes.

## AuraQuantic and SAP

In SAP there are certain functionalities that cannot be parameterized, and must be developed externally, so SAP enables the possibility of accessing, reading, and updating its data through external access points that require custom developments and programs.

These access points or SAP functions are commonly known as BAPI (Business Application Programming Interface) functions. There are BAPI for reading and updating data.

AuraQuantic includes a SAP connector that communicates with these BAPI without the need for any programming code, allowing SAP data to be integrated into AuraQuantic. This connector also allows the use of standard or custom RFC (Remote Function Call) functions from the customer's SAP environment. These BAPI / RFC are known in the AuraQuantic platform as "Operations", and it is possible to define one or more of them in the same connector.

## Example of application

A company board has realized that, despite having a high-end ERP such as SAP, vital processes such as purchasing orders and their related dispatches are not running smooth enough to comply with the production deadlines.

For this reason, in addition to making use of the great orchestration capacity of the AuraQuantic iBPMS platform, in integration with the rest of the company's tools, the company board acquires this product and creates a process that integrates with SAP, in order to simplify and streamline production requirements that in spite of previously functioning only with SAP, were not meeting up to expectations.

Because of the fast implementation of the process in AuraQuantic along with the configuration and use of the SAP connector, now the purchasing orders and their related dispatches are performed dynamically and in a noticeably shorter amount of time. Thanks to this, the company has improved in

efficiency, effectiveness and competitiveness with the consequent benefit and associated cost savings.

## Configuration

In addition to the server requirements, there are two parts to the configuration of the SAP connector on the platform, one that corresponds to the definition of the connector structure itself and the other to the creation of the element that will use the connector in a class of processes.

### Server requirements

The connection between AuraQuantic and SAP uses standard connectors provided by SAP. The libraries and the SAP connector must be downloaded by providing the corresponding SAP credentials.

In order to understand the procedure, it is necessary to go to the download page of the SAP connector for Microsoft.NET and find the corresponding version to the server infrastructure, in 32 or 64 bits, download it and install it on the application server where AuraQuantic application is installed.

Before proceeding with the installation of the \*.DLL files offered by the installer, we must stop the portal services in the IIS (stop the site), as well as the "AuraPortal BPMS Motor" service, since they must be located in these paths:

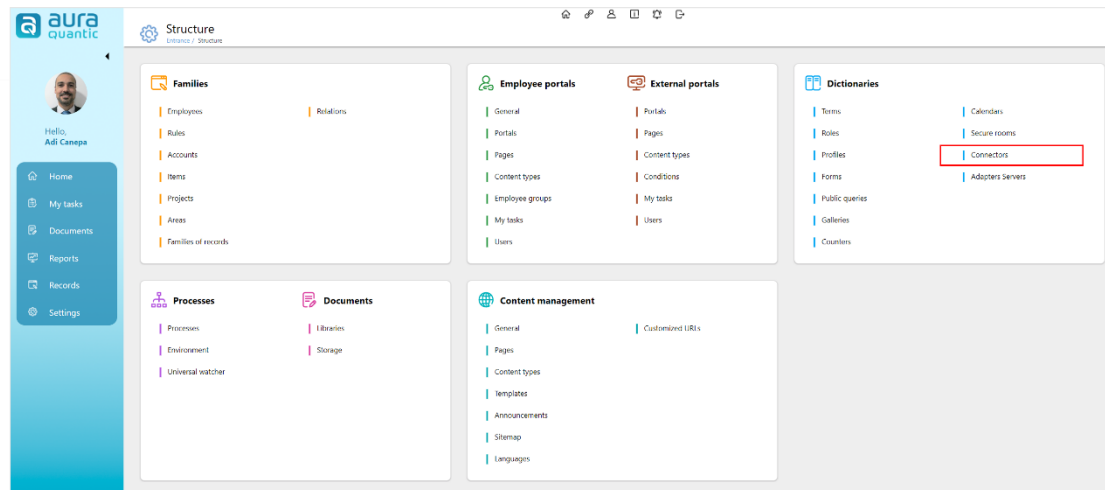
**<AuraQuantic installation path>/Bin/**

**< AuraQuantic installation path>/MotorBPMS/**

The previously detained services can be re-started again after this operation is complete.

