

# Plugin Reference Guide2

(Release 3.12)



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## **Plugins Compatibility**

• Plugins in Release 3.12 are compatible with AutomationEdge Release 6.0.0 onwards.

## **Plugins Technical Reference**

AutomationEdge Plugins technical reference includes three guides,

- AutomationEdge\_R3.12\_Plugin\_Reference\_Guide1
- AutomationEdge\_R3.12\_Plugin\_Reference\_Guide2
- AutomationEdge\_R3.12\_Plugin\_Reference\_Guide3



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## I. Workflow Steps



## **1** File Management

#### 1.1 Delete files

#### 1.1.1 Description

Delete files is a step in the File Management Plugin that deletes files and / or folders as specified.

Note: The Delete files step must be preceded by at least one step that will generate row(s).

#### 1.1.2 Configurations

No.	Field Name	Description		
1	Step name	Specify a unique name for the step.		
	File / Folder tab			
	Accept Input From Previous	Step:		
2	Accept Input From Previous Field	Select the checkbox if you want to accept input from previous fields. Note: If you do not select the checkbox then the following fields are unavailable: Previous Field and WildCard(RegExp)		
3	Previous Field	Select the field from the list.		
4	WildCard(RegExp)	Specify the regular expression matching files to delete if the previous option is a folder.		
5	File / Folder	<ul> <li>Click Folder to select the folder from which you want to delete the files or File to select the file you want to delete.</li> <li>Note: <ul> <li>Add: Add folder field to the list of folders.</li> <li>Folder: Select a folder.</li> <li>Delete: Remove the selected folders from the list.</li> <li>Edit: Move the selected folder to the folder field for editing.</li> </ul> </li> </ul>		
6	WildCard(RegExp)	The regular expression matching files to delete if the previous option is a folder. For example: To delete all files ending in .dat, the regular expression would be ".*\.dat\$".		
7	Files / Folders	The complete list of files / folders to delete.		
	Settings tab:			

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8	Include Subfolders	Select the checkbox if you want to add the subfolders available in the selected folder.
9	Fail If File Not Exist	Select the checkbox if you want the workflow to fail when the file to delete does not exist.
10	Delete For	<ul> <li>Select the option from the list. Available options are:</li> <li>First Row: File is deleted after the first row is generated.</li> <li>Each Row: File is deleted after each row is generated.</li> <li>Last Row: File is deleted after the last row is generated.</li> </ul>

**Note:** If you use wild card expression for files, then when you click OK you will see a warning and the wild card will be removed for the file.

#### **1.2** Delete folders

#### 1.2.1 Description

Delete folders is a step in the File Management Plugin deletes one or more folders and all its contents.

Note: The Delete folders step must be preceded by at least one step that will generate row(s).

No.	Field Name	Description
1	Step Name	Specify a unique name for the step.
	Folder tab	
	Accepting Input From Previo	us Step
2	Accept Input From Previous Field	Select the checkbox if you want to accept input from previous fields.
3	Previous Field	Select the field from the list.
4	Folder	<ul> <li>Click Folder to select the folder that you want to delete.</li> <li>Note: <ul> <li>Add: Add folder field to the list of folders.</li> <li>Folder: Select a folder.</li> <li>Delete: Remove the selected folders from the list.</li> <li>Edit: Move the selected folder to the folder field for editing.</li> </ul> </li> </ul>

#### 1.2.2 Configurations

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Settings tab	
Fail If Folder Not Deleted	Select the checkbox if you want the workflow to fail when the folder does not get deleted.
Delete For	<ul> <li>Select the option from the list. Available options are:</li> <li>First Row: File is deleted after the first row is generated.</li> <li>Each Row: File is deleted after each row is generated.</li> <li>Last Row: File is deleted after the last row is generated.</li> </ul>

#### 1.3 **Unzip file**

#### 1.3.1 Description

Unzip file is a step in the File Management Plugin that unzipped a file or folder.

Note: The Unzip file step must be preceded by at least one step that will generate row(s).

No.	Field Name	Description
1	Step Name	Specify a unique name for the step.
	General tab	
2	Source files	You can specify the list of source (zip) files in this section <b>Get args from previous</b> : check this option if you want to use the list of result files (from a previous step) as the list of files to unzip (bug - it takes the first field of the result row instead of the result files). <b>Zip file name</b> : the name of the zip file or a folder if you want to use a wildcard <b>Source wildcard</b> : if the previous option is a folder, you can enter a regular expression wildcard here. <b>Note:</b> The regex is compared against the absolute path of the file and a complete match MUST be made For example, to match "/folder/test.zip" a regex of "te.\.zip" will come up empty. Use ".*te.\.zip" instead to account for the folders ahead of it. ** For Windows file paths, the direction of the slashes will be reversed in the match, so use "\" instead of "\\".
3	Unzipped files	This section allows us to specify what to do with the unzipped files. <b>Use zipfile name as root</b> : check this if you want to create a separate directory for each zip filename (same name as file).

#### 1.3.2 Configurations



		Target directory: the target directory to unzip in Create folder: check this if you want to create the target folder Include wildcard (RegExp): use this regular expression to select the files in the zip archives to extract Exclude wildcard (RegExp): use this regular expression to select the files in the zip archives to extract Include date in filename: Include the current date in the unzipped filenames (format yyyyMMdd) Include time in filename: Include the time (format HHmmss) Specify Date time format: allows you to specify the date time format yourself (default is: yyyyMMdd'_'HHmmss) Date time format: specify the date and time format. Add original timestamp: select the checkbox if you want to add the original timestamp of the file. Set modification date to original: select the checkbox to if you want the original modification date of the file. If files exists: Select the action to take if the target (unzipped) file exists: skip, overwrite, etc. After extraction: Select the action to take after zip file extraction: Do nothing, Delete files, Move files Move files to: if the previous option is "Move files", you can select the target directory here. Create folder: select the checkbox if you want to create a folder for the unzipped file.
4	Advanced	<ul> <li>Add extracted file to result: add the extracted file names to the list of result files of this process entry for use in the next process entries.</li> <li>Unzip for: specify for which row you want to unzip the file.</li> <li>Ignore errors: select the checkbox if you want the workflow to continue even if there are errors.</li> </ul>

## 2 Input

## 2.1 CSV file input

#### 2.1.1 Description

CSV file input is a step in the Input Plugin for Process Studio Workflows. CSV file input step is used to read data from a delimited file. You can define any separator you want to use, such as pipes, tabs, and semicolons in addition to commas. Internal processing without rendering the file leads to quick step execution. Options for this step are a subset of the Text File Input step.



#### Configurations 2.1.2

Varia	anables lab			
No.	Field Name	Description		
1	Step name	Name of the step. This name has to be unique in a single workflow.		
2	Filename or The filename field (data from previous steps)	Specify the name of the CSV file to read from. Or Select the fieldname that will contain the filename(s) to read from. If this step receives data from a previous step, this option is enabled as well as the checkbox to- include the filename in the output? appears.		
3	Delimiter	Specify the file delimiter character used in the target file. Special characters (e.g. CHAR HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].		
4	Enclosure	Specify the enclosure character used in the target file. Special characters (e.g. CHAR HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].		
5	NIO buffer size	Specify the size of the read buffer in bytes, read from the disk each time.		
6	Lazy conversion	Enable this checkbox to enable lazy conversion algorithm. The lazy conversion algorithm tries to avoid unnecessary data type conversions that could lead to significant performance improvements if possible.		
7	Header row present?	Enable this option if the target file should contain a header row containing column names.		
8	Add filename to result	Enabling this checkbox adds the CSV filename(s) read to the result of the workflow. Filenames in result is a unique list being kept in memory that can be used in the next steps or parent workflow steps or parent process entries.		
9	The row number field name (optional)	Specify the name of the Integer field that will contain the row number in the output of this step.		
10	New line possible in fields?	Enable this checkbox if data in fields may contain new line characters.		
11	Running in parallel?	Enable this checkbox if you will have multiple instances of this step running (step copies) and if you want each instance to read a separate part of the CSV file(s).		
12	File Encoding	Specify the encoding of the file being read.		



13	Fields Table	This table contains an ordered list of fields to be read from the file.
14	Preview button	Click to preview the data coming from the file.
15	Get Fields button	Click to get all the fields from the file based on the current settings (i.e. Delimiter, Enclosure, etc.). All fields identified will be added to the Fields Table.

#### 2.2 Data Grid

#### 2.2.1 Description

Data Grid is a step in the Input Plugin for Process Studio Workflows. The Data Grid step is used to create a tabular data grid. This is usually done for testing, reference or demo purposes.

#### 2.2.2 Configurations

Meta Tab:

On this tab you can specify the field metadata (output specification) of the data

No.	Field Name	Description
1	Step name	Name of the step. This name has to be unique in a single workflow.
2	Name	Provide a name for column in your grid.
3	Туре	Select a data type from a list
4	Format	Choose a format from the list
5	Length	Specify the length of the field.
6	Precision	Specify the precision of the output data type.
7	Currency	Specify the currency symbol to use.
8	Decimal	Specify the decimal symbol.
9	Group	Specify the grouping symbol to use.
10	Set empty string?	Set the field value to null (Y/N)

#### Data Tab:

This grid contains the data. Everything is entered in String format so make sure you use the correct format masks in the metadata tab.

#### 2.3 De-serialize from file

#### 2.3.1 Description



De-serialize from file is a step in the Input Plugin for Process Studio Workflows. The Deserialize from file step reads rows of data from a binary Process Studio file containing rows and its metadata.

#### 2.3.2 Configurations

No.	Field Name	Description
1	Step Name	Specify the name of the step. This name has to be unique in a single workflow.
2	Filename	Specify the name of the binary file to be de-serialized.
3	Limit Size	Specify the limit the number of rows written to the file. A value of zero (0) indicates no size limit (optional).
5	Add filename to result	Adds the generated filename to the result of the workflow. Filenames in result is a unique list being kept in memory that can be used in the next steps or parent workflow steps or parent process entries.

#### 2.4 Email messages input

#### 2.4.1 Description

Email messages input is a step in the Input Plugin for Process Studio Workflows. This step is used to retrieve messages and their attachments from a mail server using the POP3, IMAP or MBOX standard protocols. This step is similar to 'Get emails from POP' entry in a process.

#### 2.4.2 Configurations

Gene	General Tab: General mail server connection settings		
No.	Field Name	Description	
1	Step name	Specify the name of the step. This name has to be unique in a single workflow.	
	Server Settings:		
2	Source host	Provide the mail server host.	
3	Use SSL?	Enable this checkbox if your server needs an SSL connection.	
4	Username	Specify the username of the mailbox to connect to.	
5	Password	Specify the password for the username.	
6	Use proxy?	Enable this checkbox if you want to connect through a proxy.	
7	Proxy username	Specify the username to connect to the proxy server.	
8	Retrieve emails in reverse order	Enable this checkbox to retrieve email in reverse order i.e latest to oldest.	

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9	Fetch in batches?	Enable this checkbox if you want to retrieve larger volumes of mails in batches.
10	Save Attachments	Enable this checkbox to save attachments.
11	Attachment Folder	Click Select folder to specify the folder name to save the attachments.
12	Ignore errors reading fields	Sometimes a server doesn't support the retrieval of a particular piece of information. Enable this option to ignore these errors.
13	Protocol	<ul> <li>Select a standard protocol POP3, IMAP or MBOX to retrieve mails.</li> <li>Note: To use a pop protocol, you need to configure your application for pop protocol, or for a web application you need to enable pop protocol which can differ for different service providers.</li> <li>For example:</li> <li>For web-based Gmail, you need to set the following, <ol> <li>Go to settings.</li> <li>Go to Forwarding and POP/IMAP.</li> <li>Enable POP for mail that arrives from now on.</li> </ol> </li> </ul>
	Timeout and Protocols	
14	Connection timeout (in milliseconds)	Specify the socket connection timeout value in milliseconds. Default value is infinite.
15	Timeout (in milliseconds)	Specify the socket read timeout in milliseconds. Default value is infinite.
16	Protocols	Select the checkbox of the TLS version for sending the email message. The available versions are: TLSv1, TLSv1.1, TLSv1.2, or TLSv1.3. You can select one or all versions.
17	Test Connection button	Click this button to connect to the mail server with the connection details specified. This button does not retrieve mails.

Setti	Settings Tab:		
No.	Field Name	Description	
	POP3 Settings:	POP3 Settings are enabled if you chose POP3 as the protocol.	
1	Retrieve	Specify either "All emails" or "Retrieve first emails"	
2	Retrieve the first emails	If you chose "Retrieve first emails", in the field above this field is enabled. Specify the number of mails you want to retrieve.	



		Note : The value should be less than or equal to number of email present in INBOX
3	Delete emails after	Enable checkbox to Delete emails after retrieval?
	IMAP Settings:	IMAP Settings are enabled if you chose IMAP as the protocol.
1	Get folder from field	Enable this option if you wish to retrieve the IMAP folder name from an input field.
2	Folder field	Select a field containing the folder name.
3	IMAP folder	Type or browse for the IMAP folder to retrieve mails from.
4	Test folder button	Click Test folder button to test if the folder is valid.
5	Open button	Click Open button to select the IMAP folder.
6	Include subfolders	Check this option to retrieve mails from sub-folders as well.
7	Retrieve	Specify which mails to retrieve: Get all, new, old, read, unread, flagged, not flagged, draft, not draft, answered or not answered messages.
8	Retrieve the first emails	Specify the number emails to retrieve at most. <b>Note:</b> This field is enabled Protocol chosen is IMAP in the General settings.
	Batch Settings:	
1	Batch size	Specify the number of emails to retrieve at once in one batch.
2	Start at message number	Specify the first message number to start retrieving at.
3	End at message number	Specify the last message number to end retrieving with.

Filters Tab: These are the filters you can set on the header of the mail message.		
No.	Field Name	Description
1	Sender (FROM)	If check box is ticked then filter by Sender (FROM)
2	Recipient(To)	If check box is ticked then filter by Recipient(To)
3	Subject	If check box is ticked then filter by Subject
4	Received Date	Choose a condition on Received Date from the dropdown list.
5	Limit Size	Put a size limit on the mail with attachments.



Field	Fields Tab:		
No.	Field Name	Description	
1	Name	Choose email attributes to be available as fields.	
2	Keep HTML Tags in the Body	Select the checkbox if you want the HTML tags to be displayed in the output view. <b>Note:</b> The checkbox is clear by default.	

## 2.5 GZIP CSV Input

#### 2.5.1 Description

GZIP CSV Input is a step in the Input Plugin for Process Studio Workflows. This step is similar to CSV file input step. It is used to read data from a delimited file in compressed format. The GZIP CSV Input step does not have the provision for error handling in the step.

#### 2.5.2 Configurations

Varia	Variables Tab		
No.	Field Name	Description	
1	Step name	Name of the step. This name has to be unique in a single workflow.	
2	Filename or The filename field (data from previous steps)	Specify the name of the GZIP CSV file to read from. Or Select the fieldname that will contain the filename(s) to read from. If this step receives data from a previous step, this option is enabled as well as the option to include the filename in the output.	
3	Delimiter	Specify the file delimiter character used in the target file. Special characters (e.g. CHAR HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].	
4	Enclosure	Specify the enclosure character used in the target file. Special characters (e.g. CHAR HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].	
5	NIO buffer size	Specify the size of the read buffer. It is the number of bytes read from the disk at one time.	
6	Lazy conversion	The lazy conversion algorithm tries to avoid unnecessary data type conversions. This could result in significant performance improvements if possible.	
7	Header row present?	Enable this option if the target file contains a header row containing column names.	

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8	Add filename to result	Enable checkbox to adds the filename(s) read to the result of the workflow. Filenames in result is a unique list being kept in memory that can be used in the next steps or parent workflow steps or parent process entries.
9	The row number field name (optional)	The name of the Integer field that will contain the row number in the output of this step.
10	Running in parallel?	Check this box if you will have multiple instances of this step running (step copies) and if you want each instance to read a separate part of the file(s).
11	File Encoding	Specify the encoding of the file being read.
12	Fields Table	This table contains an ordered list of fields to be read from the file.
13	Preview button	Click to preview the data coming from the target file.
14	Get Fields button	Click to get all the fields from the file based on the current settings (i.e. Delimiter, Enclosure, etc.). All fields identified will be added to the Fields Table.

#### 2.6 Generate Rows

#### 2.6.1 **Description**

Generate Rows is a step in the Input Plugin for Process Studio Workflows. Generate rows step is a data generating step that generates a single row or a specified number of rows. By default, the rows are empty; however you may define a number of static fields. Generate Rows is used primarily for testing purposes.

- You may generate only one row that is an initiating point for your workflow. For example, you might generate one row that contains two or three field values that you might use to parameterize your workflow and then generate the real rows.
- Or you may use Generate Rows to generate a specified number of rows. It may be useful for generating a fixed number of rows, for example, you want exactly 12 rows for 12 months of a year.

#### 2.6.2 Configurations

Variables Tab		
No.	Field Name	Description
1	Step Name	Specify the name of the step this name has to be unique in a single workflow
2	Limit	Limit sets the maximum number of rows to generate.

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3	Never stop generating rows	Enable this checkbox for real-time use cases where you never want to stop the running workflow. The output of this step is then used to drive recurring tasks like polling from a file, queue, and database.
4	Interval in ms	Specify the interval between generated rows in milliseconds.
5	Current row time field name	Specify the *optional *field name for the Date field containing the time when the current row was generated.
6	Previous row time field name	Specify the *optional *field name for the Date field containing the time when the previous row was generated.
7	Fields	This table is where you configure the structure and values of the rows you are generating (optional). Value for a field can be an environment variable too, e.g. \${paramater1}

#### 2.7 Generate random value

#### 2.7.1 Description

Generate random value is a step in the Input Plugin for Process Studio Workflows. Generate random value step generates random numbers, integers, strings and even UUID.

#### 2.7.2 Configurations

No.	Field Name	Description
1	Name	Specify the name of the new field that will contain the random value
2	Туре	<ul> <li>Specify the type of data you want to get back:</li> <li>Random number: generates a random number between 0 and 1</li> <li>Random integer: generates a random 32-bit integer</li> <li>Random string: generates a random string based on a 64-bit long random value</li> <li>Universally Unique Identifier (UUID)</li> <li>Universally Unique Identifier type 4 (UUID4)</li> <li>Random Message Authentication Code (HmacMD5)</li> <li>Random Message Authentication Code (HmacSHA1)</li> </ul>

#### 2.8 Get File Names

#### 2.8.1 Description

Get File Names is a step in the Input Plugin for Process Studio Workflows. The Get File Names step is used to get information associated with files on a specified path (with filters) in the file system. The associated information includes, short\_filename - only the filename, without the

path (somefile.txt), path - only the path (e.g. /tmp/), type, exists, ishidden, isreadable, iswriteable, lastmodifiedtime, size, extension, uri, rooturi. The retrieved files along with associated information are added as rows onto the stream.

#### 2.8.2 Configurations

File <sup>-</sup>	-ile Tab		
No.	Field Name	Description	
$\checkmark$	Filename is defined in field	Enable checkbox if filename is defined in a field. If this is checked the following four fields are activated.	
1	Get filename from field	Specify the field from which to retrieve the filename	
2	Get wildcard from field	A File can be selected using regular expressions. This field specifies a wildcard for the regular expression. Wildcard you would have a RegEx with something like .*\.dat\$ If incorrect regex is specified then 'Regex pattern is incorrect so no files will be retrieved' message is displayed.	
3	Exclude wildcard field	Specify a wildcard to exclude for the regular expression.	
4	Include subfolders	Include files from the folder and sub-folders.	
$\checkmark$	Filename is defined in field	Enable checkbox if filename is defined in a field. If this is not checked the following five fields are activated.	
1	File or Directory	Specify the file or directory selection.	
2	Regular Expression	Provide a regular expression to search files.	
3	Exclude Regular Expression	Provide a regular expression to exclude files.	
4	Selected files	This is a tabular list of files selected	
5	Show filenames button	Click this button to see what the filename looks like after selecting all the previous settings.	

Filte	Filters Tab		
No.	Field Name	Description	
1	Get	<ul> <li>Filter the retrieved file names based on by choosing an option from the drop down list,</li> <li>All files and folders</li> <li>Files only</li> <li>Folders only</li> </ul>	

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2	Include a row number in the output	Enable checkbox to include a row number in the output.
3	Rownum fieldname	Specify a fieldname for holding rownum.
4	Do not report error on no files or folders	Enable this checkbox not throw error on no files or folders.
5	Limit the number of rows returned	Specify a value to limit the number of rows returned to this value.
6	Add the filename(s) to the result list	Enable checkbox to add the filename(s) to the result list.

Note: The output fields for this step are:

- filename the complete filename, including the path (/tmp/somefile.txt)
- short\_filename only the filename, without the path (somefile.txt)
- path only the path (e.g. /tmp/)
- type
- exists
- ishidden
- isreadable
- iswriteable
- lastmodifiedtime
- size
- extension
- uri
- rooturi

If you have no files then the step(and the workflow) do not abort. If you want to abort the workflow you could use a 'Detect Empty Stream' step with some logic. Secondly, you could also check for no files and abort within a process by the 0

Checks if files exist process entry.

#### 2.9 Get Files Rows Count

#### 2.9.1 Description

Get Files Rows Count is a step in the Input Plugin for Process Studio Workflows. Get Files Rows Count step counts the number of rows in a file or a set of files.

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Note: This step only works with text/delimited file types.

#### Configurations 2.9.2

File	File Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
	Filename from field:		
1	Get filename from field	Enable this checkbox if you need to get fieldname from a field	
2	Filename from field	If 'Get filename from field' is checked choose field containing the file name.	
	Selected files:	The following fields are enabled when Get filename from field checkbox is not enabled.	
1	File or directory	Browse for the file or directory and Add to the list of selected files.	
2	Wildcard(RegExp)	If directory is chosen you could filter the files in the directory using regular expression.	
3	Exclude wildcard	If directory is chosen you could exclude files with this Regular Expression	
4	Required	Choose Y (from Y/N) if File/Directory is required.	
5	Include subfolders	Choose Y (from Y/N) to include subfolders.	

Content Tab:

No.	Field Name	Description
	Rows Count Field:	
1	Rows Count Fieldname	Specify a fieldname in which to store the row count.
	Row Separator:	
1	Row Separator Type	Specify a Row Separator Type from the list.
2	Row Separator	If Row Separator Type is 'Tabulation' provide Row Separator
3	Perform Smart Count	Enable this option to identify data after a separator. So that the rows count is not based simply on number of separators but also checks if there is data after separator.
	Additional fields:	



1	Include files count in output?	Enable checkbox to include no. of files in output.
2	Files Count fieldname	If the above checkbox is selected provide fieldname to store files count.
	Add filename to result:	
1	Add filename to result	Adds the CSV filename(s) read to the result of the workflow. Filenames in result is a unique list being kept in memory that can be used in the next steps or parent workflow steps or parent process entries.

#### 2.10 Get Subfolder names

#### 2.10.1 Description

Get Subfolder names is a step in the Input Plugin for Process Studio Workflows. Get Subfolder names step reads a parent folder and return all the subfolders in it.

#### Configurations 2.10.2

Folder Tab

i ulu			
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
	Folder names from field:		
1	Accept folder name from field	Enable checkbox to accept folder name from field.	
2	Folder name field	Select the field containing the folder name.	
3	Directory	If "Accept folder name from field" is unchecked browse the directories to get sub-folders. Click Add to add to the list of Selected directories.	
4	Selected directories	View the list of all the directories chosen.	

#### Settings Tab

ocia			
No.	Field Name	Description	
	Additional fields:		
1	Include rownum in output?	Enable checkbox to include row number in output.	
2	Rownum fieldname	Provide a fieldname to store row number.	
3	Limit	The limit puts a cap on the number of sub-folders to get.	



## 2.11 Get System Info

#### 2.11.1 Description

Get System Info is a step in the Input Plugin for Process Studio Workflows. The Get System Info step retrieves information from the Process Studio environment. The table below lists a few of the available information types. This step generates a single row with fields containing the requested information. A name may be specified for each field.

#### 2.11.2 Configurations

No.	Field Name	Description
	Name	Specify a user defined name of a system property
	Туре	Any of system properties from the list can be added.
	Sample System Info:	
	Name	Туре
1	system date (variable)	System time, changes every time you ask a date.
2	system date (fixed)	System time, determined at the start of the workflow.
3	start date range (Workflow)	Start of date range, based upon information in log table.
4	end date range (Workflow)	End of date range, based upon information in log table.

#### 2.12 Get Data from XML

#### 2.12.1 Description

Get Data from XML is a step in the Input Plugin for Process Studio Workflows. Get Data from XML plugin step can read data from any type of XML file using XPath specifications.

Get Data from XML step can read data dynamically from field values in the stream or parameters referring to files or Urls. Secondly, users can also define files as static values.

#### 2.12.2 Configurations

Files Tab:

The files tab is where you define the location of the XML files from which you want to read.

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

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2	XML Source from field	<ul> <li>XML source is defined in a field: XML data source is defined in a field in the input stream.</li> <li>XML source is a filename: XML data is in a file specified in a field in the input stream.</li> <li>Read source as URL: XML data is retrieved from a URL specified in a field in the input stream.</li> <li>Get XML source from a field: Choose a field to read XML, filename or URL.</li> </ul>
3	File or directory	Specify the location and/or name of the input text file or browse for the file. <i>Note:</i> Click Add to add the file/directory/wildcard combination to the list of selected files (grid) below.
4	Regular expression	Specify the regular expression you want to use to filter the files in the directory specified in the previous option.
5	Selected Files	Contains a list of selected files (or wildcard selections) and a property specifying if file is required or not. If a file is required and it is not found, an error is generated; otherwise, the file name is skipped.
6	Show filename(s)	Displays a list of all files that will be loaded based on the current selected file definitions.

#### Content Tab:

••••			
No.	Field Name	Description	
1	Settings	<ul> <li>Loop XPath: For every "Loop XPath" location we find in the XML file(s), we will output one row of data. This is the main specification we use to flatten the XML file(s). You can use the "Get XPath nodes" button to search for the possible repeating nodes in the XML document. Please note that if the XML document is large that this can take a while.</li> <li>Encoding: the XML filename encoding in case none is specified in the XML documents. (yes, those still exist)</li> <li>Namespace aware: check this to make the XML document namespace aware.</li> <li>Ignore comments: Ignore all comments in the XML document while parsing.</li> <li>Validate XML: Validate the XML prior to parsing. Use a token when you want to replace dynamically in a Xpath field value. A token is between @_ and - (@_fieldname-).</li> <li>Use token: a token is not related to XML parsing but to Process Studio.</li> </ul>	



		<ul> <li>Ignore empty file: an empty file is not a valid XML document. Check this if you want to ignore those altogether.</li> <li>Do not raise an error if no file: Enable checkbox if you do not want the step to raise an error when no files are found.</li> <li>Limit: Limits the number of rows to this number (zero (0) means all rows).</li> <li>Prune path to handle large files: almost the same value as the "Loop XPath" property with some exceptions, see Get Data from XML - Handling Large Files for more details. Note that you can use this parameter to avoid multiple HTTP URL requests.</li> </ul>
2	Additional fields	<ul> <li>Include filename in output?: Enable checkbox to allow you to specify a field name to include the file name (String) in the output of this step.</li> <li>Rownum in output?: Enable checkbox to allow you to specify a field name to include the row number (Integer) in the output of this step.</li> </ul>
3	Add to result filename	Enable the checkbox to add the XML filenames read to the result of this workflow. Filenames in result is a unique list being kept in memory that can be used in the next steps or parent workflow steps or parent process entries.

Field	Fields Tab:		
No.	Field Name	Description	
1	Element	The element type to read: Node or Attribute	
2	Туре	Specify the data type to convert to	
3	Format	Specify the format or conversion mask to use in the data type conversion	
4	Length	Specify the length of the output data type	
5	Precision	Specify the precision of the output data type	
6	Currency	Specify the currency symbol to use during data type conversion	
7	Decimal	Specify the numeric decimal symbol to use during data type conversion	
8	Group	Specify the numeric grouping symbol to use during data type conversion	
9	Trim type	Specify the type of trimming to use during data type conversion	



10	Repeat	Repeat the column value of the previous row if the column value
		is empty (null)

## 2.13 Get table names

#### 2.13.1 Description

Get table names is a step in the Input Plugin for Process Studio Workflows. The Get Table Names step retrieves only table names when the 'Include Tables' option is checked. Secondly, when both 'Include Tables' and 'Include Views' are checked, both types of names are retrieved. Thirdly however, when only 'Include views' is checked, nothing is returned. In order to handle the third scenario when you need on View names you may 'Include Tables' and 'Include Views' and add a filter rows step to get rid of the unwanted table names.

No.	Field Name	Description
1	Step Name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Connection	This defined the connection to the database.
3	Schema Name	The name of the Schema to retrieve tables.
4	Get Schema from field	Enable checkbox to get schema name from field.
5	Schema Name Field	Enter the fieldname to get schema name.
	Settings:	Select objects to include in output
6	Include catalogs	Enable checkbox to see catalogs
7	Include schemas	Enable checkbox to see schemas
8	Include tables	Enable checkbox to see tables
9	Include views	Enable checkbox to see views
10	Include procedures	Enable checkbox to see procedures
11	Include synonyms	Enable checkbox to see synonyms
12	Add schema in object	Enable checkbox to prefix schema name to 'Tablename Fieldname'.
	Output Fields:	
13	Table name Fieldname	Specify an output fieldname to contain Table/Object name
14	Object type fieldname	Specify an output fieldname to contain Database Object Type
15	Is system object fieldname	Specify an output fieldname to contain a Boolean value: Is it a system object(Y/N)

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1	16	Creation SQL fieldname	Specify an output fieldname to contain the SQL script for the
			object creation.

#### 2.14 Google Analytics

#### 2.14.1 Description

Google Analytics is a step in the Input Plugin for Process Studio Workflows. The Google Analytics step accesses your Google analytics data to generate reports or to populate your data warehouse. It uses the Google Analytics 3.0 API.

Prerequisites:

- 1. You must have a Google Analytics account, and be an owner of the Analytics account that will be used.
- 2. The Google Analytics step requires an API key. The method that we support involves generating a private key, creating a service account, and adding the service account's email as a user on your Google Analytics account. Here is how to do this.
  - Go to http://console.developers.google.com and sign in with your credentials.
  - In the Projects page, click Create Project, then when the New Project dialog appears, provide a project name and click Create.
  - In the dashboard select Enable and Manage APIs.
  - Search for Analytics API.
  - Select Analytics API from the search results, then click the Enable API button.
  - In the left menu pane, click **Credentials**, then click the **Add Credentials** button, and select **Service AcRegex Evaluationcount**.
  - When prompted for a key type, select the P12 option, and click Create. Before the P12 file is downloaded you will be prompted to open or save the file. Save the file in a safe location. Saving the file is important because you cannot download it again. You will also need to reference the path to this file when you fill out the Google Analytics step in Spoon.
  - Copy the Service Account's Email Address (<random characters>@developer.gserviceaccount.com). You will paste it in another field later in these instructions.
  - Go to http://google.com/analytics and sign in with your credentials.
  - Click the Admin menu option, then click User Management.
  - In the Add permissions for field, enter the Service Account's email address you copied previously. Make sure the user has, at minimum, the Read and Analyze permission.

#### 2.14.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of this step as it appears in the workflow workspace. This name has to be unique in a single workflow.

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	Google Analytics Connection Settings:	
1	Application Name	Specify an application name such as "PS" or leave the default.
2	OAuth Service Email	Your Google Developer Service Account's Email Address (e.g. " <random characters@developer.gserviceaccount.com="">").</random>
3	Key file	Specify the path to the P12 private key associated with your OAuth Service account.
4	Specify tableId directly	Enable checkbox if you want to specify the tableId directly without getting the tableId from the profile.
5	Get tableId from profile	Select a Google Analytics tableId from your profile.
	Query Definition:	
1	Start Date	Specify the start date associated with the query. The date must be entered in the following format: YYYY-MM-DD.
2	End Date	Specify the end date associated with the query. The date must be entered in the following format: YYYY-MM-DD.
3	Dimensions	Specify the dimension fields for which you want to query. The Google Analytics API documentation provides you with a list of valid inputs and metrics that can be combined.
4	Metrics	Specify the metrics fields you want returned. At least one metric must be provided.
5	Filters	Specify the filter (described in the Google Analytics API documentation). Here is an example: 'ga:country==Algeria'.
6	Sort	Specify a field on which to sort. Here is an example: 'ga:city'.
7	Specify a segment for the query	Enable checkbox to specify a segment for the query. A segment is analogous to a database "view."
8	Use custom segment	Enable checkbox, if you want to specify a custom segment. A segment is analogous to a database "view."
9	Use predefined segment	Select from the predefined segments dropdown list. A segment is analogous to a database "view."
	Output fields:	This is a tabular list of output fields. It is populated by the get Fields button.
1	Feed field type	Choose from a dropdown list.
2	Feed field	Specify a Feed field name.
3	Output field	Specify an output fieldname to store the feed field.
4	Output type	Choose the output data type.



5	Input format	Choose a format for the Output type.
	Limit Size:	Provide a numeric limit to the number of output fields.

## 2.15 JSON Input

#### 2.15.1 Description

JSON input is a step in the Input Plugin for Process Studio Workflows. The **JSON Input** step plugin step can read relevant portions out of JSON structures dynamically from field values in the stream or parameters, referring to files or Urls. Secondly, users can also define files and urls as static values. The step outputs portions of the JSON structures as rows.

#### 2.15.2 Configurations

File	File Tab: Here you enter basic connection information for accessing a resource.				
No.	Field Name	Description			
1	Step name	Specify the name of this step as it appears in the workflow workspace			
2	Source is from a previous step	Enable checkbox to retrieve the source from a previously defined field.			
3	Select field	Choose the field containing the source file from a dropdown list.			
4	Use field as file names	Enable checkbox if source is a filename.			
5	Read source as URL	Enable checkbox if source should be accessed as a URL			
6	Do not pass field downstream	Enabling checkbox will not pass this field downstream. This improves performance and memory utilization with large JSON fields.			
7	File or directory	Specify the location of the source if the source is not defined in a field			
8	Regular expression	Specify a regular expression. All filenames that match this regular expression are selected if a directory is specified			
9	Exclude regular expression	Specify a regular expression. All filenames that match this regular expression are excluded if a directory is specified			
10	Button: Show filename	Click Button to display the file names selected.			

Content Tab: enables you to configure which data to collect.				
No.	Field Name	Description		

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1	Ignore empty file	Enable checkbox to skip empty fileswhen unchecked, instances of empty files causes the process to fail and stop
2	Do not raise an error if no files	Enable checkbox to avoid failure when there is no file to process. When unchecked the workflow to fails when there is no file to process.
3	Ignore missing path	When unchecked, causes the workflow to fail when the JSON path is missingthen checked, avoids failure when there is no JSON path
4	Limit	Sets a limit on the number of records generated from the step when set greater than zero
5	Include filename in output	Adds a string field with the filename in the result
6	Rownum in output	Adds an integer field with the row number in the result
7	Add files to result files name	If checked, adds processed files to the result file list

Field	Fields Tab:		
No.	Field Name	Description	
1	Name	Specify the name of the output field	
2	Attribute	Specify the attribute to read	
3	Туре	Specify the data type to convert to	
4	Format	Specify the format or conversion mask to use in the data type conversion	
5	Length	Specify the length of the output data type	
6	Precision	Specify the precision of the output data type	
7	Currency	Specify the currency symbol to use during data type conversion	
8	Decimal	Specify the numeric decimal symbol to use during data type conversion	
9	Group	Specify the numeric grouping symbol to use during data type conversion	
10	Trim type	Specify the type of trimming to use during data type conversion	
11	Repeat	Choose from (Y/N). Specify Y to Repeat the column value of the previous row if the column value is empty (null)	

Additional output fields Tab:		
No.	Field Name	Description



1	Short filename field	Specify the field name for short filename.
2	Extension field	Specify the field name for filename extension.
3	Path field	Specify the field name for file path
4	Size field	Specify the the size of the file.
5	Is hidden field	Specify fromY/N. Y to hide field. Default is N
6	Last modification field	Specify the field name for the last modification.
7	Uri field	Specify the fieldname for Uri (e.g. file:///C:/temp/file.txt)
8	Root uri field	Specify the fieldname for Root Uri (e.g. file:///C:/)

# 2.16 LDAP Input

## 2.16.1 Description

LDAP Input is a step in the Input Plugin for Process Studio Workflows. The LDAP Input step reads information like users, roles and other data from an LDAP server. The following sections describe the available options for the LDAP input step.

## 2.16.2 Configurations

General Tab No. Field Name Description Specify the name of the step. This name can me modified from 1 Step name the default name and has to be unique within the workflow. Host: 2 Host Specify the host on which the LDAP server is running 3 Port Specify the port number on which the LDAP server is running Specify the protocol. The default value is LDAP. 4 Protocol Authentication: 5 Use Authentication Select the checkbox to enable user name and password fields needed to connect to LDAP. Username Specify Username. 6 7 Password Specify Password. Certificate: 8 Use Certificate Not enabled Not enabled 9 Trust store path 10 Button: Browse Not enabled

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11	Trust store password	Not enabled
12	Trust all certificates	Not enabled
13	Test connection button	Click to tests whether the connection is established.

Search Tab:		
No.	Field Name	Description
1	Dynamic search base	Checkbox to enable a dynamic search base
2	search base fieldname	This field is enabled only when the Dynamic search base checkbox is checked. Choose a field name from the dropdown containing the search base.
3	Search base	This field is enabled when the Dynamic search base checkbox is unchecked. Provide a static search base.
4	Dynamic filter string	Checkbox to enable a dynamic filter string
5	Filter string fieldname	This field is enabled only when the Dynamic filter string checkbox is checked. Choose a field name from the dropdown containing the filter string.
6	Filter String	This field is enabled when the Dynamic filter string checkbox is unchecked. Provide a static filter string.

Adva	Advanced Tab:		
No.	Field Name	Description	
1	Include rownum in output?	This is a checkbox to include rownum (Integer) in the output of this step.	
2	Rownum fieldname	Specify a fieldname to hold the rownum.	
3	Limit	Specify a Limit to the number of rows to this number (zero (0) means all rows).	
4	Time limit	Specify a time limit in seconds to retrieve the specified number of rows (zero (0) means no time limit).	
5	Multi valued field separator	For multi-valued content fields, you can specify a separator here. (default is a comma).	
6	Set paging	Enable checkbox to set paging.	
7	Page size	Specify a page size.	
8	Search scope	<ul><li>Choose the search scope from one of the following,</li><li>Object scope</li></ul>	



Field	Fields Tab:		
No.	Field Name	Description	
1	Name	Specify the name of the output field	
2	Attribute	Specify the attribute to read	
3	Туре	Specify the data type to convert to	
4	Format	Specify the format or conversion mask to use in the data type conversion	
5	Length	Specify the Specify the he length of the output data type	
6	Precision	Specify the precision of the output data type	
7	Currency	Specify the currency symbol to use during data type conversion	
8	Decimal	Specify the numeric decimal symbol to use during data type conversion	
9	Group	The numeric grouping symbol to use during data type conversion	
10	Trim type	Specify the type of trimming to use during data type conversion	
11	Repeat	Choose from (Y/N). Choose Y to Repeat the column value of the previous row if the column value is empty (null).	

# 2.17 Load file content in memory

# 2.17.1 Description

Load file content in memory is a step in the Input Plugin for Process Studio Workflows. Load file content in memory Input plugin step is used to load file content in memory.

# 2.17.2 Configurations

File <sup>-</sup>	File Tab:		
No.	Field Name	Description	
1	Step Name	Specify the name of the step; the name has to be unique in a single workflow.	
	Dynamic filename:		
1	Filename is defined in a field	Enable checkbox to get filename from field	
2	Get filename from a field	Select the field from which to get filename	

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	Or	
1	File or directory	Browse the file or directory to load in memory
2	Regular expression	If directory is chosen filter filenames using regular expression
3	Exclude Regular expression	Exclude filenames with this regular expression
	Selected Files:	View the selected files.
1	File/Directory	View added Directory or filename
2	Wildcard	View Regular expression applied
3	Exclude wildcard	View Regular expression to exclude files
4	Required	Is this file required(Y/N). The default value is N.
5	Include subfolders	Select value for: Include subfolders(Y/N). The default value is N.

Con	tent Tab:	
No.	Field Name	Description
	Settings:	
1	Encoding	Choose the file content character encoding
2	Ignore empty file	Enable to ignore empty file
3	Limit	Provide content limit.
	Additional fields:	
1	Include filename in output?	Enable checkbox to include file name in output.
2	Filename fieldname	Provide the field name for Filename output
3	Rownum in output?	Enable to see row number in output.
4	Rownum fieldname	Specify field name for rownum
	Add to result filename:	
1	Add files to result filename	Enable this checkbox to add the names of the files read to the result of this workflow. A unique list is being kept in memory that can be used in the next process entry in a process, for example in another workflow.

Field	Fields Tab:		
No.	Field Name	Description	
1	Name	Specify the name of the file related elements loaded in memory.	
2	Element	Choose File element: File content/File size.	



3	Туре	Data type of element
4	Format	Choose a field format.
5	Length	Specify the length of the element
6	Precision	Specify the precision of the element
7	Currency	Specify the currency symbol of the element
8	Decimal	Specify the numeric decimal symbol of the element
9	Group	Specify the numeric grouping symbol to use.
10	Trim type	Specify the type of trimming to use.
11	Repeat	Choose from Y/N. Select Y to repeat the column value of the previous row if the column value is empty (null)

Addi	Additional Output Fields Tab:		
No.	Field Name	Description	
1	Short filename field	Specify a field name for short filename	
2	Extension field	Specify a field name for filename extension	
3	Path field	Specify a field name for file path	
4	Is hidden field	Specify a Y/N. Y to hide field. Default is N	
5	Last modification field		
6	Uri field	Specify a field name for Uri (e.g. file:///C:/temp/file.txt)	
7	Root Uri field	Specify a field name for Root Uri (e.g. file:///C:/)	

### 2.18 **Microsoft Access Input**

### 2.18.1 Description

Microsoft Access Input is a step in the Input Plugin for Process Studio Workflows. Microsoft Access Input plugin step reads directly from Microsoft Access "MDB" files.

#### 2.18.2 Configurations

File	File Tab		
No.	Field Name	Description	
1	Step name	Specify the name of the step; the name has to be unique in a single workflow.	
2	Filename is defined in a field	Enable checkbox to accept filenames from previous steps.	



3	Get filename from field	Select the field that will contain the filenames at runtime from this drop down list.
4	File or directory	Specify the location and/or name of the input file or browse for the file. <i>Note:</i> Click Add to add the file/directory/wildcard combination to the list of selected files (grid) below.
5	Regular Expression	Specify the regular expression you want to use to select the files in the directory specified in the previous option.
6	Selected files	Contains a list of selected files (or wildcard selections) and a property specifying if file is required or not. If a file is required and it is not found, an error is generated; otherwise, the file name is skipped.
7	Show Filename(s) button	Displays a list of all files that will be loaded based on the current selected file definitions
8	Preview rows button	Click Preview to examine the contents of the specified Access file

Cont	ent Tab	
No.	Field Name	Description
1	Table	The access table-name to read data from
2	Include filename in output?	Allows you to specify a field name to include the file name (String) in the output of this step.
3	Include table name in output?	Allows you to specify a field name to include the table name (String) in the output of this step.
4	Include rownum in output?	Allows you to specify a field name to include the row number (Integer) in the output of this step.
5	Reset rownum per file?	This check box will start to number at 1 in each file that is being read.
6	Limit	Specify an integer larger than zero here to limit the number of rows being read by this step.
7	Add filename to result?	Adds the Access filenames read to the result of this workflow. A unique list is being kept in memory that can be used in the next process entry in a process, for example in another workflow.

Fields Tab		
No.	Field Name	Description
1	Name	Specify the name of the output field.
2	Column	Specify the name of the column in the Access table.
3	Туре	Specify the data type to convert to.



4	Format	Specify the format or conversion mask to use in the data type conversion.
5	Length	Specify the length of the output data type.
6	Precision	Specify the precision of the output data type.
7	Currency	Specify the currency symbol to use during data type conversion.
8	Decimal	Specify the numeric decimal symbol to use during data type conversion.
9	Group	Specify the numeric grouping symbol to use during data type conversion.
10	Trim type	Specify the type of trimming to use during data type conversion.
11	Repeat	Choose from Y/N. Select Y to repeat the column value of the previous row if the column value is empty (null).

# 2.19 Microsoft Excel Input

# 2.19.1 Description

Microsoft Excel Input is a step in the Input Plugin for Process Studio Workflows. Microsoft Excel input plugin step is used to read data from Excel and Open Office files.

# 2.19.2 Configurations

Files Tab

1 1100		
No.	Field Name	Description
1	Step name	Specify the name of the step. The step name should be unique within the workflow.
2	Spread sheet type (engine)	<ul> <li>Specify the spreadsheet type according to the file to be read.</li> <li>EXCEL 97-2003 XLS (JXL)</li> <li>EXCEL 2007 XLSX (Apache POI)</li> <li>EXCEL 2007 XLSX (Apache POI Streaming)</li> <li>Open Office ODS(ODFDOM)</li> <li>EXCEL Streamer</li> <li>EXCEL Binary XLSB</li> <li>Default value: EXCEL 97-2003 XLS (JXL)</li> </ul>
		<ul> <li>Notes:</li> <li>Excel streamer like Apache POI Streaming is also for reading large XLSX files. It is memory efficient and works across machine configurations. Comparatively, Apache POI</li> </ul>

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		is faster in reading files but fails for some lower configuration machines with memory error.
		<ul> <li>Excel Binary XLSB is provided to read Excel binary files. The File format is available from Excel 2007 onwards.</li> <li>Advantages:         <ul> <li>The Excel workbook sheets can be read and written a bit faster, making them useful for the larger spreadsheets.</li> <li>Notes:                 <ul> <li>A little extra time is required for fetching headers of the file.</li> <li>By default the type of all the columns are defined as String. The developer can change the type from the drop-down in Fields tab.</li> <li>Some options on Content tab (Stop on empty rows, No empty rows, Encoding) and Error handling tab (Ignore Errors) are disabled.</li> <li>Limitations:</li> <li>File type as runtime parameter is not supported for Excel Binary files.</li></ul></li></ul></li></ul>
3	File or directory	Specify the location or the name of the input file or browse for file.
4	Button: Add	Click to add files to the Selected files group.
5	Button: Browse	Click to browse for a files or a directory.
6	Regular Expression	Specify a regular expression for selecting files in the directory specified in the previous option.
7	Exclude Regular Expression	Specify a location to exclude all files that meet criteria specified by the regular expression.
8	Selected files	It contains a tabular list of selected files (or wildcard selections) and a property specifying whether the file is required or not. If a file is required and it is not found, and an error is generated, otherwise, the file name is skipped.
9	Delete	Click Delete button to delete rows from Selected files data grid.



10	Edit	Click Edit button to enable fields to be edited in data grid.
	Accept filename from previous steps:	
11	Accept filenames from previous step	Enable checkbox to read file names from the previous step in the workflow.
12	Step to read filenames from	Specify the step name to read filenames from.
13	Field in the input to use as filename	Specify the field in the input to use as a filename.
14	Button: Show filenames	Click Show filenames button to show list of sheets in the input file.

Shee	Sheets Tab		
No.	Field Name	Description	
1	Sheet name	Specify single or multiple sheet names in the excel sheet. <b>Note:</b> You can also specify the sheet name as a variable.	
2	Start row	Specify a start row in the corresponding sheet. <b>Note:</b> You can also specify the start row as a variable.	
3	Start column	Specify the start column in the corresponding sheet. <b>Note:</b> You can also specify the start column as a variable.	
4	Button: Get Sheet name(s)	Click to retrieves a list of sheet names in the input excel file.	

Content Tab		
No.	Field Name	Description
1	Header	If checked, it skips a header row in the sheet. The default value is checked.
2	No empty rows	If checked, no empty rows are generated in the output sheet. Default value: checked. The default value is checked.
3	Stop on empty row	Enable checkbox to stop reading the current sheet of a file when an empty line is encountered.
4	Limit	Specify the Limit on the number of rows.
5	Encoding	Specify text file encoding to use.



6	Enable Batching	This checkbox is editable only if the Spreadsheet type engine in the Files tab is Excel Binary (XLSB). Enable this option for reading large XLSB files using batch processing.
7	Batch Size	This field is enabled only if the Enable Batching checkbox above is checked. Specify the number of rows per batch, for processing. The data type is number.
	Result filenames:	
1	Add filenames to result	Enable checkbox to add filenames to result. Default value: checked

Erro	Error Handling Tab		
No.	Field Name	Description	
1	Strict types?	Enable checkbox to report data type errors in the input.	
2	Ignore errors?	Enable checkbox to ignore errors during parsing.	
3	Skip error lines?	Enable checkbox to it skips lines with errors.	
4	Warning files directory	Specify the location for storing warnings. It can be set by variables using Variable button or you may browse a directory location using the browse button.	
5	Error files directory	Specify the location for storing errors. It can be set by variables using Variable button or you may browse a directory location using the browse button.	
6	Failing line numbers files directory	Specify the location of files with errors on a line number. It can be set by variables using Variable button or you may browse a directory location using the browse button.	

Field	Fields Tab		
No.	Field Name	Description	
1	Read Based on Column Name	Select the checkbox if you want to get input based on name of the column. Table data is copied to the <b>Get fields based to</b> <b>column name</b> table when you click <b>Get fields from header</b> <b>row</b> . <b>Note:</b>	



		If the checkbox is not selected, table data is copied from column based table to index based table.
2	Name	Specify the name of the field.
3	Туре	<ul> <li>Specify the data type of the field.</li> <li>Number</li> <li>String</li> <li>Date</li> <li>Boolean</li> <li>Integer</li> <li>BigNumber</li> <li>Binary</li> <li>Timestamp</li> <li>Internet Address</li> </ul>
4	Length	Specify the maximum length of the field.
5	Precision	Specify Precision of the field.
6	Trim Type	<ul> <li>Truncate spaces for the field by selecting one of the following.</li> <li>None</li> <li>Left</li> <li>Right</li> <li>Both</li> </ul>
7	Repeat	Specify a Boolean value for repeating field.
8	Format	Specify Format of the field.
9	Currency	Specify symbol for Currency.
10	Decimal	Specify Decimal value.
11	Grouping	Specify grouping of numbers.
	Button:	
1	Get fields from header row	Click button to populate the field names from the header row.

Additional Outputs fields Tab		
No.	Field Name	Description
1	Full filename field	Specify Full filename along with the extension.
2	Sheet name field	Specify worksheet name.
3	Sheet row nr field	Specify current sheet row number.



4	Row nr written field	Specify the number of rows written.
5	Short filename field	Specify a filename without a path.
6	Extension field	Specify extension of the file.
7	Path field	Specify the path in operating system format.
8	Size field	Specify the size of the file.
9	Is hidden field	Specify whether the file is hidden or not.
10	Last modification field	Specify field name to contain the latest modified field.
11	Uri field	Specify a field name that contains URI.
12	Root uri field	Specify a field name that contains only root part of URI.

### 2.20 **Property Input**

#### 2.20.1 **Description**

Property Input is a step in the Input Plugin for Process Studio Workflows. This step reads data (key, value) from Java properties files.

### 2.20.2 Configurations

File	File Tab		
No.	Field Name	Description	
1	Step Name	Specify the name of the step; the name has to be unique in a single workflow.	
2	Filenames from field	Enable 'Filename is defined in a field' checkbox to read filenames from a previous field.	
3	Get filename from field:	Specify the field to the filenames from.	
4	File or directory	Specify the location and/or name of the input text file. <i>Important</i> : Click Add to add the file/directory/wildcard combination to the list of selected files (grid) below.	
5	Regular expression	Specify the regular expression you want to use to select the files in the directory specified in the previous option.	
6	Selected Files	Contains a list of selected files (or wildcard selections) and a property specifying if file is required or not. If a file is required	



		and it is not found, an error is generated; otherwise, the file name is skipped.
7	Show filenames(s)	Click button to display a list of all files that will be loaded based on the current selected file definitions

Cont	Content Tab		
No.	Field Name	Description	
1	Include filename in output?	Enable checkbox to include the file name (String) in the output of this step.	
2	Rownum in output	Specify a field name to contain the row number (Integer) in the output of this step.	
3	Reset rownum per file?	Enable this option if you want the generated row number (optional) to be reset (to 1) at the start of every individual file.	
4	Limit	Limits the number of rows to this number (zero (0) means all rows).	
5	Result filenames	Enable checkbox to add the names of the files read to the result of this workflow. A unique list is being kept in memory that can be used in the next process entry in a process, for example in another workflow.	

Field	Fields Tab		
No.	Field Name	Description	
1	Name	Specify the name of the output field	
2	Column	Specify the attribute to read	
3	Туре	Specify the data type to convert to	
4	Format	Specify the format or conversion mask to use in the data type conversion	
5	Length	Specify the length of the output data type	
6	Precision	Specify the precision of the output data type	
7	Currency	Specify the currency symbol to use during data type conversion	
8	Decimal	Specify the numeric decimal symbol to use during data type conversion	
9	Group	Specify the numeric grouping symbol to use during data type conversion	



10	Trim type	Specify the type of trimming to use during data type conversion
11	Repeat	Select Y/N. Select Y to repeat the column value of the previous row if the column value is empty (null)

Additional Output Fields Tab:		
No.	Field Name	Description
1	Short filename field	Specify a fieldname to hold the short filename
2	Extension field	Specify a fieldname to hold the filename extension
3	Path field	Specify a fieldname to hold the file path
4	Size field	Specify a fieldname to hold the file size
5	Is hidden field	Choose from Y/N. Choose Y to hide field. Default is N
6	Last modification field	Specify a fieldname to hold the last modification date
7	Uri field	Specify a fieldname to hold the Uri (e.g. file:///C:/temp/file.txt)
8	Root Uri field	Specify a fieldname to hold the Root Uri (e.g. file:///C:/)

### 2.21 **Salesforce Input**

#### 2.21.1 Description

Salesforce Input is a step in the Input Plugin for Process Studio Workflows. The SalesForce Input step reads data directly from SalesForce using the SalesForce Web Service. The following sections describe each of the available features for configuring the SalesForce Input step.

#### Configurations 2.21.2

Settings Tab

0011	Sounge rub.	
No.	Field Name	Description
1	Step Name	Specify the name of this step in the workflow workspace.
2	SalesForce Webservice URL	Specify the URL to the SalesForce Webservice. <i>Note:</i> This URL is dependent on the API version you are using.
3	Username	Specify Username for authenticating to Salesforce (i.e. myname@automationedge.com)
4	Password	Specify Password for authenticating to Salesforce. Enter your password followed by your security token. If your password is 'PASSWORD' and your security token is 'TOKEN', enter 'PASSWORDTOKEN' in this field.
5	Module	Select the module you wish to retrieve data from.

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		<i>Note:</i> This list will be populated upon successfully authenticating to Salesforce using the Test Connection button.
6	Query Condition	Enter any query filters you wish to apply. For example, 'fieldname=myvalue AND fieldname2=myvalue2' Note that you do NOT need to include WHERE in your condition statement and variables are supported for this field.

Cont	Content Tab		
No.	Field Name	Description	
1	Include URL in Output?	Enable to add a field to the output containing the URL used to retrieve the data.	
2	Include Module in output?	Enable to add a field to the output containing the module from which the data was retrieved.	
3	Include SQL in output?	Enable to add a field to the output containing the SQL used to generate the result set.	
4	Include timestamp in output?	Enable to add a field to the output containing the timestamp for when the record was retrieved.	
5	Include Rownum in output?	Enable to add a field to the output containing a row number for each record retrieved.	
6	Time out	Configure the timeout interval in milliseconds before the step times out.	
7	Limit	Configure the maximum number of records to retrieve. <i>Note:</i> Setting this to '0' means there will be no limit placed on the number of records that can be retrieved.	

Field	Fields Tab		
No.	Field Name	Description	
1	Name	Specify the field name for Name.	
2	Field	Specify the field name for field in the Salesforce table	
3	IsIdLookup?	Enable checkbox if it Is it a lookup Id column in Salesforce	
4	Туре	Specify the field name for data type to convert to	
5	Format	Specify the field name for the format or conversion mask to use in the data type conversion	
6	Length	Specify the field name for the length of the output data type	
7	Precision	Specify the field name for the precision of the output data type	



8	Currency	Specify the field name for the currency symbol to use during data type conversion
9	Decimal	Specify the field name for the numeric decimal symbol to use during data type conversion
10	Group	Specify the field name for the numeric grouping symbol to use during data type conversion
11	Trim type	Specify the field name for the type of trimming to use during data type conversion
12	Repeat	Repeat the column value of the previous row if the column value is empty (null)

# 2.22 Start

## 2.22.1 Description

Input: Start step starts a workflow and acts as an input generating step. It facilitates starting of any workflow that requires an input step (e.g. Surface, Windows Application GUI, etc.). It generates an empty row to start the workflow.

# 2.22.2 Configurations

Content Tab

No.	Field Name	Description
1	Step Name	Specify the name of this step in the workflow workspace. Step name must be unique.

# 2.23 Table Input

# 2.23.1 Description

Table Input is a step in the Input Plugin for Process Studio Workflows. Table input step is used read and input data from databases using SQL statements.

# 2.23.2 Configurations

Content Tab		
No.	Field Name	Description

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1	Step Name	Specify the name of this step in the workflow workspace. Step name must be unique.
2	Connection	Select existing Database connection for reading data.
3	Button: Edit	Click to edit database connection properties.
4	Button: New	Click this button to create and configure settings of a new database connection.
5	Button: Wizard	Click to create a new wizard based database connection.
6	SQL	Specify SQL statement for reading information from a database connection.
7	Button: Get SQL select statement	Click Get SQL select statement to browse tables and automatically generate a basic select statement.
8	Enable lazy conversion	If checked, unnecessary data type conversions are avoided resulting in performance improvements.
9	Replace variables in script?	If checked, it allows performing testing with or without performing variable substitutions.
10	Insert data from step	Select a field in the input stream from which information is expected to come.
11	Execute for each row?	If checked, it performs data insertion for each individual row.
12	Limit size	Specify the number of lines to read from the database. Zero (0) means read all lines.

# 2.24 Text File Input

# 2.24.1 Description

Text File Input is a step in the Input Plugin for Process Studio Workflows. The Text File Input step reads data from text (.txt) file types. The other most commonly used format include Comma Separated Values (CSV files) generated by spreadsheets and fixed width flat files.

# 2.24.2 Configurations

File Tab		
No.	Field Name	Description
1	File or directory	Specify path of the input text file.

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		<b>Note:</b> Press the "add" button to add the file/directory/wildcard combination to the list of selected files (grid) below.
2	Regular expression*	Specify the regular expression you want to use to select the files in the directory specified in the previous option. For example, you want to process all files that have a .txt extension. (See below "Selecting file using Regular Expressions")
3	Selected Files	This table contains a list of selected files (or wildcard selections) along with a property specifying if file is required or not. If a file is required and it isn't found, an error is generated. Otherwise, the filename is skipped.
4	Accept filenames from previous steps	Text File Input step can accept filenames from a previous step enabling dynamic filename handling. Enable this checkbox to get filenames from previous steps.
5	Pass through fields from previous step	Enable this checkbox to add all previous fields coming into the step to the step output. This behaves like a join option.
6	Step to read filenames from	Step from which to read the filenames
7	Field in the input to use as filename	Text File Input looks in this step to determine which filenames to use
8	Button: Show filenames	Click button to display a list of all the files selected. Note that if the workflow is to be run on a separate server, the result might be incorrect.
9	Button: Show file content	Click button to display the first lines of the text-file. In case of any error make sure that the file-format is correct. When in doubt, try both DOS and UNIX formats.
10	Show content from first data line	Helps you position the data lines in complex text files with multiple header lines and more. It shows the first data line excluding header row.

\* Regular expression, Searching files using Regular Expressions

The Text File Input step also provides the ability to specify a list of files to read, or a list of directories with wild cards in the form of regular expressions to filter files. Regular expressions are more sophisticated than using '\*' and '?' wildcards. Below are a few examples of regular expressions:

Filename	Regular Expression	Files selected
/dirA/	.userdata.\.txt	Find all files in /dirA/ with names containing user data and ending with .txt
/dirB/	AAA.*	Find all files in /dirB/ with names that start with AAA

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/dirC/	[ENG:A-Z][ENG:0-	Find all files in /dirC/ with names that start with a capital and
	9].*	followed by a digit (A0-Z9)

\*Accepting filenames from a previous step

This option allows even more flexibility in combination with other steps such as "Get Filenames". You can construct your filename and pass it to this step. This way the filename can come from any source: text file, database table, etc.

Content Tab			
	Field Name	Description	
1	File type	Select from CSV or Fixed length.	
2	Separator	One or more characters that separate the fields in a single line of text. Typically this is; or a tab. Special characters (e.g. CHAR ASCII HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].	
3	Enclosure	Some fields can be enclosed by a pair of strings to allow separator characters in fields. The enclosure string is optional. If you use repeat an enclosures allow text line 'Not the nine o''clock news.'. With ' the enclosure string, this gets parsed as Not the nine o'clock news. Special characters (e.g. CHAR ASCII HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].	
4	Allow breaks in enclosed fields?	This field is Disabled.	
5	Escape	Specify an escape character (or characters) if you have these types of characters in your data. If you have \ as an escape character, the text 'Not the nine o\'clock news' (with ' the enclosure) gets parsed as Not the nine o'clock news. Special characters (e.g. CHAR HEX01) can be set with the format \$[hex value], e.g. \$[01] or \$[6F,FF,00,1F].	
6	Header & number of header lines	Enable if your text file has a header row (first lines in the file); you can specify the number of times the header lines appears.	
7	Footer & number of footer lines	Enable if your text file has a footer row (last lines in the file); you can specify the number of times the footer row appears.	
8	Wrapped lines and number of wraps	Enable checkbox if you deal with data lines that have wrapped beyond a specific page limit; note that headers and footers are never considered wrapped. Specify the number of times wrapped.	
9	Paged layout and page size and doc header	Use these options as a last resort when dealing with texts meant for printing on a line printer; use the number of document header lines to	

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		skip introductory texts and the number of lines per page to position the data lines
10	Compression	Enable if your text file is placed in a Zip or GZip archive. <b>Note:</b> At the moment, only the first file in the archive is read.
11	No empty rows	Enable if you do not want to send empty rows to the next steps.
12	Include filename in output	Enable if you want the filename to be part of the output
13	Filename field name	Name of the field that contains the filename
14	Rownum in output?	Enable if you want the row number to be part of the output
15	Row number field name	Name of the field that contains the row number
16	Rownum by file?	Enable to reset the row number per file
17	Format	Can be either DOS, UNIX or mixed. UNIX files have lines that are terminated by line feeds. DOS files have lines separated by carriage returns and line feeds. If you specify mixed, no verification is done.
18	Encoding	Specify the text file encoding to use; leave blank to use the default encoding on your system. To use Unicode, specify UTF-8 or UTF-16. On first use, Process Studio searches your system for available encodings.
19	Limit	Sets the number of lines that is read from the file; 0 means read all lines.
20	Be lenient when parsing dates?	Disable if you want strict parsing of data fields; if case-lenient parsing is enabled, dates like Jan 32nd will become Feb 1st.
21	The date format Locale	Specify the locale is used to parse dates that have been written in full such as "February 2nd, 2006;"
22	Add filenames to result	Enable checkbox to add the filenames to the internal filename result set. This internal result set can be used later on, e.g. to process all read files.

Erroi	r Handling Tab	
No.	Field Name	Description
1	Ignore errors?	Enable if you want to ignore errors during parsing
2	Skip error lines	Enable if you want to skip those lines that contain errors. You can generate an extra file that contains the line numbers on which the errors occurred. Lines with errors are not skipped, the fields that have parsing errors, will be empty (null)
3	Error File Field Name	Specify a field name to contain the error file name.



4	File error message field name	Specify a field name to contain the message of the error in file.
5	Error count field name	Specify a field name to contains the number of errors on the line
6	Error fields field name	Add a field to the output stream rows; this field contains the field names on which an error occurred
7	Error text field name	Add a field to the output stream rows; this field contains the descriptions of the parsing errors that have occurred
8	Warnings file directory	When warnings are generated, they are placed in this directory. The name of that file is <warning dir="">/filename.<date_time>.<warning extension=""></warning></date_time></warning>
9	Error files directory	When errors occur related to non-existing or non-accessible files, they are placed in this directory. The name of the file is <errorfile_dir>/filename.<date_time>.<errorfile_extension></errorfile_extension></date_time></errorfile_dir>
10	Failing line numbers files directory	When a parsing error occurs on a line, the line number is placed in this directory. The name of that file is <errorline dir="">/filename.<date_time>.<errorline extension=""></errorline></date_time></errorline>

Filter	Filters Tab		
No.	Field Name	Description	
1	Filter string	Specify the string for which to search	
2	Filter position	The position where the filter string has to be at in the line. Zero (0) is the first position in the line. If you specify a value below zero (0) here, the filter string is searched for in the entire string.	
3	Stop on filter	Specify Y here if you want to stop processing the current text file when the filter string is encountered.	
4	Positive match	Specify Y here if you want to process lines that match the filter, or N if you want to ignore such lines.	

Field	Fields Tab			
No.	Field Name	Description		
1	Name	Name of the field		
2	Туре	Type of the field can be either String, Date or Number		
3	Format*	See Number Formats for a complete description of format symbols.		



4	Position	This is needed when processing the 'Fixed' file type. It is zero based, so the first character is starting with position 0.
5	Length	For Number: Total number of significant figures in a number; For String: total length of string; For Date: length of printed output of the string (e.g. 4 only gives back the year).
6	Precision	For Number: Number of floating point digits; For String, Date, Boolean: unused;
7	Currency	Used to interpret numbers like \$10,000.00 or E5.000,00
8	Decimal	A decimal point can be a "." (10;000.00) or "," (5.000,00)
9	Grouping	A grouping can be a dot "," (10;000.00) or "." (5.000,00)
10	Null if	Treat this value as NULL
11	Default	Default value in case the field in the text file was not specified (empty)
12	Trim	type trim this field (left, right, both) before processing
13	Repeat	If the corresponding value in this row is empty, repeat the one from the last row when it was not empty.

\*Number Formats: For information on valid numeric formats used in this step, view the Number Formatting Table as below.

Symbol	Location	Localized	Meaning	
0	Number	Yes	Digit	
#	Number	Yes	Digit, zero shows as absent	
	Number	Yes	Decimal separator or monetary decimal separator	
-	Number	Yes	Minus sign	
,	Number	Yes	Grouping separator	
E	Number	Yes	Separates mantissa and exponent in scientific notation; need not be quoted in prefix or suffix	
• 7	Sub pattern boundary	Yes	Separates positive and negative sub patterns	
%	Prefix or suffix	Yes	Multiply by 100 and show as percentage	
\u2030	Prefix or suffix	Yes	Multiply by 1000 and show as per mille	
€ (\u00A4)	Prefix or suffix	No	Currency sign, replaced by currency symbol. If doubled, replaced by international currency symbol. If present in a pattern, the monetary decimal separator is used instead of the decimal separator.	



'	Prefix or	No	Used to quote special characters in a prefix or suffix, for
	suffix		example, "'#'#" formats 123 to "#123". To create a single
			quote itself, use two in a row: "# o"clock".

\*Scientific Notation

In a pattern, the exponent character immediately followed by one or more digit characters indicates scientific notation (for example, "0.###E0" formats the number 1234 as "1.234E3".

### \*Date formats

Letter	Date or Time Component	Presentation	Examples
G	Era designator	Text	AD
Y	Year	Year	1996; 96
М	Month in year	Month	July; Jul; 07
W	Week in year	Number	27
W	Week in month	Number	2
D	Day in year	Number	189
D	Day in month	Number	10
F	Day of week in month	Number	2
E	Day in week	Text	Tuesday; Tue
А	Am/pm marker	Text	PM
Н	Hour in day (0-23)	Number 0	
K	Hour in day (1-24)	Number 24	
К	Hour in am/pm (0-11)	Number 0	
Н	Hour in am/pm (1-12)	Number 12	
М	Minute in hour	Number 30	
S	Second in minute	Number 55	
S	Millisecond	Number 978	
Z	Time zone	General time zone	Pacific Standard Time; PST; GMT- 08:00
Z	Time zone	RFC 822 time zone	-0800



Additional Output Fields Tab		
Field	Description	
Short filename field	Specify the field name that contains the filename without path information but with an extension.	
Extension field	Specify the field name that contains the extension of the filename.	
Path field	Specify the field name that contains the path in operating system format.	
Size field	Specify the field name that contains the size of the field.	
Is hidden field	Specify the field name that contains if the file is hidden or not (boolean).	
Uri field	Specify the field name that contains the URI.	
Root uri field	Specify the field name that contains only the root part of the URI.	

Function/Button	Description
Show filenames	Click button to display a list of all the files selected. Note that if the workflow is to be run on a separate server, the result might be incorrect.
Show file content	Click button to display the first lines of the text-file. In case of any error make sure that the file-format is correct. When in doubt, try both DOS and UNIX formats.
Show content from first data line	Helps you position the data lines in complex text files with multiple header lines and more. It shows the first data line excluding header row.
Get fields	Allows you to guess the layout of the file. In case of a CSV file, this is performed almost automatically. In case you select a file with fixed length fields, you must specify the field boundaries using a wizard.
Preview rows	Preview the rows generated by this step.

# 2.25 XBase input

# 2.25.1 Description

XBase Input is a step in the Input Plugin for Process Studio Workflows. The XBase step reads data from and XBase type of database file(DBF). This includes most types of DBF file derivatives called the XBase family (for example, dBase III/IV, Foxpro, Clipper, and more).

## 2.25.2 Configurations

No.	Field Name	Description
1	Step Name	Specify the name of the step. This name has to be unique in a single workflow.

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2	Filename	Specify the name of the DBF file from which to read the data.
3	Button: Browse	Click to search the file from which you want to read the data.
	Accept filenames from previous steps	<b>Note:</b> You can opt to enter details either in the Filename field OR in the Accept filenames from previous steps section.
4	Accept filenames from previous step	Enable checkbox to read filenames from a previous step in the workflow.
5	Step to read filenames from	Select the step from which you want the filename to be read.
6	Field in the input to use as filename	Select the field from the input step that you want to use as a filename.
7	Limit Size	Specify a limit size to limit the number of rows read (optional).
8	Add rownr? - And Fieldname of rownr	Enable checkbox to add row number to output. Specify a fieldname to that contains the row number.
9	Include filename in output? - Filename fieldname	Enable checkbox to include filename in output. Specify fieldname to contain the file name to be included in output (optional).
10	The character-set name to use	Specifies the character set (such as, ASCII, UTF-8) to use.
11	Button: Preview	Click to preview the content that will be read.

# 2.26 XML Input Stream (StAX)

# 2.26.1 Description

XML Input Stream (StAX) is a step in the Input Plugin for Process Studio Workflows. XML Input Stream (StAX) step provides the ability to read data from any type of XML file using the StAX parser. The existing Get Data from XML step is easier to use but uses DOM parsers that need in memory processing and even the purging of parts of the file is not sufficient when these parts are very big.

Choose this step, whenever you have limitations with other steps or when you are in need of parsing XML with the following conditions:

- Very fast and independent of the memory regardless of the file size (GBs and more are possible due to the streaming approach)
- Very flexible reading different parts of the XML file in different ways (and avoid parsing the file many times)

## 2.26.2 Configurations

### Options:

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No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Filename	Specify the file name of the input XML file.
3	Add filename to result?	Enable checkbox to add the processed XML filename to the result of this workflow. A unique list is being kept in memory that can be used in the next job entry in a job, for example in another workflow.
4	Skip (Elements/Attributes)	Specify the number of Elements / Attributes that should be skipped. This can be used for starting the processing at a specific location of a file. The file is still being loaded by the parser but the rows are not produced.
5	Limit (Elements/Attributes)	Specify the limit of Elements / Attributes after which processing stops. With the <i>Skip</i> and <i>Limit</i> properties it is possible to enable chunk loading that is defined in an outer loop.
6	Default String Length (Elements / Attributes)	Specify the default string length for the XML data name and value fields.
7	Encoding	Specify the encoding of the XML file.
8	Add Namespace information?	Enable checkbox to add the XML data type <b>NAMESPACE</b> to the stream with an optional prefix (given in the XML data name) and URI information (given in the XML data value). Also a defined prefix in the ELEMENT data type is preceded to the XML data name, e.g. prefix: product. <u>Performance considerations:</u> Due to the extra namespace handling this option slows down the processing throughput a little bit.
9	Trim strings?	Enable checkbox to trims all name/value elements and attributes. It is also eliminating white spaces, tab, cr, lf at the beginning and end of the string.
10	Include filename in output? / Fieldname	Enable checkbox to add the processed filename to the given fieldname.
11	Row number in output? / Fieldname	Enable checkbox to add the processed row number (starting with 1) to the given fieldname.
12	XML data type (numeric) in output? / Fieldname	Enable checkbox to step add the processed data type in numeric format to the given fieldname. <u>The following data types are defined:</u> 0 - "UNKNOWN" (not used, reserved) <b>1 - "START_ELEMENT"</b> <b>2 - "END_ELEMENT"</b> <b>3 - "PROCESSING_INSTRUCTION" (not used, reserved)</b> <b>4 - "CHARACTERS"</b> <b>5 - "COMMENT" (not used, reserved)</b>

		<ul> <li>6 - "SPACE" (not used, reserved)</li> <li>7 - "START_DOCUMENT"</li> <li>8 - "END_DOCUMENT"</li> <li>9 - "ENTITY_REFERENCE" (not used, reserved)</li> <li>10-"ATTRIBUTE"</li> <li>11-"DTD" (not used, reserved)</li> <li>12-"CDATA" (not used, reserved)</li> <li>13-"NAMESPACE" (when namespace information is selected)</li> <li>14-"NOTATION_DECLARATION" (not used, reserved)</li> <li>15-"ENTITY_DECLARATION" (not used, reserved)</li> </ul>
13	XML data type (description) in output? / Fieldname	Enable checkbox to add the processed data type in text format to the given fieldname. This should be used instead of the numeric data type for better readability of the workflow. See XML data type (numeric) for a list of values. <u>Performance considerations:</u> Due to slower processing of strings and the extra memory consumption, it is recommended to use the numeric data type format for big data loads.
14	XML location line in output? / Fieldname	Enable checkbox to add the processed source XML location line to the given fieldname.
15	XML location column in output? / Fieldname	Enable checkbox to add the processed source XML location column to the given fieldname.
16	XML element ID in output? / Fieldname	Enable checkbox to add the processed element number (starting with 0) to the given fieldname. In contrast to the Row number, this field gets incremented by a new element and not a now row. The correct nesting between levels is ensured.
17	XML parent element ID in output? / Fieldname	Enable checkbox to add the parent element number to the given fieldname. <b>Note:</b> By the use of the XML element ID in connection with the XML parent element ID, a complete XML element tree is available for later usage.
18	XML element level in output? / Fieldname	Enable checkbox to add the processed element level (starting with 0 for the root START_ and END_DOCUMENT) to the given fieldname.
19	XML path in output? / Fieldname	Enable checkbox to add the processed XML path to the given fieldname.
20	XML parent path in output? / Fieldname	Enable checkbox to add the processed XML parent path to the given fieldname.
21	XML data name in output? / Fieldname	Enable checkbox to add the processed data <b>name of elements</b> , <b>attributes</b> and opional namespace prefixes to the given fieldname.

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22	XML data value in output? /	Enable checkbox to step add the processed data value of
	Fieldname	elements, attributes and optional namespace URIs to the given
		fieldname.



# 3 Output

# 3.1 Delete

## 3.1.1 Description

Delete is a step in the Output Plugin for Process Studio Workflows. Delete, plugin step is for deleting rows.

# 3.1.2 Configurations

No.	Field Name	Description
	Step Name	Name of the step. This name has to be unique in a single workflow.
1	Connection	Name of the database connection on which the target table resides.
2	Target Schema	The name of the Schema for the table to write data to.
3	Target Table	Name of the target table.
4	Commit Size	The number of rows after which to commit.
	The keys to lookup the values:	
1	Table field	Field in the table to lookup
2	Comparator	Select from the list of comparators
3	Stream field1	Table field is compared with Stream field1 using comparator
4	Stream field2	Table field is compared with Stream field2 using comparator

# 3.2 Insert / Update

## 3.2.1 Description

Insert/Update is a step in the Output Plugin for Process Studio Workflows. Insert/Update plugin step can be used for inserting/updating rows in a table. The insert or update operation is based on the result of looking up one or more lookup keys in the target table.

## 3.2.2 Configurations

No.	Field Name	Description

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1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Connection	Name of the database connection on which the target table resides.
3	Target Schema	The name of the Schema for the table to write data to.
4	Target Table	Name of the target table.
5	Commit Size	The number of rows after which to commit.
6	Don't perform any updates	Select this checkbox to perform only insert.
	The keys to lookup the values:	
1	Table field	Field in the table to lookup
2	Comparator	Select from the list of comparators
3	Stream field1	Table field is compared with Stream field1 using comparator
4	Stream field2	Table field is compared with Stream field2 using comparator
	Update Fields:	
1	Table field	The field to be updated in the table
2	Stream field	The field in the stream used to update the table field.
3	Update	Select Y/N to confirm update

# 3.3 JSON Output

## 3.3.1 Description

JSON Output is a step in the Output Plugin for Process Studio Workflows. Json output step generates json blocks based on input step values and outputs it in a field or file. Output json is vailable as java script array or java script object depending on step settings.

# 3.3.2 Configurations

General Tab:		
No.	Field Name	Description
1	Operation	Specify type of step operation, output json structure, step output file. This file will be used to dump all generated json.

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	Settings:	
1	Step name	Step name should be unique in context of workflow
2	Operation	Specify step operation type. Currently available 3 types of operation: Output value - only pass output json as a step output field, do not dump to output file Write to file - only write to fie, do not pass to output field Output value and write to file - dump to file and pass generated json as a step output file
3	Json block name	This value will be used as a name for json block. Can be empty string that will affect output json structure, see detailed description below.
4	Nr. rows in a block	Specify the number of rows in a block. In others words it is the number key - value pairs in a json block. 0 means all the rows in the same unique block. NOTE, 1 is a special value, in case of 1 every output will be generated as one object. See description below.
5	Output value	This value will be used as a step output field. Will contain generated json output block depending on step settings.
6	Compatibility mode	This check box handles compatibility configuration with previous Process Studio versions.
	Output File:	
1	Filename	full path to output file
2	Append	If not checked new file will be created every time step is running. If file with specified name already existed - it will be replaced by a new one. If checked - new json output will be appended at the end of existing file. Or if existing file is not exists - it will be created as in previous case.
3	Create Parent folder	Usually file name contains some path folder as a parent folder. If parent folder does not exist and this option is checked - parent folder will be created as a new folder. Otherwise - file not be found and step will fail.
4	Do not open create at start	If not checked - file (and in some cases parent folder) will be created/opened to write during workflow initialization. If checked - file and parent folder will be created only after step will get any first input data.
5	Extension	Output files extension. Default value is 'js'
6	Encoding	Output file encoding



7	Pass output to servlet	Enable this option to return the data via a web service instead writing into a file
8	Include date in filename?	If checked - output file name will contain File name value + current date. This may help to generate unique output files.
9	Include time in filename	If checked - output file name will contains file creation time. Same as for 'Include date in filename' option
10	Show filename(s) button	Can be useful to test full output file path
11	Add file to result filenames?	If checked - created output file path will be accessible form step result

Fields Tab		
No.	Field Name	Description
1	Fieldname	Input step field name. Use 'Get Fields' button to discover available input fields
2	Element name	Json element name as a key. For example "A":"B" - A is an element name, B is actual input value mapped for this Element name.

# 3.4 Microsoft Excel Output

## 3.4.1 Description

Microsoft Excel Output is a step in the Output Plugin for Process Studio Workflows. Microsoft Excel Output step can write data to sheets in one or more Excel files. This step can write to a Microsoft Excel 2003 spreadsheet file (xls). If you want to write to an xlsx file (Excel 2007 and above), you may use the Microsoft Excel Writer step. The Split option allows you to write to multiple files. The following sections describe the features available for configuring the Excel output step.

# 3.4.2 Configurations

File Tab:		
No.	Field Name	Description
1	Step name	The name of this step in the workflow workspace.

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2	Filename	The name of the spreadsheet file you are reading from.
3	Create Parent folder	If checked, the parent folder will be created
4	Do not create file at start	If checked, does not create the file until the end of the step. This avoids creating empty files when no rows are in the data stream.
5	Extension	The three-letter file extension to append to the file name.
6	Include stepnr in filename	If you run the step in multiple copies (launching several copies of a step), the copy number is included in the file name, before the extension. (_0).
7	Include date in file name	Includes the system date in the filename (_20101231).
8	Include time in file name	Includes the system time (24-hour format) in the filename (_235959).
9	Specify Date time format	If checked, the filename will include a date and time stamp that follows the selection you choose from the drop-down box. Selecting this option disables the previous two options.
10	Date time format	Provide a specific date time format for the filename.
11	Show file name(s)	Displays a list of the files that will be generated. This is a simulation and depends on the number of rows that will go into each file.
12	Add filenames to result	Adds the filenames to the internal filename result set. This internal result set can be used later on, e.g. to process all created files.

Content Tab		
No.	Field Name	Description
1	Append	When checked, appends lines to the end of the specified file. If the file does not exist, a new one will be created.
2	Header	Enable this option if you want a header to appear before the spreadsheet grid data.
3	Footer	Enable this option if you want a footer to appear after the spreadsheet grid data.
4	Encoding	Specifies the text file encoding to use. Leave blank to use the default encoding on your system. To use Unicode, specify UTF-8 or UTF-16. On first use, Process Studio searches your system for available encodings and populates this list accordingly.



5	Split every rows	After this many rows, start a new spreadsheet file to continue data output.
6	Sheet name	Specifies the name of the worksheet within the spreadsheet file.
7	Protect sheet?	If checked, enables password protection on the worksheet. You must also specify a password in the Password field.
8	Auto size columns	If checked, automatically sizes the worksheet columns to the largest value.
9	Retain NULL values	If checked, NULL values are preserved in the output. If un- checked, NULLs are replaced with empty strings.
10	Use temporary file	Sets whether a temporary file is used during the generation of the workbook. If not set, the workbook will take place entirely in memory. Setting this flag involves an assessment of the trade- offs between memory usage and performance.
11	Temporary files directory	Define the temporary files directory.
12	Use Template	If checked, PROCESS STUDIO will use the specified Excel template to create the output file. The template must be specified in the Excel template field.
13	Excel Template	Define the Excel template to use.
14	Append to Excel Template	Appends output to the specified Excel template.

Custom Tab		
No.	Field Name	Description
1	Header Font	Defines the Header Font details
2	Row Font	Defines the Row Font details

Fields Tab		
No.	Field Name	Description
1	Name	The name of the field.
2	Туре	The field's data type; String, Date or Number.
3	Format	The format mask (number type).

### **Microsoft Excel Writer** 3.5

### 3.5.1 Description



# 3.5.2 Configurations

File	File & Sheet Tab:			
No.	Field Name	Description		
	File:			
1	Filename	The name of the spreadsheet file you are reading from.		
2	Extension	Extension is the three-letter file extension to append to the file name. Choose xls or xlsx from the dropdown list.		
		Note: The proprietary (binary) xls format is not as well understood and deciphered, so moving/replicating nontrivial xls content in non-MS software environments is usually problematic.		
3	Stream XLSX data	Check this option when writing large XLSX files. It uses internally a streaming API and is able to write large files without any memory restrictions (of course not exceeding Excel's limit of 1,048,575 rows and 16,384 columns). Note: This option is available since version 4.4.0.		
4	If output file exists	Check this option when writing large XLSX files. It uses internally a streaming API and is able to write large files without any memory restrictions (of course not exceeding Excel's limit of 1,048,575 rows and 16,384 columns). Note: This option is available since version 4.4.0.		
5	Wait for first row before creating file	Checking this option makes the step create the file only after it has seen a row. If this is disabled the output file is always created, regardless of whether rows are actually written to the file.		
6	Add filename(s) to result	Check to have the filename added to the result filenames		
	Sheet:			
1	Sheet Name	The sheet name the step will write rows to.		
2	Make this the active sheet	If checked the Excel file will by default open on the above sheet when opened in MS Excel.		
3	If sheet exists in output file	The output file already has this sheet (for example when using a template, or writing to existing files), you can choose to write to the existing sheet, or replace it.		