### Connector

The first part of the configuration in the platform involves defining the SAP connector, which will be the basic communication structure that will be used to define the integration operations with the SAP environment to which it connects and its operations. This is carried out from the "Connectors" option in structure:

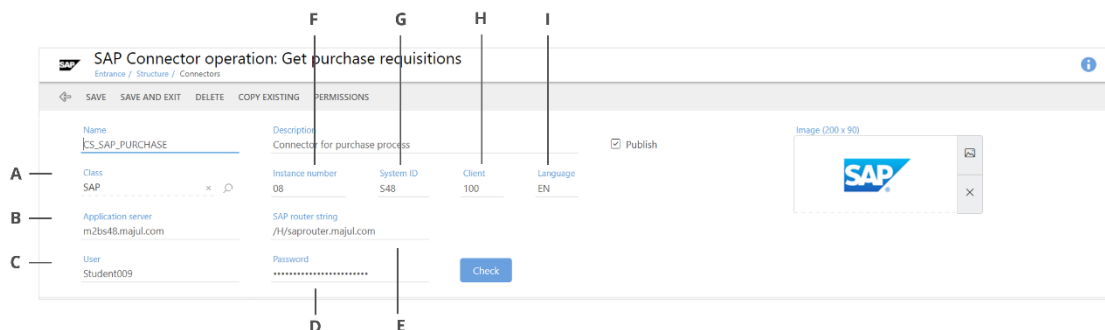


Location of the “Connectors” among the structure options, from here we can access the SAP connector creation.

From here we create a new connector indicating **SAP** as the function. The configuration is explained throughout the following sections.

## Connection details

In the top part of the configuration window, we indicate the corresponding connection parameters:



**A** Class **B** Application server **C** User **D** Password **E** SAP router string **F** Instance number **G** System ID **H** Client **I** Language

- A. **Class**. The corresponding connector class, in this case, SAP.
- B. **Application server**. Name of the SAP server to connect to.
- C. **User**. Name of the user with permission to connect to the SAP environment indicated.
- D. **Password**. Password of the user with permission to connect to the SAP environment indicated.
- E. **SAP router string**. This field is optional. A parameter to indicate in specific cases of connections between hosts.
- F. **Instance number**. Instance number of the SAP server to connect to.
- G. **System ID**. Identifier of the SAP system to connect to.
- H. **Client**. Indicates from SAP with whom the connection will be made.
- I. **Language**. Language required to establish the connection.

Once all the necessary parameters have been established, click on **Check** to make sure that the data is correct, and the connection has been established. Now we can go on to create the operations.

## Operation details

All operations or calls to the BAPI / RFC of the SAP system are defined from this section of the connector configuration window:



*Operations definition window. A Create operation B First connector operation C Second connector operation D Operation E Delivery data F Return data G Simulator H Location*

The indicated options are described below.

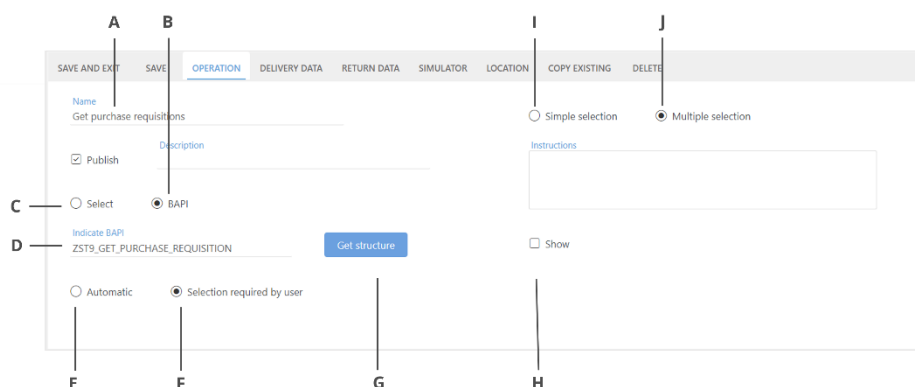
### Create operation

A new operation is created each time this button is clicked, adding it to the list. In the image above there are two configured operations (B and C).

### Operation

The "Operation" tab opens the window in which all the general parameters of the selected operation are indicated, as well as the BAPI structure to use. An operation is a call to a SAP BAPI function. By means of these operations, field values can be transferred (from either singular fields or groups of fields) bidirectionally, from SAP to AuraQuantic, and vice versa. Multiple operations can be defined in the same connector.