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4	Protect Sheet	The XLS file format allows to protect an entire sheet from changes. If checked you need to provide a password. Excel will indicate that the sheet was protected by the user you provide here.
	Template:	When creating new files (when existing files are replaced, or completely fresh files are created) you may choose to create a copy of an existing template file instead. Please make sure that the template file is of the same type as the output file (bot must be xls or xlsx respectively). Although the xlsx format is usually a good choice when working with template files, as it is more likely to preserve charts and other misc objects in the output. When creating new sheets, the step may copy a sheet from the current document (the template or an otherwise existing file the step is writing to). A new sheet is created if the target sheet is not present, or the existing one shall be replaced as per
1	Use template when creating new files	Select the checkbox if you want to create new files using the template. Note: You must select the checkbox if you want add multiple templates to an existing file.
2	Template file	Select the template file from the folder path. Note: Click Browse to select the folder path.
3	Use template when creating new sheets	Select the checkbox if you want to add template details as a new sheet to the existing file.
4	Template sheet	Specify the name of the sheet that will be added to the file.
5	Hide Template Sheet	Select the checkbox if you want to hide the template sheet added to the file.

Con	Content Tab		
No.	Field Name	Description	
	Content:		
	Start writing at cell	This is the cell to start writing to in Excel notation (letter column, number row)	
	When writing rows	The step may overwrite existing cells (fast), or shift existing cells down (append new rows at the top of sheet)	
	Write Header	If checked the first line written will contain the field names	



Write Footer	If checked the last line written will contains the field names
Auto Size Columns	If checked the step tries to automatically size the columns to fit their content. Since this is not a feature the xls(x) file formats support directly, results may vary
Force formula recalculation	If checked, the step tries to make sure all formula fields in the output file are updated. The xls file format supports a "dirty" flag that the step sets. The formulas are recalculated as soon as the file is opened in MS Excel. For the xlsx file format, the step must try to recalculate the formula fields itself. Since the underlying <u>POI library</u> does not support the full set of Excel formulas yet, this may give errors. The step will throw errors if it cannot recalculate the formulas.
Ignore formula evaluation error	If checked, the step evaluates the formula entered by the user, and even if the formula is incorrect the error is ignored. <b>Note:</b> The output file displays the whole formula as a value if there is an error in the formula.
Leave styles of existing cells unchanged	If checked, the step will not try to set the style of existing cells it is writing to. This is useful when writing to pre-styled template sheets.
Sheet:	
Start writing at end of sheet	The step will try to find the last line of the sheet, and start writing from there.
Offset by rows	Any non-0 number will cause the step to move this amount of rows down (positive numbers) or up (negative numbers) before writing rows. Negative numbers may be useful if you need to append to a sheet, but still preserve a pre-styled footer.
Begin by writing empty lines	The step will try to find the last line of the sheet, and start writing from there.
Omit Header	Any non-0 number will cause the step to move this amount of rows down (positive numbers) or up (negative numbers) before writing rows. Negative numbers may be useful if you need to append to a sheet, but still preserve a pre-styled footer.
Fields:	
Name	The field to write
Туре	The type of data



Format	The Excel format to use in the sheet. Please consult the Excel manual for valid formats.
Style from cell	A cell (i.e. A1, B3 etc.) to copy the styling from for this column (usually some pre-styled cell in a template)
Field Title	If set, this is used for the Header/Footer instead of the Process Studio field name
Header/Footer style from cell	A cell to copy the styling from for headers/footers (usually some pre-styled cell in a template)
Field Contains Formula	Set to Yes, if the field contains an Excel formula (no leading '=')
Hyperlink	A field, that contains the target to link to. The supported targets are Link to other cells, http, ftp, email, and local documents
Cell Comment / Cell Author	The xlsx format allows putting comments on cells. If you'd like to generate comments, you may specify fields holding the comment and author for a given column.

## 3.6 **Properties Output**

### 3.6.1 Description

Properties Output is a step in the Output Plugin for Process Studio Workflows. Properties Output step outputs a set of rows of data to a Java properties files. The data needs to be structured in a key/value format to be usable for a properties file.

## 3.6.2 Configurations

General Tab: set the input fields that will contain the key van location of the files from which you want to read.

No.	Field Name	Description
	Step Name	Name of the step. This name has to be unique in a single workflow.
	Fields	Key field: The input field name that will contain the key part to be written to the properties file Value field : The input field name that will contain the value part to be written to the properties file
	Comment	A short comment that is going to be copied into the properties file (at the top). <b>Note:</b> Only the first line is commented out. The next ones need to be commented by the user.

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Cont	Content Tab		
No.	Field Name	Description	
	File	<ul> <li>Filename: the filename without the file extension</li> <li>Append: check this option to update an existing property file. Properties in the file that are not processed by the step will remain unchanged.</li> <li>Create parent folder: check this option if you want to automatically create the parent folder</li> <li>Accept file name from field: check this option if the file name is specified in an input stream field.</li> <li>File name field: specifies the field that contains the name of the file to write to.</li> <li>Extension: specify the file extension. Usually this is "properties".</li> <li>Include stepnr in filename: includes the step number (when running in multiple copies) in the output filename</li> <li>Include date in filename: includes the date in the output filename with format yyyyMMdd (20081231)</li> <li>Include time in filename: includes the date in the output filename with format HHmmss (235959)</li> <li>Show filenames: hit this button to see the complete filename after assembly of the various parts (filename, extension, stepnr, date and time)</li> </ul>	
	Result filename	Add files to result filename: Adds the generated filenames read to the result of this workflow. A unique list is being kept in memory that can be used in the next process entry in a process, for example in another workflow.	

## 3.7 Salesforce Delete

## 3.7.1 Description

SalesForce Delete is a step in the Output Plugin for Process Studio Workflows. The SalesForce Delete step deletes data directly from SalesForce using the SalesForce Web Service.

## 3.7.2 Configurations

General Tab:

No.	Field Name	Description
	Connection:	

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1	SalesForce Webservice URL	This is the URL to the SalesForce Webservice. <b>Note:</b> This URL is dependent on the API version you are using.
2	Username	Username for authenticating to Salesforce (i.e. myname@ automationedge.com)
3	Password	Password for authenticating to Salesforce. Enter your password followed by your security token. If you password is 'PASSWORD' and your secuirty token is 'TOKEN', enter 'PASSWORDTOKEN' in this field.
	Settings:	
1	Time out	Configure the timeout interval in milliseconds before the step times out.
2	Use compression	Enable checkbox to use compression.
3	Rollback all changes on	Enable this checkbox to ensure complete success or to rollback all changes.
4	Batch size	This is the number of rows to commit as a batch.
5	Module	Select the module you wish to delete data from. <b>Note:</b> This list will be populated upon successfully authenticating to Salesforce using the Test Connection button.
6	Fieldname id	This is the ID of the fieldname to delete.

### 3.8 **Salesforce Insert**

#### 3.8.1 Description

SalesForce Insert is a step in the Output Plugin for Process Studio Workflows. The SalesForce Insert step inserts data directly into SalesForce using the SalesForce Web Service.

#### 3.8.2 Configurations

General Tab:

No.	Field Name	Description
	Connection:	
1	SalesForce Webservice URL	This is the URL to the SalesForce Webservice. <b>Note:</b> This URL is dependent on the API version you are using.
2	Username	Username for authenticating to Salesforce (i.e. myname@ automationedge.com)
3	Password	Password for authenticating to Salesforce. Enter your password followed by your security token. If you password is



		'PASSWORD' and your secuirty token is 'TOKEN', enter 'PASSWORDTOKEN' in this field.
	Settings:	
1	Time out	Configure the timeout interval in milliseconds before the step times out.
2	Use compression	Enable checkbox to use compression.
3	Rollback all changes on	Enable this checkbox to ensure complete success or to rollback all changes.
4	Batch size	This is the number of rows to commit as a batch.
5	Module	Select the module you wish to delete data from. <b>Note:</b> This list will be populated upon successfully authenticating to Salesforce using the Test Connection button.
	Output Fields:	
1	Salesforce id fieldname	This is the ID of the fieldname inserted.
	Fields:	
1	Dynamic Fields as JSON format	Enable checkbox to accept field names as JSON input. In the JSON text you can have dynamic fields to insert rather than static fields as provided in the table provided
2	JSON	About JSON text: If 'Accept Fields as JSON' checkbox is enabled this field is activated. Choose a field containing the JSON text. JSON text should contain key-value pairs enclosed by double quotes (") enclosure. Provide all the required or mandatory fields as well as other fields to be inserted as keys in the JSON. <b>Note:</b> The JSON could be from any input step such as Generate rows, Text File input, Excel Input Et al. JSON text can only be accepted from input fields from previous steps and not as files directly. JSON text can also be specified by a parameter already defined. Sample JSON key value pairs: [ { "displayName": "Service", "value": "HR Service Desk" }, { "displayName": "Title", "value": "Test_KA10"



		}
	Table:	Tabular selection of fields to be inserted
1	Module field	Module field in Salesforce
2	Stream field	Field from stream
3	Use External id?	(Y/N)

#### 3.9 **Salesforce Update**

#### 3.9.1 Description

SalesForce Update is a step in the Output Plugin for Process Studio Workflows. The SalesForce Update step updates data directly into SalesForce using the SalesForce Web Service.

#### 3.9.2 Configurations

Gen	eral Tab:	
No.	Field Name	Description
	Connection:	
1	SalesForce Webservice URL	This is the URL to the SalesForce Webservice. <b>Note:</b> This URL is dependent on the API version you are using.
2	Username	Username for authenticating to Salesforce (i.e. myname@ automationedge.com)
3	Password	Password for authenticating to Salesforce. Enter your password followed by your security token. If you password is 'PASSWORD' and your secuirty token is 'TOKEN', enter 'PASSWORDTOKEN' in this field.
	Settings:	
1	Time out	Configure the timeout interval in milliseconds before the step times out.
2	Use compression	Enable checkbox to use compression.
3	Rollback all changes on	Enable this checkbox to ensure complete success or to rollback all changes.
4	Batch size	This is the number of rows to commit as a batch.



5	Module	Select the module for which you wish to update data. <b>Note:</b> This list will be populated upon successfully authenticating to Salesforce using the Test Connection button.
	Output Fields:	
1	Salesforce id fieldname	This is the ID of the fieldname to update.
	Fields:	
1	Dynamic Fields as JSON format	Enable checkbox to accept field names as JSON input. In the JSON text you can have dynamic fields to update rather than static fields as provided in the table provided
2	JSON	About JSON text: If 'Accept Fields as JSON' checkbox is enabled this field is activated. Choose a field containing the JSON text. JSON text should contain key-value pairs enclosed by double quotes (") enclosure. Provide all the required or mandatory fields as well as other fields to be updated as keys in the JSON. <b>Note:</b> The JSON could be from any input step such as Generate rows, Text File input, Excel Input Et al. JSON text can only be accepted from input fields from previous steps and not as files directly. JSON text can also be specified by a parameter already defined. Sample JSON key value pairs: [ { "displayName": "Service", "value": "HR Service Desk" }, { "displayName": "Title", "value": "Test_KA10" } }
	Table:	Tabular selection of fields to be updated.
1	Module field	Select a Module.
2	Stream field	Select a field from stream
3	Use External id?	(Y/N)

### **Salesforce Upsert** 3.10



## 3.10.1 Description

SalesForce Upsert is a step in the Output Plugin for Process Studio Workflows. The SalesForce Upsert step inserts/updates data directly into SalesForce using the SalesForce Web Service.

## 3.10.2 Configurations

Gen	eral Tab:	
No.	Field Name	Description
	Connection:	
1	SalesForce Webservice URL	This is the URL to the SalesForce Webservice. <b>Note:</b> This URL is dependent on the API version you are using.
2	Username	Username for authenticating to Salesforce (i.e. myname@ automationedge.com)
3	Password	Password for authenticating to Salesforce. Enter your password followed by your security token. If you password is 'PASSWORD' and your security token is 'TOKEN', enter 'PASSWORDTOKEN' in this field.
	Settings:	
1	Time out	Configure the timeout interval in milliseconds before the step times out.
2	Use compression	Enable checkbox to use compression.
3	Rollback all changes on	Enable this checkbox to ensure complete success or to rollback all changes.
4	Batch size	This is the number of rows to commit as a batch.
5	Module	Select the module you wish to delete data from. <b>Note:</b> This list will be populated upon successfully authenticating to Salesforce using the Test Connection button.
6	Upsert Comparison field	The field used to compare the module field and stream field.
	Output Fields:	
1	Salesforce id fieldname	This is the ID of the fieldname inserted.
	Fields:	
1	Dynamic Fields as JSON format	Enable checkbox to accept field names as JSON input. In the JSON text you can have dynamic fields to upsert rather than static fields as provided in the table provided
2	JSON	About JSON text:

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	Table:	<pre>If 'Accept Fields as JSON' checkbox is enabled this field is activated. Choose a field containing the JSON text. JSON text should contain key-value pairs enclosed by double quotes (") enclosure. Provide all the required or mandatory fields as well as other fields to be upserted as keys in the JSON. Note: The JSON could be from any input step such as Generate rows, Text File input, Excel Input Et al. JSON text can only be accepted from input fields from previous steps and not as files directly. JSON text can also be specified by a parameter already defined. Sample JSON key value pairs: [     {         "displayName": "Service",         "value": "HR Service Desk"         },         {         "displayName": "Title",         "value": "Test_KA10"         } ] Tabular selection of fields to be inserted</pre>
1	Module field	Module field in Salesforce
2	Stream field	Field from stream
3	Use External id?	(Y/N)

## 3.11 Serialize to file

### 3.11.1 Description

Serialize to file is a step in the Output Plugin for Process Studio Workflows. The Serialize to file step, outputs rows of data in a binary format and stores in a file. The binary format has an advantage over a text (flat) file because the content does not have to be parsed when read back. The metadata is stored in the file as well. The Serialize to file step supports a write-once access pattern, and does not support appending to existing files.

## 3.11.2 Configurations

No.	Field Name	Description
1	Filename	Browse the file

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2	Do not create file at start	The file is created after the entire file is parsed
3	Add filenames to result	Adds the filenames to the internal filename result set. This internal result set can be used later on, e.g. to process all read files.

## 3.12 Synchronize after merge

### 3.12.1 Description

Synchronize after merge is a step in the Output Plugin for Process Studio Workflows. This step can be used in conjunction with the Merge Rows (diff) workflow step. The Merge Rows (diff) workflow step appends a Flag column to each row, with a value of "identical", "changed", "new" or "deleted". This flag column is then used by the Synchronize after merge workflow step to carry out updates/inserts/deletes on a connection table. Note that the input data streams must be sorted before being passed into the Merge Rows (diff) workflow step. Make sure the sort column(s) are of same or equal data type. Both input tables must have the same number of columns.

## 3.12.2 Configurations

General Tab:

Gen				
No.	Field Name	Description		
1	Step Name	Name of the step. This name has to be unique in a single workflow.		
2	Connection	The database connection to which data is written		
3	Target schema	The name of the Schema for the table to which data is written. This is important for data sources that allow for table names with periods in them.		
4	Target table	Name of the table in which you want to do the insert/update/delete.		
5	Commit size	The number of rows to change before running a commit.		
6	Use batch update			
7	Tablename is defined in a field			
8	Key Lookup table	Allows you to specify a list of field values and comparators. You can use the following comparators: =, <>, <, <=, >, >=, LIKE, BETWEEN, IS NULL, IS NOT NULL <b>Note:</b> Click Get fields to retrieve a list of fields from the input stream(s).		
9	Update Fields	Allows you to specify all fields in the table you want to insert/update including the keys. Avoid updates on certain fields		

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		<ul> <li>(e.g. primary keys or non-null constrained fields) by specifying N in the update column.</li> <li>Note: Click Get Update fields to retrieve a list of update fields from the input stream(s).</li> </ul>
10	SQL button	Click SQL to generate the SQL to create the table and indexes for correct operation.

Adva	Advanced Tab:		
No.	Field Name	Description	
	Operation fieldname	This is a required field. This field is used by the step to obtain an operation flag for the current row. Default from the Merge Rows (diff) step: "flagfield"	
	Insert when value equal	Specify the value of the Operation fieldname which signifies that an Insert should be carried out. Default from the Merge Rows (diff) step: "new"	
	Update when value equal	Specify the value of the Operation fieldname which signifies that an Update should be carried out. Default from the Merge Rows (diff) step: "changed"	
	Delete when value equal	Specify the value of the Operation fieldname which signifies that a Delete should be carried out. Default from the Merge Rows (diff) step: "deleted"	
	Perform lookup	Performs a lookup when deleting or updating. If the lookup field is not found, then an exception is thrown. This option can be used as an extra check if you wish to check updates/deletes prior to their execution. Default from the Merge Rows (diff) step: Not applicable	

### 3.13 **Table Output**

#### 3.13.1 Description

Text file output is a step in the Output Plugin for Process Studio Workflows. The Table output step writes information to a database table. It provides configuration options for a target table.

#### 3.13.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step. <b>Note:</b> This name has to be unique in a single workflow.



Connection		Specify the database connection to which the data is to be written.
	Edit	Click to edit the database connection.
	New	Click to create a new database connection.
	Wizard	Click to create a new database connection using the Wizard.
Tar	get Schema	Specify the name of the database schema.
	Browse	Click to browse and select a database schema.
Tar	get Table	Specify the name of the table to write data.
	Browse	Click to browse and select a table from the schema.
Con	nmit size	Specify the batch size for commit. Specifying a commit size may change the performance.
 		<b>Note:</b> Transactions are not supported on all database platforms.
Tru	ncate table	Enable checkbox to truncate the table before inserting the first row into the table.
Igno	ore insert errors	Enable checkbox to ignore all insert errors A maximum of 20 warnings are logged. This option is not applicable for batch inserts.
Spe	cify database fields	Enable checkbox to specify the fields in the Database fields tab. Otherwise all fields are inserted by default.

Main	Main options Tab		
No.	Field Name	Description	
1	Partition data over tables	Enable checkbox to split the data over multiple tables based on the value of the date field specified in the Partitioning field below. When this option is selected, data is inserted into tables with name format: ' <target-table>_<date-format>'. These tables must be created manually before running the transformation in order for data to be inserted in these tables.</date-format></target-table>	
2	Partitioning field	Select the date field to use to determine how to split values across multiple tables. This value is used to generate a dated table name into which data is inserted.	
3	Partition data per month	Specify the date format used in the table name when partitioning the table: 'yyyyMM' for 'per month'	
4	Partition data per day	Specify the date format used in the table name when partitioning the table: 'yyyyMMdd' for 'per day'.	



5	Use batch update for inserts	Enable checkbox for batch inserts. This option is enabled by default.
		<ul> <li>The batch mode is only used when the following conditions are met:</li> <li>The Use batch update for inserts check box is selected</li> <li>The Commit Size option is greater than 0</li> <li>The Return auto-generated key option is cleared</li> <li>The workflow is not enabled to use unique connections (Workflow properties &gt; Misc Tab &gt; Make the workflow database transactional)</li> <li>The database type supports batch updates</li> <li>There are limiting factors depending on the database type and further step options.</li> </ul>
6	Is the name of the table defined in a field?	Enable checkbox to specify the name of the target table in the Field below. This option allows you to store data from each row in a different table, based on the value of the Field that contains name of table.
7	Field that contains name of table	Select a field name from the input stream to use for the name of the table when the option "Is the name of the table defined in a field?" is selected.
8	Store the table name field	Enable checkbox to store the table name in the output. When using this option, the table must contain a column with the name you defined in the Field that contains name of table.
9	Return auto-generated key	Enable checkbox to return the key that was generated by inserting a row into the table in the field 'Name of auto-generated key field', below.
10	Specify Name of the auto- generated key	Enable checkbox to store the key that was generated by inserting a row into the table; in the field below 'Name of the auto-generated key column'.
11	Name of the auto-generated key column	Specify an output field that stores the name of auto-generated key column.
12	Name of auto-generated key field	Specify an output field that stores the auto-generated key.

## Database Fields Tab

No.	Field Name	Description
	Fields to insert:	Tabular List:



1	Table Field	Specify the name of the database column to insert data.
2	Stream Field	Specify the stream field being read from the source/input steps and inserted into the database.
3	Get fields (button)	Click to import the fields from the data source into the Database fields table. The Specify database fields option in the general area must be selected for this to be active.
4	Enter field mapping (button)	Click to open the Enter Mapping window. The Specify database fields option in the general area must be selected for this tool to be active.

## 3.14 Text file Output

## 3.14.1 Description

Text file output is a step in the Output Plugin for Process Studio Workflows. The Text file output step outputs data in text file format. This step is commonly used to generate fixed width files by setting lengths on the fields in the fields tab or to write Comma Separated Values (CSV files) that can be read by spreadsheet applications.

## 3.14.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step. <b>Note:</b> This name has to be unique in a single workflow.

File	File Tab		
No.	Field Name	Description	
1	Filename	This field specifies the filename and location of the output text file. <b>Note:</b> Don't add the extension in this field, when the date and time should optionally be appended and afterwards the extension option (see Extension option field below). When the Extension option is left blank, add it to this field.	
2	Run this as a command instead?	Enable to "pipe" the results into the command or script you specify. It can also be used for some database bulk loaders that can process the input from stdin. In this case set the filename to the script or binary to execute.	
3	Pass output to servlet	Enable this option to return the data via a web service instead writing into a file	
4	Create parent folder	Enable to create the parent folder	

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5	Do not create file at start	Enable to avoid empty files when no rows are getting processed.
6	Accept file name from field?	Enable to specify the file name(s) in a field in the input stream
7	File name field	When the previous option is enabled, you can specify the field that will contain the filename(s) at runtime.
8	Extension	Adds a point and the extension to the end of the filename. (.txt)
9	Include stepnr in filename	If you run the step in multiple copies (Launching several copies of a step), the copy number is included in the filename, before the extension. (_0).
10	Include partition nr in filename?	Includes the data partition number in the filename.
11	Include date in filename	Includes the system date in the filename. (Default _20041231).
12	Include time in filename	Includes the system time in the filename. (Default _235959).
13	Specify Date time format	Enable to specify the date time format
14	Date time format	Chose the date time format to append to the filename
15	Add file name to rest	This adds all processed filenames to the internal result filename set to allow for further processing.
16	Show filename(s)	This option shows a list of the files that will be generated. <b>Note:</b> This is a simulation and among others depends on the number of rows that will go into each file.

Content Tab: The content tab contains the following options for describing the content being read:

No.	Field Name	Description
1	Append	Check this to append lines to the end of the specified file.
2	Separator	Specify the character that separates the fields in a single line of text. Typically this is ; or a tab.
3	Enclosure	A pair of strings can enclose some fields. This allows separator or enclosure characters in fields. The enclosure string is optional.
4	Force the enclosure around fields?	This option forces all fields of an incoming string type (independent of the eventually changed field type within the Text File Output field definition) to be enclosed with the character specified in the Enclosure property above.
5	Disable the enclosure fix?	This is for backward compatibility reasons related to enclosures and separators. The logic is: When a string field contains an enclosure it gets enclosed and the enclose itself gets escaped.



		When a string field contains a separator, it gets enclosed. Check this option, if this logic is not wanted. It has also an extra performance burden since the strings are scanned for enclosures and separators. So when you are sure there is no such logic needed since your strings don't have these characters in there and you want to improve performance, un- check this option.
6	Header	Enable this option if you want the text file to have a header row. (First line in the file).
7	Footer	Enable this option if you want the text file to have a footer row. (Last line in the file). <b>Note:</b> Be careful to enable this option when in Append mode since it is not possible to strip footers from the file contents before appending new rows. There are use cases where this option is wanted, e.g. to have a footer after each run of a workflow to separate sections within the file.
8	Format	This can be either DOS or UNIX. UNIX files have lines are separated by linefeeds. DOS files have lines separated by carriage returns and line feeds. The options are: CR+LF terminated (Windows, DOS) / LF terminated (Unix) / CR terminated / No new-line terminator
9	Encoding	Specify the text file encoding to use. Leave blank to use the default encoding on your system. To use Unicode specify UTF-8 or UTF-16. On first use, Process Studio will search your system for available encodings.
10	Compression	Allows you to specify the type of compression, .zip or .gzip to use when compressing the output. <b>Note:</b> Only one file is placed in a single archive.
11	Right pad fields	Add spaces to the end of the fields (or remove characters at the end) until they have the specified length.
12	Fast data dump (no formatting)	Improves the performance when dumping large amounts of data to a text file by not including any formatting information.
13	Split every rows	If this number N is larger than zero, split the resulting text-file into multiple parts of N rows.
14	Add Ending line of file	Allows you to specify an alternate ending row to the output file.

### Fields Tab:

The fields tab is where you define properties for the fields being exported. The table below describes each of the options for configuring the field properties:



No.	Field Name	Description
1	Name	The name of the field.
2	Туре	Type of the field can be either String, Date or Number.
3	Format	The format mask to convert with. See Number Formats for a complete description of format symbols.
4	Length	The length option depends on the field type follows: Number - Total number of significant figures in a number String - total length of string Date - length of printed output of the string (e.g. 4 only gives back year)
5	Precision	The precision option depends on the field type as follows: Number - Number of floating point digits String - unused Date - unused
6	Currency	Symbol used to represent currencies like \$10,000.00 or E5.000,00
7	Decimal	A decimal point can be a "." (10,000.00) or "," (5.000,00)
8	Group	A grouping can be a "," (10,000.00) or "." (5.000,00)
9	Trim type	The trimming method to apply on the string. <b>Note:</b> Trimming only works when there is no field length given.
10	Null	If the value of the field is null, insert this string into the textfile
11	Get	Click to retrieve the list of fields from the input fields stream(s)
12	Minimal width	Alter the options in the fields tab in such a way that the resulting width of lines in the text file is minimal. So instead of save 0000001, we write 1, etc. String fields will no longer be padded to their specified length.

### 3.15 Update

#### 3.15.1 Description

Update is a step in the Output Plugin for Process Studio Workflows. This step is used for updating field in tables.

### Configurations 3.15.2

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.



2	Connection	Name of the database connection on which the target table resides.
3	Target Schema	The name of the Schema for the table to write data to.
4	Target Table	Name of the target table.
5	Commit Size	The number of rows after which to commit.
6	Use batch updates	Select this checkbox to decide if updates are in batch mode.
7	Skip Lookup	Select this checkbox to skip lookup.
8	Ignore lookup failure	Select this checkbox to ignore lookup failure.
	The keys to lookup the values:	
1	Table field	Field in the table to lookup
2	Comparator	Select from the list of comparators
3	Stream field1	Table field is compared with Stream field1 using comparator
4	Stream field2	Table field is compared with Stream field2 using comparator
	Update Fields:	
1	Table field	The field to be updated in the table
2	Stream field	The field in the stream used to update the table field.
3	Update	Select Y/N to confirm update

## 3.16 XML Output

### 3.16.1 Description

XML Output is a step in the Output Plugin for Process Studio Workflows. The XML Output step writes data rows from the source to one or more XML files.

## 3.16.2 Configurations

File Tab:

The file tab is where you set general properties for the XML output file format:

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.

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2	Filename	Specifies the file name and location of the output text file <b>Note:</b> Don't add the extension in this field, when the date and time should optionally be appended and afterwards the extension option (see Extension option field below). When the Extension option is left blank, add it to this field.
3	Do not create file at start	Enable to avoid empty files when no rows are getting processed.
4	Pass output to servlet	Enable this option to return the data via a web service instead writing into a file
5	Extension	Adds a period and the extension to the end of the file name (.xml)
6	Include stepnr in filename	If you run the step in multiple copies (see also Launching Several Copies of a step), the copy number is included in the file name, before the extension (_0)
7	Include date in filename	Includes the system date in the file name (_20041231)
8	Include time in filename	Includes the system date in the file name (_235959)

Content Tab:		
No.	Field Name	Description
1	Zipped	Check this if you want the XML file to be stored in a ZIP archive.
2	Encoding	The encoding to use. This encoding is specified in the header of the XML file.
3	Parent XML element	The name of the root element in the XML document.
4	Row XML element	The name of the row element to use in the XML document.
5	Split every rows.	The maximum number of rows of data to put in a single XML file before another is created

Field	Fields Tab:		
No.	Field Name	Description	
1	Fieldname	The name of the field.	
2	Elementname	Specify the name of the element in the XML file to use. Type: Type of the field can be either String, Date, or Number.	
3	Туре	Type of the field can be either String, Date, or Number. Format mask from which to convert; see Number formats for a complete description of format specifiers.	



4	Length	<ul> <li>The length option depends on the field type follows:</li> <li>Number - Total number of significant figures in a number</li> </ul>
		<ul> <li>String - total length of string</li> <li>Date - length of printed output of the string (e.g. 4 only gives back year)</li> </ul>
		<i>Note:</i> the output string is padded to this length if it is specified.
5	Precision	The precision option depends on the field type as follows:
		<ul> <li>Number - Number of floating point digits</li> <li>String - unused</li> <li>Date - unused</li> </ul>
6	Currency	Symbol used to represent currencies such as \$10,000.00 or E5.000,00
7	Decimal	A decimal point can be a "." (10,000.00) or "," (5.000,00)
8	Group	A grouping can be a "," (10,000.00) or "." (5.000,00)
9	Null	If the value of the field is null, insert this string into the textfile
10	Get fields	Click to retrieve the list of fields from the input stream(s).
11	Minimal width	Alter the options in the fields tab in such a way that the resulting width of lines in the text file is minimal; for example instead of save 0000001, "1" is written, and so on. String fields are not padded to their specified length.

# 4 AutomationEdge Core

## 4.1 Audit Log

## 4.1.1 Description

The Audit Log step is used for logging Process/Workflow variables and fields into AutomationEdge audit log.

## 4.1.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.

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2	Log Level	Select a value from the drop down list. Possible values are
	-	INFO and TRACE

Variables Tab		
No.	Field Name	Description
1	variables	Accepts comma separated list of variables to be logged in.

Fields Tab: Contains table to accept fields to be logged in.		
No.	Field Name	Description
1	Name	Name of field to be logged in.
2	Туре	Auto populated once the field name is selected. It is not editable.

Notes: Secret variables are logged as 'XXXX'

## 4.2 AutomationEdge File Download

## 4.2.1 Description

The AutomationEdge File Download is used to download files from AutomationEdge Server.

This step downloads files uploaded by AutomationEdge File Upload step in one of the previous steps in a workflow using the File Identifier from the upload step. These files (such as .csv or .txt) are mostly used for operational purposes by a workflow.

**Note:** This step can be used to design a workflow however, it executes meaningfully only once published on AutomationEdge Server and when executed by Agents.

### 4.2.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
	Download Files:	
1	File Identifier	Provide a Field Name which contains unique identifier to access file on the server

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2	Downloaded file path	Output field name which would contain the absolute file path with file name and extension of the downloaded file
3	Set Request Id	Defines whether the file scope is public or for the specific request id (Select Yes/No)

## 4.3 AutomationEdge File Upload

## 4.3.1 Description

The AutomationEdge File Upload is used to upload files to AutomationEdge Server.

This step uploads files to be consumed by AutomationEdge File Download step in one of the next steps in a workflow using the File Identifier from the upload step. These files (such as .csv or .txt) are mostly used for operational purposes by a workflow.

**Note:** This step can be used to design a workflow however, it executes meaningfully only once published on AutomationEdge Server and when executed by Agents.

	U	
No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
	Upload Files:	
1	File to upload	Provide a Field name which contains absolute file path with file name and extension to upload
2	Uploaded file identifier	Output field name which contains the unique identifier to access file on the server
3	Set Request Id	Defines whether the file scope is public or for the specific request id (Select Yes/No)
4	File Identifier(Optional)	To override the file identifier generated by AutomationEdge server (which is random and complex to remember) by a more user friendly user specified identifier.

## 4.3.2 Configurations

## 4.4 Get Files from Server

## 4.4.1 Description

Get Files from server step in the AutomationEdge Core plugin, downloads Agent/Workflow files from server at runtime, when executed from AutomationEdge server.

**Note:** The file name should not be changed when updated from AutomationEdge UI; only then the workflow will be able to pick it up. If there is filename change, the workflow also should be updated accordingly.

## 4.4.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.

Gen	General Tab:		
No.	Field Name	Description	
	Common Input Parameters:		
1	'Download all workflow related files'	Enable 'Download all workflow related files' check box to download all workflow related files; any entry related to workflow level in the table below will not be considered.	
2	Target Directory	Target Directory is enabled only if the checkbox above is selected. Specify target directory to copy all the workflow related files.	
	Tabular Fields:		
3	Level	<ul> <li>Allowed values are Agent/Workflow.</li> <li>Note:</li> <li>If the 'Download all workflow related files' checkbox above is selected, then only Agent is shown in the dropdown list.</li> </ul>	
		For Same level, duplicate filename is not allowed	
4	Filename	Specify the file name with extension, to be downloaded	
5	Target Directory	Specify the target directory to download the file. If target directory is not specified, the file is downloaded in the directory of the workflow/agent (i.e. Internal.Entry.Current.Directory path).	

Configuration Tab:		
No.	Field Name	Description
1	Ignore Errors	Enable checkbox to ignore all errors in downloading files from server.

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	If file exists:	
2	Radio button options:	Select a radio button option below to specify the behaviour if filename already exists in the target directory.
		<ul> <li>Overwrite existing files (Default)</li> <li>Error if file exists</li> <li>Skip if file exists</li> </ul>

**Note:** This step can be used as a first step or intermediate step. In case of intermediate step, execution is done only for the first row.

## 4.5 Intermediate Status

### 4.5.1 Description

This step can be used in a workflow to set intermediate status of the workflow.

Currently, AutomationEdge has the set of states of a workflow: "New", "ExecutionStarted", "Complete", "Failure" and "Diverted". However, if a workflow is going to run for a long duration then there is no information at the server regarding the state of a running workflow.

Intermediate Status can be used to set a user defined current status of a running workflow which will be displayed on the UI. Send Status to AE can be used to send the intermediate status of a workflow to AE Server. User can add multiple such steps in a single workflow. Last executed status will be shown at any given time.

No.	Field Name	Description	
1	Step Name	Name of the step. This name has to be unique in a single workflow.	
2	Status	Specify status that is to be sent to AutomationEdge. It is a free textbox where user can set the status or message like % of completion or any other user defined status	
3	Total row count Options	<ol> <li>Choose from the drop down list:</li> <li>1. Implicit row count: Process Studio will calculate number of rows processed. The row count is maintained internally.</li> <li>2. Explicit row count: The row count can be set explicitly by the user.</li> </ol>	
4	Total row count	Provide a numeric value for the Total number of rows processed. It will only be enabled when Explicit Row Count is selected.	

## 4.5.2 Configurations

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5	Successful row count	Enter a numeric value for Successful row count
6	Options	<ol> <li>Choose from the drop down list:         <ol> <li>Send for all rows: will send status to AE for each row. This step would be executed for each row processed.</li> <li>Send for last row: will send status only for last row. This step would be executed after the specified batch size.</li> <li>Send for batch: you can specify after how many rows the status will be send to AE. This step would be executed after the specified batch size.</li> </ol> </li> </ol>
7	Batch size	Choose a batch size from the drop down list: you can specify batch size. Batch size after which this step would be executed.

## 4.6 Manual Intervention

### 4.6.1 Description

This step can be used in a workflow to enable manual intervention for users to complete some tasks or provide input values for a new field or existing field. A pop-up is displayed (always on top) and the workflow pauses until the 'OK' or 'Cancel' button is pressed.

### Note:

Ignore the following errors in the logs, if the step is used with versions of Process Studio and AutomationEdge previous to v7.5:

- Manual Intervention ERROR WorkflowUtil:501 Required number of variable arguments for send status to AE Server are 3 in order: 'String: status, Long: totalProcessedRows, Long: successfulRows'
- Manual Intervention ERROR BaseStep:3000 Error while changing Workflow Execution Status: com.automationedge.exception.AEUtilsException: Unexpected error occurred while sending current status to AE Server.

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Display Message	Specify a Display message to appear on the manual intervention pop-up.
3	Process this step for	<ul> <li>Choose from the list,</li> <li>1. Each Row – Will pause for each row</li> <li>2. First Row – Will pause only for the first row</li> <li>3. Last Row – Will pause only for the last row</li> </ul>

### 4.6.2 Configurations

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	Additional Fields:	Provide a tabular list of fields in the workflow stream to be displayed.
1	Display name	Specify a Display name for the fields. This will be a user-friendly name of the field which will be shown at run time for taking input from the end user.
2	Туре	Specified field type, possible values are: String, Number, List, Boolean, Date.
3	Format	Specify the format of specific types like Number, Date.
4	Secret	Specify whether field value would be secured or not (true/false).
5	Display Only	Specify whether value of the field is display only or editable by the end-user (true/false).
6	Optional	Specify whether field value is Optional (true/false)
7	List of Values	Type a list of Comma separated values here and at run time these will be converted to a dropdown where the user can choose one of the values.
8	Default Value	Specify a default value for the given field. This can be a previous field or static value.
10	Field name	Specify names of fields to be created (in specific cases, details in Validation section) when the step is run. These fields will be available further in the workflow. If Default Value contains a previous field from drop down and Field name is left blank then field is updated.
11	Tooltip Description	Specify a desired Tooltip Description for the field.
	Output Field:	
11	Status Field Name	Specify an output fieldname to hold the user action (OK/Cancel) during step execution. The default value is status.

#### 4.7 Send Email

#### 4.7.1 Description

This step is used to send email via AE server. We need to set the SMTP server settings on AE to use this step.

#### 4.7.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.



	Email Details:	
1	То	Provide a comma separated list of email addresses.
2	CC	Provide a comma separated list of email addresses in carbon copy(CC)
3	BCC	Provide a comma separated list of email addresses in blind carbon copy(BCC)
4	Subject	Provide a subject for the email.
5	Email body	Provide contents of email body or a variable.
6	Synchronous	If it is checked the step will wait for response from AE Server. Enable checkbox to make it synchronous with workflow completion.
7	Send Email on last row	Enable checkbox to send one email upon completion of reading the last row.
	Attachment Details:	
1	Attachment	List of attachments

#### 4.8 **Set PS Variable**

#### 4.8.1 Description

Set PS Variable step sets PS Variables with global or local scope as specified; with value assigned from a field. These variables are available in the same workflow.

#### Configurations 4.8.2

No.	Field Name	Description
1	Step name	Name of the step. This name has to be unique in a single workflow.
2	Execute even if no row is found	A checkbox to define if the step is to be executed in case no rows are received. By default it is unchecked.
3	Fail if field not found	A checkbox to define if the step is to be failed in case no field is specified. By default it is unchecked.
	Field values (Tabular):	
1	Field name	Specify the field value which is to be assigned to a variable.
2	Variable name	Specify the variable name which will be used further.
3	Variable scope type	Specify the scope of the variable (Global or Local).



		<ul> <li>Note:</li> <li>Global variables are available throughout the lifecycle of the parent workflow/process. They can be created at any sub-level and it will be available after that to the entire scope. They will be destroyed after the main or parent workflow/process ends.</li> <li>Local variables are available only in the workflow/process where it has been created. They are not available to the child workflow/process.</li> <li>The same variable name can be used for global and local scopes simultaneously. The value modified or fetched is completely based on the scope specified as mentioned in the note below.</li> <li>The PS variables are added to the existing list which pops up on Ctrl-Space where applicable. The format of these variables in the list will be as \${GLOBAL.varname} and \${LOCAL.varname}. The PS variables created in 'User Defined Java Class' or 'Modified Java Script', are not visible in this list.</li> <li>However,</li> <li>If the child workflow/process is already opened and a variable is added in the parent workflow/process. This variable is not reflected directly at design time (i.e. on Ctrl-Space) although there no issues during runtime. There are two options for this,</li> <li>The user can type the variable name where required</li> <li>Reopen the child workflow/process (from Open referenced object) after the variable is added.</li> </ul>
4	Default value	Specify the default value of the variable. Depending on the value of the 'Execute even if no row is found' checkbox, it is considered if no row is received.

Note: The PS variables set in this cannot be used for database connection details.

Com	Common Buttons:		
No.	Field Name	Description	
	Buttons:		
1	ОК	On click of this button. It will check the field values. If any required field values are missing then it will display validation error message.	
		If all the required field values are provided then it will save the field values.	
2	Cancel	On click of this button, it will cancel the window and does not save any values.	



3	Get Fields	Click this button to fetch the fields from the previous steps in the
		workflow stream.

#### 4.9 **Get PS Variables**

#### 4.9.1 Description

Get PS Variables step gets PS Variables and assigns to new fields.

#### 4.9.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step. This name has to be unique in a single workflow.
	Field values (Tabular):	
1	Variable	Specify the variable which needs to be converted to a field.
2	Field name	Specify a new field name to contain the variable value. <b>Note:</b> When the variable value will be converted to field the specified type, format and other attributes will be taken into
		consideration.
3	Туре	Specify the type of the field by picking from the list as below. Number String Date Boolean Integer BigNumber Binary Timestamp Internet Address
4	Format	Specify the format of the field.
5	Length	Specify the length of the field.
6	Precision	Specify the precision of the field.
7	Currency	Specify the currency of the field.
8	Decimal	Specify the number of decimals for the field.
9	Group	Specify the Group of the field.
10	Trim type	<ul> <li>Specify the Trim type of the field from the following,</li> <li>None</li> <li>left</li> <li>right</li> <li>both</li> </ul>



Corr	imon Buttons:	
No.	Field Name	Description
	Buttons:	
1	ОК	On click of this button. It will check the field values. If any required field values are missing then it will display validation error message. If all the required field values are provided then it will save the field values.
2	Get PS Variables	Click this button to fetch PS Variables.
3	Cancel	On click of this button, it will cancel the window and does not save any values.

#### 4.10 **Set Workflow Result**

#### 4.10.1 Description

The Set Workflow Result is used to set the workflow result on AutomationEdge for the particular request.

J		
Field Name	Description	
Step name	Name of the step. This name haw orkflow.	as to be unique in a single
Success	Boolean value (true or false) car status (Success or Failure).	h be set to define the request
Status	Status can be set from one of the or Diverted. Status can be set irr Success above.	e following: Complete, Failure respective of value set in
Message	Write the success or error messa this field. Since Success field can have tw three values the following combi SUCCESS field True True True	age to be set for the request in o values and Status field has nations are possible. STATUS Field Complete Diverted Failure
	Field Name Step name Success Status Message	Field NameDescriptionStep nameName of the step. This name ha workflow.SuccessBoolean value (true or false) car status (Success or Failure).StatusStatus can be set from one of th or Diverted. Status can be set irr Success above.MessageWrite the success or error messa this field. Since Success field can have tw three values the following combi SUCCESS field True TrueTrueTrue

#### 4.10.2 Configurations



		False	Diverted
		False	Failure
		The message f above. If Succe and if success The exceptions Complete. For	format is governed by the Success field set ess is true message is prefixed with Message: is false message is prefixed with Error: are the combinations of True-Failure and False- these combinations no message is displayed.
5	Total Operations	Total number of processed in a 'Status-wise W	of operations performed (such as no. of lines file). The value in this field can be viewed in the orkflow Operations Report'.
6	Successful	Number of suc field can be vie Report'.	cessful operations performed. The value in this wed in the 'Status-wise Workflow Operations
7	Attribute 1	Additional Attri as columns in	bute 1. This attribute can be chosen for display Requests in AutomationEdge UI.
8	Attribute 2	Additional Attri as columns in	bute 2. This attribute can be chosen for display Requests in AutomationEdge UI.
9	Attribute 3	Additional Attri as columns in	bute 3. This attribute can be chosen for display Requests in AutomationEdge UI.
10	Attribute 4	Additional Attri as columns in	bute 4. This attribute can be chosen for display Requests in AutomationEdge UI.
11	Attribute 5	Additional Attri as columns in	bute 5. This attribute can be chosen for display Requests in AutomationEdge UI.
12	Attribute 6	Additional Attri as columns in	bute 6. This attribute can be chosen for display Requests in AutomationEdge UI.
13	Output file name patterns (separated by comma)	This field has b accepts a com be available wi Desk upon suc	been added for integration support. This field ma separated filename regex. These files would th the Service Request/Ticket on the Service cessful updation by an AE workflow.
	Output Parameters:		
1	Name	The internal na	me of the variable.
2	Display Name	Display name	of the variable as seen on AutomationEdge UI



3	Туре	Data type of the variable.
4	Value	Provide the value of the variable. Value could be static, field or a variable.

## 4.11 Debug Log

## 4.11.1 Description

The Debug Log step is used for logging Process/Workflow variables and fields into AutomationEdge Agent log (agent.log) file when Process/Workflow is run from AutomationEdge; or in Process Studio log (process-studio.log) file when Process/Workflow is run from Process Studio.

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Log Level	Select a value from the drop down list. Possible values are DEBUG, INFO, WARN, ERROR in ascending order of severity. The debug log step will collect logs at the level selected here or at higher lever of severity.
		However the base level is governed by the Agent Logger setting (DEBUG, INFO, WARN or ERROR) in the log4j2.xml file available in the agents conf folder. All logs at a higher level than this setting will be visible in Agent log file.
		In case of Process Studio the base level is governed by the ProcessStudioLogger setting (DEBUG, INFO, WARN or ERROR) in the log4j2.xml file available in the Process Studio distribution conf folder. All logs at a higher level than this setting will be visible in Process Studio Log file.

## 4.11.2 Configurations

Varia	ables Tab	es Tab		
No.	Field Name	Description		
1	variables	Accepts comma separated list of variables to be logged in.		

Field	elds Tab: Contains table to accept fields to be logged in.		
No.	Field Name	Description	
1	Name	Name of field to be logged in.	

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2	Туре	Auto populated once the field name is selected. It is not editable.
---	------	---

Notes: Secret variables are logged as 'XXXX'

Agent logs are also accessible from AutomationEdge Agent Log menu. Debug logs are part of Agent Logs. Agent Logs are visible by navigating to the Logs menu and Agent Logs sub-menu in AutomationEdge. Agent logs can be obtained by clicking the New Request Button on the top right corner. Source should be chosen at Agent or Workflow level as shown in the screenshot below.

				New Request					N.	utomatio	onEdge
*		Age	nt Logs	Select Entity*	0				Search	٩	New Request
20		C		1							
P		Id	Agent Name	AGENT WORKFLOW		Submit	¥ Close	on	Issue Dato	Last Updated	
Q		2	Administrator@LPT0540_d1535519190			Frank	TT Grove	7-Aug-2018 14:59.43	27-Aug-2018 15:00 25	27-Aug-2018	15 00 34
=		1	Administrator@LPT0540_d1535519190	1	Download	27-Aug-201	8 14 57 41	27-Aug-2018 14 58 56	27-Aug-2018 15:00 19	27-Aug-2018	15:00:28
8											
6											
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ф											
3	Tenunt1 Admin										

# 5 AutomationEdge Core: Try-Catch

Try Catch can be used to handle errors for a group of steps in a workflow eliminating the need to appy individual error handling hop to each step.

**Try** and **Catch steps are** added in pairs in an AutomationEdge Process Studio's workflow. On adding a 'Try' step onto the canvas, a 'Catch' step is automatically added on the canvas.

### Validations:

- If Try-Catch steps are not in pairs, then the workflow gives an error on save workflow operation.
- When a 'Try' step is added onto the canvas, a 'Catch' step is also added. When any one of the steps is removed the related pair is deleted.
- A hop from 'Catch' step towards 'Try' step which belongs to the same pair is not allowed. The workflow gives an error on save workflow operation.



- A hop from 'Catch' step towards any intermediate step of its pair is not allowed. The workflow gives an error on save workflow operation.
- In the error handling- Catch table of a 'Catch' step, for a specific record, if the value is specified under the 'Target Step' column then either 'Error Code' column value or 'Error Description' column value must be specified. Else an error is thrown on the clicking the 'Ok' button of the 'Catch' step.
- The 'Catch' step throws an error during execution of the workflow if it doesn't find any of the target steps as specified in the 'Catch' step.
- Try Catch steps can only be used in combination with Start Loop Continue Loop steps in the following ways,
  - Start Loop Continue Loop steps should be completely designed in between Try - Catch steps.
  - ✓ Try Catch steps should be completely designed in between Start Loop -Continue Loop steps.
  - All the hops from Catch should be connected to Continue (maintain the current loop validations)

Any other cases result in validation errors on save workflow operation.

## 5.1 Try

### 5.1.1 Description

'Try' step acts as the starting point of the Try-Catch feature to handle the errors. 'Try' step can also be the first step in a workflow.

### 5.1.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.

## 5.2 Catch

## 5.2.1 Description

Catch is the main step in the Try-Catch pair that handles all the unhandled errors that would potentially occur between Try – Catch steps in a workflow.

On Process Studio UI while joining output hops from Catch step the following options are shown,

 Error handling of step (AE Process Studio's error hop to handle 'Catch' step related error)

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The Catch step has an error handling hop, to handle any errors that might occur in the step. Following are the possibilities of errors.

- Invalid Target Step name in any of the fields.
- Neither anything is specified in the Error Handling table nor the Default Error Target Step.
- The error does not match the entries in the Error Handling table and Default Error Target step is not specified.
- The default success target step
- The default error target step



 Create a new error target case for this step Also once an error case is added in Catch table in the Configuration tab in the step it is also shown in the options of output hop as "The case target for value < Error Description> < and < Error Code>>".

In the following screenshot, there is an entry in the Catch table, hence you can see an additional outgoing hop "The case target for value 'Input File Missing".

	]-	> 100% -	•	<u>.</u>	<b>-</b>	L	
Try Get Vanables Read Sal	es Da	sta Calculato	or Micros	oft Excel Output	Catch		
Step name	Cat	ch				Write t 📀	The case target for value 'Input File Missing
coniguration rields	Enak	le Partial Matching				0	The default success target step
Catch Table	Error_Description		Error_Code Target	Target_Step		-	The default error target step
	1	Input File Missing		Write to log		0	Create a new target case for this step
Default Success Step					×.		
Default Error Step	Ľ.,						
Get	field	is OK	Cancel				

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# 5.2.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.

Con	figuration Tab	
No.	Field Name	Description
1	Enable Partial Mapping	Enable checkbox to compare the errors partially with the error received,
2	Catch Table:	This table contains the details of how the errors have to be routed. The priority depends on the sequence. The fields in this table are not mandatory.
i	Error_Description	Specify a full or partial error description to handle.
ii	Error_Code	Specific plugin error code to handle. If the Error description and Error Code are specified in a single entry, both will be verified before forwarding to the target step.
iii	Target_Step	The target step to move to or traverse when the error occurs.
3	Default Success Step	If there aren't any errors in between Try - Catch, the row will be forwarded to the step specified here. This field is not mandatory.
4	Default Error Step	If the error occurred does not match any entries in the 'Error Handling' table, the row will be forwarded to the step specified here. This field is not mandatory.
		In case this field is empty, the workflow terminates at the 'Catch' step with the error which is received by the 'Catch' step.

Open Step error handling settings for any step with Error handling option enabled in the popup navigation, between Try-Catch steps as seen below. The various Error Handling field names are pre-populated (and disabled) by Try-Catch as seen below.

AutomationEdge Process Studio - HelloWorld (changed) 00 Eile Edit View Action Tools Help 000000000 HelloWorld 🟦 Project Explorer 2 ⊙ • II ○ ○ 🎘 • O ② 🛱 🖬 🖏 📑 100% • E 8= 44 A 😫 Workspace - Tutorials ∕→& Intropose (
 Spy
 Inv-Catch Get Variables Try . Mondlows and Process HelloWorld.psw
 TCWithManyErrHand
 testSampleWorldIowi > VD New Hop. 0 Read Catch TryCatchContainsLoc Edit... a 🛅 Resources B sales data output.xls Data Movement Write to log Copy CTRL-C Duplicate Step error handling settings DEL Delete Error handling stepname Read Sales Data 111 \_\_\_\_ Detach Target step Catch 🖳 View 🧷 Design 12 Input Fields... Enable the error handling? Output Fields... Steps E #= Nr of errors fieldname PS\_Try224333806712036\_NumberOfErrors 0 Check Selected Step(s) Error descriptions fieldname PS\_Try224333806712036\_ErrorDescription 0 C Active Directory Error fields fieldname PS\_Try224333806712036\_EmorField 0 CR OCR Error Handling. Show Related Loop Steps Error codes fieldname PS\_Try224333806712036\_ErrorCode 0 AirWatch Preview ... Max nr errors allowed 3 Azure DevOps Max % errors allowed (empty==100%) 1 Align / Distribute × 🛅 BMC Remedy Min nr of rows to read before doing % . (1) BMC Remedy (REST) Breakpoint Actions 🛅 САРТСНА D Cherwell OK Cancel Desktop Exchange Server Google Spreadsheets

These Error Handling field names are generated by Try-Catch. These field names can be changed by configuring with user defined names in the Fields tab.

Field	ls Tab:	
No.	Field Name	Description
	Error Handling Fields:	These fields may be configured to be used further in the workflow. If any field is not specified it will be lost after the Catch step.
1	Number of Errors	Specify a field name to hold No of errors ocurred step with error.
2	Error Description	Specify a field name to hold Error Description.
3	Error Field	Specify a field name to capture the error fields.
4	Error Code	Specify a field name to store error codes.
5	Error Step Name	Specify a field name to hold Step name on which errors occurred.
	Tabular Fields:	Choose the fields to be forwarded by Catch step
1	Field Name	You may populate previous step fields by clicking on the get Fields button. You may remove fields you do not want to forward by the Catch step.

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2	Default Values	Specify field values to be assigned in case of errors.
---	----------------	--

Corr	nmon Buttons:	
No.	Field Name	Description
	Buttons:	
1	Get Fields	Click Get Fields button to get previous step fields.
1 2	ОК	On click of this button. It will check the field values. If any required field values are missing then it will display validation error message.
		If all the required field values are provided then it will save the field values.
3	Cancel	On click of this button, it will cancel the window and does not save any values.

# 6 AutomationEdge Core: Looping

This plugin has steps for implementing loop in workflows. The steps to implement a loop are described below. The descriptions below specify the design to implement loops in workflows.

Loop Start and Loop Continue steps execute as a pair. If you drag and drop Loop Start Loop Continue is automatically dropped. The two steps in pair have the same color. If any other pair is dropped in Process Studio, it will have a new color for the pair.

# 6.1 Break Loop

### 6.1.1 Description

**Break** Loop step breaks the current loop iteration based on certain conditions, independent of start Loop conditions.

The Break step can be executed in between the loop. This step is internally attached to one specific Start Loop Step and can break only the relevant loop attached to it.

### 6.1.2 Configurations

	U	
No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Loop Name	When Break Step is dropped on canvas a dialog pops with loop names. Choose a Loop name to which the Break Loop step is to be associated.

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Note:

- When Loop Start or Loop Continue is deleted the relevant Break Loop Step is also deleted.
- All break steps should have incoming hops from the steps connected to relevant Start Loop Step.
- If Break Loop step is deleted from the workflow relevant Loop steps are not deleted.

# 6.2 Start Loop

### 6.2.1 Description

This step marks begin of loop execution.

**Single Threaded**: The steps in the loop will be executed as a single thread. The other input rows are paused until a continue signal is received from loop continue step.

**Input Row**: The same input row is passed for each iteration of that particular row. Additional fields can be added to this input row, which would be populated during the loop iteration and available after the loop iteration.

All other fields generated by steps during loop iteration will be destroyed i.e. their scope would be valid only for that particular iteration.

**Loop Condition:** A dynamic condition block will be provided. This can be used to construct simple as well as complex conditions. Based on the output of this condition, the input row will be routed to either continue (in case of condition failure) or end the loop (in case of condition success).

**Implicit Counter:** The user can provide a counter name and number of iterations for which the loop would execute.

**Output Hops:** There will be two output hops, for 'true' and 'false' condition. It is mandatory to have Loop Continue at the end of true path.

This step has the following user inputs as shown in the screenshot and configuration table below,

- Counter Name
- Loop iteration count
- Dynamic Conditions block
- Table for Additional field names

## 6.2.2 Configurations

		Step name Start Loop		
		E		
		Loop name DS Start Loop10145600318678	821	
	(	proditional Loop?	2.2	
		Iterator Name		1
	Nu	aber of iterations		- (2)
dditional Fields	140			
A Name Tur	Defaultablue			
1 Name Typ	e Derault value			
-				
Condition(s)				
Contraction of the second s				121
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(field) =	<field< td=""><td></td><td></td><td>В</td></field<>			В
(field) =	<field< td=""><td></td><td></td><td></td></field<>			
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(field) =	<field< td=""><td>Get Field</td><td>ts.</td><td>E</td></field<>	Get Field	ts.	E
((ield) =	(field	Get Field	ds	E

Figure: Start Loop Step UI

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Loop Name	A Loop Name generated automatically.
3	Conditional Loop?	Enable check box if you want to loop based on a condition. If enabled Iterator name below is disabled.
4	Iterator Name	This field is enabled Conditional Loop above is not checked. Provide an iterator name.
5	Number of iterations	Provide an integer value for number of iterations for each row.
	Table: Additional Fields <sup>1</sup>	This table is used to create user defined additional fields. Additional fields are added as columns to the row. They are permanent and visible even after the loop is over.
		available after loop execution. Only Additional fields specified in Loop Start are available even after loop execution.
1	Name	Provide names of all additional fields you want to define.
2	Туре	Select a data type for the additional field.
3	Format	Select a format for the data Type selected above.
4	Default value	Provide a default value for the additional field.
5	Set empty string?	Select Y or N.



	If default value is not provided set 'Set empty string?' to Y. This sets a null value as an empty string.
Block: Conditions	Conditions Block is a set of five fields. These fields can be populated with Previous field, Addition fields or Static values. Click the field to populate a value as a toggle or from a popup that comes up. The first field specifies a toggle for a condition. Leave it default to blank or click once to toggle it to NOT. The second is the field to compare. The third field is an operator The fourth field is the field to be compared against or alternately specify a static value in the sixth field to be compared against. Click on the small rectangular icon on the right hand side of the block to add a condition. You can Add a condition with the following operators: OR, AND, OR NOT, AND NOT, XOR. Multiple condition list by icon on right side Right click on a condition to get a pop-up menu with the following options: Edit condition, Delete condition, Add sub- condition, Move condition to sub-condition (>), Move condition to parent (<) and more copy options. These options can be used to create Nested conditions.
Button: Get Fields	In the Conditions Block above only previous fields are available. Click Get Fields to make Additional fields also available in the conditions block.

#### 6.2.2.1 **Conditions Block Description**

- 1. The first field is a Boolean and value can be set to null or NOT. This field acts like a toggle field and changes values upon click. The possible values are null or NOT.
  - Null Condition

Condition(s)		
		E
<field> =</field>	<field></field>	
	<value></value>	

NOT condition •



Condition(s)	
NOT a = (String)	

2. In the second field User defined Additional fields can be selected.

		St	ep name	Start Loop							
	l	L Conditic Itera Number of	oop name mal Loop? ator Name iterations	PS_Start Loc it 2	p36569365	19078	74		572	<u> </u>	÷
dd	itional Field	ds			<u> </u>	Fiel		1 1	25	_	
#	Name	Туре	Default	value	Sele	ect a fi	ield:				
1	b	String			a	(Str	ing)				
2	d	String			b	(Str	ring)				
3	e	String	week		d	(Str	ring)				
4	f	String			f	(Stri	ing)				
5	g	String			g	(Str	ring)				
6	z	String			z	(Str	ing)				
on	dition(s)					OK		Can	cel		
a					(Strin	ng)		Sell Of		IJ	E

3. In this case 'a' is selected and is assigned a value 2. It can also be assigned a field value.



		Step name	Start	Loop			
		Loop Name	PS_S	tart Loop6	51790783661171		
		Conditional Loop?	1				
		Iterator Name	addit	tion			
	Nu	Imber of iterations	2				-
lit	tional Field	ds					
	Name	Туре		Format	Default Value	Set empty string?	
	c	String				N	
nc	dition(s)	=	] [		] (String)		E
nc	dition(s)	=	] [		] (String)	46 26	E
nc	dition(s)	=	] [2		] (String)		E



Number of iterations 2	Loop Nan Conditional Looj Iterator Nan	ne ps pr ne ado	Start Loopf	51790783661171		
Name Type Format Default Value Set empty string?     c String N  ondition(s)  a 2 (String)	Number of iteration dditional Fields	15 2				-
c String N iondition(s) a 2 (String)	F Name Type		Format	Default Value	Set empty string?	
a Condition(s)	c String				N	
	andition(s)	_ [		]		Ada

5. In the snapshot below the first condition has been added and ready to add the second condition. Click on the null condition to populate it.

		Step name	Start Loop		
		Loop Name	PS_Start Loop6	51790783661171	
		Conditional Loop? 🛽			
		Iterator Name	addition		
	Nu	Imber of iterations	2		1
Idi	itional Field	ds			
1	Name	Туре	Format	Default Value	Set empty string?
	c	String			N
		a = [	21		E
Ał	ND	a = [ null	2] 2]		
Ał	лр	a = [ null	2] = []		

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Loop name PS_Start Loop365693651 Conditional Loop? Iterator Name it Number of iterations 2 # Name Type Default value 1 b String 3 e String week Koop name PS_Start Loop365693651 Select the functions: Select the functions: Sel	
Loop name PS_Start Loop365693651 Conditional Loop?  Iterator Name it Number of iterations 2  Additional Fields  Additional Fie	-*
Conditional Loop?     Iterator Name     Iterator Name       Iterator Name     It       Number of iterations     2       *#     Name     Type       Default value     Is NULL       1     b     String       2     d     String       3     e     String	
Iterator Name     it       Number of iterations     2       vadditional Fields     >       # Name     Type       Default value     REGEXP       1     b     String       2     d     String       3     e     String	-  ¢
Number of iterations     2     <	- k
xdditional Fields        #     Name     Type       Default value     REGEXP       1     b     String       2     d     String       3     e     String	
kdditional Fields     >=       #     Name     Type       Default value     REGEXP       1     b     String       2     d     String       3     e     String	
#         Name         Type         Default value         REGEXP           1         b         String         IS NUL         IS NULL           2         d         String         III NULST           3         e         String         Vwek	
1     b     String     IS NOLL       2     d     String     IS NOT NULL       3     e     String     USS	
2 d String IN LIST 3 e String week CONTAINS	
3 e String week CONTAINS	
4 f String STARTS WITH	
5 g String	
6 z String TRUE	
Condition(s)	ncel
	incer j
a =	
(String)	

6. In the third field select operational functions.

7. In the fourth field previous step fields or Additional fields can be set. Values can be set either in the fourth step or in the fifth fields.

		St	ep name	Start Loop		
		L Conditic Itera Number of	oop name onal Loop? ator Name	PS_Start Loc v t 2	p365693651907874	
Add	itional Field	ds			🔨 Fiel 😑 🖸 🕅	
#	Name	Туре	Default	value	Select a field:	
1	b	String			a (String)	
2	d	String			b (String)	
3	e	String	week		d (String)	
4	f	String			e (String) f (String)	
5	9	String			g (String)	
6	z	String			z (String)	
Con	dition(s)					
a	=			2		
					(String)	
			2			

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		St	ep name	Start Loop		
		L	oop nam	e PS_Start Loop365693	651907874	
		Conditio	nal Loop	? 🔽		
		Itera	ator Nam	e it		
		Number of	iteration	s 2		
dd	itional Field	ds.	ſ	<ul> <li>Enter value</li> </ul>		23
<i>*</i>	Name	Type	Def		Page of the second s	
1	b	String	111.55	Type:	String	
2	d	String		Value:	12/28/2018	
3	e	String	wee	Conversion format:	dd/mm/yyyy	+
4	f	String		Length:	-1	
5	g	String		Precision		
6	z	String		FIECISION.	-1	
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on	dition(s)			L		
			19.00			E
a	=					
			4	56 (Str	ing)	

# 6.3 Continue Loop

### 6.3.1 Description

Loop Continue step is created automatically with a Loop Start step.

This step continues to loop start step for further decision making. It will only contain the loop start step name. All the additional generated fields will be passed. Also the counter is incremented before the row is forwarded.

This step needs the following user input as listed in the Configurations table below,

• Loop Start step name

### 6.3.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Loop Name	It automatically picks up a loop name based on the Loop Start step it is connected to.
3	Button: OK	Click OK button to accept configurations.

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4	Button: Cancel	Click CANCEL button to discard configurations.
---	----------------	--

# 6.3.3 Schematic representation of a Workflow with Loops





# 6.3.4 Sample Workflows: Simple Loop

Following is a demonstration to create a Simple Loop workflow.

- 1. Create a new workflow and save it as SimpleLoop.
- 2. Add a Data Grid step with meta data as shown below.

		St	ep name	Start Loop		
		L	oop nam	e PS_Start Loop365693	651907874	
		Itera	ator Nam	e ia		
		Number of	iteration	- 1L		
arar	Manager Prote		C	· · · ·		53
aa	itional Fleid	15		Enter value		
ŧ	Name	Туре	Def	Type:	String	
1	b	String		Value:	12/20/2019	
2	d	String			12/28/2018	
3	e	String	wee	Conversion format:	dd/mm/yyyy	*
4	f	String		Length:	-1	
5	g	String		Precision	1	
5	z	String	_	riccision	-1	
				ОК	Test Cancel	
on	dition(s)			<u> </u>		-
			1000			E
a	=					
	100		4	(Str	ring)	



3. Add data in the data tab.

AutomationEdge Process Studio - SimpleL	oop (changed)	-	a Million Ample	New York, New	of Sect.		-				
ile Edit Yiew Action Tools Help											
) 🗢 🖬 🖬 🖉 🔹 🔹											
View 🧷 Design	🔆 SimpleLo	000 23									
Steps data grid 👌 🚼	<mark>⊙</mark> • II (	0 <b>0 ()</b>	OBB	b 🗾 100% 🔻							
Active Directory  Active Directory  Active AD  Cherwell  Service Now		( Da	a Grid								
Π-Utility	_										
MSSQL		Add consta	it rows								22
Office365				Step name	Data Grid						
Oracle	6	feta Data			0000 010						-
Remedy	1	- w		• 50/10 PM	200200		1-www.				
SAP		a Name	Type	Format	Length	Precision	Currency	Decimal	Group	Set empty string/	
Services		2 b								N	
Solarwinds											
System	100 B						_				
Web GUI					<u>OK</u> Preview	x <u>C</u> anc	el				
input											
🧮 Data Grid											
Coutput											
AutomationEdge Core											
P Transform											
Pin Blow											

4. Click Preview button to view the records.

Add	cons	tant rows					X
			Step name	Data Grid			
Meto	Data						
*	a	b					
1	10	15					
2	20	35					

5. Always Drag and Drop Start Loop Step or double click Start Loop. When you do this automatically a Continue Loop step is also created for you in Process Studio. These steps always exist in combination.

/	Ex	amine p	oreview	data		23
F	lows	of step	: Data G	rid (2 rows)		
	ŧ	а	b			
	1	10	15			
	2	20	35			
				Close Show Log		

6. Add a Modified Java Script step between Start Loop and Continue Loop. Whenever you create a Hop from Start Loop it is terminated with 'Condition: TRUE' or 'Condition: False'. No Hops are allowed from Continue Loop.





7. Join Modified Java Script to Continue Loop as shown below.

AutomationEdge Process Studio - Simp	leloop (changed)
Eile Edit View Action Tools Help	
View Design	SimpleLoop 😚
Steps java script 🗧 🗄	○ ·    ○ ◆ 13 ○ ○ ○ □ 16 □ 100% -
C Sevices	*
Colarwinds	
C System	
Web GUI	
En Input	Data Grid Start Loop
Cutput	<b>o</b>
AutomationEdge Core	1
Transform	
🛅 Utility	
Flow	Gondition : TRUE
<ul> <li>Scripting</li> </ul>	Modified Java 5 🔮 Condition : HALS:
Modified Java Script Value	
E Lookup	
Joins .	(P)
Data Warehouse	
Validation	ContinueLoop
Statistics	
Cryptography	
Process	
Bulk loading	
Eperimental	
- History	Q
< +	

8. Configure Start Loop. All the fields of Start Loop have been explained in the Configurations table.

In this example we do not have a condition, instead we have created an iterator 'addition' with number of iterations for each row equals to 1.





		-			
		Step name St	art Loop		
		Loop Name ps	_Start Loop65179078	33661171	
	Conc	ditional Loop? 📃			
	1	Iterator Name ad	dition		
	Numbe	er of iterations 2			
litional Fiel	de	-			
Name	Tune	Format	Default Value	Set empty string?	
INdiffe	Ctring	Tonnac	Default value	Set empty string:	
c	String				
ndition(s)					
					E
field>	=	<field></field>			E
field>	=	<field></field>			E
field>	=	<field></field>			E
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field>	=	<pre> (field)  (value)</pre>			
field>	2	<pre> (field)  (value)</pre>			
field>	2	<pre>(field) (value)</pre>			
field>	2	<pre>(field) (value)</pre>			E

10. Leave Continue Loop configurations as it is or alternately specify a Step name.

1 Sc	mpt Values / Mod						1.00 3.5
			Step name	Modified Java Scr	ipt Value		
lava	script functions :	lava	ścript i				
1	CI Transform Scripts	14	Script1 II				
1	C Transform Consta	inta 175	easht peas				(4)
	Innut fields	pres					
15		a.m	ar Cart a summer	()+arround b	<i>,,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	P 6						
	addition						
	D Output fields						
1	Please use the	'Re					
		141					
		Posit	ion: 4, 17				
91		+ Com	patibility model	Optimization	level y		00
	0						
FIGH		07223310	1.2010	0105200	1.27/11201		
	Fieldname: Ren	ame to	Туре	Length	Precision	Replace value 'Fieldname' or 'Rename to'	
4	u.		String			N	
							-
			OK	Cancel	Get vi	mables Test scriet	
						A CONTRACTOR OF THE OWNER OWNER OF THE OWNER	

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11. Add a Text file output step. Draw a Hop with Condition: FALSE. This completes creating both Condition: TRUE and Condition: FALSE Hops.

🔿 Continue Loop	
Step name Loop Name	Continue Loop PS_Start Loop651790783661171
	OK Cancel

12. This is the complete workflow. You can now run the workflow.



This workflow introduced you to how to use Loop step in a workflow.

### 6.3.5 Sample Workflows: Nested Loop

Nested Loop can be considered as a loop in a loop. The following picture depicts a Nested Loop. In the screen shot the parent loop steps are 'Start Loop' and 'Continue Loop' as seen below. The child workflow steps are 'Start Loop2' and 'Continue Loop2'.





### 6.3.6 Validations for Workflow with Loop steps

- If the workflow is using switch case for path decisions inside loop or error handling, all of them must end with Loop Continue Step.
- Both the steps must be present and connected properly in the workflow.
- Infinite loop will not be verified.
- Cannot have Blocking Steps in the loop
- Steps like Merge Join, Join Rows which wait for all rows before execution start will not be allowed in the loop.
- Row generating steps like Microsoft Excel Input are not allowed in a loop. However, Web Loop Table is allowed in a loop.
- The following steps are also not allowed in a loop, Identify last row in a stream, Send Email, Intermediate Status and Exit Browser

# 6.3.7 Sample Workflows: Break Loop

Nested Loop can be considered as a loop in a loop. The following picture depicts a Nested Loop. In the screen shot the parent loop steps are 'Start Loop' and 'Continue Loop' as seen below. The child workflow steps are 'Start Loop2' and 'Continue Loop2'.





# 6.3.8 Validations for Workflow with Loop steps

If the workflow is using switch case for path decisions inside loop or error handling, all of them must end with Loop



# 7 Transform

# 7.1 Add XML

## 7.1.1 Description

Add XML column is a step in the Transform Plugin for Process Studio Workflows. The Add XML column step encodes the content of a number of fields in a row in XML. This XML is added to the row in the form of a String field.

# 7.1.2 Configurations

Add	Add XML Column:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	

Cont	Content Tab:			
No.	Field Name	Description		
1	Encoding	Specify the encoding to use. This encoding is specified in the header of the XML file		
2	Output Value	Specify the name of the new field that contains the XML		
3	Root XML element	Specify the name of the root element in the generated element.		
4	Omit XML header	Enable to not include the XML header in the output.		
5	Omit null values from the XML result	Do not add or eliminate elements or attributes with null values. This is often used to limit the size of the target XML.		

### Fields Tab:

The Fields tab is where you configure the output fields and their formats. The table below describes each of the available properties for a field:

No.	Field Name	Description
1	Fieldname	Specify the name of the field
2	Element name	Specify the name of the element in the XML file to use
3	Туре	Specify the Type of the field can be either String, Date, or Number

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4	Format	Specify the Format mask with which to convert data; see Number Formats for a complete description of format specifiers
5	Length	Output string is padded to this length if it is specified
6	Precision	Specify the precision.
7	Currency	Specify the Symbol used to represent currencies like \$10,000.00 or E5.000,00
8	Decimal	Specify the decimal separator. The Decimal point separator can be a "." (10,000.00) or "," (5.000,00)
9	Grouping	Specify a thousand's group separator. A group separator can be a "," (10,000.00) or "." (5.000,00)
10	Null	Specify the string to use in case the field value is null.
11	Attribute	Choose Y/N from the dropdown list. Choose Y to make this an attribute (N means: element)
12	Attribute parent name	You can specify the name of the parent element to add the attribute to if previous parameter attribute is set to Y. If no parent name is specified, the attribute is set in the parent element.

#### 7.2 Add constants

#### 7.2.1 Description

Add Constants is a step in the Transform Plugin for Process Studio Workflows. The Add constant values step is a simple and high performance way to add constant values to the stream.

#### 7.2.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step. <i>Note:</i> This name has to be unique in a single workflow.
2	Fields	Specify the name, type, and value in the form of a string. Specify the formats to convert the value into the chosen data type.

#### 7.3 Add sequence



# 7.3.1 Description

Add sequence is a step in the Transform Plugin for Process Studio Workflows. The Add sequence step adds a sequence to the stream. A sequence is an ever-changing integer value with a specific start, increment and maximum value. You may use a database to generate the sequence or use a workflow counter in Process Studio to generate the sequence.

# 7.3.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of this step as it appears in the workflow workspace. This name must be unique within a single workflow.
2	Name of value	Specify the name of the new sequence value that is added to the stream.
3	Use DB to generate the sequence	Enable if you want the sequence to be driven by a database sequence, then set these parameters: Connection name, Schema name (optional), Sequence name.
4	Connection name	Specify the name of the connection on which the database sequence resides.
5	Schema name (optional)	Specify the table's schema name.
6	Sequence name	Specify the name of the database sequence.
7	Use a workflow counter to generate the sequence	Enable if you want the sequence to be generated by Process Studio, and then set these parameters: Counter name (optional), Start at, Increment by, Maximum value.
8	Counter name (optional)	If multiple steps in a workflow generate the same value name, this option enables you to specify the name of the counter to associate with. Avoids forcing unique sequencing across multiple steps.
9	Start at	Specify the value to begin the sequence with.
10	Increment by	Specify the amount/number by which the sequence increases or decreases.
11	Maximum value	Specify the value after which the sequence returns to the Start At value.

# 7.4 Calculator

# 7.4.1 Description

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Calculator is a step in the Transform Plugin for Process Studio Workflows. The calculator step provides predefined calculation expressions that can be executed on input field values. It can take up to three input arguments (Field A, Field B and Field C) and a return type must be specified. You may perform multiple such calculations within the step that are independent of each other or depend on fields generated in previous calculations. There is an option to remove fields from the output after all values are calculated. This is useful for removing temporary values.

**Note:** The execution speed of the Calculator is far better than the speed provided by custom scripts (JavaScript).

No.	Field Name	Description
1	New field	This field is populated by the value of the calculation. This field can be temporary or permanent.
2	Calculation*	This field contains the expression of the calculation.
3	Field A	An input for the calculation
4	Field B	An input for the calculation
5	Field C	An input for the calculation
6	Value type	It is the data type of the new field
7	Length	It is the length of the data type
8	Precision	It is the precision of the data type
9	Remove	If remove is selected then the value in the new field is deleted after completion of the step. It can be used for interim calculations.
10	Conversion mask	Date or Number format
11	Decimal symbol	The decimal digits and precision separator
12	Grouping symbol	The thousand separator
13	Currency symbol	Currency symbol

### 7.4.2 Configurations

## \*Calculations Available

The table below contains the available calculations and associated descriptions:



No.	Calculation	Explanation
1	Set field to constant A	Create a field with a constant value.
2	Create a copy of field A	Create a copy of a field with the given field value.
3	A + B	A plus B.
4	A - B	A minus B.
5	A * B	A multiplied by B.
6	A / B	A divided by B.
7	A * A	The square of A.
8	SQRT( A )	The square root of A.
9	100 * A / B	Percentage of A in B.
10	A - ( A * B / 100 )	Subtract B% of A.
11	A + ( A * B / 100 )	Add B% to A.
12	A + B *C	Add A and B times C.
13	SQRT( A*A + B*B )	Calculate ?(A2+B2).
14	ROUND( A )	Returns the closest Integer to the argument. The result is rounded to an Integer by adding 1/2, taking the floor of the result, and casting the result to type int. In other words, the result is equal to the value of the expression: floor ( $a + 0.5$ ). In case you need the rounding method "Round half to even", use the following method ROUND(A, B) with no decimals (B=0).
15	ROUND( A, B )	Round A to the nearest even number with B decimals. The used rounding method is "Round half to even", it is also called unbiased rounding, convergent rounding, statistician's rounding, Dutch rounding, Gaussian rounding, odd-even rounding, bankers' rounding or broken rounding, and is widely used in bookkeeping. This is the default rounding mode used in IEEE 754 computing functions and operators. In Germany it is often called "Mathematisches Runden".
16	STDROUND( A )	Round A to the nearest integer. The used rounding method is "Round half away from zero", it is also called standard or common rounding. In Germany it is known as "kaufmännische Rundung" (and defined in DIN 1333).
17	STDROUND( A, B )	Same rounding method used as in STDROUND (A) but with B decimals.
18	CEIL( A )	The ceiling function maps a number to the smallest following integer.
19	FLOOR( A )	The floor function maps a number to the largest previous integer.



20	NVL( A, B )	If A is not NULL, return A, else B. Note that sometimes your variable won't be null but an empty string.
21	Date A + B days	Add B days to Date field A. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with hours.
22	Year of date A	Calculate the year of date A.
23	Month of date A	Calculate number the month of date A.
24	Day of year of date	A Calculate the day of year (1-365).
25	Day of month of date A	Calculate the day of month (1-31).
26	Day of week of date A	Calculate the day of week (1-7).
27	Week of year of date A	Calculate the week of year (1-54).
28	ISO8601 Week of year of date A	Calculate the week of the year ISO8601 style (1-53).
29	ISO8601 Year of date A	Calculate the year ISO8601 style.
30	Byte to hex encode of string A	Encode bytes in a string to a hexadecimal representation.
31	Hex encode of string A	Encode a string in its own hexadecimal representation.
32	Char to hex encode of string A	Encode characters in a string to a hexadecimal representation.
33	Hex decode of string A	Decode a string from its hexadecimal representation (add a leading 0 when A is of odd length).
34	Checksum of a file A using CRC-32	Calculate the checksum of a file using CRC-32.
35	Checksum of a file A using Adler-32	Calculate the checksum of a file using Adler-32.
36	Checksum of a file A using MD5	Calculate the checksum of a file using MD5.
37	Checksum of a file A using SHA-1	Calculate the checksum of a file using SHA-1.
38	Levenshtein Distance (Source A and Target B)	Calculates the Levenshtein Distance
39	Metaphone of A (Phonetics)	Calculates the metaphone of A
40	Double metaphone of A	Calculates the double metaphone of A
41	Absolute value ABS(A)	Calculates the Absolute value of A.



42	Remove time from a date A	Removes time value of A. <b>Note:</b> Daylight Savings Time (DST) changes in Sao Paulo and some other parts of Brazil at midnight 0:00. This makes it impossible to set the time to 0:00 at the specific date, when the DST changes from 0:00 to 1:00 am. So, there is one date in one year in these regions where this function will fail with an "IllegalArgumentException: HOUR_OF_DAY: 0 -> 1". It is not an issue for Europe, the US and other regions where the time changes at 1:00 or 2:00 or 3:00 am.
43	Date A - Date B (in days)	Calculates difference, in days, between A date field and B date field.
44	A + B + C	A plus B plus C.
45	First letter of each word of a string A in capital	Transforms the first letter of each word within a string.
46	UpperCase of a string A	Transforms a string to uppercase.
47	LowerCase of a string A	Transforms a string to lowercase.
48	Mask XML content from string A	Escape XML content; replace characters with &values.
49	Protect (CDATA) XML content from string A	Indicates an XML string is general character data, rather than non-character data or character data with a more specific, limited structure. The given string will be enclosed into String .
50	Remove CR from a string A	Removes carriage returns from a string.
51	Remove LF from a string A	Removes linefeeds from a string.
52	Remove CRLF from a string A	Removes carriage returns/linefeeds from a string.
53	Remove TAB from a string A	Removes tab characters from a string.
54	Return only digits from string A	Outputs only Outputs only digits (0-9) from a string from a string.
55	Remove digits from string A	Removes all digits (0-9) from a string.
56	Return the length of a string A	Returns the length of the string.
57	Load file content in binary	Loads the content of the given file (in field A) to a binary data type (e.g. pictures).
58	Add time B to date A	Add the time to a date, returns date and time as one value.



59	Quarter of date A	Returns the quarter (1 to 4) of the date.
60	variable substitution in string A	Substitute variables within a string.
61	Unescape XML content	Unescape XML content from the string.
62	Escape HTML content	Escape HTML within the string.
63	Unescape HTML content	Unescape HTML within the string.
64	Escape SQL content	Escapes the characters in a String to be suitable to pass to an SQL query.
65	Date A - Date B (working days)	Calculates the difference between Date field A and Date field B (only working days Mon-Fri).
66	Date A + B Months	Add B months to Date field A. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with days.
67	Check if an XML file A is well formed	Validates XML file input.
68	Check if an XML string A is well formed	Validates XML string input.
69	Get encoding of file A	Guess the best encoding (UTF-8) for the given file.
70	Dameraulevenshtein distance between String A and String B	Calculates Dameraulevenshtein distance between strings: http://en.wikipedia.org/wiki/Damerau%E2%80%93Levenshtein_distance
71	NeedlemanWunsch distance between String A and String B	Calculates NeedlemanWunsch distance between strings: http://en.wikipedia.org/wiki/Needleman%E2%80%93Wunsch_algorithm
72	Jaro similitude between String A and String B	Returns the Jaro similarity coefficient between two strings.
73	JaroWinkler similitude between String A and String B	Returns the Jaro similarity coefficient between two string: http://en.wikipedia.org/wiki/Jaro%E2%80%93Winkler_distance
74	SoundEx of String A	Encodes a string into a Soundex value.
75	RefinedSoundEx of String A	Retrieves the Refined Soundex code for a given string object
76	Date A + B Hours	Add B hours to Date field. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with minutes.



77	Date A + B Minutes	Add B minutes to Date field. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with seconds.
78	Date A - Date B (milliseconds)	Subtract B milliseconds from Date field A
79	Date A - Date B (seconds)	Subtract B seconds from Date field A. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with milliseconds.
80	Date A - Date B (minutes)	Subtract B minutes from Date field A. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with seconds.
81	Date A - Date B (hours)	Subtract B hours from Date field A. <b>Note:</b> Only integer values for B are supported. If you need non-integer calculations, please add a second calculation with minutes.
82	Hour of Day of Date A	Extract the hour part of the given date
83	Minute of Hour of Date A	Extract the minute part of the given date
84	Second of Hour of Date A	Extract the second part of a given date
85	Second of Minute of Date A	
86	ROUND_CUSTOM(A,B)	
87	ROUND_CUSTOM(A,B,C)	
88	Date A + B Seconds	
89	Remainder of A / B	

# 7.5 Add value fields changing sequence

### 7.5.1 Description

Add value fields changing sequence is a step in the Transformation Plugin for Process Studio Workflows. This step generates a sequence based on Start at and Increment by values. The sequence resets each time a value changes in any of the specified fields in the list. The input data should typically arrive in an ordered fashion although as long as identical values are grouped together in the data stream the step works as desired.