It is possible to select one or more of the operations that have been defined in the connector, as long as they are marked as published.



*"Operation" window. A Operation name B BAPI C select, D indicate BAPI E Automatic F Selection required by user G Get structure, H Show I Simple selection J Multiple selection*

- A. **Name.** Name to define the operation, in accordance with the action performed by the BAPI.
- B. **BAPI.** Field to introduce the name of the BAPI. It is possible to select this option and indicate the corresponding name in the "Indicate BAPI" field.
- C. **Select.** Field that enables the selection of any of the BAPIs available in the system.

- D. **Indicate BAPI.** Field to manually introduce the name of the BAPI to use when the “BAPI” option has been selected.
- E. **Automatic.** With this option marked, the operation will be performed by a CONNECTOR system task configured either independently in the process diagram or from an action button in a form. In execution, when the flow passes through the system task, or a user clicks on the button, the operation will be automatically executed (call to BAPI) assigning all the “input” and “output” data configured in the operation.
- F. **Selection required by user.** The operation can only be executed from an action button in a form, configured with the “Connector data selector” action. When this button is clicked, a window will open where the user can select one or more values from the data table. Once selected, the operation will transfer the values to fields in the process panel, according to what has been configured in the operation.
- G. **Get structure.** This button allows the data structure of the selected BAPI to be obtained.
- H. **Show.** If we indicate any instructions in the “Instructions” box, this marker activates or deactivates the visibility of the instructions when the call is executed. See an example below.
- I. **Simple selection.** When “Selection required by user” has been selected and this option is marked, it will only be possible to select one value from the list in the data table that appears in execution.
- J. **Multiple selection.** When “Selection required by user” has been selected and this option is marked, it will be possible to select multiple values from the list in the data table that appears in execution.

Instructions

Please show only A class registers.

☒ Show

Example of instructions to show during the execution of the call to SAP.

Connector data selector

INSTRUCTIONS

ACCEPT SELECTION

Purchase Order

Proceed

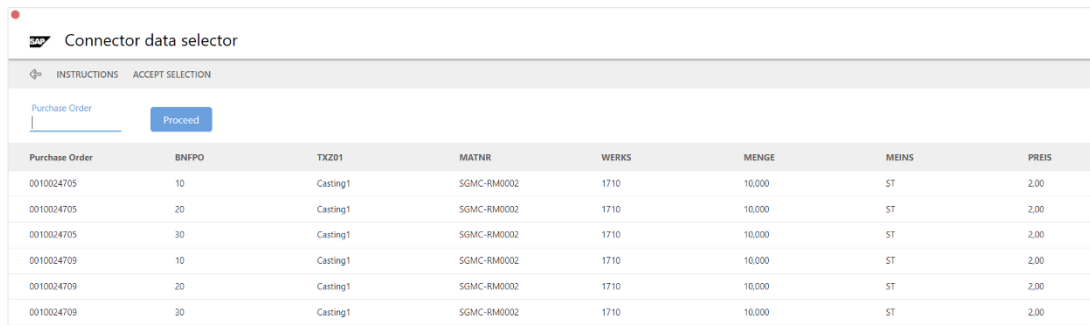
Message

Please show only A class registers.

Accept

Purchase Order	BNFPO					MEINS	PREIS
<input type="checkbox"/> 0010024705	10					ST	2,00
<input type="checkbox"/> 0010024705	20					ST	2,00
<input type="checkbox"/> 0010024705	30					ST	2,00
<input type="checkbox"/> 0010024709	10					ST	2,00
<input type="checkbox"/> 0010024709	20	Casting1	SGMC-RM0002	1710	10,000	ST	2,00
<input type="checkbox"/> 0010024709	30	Casting1	SGMC-RM0002	1710	10,000	ST	2,00

Execution view of the instructions. The “Instructions” button is visible due to marking the “Show” checkbox in the operation configuration.