# 7.5.2 Configurations



No.	Field Name	Description
1	Step name	Specify the name of the step, needs to be unique in a workflow
2	Result field	Specify the name of the output field, the sequence
3	Start at value	Specify the number to start at each time
4	Increment by	Specify the value to increase at each row in the same group
5	Init sequence if value of following fields change	Specify a list of fields here. If a value in one or more of these field's changes compared to the previous rows, the sequence will be reset to the start value.

# 7.6 Concat Fields

### 7.6.1 Description

Concat fields, is a step in the Transformation Plugin for Process Studio Workflows. The Concat Fields step concatenates multiple fields (The fields can be separated by a separator and an enclosure) and outputs into a target field.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Target Field Name	Specify the name of the target field (String type)
3	Length of Target Field	Specify the length of the string type (setting the meta-data of the String type, this is also used by the Fast Data Dump option for performance optimization)
4	Separator	Specify the character that separates the fields in a single line of text. Typically this is ; or a tab.
5	Enclosure	A pair of strings can enclose some fields. This allows separator characters in fields. The enclosure string is optional.

## 7.6.2 Configurations

Fields Tab	This is identical	to the fields tab	option of the	Text File Output step

No.	Field Name	Description
1	Name	Specify the name of the field.
2	Туре	Specify the Type of the field can be either String, Date or Number.

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3	Format	Specify the format mask to convert with. See Number Formats for a complete description of format symbols.
4	Length	Specify the length option depends on the field type follows: Number - Total number of significant figures in a number String - total length of string Date - length of printed output of the string (e.g. 4 only gives back year)
5	Precision	<ul> <li>Specify the precision option depends on the field type as follows:</li> <li>Number - Number of floating point digits</li> <li>String - unused</li> <li>Date - unused</li> </ul>
6	Currency	Specify the symbol used to represent currencies like \$10,000.00 or E5.000,00
7	Decimal	A decimal point can be a "." (10,000.00) or "," (5.000,00)
8	Group	A grouping can be a "," (10,000.00) or "." (5.000,00)
9	Trim type	Specify the trimming method to apply on the string. Trimming only works when there is no field length given.
10	Null	If the value of the field is null, insert this string into the text file
11	Get	Click to retrieve the list of fields from the input fields stream(s)
12	Button: Minimal width	Alter the options in the fields tab in such a way that the resulting width of lines in the text file is minimal. So instead of save 0000001, we write 1, etc. String fields will no longer be padded to their specified length.

Adva	Advanced Tab			
No.	Field Name	Description		
1	Remove selected fields	Enable this checkbox to remove all selected fields from the output stream.		
2	Force the enclosure around fields?	Enable this checkbox to force all field names to be enclosed with the character specified in the Enclosure property above.		
3	Disable the enclosure fix?	This is for backward compatibility reasons (since version 4.1) related to enclosures and separators. The logic since version 4.1 is: When a string field contains an enclosure it gets enclosed and the enclose itself gets escaped. When a string field contains a separator, it gets enclosed.		



		Check this option, if this logic is not wanted. It has also an extra performance burden since the strings are scanned for enclosures and separators. So when you are sure there is no such logic needed since your strings don't have these characters in there and you want to improve performance, un- check this option.
4	Header	Enable this option if you want a header row. (First line in the stream). <b>Note:</b> All other output stream fields are set to Null when this line is produced.
5	Footer	Enable this option if you want a footer row. (Last line in the stream). <b>Note:</b> All other output stream fields are set to Null when this line is produced.
6	Encoding	Specify the String encoding to use from the dropdown list. Leave blank to use the default encoding on your system. To use Unicode specify UTF-8 or UTF-16. On first use, Process Studio will search your system for available encodings. <b>Note:</b> This is needed especially when you concatenate different encoded fields into the target field with a unique encoding. This applies also on Binary stored string fields due to Lazy conversion.
7	Right pad fields	Add spaces to the end of the fields (or remove characters at the end) until they have the specified length.
8	Fast data dump (no formatting)	Improves the performance when concatenating large amounts of data by not including any formatting information. Please consider setting the "Length of Target Field" option to an approximately maximum of the target field length. This improves performance since the internal buffer will be allocated and needs no reallocation when it is not sufficient. <b>Note:</b> When then "Length of Target Field" option is "0", the internal buffer size is calculated as 50 times the number of concatenated fields, for instance an internal buffer of 250 is used by default for 5 fields.
9	Split every rows	If this number N is larger than zero, split the resulting stream into multiple parts of N rows. <b>Note:</b> This is only needed when a Header/Footer is used to be compatible with the result of the Text File Output step.
10	Add Ending line of file	Allows you to specify an alternate ending row to the output stream. <b>Note:</b> All other output stream fields are set to Null when this line is produced.



# 7.7 Number range

### 7.7.1 Description

Number range is a step in the Transformation Plugin for Process Studio Workflows. Number range step identifies the range for a numeric field based on defined ranges.

### 7.7.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of this step as it appears in the workflow workspace.
2	Input field	Specify the field that gets checked for the lower and upper boundaries so that a range.
3	Output field	Specify the output field name that gets filled with the range value (ranges are defined in the table below) depending of the input field.
4	Default value	Value to return if there are no matches within the ranges specified.
	Ranges(min<=x<=max):	Specify ranges.
5	Lower Bound	Specify a field name for the minimum value of a range.
6	Upper Bound	Specify a field name for the upper value of a range.
7	Value	Specify a field name for the value.

# 7.8 Rename Fields (Select / Rename values)

### 7.8.1 Description

Rename Fields (Select / Rename values) is a step in the Transformation Plugin for Process Studio Workflows. The Rename fields step is useful for selecting, renaming, removing, changing data types and configuring the length and precision of the fields on the stream.

## 7.8.2 Configurations

Select and Alter Tab:

Specify the exact order and name in which the fields have to be placed in the output rows

No.	Field Name	Description
1	Fieldname	The name of the field from the input stream

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2	Rename to	The new name of the field. Leave blank if you do not wish to rename the field
3	Length	Specify this value if you want to implicitly select all other fields from the input stream(s) that are not explicitly selected in the Fields section.
4	Precision	The precision option depends on the field type, but only Number is supported; it returns the number of floating point digits
6	Include unspecified fields, ordered by name	Enable if you want to implicitly select all other fields from the input stream(s) that are not explicitly selected in the Fields section

### Button: Edit Mapping

The Edit Mapping dialog allows you to easily define multiple mappings between source and target fields. **Note:** Edit Mapping will only work if there is only one target output step.

No.	Field Name	Description
1	Source fields	A list of input fields available to map. Select a field to begin mapping
2	Target fields	A list of fields that source fields can be mapped to. Once you have selected a source field, select a target field to create a mapping
3	Add	Adds a source and target field mapping pair to the Mappings section
4	Delete	Removes a selected Mappings entry

#### Remove Tab:

Specify the fields that have to be removed from the output rows. Click Get fields to remove button to import fields from previous steps. **Note:** Field removals can slow down the process since the field order gets internally changed.

Meta-data Tab: Change the name, type, length and precision (the metadata) of one or more fields. Click Get fields to change to import fields from previous steps.

No	Field Name	Description
INO.	Field Name	Description

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1	Fieldname	The name of the imported field. <b>Note:</b> If you renamed a field in the Select & Alter tab, the name here must match the renamed value.
2	Rename to	If you want to rename this field, this is where you put the new name
3	Туре	The data type for this field
4	Length	The field length
5	Precision	The precision option depends on the field type, but only Number is supported; it returns the number of floating point digits
6	Binary to Normal?	Converts a string to a numeric data type, when appropriate
7	Format	The format mask (number type or date format)
8	Date Format Lenient?	Determines whether the date parser is strict or lenient. Leniency means that invalid date values are processed. If set to N, only strictly valid date values will be accepted; if set to Y, the parser will attempt to determine the intention of an incorrect date, if possible, and correct it.
9	Date Locale	Specifies the date locale to use for date conversions and calculations. Leave blank to use the default encoding on your system or chose from the populated this list accordingly.
10	Date Time Zone	Specifies the date time zone to use for date conversions and calculations. Leave blank to use the default encoding on your system or chose from the populated list accordingly.
11	Lenient number conversion	When this option is set to Y, numbers get parsed until it finds a non-numeric value (e.g. a dash or slash) and stops parsing without reporting an error. When set to N, numbers get parsed strictly throwing an error in case invalid numbers are in the input. The default behavior is set to N.
12	Encoding	Specifies the text file encoding to use. Leave blank to use the default encoding on your system. To use Unicode, specify UTF-8 or UTF-16. On first use, Process Studio searches your system for available encodings and populates this list accordingly.
13	Decimal	A decimal point; this is either a dot or a comma
14	Grouping	A method of separating units of thousands in numbers of four digits or larger. This is either a dot or a comma.
15	Currency	Symbol used to represent currencies



# 7.9 Replace in string

### 7.9.1 Description

Replace in string is a step in the Transformation Plugin for Process Studio Workflows. Replace in string is a simple search and replace all occurrences of a word in a string with another word. It also supports regular expressions and group references. Group references are picked up in the replace with field as \$n where n is the number of the group.

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	In Stream field	Select the in stream field where search and replace is to be done.
3	Out Stream field	Select the out stream field where the new string value is put.
4	Use RegEx	Is your search string a regular expression. Select Y/N
5	Search	Enter the search string.
6	Replace with	Replace the search string with the replace string.
7	Set empty string?	Set the string to null(Y/N).
8	Replace with field	Select a field use to replace the Out Stream field.
9	Whole Word	Is the search and replace field a whole wordSelect Y/N
10	Case sensitive	Is the search and replace field case sensitive. Select Y/N

### 7.9.2 Configurations

## 7.10 Row Normaliser

### 7.10.1 Description

Row Normaliser is a step in the Transformation Plugin for Process Studio Workflows. Row Normaliser step outputs normalized data from De-normalized information

### 7.10.2 Configurations

Following is an example where Row Normaliser step normalizes data back from pivoted tables as demonstrated below.

### Below is a sample table of product sales data:


Month	Product A	Product B	Product C
2003/01	10	5	17
2003/02	12	7	19

The Row Normaliser step converts the data into the format below so that it is easier to update your fact table:

Month	Product	sales
2003/01	А	10
2003/01	В	5
2003/01	С	17
2003/02	А	12
2003/02	В	7
2003/02	С	19

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Typefield	The name of the type field (product in the example above)
3	Fields table	A list of the fields you want to normalize; you must set the following properties for each selected field:
		• Fieldname: Name of the fields to normalize (Product A ? C
		in the example).
		• <b>Type:</b> Give a string to classify the field (A, B or C in our
		example).
		• New field: You can give one or more fields where the new
		value should transfer to (sales in our example).
4	Get Fields	Click to retrieve a list of all fields coming in on the stream(s).

#### Row denormaliser 7.11



### 7.11.1 Description

Row denormaliser is a step in the Transformation Plugin for Process Studio Workflows. The Row De-normalizer step de-normalizes data by looking up key-value pairs in the normalized data and assigning them to new fields in the output rows ad de-normalized data. It also allows you to immediately convert data types. This method may use aggregates and needs the input rows to be sorted on the grouping fields.

#### 7.11.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Key field	The field that defined the key of the output row.
3	Group fields	Specify the fields that make up the grouping here.
4	Target fields	Select the fields to de-normalize by specifying the String value for the key field (see above). Options are provided to convert data types. Strings are most common as key-value pairs so you must often convert to Integer, Number or Date. If you get key-value pair collisions (key is not unique for the group specified) specify the aggregation method to use.

### 7.12 Row flattener

#### 7.12.1 Description

Row flattener is a step in the Transformation Plugin for Process Studio Workflows. The Row flattener step flattens consecutive rows in the input stream to columns as specified in the step Target Fields configuration.

#### 7.12.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	The field to flatten	The field that must be flattened into different target fields.
3	Target fields	The name of the target field to which the field is flattened.

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# 7.13 Set field value

#### 7.13.1 Description

Set field value is a step in the Transformation Plugin for Process Studio Workflows. It replaces the value of a field with the value of another field.

#### 7.13.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Field name	Displays the fields with values that can be replaced.
3	Replace by value from field	Specify the field value to replace the values in the Field name column.

### 7.14 Set field value to a constant

#### 7.14.1 Description

Set field value to a constant is a step in the Transformation Plugin for Process Studio Workflows. Set field value to a constant step replaces the value of a field with a constant value and there could be a variable replacement within the constant.

#### 7.14.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Use variable in constant	Selecting this option allows you to use variable replacement within a constant.
3	Field	Displays the fields with values that can be replaced.
4	Replace by value	The value that will replace existing values within the specified field.
5	Conversion mask (Date)	Choose a date format
6	Set empty string?	Assign a null value to the field

### 7.15 Sort rows

#### 7.15.1 Description

Sort rows, is a step in the Transformation Plugin for Process Studio Workflows. The Sort rows step sorts rows on the fields specified and on whether they should be sorted in ascending or descending order.

Process studio sorts rows using temporary files when the number of rows exceeds the default limit of 1 million rows. In case you get an out of memory exception (OOME), you need to lower this limit threshold or change your available memory.

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Sort directory	The directory in which the temporary files are stored in case when needed; the default is the standard temporary directory for the system
3	TMP-file prefix	Choose an easily recognized prefix so you can identify the files when they show up in the temp directory.
4	Sort size	The more rows you store in memory, the faster the sorting process because fewer temporary files must be used and less I/O is generated.
5	Free memory threshold (in %)	<ul> <li>If the sort algorithm finds that it has less available free memory than the indicated number, it will start to page data to disk.</li> <li>Note: This is not exact science, because:</li> <li>This is checked every 1000 rows. Depending on the row size and other steps within complex workflows this could still lead to an OutOfMemoryError.</li> <li>In a Java Virtual Machine it's not possible to know the exact amount of free memory. As such it is not recommended to use this step for very complex workflows with other steps and processes that use up a lot of memory.</li> </ul>
6	Compress TMP Files	Compresses temporary files when they are needed to complete the sort.
7	Only pass unique rows?	Enable if you want to pass unique rows only to the output stream(s).
8	Fields table	Specify the fields and direction (ascending/descending) to sort. You can specify whether to perform a case sensitive sort (optional)
9	Get Fields	Click to retrieve a list of all fields coming in on the stream(s).

#### 7.15.2 Configurations

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# 7.16 Split Fields

### 7.16.1 Description

Split fields, is a step in the Transformation Plugin for Process Studio Workflows. The Split Fields step splits a field based on delimiter and enclosure information.

### 7.16.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Field to split	The name of the field you want to split
3	Delimiter	Delimiter that determines the field. Special characters (e.g. CHAR ASCII HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].
4	Enclosure	Specify the field enclosure.
5	Fields table	This table is where you define the properties for each new field created by the split. For each new field, you must define the field name, data type, and other properties.

### 7.17 Split field to rows

### 7.17.1 Description

Split fields to rows, is a step in the Transformation Plugin for Process Studio Workflows. This step allows you to split a row containing a delimited field into multiple new rows, one per split value.

The original field must be a string field. A new field name must be specified. If the value type/format of the new row is not specified, the new field will use the same type/format as the original field.

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Field to split	The field you want to split
3	Delimiter	The delimiter or separator used. Special characters (e.g. CHAR ASCII HEX01) can be set with the format \$[value], e.g. \$[01] or \$[6F,FF,00,1F].
4	New name field	The name of the new field

### 7.17.2 Configurations

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# 7.18 String operations

### 7.18.1 Description

String operations, is a step in the Transformation Plugin for Process Studio Workflows. String operations step performs operations, such as trimming, padding, InitCap and others to the string value.

### 7.18.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	In stream field	Designate the field to transform.
3	Out stream field	Designate the name of the field to be created.
4	Trim type	Designate the trim type: none, left, right, or both.
5	Lower/Upper	Designate upper or lowercase.
6	Padding	Designate left or right padding.
7	Pad char	Designate the padding character.
8	Pad Length	Designate how long the padding will be.
9	InitCap	Transform to initial capitalization.
10	Escape	Define to Escape or Unescape XML, HTML, use CDATA or Escape SQL.
11	Digits	Designate whether to return remove, or do nothing to digits.
12	Remove Special character	Designate a special character to remove.

## 7.19 Strings cut

### 7.19.1 Description

Strings cut, is a step in the Transformation Plugin for Process Studio Workflows. Strings cut step can cut a portion of a string based on a range of positions. If the range is invalid, it returns blank.

### 7.19.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	In stream field	Name of the field whose substring to cut.

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3	Out stream field	When a field name is given here, the step creates a new field with the substring. Otherwise the original field gets replaced by the substring.
4	Cut from	Designate where to begin cutting the substring. This value is 0- based, thus the first character in a string is 0.
5	Cut to	Designate where to end cutting the substring. This value is exclusive (1-based), so using a 1 includes the first character. The maximum length of the new string is <b>Cut to</b> minus <b>Cut from</b> .

## 7.20 Unique rows

#### 7.20.1 Description

Unique rows, is a step in the Transformation Plugin for Process Studio Workflows. The Unique rows step passes unique rows by removing duplicate rows from the input stream(s). It is a prerequisite that input stream is sorted; otherwise, only consecutive double rows are evaluated correctly. **Unique rows (HashSet)** step does not need the rows to be sorted.

	······································		
No.	Field Name	Description	
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Add counter to output?	Check this option to add a counter field to the stream.	
3	Counter field	Define the counter field name.	
4	Redirect duplicate row	Processes duplicate rows as an error and redirect rows to the error stream of the step. Requires you to set error handling for this step.	
5	Error Description	Sets the error handling description to display when duplicate rows are detected. Only available when Redirect duplicate row is checked.	
6	Fields to compare table	Specify the field names on which you want to force uniqueness or click Get to insert all fields from the input stream(s) You can choose to ignore case by setting the Ignore case flag to Y. For example: Tea, TEA, tea are the same if the compare is performed as case-insensitive. In this instance, the first occurrence (Tea) is passed to the next step(s).	

### 7.20.2 Configurations

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## 7.21 Unique rows (HashSet)

#### 7.21.1 Description

Unique Rows (HashSet) is a step in the Transformation Plugin for Process Studio Workflows. The Unique Rows (HashSet) step removes duplicate rows and leaves only unique row occurrences. The Unique Rows (HashSet) step tracks duplicates in memory and does not require a sorted input to process duplicate rows,

### 7.21.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Compare using stored row values	Stores values for the selected fields in memory for every record. Storing row values requires more memory, but it prevents possible false positives if there are hash collisions.
3	Redirect duplicate row	Processes duplicate rows as an error and redirect rows to the error stream of the step. Requires you to set error handling for this step.
4	Error description	Sets the error handling description to display when duplicate rows are detected. Only available when Redirect duplicate row is checked.
5	Fields to compare table	Lists the fields to compareno entries means the step compares an entire row

### 7.22 Value Mapper

#### 7.22.1 Description

Value Mapper is a step in the Transformation Plugin for Process Studio Workflows. Mapping is usually achieved by storing the conversion table in a database. The Value Mapper provides you with a simple alternative. The Value Mapper maps and replaces string values from one value to another.

#### 7.22.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Fieldname to use	Field to use as the mapping source

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3	Target field name	Field to use as the mapping Target
4	Default upon non-matching	Defines a default value for situations where the source value is not empty, but there is no match
5	Field values table	Contains the mapping of source value to converted target value

# 7.23 XSL Transformation

### 7.23.1 Description

XSL Transformation is a step in the XML Plugin for Process Studio Workflows. This step transforms XML stream using XSL (eXtensible Stylesheet Language).

#### 7.23.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

Setti	ings Tab:	
No.	Field Name	Description
1	XML Field Name	Select a field from the drop-down list containing the input XML.
	Result Fields:	
3	Result Fieldname	Specify an output field name to hold the result of execution. The default value is result.
	XSL File:	
4	XSL source defined in a	Select the checkbox if XSL source must be extracted from a field in incoming stream.
5	XSL Filename field	This field is enabled if the checkbox above is selected. Select a field from the drop-down list for the XSL source.
6	XSL field in a filename	This checkbox is enabled if the 'XSL source defined in a' checkbox above is selected. Select checkbox to consider the value of field as a filename. Otherwise the value of the field will be considered as stream.
7	XSL Filename	This field is enabled by default when the 'XSL source defined in a' checkbox is unselected. Specify the source XSL filename path or browse for it.
8	Button: Browse	Click to Browse for the source XSL filename.

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9	XSLT Factory	Select from JAXP or SAXON.
---	--------------	----------------------------

Adva	Advanced Tab:		
No.	Field Name	Description	
	Output Properties:	Tabular list of Properties.	
1	Property name	Select a Property name from the list.  Property name  method version encoding standalone indent omit-xml-declaration doctype-public doctype-system media-type	
2	Property value	Specify a property value.	
	Parameters:	Tabular list of parameters.	
4	Stream Field	Select an input field from the stream.	
5	Parameter name	Specify a parameter name.	
6	Button: Get Fields	Click the button to populated input fields.	

# 8 Utility

### 8.1 Advanced REST Client

### 8.1.1 Description

Advanced REST Client is a step in the Utilty Plugin for Process Studio Workflows. The REST Client workflow step enables you to consume RESTful services by making REST calls. It is an extension of the step 'REST Client' with more features as follows:

- Authenticated Proxy Support
- Option to ignore SSL certificate validation
- Request Timeout
- Form-data request body along with file upload by providing file path
- Ability to read HTTP Response headers
- Ability to test REST API



#### Configurations 8.1.2

HTT	HTTP Request:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	HTTP Method Dropdown	Choose how the step interacts with a resource HTTP Method options are either GET, PUT, DELETE, POST, HEAD, OPTIONS (Read Only) or PATCH.	
3	HTTP URL	Specify the path to a REST client resource (HTTP URL).	
4	Get URL from field?	Enable checkbox to accept path to a resource (HTTP URL) from a field. When checked the field next to it is enabled.	
5	Field Selection	Select the field which defines the path to a resource (HTTP URL). This field is enabled when Get URL from field? Is checked.	

No.	Field Name	Description
	General:	
1	Request timeout in seconds	The time to establish the connection with the remote host.
	SSL Configuration:	Provide authentication details for accessing a resource that requires SSL certificate authentication.
1	Ignore SSL certificate verification	Enable this checkbox to ignore SSL certificate verification while making HTTPS connection. (This strategy entirely ignores certificate checking which makes it insecure and only to be used where it makes sense!!)
2	Trust store file	Specify trust store file path in case of HTTPS connection.
3	Browse	Click Browse button to select trust store file from local machine.
4	Trust store password	Specify trust store password in case of HTTPS connection
	Proxy Configuration:	
1	Use System Proxy	Enable checkbox to allow REST client to use the Process Studio's default proxy configurations. In case of AE agent, it will use agent's proxy configurations.
2	Ргоху Туре	Select Proxy server type (HTTP/HTTPS)

Settings Tab: Enter basic connection information for accessing a resource.



3	Proxy Host	Specify the name/IP of a proxy host, if proxy authentication is required
4	Proxy Port	Specify the port number of a proxy host, if proxy authentication is required
5	Proxy Username	In case of authenticated proxy server, provide username
6	Proxy Password	In case of authenticated proxy server, provide password

Parameters Tab: This tab contains table with three columns to provide request (URL) parameters

No.	Field Name	Description
1	Parameter Key	Specify the Request parameter keys to set value.
2	Parameter Value	Specify the Request parameter keys values.
3	Description	Specify a description for the parameter.

Authorization Tab: Enter authorization details for a resource in the Authorization tab.		
No. Field Name Description		Description
	HTTP Authorization:	
1	Туре	Select Request Authentication (No Authentication, Basic Authentication, Bearer Token, and OAuth 2.0).
2	Username	In case of Basic Authentication provide username
3	Password	In case of Basic Authentication provide password

Headers(0) Tab: This tab contains table with four columns to provide request headers

No.	Field Name	Description
1	Header Key	Specify request header key
2	Header Value	Specify request header value
3	Header Value Field	Define the content of any HTTP headers using an existing field. Populate the list of fields by clicking the Get fields button.
4	Description	Specify a description for header

#### Request Body Tab: Request Body tab has a group of radio buttons as follows:



No.	Field Name	Description
	Request Body:	
1	none	In case where request does not have a request body
2	● raw	Specify raw Request Body as Text, HTML, XML, JSON or XML. You could insert fields in the raw body from the navigator by double clicking the field. Else, use template support in request body to substitute fields and environment variables/parameters in appropriate placeholders (?{fieldname}, \${environment variable}).
3	form-data	Enter Request body in tabular format in a form. Use form-data to send non-ASCII text or large binary data.
4	O x-www-form-urlencoded	Enter Request body in tabular format in a form. Use x-www- form-urlencoded to send simple text/ASCII data.
5	O read from file	In case where request body to be read from a file.
6	• read from field	In case where request body text to be read from a field.
7	O binary	In case where request body is to be read from a file.
8	O GraphQL (Beta)	Specify GraphQL to execute the GraphQL query schema. Query: Specify a GraphQL query to read or fetch values or a mutation to write or post values. E.g. Query : { students{ id fullName
		}
		}
		GraphQL Variables: GraphQL variables help to factor dynamic values out of the query and pass them as a separate dictionary.
		You could insert fields in the Query and GraphQL Variables from the navigator by double-clicking the field. Else, use template support in the request body to substitute fields and



	environment variables/parameters in appropriate placeholders (?{fieldname}, \${environment variable}).
	<b>Note:</b> Please make sure, when substituting (field or environment variable) a string value we have to explicitly enclose that value in double quotes ("").
	<b>Limitation:</b> Subscription query are not supported by ARC GraphQL.

Form-data: This tab contains table with five columns:		
No.	Io.         Field Name         Description	
1	Кеу Туре	Select form-data parameter key type (Text/File) from the dropdown list.
2	Кеу	Specify form-data parameter key.
3	Value	Specify form-data parameter value.
4	Value Field	Select a field containing form-data parameter.
5	Description	Specify a description for form-data parameter String.

No.	Field Name	Description
1	Кеу	Specify a parameter key.
2	Value	Specify a parameter value.
3	Description	Specify a description for parameter.

Rea	d from file: This tab contains	table with five columns:
No.	Field Name	Description
1	Content type for request body	Select content-type for request body dropdown.
2	File Path	Specify request body file path.
3	View Request Body Contents	Click this button to view request body file contents.
Rea	d from field: This tab contains	s table with five columns:



No.	Field Name	Description
1	Content type for request body	Select content-type for request body from dropdown.
2	Field name	Specify request body raw text to be read from a field.

HTT	HTTP Response Tab: This tab has Output fields.		
No.	Field Name	Description	
1	Response Status	Specify the output field to hold the HTTP Response status (e.g 200 OK). The default field name is ArcRespStatus.	
2	Response Time (milliseconds)	Specify the output field to hold the HTTP Response time in milliseconds. The default field name is ArcRespTime.	
3	Response Headers (JSON)	Specify the output field to hold the HTTP Response headers in the JSON format. The default field name is ArcResponseHeaders.	
4	Response Cookies (JSON)	Specify field name to set HTTP Response Cookies in JSON format. The default field name is ArcRespCookies.	
5	Response Body	Specify the output field to hold the HTTP Response body text if any. The default field name is ArcRespBody.	
6	Output File	Specify the output field to hold the file path for file received in the HTTP Response. The default field name is ArcRespOutputFile.	
7	Add File to Result	Check this option to add HTTP Response output file to workflow result.	

### 8.2 Capture Screenshot

#### 8.2.1 Description

Capture Screenshot is a step in the Utility Plugin for Process Studio Workflows. The Plugin is used to capture partial or full Screenshot of the current screen in the processing machine.

#### Limitations:

- The screen resolution of the processing machine (agent machine) must be same as the screen resolution of the machine on which the workflow is designed.
- This step will not work for the headless environment,
- This step will not produce the expected output if the screen is locked/inactive.

### 8.2.2 Configurations

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No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow. This field is mandatory.

Inpu	nput Tab:		
No.	Field Name	Description	
	Input Fields:		
2	Screenshot Type	Holds the default value i.e. Full Screen. Screenshot Type i.e. Full Screen or Partial Screen. This field is mandatory.	
3	X coordinate	Minimum allowed value is 0. Maximum allowed value depends on the screen resolution of processing machine. X co-ordinate field value should be positive.	
4	Y coordinate	Minimum allowed value is 0. Maximum allowed value depends on the screen resolution of processing machine. Y co-ordinate field value should be positive.	
5	Width	Width value for the screenshot. Width field value should be positive.	
6	Height	Height value for the screenshot. Height field value should be positive.	
7	File Name	Name of the image file without that will be created. This field is mandatory.	
8	File Extension	Holds the extension of the image file that will be created. Currently only bmp, png, jpg and jpeg file are supported by this plugin. This field is mandatory.	
9	File Path	Holds the absolute path of the file where the image will be saved. This field is mandatory.	
10	Button: Browse	On click of this button a dialog box opens and helps to select the file path. This field is mandatory.	
11	Add File To Result	Output field to hold the result of the step execution.	

Note: MousePos.exe is a useful utility to locate coordinates of the current cursor position on a screen

Outp	out Tab:	
No.	Field Name	Description
	Output Fields:	
1	Result	Output field to hold the result of the step execution. This field is mandatory.

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**Note:** If the capture screenshot step is part of a workflow also containing Start Browser step, then it is advisable that no browser instance is kept open on agent machine, before executing such a workflow.

### 8.3 Clone row

#### 8.3.1 Description

Clone row is a step in the Utility Plugin for Process Studio Workflows. Clone row step clones' rows in the input stream. The cloned row is output directly after the original row in the next steps.

#### 8.3.2 Configurations

Sele	Select & Alter Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Nr clones	Specify the number of clones you want to add after the original row.	
3	Nr clone in field?	Select the checkbox if you want number of clones in a field of your choice.	
4	Nr Clone field	Select the field of which you want to clone the rows. <b>Note:</b> This field is available only if you select the Nr clones checkbox.	
5	Add clone flag to output?	Select the checkbox if you want to add a Boolean field in the output indicating if the row is a clone or not. N / false: this is not a cloned row, it's the original row Y / true: this is a cloned row, a copy of the original row	
6	Clone flag field	Specify the name of the clone flag field.	
7	Add clone num to	Select the checkbox if you want to add a number to the clone.	
8	Clone num field	Specify the cloned number.	

#### 8.4 Delay row

#### 8.4.1 Description

Delay row is a step in the Utility Plugin for Process Studio Workflows. Delay row is the delay timeout or wait period for each input row before it is passed to the next step. Use this step to force delay for rows.

#### 8.4.2 Configurations

No. Field Name

Description

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1	Step name	Specify the name of the step. This name has to be unique in a single workflow
2	Timeout	Specify the timeout value in seconds, minutes or hours

### 8.5 Display Msgbox

#### 8.5.1 Description

Display Msgbox is a step in the Utilities plugin for Process Studio workflows. This step displays a message box/alert only when the workflow is executed through Process Studio and you can easily see where you are in the workflow. It proceeds as usual when executed through an Agent, similar to the Alert in Modified Java Script.

The message box displays "OK" and "Cancel" buttons.

- Clicking on "OK" exits on the green hop
- Clicking on "Cancel" exits on the red hop
- When running this step from a non-Graphical User Interface, the step always exits on the green hop.

#### 8.5.2 Configurations

No.	Field Name	Description
1	Step name	Specify a unique name for the step, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Message title	Specify the title of the message
3	Message body	Specify the message to display

### 8.6 Execute a Process

#### 8.6.1 Description

Execute a Process is a step in the Utility Plugin for Process Studio Workflows. Execute a process step executes a shell script on the host where the workflow runs. The step is similar to the process entryShell, the difference being this step is executed in a workflow for every row.

#### 8.6.2 Configurations

No.	Option	Description
1	Step name	Specify the name of the step; this name has to be unique in a single workflow
2	Process field	Specify the field name in the data stream that defines the process to start (shell script /batch file to start on linux and windows OS respectively). Arguments can also be used.

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3	Fail if not success	Checking this option means if the exit status is different than zero the step fails. You can use error handling to get these rows.
4	Output line delimiter	Without defining a line delimiter, all returned lines are collapsed into a single string with no line delimiters. Specify Output line Delimiter field to contain the line separator character used to separate lines in the output. You can set to any line delimiter and special characters can be set with the format \$[value], e.g. \$[0D] for CR or \$[0D,0A] for CR/LF
5	Result fieldname	Specify the result fieldname (STRING)
6	Error fieldname	Specify the error fieldname (STRING)
7	Exit value	Specify the exit fieldname (INTEGER)

### 8.7 Generate Hash

#### 8.7.1 Description

Generate Hash-value is a step in the Utility Plugin for Process Studio Workflows. This Plugin generates Hash-value of any file selected.

#### 8.7.2 Configurations

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	File(String)	Holds the absolute path along with the name of the file. File field cannot be empty.
3	Button: Browse File	Click on this button to select a particular file.
4	Hash Type(String)*	Select the type of encryption for generating Hash-value. Encryption Algorithm field cannot be empty. This field is mandatory. Currently following are the hash types implemented with this plugin. (MD5, SHA1, SHA-256,SHA-384,SHA-512)

**Note:** Some Hash Algorithms must be installed on your machine. One such example is to download hash algorithms from <u>http://implbits.com/products/hashtab/</u>.

Output Tab:		
No.	Field Name	Description
	Output Fields:	

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1	Result	Displays the generated Hash-value of the file selected if
		executed successfully.
		Note: You may cross verify the Hash-value generated. Right
		click the file you chose for hashing and under properties tab
		select the hashing algorithm. Copy the hash value shown. After
		copying the hash value is available in a field below. Compare
		this hash value with the hash value generated in process studio.
		These two should be the same.

### 8.8 Generate Password

#### 8.8.1 Description

Generate Password is a step in the Utility Plugin for Process Studio Workflows. This plugin can generate a random password based on the input criteria provided by the user. The requirement may be to create a random password for applications/systems, OTP-One time password etc. The step generates a random password with a provision to set maximum and minimum length of the password, a number of capital case letters, small case letters, special characters and digits.

No.	Field Name	Description
1	Step Name	Name of the step. This name has to be unique in a single workflow.
2	Maximum length	The maximum length of the password. An integer value should be provided.
3	Minimum length	The minimum length of the password. An integer value should be provided.
4	Minimum number of capital case letters	The minimum number of capital case letters to be present in the password. An integer value should be provided.
5	Minimum number of small case letters	The minimum number of small case letters to be present in the password. An integer value should be provided.
6	Minimum number of digits	The minimum number of digits to be present in the password. An integer value should be provided.
7	Minimum number of special characters	The minimum number of special characters to be present in the password. An integer value should be provided.

#### 8.8.2 Configurations

**Note:** Addition of criteria field values (minimum number of capital letters, the minimum number of small case letter, the minimum number of special character, the minimum number of digits) should be less than the value in the field *Minimum Password length*. Validation for mandatory integer field values is also implemented for all the fields from 2 to7 above.

#### Output Tab:

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No.	Field Name	Description
1	Result	This field contains the final password generated randomly.

### 8.9 Generate Template

#### 8.9.1 Description

Generate Template is a step used to create templates in which you can use existing fields and variables along with HTML tags and hardcoded string.

#### 8.9.2 Configuration

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Output field	Specify a field that will hold the template. Default name: <i>Result</i>
3	Input Fields	Displays the list of existing fields.
		Note. Double click of the field to add it to the Template field.
4	Variables	Displays the list of existing variables which may include variables, workflow parameters, and PS variables. <b>Note:</b> Double click on the variable to add it to the <b>Template</b> field.
5	Template	Specify the hardcoded string. For example: My name is ?{Name} <h5>My surname is ?{Surname} </h5> Currently working on project \${Project.Name}
6	Button: View Template	Click to view the field names and field values in the template. Note: In the Provide Field Values dialog, click OK. The Template Preview dialog appears.

# 8.10 If field value is null

#### 8.10.1 Description

If field value is null, is a step in the Utility Plugin for Process Studio Workflows. The step 'If field value is null' is used to replace nulls by a given value for,

#### • Rows with all fields



- Rows but only for specific field types (Number, String, Date etc.)
- Rows but only for specific fields by name

**Note:** Changing a numeric field type to an empty string field type can cause an error in the subsequent steps. The error appears only when the next step accesses that field.

### 8.10.2 Configurations

Select & Alter Tab:

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Replace null for all fields:	
1	Replace by value	Specify the value for all null fields
2	Set empty string?	Enable checkbox to insert empty string otherwise it inserts null string.
3	Mask(Date)	Choose a Date Format from the dropdown list.
4	Select fields	Enable checkbox to select fields to be replaced for null values
5	Select value type	Enable checkbox to select value types for replacing null values
	Value Types:	This is enabled when Select value type is enabled
1	Туре	Choose the data type
2	Replace by value	Put the value for all null fields by data type
3	Conversion mask(Date)	Date Format
4	Set empty string?	Select Y to Set empty string or N to Set value to null
	Fields:	This is enabled when Set empty string? above is enabled
1	Field	Select the fields whose null values have to be replaced.
2	Replace by value	Specify the value for all null fields by field
3	Conversion mask(Date)	Choose the date Format
4	Set empty string?	Select Y to Set empty string or N to Set value to null

### 8.11 Mail

#### 8.11.1 Description

Mail is a step in the Utility Plugin both for Process Studio Workflows and Process Studio Processes. **Mail** step is used to send a text or HTML email with optional file attachments.

Most commonly Mail is used as a process entry at the end of a process. It can be used to announce a process failure or success, for example, it is not uncommon at the end of a successful load, to send an email to a distribution list announcing that the load was successful



and include a log file. If there are errors, an email can be sent to alert individuals on a distribution list.

**Note:** No email messages are sent when a process crashes during a run. If you are bound by service level agreements, you may configure Email Notification settings in AutomationEdge.

Addı	Addresses Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Destination Address	The destination for the email; you can specify multiple addresses if you separate them with a space. <b>Best practice</b> : Do not maintain your distribution list within a process. Rather, have your email administrators set up a list so that you can send to a specified list each time you create the process.	
3	Cc:	An identical copy of the message is also sent to all the addresses listed in the Cc: field. To enter more than one address in the Cc: field, separate them with a space.	
4	BCc:	Send to a recipient whose email address does not appear in the message	
5	Sender name	Name of the person sending the email	
6	Sender address	Email address of the person sending the email	
7	Reply to	Email address of the person to which to send a reply	
8	Contact person	The name of the contact person to be placed in the email	
9	Contact phone	The contact telephone number to be placed in the email	

## 8.11.2 Configurations

Serv	Server Tab:		
No.	Field Name	Description	
1	SMTP Server	The SMTP server address. SMTP server is mandatory. You can use authentication and security as part of the connection but you must have the SMTP credentials and enable Use Authentication checkbox below.	
2	Port	The port on which the SMTP Server is running	
3	Connection timeout (in milliseconds)	Specify the socket connection timeout value in milliseconds. Default value is infinite.	

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4	Timeout (in milliseconds)	Specify the socket read timeout in milliseconds. Default value is infinite.
5	Write timeout (in milliseconds)	Specify the socket write timeout value in milliseconds. Default value is infinite.
6	Use Authentication	Enable Use Authentication checkbox to authenticate to the SMTP Server. In this way you can use authentication and security as part of the connection to SMTP server.
7	Authentication user	SMTP user account name.
8	Authentication password	SMTP user account password.
9	Use Secure Authentication?	Enable to use secure authentication.
10	Secure Connection Type	Select authentication type (SSL, TSL).
11	Protocols	Select the checkbox of the TLS version for sending the email message. The available versions are: TLSv1, TLSv1.1, TLSv1.2, or TLSv1.3. You can select one or all versions.

Email Message Tab:		
No.	Field Name	Description
1	Include date in message?	Enable checkbox to Include date in message
2	Only send comment in mail body?	Enable to Only send comment in mail body.
3	Use HTML in mail body	Enable to Use HTML in mail body
4	Encoding	Select encoding type
5	Manage Priority	<ul> <li>Enable to manage priority. Note: The support of this flag is depending on the mail server.</li> <li>Priority</li> <li>Importance</li> <li>Sensitivity</li> </ul>
6	Subject	Enter the subject of the mail into this field.
7	Comment	Enter the comment within the body of the mail into this field.

Attached files Tab:		
No.	Field Name	Description
1	Attach files to message?	Enable to attach a file to your email message.



		You can attach files to your email messages such as error logs and regular logs. In addition, logs can be zipped into a single archive for convenience.
2	Select file type	The files to send are defined within the internal files result set. Every file in this list is marked with a file type and you can select what type of file you want to send: • General • Log • Error line • Error • Warning
3	Zip files to single archive?	Enable to have attachments archived in a zip file
4	Name of the zip archive	Define the filename of your zip archive
5	Filename	Name of a <i>single</i> image file to add. <b>Note:</b> This works only when Use HTML format is defined in the EMail Message tab.
6	Content ID	Automatically entered
7	Image	The full path to image (used when embedding multiple images) Click <b>Edit</b> to edit the path; click <b>Delete</b> to delete the path to the image
8	Content ID	The image content ID (used when embedding multiple images) Click <b>Edit</b> to edit the content ID; click <b>Delete</b> to delete the Content ID

# 8.12 Null if...

#### 8.12.1 Description

Null if... is a step in the Utility Plugin for Process Studio Workflows. Null if... can set a field value to null if it is equal to a constant value provided in the step configuration. Some or all fields in the stream can be used in Null if... step.

#### 8.12.2 Configurations

	0	
No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Fields:	
1	Name	Specify the name of the field that is to be checked/compared against a value
2	Value to turn to NULL	The value to be checked for replacement with null.

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### 8.13 Process files

#### 8.13.1 Description

Process files, is a step in the Utility Plugin for Process Studio Workflows. This step copies, moves or deletes files by specifying the necessary source and target file names.

### 8.13.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Operation	Choose an operation from the drop down list: Copy, Move or Delete
3	Create target parent folder	Enable this checkbox to create the target parent folder. Otherwise it throws an exception when the target parent folder does not exist.
4	Overwrite target file	Enable this option to overwrite the target file if it already exists. Otherwise it will not be overwritten and silently ignored.
5	Add target filename to result	Enable Add target filename to result checkbox to add the copied, moved or deleted files to result files.
6	Set simulation mode	Enable this checkbox to execute the step only for simulation purposes. No action will be taken at the end and no file will be copied, moved or deleted.
7	Source filename field	Specify a field that contains the complete path to the source file for copy or move or the file to be deleted.
8	Target filename field	Specify a field that contains the complete path to the target file. This field must not be given in the Delete mode.