Connector data selector

INSTRUCTIONS ACCEPT SELECTION

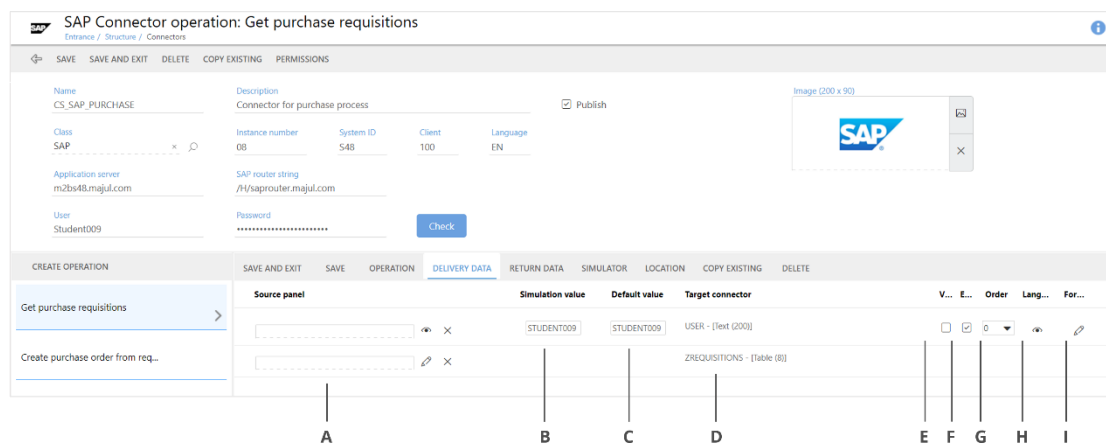
Purchase Order

Purchase Order	BNFPO	TXZ01	MATNR	WERKS	MENGE	MEINS	PREIS
0010024705	10	Casting1	SGMC-RM0002	1710	10,000	ST	2,00
0010024705	20	Casting1	SGMC-RM0002	1710	10,000	ST	2,00
0010024705	30	Casting1	SGMC-RM0002	1710	10,000	ST	2,00
0010024709	10	Casting1	SGMC-RM0002	1710	10,000	ST	2,00
0010024709	20	Casting1	SGMC-RM0002	1710	10,000	ST	2,00
0010024709	30	Casting1	SGMC-RM0002	1710	10,000	ST	2,00

Execution view of the "Simple selection" option specified in the connector configuration; it only allows the selection of one of the listed entries.

## Delivery data

After indicating all the general data of the operation in the "Operation" tab and the structure has been imported, all the possible parameters from the BAPI structure that can be sent to SAP will appear in the "Delivery data" tab:



SAP Connector operation: Get purchase requisitions

Entrance / Structure / Connectors

SAVE SAVE AND EXIT DELETE COPY EXISTING PERMISSIONS

Name: CS\_SAP\_PURCHASE Description: Connector for purchase process ☒ Publish

Class: SAP Instance number: 08 System ID: S48 Client: 100 Language: EN

Application server: m2bs48.majul.com SAP router string: /H/saprouter.majul.com

User: Student009 Password: \*\*\*\*\*

CREATE OPERATION SAVE AND EXIT SAVE OPERATION DELIVERY DATA RETURN DATA SIMULATOR LOCATION COPY EXISTING DELETE

Get purchase requisitions >

Create purchase order from req...

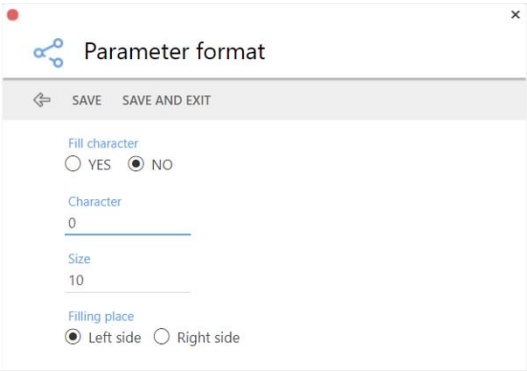
Source panel	Simulation value	Default value	Target connector	V...	E...	Order	Lang...	For...
<input type="text" value="STUDENT009"/>	<input type="text" value="STUDENT009"/>	<input type="text" value="STUDENT009"/>	USER - [Text (200)]	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0		
<input type="text" value="ZREQUISITIONS - [Table (8)]"/>								

A B C D E F G H I

**A** Source panel **B** Simulation value **C** Default value **D** Target connector **E** Visible **F** Editable **G** Order **H** Language **I** Format

- Source panel.** Here we indicate the field in the process panel that includes the value to send to SAP. According to the type of data shown in the "Target connector" column, a compatible type of field can be selected in "Source panel".
- Simulation value.** Column to enter a value manually to be able to test the simulation of the call to the BAPI with that indicated value.
- Default value.** Column to define the default value for the data that will be passed to SAP as input data. Indicating a value in this option will mean that this value will always be used, without the need to map with a panel field. It depends on the type in "Target connector", so it is advisable to know the BAPI in question in detail.
- Target connector.** It shows the SAP field to which the value indicated either in "Source panel" or "Default value" will be transferred.
- Visible.** Checkbox to activate or deactivate the visibility of the field indicated in the list, during the execution of the query.
- Editable.** Checkbox to enable the possibility of editing the field indicated in the list, during the execution of the query.
- Order.** Here it is possible to select the order in which the fields will be seen in execution.
- Language.** To define the text to be displayed depending on the language indicated in this field, during the execution of the query.

- I. **Format.** This edit icon offers a series of options to assign to the values of certain fields that allow format, effective from the execution of the query.

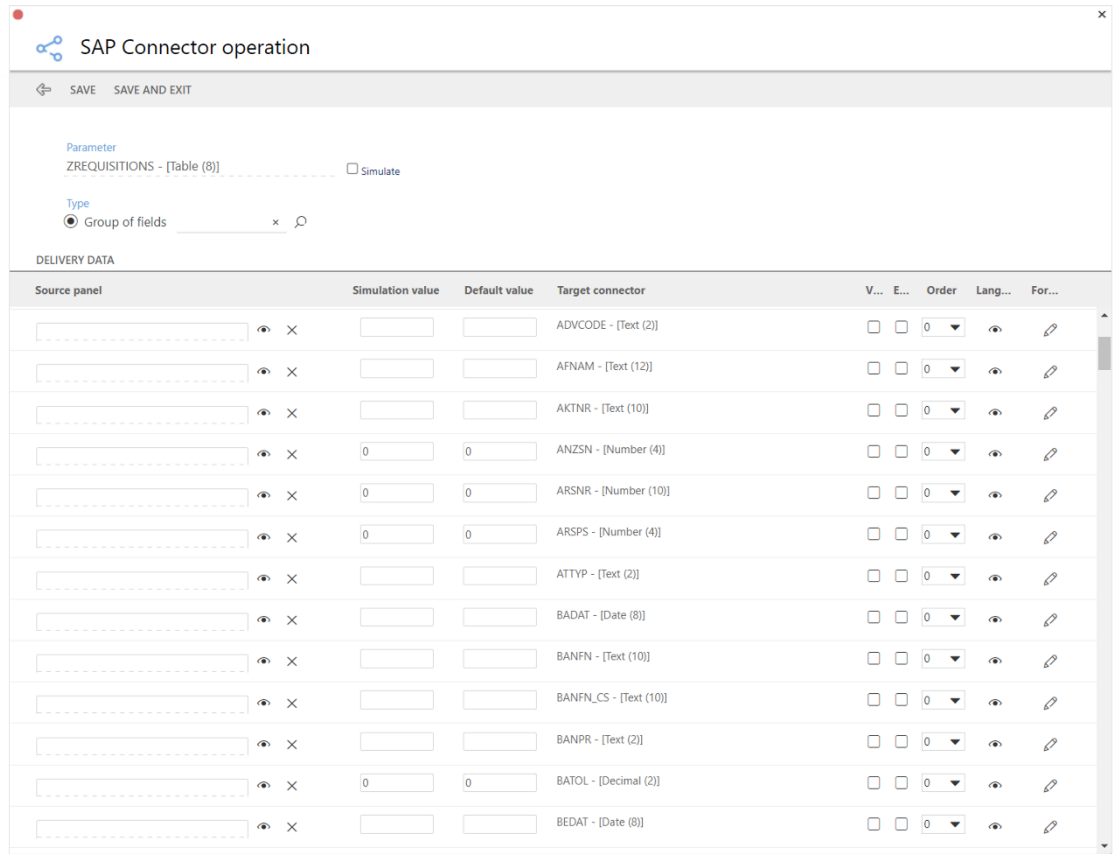


The "Parameter format" dialog box contains the following settings:

- Fill character:** YES (selected), NO
- Character:** 0
- Size:** 10
- Filling place:** Left side (selected), Right side

Format application possibilities in the fields that permit this functionality.