## 8.14 Robot Handling

#### 8.14.1 Description

The Robot Handling step is used to perform mouse and keyboard actions.

#### 8.14.2 Configurations

No.	Field Name	Description

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1	Web Browser Name	You can select any one Web Browser Name from the given list, Basically you must select the same Web Browser Name which was selected in Start Browser Step.
2	Key combination	Checkbox is selected if all the keys specified in the table are to be pressed together. This option is applicable to all the keyboard events in the table.
3	Event list*	Specify the event to be triggered from the list: Mouse, Keyboard, String
4	Value*	Specify a Value of the event.

### \*Event list

The table below contains the description of each Event list option.

No.	Field Name	Description
1	Mouse	Mouse event
2	Keyboard	Keyboard single keystroke event
3	String	All the keys for the characters in the value are pressed one after the other

### \*Value

The table below contains the description of valid Values.

#### 1. Mouse

No.	Value	Description
1	Left	Left mouse click
2	Right	Right mouse click

#### 2. Keyboard

No.	Value	Description
1	Type the character on the keyboard to be pressed on separate rows in the table	<ul> <li>All the keys are pressed and released in sequence.</li> <li>Following is a list of Special Keys allowed as values, Ctrl, Shift, Alt, Caps Lock, Esc, Enter, Left (Left Arrow), Up (UP Arrow), Right (Right Arrow), Down (Down Arrow), Cancel, Tab, Home, End, Insert, Delete, PageUp, PageDown, Backspace.</li> <li>All alphabets (understood as lower case) and numbers are allowed, for upper case letters you need to provide shift and the</li> </ul>
		alphabet.



2	'Key combination' checkbox	All the keys in the table are pressed together and then released
	is selected	at once.
		This option is applicable to all the keyboard events in the table.

## 8.15 Run SSH commands

#### 8.15.1 Description

Run SSH command is a step in the Utility Plugin for Process Studio Workflows. This step executes commands and returns result over the secure shell (ssh) TCP/IP protocol.

# 8.15.2 Configurations

General Tab:

00			
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Server name / IP address	Specify the server or IP address of the machine on which you want to execute a command.	
3	Server port	Specify the TCP/IP port on which ssh protocol lives on the server. The default is 22.	
4	Timeout	Specify the timeout in seconds. If set to a number larger than zero you can specify a non-default connection timeout.	
5	Username	Specify the username to log in with	
6	Password	Specify the password to use	
7	Use key	Enable this option if you want to log in using a private key	
8	Private key	The private key file. The private part of a private/public RSA key-pair (see: ssh-keygen)	
9	Passphrase	Specify the optional pass-phrase used when the key-pair was generated	
10	Proxy host	Specify the proxy server host to use (name or IP address)	
11	Proxy port	Specify the proxy server port to use	
12	Proxy username	Specify the proxy user name	
13	Proxy password	Specify the proxy password	
14	"Test connection" button	Click to see if the supplied credentials are sufficient for logging into the SSH server.	

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Sett	ettings Tab:		
No.	Field Name	Description	
	Output:		
1	Response fieldname	Specify the name of the String output field that will contain the text passed to the standard output channel (stdout) by the specified commands. This information can then be picked up by the step and passed in a field to subsequent steps.	
2	Error response field name	The name of the String output field that will contain the text passed to the standard error channel (stderr) by the specified commands. This information can then be picked up by the step and passed in a field to subsequent steps.	
	Commands:		
3	Get commands from field	Enable this option if you want to execute commands specified in an input field	
4	Commands field name	Select the input field that will contain the commands to execute	
5	Commands	Field allows you to specify the commands to execute.	
6	Wait for response	Specify the Wait for response time in seconds. If it is more than zero seconds, the step waits to get the command output for the specified seconds. Internally, it checks for a response after every 15 seconds. If the command output does not receive a response in the specified time, then the step exits with an error.	

# 8.16 Table compare

#### 8.16.1 Description

Table compare is a step in the Utility Plugin for Process Studio Workflows. This step compares the data from two tables (provided they have the same lay-out at-least partially to compare columns). This step finds the differences in the data of the two tables and provides detailed analysis and logs it in output fields.

#### 8.16.2 Configurations

No. Field Name

Description

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1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Reference connection / Compare connection	Database connections from which the reference/compare table data will come.
3	Reference schema field / Compare schema field	Specify the field that contains the schema names for the reference/compare table.
4	Reference table field / Compare table field	Specify the field that contains the actual table names. This means that you could compare two tables with a different name, as long as they have the same column names.
5	Key fields field	Specify a field that contains a comma separated list of the fields that make up the 'primary' key of the table(s) you are comparing. The primary key is needed because without this information the two tables cannot be correctly joined.
6	Exclude fields field	Specify the field that contains a comma separated list of columns that you want to exclude from the comparison. E.g. because they exist in the first table, but not in the second.
7	Number of errors field	Specify the name of the output column that will contain the total number of errors found for the comparison of your tables.
8	Number of reference table records field	Specify the name of the field that will contain the actual number of records found in the reference table.
9	Number of compare table records field	Specify the name of the field that will contain the actual number of records found in the compare table.
10	Number of left join errors field	Specify the name of the field that will contain the number of records that are only present in the reference table.
11	Number of inner join errors field	Specify the name of the field that will contain the number of records that show a difference between common records.
12	Number of right join errors field	Specify the name of the field that will contain the number of records that are only present in the compare table.
13	Error handling key description input field	Specify the output field names that will be used by the error handling of this step to describe the key(s) on which an error occurred.
14	Error handling reference value input field	Specify the output field names that will be used by the error handling of this step to describe the reference value that caused an error.
15	Error handling compare value input field	Specify the output field names that will be used by the error handling of this step to describe the compare value that caused an error.

# 8.17 Write to log

### 8.17.1 Description

Write to log is a step in the Utility Plugin for Process Studio Workflows. This step writes information to the Process Studio logging system visible in the preview pane as well as some log levels are mapped and written to Process studio log files.

#### 8.17.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Log level	Choose the log level to use. <b>Note:</b> Logging will occur in processes or workflows run at any logging level at or above the level specified here. So, setting this value to Minimal will cause a log entry to be written in a process or workflow run in <b>Minimal</b> <b>logging</b> , <b>Basic logging</b> , <b>Detailed logging</b> , etc. logging levels, but NOT <b>Nothing at all</b> or <b>Error logging only</b> .
3	Print header	Enable checkbox to print field names as well as data values.
4	Limit rows	Enable "Nr. of rows to print" checkbox to Limit the number of rows to print in logs.
5	Nr. of rows to print	Specify the number of rows to print when option "limit rows" is checked.
6	Write to log	Specify the text to use in the logging line(s)
7	Fields	Specify the field that should we written to the log.

# 8.18 Zip file

### 8.18.1 Description

Zip file is a step in the Utility Plugin for Process Studio Workflows. Zip file step creates a standard ZIP archive using the options specified in the step.

#### 8.18.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Settings:	
1	Create target parent	Check this option to create the target parent folder

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2	Overwrite target file	Enable check box to overwrite target file if present.
3	Add zip filename to result	Check this option to add the zip filename to the internal result set and make available to next step.
4	Source filename field	Specify the field that contains the source
5	Target filename field	Specify the field that contains the target zip filename
6	Keep source folders	Check this option to keep the source folder within the target zip filename
7	Base folder fieldname	Specify the field that contains the base folder that is removed from the filename within the zip (used by the option keep source folders)
8	After zip	Select from: (Do Nothing/Move source file/Delete source file)
9	Move to folder fieldname	If 'Move source file' is select in 'After zip' above provide fieldname containing folder name to move zip file.

# 9 Flow

### 9.1 Abort

#### 9.1.1 Description

Abort is a step in the Flow Plugin for Process Studio Workflows. This step can be used to abort a workflow, if the number of rows going to the error hop crosses a threshold and write the Abort message to the log. Abort is designed to work with parent child hierarchy.

#### 9.1.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Options:	
2	Select one of these radio buttons	• Abort the running workflow: In parent-child workflows Abort step configured with Abort the running workflow option is recommended in the child workflow, when the parent wants to allow a specific number of rows from the child (with Abort step in the child workflow).

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		In case Abort is used in the parent workflow, if the threshold value exceeds, it neither executes the workflow successfully nor throws any error.
		• Abort and log as an error: In a workflow if the number of rows reaching the Abort step exceeds the threshold row value, the workflow fails and logs the error message provided in the message box.
		• Stop input processing: In a workflow if the number of rows reaching the Abort step exceeds the threshold value, it stops the input rows processing as soon as the Abort step receives number of records equal to the threshold value.
3	Abort threshold	Specify the threshold of number of rows after which to abort the workflows. E.g. If threshold is 0, the abort step will abort after seeing the first row. If threshold is 5, the abort step will abort after seeing the sixth row.
	Logging:	
4	Abort message	Specify the message to put in the log upon aborting. If not filled in no message will be logged. Abort message is applicable only if <b>Abort and log as an error</b> radio button option is selected above.
5	Always log	Enable Always log checkbox to always log the rows processed by the Abort step even if log level is below current log level. This allows the rows to be logged although the log level of the workflow would normally not do it. This way you can always see in the log which rows caused the workflow to abort.

### 9.2 Append streams

#### 9.2.1 Description

Append Streams is a step in the Flow Plugin for Process Studio Workflows. The "Append streams" step reads data from two input steps. It processes data from the first and second streams in that order and appends the rows coming from the second step to the rows from the first step. The row layout of the input data coming from both steps has to be identical: the same row lengths, the same data types, the same fields at the same field indexes in the row.

#### 9.2.2 Configurations

No.	Field Name	Description

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1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Head hop	Specify the name of the step from which will be read from first.
3	Tail hop	Specify the name of the step from which will be read from last.

### 9.3 Block This Step Until Steps Finish

#### 9.3.1 Description

'Block this step until steps finish' is a step in the Flow Plugin for Process Studio Workflows. This step simply waits until all the steps that are specified in its configuration have finished. It then passes all the rows to the next step.

#### 9.3.2 Configurations

Watch the following steps: Use the grid to specify the steps to wait for

No.	Field Name	Description
1	Step name	The name of the step to wait for.
2	Copy Nr	The default number of copies is 1, (i.e. the CopyNr equals 0). Leave it to the default value 0.

Get Steps Button				
No.	Field Name	Description		
1	Button: Get steps	Push this button to auto-fill the "Watch the following steps" grid with all steps available in the workflow.		

### 9.4 Blocking Step

#### 9.4.1 Description

Blocking Step is a step in the Flow Plugin for Process Studio Workflows. The Blocking step blocks all output until the very last row is received from the previous step. At that point, no row is sent to the next step or the complete input is sent to the next step. The Blocking Step is used in workflows before triggering plugins, stored procedures, Java scripts, or for synchronization purposes.

**Note:** When using this step in combination with a Table Output step, the functionality is not guaranteed when a SQL statement is fired against the target table afterwards.


## 9.4.2 Configurations

Vari	ables Tab	
No.	Field Name	Description
1	Step name	Specify a name for the step; this name has to be unique in a single workflow.
2	Pass all rows?	This checkbox determines whether to pass no row or all rows. If this is checked the following fields are enabled.
3	Spool directory	Specify the directory in which the temporary files are stored if needed; the default is the standard temporary directory for the system
4	Spool-file prefix	Specify a recognizable prefix to identify the files when they appear in the temp directory
5	Cache size	Specify a cache size for rows in memory. The more rows you can store in memory, the faster the step works
6	Compress spool files?	Enable this checkbox to compresses temporary files.

## 9.5 Detect empty stream

### 9.5.1 Description

Detect empty stream is a step in the Flow Plugin for Process Studio Workflows. Detect empty stream step is used to detect an empty stream. This step outputs a single row if the input stream is empty (i.e. when input stream does not contain any row); and has the same fields as the input row, but all field values are empty (null). If the input stream is not empty, the step does not give any output.

## 9.6 Dummy (do nothing)

### 9.6.1 Description

Dummy is a step in the Flow Plugin for Process Studio Workflows. The Dummy step does not do anything. Its primary function is to be a placeholder for testing purposes. For example, for a workflow, you need at least two steps connected to each other. If you want to test a file input step, you can connect it to a dummy step.

## 9.7 Filter Rows

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## 9.7.1 Description

Filter Rows is a step in the Flow Plugin for Process Studio Workflows. Filter Rows step filters incoming data rows based on conditions and comparisons. It generally has two output hops 'true' and 'false' based on the evaluation of the conditions. When the condition evaluates true it follows the main hop and when the condition evaluates false it follows the false hop.

## 9.7.2 Configurations

No.	Field Name	Description
1	Step Name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Send 'true' data to step	Choose a step to send the rows for which the condition specified is true.
3	Send 'false' data to step	Choose a step to send the rows for which the condition specified is false.
4	The Condition	Click <field> to select from a list of fields from the input stream(s) to build your condition(s). <value> to enter a specific value into your condition(s). To enter an IN LIST operator, use a string value separated by semicolons. This also works on numeric values like integers. The list of values must be entered with a string type, e.g.: 2;3;7;8 To delete a condition, right-click and select Delete Condition.</value></field>
5	Add Condition	Click 'Add condition' to add conditions. Add condition converts the original conditions into a sub-level conditions. Click a sub- condition to edit it by going down one level in the condition tree.

## 9.8 Identify last row in a stream

## 9.8.1 Description

Identify last row in a stream is a step in the Flow Plugin for Process Studio Workflows. The Identify last row in a stream workflow step generates a Boolean field with true for the last row and false otherwise.

## 9.8.2 Configurations

No. Field Name

Description

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1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Result fieldname	Specify a field to mark the last row of a stream. It is a Boolean field filled with true for the last row and false otherwise.

## 9.9 Java Filter

### 9.9.1 Description

Java Filter is a step in the Flow Plugin for Process Studio Workflows. The Java Filter Step allows filters the input stream using user defined Java expressions. The input stream, coming from one or more steps, can be redirected to two different steps based on the evaluation of the Java expression.

### 9.9.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Destination step for matching rows (optional)	Specify the step to send the rows for which the condition evaluates to true.
3	Destination step for non- matching rows (optional)	Specify the step to send the rows for which the condition evaluates to false.
4	Condition (Java Expression)	Provide a condition/Java expression to filter the data.

## 9.10 **Prioritize streams**

### 9.10.1 Description

Prioritize Streams is a step in the Flow Plugin for Process Studio Workflows. The Prioritize streams step controls the order in which input streams are read. Data is read concurrently form all inputs streams with an unpredictable order. However, 'Prioritize streams' step can prioritize input streams.

## 9.10.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

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2	Step name priority	This list defines the order in which the input streams will be read. Names at the top of the list have higher priority than steps below. <b>Note:</b> Names have to exactly match incoming steps names, otherwise the step will fail. You may choose the steps from the drop down list.
3	Get Previous Steps	This button will add the names of all the previous steps to the list. Right click to move rows up and down.

## 9.11 Process Executor

### 9.11.1 Description

Process Executor is a step in the Flow Plugin for Process Studio Workflows. The process executor executes a Process Studio process. By default, the process is executed once for each input row from the workflow. This row can be used to set parameters and variables and it is passed to the process in the form of a result row. A group of records can also be passed based on the value in a field (The process is executed when the value changes) or on time. In these cases, the first row of the group or rows is used to set parameters or variables in the process.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Workflow	<ul> <li>Use this section to specify the process to execute. You have the following options to specify the process:</li> <li>Use a file for the process: when this option is enabled, you can enter the the .psw file that is to be used as process. The filename may contain variables (for example, you can use the built-in Internal.Workflow.Filename.Directory variable to construct a filename relative to the current workflow), or you can use the "Browse" button to select a file using a file browser.</li> <li>Use a process from the repository: This option is available when connected to a repository path in the two fields corresponding to this option. Alternatively you can use the "Select" button to browse the repository and point to the</li> </ul>

## 9.11.2 Configurations

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	workflow stored in the repository. This feature is currently not enabled.
	<ul> <li>Repository by reference: This feature is currently not enabled.</li> </ul>
	• The following two buttons in this section makes it easier to work with the process:
	New process: create a new workflow to be used. The new process will be opened in a new tab.
	Edit process: open the currently selected process in a new tab so you can edit it.

Parameters Tab: Specify which field to use to set a certain parameter or variable value. If multiple rows are passed to the process, the first row is taken to set the parameters or variables.

No.	Field Name	Description
1	Variable / Parameter name	The Parameters tab allows you to define or pass stream fields as variables down to the Process Studio process.
2	Field to use	Specify which field to use to set a certain parameter or variable value. If you specify an input field to use, the static input value is not used.
3	Static input value	Instead of a field to use you can specify a static value here.
4	Inherit all variables from the workflow?	Select check box, to pass all workflow parameters to the specified child process in the step.
5	Button: Get parameters	Click this button to get all the parameters of the workflow in the Variable / Parameter name column.

Row grouping Tab: specify the amount of input rows that are passed to the workflow in the form of result rows. You can use the result rows in a Get rows from result step in a workflow.

No.	Field Name	Description
1	The number of rows to send to the workflow	Specify a number say X. After every X rows the process will be executed and these X rows will be passed to the process.
2	Field to group rows on	Rows will be accumulated in a group as long as the field value stays the same. If the value changes the process will be executed and the accumulated rows will be passed to the process.
3	The time to wait collecting rows before execution	This is the maximum time in Milliseconds the step will spend accumulating rows prior to the execution of the process.



Exec	cecution results Tab:		
No.	Field Name	Description	
1	The target steps for the execution results	Choose the target step for the execution results from a drop down list	
2	Fieldname of the execution time(ms)	Enter the fieldname to store the execution time(ms)	
3	Fieldname of the ExecutionResult	Enter the fieldname to store the ExecutionResult	
4	Fieldname of the number of errors	Enter the fieldname to store the number of errors	
5	Fieldname of the number of rows read	Enter the fieldname to store the number of rows read	
6	Fieldname of the number of rows written	Enter the fieldname to store the number of rows written	
7	Fieldname of the number of rows input	Enter the fieldname to store the number of rows input	
8	Fieldname of the number of rows output	Enter the fieldname to store the number of rows output	
9	Fieldname of the number of rows rejected	Enter the fieldname to store the number of rows rejected	
10	Fieldname of the number of rows updated	Enter the fieldname to store the number of rows updated	
11	Fieldname of the number of rows deleted	Enter the fieldname to store the number of rows deleted	
12	Fieldname of the number of rows retrieved	Enter the fieldname to store the number of rows retrieved	
13	Fieldname of the exit status	Enter the fieldname to store the exit status	
14	Fieldname of the execution logging text	Enter the fieldname to store the execution logging text	
15	Fieldname of the log channel ID	Enter the fieldname to store the log channel ID	

Result rows Tab:		
No.	Field Name	Description



1	The target step for the result rows	The target step for the result rows in the parent workflow.
	Expected Layout of result rows:	
1	Field name	Names of the fields that are part of the result.
2	Data type	Type of data.
3	Length	For Number: Total number of significant figures in a number; For String: total length of string; For Date: length of printed output of the string.
4	Precision	For Number: Number of floating point digits; For String, Date, Boolean: unused.

Resu	Result files Tab:		
No.	Field Name	Description	
1	The step to send the result files information to	Choose the step to send the result files information to from the drop down list.	
2	The result filename field	The fieldname to store the result filename	

Con	Common:		
No.	Field Name	Description	
1	Checkbox: On error execute only error path <b>Note:</b> This option is only	Enable checkbox to execute only the step connected with 'Error Handling of step' path in the workflow. By default if you leave this checkbox unchecked all the steps following this step in the workflow, connected with any of the below options are excuted.	
	available Process Studio 5.6.0 onwards.	<ul> <li>This output will contain the execution results.</li> <li>This output will contain the result rows after execution</li> <li>This output will contain the result file names after execution.</li> <li>The output will contain a copy of the executor steps input data</li> <li>Main output of step</li> <li>Error handling of step</li> </ul>	
2	Help	Click Help for a description of plugin step configuration details,	
3	Button: OK	On click of this button. It will check the field values. If any required field values are missing then it will display validation error message.	



		If all the required field values are provided then it will save the field values.
4	Button: Cancel	On click of this button, it will cancel the window and do not save any values

## 9.12 Switch / Case

### 9.12.1 Description

Switch /Case is a step in the Flow Plugin for Process Studio Workflows. This step routes rows of data to one or more target steps based on the value encountered in a certain field. This is like the Switch/Case statement found in popular programming languages like Java

No.	Option	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Field name to switch	Specify the field name that contains the value to use as a basis for the row routing.
3	Use string contains comparison	Enable checkbox to send rows to the first step whose case value is contained inside the field string value or in other words case value is found anywhere in the field being tested. If unchecked the value has to exactly match the field
4	Case value data type	Specify the data type of the values specified in this dialog
5	Case value conversion mask	Specify the conversion mask of the values specified in this dialog (numeric / date values)
6	Case value decimal symbol	Specify the decimal symbol of the values specified in this dialog (numeric values)
7	Case value grouping symbol	Specify the grouping symbol of the values specified in this dialog (numeric values)
8	Case values	<ul><li>Here you can specify a value-target step pair, one per row.</li><li>To specify a null value, simply leave the value column blank while entering a target step.</li><li>Please note that it is possible to specify the same target step more than once.</li></ul>
9	Default target step	Specify a default target step. All the rows that don't match any of the case values above are sent to this target step.

## 9.12.2 Configurations

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## 9.13 Workflow Executor

### 9.13.1 Description

Workflow Executor is a step in the Flow Plugin for Process Studio Workflows. The workflow executor executes a Process Studio workflow. It is similar to the Process Executor step but works on workflows. By default, the specified workflow is executed once for each input row. This row can be used to set parameters and variables and it is passed to the workflow in the form of a result row. A group of records can also be passed based on the value in a field (when the value changes the workflow is executed) or on time. In these cases, the first row of the group or rows is used to set parameters or variables in the process.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Workflow	<ul> <li>Use this section to specify the workflow to execute. You have the following options to specify the workflow:</li> <li>Use a file for the workflow: when this option is enabled, you can enter the the .psw file that is to be used as workflow. The filename may contain variables (for example, you can use the built-in Internal.Workflow.Filename.Directory variable to construct a filename relative to the current workflow), or you can use the "Browse" button to select a file using a file browser.</li> <li>Use a workflow from the repository: This option is unavailable currently.</li> <li>Specify by reference: This option is unavailable currently.</li> <li>The following two buttons in this section makes it easier to work with the workflow:</li> <li>New workflow: create a new workflow to be used. The new workflow will be opened in a new tab.</li> <li>Edit workflow: open the currently selected workflow in a</li> </ul>
		new tad so you can edit it.

## 9.13.2 Configurations

Parameters Tab: Specify which field to use to set a certain parameter or variable values. If multiple rows are passed to the process, the first row is taken to set the parameters or variables.

1	No.	Field Name	Description

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1	Variable / Parameter name	The Parameters tab allows you to define or pass stream fields as variables down to the workflow.
2	Field to use	Specify which field to use to set a certain parameter or variable value. If you specify an input field to use, the static input value is not used.
3	Static input value	Instead of a field to use you can specify a static value here.
4	Inherit all variables from the workflow?	Select check box, to pass all workflow parameters to the specified child workflow in the step.
5	Button: Get parameters	Click this button to get all the parameters of the workflow in the Variable / Parameter name column.

Row grouping Tab: Specify the amount of input rows that are passed to the workflow in the form of result rows. You can use the result rows in Get rows from result step in a workflow.

No.	Field Name	Description
1	The number of rows to send to the workflow	Specify a number say X. After every X rows the workflow will be executed and these X rows will be passed to the workflow
2	Field to group rows on	Rows will be accumulated in a group as long as the field value stays the same. If the value changes the workflow will be executed and the accumulated rows will be passed to the workflow.
3	The time to wait collecting rows before execution	This is maximum time in Milliseconds the step will spend accumulating rows prior to the execution of the workflow.

Exec	Execution results Tab:		
No.	Field Name	Description	
1	The target step for the execution results	Choose the target step for the execution results from a drop down list	
2	Fieldname of the execution time(ms)	Enter the fieldname to store the execution time(ms)	
3	Fieldname of the Execution Result	Enter the fieldname to store the Execution Result	
4	Fieldname of the number of errors	Enter the fieldname to store the number of errors	
5	Fieldname of the number of rows read	Enter the fieldname to store the number of rows read	





6	Fieldname of the number of rows written	Enter the fieldname to store the number of rows written
7	Fieldname of the number of rows input	Enter the fieldname to store the number of rows input
8	Fieldname of the number of rows output	Enter the fieldname to store the number of rows output
9	Fieldname of the number of rows rejected	Enter the fieldname to store the number of rows rejected
10	Fieldname of the number of rows updated	Enter the fieldname to store the number of rows updated
11	Fieldname of the number of rows deleted	Enter the fieldname to store the number of rows deleted
12	Fieldname of the number of rows retrieved	Enter the fieldname to store the number of rows retrieved
13	Fieldname of the exit status	Enter the fieldname to store the exit status
14	Fieldname of the execution logging text	Enter the fieldname to store the execution logging text
15	Fieldname of the log channel ID	Enter the fieldname to store the log channel ID

Resu	Result rows Tab:		
No.	Field Name	Description	
1	The target step for the result rows	Specify the target step for the result rows in the parent workflow.	
	Expected Layout of result rows:		
1	Field name	Specify the names of the fields that are part of the result.	
2	Data type	Specify the data type.	
3	Length	<ul> <li>Specify the length,</li> <li>For Number: Total number of significant figures in a number;</li> <li>For String: total length of string;</li> <li>For Date: length of printed output of the string.</li> </ul>	
4	Precision	<ul><li>Specify the precision,</li><li>For Number: Number of floating point digits;</li><li>For String, Date, Boolean: unused.</li></ul>	



Result files Tab:

No.	Field Name	Description
1	The step to send the result files information to	Choose the step to send the result files information to from the drop down list.
2	The result filename field	Specify the fieldname to store the result filename

Com	Common:		
No.	Field Name	Description	
	Checkbox: On error execute only error path <b>Note:</b> This option is only available in Process Studio 5.6.0 onwards.	Enable checkbox to execute only the step connected with 'Error Handling of step' path in the workflow. By default if you leave this checkbox unchecked all the steps following this step in the workflow, connected with any of the below options are excuted. This output will contain the execution results This output will contain the result rows after execution	
		<ul> <li>This output will contain the result file names after execution.</li> <li>The output will contain a copy of the executor steps input data</li> <li>Main output of step</li> <li>Error handling of step</li> </ul>	
1	Button: OK	On click of this button. It will check the field values. If any required field values are missing then it will display validation error message. If all the required field values are provided then it will save the	
		field values.	
2	Button: Cancel	On click of this button, it will cancel the window and do not save any values	

# 10 Scripting

# **10.1** Execute Autoit Script

## 10.1.1 Description

Execute Autoit Script is a step in the Scripting Plugin for Process Studio Workflows. Autoit script can be executed in this step.

### 10.1.2 Configurations

No.	Field Name	Description
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1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Left Navigator:	
1	Get Input Fields	Shows the fields from input stream
2	Write to Console: Write Value to Console	Writes output values to console
	Right Hand Side:	
1	Autoit Script Tab	A workspace area to write the Autoit Script.

## **10.2** Execute Powershell Script

### 10.2.1 Description

Execute Powershell Script is a step in the Scripting Plugin for Process Studio Workflows. This step is used to execute PowerShell Script. This step can be used to leverage the Python programming language (and its extensive package-based support for scientific computing)

### 10.2.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Left Navigator:	
1	Get Input Fields	Shows the fields from input stream
2	Write to Console: Write Value to Console	Writes output values to console
	Right Hand Side:	
1	Powershell Script Tab	It has a workspace area to write Powershell Script.

## **10.3 Execute Python Script**

### 10.3.1 Description

Execute Python Script is a step in the Scripting Plugin for Process Studio Workflows. This step is used to execute Python Script.

Prerequisites:

- 1. Install Anaconda, Minimum version 4.2.0
- 2. No need for separate python installation, Anaconda takes care of python installation.
- 3. Anaconda should be in the PATH.

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- i. This can be conveniently achieved by enabling "Anaconda in PATH" checkbox during Anaconda installation else,
- ii. Manually set Anaconda in the PATH environment variable by adding the following to the path
- iii. <ANACONDA\_BASE>; <ANACONDA\_BASE>\Library\mingw-w64\bin; <ANACONDA\_BASE>\Library\usr\bin; <ANACONDA\_BASE>\Library\bin; <ANACONDA\_BASE>\Scripts;

## 10.3.2 Configurations

Con	Configure Tab:			
No.	Field Name	Description		
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.		
	Row Handling:			
2	No. of rows to process	<ul> <li>Select No. of rows to process for row handling from input steps data frames from the following,</li> <li>All</li> <li>Row by Row or</li> <li>Batch: If batch is selected a value needs to be provided in the size field.</li> </ul>		
3	Reservoir Sampling	Enable checkbox to randomly sample rows from an incoming data stream. If checkbox is enabled a value needs to be provided in the size field. Random seed field is also enabled and user can provide a value.		
4	Random seed	Random seed is enabled only if Reservoir checkbox is enabled. Provide a value to use for seeding the random number generator. Repeating a workflow with a different value for the seed will result in a different random sample being chosen.		
	Options:			
5	Include Input Fields as Output Fields checkbox	Enable this checkbox to include incoming fields as output fields.		
	Input Frames:			
6	Step name	Input step name are visible here in a dropdown list. Data from input steps is available as a Data frame.		
7	Pandas frame name	Provide Pandas frame name for step name above. Or else use system generated name (for e.g. ps_data0)		

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Python Script:		
Field Name	Description	
Load Script from file at Runtime	Enable checkbox to load python script dynamically from a file at runtime.	
Script file Location and Browse button	Browse for the python script file.	
Manual Python Script	It is a free textbox where user can write Python Script.	
Python Variables to get	Provide output variable name or frame name from the python script.	
Continue on unset variables	Enable checkbox to specify: Don't raise an error if specified variables are not set in python after script has executed.	

Outp	Output Fields:		
No.	Field Name	Description	
1	Output Fields:		
1	Name	Get the name of python output fields.	
2	Туре	Provide the data type of the field above.	
	Buttons:		
1	Vars to Fields	Click button to get Python frame.	
2	Get Frame Fields	Click button to the Frame fields.	
3	Include frame row index as an output field checkbox	Enable checkbox to Include frame row index as an output field.	

## 10.4 Execute SQL script

### 10.4.1 Description

Execute SQL script is a step in the Scripting Plugin for Process Studio Workflows. You can execute SQL scripts with this step, either once, during the initialization phase of the workflow, or once for every input-row to the step.

However, because of the scripting/dynamic nature of the step, it does not use prepared statements and thus is not intended to work fast or optimal. For good performance turn to dedicated steps like Table Output (insert into), Table Input (Select), Update, Delete, etc.

## 10.4.2 Configurations



No.	Field Name	Description
1	Step name	Specify the name of the step; This name has to be unique in a single workflow
2	Connection	Select a database connection to use
3	SQL script to execute	Specify the SQL to execute. Separate statements by; and use question marks as place holders for parameter. <b>Note:</b> This step does not use prepared statements by default; therefore the given parameters have to be enclosed correctly. Numeric values do not need to be enclosed, but all others e.g. Strings need to be enclosed with quotes or double quotes depending on the database dialect.
4	Execute for each row?	Enable checkbox to execute the SQL for each incoming row. In this case parameters can be used. When this option is unchecked, the SQL statement is executed at the step initialization phase.
6	Execute as a single statement	This option does not split the statements by; and will send the whole SQL to the database.
7	Variable substitution	In case you want to use variables in the SQL, e.g. \${table_name}, this option needs to be checked.
8	Bind parameters?	Check this option to bind parameters using prepared statements, otherwise this step will perform a literal string replacement of the parameters.
9	Quote Strings?	This option adds quotes around the string according to the database dialect and also escapes special characters like CR, LF and the quote character itself.
10	Parameters	The list of used parameters that will replace the question marks in the query in the given order. So the first question mark will be replaced by the first parameter, the second question mark by the second parameter etc. <b>Note:</b> If you need the same parameter multiple times in your query, you need to use multiple question marks. Using a "Select Values" step you can duplicate field values within the "Select & Alter" tab by selecting the value once and renaming it a second or third time.
11	Field to contain insert stats (Optional)	Specify a field name to hold the number or records that where inserted.
12	Field to contain update stats	Specify a field name to hold the number or records that where updated.



13	Same as insert stats, but for deleted rows.	Specify a field name to hold the number or records that where deleted.
14	Same as insert stats, but for read rows.	Specify a field name to hold the number or records that where read.

## 10.5 Execute VB Script

### 10.5.1 Description

Execute VB Script is a step in the Scripting Plugin for Process Studio Workflows. Execute VB Script Step allows you to execute any VB Script. One can write the script to the space given right and side Under VB Script Tab.

### 10.5.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step; This name has to be unique in a single workflow
	Left Panel:	
1	Get Input Fields	By clicking on this it will give a list of all input fields that can be used as a part of VB Script.
2	Write to Console:	Under this option there are two sub options:
	1. Create StdOut Object	This option allows you to create one new stdout object for VB Script. To use this option, users must have wscript.exe on their respective machines and the path of wscript.exe must be stored in Path Variable.
	2. Write Value to Console	This option allows you to create output fields from VB Script which can be used in subsequent steps.
	Right Panel:	
1	VB Script	Write the VB Script in the space provided.

## **10.6** Execute row SQL script

### 10.6.1 Description

Execute row SQL script is a step in the Scripting Plugin for Process Studio Workflows. Execute SQL script for every input-row to this step (not). An input field can be used to specify the SQL to execute or it can specify a file that contains the SQL to execute. This step is similar to Execute SQL script but does not have the option to execute SQL during the initialization phase of the workflow.



## 10.6.2 Configurations

Sele	Select & Alter Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Connection	Select a database connection to use	
3	Commit	Specify the number of rows to send before doing a database commit	
4	SQL field name	The field that either contains the SQL to execute or optionally specifies the path to a file that contains SQL to execute	
5	Read SQL from file	If checked, then the SQL field name option specifies a file that contains SQL to execute, otherwise the SQL field name option specifies the actual SQL to execute.	
6	Field to contain insert stats(optional)	Specify a field name to hold the number or records that where inserted.	
7	Field to contain update stats	Specify a field name to hold the number or records that where updated.	
8	Field to contain delete stats	Specify a field name to hold the number or records that where deleted.	
9	Field to contain read stats	Specify a field name to hold the number or records that where read.	

## 10.7 Formula

## 10.7.1 Description

Formula is a step in the Scripting Plugin for Process Studio Workflows. The Formula step can calculate Formula Expressions within a data stream. It can be used to create simple calculations like [A]+[B] or more complex business logic with a lot of nested if / then logic.

When you press on the Formula cell entry, the formula editor window opens and gives you help on the available functions: The formula editor window does a direct check on the syntax and the field names supplied. In case of an error you get the error message for the instance.

## 10.7.2 Configurations

No.	Field Name	Description

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1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Fields:	
1	New Field	Specify a new field in the data stream. If you want to overwrite an existing field, you need to define the field here and in the "Replace value" option.
2	Formula	Build the Formula using the editor and a tree of available functions.
3	Value Type	Specify data type for the field.
4	Length	<ul> <li>Specify the length,</li> <li>For Number: Total number of significant figures in a number;</li> <li>For String: total length of string;</li> <li>For Date: length of printed output of the string.</li> </ul>
5	Precision	<ul><li>Specify the precision,</li><li>For Number: Number of floating point digits;</li><li>For String, Date, Boolean: unused.</li></ul>
6	Replace value	Select a field from the drop down list when you want to replace a field.

## 10.8 Modified Java Script

### 10.8.1 Description

Modified Java Script is a step in the Scripting Plugin for Process Studio Workflows. It is an easy, expression based user interface for building JavaScript expressions. This step also allows you to create multiple scripts for each step.

Please keep in mind that this step has performance disadvantages due to the fact that it is interpreting the JavaScript. Please see the other steps in the 'Scripting' section when performance is critical for you.

### 10.8.2 Configurations

Java	Java Script Functions Section		
This	This section provides a tree view of your available scripts, functions, input fields and output fields.		
No.	Tree View	Description	
1	Transform Scripts	It displays a list of scripts you have created in this step	

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2	Transform Constants	a list of pre-defined, static constants including SKIP_WORKFLOW, ERROR_ WORKFLOW, and CONTINUE_ WORKFLOW
3	Transform Functions*	It contains a variety of String, Numeric, Date, Logic and specialized functions you can use to create your script. To add a function to your script, simply double-click on the function or drag it to the location in your script that you wish to insert it.
4	Input Fields	A list of inputs coming into the step. Double-click or use drag and drop to insert the field into your script.
5	Output Fields	A list of outputs for the step.

#### Java Script Section

This section is where you edit the script for this step. You can insert functions, constants, input fields, etc. from the tree control on the left by double-clicking on the node you wish to insert or by dragging the object onto the Java Script panel.

There are two versions of the javascript engine: the 2.5 version and the 3 version. If "compatibility mode" is checked (and by default it is), javascript works like it did in version 2.5. Obviously the new version should be used if possible so uncheck "compatibility mode" if you can.

#### Fields Section

The Fields table contains a list of variables from your script including the ability to add metadata like a descriptive name.

No.	Column	Description
1	Field Name	Variable Name
2	Rename to	Rename
3	Туре	String, Date, Boolean, Integer, BigNumber, Binary, Timestamp, Internet Address
4	Length	<ul> <li>Specify the length,</li> <li>For Number: Total number of significant figures in a number;</li> <li>For String: total length of string;</li> <li>For Date: length of printed output of the string.</li> </ul>
5	Precision	<ul> <li>No. of digits after decimal.</li> <li>Specify the precision,</li> <li>For Number: Number of floating point digits;</li> <li>For String, Date, Boolean: unused.</li> </ul>

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6	Replace value 'Fieldname'	Select Y/N to accept 'Rename to'.
	or Rename to'	

Buttons		
1	Get Variables button	Retrieves a list of variables from your script.
2	Test script button	Use this button to test the syntax of your script.

\*Transform Functions: Transform functions are broadly classified as below,

No.	Function	Description
1	String Functions	This has several JavaScript String functions.
2	Numeric Functions	This has several JavaScript Numeric functions.
3	Date Functions	This has several JavaScript Date functions.
4	Logic Functions	This has several JavaScript Logic functions.
5	Special Functions	This has several Contains a mix of utility functions.
6	File Functions	This Category has several, functions that do simple verifications or actions related to files and folders—for example, fileExist() or createFolder().

## **10.9** Regex Evaluation

### 10.9.1 Description

Regex Evaluation is a step in the Scripting Plugin for Process Studio Workflows. This step matches the String value of an input field against a text pattern defined by a regular expression. Optionally, you can use the regular expression step to extract particular substrings from the input text field matching a portion of the text pattern into new output fields. This is known as "capturing".

## 10.9.2 Configurations

Setti	Settings Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Field to evaluate	Specify the name of the field from the incoming stream which is to be matched against the regular expression	

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3	Result Fieldname	Specify the name of the result output field (boolean). This field will be added to the output stream and indicate whether the value of the input field matched the regular expression (Y/N).
4	Create fields for capture groups	Enable this if you want to create new fields based on capture groups in the regular expression. Capturing groups are those parts of the regular expression pattern which are enclosed in a pair of left and right parenthesis. If this option is enabled, substrings of the input field value corresponding to the capturing groups in the regular expression will be extracted and stored in new output fields. If this option is enabled, the "Capture group fields" grid needs to define one field for each capturing group.
5	Replace previous fields	This option is available in case the "Create fields for capture groups" option is enabled. When the "Replace previous fields" option is checked, fields created for capturing groups will replace existing fields in the incoming stream with the same name. If not enabled, new fields will be added to the output stream for each capturing group field.
6	Regular expression	Put here the regular expression to match. See the java.util.regex.Pattern javadoc for reference documentation of the particular regular expression syntax used by this step.
7	Use variable substitution	Enable this if your regular expression contains variable references. By enabling this, variable references will be expanded to their value before evaluating the regular expression pattern.
8	Capture group fields	Here you can specify the new fields for any substrings captured by the regular expression from the input string. If the "Create fields for capture groups" option is enabled, you need to use this grid to enter a field definition corresponding to each capturing group in the regular expression. The order of the fields is the same as the order of the capturing groups in the regular expression. The columns in the grid allow you to change to the required data type right away.
Cont	ent Tab:	
No.	Field Name	Description
1	Ignore differences in Unicode encodings	Enable checkbox to ignore differences. <b>Note:</b> This may improve performance, but be sure your data only contains US ASCII characters.
2	Enables case-insensitive matching	By default, case-insensitive matching assumes that only characters in the US-ASCII charset are being matched. Unicode-aware case-insensitive matching can be enabled by



		specifying the 'Unicode-aware case' flag in conjunction with this flag.
3	Permit whitespace and comments in pattern	When enabled, the step will ignore whitespace and embedded comments starting with # through the end of the line. In this mode, you must use the \s token to match whitespace. (If this option is not enabled, any whitespace characters appearing in the regular expression are matched as-is).
4	Enable dotall mode	When enabled, the expression '.' matches any character including the line terminator. By default, this expression matches any character except line terminators.
5	Enable multiline mode	When enabled, the expressions '^' and '\$' match just after or just before, respectively, a line terminator or the end of the input sequence. By default, these expressions only match at the beginning and the end of the entire input sequence.
6	Enable Unicode-aware case folding	When enabled, in conjunction with the Case-insensitive flag, case-insensitive matching is done in a manner consistent with the Unicode standard. By default, case-insensitive matching assumes that only characters in the US-ASCII charset are being matched.
7	Enables Unix lines mode	When enabled, only the line terminator is recognized in the behavior of '.', '^', and '\$'.

## 10.10 User defined Java Class

### 10.10.1 Description

User defined Java Class is a step in the Scripting Plugin for Process Studio Workflows. This step allows you to enter User Defined Java Class to drive the functionality of a complete step. In essence, this step allows you to program your own step.

**Note:** The goal is to allow users to define methods and logic with as little as code as possible, executed as fast as possible. For this the Janino project libraries that compile Java code in the form of classes at runtime are used. Not 100% Java. The first thing to know is that Janino and as a consequence this step doesn't need the complete Java class, only the class body: the imports, constructors and methods needed. So to drive the point home, the step doesn't need the full class declaration. The developers of this step selected this approach over the definition of the full class since it was possible to hide a lot of technical details and methods from the user this way.