The types of fields available for selection in "Source panel" will depend on the type of destination in SAP.



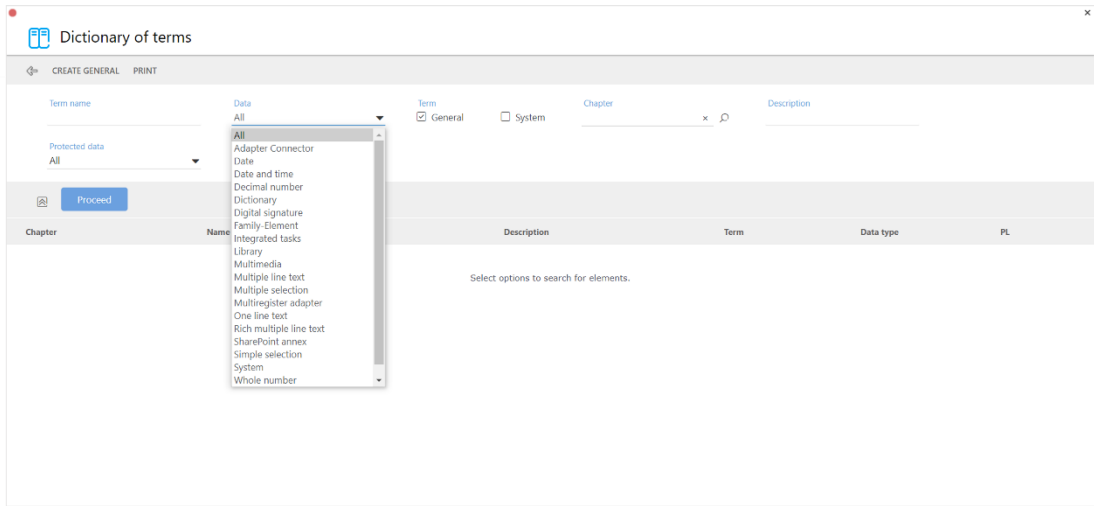
The "SAP Connector operation" window displays the following configuration:

- Parameter:** ZREQUISITIONS - [Table (8)]
- Simulate:** ☐
- Type:** Group of fields
- DELIVERY DATA Table:**

Source panel	Simulation value	Default value	Target connector	V...	E...	Order	Lang...	For...
			ADVCODE - [Text (2)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			AFNAM - [Text (12)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			AKTNR - [Text (10)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
	0	0	ANZSN - [Number (4)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
	0	0	ARSNR - [Number (10)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
	0	0	ARSPS - [Number (4)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			ATTYP - [Text (2)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			BADAT - [Date (8)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			BANFN - [Text (10)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			BANFN_CS - [Text (10)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			BANPR - [Text (2)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
	0	0	BATOL - [Decimal (2)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>
			BEDAT - [Date (8)]	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>	<input type="checkbox"/>

Window for mapping group of fields columns with the corresponding data type indicated in "Target connector".

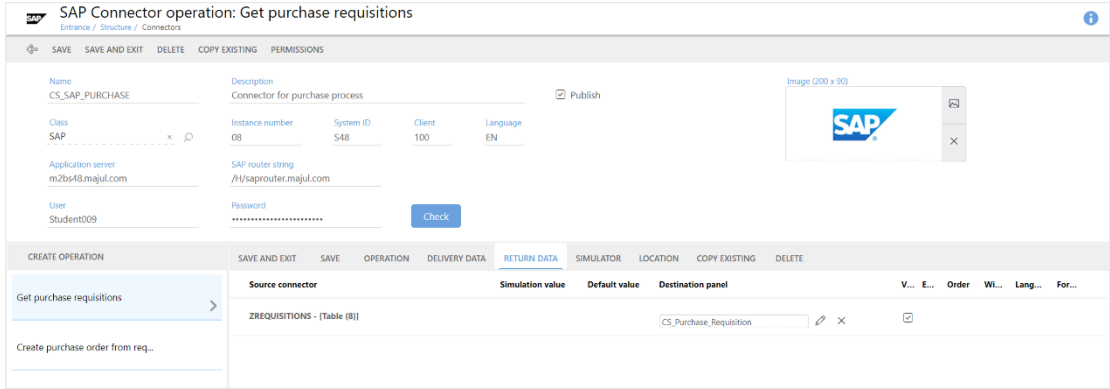




Panel field data types available to select to send data to SAP; depending on the type of destination, the drop-down will show the compatible options.

Return data

After indicating all the general data of the operation in the "Operation" tab and the structure has been imported, all the possible SAP return parameters from the BAPI structure will appear in the "Return data" tab:




The options offered in this table are similar to those explained in the "Delivery data" tab but, in this case, to establish the mapping of the return values according to the input data used.

Simulator

In this tab, it is possible to test the values that will be obtained from the call to the selected operation, by using the parameters and values indicated in the "Simulation value" columns in the "Delivery data" and "Return data" tabs.




After accessing the "Simulator" tab, the initial window for calling the operation is displayed.



## SAP Connector operation: Get purchase requisitions

[Overview](#) / [Structure](#) / [Connections](#)



### SIMULATE

Name

Get purchase requisitions

IN: USER = STUDENT009

OUT: ZREQUISITIONS [TABLE (8)]

MANDT	BANFN	BNFPO	BSART	BSTYP	BSAKZ	LOEKZ	STATU
100	0010024705	00010	NB	B			N
100	0010024705	00020	NB	B			N
100	0010024705	00030	NB	B			N
100	0010024709	00010	NB	B			N
100	0010024709	00020	NB	B			N
100	0010024709	00030	NB	B			N

Total: 19

IN: ZREQUISITIONS [TABLE (8)]

BEDNR	MATKL	RESWK	MENGE	MEINS	BUMNG	BADAT	LPEIN
-------	-------	-------	-------	-------	-------	-------	-------

No element was found

Depending on the general data of the connector, and those indicated in the "Simulation value" columns, a result will be obtained that will not affect the processes that include this operation. This allows us to validate the applied configuration.

## Location

This tab indicates a list of classes of processes and their objects that include this operation:

Location. Operation:	
←	
Clase	Objeto
New Equipment (SAP Connector)	IM.1
New Equipment (SAP Connector)	EM.1
Copy - New Equipment (SAP Connector)_4744	TS.13
Copy - New Equipment (SAP Connector)_4744	EM.1
New Equipment (SAP Connector)	TP.2
New Equipment (SAP Connector)	TS.11
New Equipment (SAP Connector)	TP.1
New Equipment (SAP Connector)	TP.4
Copy - New Equipment (SAP Connector)_4744	TP.2
Copy - New Equipment (SAP Connector)_4744	TP.1
Copy - New Equipment (SAP Connector)_4744	TP.4
Copy - New Equipment (SAP Connector)_4744	TS.3
Copy - New Equipment (SAP Connector)_4744	TP.5
New Equipment (SAP Connector)	TP.5
New Equipment (SAP Connector)	TP.5.00001
Total: 15	

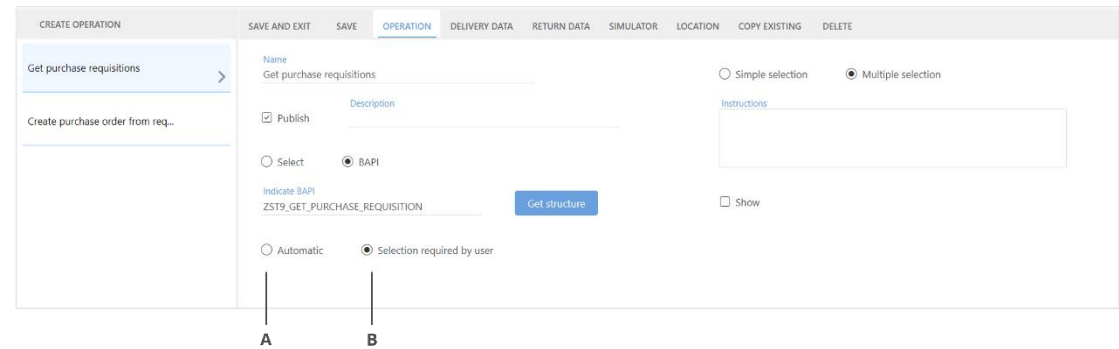
*List of classes of processes and their objects where the operation is in use.*

# Class of processes

The second part of the configuration from the platform is to establish the call to the connector from a class of processes.