If you need to do a lot of Java development it is advised to do this in a Java IDE like Eclipse, not inside this step. You can always expose your Java code to this step by throwing it in a jar file and by placing that library in the classpath of Process Studio (libext/ folder).

## 10.10.2 Configurations

Description

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1	Classes & Code Fragments*	It is a navigator from where you can choose Classes & Code Fragments such as code snippets. Web Driver.
		Logging, Input/Output/Info fields.
2	Class Code	It contains the body of the class.
3	Fields Tab	You can define all the new fields you want in the output of the step in the "Fields" tab.
4	Parameters Tab	Suppose you have a nice piece of code, and you'd like it to become more generic. Step parameters may be a useful tool in this context. As an example I'd like to provide a regular expression and a field name as parameters. The step should check whether the specified field matches the regex and output a 1 or 0 to a result field.
5	Info Steps Tab	Sometimes it's necessary to combine the input of multiple steps. Possibly assigning roles to them. A stream lookup step is a classic example. This is where info steps come into play: they are input steps that are explicitly read from. Their rows are not returned by calls to getRow(). It's easy to utilize info steps on a user defined java class step. Just attach them to the step and define them as info steps in the UDJC step UI. Reading rows from the info steps is as easy as calling getRowsFrom().
6	Target Steps Tab	It is possible to direct rows to different target steps using the user defined java class step. In a regular case a call to putRow() takes care of passing on a row to the next step(s). Process takes care of the rest. Now if you'd like to direct rows to specific steps, you'd define all possible target steps and call putRowTo(), specifying the output row set explicitly instead.

\* Classes & Code Fragments

No.	Tree Structure	Description
	Code Snippets:	
1	Common Use	It provides the common methods such as main method.
2	Step Status	It provides methods for getting/setting and incrementing input and output lines of the step
3	Step Logging	It provides methods for logging at different level of details at step level.
4	Step/Row Listener	It provides methods for row level and step level listeners.



5	Row Manipulation	It provides methods for getting metadata of input and output rows and row manipulation
6	Uncommon Use	This package contains the uncommon classes
		needed to define and execute workflows.
	Web Driver:	
1	Get Web Driver	This method is used to specify the Web Driver
	Logging:	Logging option is used to log some extra
		information in the agent log file.
1	Info	It provides methods for 'Info' level logging at
		workflow level.
		The log can be specified ,
		WithIdentifier:
		Double clicking this option allows you to specify log
		message and its relevant identifier through which
		information can be searched in agent log file. Or
		WithWorkflowInstanceId:
		This option also allows info level logging but uses
		WorkflowRequestId instead of custom identifier.
2	Error	It provides methods for 'Error' level logging at
		workflow level.
		The error log can be specified
		WithIdentifier or
		WithWorkflowInstanceId
3	Exception	It provides methods for 'Exception' level logging at
		It allows to log exceptions at
		Info or
		Frror
4	Input fields:	Most of the time, working with input and output
	input noide.	fields is the most important thing you'll be doing in
		vour UDJC code. As such, there are a number of
		ways to handle the manipulation of fields provided
		by 'row manipulation' code snippets.
5	Output fields:	These are the step output fields
6	Info fields:	These are fields from the stream

# 10.11 User Defined Java Expression

### 10.11.1 Description

User Defined Java Expression is a step in the Scripting Plugin for Process Studio Workflows. This step allows you to enter User Defined Java Expressions as a basis for the calculation of new values.



# 10.11.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	New Field	The new field in the data stream. If you want to overwrite an existing field, you need to define the field here and in the "Replace value" option.
3	Java Expression	Specify the Java Expression
4	Value Type	Specify the data type.
5	Length	<ul> <li>For Number: Total number of significant figures in a number;</li> <li>For String: total length of string; For Date: length of printed output of the string.</li> <li>Specify the length,</li> <li>For Number: Total number of significant figures in a number</li> <li>For String: total length of string</li> <li>For Date: length of printed output of the string.</li> </ul>
6	Precision	<ul> <li>For Number: Number of floating point digits; For String, Date, Boolean: unused.</li> <li>No. of digits after decimal.</li> <li>Specify the precision,</li> <li>For Number: Number of floating point digits;</li> <li>For String, Date, Boolean: unused.</li> </ul>
7	Replace value	Select a field from the drop down list when you want to replace a field.

# 11 Lookup

## 11.1 Call DB Procedure/Function

### 11.1.1 Description

Call DB Procedure/Function is a step in the Lookup Plugin for Process Studio Workflows. The Call DB Procedure/Function step executes a database procedure (or function) and gets the result(s) back.

## 11.1.2 Configurations



No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Local Connection	Specify the name of the database connection on which the procedure resides.
3	Туре	Select type of call you want to make, that is, either procedure or function.
4	Procedure name	Specify the name of the procedure or function to call.
5	Find it	Click to search available procedures and functions (Oracle and SQL Server only; With MySQL and JDBC, it is not possible to retrieve the result set of a stored procedure.)
6	Enable auto commit	In some instances, you want to perform updates. Commit in the database using the specified procedure. You can either have the changes performed using auto-commit or not. If auto-commit is disabled, a single commit is performed after the last row is received by this step.
7	Result name	Specify a field to store the result of the function call. <b>Note:</b> The field is unavailable if you selected <b>Procedure</b> in the <b>Type</b> field.
8	Result type	Specify a field to store the Type of the result of the function call. <b>Note:</b> The field is unavailable if you selected <b>Procedure</b> in the <b>Type</b> field.
9	Parameters	<ul> <li>Stored procedures and functions can only return values through their function arguments and those arguments must be defined in the Parameters section of the DB Procedure Call configuration.</li> <li>Provide a list of parameters that the procedure or function needs in this section <ul> <li>Parameter name: Name of the field.</li> <li>Direction: Can be either IN (input only), OUT (output only), INOUT (value is changed on the database).</li> <li>Type: Used for output parameters so that Process Studio knows what data type returns.</li> </ul> </li> </ul>
10	Get Fields	Fills in all the fields in the input streams to make your life easier; delete the lines you don't need and re-order the remaining lines

## 11.2 Check if a column exists

### 11.2.1 Description

Check if a column exists is a step in the Lookup Plugin for Process Studio Workflows. This step allows you to verify the existence of a specific column in a database table.

## 11.2.2 Configurations

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No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Connection	Specify the database connection to use.
3	Schema name (optional)	Specify the schema name of the table containing the column to check
4	Table name	Specify the name of the table containing the column to check
5	Tablename in field?	Enable to read the name of the table in an input field
6	Tablename field	Specify the fields containing parameters and the parameter type
7	Columnname field	Specify the name of the column field in the input stream.
8	Result fieldname	Specify the name of the result boolean flag field.

## 11.3 Check if file is locked

### 11.3.1 Description

Check if file is locked is a step in the Lookup Plugin for Process Studio Workflows. This step tries to determine if a file is locked by any other process. It does this by trying to move it to itself.

## 11.3.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Filename field	Specify the name of the input field that will contain the names of the files during execution.
3	Result fieldname	Specify the name of the Boolean output field that will contain true or false depending on whether or not the file is locked or not.
4	Add filename to result	Enable checkbox to add the checked file-names to the list of files in the workflows result.

## 11.4 Check if Webservice is available

### 11.4.1 Description

Check if Webservice is available is a step in the Lookup Plugin for Process Studio Workflows. This step checks if a given URL (e.g. a Webservice URL) in the input stream is valid, can be

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connected and if data can be read from it. If it connects within the given timeout and data can be read, it returns 'true', otherwise 'false'.

### 11.4.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	URL field	Specify the URL fieldname in the data stream. The URL is checked for every row that is coming into this step.
3	Connect timeout (ms)	Specify the connect timeout in ms. The value will depend on the quality of service of this URL and experiences.
4	Read timeout (ms)	Specify the read timeout in ms during which the step tries to read data. The value will depend on the quality of service of this URL and experiences.
5	Result fieldname	Specify the name of the result boolean flag field. If it connects within the given timeout and data can be read, it returns 'true' else 'false'. Further information of the failing reason can be found in the log when debug logging is enabled.

## 11.5 Database join

### 11.5.1 Description

Database join is a step in the Lookup Plugin for Process Studio Workflows. The Database Join step runs a query against a database using data obtained from previous steps. The parameters for this query are specified as follows:

- The data grid in the step properties dialog. This allows you to select the data coming in from the source hop.
- As question marks (?) in the SQL query. When the step runs, these will be replaced with data coming in from the fields defined from the data grid. The question marks will be replaced in the same order as defined in the data grid.

### 11.5.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Connection	Specify the database connection to use for the query.
3	SQL	Specify the SQL query to form the join between source parameters and the database connection specified; use question marks as parameter placeholders

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4	Number of rows to return	Specify the field name to store Number of rows to return. Zero (0) returns all rows; any other number limits the number of rows returned.
5	Outer join?	Enable to always return a result, even if the query did not return a result
6	Parameters table	Specify the fields containing parameters. Also specify the data type is required.

# 11.6 Database lookup

## 11.6.1 Description

Database lookup is a step in the Lookup Plugin for Process Studio Workflows. The Database lookup step looks up values in a database table. Lookup values are added as new fields in the stream.

## 11.6.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Connection	Specify the Database connection for the lookup table.
3	Lookup schema	Specify the Database schema containing the lookup table.
4	Lookup Table	Specify the name of the database table used for the lookup.
5	Enable cache?	Enables caching of database lookups. This means that once a key (or group of key) has been looked up, the looked up values are stored, and returned again the next time this key (or group of key) is being looked up (without incurring the cost of a database call).
6	Cache size in rows	Specify the size of the cache (number of rows), 0 means cache everything.
7	Load all data from table	Pre-loads the cache with all the data present in the lookup table. This may improve performance by avoiding database calls. However, if you have a large table, you risk running out of memory.
8	Keys to look up table	Specify the keys and conditions to perform the database lookup.
9	Values to return table	<ul> <li>Specify the fields from the lookup table to add to the output stream.</li> <li>"New name" allows you to use a different name if the database column name is inappropriate.</li> </ul>

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		<ul> <li>"Default" is the value returned (instead of null) if the lookup fails.</li> <li>"Type" is the type of the output field.</li> <li>Note: Enabling error handling on the Database Lookup step will redirect all failed lookup rows to the error handling step, instead of adding them to the main output stream with null/default values.</li> </ul>
10	Do not pass the row if the lookup fails	Enable checkbox to avoid passing a row when lookup fails. Within the SQL syntax, enabling this would be an INNER JOIN, otherwise it would be an OUTER JOIN.
11	Fail on multiple results?	Enable checkbox to force the step to fail if the lookup returns multiple results.
12	Order by	If the lookup query returns multiple results, the ORDER BY clause helps you to select the record to take. For example, ORDER BY would allow you to pick the customer with the highest sales volume in a specified state.
13	Get Fields	Click to return a list of available fields from the input stream(s) of the step.
14	Get lookup fields	Click to return a list of available fields from the lookup table that can be added to the step's output stream.

# 11.7 Dynamic SQL row

## 11.7.1 Description

Dynamic SQL row is a step in the Lookup Plugin for Process Studio Workflows. The Dynamic SQL row step allows you to execute a SQL statement that is defined in a database field. The lookup values are added as new fields in the output stream

### 11.7.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Connection	Specify the field that contains a database connection for the lookup.

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3	SQL field name	Specify the field that contains the SQL to execute.
4	Number of rows to return	Specify the number of records to return. 0 means, return all rows.
5	Outer Join	<ul> <li>false: don't return rows where nothing is found</li> <li>true: at least return one source row, the rest is NULL</li> </ul>
6	Replace variables	In case you want to use variables in the SQL, e.g. \${table_name}, this option needs to be checked.
7	Query only on parameters change	If your SQL statements do not change a lot, check this option to reduce the number of physical database queries.
8	Template SQL	In PROCESS STUDIO meta and data are separate so you have to specify the meta part in template <b>SQL</b> (field name and type). I mean any statement that returns the same <b>row</b> structure.

## 11.8 File exists

### 11.8.1 Description

File exists is a step in the Lookup Plugin for Process Studio Workflows. This step verifies the existence of a file where the filename comes from previous steps. The result is a Boolean flag field that gets added to the input fields in the output.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Filename field	Specify the input field that will contain the filename at runtime
3	Result fieldname	Specify the name of the field that will contain the boolean flag.
4	Add filename to result	Enable checkbox if you want to add the filename to the list of filenames that can be used in the next process entry.
5	Include file type	Enable checkbox to specify the file type in a field.
6	File type field	Specify the name of the field that will contain the file type as a String: "file", "folder", "imaginary"

# 11.9 Fuzzy match

### 11.9.1 Description

Fuzzy match is a step in the Lookup Plugin for Process Studio Workflows. The Fuzzy Match step finds strings that potentially match using duplicate-detecting algorithms that calculate the

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similarity of two streams of data. This step returns matching values as a separated list as specified by user-defined minimal or maximal values.

#### 11.9.2 Configurations

0011				
No.	Field Name	Description		
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.		
	Lookup stream(source):			
2	Lookup step	Specify the step that contains the fields to match.		
3	Lookup field	Specify the field in the Lookup step above to match.		
	Main Stream:			
4	Main stream field	Identifies the primary stream to match with the Lookup field.		
	Settings:			
5	Algorithm	Identifies which string-matching algorithm to use. Options include, Jaro Jaro Winkler Pair letters similarity Levenshtein Damerau-Levenshtein Needleman Wunsch Metaphone Double Metaphone SoundEx Refined SoundEx		
6	Case sensitive	Enable or disable checkbox to determine if streams can or cannot differ based on the use of uppercase and lowercase lettersonly for use with the Levenshtein algorithms		
7	Get closer value	When checked, returns a single result with the highest similarity scorewhen unchecked, returns all matches that satisfy the minimal and maximal value setting as a separated list, separated by the values separator		
8	Minimum value	Specify the lowest possible similarity score		
9	Maximal value	Specify the highest possible similarity score		

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10	Values separator	Specify the string that separates the matches. Only available for specific algorithms and when the Get closer value option is unchecked.
Field	ls Tab:	
No.	Field Name	Description
	Output fields:	
1	Match field	Defines the name of the column that contains the comparison value.
2	Value field	Defines the similarity score for which to return a value.
3	Additional fields:	Specify the list of additional fields to retrieve from the lookup stream.

## 11.10 HTTP Client

### 11.10.1 Description

HTTP Client is a step in the Lookup Plugin for Process Studio Workflows. The HTTP client step performs a simple call to a base URL with options configured. The result is stored in a String field with the specified name.

	-	
No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	URL	Specify the base URL string to call.
3	Accept URL from field?	Enable this option if you want to get the URL from a previous step. Enabling this will also allow you to specify the name of the input field.
4	URL field name	Specify the name of the incoming field that contains the URL
5	Connection timeout	Specify the timeout until a connection is established (milliseconds)
6	Socket timeout	Specify the number of seconds to wait if no data is returned from the server.
7	Connection close wait time	Specify Connection close wait time to Close all connections older than the value specified here.
8	Result fieldname	Specify the name of the field to store results

## 11.10.2 Configurations

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9	HTTP status code field name	Specify the name of the field to store the HTTP response code (e.g. 200, 404)
10	Response time (milliseconds) field name	Specify the name of the field to store the response time
11	Http Login	Specify the username to be passed during HTTP (Basic) authentication
12	HTTP Password	Specify the password to be passed during HTTP (Basic) authentication
13	Proxy Host	Specify the hostname of the Proxy Server to be used
14	Proxy Port	Specify the port number of the Proxy Server to be used
15	Parameters	Provide parameter name-value pairs to pass on the URL
16	Custom HTTP Headers	Provide optional HTTP headers



#### 11.11 **HTTP Post**

## 11.11.1 Description

HTTP Post is a step in the Lookup Plugin for Process Studio Workflows. This step uses an HTTP POST command to submit form data via a URL.

#### 11.11.2 Configurations 0

Gene	Seneral Tab:			
No.	Field Name	Description		
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.		
2	URL	Specify the Web service URL to submit the HTTP Post.		
3	Accept URL from field?	If checked, you must specify which field to retrieve the URL from.		
4	URL field name	If the previous option is checked, this is where you specify the URL field.		
5	Encoding	The encoding standard for the files being accessed.		
6	Request entity field	Specify the name of the field that will contain the POST request. When enabled, the Post a file option below will retrieve the file named in this field, and post the contents of that file.		
7	Post a file	If a file is defined in the Request entity field, its contents will be posted if this option is checked. Currently "Request entity field" must be filled in order for "Post a file" to work. Selecting "Post a file" and specifying a field under "Body parameters" without selecting a value for "Request entity field" (the place for the file name) will fail silently.		
8	Connection timeout	Defines the timeout (defaults to 10000) in Milliseconds when connection attempts error out.		
9	Socket timeout	Defines the timeout (defaults to 10000) in Milliseconds when socket error out.		
10	Connection close wait time	Define the wait time after which the connection is closed in Milliseconds, the default -1 means the default wait time from the operating system (often 2 minutes).		
11	Result fieldname	Specify the field that you want to post the result output to.		
12	HTTP status code fieldname	Specify the field that you want to post the status code output to.		
13	Response time (milliseconds) fieldname	Specify the field that you want to post the response time, in milliseconds, to.		


14	HTTP login	If this form requires authentication, this field should contain the username.
15	HTTP password	If this form requires authentication, this field should contain the password that corresponds with the username.
16	Proxy host	Hostname or IP address of the proxy server, if you use one.
17	Proxy port	Port number of the proxy server, if you use one.
Field	ls Tab:	
No.	Field Name	Description
	Body(Header) Parameters:	
1	#	Specify the order in which parameter will be passed to the Web application.
2	Name	Specify the name of the field that contains the value to map to the parameter.
3	Parameter	Specify the parameter to map the value of Name to.
4	Put in Header?	If set to Y, the parameter will be put into the request header.
	Query Parameters:	
1	#	Specify the order in which parameters will be passed to the Web application.
2	Name	Specify the name of the field that contains the value to map to the parameter.
3	Value	Specify the value to map to the parameter.

#### 11.12 **REST Client**

#### 11.12.1 Description

REST Client is a step in the Lookup Plugin for Process Studio Workflows. The REST Client workflow step enables you to consume RESTful services.

### 11.12.2 Configurations

General Tab: Enter basic connection information for accessing a resource.		
No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	URL	Specify the path to a REST client resource.



		(Representational State Transfer (REST) is a key design idiom that embraces a stateless client-server architecture in which the web services are viewed as resources and can be identified by their URLs).
3	Accept URL from field	Enable checkbox to accept path to a resource from a field.
4	URL field name	Choose a field which defines the path to a resource
5	HTTP method	Choose how the step interacts with a resourceoptions are either GET, PUT, DELETE, POST, HEAD, or OPTIONS
6	Get Method from field	Enable checkbox to GET method from a field.
7	Method fieldname	Specify the field from which the GET method is defined.
8	Body field	Choose a field from the dropdown list that contains the request body for POST, PUT, and DELETE methods
9	Application type	Choose what type of application a resource isoptions are either TEXT PLAIN, XML, JSON, OCTET STREAM, XHTML, FORM URLENCODED, ATOM XML, SVG XML, or TEXT XML
10	Result fieldname	Specify the name of the result output field
11	HTTP status code fieldname	Specify the name of the HTTP status code field
12	Response time (milliseconds) fieldname	Specify the name of the response time field
Auth	entication Tab: Enter authention	cation details for a resource in the Authentication tab.
No.	Field Name	Description
1	HTTP Login	Specify the username required to access a resource
2	HTTP Password	Specify the password associated with the provided HTTP Login user name
3	Preemptive	Enable checkbox to send the authentication credentials before a server gives an unauthorized response
4	Proxy Host	Specify the name of a proxy host, if proxy authentication is required
5	Proxy Port	Specify the port number of a proxy host, if proxy authentication is required
SSL auth	Tab: Provide authentication de	etails for accessing a resource that requires SSL certificate
No.	Field Name	Description
4	Truck to the set file	One off other territies of a two tetres file

2	Truststore password	Specify the password associated with the provided truststore file
2	Truststore password	Specify the password associated with the provided truststore file
	I ruststore file	Specify the location of a truststore file



Head	Headers Tab:		
No.	Field Name	Description	
1	Field	Define the content of any HTTP headers using an existing field. Populate the list of fields by clicking the Get fields button.	
2	Name	Provide a name	
Parameters Tab:			
No.	Field Name	Description	
1	Parameter	Choose the parameters to set value.	
2	Parameter	Provide parameter values for POST, PUT, and DELETE requests. GET parameters should be part of the URL directly.	
Matri	x Parameters Tab:		
No.	Field Name	Description	
1	Parameter	Choose the parameter to set value.	
2	Parameter	Provide parameter values for POST, PUT, and DELETE requests. GET parameters should be part of the URL directly.	

## 11.13 Stream Lookup

### 11.13.1 Description

Stream Lookup is a step in the Lookup Plugin for Process Studio Workflows. The Stream lookup step looks up data and adds it to information coming from other source steps in the workflow. The data coming from the Source steps is cached into memory and then a common key field is used to look up data from the lookup table.

In the example below, database table input is the primary input. The workflow looks up data in a text-file based on a common key field.



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**Note:** Consider using the Database Lookup step when the Lookup step originates from a table. In this case, it is faster to use the Database Lookup step and enable the option. Load all data from table that preloads the cache.

If there are multiple matching records in the Lookup step data having same keys, then by default the last matched record will be fetched by the step. Enable the **Fetch First Matched Record** checkbox to fetch the first matched record.

### 11.13.2 Configurations

The table below describes the features available for configuring the stream lookup:

No.	Field Name	Description
1	Step name	Specify the name of the step this name has to be unique in a single workflow
2	Lookup step	Specify the step name where the lookup data is coming from
3	The keys to lookup	Specify the names of the fields that are used to look up values. Values are always searched using the "equal" comparison
4	Fields to retrieve	Specify the names of the fields to retrieve here, as well as the default value in case the value was not found or a new field name in case you didn't like the old one.
6	Preserve memory	Enabling this checkbox encodes rows of data to preserve memory while sorting.
7	Radio Button 1: Key and value are exactly one integer field	Preserves memory while executing a sort by. <b>Note:</b> Works only when "Preserve memory" is checked. Cannot be combined with the "Use sorted list" option below.
8	Radio Button 2: Use sorted list	Enable to store values using a sorted list; this provides better memory usage when working with data sets containing wide row. <b>Note:</b> Works only when "Preserve memory" is checked. Cannot be combined with the "Key and value are exactly one integer field" option.
9	Fetch First Matched Record	Enabling this checkbox will fetch the matched record from the Lookup Step.
10	Button: Get fields	Automatically fills in the names of all the available fields on the source side (A); you can then delete all the fields you don't want to use for lookup.
11	Button: Get lookup fields	Automatically inserts the names of all the available fields on the lookup side (B). You can then delete the fields you don't want to retrieve

Content Tab: Current Options Section

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## 11.14 Table exists

### 11.14.1 Description

Table Exists is a step in the Lookup Plugin for Process Studio Workflows. You can use the Table Exists step to verify if a certain table exists in a database. The result is a Boolean flag field that gets added to the input fields in the output.

### **11.14.2** Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Connection	Specify the database connection to use
3	Schema name	Specify the schema of the table to look for
4	Table name field	Specify the name of the field that will contain the database table name to look for.
5	Result fieldname	Specify the name of the field that will contain the Boolean result flag in the output of this step.

## 11.15 Web Services Lookup

### 11.15.1 Description

Web Services Lookup is a step in the Lookup Plugin for Process Studio Workflows. This step performs a Web Services lookup using the Web Services Description Language (only SOAP WSDL requests / responses are understood. And some WSDL XML dialects and formats are not easily read, you may manually need to specify input and output fields. As a workaround Use SOAP UI, generate the XML you need and you may push that to the service using the HTTP Post step).

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	URL	Specify the base URL pointing to the WSDL document that will be retrieved
3	Operation	Choose an operation to call.
4	Operation request name (optional)	On occasions the WSDL gives back the wrong operation request name to put in the body. Put in the correct one(as expected by the service) here.

### 11.15.2 Configurations

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5	Load (button)	The load button loads the WSDL at the specified URL and tries to automatically populate the input and output tabs and fields. <b>NOTE:</b> If this doesn't work, you can still try to manually specify the input and output fields using the "Add Input" and "Add Output" buttons.
6	The number of rows per call	Specify the number of rows to send with each WSDL call
7	Pass input data to output	If you disable this, the input will be eaten and only the WSDL output will be passed along to the next steps.
8	v2.x/3.x compatibility mode	Enable this checkbox to support engine v2.x as well as 3.x. The parsing engine is 3.x. For compatibility reasons, 2.x is around to make sure older steps would still work OK.
9	Repeating element name	Specify the name of the repeating element in the output XML (if any).
10	HTTP authentication	Specify the username and password if these are required for the web service.
11	Proxy to use (optional)	Specify the proxy host and port information if necessary.
12	Add Input / Add Output	These buttons will allow you to manually specify the input and output specifications of the WSDL service. <b>Note:</b> The data of the input fields can be escaped by the Calculator step and the function "Mask XML content from string A"

# 12 Joins

### **12.1** Join Rows (Cartesian product)

### 12.1.1 Description

Join Rows is a step in the Joins Plugin for Process Studio Workflows. The Join rows step creates combinations (Cartesian product) of all rows in the input streams. The number of rows is the multiplication of the number of rows in the input streams.

### 12.1.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step; this name has to be unique in a single workflow

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2	Temp directory	Specify the name of the directory where the system stores temporary files. This is required when you want to combine more than the cached number of rows.
3	TMP-file prefix	Specify the prefix of the temporary files that will be generated.
4	Max. cache size	Specify the maximum cache size. Only after the cache size threshold the system uses temporary files for caching data. This is required when you want to combine large row sets that do not fit into memory.
6	Main step to read from	Specify the step from which to read most of the data. The data from this step is spooled to the temporary file in disk while the data from other steps is not spooled to the file.
7	The Condition(s)	You can enter a multi-level condition to limit the number of output rows.

### 12.2 Merge Join

### 12.2.1 Description

Merge Join is a step in the Joins Plugin for Process Studio Workflows. Merge Join step is used to merge data sets coming from two input streams with a common key column. It can join the two streams on a given key as an Inner Join, Left Outer Join, Right Outer Join or Full Join and outputs a joined set with fields in the two sets. The input streams must be sorted on the join key.

### 12.2.2 Configurations

Field	Fields Tab		
No.	Field Name	Description	
1	Step name	Specify the name of the step. The step name should be unique within the workflow.	
2	First Step	Used to specify first input step to the merge join (left).	
3	Second Step	Used to specify second input step to the merge join (right).	
4	Join Type	<ul> <li>Select the type of Join.</li> <li>INNER-Only rows having the same key in both datasets are included in the result.</li> <li>LEFT OUTER-All rows from the first dataset are included in the result, along with empty values for non-matching keys in the second dataset.</li> <li>RIGHT OUTER- All rows from the second dataset are included in the result, along with empty values for non-matching keys in the first dataset.</li> </ul>	

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		• <b>FULL OUTER-</b> All rows from both datasets are included in the result, along with empty values for non-matching keys in both datasets.
5	Keys for 1 <sup>st</sup> step	Used to specify key fields on which the incoming data is sorted.
6	Keys for 2 <sup>nd</sup> step	Used to specify key fields on which the incoming data is sorted.
Butto	ons:	
No.	Field Name	Description
1	Get key fields	When clicked, it retrieves a list of fields from the step specified.

### 12.3 Merge Rows (diff)

#### 12.3.1 Description

Merge Rows (diff) is a step in the Joins Plugin for Process Studio Workflows. Merge rows step compares data from two input streams (say reference and compare rows) and merges the data, based on common keys. The data from both the input steps should be sorted on the key used for merging. The two streams are compared based on keys as well as other fields of the row. The latest version of a row is passed to the next steps. The new rows are flagged as equals, changed, new or deleted as the case may be. (This is useful for comparing data from two different times. It is often used in situations where the reference system does not contain a date of last update).

This step may be used in conjunction with Synchronize after merge step. The flag column is then used to execute updates/inserts/deletes on a target table.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Reference rows origin	Specify the step with reference rows.
3	Compare rows origin	Specify the step with compare rows (new rows).
4	Flag fieldname	Specify the name of the flag field on the output stream. It will contain one of the following values: Identical, Changed, New or Deleted
5	Keys to match	Specify fields containing the keys on which to match; click Get key fields to insert all of the fields originating from the reference rows step
6	Values to compare	Specify fields containing the values to compare; click Get value fields to insert all of the fields from the originating reference and Compare rows steps. Key fields need not be specified here. The Flag fieldname is populated depending on the value in the

#### 12.3.2 Configurations

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compare field or the absence of rows for some keys in the compare rows the	
---	--

### 12.4 Multiway Merge Join

#### 12.4.1 Description

Multiway Merge Join is a step in the Joins Plugin for Process Studio Workflows. This step allows joining of multiple streams and supports INNER and FULL OUTER joins. This is in contrast to the Merge Join step only allows doing this for two streams.

#### 12.4.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Join type	List of Values: INNER, FULL OUTER

### 12.5 Sorted Merge

#### 12.5.1 Description

Sorted Merge is a step in the Joins Plugin for Process Studio Workflows. The Sorted Merge step is similar to the Merge Join step in that it merges rows coming from multiple input steps. The differentiator is that that these rows are also sorted on the given key fields in the step itself.

#### 12.5.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Fields table	Specify the field name and sort direction (ascending/descending); click Get Fields to retrieve a list of fields from the input stream(s).

### 12.6 XML Join

#### 12.6.1 Description

XML Join is a step in the Joins Plugin for Process Studio Workflows. This step can join a stream of XML-Tags into a target XML string. The target stream must have only one row, since it represents an XML document. The source stream can consist of many rows and the tags from all rows are added to the target document. After the join only one row will be produced containing the fields of the target step plus the result field of the join.



# 12.6.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Target Stream Properties:	
2	Target XML Step	Specify the step that sends the target document to the join
3	Target XML Field	Specify the field that contains the XML structure
	Source Stream Properties:	
4	Source XML Step	Specify the step that send the XML structure(s) to the join that need to be added to the target
5	Source XML Field	Specify the field that contains the XML structures that get added to the target
	Join Condition Properties:	
6	XPath Statement	Specify the XPath statement to find the node in the target document where the tags will be added. When complex join is enabled a single? is used as a placeholder.
7	Complex Join	Enable the complex join syntax, using the placeholder in the XPath Statement
8	Join Comparision Field	Specify Field that contains the values that get replaced in the XPath Statement
	Result Stream Properties:	
9	Result XML field	Specify the field that will contain the result.
10	Encoding	Choose the encoding to be used in the XML Header and to transform the XML.
11	Omit XML header	Enable checkbox to omit XML header.

# 13 Validation

## 13.1 Data Validator

### 13.1.1 Description

Data Validator is a step in the Validation Plugin for Process Studio Workflows. Data Validator step validates data from the input stream against a set of validation rules on the data type and the data. An unlimited number of validation rules can be set. This ensures the quality of data from the input stream. Data validations can include a value range, a distinct list of values or data lengths etc.

### 13.1.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Report on all errors, not only the first	Enable checkbox to report on all errors.
3	Output one row, concatenate errors with separator	Output one row, concatenate errors with separator is enabled When Report on all errors, not only the first above is enabled. Enable this checkbox to concatenate all errors and specify the separator.
	Validations:	The fields appear after you add a validation, using <b>New</b> <b>validation.</b> Click <b>Remove validation</b> to delete the selected validation from the list.
4	Validation Description	Displays the name of the validation. You can modify the name of validation, if required.
5	Name of the fields to validate	Click <b>Add</b> to select the fields you want to validate from the <b>List</b> of fields dialog. OR Click <b>Add manually</b> to add name of the field you want to validate. Click <b>Remove</b> to delete the selected field from the list.
6	Error code	Specify the error code to pass to error handling for this validation rule.
7	Error description	Specify the error description to pass to error handling for this validation rule.
8	Data type	<ul> <li>Verify data type?: Check this if you want to specify a certain data type to match.</li> <li>Data type: Specify the data type of the data specified in this dialog or the data type to verify.</li> <li>Conversion mask: Specify the mask to use to convert the data specified in this validation rule.</li> </ul>

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		<ul> <li>Decimal Symbol: Specify the decimal symbol to use to convert the data specified in this validation rule.</li> <li>Grouping Symbol: Specify the grouping symbol to use to group the data in the validation rule.</li> </ul>
9	Values	<ul> <li>This block of information contains the actual bulk of the validation rule</li> <li>Null allowed?: Select the checkbox if you don't want to allow null values in the data for the selected field.</li> <li>Only null values allowed?: Select the checkbox if you want to allow null values only.</li> <li>Only numeric data expected?: Select the checkbox if you expect only numeric data to be available.</li> <li>Min string length: Verify the length of the string-form of the data of the selected field, make sure it's longer than or as long as the length specified here.</li> <li>Max string length: Verify the length of the string-form of the data of the selected field, make sure it's shorter than or as long as the length specified here.</li> <li>Minimum value: Verify the data of the selected field and see if it's not lower than the minimum value specified here.</li> <li>Maximum value: Verify the data of the selected field and see if it's not lower than the maximum value specified here.</li> <li>Expected start string: the string value of the value we validate needs to start with this value (when specified).</li> <li>Expected end string: the string value of the value we validate needs to end with this value (when specified).</li> <li>Not allowed end string: the string value with which the value to be validated must not end.</li> <li>Regular expression expected to match: the string value of the value we validate needs to match this regular expression (when specified)</li> <li>Regular expression not allowed to match: the string value of the value we validate needs to an out on the string?: enable this option to source the data from another step?: enable this option to source the data from another step in the workflow. This effectively removes the need to hard code allowed values. You can now store them in a database table or a file somewhere.</li> </ul>



<ul> <li>You also need to specify the step and field to read from if this option is selected.</li> <li>IMPORTANT: For every validation that sources data you need to specify a <i>different</i> step to read from.</li> <li>The step to read from: select the step from which to read the value to be validated.</li> <li>The field to read from: select the field to be validated from the selected step.</li> <li>Allowed values: Make sure that the data of the selected field</li> </ul>
<ul> <li>Allowed values: Make sure that the data of the selected field is only one of the values in the list.</li> </ul>
You can use the buttons to the right to add or remove values
from the list.
<ul> <li><u>Click Add to manually add allowed values.</u></li> </ul>
<ul> <li><u>Click Remove to delete the allowed values.</u></li> </ul>

## 13.2 Mail Validator

### 13.2.1 Description

Mail is a step in the Validation Plugin for Process Studio Workflows. This step checks if an email address is valid or not. The Mail Validator step returns a result field (Boolean or String depending on your settings) and one additional field (String) containing errors string when email address is not valid. The step adds result fields to input stream.

13.2.2	Configurations
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No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	email fieldname	Specify the name of the field that contains the email addresses to check. This field must be defined in a previous step. Dropdown the combo to select fieldname.
3	SMTP check?	By default, PROCESS STUDIO will only check email address structure (using regular expression). If you want to perform a SMTP check, please select this option and fill Email sender (see after). PROCESS STUDIO will extract domain name from the supplied email address (to check) and will try to get all exchangers from the domain name. Each exchanger will be queried.
4	Time out	In order to perform a SMTP check, PROCESS STUDIO will open a socket on the target SMTP host. Specify here the socket time out (by default 0).

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5	Email sender	If you select "SMTP check?" option, this field is mandatory. PROCESS STUDIO will need sender email address to query SMTP host.
6	Default SMTP server	If you know which SMTP server to query, please specify it here, PROCESS STUDIO will then query only this one. <b>Note:</b> Specifying SMTP host here will faster the process because PROCESS STUDIO will ask only this one and not fetching all the exchangers from the domain name.
7	dynamic default SMTP?	IF you want to pass default SMTP server in a dynamic way, check this option.
8	Default SMTP field	If you select the previous option, you must fill this field. This field must be defined in a previous step. Dropdown the combo to select fieldname.
9	Result fieldname	PROCESS STUDIO will store the result of the process in this field. The result will be Boolean (TRUE = the email address is valid, FALSE = the email address is unvalid) if "Result is a string" option is unchecked (see after). <b>Note:</b> This field is mandatory and will be added to the input stream.
10	Result is a string	This option will turn the ouput field into a String and when the email address is valid the output will contains the "Email is valid" field (see after) otherwise it will contains the "Email is not valid" field (see after).
11	Email is valid	If you selected the previous option, you must fill this field
12	Email is not valid	If you selected the previous option, you must fill this field
13	Errors field	When an email is address is invalid, PROCESS STUDIO return the reason. If you want to add it in the input stream, please give the field a name, otherwhise leave this field blank.

## 13.3 XSD Validator

#### 13.3.1 Description

XSD Validator is a step in the Validation Plugin for Process Studio Workflows. This step validates XML source (file or input field) against XSD (XML Schema Definition). You need to specify the XSD source that describes how XML file should look like and the XML you want to validate for layout.

### 13.3.2 Configurations



No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	XML Source:	
2	XML source is a file	Enable this checkbox if the XML file is defined as a filename in the XML field
3	XML field	Enable this checkbox if the field to read that contains the XML filename or the XML content itself.
	Output fields:	
4	Result fieldname	Specify the name of the result field
5	Output String field	<ul> <li>Enable this checkbox if you want to specify specific messages after validation:</li> <li>Display if XML is valid : the message if the XML was valid</li> <li>Display if XML is not valid : the message if the XML wasn't valid</li> </ul>
6	Add validation msg in output	Enable this check box if you want to add a validation message in the output
7	Validation msg field	Specify the name of the validation message field
	XML schema definition:	
8	XSD source	<ul> <li>Select one of these options:</li> <li><u>1.</u> The XSD source is a file, let me specify the filename (specify below in the XSD filename field).</li> <li><u>2.</u> The XSD source is a file, defined in a field (specify below in the XSD filename field).</li> <li><u>3.</u> The XSD source is defined inside the source XML.</li> </ul>
9	XSD Filename	Specify the filename if option 1 is chosen above. Click Browse button to search the file.
10	XSD Filename Field	Specify the field containing the file if option 2 is chosen as XSD source above.

# 14 Statistics

#### Analytic Query 14.1

#### 14.1.1 Description

Analytic Query is a step in the Statistics Plugin for Process Studio Workflows. Analytic Query step is used to execute analytic queries over a sorted data set. This step allows you to peek forward and backwards across rows (e.g. LEAD, LAG, FIRST, LAST).

No.	Field Name	Description
1.	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2.	Group fields table	Specify the fields you want to group. Click Get Fields to add all fields from the input stream(s). The step will do no additional sorting, so in addition to the grouping identified (for example CUSTOMER_ID) here you <i>must</i> also have the data sorted (for example ORDER_DATE).
	Analytic Functions table:	<ul> <li>Specify the analytic functions to be solved. Examples of common use cases are:</li> <li>Calculate the "time between orders" by ordering rows by order date, and LAGing 1 row back to get previous order time.</li> <li>Calculate the "duration" of a web page view by LEADing 1 row ahead and determining how many seconds the user was on this page.</li> </ul>
3	New Field Name	Specify the name you want this new field to be named on the stream (for example PREV_ORDER_DATE).
4	Subject	Specify the existing field to grab (for example ORDER_DATE) .
5	Туре	Specify the type of analytic function: Lead - Go forward N rows and get the value of Subject. Lag - Go backward N rows and get the value of Subject.
6	N	Specify the number of rows to offset (backwards or forwards).

#### 14.1.2 Configurations

## 14.2 Group by

#### 14.2.1 Description

Group by is a step in the Statistics Plugin for Process Studio Workflows. This step groups rows over a specified field or a group of fields. Group by step requires a sorted input only. If the input is not sorted, only consecutive rows with same value for grouping field are handled correctly. Examples of common use cases are: calculate the total sales per region or get the number of students with 75% marks.

### 14.2.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

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2	Include all rows?	Enable if you want all rows in the output, not just the aggregation; to differentiate between the two types of rows in the output, a flag is required in the output. You must specify the name of the flag field in that case (the type is boolean).	
3	Temporary files directory	Specify the directory in which the temporary files are stored (needed when the <i>Include all rows</i> option is enabled and the number or grouped rows exceed 5000 rows); the default is the standard temporary directory for the system	
4	TMP-file prefix	Specify the file prefix used when naming temporary files	
5	Add line number, restart in each group	Enable this checkbox to add a line number that restarts at 1 in each group	
6	Line number field name	Enable to add a line number that restarts at 1 in each group	
7	Always give back a row	If you enable this option, the Group By step will always give back a result row, even if there is no input row. This can be useful if you want to count the number of rows. Without this option you would never get a count of zero (0).	
8	Group fields table	<ul> <li>Click Get Fields to add all fields from the input stream(s).</li> <li>Group field: Specify the fields over which you want to group.</li> </ul>	
9	Aggregates table	<ul> <li>Specify the fields that must be aggregated, the method and the name of the resulting new field.</li> <li>Name: Specify the name you want this new field to be named on the stream</li> <li>Subject: Specify the fields which you want to aggregate.</li> <li>Type: Here are the available aggregation method types : <ul> <li>Sum</li> <li>Name: Specify the name you want this new field to be named on the stream</li> <li>Subject: Specify the name you want this new field to be named on the stream</li> <li>Subject: Specify the name you want this new field to be named on the stream</li> <li>Subject: Specify the fields which you want to aggregate.</li> <li>Type: Here are the available aggregation method types : <ul> <li>Sum</li> <li>Average (Mean)</li> <li>Median</li> <li>Percentile</li> <li>Minimum</li> <li>Maximum</li> <li>Number of values (N)</li> </ul> </li> </ul></li></ul>	



<ul> <li>Concatenate strings separated by , (comma)</li> <li>First non-null value</li> </ul>
- Last non-null value
<ul> <li>First value (including null)</li> </ul>
<ul> <li>Last value (including null)</li> </ul>
<ul> <li>Cumulative sum (all rows option only!)</li> </ul>
<ul> <li>Cumulative average (all rows option only!)</li> </ul>
- Standard deviation
<ul> <li>Concatenate strings separated by <value>:</value></li> </ul>
specify the separator in the Value column
- Number of distinct values
- Number of rows (without field argument)

### 14.3 Memory Group by

#### 14.3.1 Description

Memory Group by is a step in the Statistics Plugin for Process Studio Workflows. This step groups rows based on specified fields. This step builds aggregates in the same way as group by step. However, it does not require a sorted input since it processes all rows within memory. When the number of rows is too large to fit into memory, you need to use the combination of the Sort rows and Group by steps.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Always give back a result row	If you enable this option, the Group By step will always give back a result row, even if there is no input row. This can be useful if you want to count the number of rows. Without this option you would never get a count of zero (0).
3	The field that make up the group	<ul> <li>Click Get Fields to add all fields from the input stream(s).</li> <li>Group field: Specify the fields over which you want to group.</li> </ul>
4	Aggregates	<ul> <li>Specify the fields that must be aggregated, the method and the name of the resulting new field.</li> <li>Name: Specify the name you want this new field to be named on the stream</li> <li>Subject: Specify the fields which you want to aggregate.</li> <li>Type: Here are the available aggregation method types :</li> </ul>

#### 14.3.2 Configurations

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	-	Sum
	-	Average (Mean)
	-	Median
	-	Percentile
	-	Minimum
	-	Maximum
	-	Number of values (N)
	-	Concatenate strings separated by , (comma)
	_	First non-null value
	_	Last non-null value
	_	First value (including null)
	_	Last value (including null)
	_	Cumulative sum (all rows option only!)
	_	Cumulative average (all rows option only!)
	_	Standard deviation
	_	Concatenate strings separated by <values:< th=""></values:<>
		specify the separator in the Value column
		Number of dictingt values
	-	Number of distinct values
	-	Number of rows (without field argument)

#### 14.4 **Output steps metrics**

#### 14.4.1 Description

'Output steps metrics' is a step in the Statistics Plugin for Process Studio Workflows. This step returns metrics of one or several steps in a workflow.