The overall configuration of the classes of processes is explained in an independent document in the Knowledge base. Here we will focus on the configuration of the elements that will allow us to use the predefined SAP connectors.

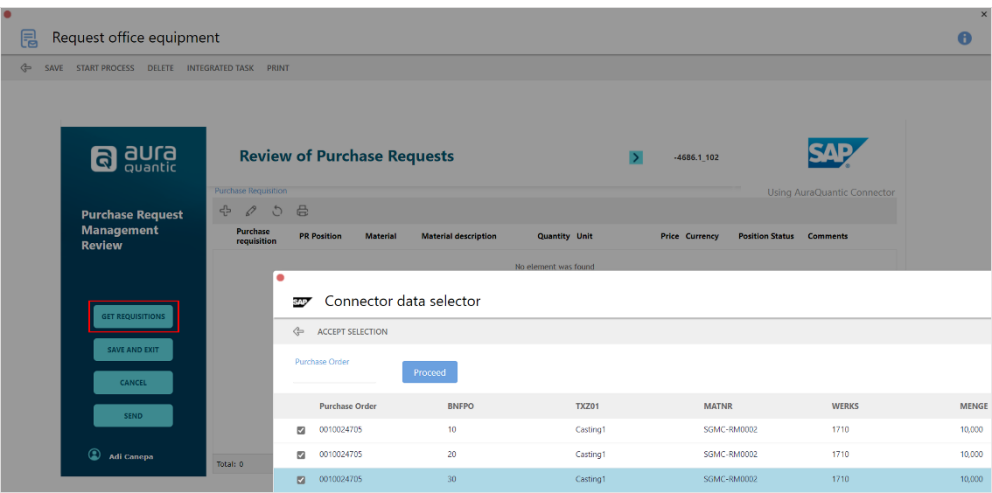
From the options indicated when defining the different connector operations, two of them indicate how we should configure the execution of each call to the corresponding operation:



A Automatic B Selection required by user

- A. **Automatic.** With this option marked, the operation will be performed by a CONNECTOR system task configured either independently in the process diagram or from an action button in a form. In execution, when the flow passes through the system task, or a user clicks on the button, the BAPI operation which performs the input and output data mapping configured in the operation, will be executed.
- B. **Selection required by user.** The operation can only be executed from an action button in a form, configured with the "Connector data selector" action. When this button is clicked, a window will open where the user can select one or more values from the data table. Once selected, the operation will transfer the values to fields in the process panel, according to what has been configured in the operation.

In the example below, we can see the "Get" operation configured previously used in a running process:



Form in which the call to the "Get" BAPI operation is executed through a button.

Appearance of the group of fields (seen in the background of the previous image) in the form, once the user has selected the SAP data to load in the group of fields.

The button configuration in the form design is as shown below:

With "Selection required by user" selected in the connector configuration, the button must be configured with the "Connector data selector" action.

If the "Automatic" option is selected in the connector configuration, the action button must be configured with the CONNECTOR system task action:

With the "Automatic" option, it is also possible to execute the call from an independent object in the diagram configured with the CONNECTOR system task:

The screenshot displays the SAP system task configuration interface for 'Connector SAP'. The interface is divided into two main sections: 'IDENTITY' and 'EXECUTION'.

**IDENTITY Section:**

- Name:** Connector SAP
- Description from diagram:** (Empty text box)
- Description for documentation:** (Empty text box with a link icon)

**EXECUTION Section:**

- Type of TS:** CONNECTOR - (SAP)
- Connector:** CS\_SAP\_PURCHASE
- Conditions:** (Empty text box)

**ADD OPERATION Section:**

Order	Operation
1	Create purchase order from requisition

**Process Diagram:**

The process diagram, titled 'Connector SAP', shows a flow starting from a green circle labeled 'TS.3'. It proceeds to a blue box labeled 'TS.2 UPLOADER Update Calculations', then to a blue box labeled 'TS.10 Connector SAP', and finally to a blue box labeled 'TS.16 Update footers'. After 'TS.16', the flow goes to a decision diamond labeled 'Error control' with 'OK.3' and 'FNLS' options. If 'Yes', it goes to a grey box labeled 'TP.3 IT technician Error Control'. If 'No', it loops back to 'TS.2'.

Configuring of a system task as an independent object in the diagram, when the option to execute the operation is set to "Automatic".



## **SAP connector**

Structure

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