#### 14.4.2 Configurations

Gene	General Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Copy Nr	Specify the copy number of the step. The default number of copies is 1, (i.e. the CopyNr equals 0). Leave it to the default value 0.	
3	Required	Is step requires. Select Y/N.	
Fields Tab:			
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	



2	Step id	Specify the step instance ID
3	Lines input	Specify the fieldname to store the number of rows input
4	Lines output	Specify the fieldname to store the number of rows output
5	Lines read	Specify the fieldname to store the number of rows read
6	Lines updated	Specify the fieldname to store the number of rows updated
7	Lines written	Specify the fieldname to store the number of rows written
8	Lines rejected	Specify the fieldname to store the number of rows rejected
9	Duration(ms)	Specify the fieldname to store the execution time(ms)

### 14.5 Sample rows

#### 14.5.1 Description

Sample rows, is a step in the Statistics Plugin for Process Studio Workflows. Sample rows step samples rows based on individual row numbers. You can specify (one or more) individual row numbers or ranges.

#### 14.5.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	The lines range	The range or ranges or row numbers. You can separate the ranges or individual row numbers with commas. Ranges are specified with two decimals between the row numbers, for example: 510
3	Line nr fieldname	Specify the name of the output field that will contain the line number.

# 15 Cryptography

### 15.1 Secret key generator

#### 15.1.1 Description

Secret key generator is a step in the Cryptography Plugin for Process Studio Workflows. The Secret Key Generator step is used to generate a random key (secret key) for algorithms such as DES, AEC, TripleDES, which can be used for symmetric encryption of data.

#### 15.1.2 Configurations

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No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Output fields:	
1	Secret key field	Specify the name of the field that contains the generated secret key.
2	Algorithm field	Specify the name of the field that contains the the algorithm the generated secret key is used with.
3	Secret key length field	Specify the name of the field that contains the bit-length of the generated secret key.
4	Output key as binary	Enable this checkbox if you want the secret key to be returned in the native binary form. Otherwise, the secret key will be encoded in hexadecimal form.
	Secret key:	
1	Algorithm	Specify the name of the Cipher algorithm that should be used to generate the secret key.
2	Scheme	Specify the name of the Cipher tranformation type that you would like to use. Leave empty for the default value used with the Algorithm. A default set of required Cipher Transformation types is available in Oracle Javadocs: https://docs.oracle.com/javase/7/docs/api/javax/crypto/Cipher.html
3	Key length	The bit-length of the secret key to be generated. For DES, the Key length can be 56. For DESede (Triple DES), the Key length can be 112 or 168. For AES, the Key length can be 128, 192, or 256.
4	How many?	The number of rows that should be generated with these Secret Key settings.

## 15.2 Symmetric Cryptography

#### 15.2.1 Description

Symmetric Cryptography is a step in the Cryptography Plugin for Process Studio Workflows. Symmetric Cryptography step is used to Encrypt or decrypt a string using symmetric encryption. Available algorithms are DES, AEC, TripleDES.

**Note:** Encrypting data with an AES key that has a key length of 192 or higher requires the Java Cryptography Extension, which allow unlimited strength cryptography. Without the JCE

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extensions, only AES with a key-length of 128 bits is supported. DES and DESede (Triple DES) are not affected.

### 15.2.2 Configurations

No.	Field Name	Description
1	Step name	Name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
	Crypto Settings:	
1	Operation	Encrypt or Decrypt the message using the specified Secret key
2	Algorithm	The algorithm to be used to encrypt or decrypt the message
3	Scheme	The Cipher transformation type to be used with the Algorithm. This can be left empty for the default setting
4	Secret Key	The Secret Key to be used to encrypt or decrypt the message.
5	Secret key defined in a field	Enable to read the Secret Key from the incoming row, instead of from the Secret Key field
6	Secret Key field	If Secret key defined in a field above is enabled, provide the name of the field in the incoming stream that contains the Secret Key
7	Read key as binary	Enable Read key as binary if you want the secret key to be read in the native binary form from the incoming row. Otherwise, the secret key will be encoded in hexadecimal form.
	Message:	
1	Message Field Name	Specify the name of the field in the incoming row that contains the message to be encrypted or decrypted
	Results Fields:	
1	Result Fieldname	Specify the name of the field in the outgoing row that contains the result of the encryption or decryption operation
2	Save result as binary	Enable Save result as binary checkbox to store the result of the encryption or decryption operation as binary in the outgoing row. Otherwise, the result is stored as a string.

# 16 **Process**

## 16.1 Copy rows to result

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### 16.1.1 Description

Copy rows to result, is a step in the Process Plugin for Process Studio Workflows. This step transfers rows of data (in memory) to the next workflow (or process entry) in a process via an internal result row set. It can be used by the Get rows from result step and by process entries that allow processing the internal result row set.

### 16.1.2 Configurations

No.	Field Name	Description
1	Step Name	Specify the name of this step as it appears in the workflow workspace

### 16.2 Get Variables

#### 16.2.1 Description

Get Variables is a step in the Process Plugin for Process Studio Workflows. Get Variables step can read variables and convert them to fields in the stream as string values. This step can return rows or add values to input rows. To convert the Variable into a data type other than String you may use Rename Fields steps Meta-data tab.

Additionally to get system values, including command line arguments, use the Get System Info step.

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Name	Specify the name of a field to store a particular variable value.
3	Variable	You may enter variables as complete strings; for example, you can specify: \${java.io.tmpdir}/tempfile.txt and it will be expanded to /tmp/tempfile.txt on Unix-like systems. Or you may choose a variable from the list (Ctrl+space).
4	Туре	Specify the field type: String, Date, Number, Boolean, Integer, BigNumber, Serializable, or Binary.
5	Format	Specify the format of the field after the type has been determined.
6	Length	<ul> <li>Specify length of the field.</li> <li>For Number: Total number of significant figures in a number;</li> <li>For String: total length of string;</li> <li>For Date: length of printed output of the string (for example, entering 4 would only return the year).</li> </ul>

### 16.2.2 Configurations

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7	Precision	<ul> <li>Specify precision,</li> <li>For Number: Number of floating point digits.</li> <li>Not used for String, Date, or Boolean.</li> </ul>
8	Currency	Specify currency format to interpret numbers with currency symbols. For example, \$10,000.00 or E5.000,00.
9	Decimal	<ul><li>Specify decimal separator:</li><li>a period (".") or comma (",") for number values.</li></ul>
10	Group	Specify a group indicator e,g to use a period (".") or comma (",") for number values.
11	Trim Type	Specify Trim Type for the field before processing: select either none, left, right, or both (left and right).

### **16.3 Get files from result**

#### 16.3.1 Description

Get files from result is a step in the Process Plugin for Process Studio Workflows. Every time a file gets processed, used or created in a workflow or a process, the details of the file, the process entry, the step, etc. are captured and added to an internal result set when the option 'Add file names to result' is set, e.g. in a Text File Output step. You can access this file information using this step.

**Note:** This step produces one or more rows and cannot be placed within a stream. It must be the first step in a stream since it produces rows. If you want to add these data to an existing stream, you need to use a join step.

#### 16.3.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

## 16.4 Get rows from result

#### 16.4.1 Description

Get rows from result is a step in the Process Plugin for Process Studio Workflows. This step returns rows that were previously generated by another workflow in a process and were passed on to this step using the Copy rows to result step. You can enter the meta-data of the fields you're expecting from the previous workflow in a process.

**Note:** This step produces one or more rows and cannot be placed within a stream. It must be the first step in a stream since it produces rows.

### 16.4.2 Configurations

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No.	Field Name	Description
1	Step name	Specify the name of this step as it appears in the workflow workspace.
2	Fieldname	Specify the name of the field that contains the rows from the previous result.
3	Туре	Specify the type of data.
4	Length	<ul> <li>Specify length of the field.</li> <li>For Number: Total number of significant figures in a number;</li> <li>For String: total length of string;</li> <li>For Date: length of printed output of the string (for example, entering 4 would only return the year).</li> </ul>
6	Precision	<ul><li>Specify precision,</li><li>For Number: Number of floating point digits.</li><li>Not used for String, Date, or Boolean.</li></ul>

## 16.5 Set Variables

#### 16.5.1 Description

Set Variables is a step in the Process Plugin for Process Studio Workflows. Set Variables step can set field values to variables in a process or in the virtual machine. It accepts one (and only one) row of data to set the value of a variable.

### 16.5.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Apply formatting	When this option is set, it formats the value (date, numbers etc.) according to the format options. Otherwise no formatting is done.
3	Field Name	Specify the name of the field that is used to set a variable.
4	Variable Name	Provide the name of the variable to set (without \${} or %%%% sigils)
5	Variable scope type	<ul> <li>Define the scope of the variable, possible options are:</li> <li>Valid in the virtual machine: the complete virtual machine will know about this variable.</li> <li>Valid in the parent process: the variable is only valid in the parent process.</li> </ul>

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		<ul> <li>Valid in the grand-parent process: the variable is valid in the grand-parent process and all the child processes and workflows.</li> <li>Valid in the root process: the variable is valid in the root process and all the child processes and workflows.</li> </ul>
6	Default value	Provide a default value for the variable to set. This is used in case no fields value is received.

## 16.6 Set files in result

#### 16.6.1 Description

Set files in result, is a step in the Process Plugin for Process Studio Workflows. This step allows you to set filenames in the internal result files of a workflow. Subsequent process entries can then use this information as it routes the list of files to the result files stream. The result files set may be used by the Get files from result step or some process entries that can process the list of result files. For example, the Mail process entry can use this list of files to attach to a mail, so perhaps you don't want all files sent, but only a certain selection. For this, you can create a workflow that filters and sets exactly those files you want to attach.

### 16.6.2 Configurations

No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	Filename field	Choose from the dropdown list the field that contains the filenames of the files to copy.
3	Type of file to set	<ul> <li>Select the type of file to set in the results for the filename above,</li> <li>General</li> <li>Log</li> <li>Error line</li> <li>Error</li> <li>Warning</li> </ul>

# **17 Experimental**

### 17.1 SFTP Put

#### 17.1.1 Description

SFTP Put is a step in the Experimental Plugin for Process Studio Workflows. This step corresponds to the Put files with SFTP process entry. SFTP Put step can be used to transfer

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one or more source files from a directory on the machine on which Process Studio runs to a remote target directory using the Secure FTP protocol.

#### 17.1.2 Configurations

Gene	General Tab		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
	Server settings:		
2	Server	Specify the name of the SFTP server or the IP address.	
3	Port	Specify the TCP port to use. This is usually 22.	
4	Username	Specify the user name to log into the SFTP server.	
5	Password	Specify the password to log into the SFTP server.	
6	Use keyfile	Enable this Checkbox to indicate whether or not a private keyfile is to be used.	
7	Keyfile	If "Use keyfile" above is checked then this field is enabled. The file can be browsed to using the browse button to the right of the field. The Private Key should be in the PEM file format. For PuTTY-based Private Keys, use PuTTYgen to convert the file into "OpenSSH" format.	
8	Key password	If "Use keyfile" above is checked then this field is enabled. If a passphrase is required then enter it here.	
9	Proxy type	Specify the proxy type (SOCKS5, HTTP) of the specified proxy server.	
10	Proxy host	Specify the host name or the IP address of the proxy server.	
11	Proxy port	Specify the port of the proxy server to connect to.	
12	Proxy username	Specify the username to log into the proxy server as.	
13	Proxy password	Specify the password associated with "Proxy username".	
14	Button: Test Connection	Click this button to test SFTP connection.	
15	Compression	Specify the compression to use in the file transfer. Current options are "none" and "zlib".	
Files	Tab		
No.	Field Name	Description	
	Source(local) files:		



1	Input is a stream	Enable this checkbox to indicate that input filename is coming from the workflow stream.
2	Source filename field	Choose a field in the stream containing the filename.
3	Add filename to result	Enable checkbox to add filename to result.
4	After SFTP Put	Specify the action to take after the file is transferred. Actions are "Do nothing", "Delete file" and "Move file to".
5	Destination folder	Destination folder is enabled if "After SFTP Put" is set to "Move file to". The destination on the source file for the move is specified here. Use to browse button to browse to destination folder.
6	Create destination folder	Enabled if "After SFTP Put" is set to "Move file to". If the "Destination folder" does not exist check this option to create it.
	Target (remote) folder:	
7	Remote directory	Specify the remote directory on the SFTP server to which we need to put the files.
8	Create folder	Check this option if the destination folder does not exist and should be created.
9	Remote filename	Provide a remote filename.



# 18 Deprecated

## 18.1 Reservoir Sampling

#### 18.1.1 Description

Reservoir Sampling is a step in the Statistics Plugin for Process Studio Workflows. The reservoir sampling step samples a specified number of rows from an input stream. The step uses uniform sampling; all incoming rows have an equal chance of being selected.

### 18.1.2 Configurations

S Ta	S Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Sample size	Select how many rows to sample from an incoming stream. Setting a value of 0 will cause all rows to be sampled; setting a negative value will block all rows.	
3	Random seed	Choose a seed for the random number generator. Repeating a workflow with a different value for the seed will result in a different random sample being chosen.	

## 18.2 Sequential Begin

#### 18.2.1 Description

Sequential Begin is a step in the Deprecated category in Process Studio, only for backward compatibility.

Sequential Begin and Sequential End steps are used in pairs in a workflow. Process Studio executes all the steps in parallel by default. For any need to execute certain steps sequentially, they can be placed between these steps. Both the steps are now deprecated and are not encouraged to be used in workfows.

### 18.2.2 Configurations

S Tab:		
No.	Field Name	Description
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

## 18.3 Sequential End

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### 18.3.1 Description

Sequential End is a step in the Deprecated Plugin in Process Studio, only for backward compatibility.

Sequential Begin and Sequential End steps are used in pairs in a workflow. Process Studio executes all the steps in parallel by default. For any need to execute certain steps sequentially, they can be placed between these steps. Both the steps are now deprecated and are not encouraged to be used in workfows.

### 18.3.2 Configurations

S Ta	S Tab:		
No.	Field Name	Description	
1	Step name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.	
2	Sequential Begin Step	Select the corresponding Sequential Begin Step from the fields in the drop down list.	



# **II. Process Entries**



# **1** AutomationEdge Core Entries

## 1.1 Debug Log

### 1.1.1 Description

The Debug Log process entry is used for logging Process/Workflow variables and fields into AutomationEdge Agent log (agent.log) file when Process/Workflow is run from AutomationEdge; or in Process Studio log (process-studio.log) file when Process/Workflow is run from Process Studio.

### 1.1.2 Configurations

No.	Field Name	Description
1	Step Name	Specify a unique name for the process entry on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Log Level	Select a value from the drop down list. Possible values are DEBUG, INFO, WARN, ERROR in ascending order of severity. The debug log step will collect logs at the level selected here or at higher lever of severity. However the base level is governed by the Agent Logger setting (DEBUG, INFO, WARN or ERROR) in the log4j2.xml file available in the agents conf folder. All logs at a higher level than this setting will be visible in Agent log file. In case of Process Studio the base level is governed by the ProcessStudioLogger setting (DEBUG, INFO, WARN or ERROR) in the log4j2.xml file available in the Process Studio distribution conf folder. All logs at a higher level than this setting will be visible in Process Studio Log file.
Varia	ables Tab	
No	Field Name	Description

INO.	Field Martie	Description
1	variables	Accepts comma separated list of variables to be logged in.
Field	Is Tab: Contains table to acce	pt fields to be logged in.
No.	Field Name	Description
1	Name	Name of field to be logged in.
2	Туре	Auto populated once the field name is selected. It is not editable.

Notes: Secret variables are logged as 'XXXX'

Agent logs are also accessible from AutomationEdge Agent Log menu. Debug logs are part of Agent Logs. Agent Logs are visible by navigating to the Logs menu and Agent Logs sub-menu in AutomationEdge. Agent logs can be obtained by clicking the New Request Button on the top

right corner. Source should be chosen at Agent or Workflow level as shown in the screenshot below.

			New Request				<b>×</b>	NutomationEdge
4	Age	ent Logs	Select Entity*				Search	Q New Request
100	C							
P	Id	Agent Name	AGENT		Submit X Close	on	Issue Dato	Last Updated
Q	2	Administrator@LPT0540_d1535519190		4,		7-Aug-2018 14:59.43	27-Aug-2018 15 00 25	27-Aug-2018 15 00 34
==	1	Administrator@LPT0540_d1535519190	1	Download	27-Aug-2018 14:57:41	27-Aug-2018 14:58:56	27-Aug-2018 15:00 19	27-Aug-2018 15:00:28
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### 1.2 Get Files from Server

### 1.2.1 Description

Get Files from server entry in the AutomationEdge Core plugin, downloads Agent/Workflow files from server at runtime, when executed from AutomationEdge server.

**Note:** The file name should not be changed when updated from AutomationEdge UI; only then the process will be able to pick it up. If there is filename change, the process also should be updated accordingly.

### 1.2.2 Configurations

No.	Field Name	Description
1	Process Entry Name	Name of the process entry. This name has to be unique in a single process.

#### General Tab:

No.	Field Name	Description
	Common Input Parameters:	

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1	'Download all workflow related files'	Enable 'Download all workflow related files' check box to download all workflow related files; any entry related to workflow level in the table below will not be considered.
2	Target Directory	Target Directory is enabled only if the checkbox above is selected. Specify target directory to copy all the workflow related files.
	Tabular Fields:	
3	Level	<ul> <li>Allowed values are Agent/Workflow.</li> <li>Note: <ul> <li>If the 'Download all workflow related files' checkbox above is selected, then only Agent is shown in the dropdown list.</li> <li>For Same level, duplicate filename is not allowed</li> </ul> </li> </ul>
4	Filename	Specify the file name with extension, to be downloaded
5	Target Directory	Specify the target directory to download the file. If target directory is not specified, the file is downloaded in the directory of the workflow/agent (i.e. Internal.Entry.Current.Directory path).

Conf	iguration Tab:	
No.	Field Name	Description
1	Ignore Errors	Enable checkbox to ignore all errors in downloading files from server.
	If file exists:	
2	Radio button options:	Select a radio button option below to specify the behaviour if filename already exists in the target directory.
		<ul> <li>Overwrite existing files (Default)</li> <li>Error if file exists</li> <li>Skip if file exists</li> </ul>

**Note:** This entry can be used as a first step or intermediate step. In case of intermediate step, execution is done only for the first row.

## 1.3 Send Email

## 1.3.1 Description

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Send email process entry can be used in a process to send emails.

### 1.3.2 Configurations

No.	Field Name	Description
1	Process Entry Name	Specify a unique name for the process entry on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Email Details:	
1	То	Provide a comma separated list of email addresses.
2	СС	Provide a comma separated list of email addresses in carbon copy(CC)
3	BCC	Provide a comma separated list of email addresses in blind carbon copy(BCC)
4	Subject	Provide a subject for the email.
5	Email body	Provide contents of email body or a variable.
6	Synchronous	If it is checked the step will wait for response from AE Server. Enable checkbox to make it synchronous with workflow completion.
7	Send Email on last row	Enable checkbox to send one email upon completion of reading the last row.
	Attachment Details:	
1	Attachment	List of attachments

## 1.4 Set PS Variables

### 1.4.1 Description

Set PS Variables entry sets PS Variables with global or local scope as specified. These variables are available in the same process.

### 1.4.2 Configurations

No.	Field Name	Description
1	Step name	Name of the process entry. This name has to be unique in a single process.

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	Field values (Tabular):	
2	Variable name	Specify the variable name to be set.
3	Scope	Specify the scope of the variable (Local or Global). <b>Note:</b> <b>Global variables</b> are available throughout the lifecycle of the parent workflow/process. They can be created at any sub-level and it will be available after that to the entire scope. They will be destroyed after the main or parent workflow/process ends. <b>Local variables</b> are available only in the workflow/process where it has been created. They are not available to the child workflow/process. The same variable name can be used for global and local scopes simultaneously. The value modified or fetched is completely based on the scope specified as mentioned in the note below.
		Note: The PS variables are added to the existing list which pops up on Ctrl-Space where applicable. The format of these variables in the list will be as <b>\${GLOBAL.varname}</b> and <b>\${LOCAL.varname}</b> . The PS variables created in 'User Defined Java Class' or 'Modified Java Script', are not visible in this list. However, If the child workflow/process is already opened and a variable is added in the parent workflow/process. This variable is not reflected directly at design time (i.e. on Ctrl-Space) although
		<ul> <li>there no issues during runtime. There are two options for this,</li> <li>The user can type the variable name where required</li> <li>Reopen the child workflow/process (from Open referenced object) after the variable is added.</li> </ul>
4	Default value	Specify the default value of the variable.

Note: The PS variables set in this cannot be used for database connection details.

Com	Common Buttons:			
No.	Field Name	Description		
	Buttons:			
1	ОК	On click of this button. It will check the field values. If any required field values are missing then it will display validation error message.		


		If all the required field values are provided then it will save the field values.
2	Cancel	On click of this button, it will cancel the window and does not save any values.
3	Get Fields	Click this button to fetch the fields from the previous steps in the workflow stream.

#### 1.5 **Set Workflow Result**

#### 1.5.1 Description

The Set Workflow Result is used to set the workflow result on AutomationEdge for the particular request.

1.5.2 Configurations			
No.	Field Name	Description	
1	Process Entry Name	Specify a unique name for the process entry on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.	
2	Success	Boolean value (true or false) can be set to define the request status (Success or Failure).	
3	Status	Status can be set from one of the following: Complete, Failure or Diverted. Status can be set irrespective of value set in Success above.	
4	Message	Success or error message to be set for the request. Message is governed by the Success set above.	
5	Failure Reason	<ul> <li>Failure reason can be set if success is false and status is failure.</li> <li>Choose from the fourteen failure reasons: <ol> <li>License invalid</li> <li>Invalid request input</li> <li>Invalid credentials</li> <li>Invalid workflow</li> <li>Agent stopped or restarted</li> <li>Failed to connect to external system</li> </ol> </li> </ul>	

#### 1.5.2 nfigurations

7. Workflow failed to internal reason

8. Error while uploading/downloading file with server

- 9. Script exited with errors
- 10. Workflow failure set in OUTPUT.txt
- 11. Workflow instantiation failure

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		<ul><li>12. Exceeded maximum execution time</li><li>13. Too many pending requests</li><li>14. Unknown reason</li></ul>
6	Total Operations	I otal number of operations performed
7	Successful	Number of successful operations performed
8	Attribute 1	Additional Attribute 1
9	Attribute 2	Additional Attribute 2
10	Attribute 3	Additional Attribute 3
11	Attribute 4	Additional Attribute 4
12	Attribute 5	Additional Attribute 5
13	Attribute 6	Additional Attribute 6
	Output Parameters:	
1	Variable	Name of the variable to set
2	Туре	Data type of the variable
3	Display Name	Display name of the variable as seen on AutomationEdge UI

# 2 General

### 2.1 Start

### 2.1.1 Description

Start is an entry in the General Plugin of Process Studio Processes. Start is the starting point for process execution. Every process must have one Start. Only unconditional process hops are generated from Start.

# 2.2 Dummy

### 2.2.1 Description

Dummy is an entry in the General Plugin of Process Studio Processes. The Dummy process entry does nothing. It is just an entry point or placeholder on the canvas; Dummy performs no evaluation. It can be useful in handling loops in workflows by branching to the Dummy step on a certain condition. It makes drawing clearer for looping.

# 2.3 Process



# 2.3.1 Description

Process is an entry in the General Plugin of Process Studio Processes. The 'Process' process entry refers to already existing processes. One or more process entries in a Process may perform different functional tasks. Hence, a process can be broken into smaller processes for the sake of organizational and visual simplicity.

# 2.3.2 Configurations

Proc	Process Specification Tab			
No.	Field Name	Description		
1	Process Entry name	Specify a unique name for the process entry on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.		
2	Process filename	Specify your process by entering in its path or clicking <b>Browse</b> . If you select a process that has the same root path as the current process, the variable \${Internal.Entry.Current.Directory} will automatically be inserted in place of the common root path. For example, if the current process's path is /home/admin/workflow.psp and you select a process in the folder /home/admin/path/sub.psp than the path will automatically be converted to \${Internal.Entry.Current.Directory}/path/sub.psp.		
3	Repository: specify by name	If you are working in the Process Studio (PS) Repository or database repository, specify the name of the workflow to start. Click the button to browse through the PS Repository. This feature is currently not enabled.		
4	Repository: specify by reference	If you specify a workflow or process by reference, you can rename or move it around in the DI Repository. The reference (identifier) is stored, not the name and directory This feature is currently not enabled.		
Adva	anced Tab			

No.	Field Name	Description
1	Copy previous results to args?	The results from a previous workflow can be copied as arguments of the process using the "Copy rows to result" step. If Execute for every input row is enabled then each row is a set of command line arguments to be passed into the process, otherwise only the first row is used to generate the command line arguments.
2	Copy previous results to parameters?	If Execute for every input row is enabled then each row is a set of command line process arguments to be passed into the

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		process, otherwise only the first row is used to generate the command line arguments.
3	Execute for every input row?	Implements looping; if the previous process entry returns a set of result rows, the process executes once for every row found. One row is passed to the process at every execution. For example, you can execute a process each row in an excel sheet or for each file found in a directory.
Logg	ing settings Tab	
No.	Field Name	Description
1	Specify logfile	Specifies a separate log file for running this process.
2	Name	The directory and base name of the log file, for example, 'C:\logs'.
3	Extension	The file name extension, for example, '.log' or '.txt'.
4	Log level	Specifies the logging level for running the process. See Enable Logging for more details.
5	Append logfile?	Appends the log file instead of creating a new one.
6	Create parent folder	Creates the parent folder for the log file if it does not already exist.
7	Include date in logfile	Adds the system date to the file name with the format 'YYYYMMDD', for example '_20051231'.
8	Include time in logfile	Adds the system time to the file name with the format 'HHMMSS', for example, '_235959'.
Argu	ment Tab	
No.	Field Name	Description
1	Arguments	Specify which command-line arguments that will be passed to the process.
Para	meters Tab: Enter the followin	g information to pass parameters to the process:
No.	Field Name	Description
1	Pass all parameter values down to the sub- process	Enable check box to pass all parameters of the process down to the sub- process.
2	Parameter	Specify the parameter name passed to the process.
3	Stream Column Name	Specify the field of an incoming record from a previous process as the parameter.
4	Value	Specify the values for the processes' parameters by using one of the following methods:



Manually typing a value or use a parameter to se example, '\${Internal. process.Name}'.		Manually typing a value or use a parameter to set the value, for example, '\${Internal. process.Name}'.
		Use a combination of manually specified values and parameter values, for example, '\${FILE_PREFIX}_\${FILE_DATE}.txt'.
5	Get Parameters	Get the existing parameters associated with the process.

#### 2.4 **Set Variables**

#### 2.4.1 Description

Set Variables is an entry in the General Plugin of Process Studio Processes. This process entry can set one or several variables in a process (at the root, parent or current process level) or in the virtual machine.

#### 2.4.2 Configurations

No.	Field Name	Description
1	Process entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Properties file:	
2	Name of properties file	Provide the name of the properties file
3	Variable scope	<ul> <li>Select the variable scope</li> <li>Valid in the Java Virtual Machine</li> <li>Valid in the current process</li> <li>Valid in the parent process</li> <li>Valid in the root process</li> </ul>
	Settings:	
4	Variable substitution	Select checkbox to enable variable substitution.
	Variables:	
5	Variable name	Select variable name
6	Value	Provide value to set for the variable
7	Variable scope type	<ul> <li>Choose variable scope:</li> <li>Valid in the Java Virtual Machine</li> <li>Valid in the current process</li> <li>Valid in the parent process</li> </ul>



	Valio	d in the	e root	process
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# 2.5 Success

### 2.5.1 Description

Success is an entry in the General Plugin of Process Studio Processes. This entry sets the status of the process to Success. Success entry clears any errors encountered in the process and sets the process status to Success.

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## 2.6 Workflow

### 2.6.1 Description

Workflow is an entry in the General Plugin of Process Studio Processes. Workflow entry refers to a previously defined workflow in a process. A process can act as a container for one or several workflows. Workflows are generally used for data transactions whereas the process can perform serialized activities such as sending mail, checking conditions, file management, executing workflows and processes etc.

### 2.6.2 Configurations

Workflow Specification Tab

**01	Volkilow Opcontration 145			
No.	Field Name	Description		
1	Name of Process Entry	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.		
2	Workflow Filename	Specify your workflow filename by entering in its path or clicking Browse. If you select a workflow that has the same root path as the current workflow, the variable \${Internal.Entry.Current.Directory} will automatically be inserted in place of the common root path. For example, if the current workflow 's path is /home/admin/ workflow.psw and you select a workflow in the folder /home/admin/path/sub.psw then the path will automatically be converted to \${Internal.Entry.Current.Directory}/path/sub. psw.		
3	Specify by Name and Directory	If you are working in the PS Repository, (or database repository) specify the name of the workflow to start. Click the Browse In processes button to browse through the repository. This feature is currently not available.		
4	Specify by Reference	If you specify a workflow or process by reference, you can rename or move it around in the repository. The reference		

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		(identifier) is stored, not the name and directory. This is enabled when working with the PS or database repository. This feature is currently not available.
Adva	anced Tab	
No.	Field Name	Description
1	Copy previous results to args	The results from a previous workflow can copied as arguments of the workflow using the "Copy rows to result" step. If Execute for every input row is enabled then each row is a set of command line arguments to be passed into the workflow, otherwise only the first row is used to generate the command line arguments.
2	Copy previous results to parameters	The results from a previous workflow can copied as parameters of the workflow using the "Copy rows to result" step.
3	Execute for every input row	Allows a workflow to be executed once for every input row (looping)
4	Clear the list or result rows before execution	Checking this makes sure that the list or result rows is cleared before the workflow is started.
5	Clear the list of result files before execution	Checking this makes sure that the list or result files is cleared before the workflow is started.
6	Run this workflow in a clustered mode	Allows you to execute the process or workflow in a clustered environment. See Running a Workflow for more details on how to execute a workflow in a clustered environment. This feature is currently not available.
7	Log remote execution locally	If enabled, transfer the log lines from the cluster nodes to the local node. This feature is currently not available.
8	Remote slave server	Specifies the slave server where the workflow will be run. This feature is currently not available.
9	Wait for the remote workflow to finish	If enabled, the process is blocked until the workflow has completed on the slave server. This feature is currently not available.
10	Follow local abort to remote workflow	If enabled, an abort signal sent locally will also be sent remotely. This feature is currently not available.

Logging settings Tab:

By default, if you do not set logging, Process Studio will take log entries that are being generated and create a log record inside the process. For example, suppose a process has three workflows to run and you have not set logging. The workflows will not output logging information to other files, locations, or special configuration. In this instance, the process executes and puts logging information into its master process log.

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In most instances, it is acceptable for logging information to be available in the process log. For example, if you have load dimensions, you want logs for your load dimension runs to display in the process logs. If there are errors in the workflows, they will be displayed in the process logs. If, however, you want all your log information kept in one place, you must set up logging.

No.	Field Name	Description
1	Specify logfile	Enable to specify a separate logging file for the execution of this workflow
2	Append logfile	Enable to append to the logfile as opposed to creating a new one
3	Name of log file	The directory and base name of the log file (for example C:\logs)
4	Create parent folder	Enable to create a parent folder for the log file it does not exist.
5	Extension of logfile	The file name extension; for example, log or txt
6	Include date in filename	Adds the system date to the filename with format YYYYMMDD.
7	Include time in filename	Adds the system time to the filename with format HHMMSS.
8	Logging level	Specifies the logging level for the execution of the workflow. See also the logging window in Logging.
Argu	ment Tab	
No.	Field Name	Description
1	Arguments	Specify which command-line arguments will be passed to the workflow.
Para	meters Tab: Specify which pa	rameters will be passed to the workflow
No.	Field Name	Description
1	Pass all parameter values down to the sub- workflow	Enable this option to pass all parameters of the process down to the sub-workflow.
2	Parameters	Specify the parameter name that will be passed to the workflow.
3	Stream column name	Allows you to capture fields of incoming records of a result set as a parameter.
4	Value	Allows you to specify the values for the workflow's parameters. You can do this by: Manually typing a value or use a parameter to set the value (Ex: \${Internal.process.Name} Using a combination of manually specified values and parameter values (Ex: \${FILE_PREFIX}_\${FILE_DATE}.txt)

# 3 Mail

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#### 3.1 Get Mails (POP3/IMAP)

#### 3.1.1 Description

Get Mails is a Process Entry in the Mail Plugin for Process Studio Processes. This process entry allows you to retrieve mails from a POP3 or IMAP server and store the mails along with attachments into one or more files.

#### Configurations 3.1.2

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Source Host	The host name or IP-address of the pop server
3	Username	The username to log in with
4	Password	The password to log in with
5	Use POP with SSL	Check this if the POP server uses SSL (Secure Socket Layer, Encrypted)
6	Port	The port to run the SSL POP connection over
7	Target directory	The directory in which you want to put the mail files
8	Target filename pattern	The filename pattern (start of filename)
9	Retrieve	Select the e-mails to retrieve: all, unread or a selection of the first e-mails
10	Retrieve the first emails	Allows you to specify the number of emails to retrieve if "first emails" is selected
11	Delete emails after retrieval	Check this if you want to delete the mails on the pop server after retrieval.
12	IMAP folder	Select the folder path from which you want to retrieve the email. Test the folder path if it is accessible as required.
13	Include subfolders	Select the checkbox if you want to include subfolders in the path.
14	Retrieve	Select the e-mails to retrieve: all, unread or a selection of the first e-mails



15	Retrieve the first emails	Allows you to specify the number of emails to retrieve if "first emails" is selected
16	After retrieved	Select the action of what you want to do after retrieving the email.
17	Move to folder	Select the folder to which you want to move the retrieved email. Test the folder path if it is accessible as required.
18	Create folder	Select the checkbox if you want to create a folder.
	Timeout and Protocols	
19	Connection timeout (in milliseconds)	Specify the socket connection timeout value in milliseconds. Default value is infinite.
20	Timeout (in milliseconds)	Specify the socket read timeout in milliseconds. Default value is infinite.
21	Protocols	Select the checkbox of the TLS version for sending the email message. The available versions are: TLSv1, TLSv1.1, TLSv1.2, or TLSv1.3. You can select one or all versions.

# 3.2 Mail

### 3.2.1 Description

Mail is a Process Entry in the Mail Plugin for Process Studio Processes. Mail Process Entry is used to send text or html emails. It may have General, Log or Error file attachments. Mail process entry is usually the last entry in a process. It can be used to announce both a process failure and success along with supporting file attachments. **Note:** No email messages are sent when a process crashes during a run.

### 3.2.2 Configurations

Addresses Tab:

No.	Field Name	Description
1	Process entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Destination Address	The destination for the email; you can specify multiple addresses if you separate them with a space. <b>Best practice</b> : Do not maintain your distribution list within a process. Rather, have your email administrators set up a list so

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		that you can send to a specified list each time you create the process.	
3	Cc:	An identical copy of the message is also sent to all the addresses listed in the Cc: field. To enter more than one address in the Cc: field, separate them with a space.	
4	BCc:	Send to a recipient whose email address does not appear in the message	
5	Sender name	Name of the person sending the email	
6	Sender address	Email address of the person sending the email	
7	Reply to	Email address of the person to which to send a reply	
8	Contact person	The name of the contact person to be placed in the email	
9	Contact phone	The contact telephone number to be placed in the email	
Serv	er Tab:		
No.	Field Name	Description	
1	SMTP Server	The SMTP server address. SMTP server is mandatory. You can use authentication and security as part of the connection but you must have the SMTP credentials and enable Use Authentication checkbox below.	
2	Port	The port on which the SMTP Server is running	
3	Use Authentication	Enable to use authentication to the SMTP Server	
4	Connection timeout (in milliseconds)	Specify the socket connection timeout value in milliseconds. Default value is infinite.	
5	Timeout (in milliseconds)	Specify the socket read timeout in milliseconds. Default value is infinite.	
6	Write timeout (in milliseconds)	Specify the socket write timeout value in milliseconds. Default value is infinite.	
7	Authentication user	SMTP user account name	
8	Authentication password	SMTP user account password	
9	Use Secure Authentication?	Enable to use secure authentication	
10	Secure Connection Type	Select authentication type (SSL, TSL)	
11	Protocols	Select the checkbox of the TLS version for sending the email message. The available versions are: TLSv1, TLSv1.1, TLSv1.2, or TLSv1.3. You can select one or all versions.	
Ema	Email Message Tab:		
No.	Field Name	Description	



1	Include date in message?	Enable checkbox to Include date in message.
2	Only send comment in mail body?	Enable to Only send comment in mail body.
3	Use HTML in mail body	Enable to Use HTML in mail body.
4	Encoding	Select encoding type
5	Manage Priority	<ul> <li>Enable to manage priority. Note: The support of this flag is depending on the mail server.</li> <li>Priority</li> <li>Importance</li> <li>Sensitivity</li> </ul>
6	Subject	Enter the subject of the mail into this field.
7	Comment	Enter the comment within the body of the mail into this field.
Atta	ched files Tab:	
No.	Field Name	Description
1	Attach files to message?	Enable to attach a file to your email message. You can attach files to your email messages such as error logs and regular logs. In addition, logs can be zipped into a single archive for convenience.
2	Select file type	<ul> <li>The files to send are defined within the internal files result set.</li> <li>Every file in this list is marked with a file type and you can select what type of file you want to send (see also the tips at the end of this document): <ul> <li>General</li> <li>Log</li> <li>Error line</li> <li>Error</li> <li>Warning</li> </ul> </li> <li>Notes:- Attaching Child Workflow logs</li> <li>You may easily attach a log file with log of a child workflow run by the process (in Workflow Entry) prior to sending the mail in this entry as follows <ul> <li>In the Workflow Entry options in logging settings tab check" Specify logfile?" and enter a name of logfile.</li> <li>In the Mail entry options, check "Attach files to message" and select (at least) the file type "Log".</li> <li>The next time the mail is send, it will have the child workflow's log attached.</li> </ul> </li> </ul>
3	Zip files to single archive?	Enable to have attachments achieved in a zip file
4	Name of the zip archive	Define the filename of your zip archive



5	Filename	Name of a <i>single</i> image file to add. <b>Note:</b> This works only when Use HTML format is defined in the Email Message tab.
6	Content ID	Automatically entered
7	Image	The full path to image (used when embedding multiple images) Click Edit to edit the path; click <b>Delete</b> to delete the path to the image
8	Content ID	The image content ID (used when embedding multiple images) Click Edit to edit the content ID; click <b>Delete</b> to delete the Content ID

# 3.3 Mail Validator

## 3.3.1 Description

Mail Validator is a Process Entry in the Mail Plugin for Process Studio Processes. This process entry checks if an email address structure is valid or not. Mail Validator entry can also perform an SMTP check on the email address provided. The result is a Boolean (true or false) or String depending on your settings and one additional field (String) containing errors string when email address is not valid.

### 3.3.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Email address	Enter the email address to check validity.
	Settings:	
1	SMTP Check?	By default, PROCESS STUDIO will only check email address structure (using regular expression). If you want to perform a SMTP check, please select this option and fill Email sender field below. PROCESS STUDIO will extract domain name from the supplied email address (to check) and will try to get all exchangers from the domain name. Each exchanger will be queried.
2	Time out	In order to perform a SMTP check, PROCESS STUDIO will open a socket on the target SMTP host. Specify here the socket time out (by default 0).



3	Email sender	If you select "SMTP check?" option, this field is mandatory. PROCESS STUDIO will need sender email address to query SMTP host.
4	Default SMTP	If you know which SMTP server to query, please specify it here, PROCESS STUDIO will then query only this one. <i>Note:</i> Specifying SMTP host here will faster the process because PROCESS STUDIO will ask only this one and not fetching all the exchangers from the domain name.



# 4 File Management

# 4.1 Copy Move Result Filenames

## 4.1.1 Description

Copy Move Result Filenames is a Process Entry in the File Management Plugin for Process Studio Processes. This process entry allows you to copy, move or delete result filenames in a previous process entry to a destination folder/file on your file system.

# 4.1.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Action	Choose Copy, Move or Delete
3	Destination folder	Define the target folder
4	Create destination folder	use this option to create the destination folder when it does not exist
5	Replace existing file	use this option to overwrite existing files
6	Remove source filenames from result	use this option to remove the processed filenames from the list of result filenames
7	Add destination filenames to result	use this option to add the processed target filenames to the list of result filenames
8	Add date to filename	add the date to the target filename, e.g. yyyyMMdd
9	Add time to filename	add the time to the target filename, e.g. HHmmss
10	Specify date time format	allows you to specify your own date-time format, e.g. yyyyMMdd_HHmmss
11	Add date before extension	when this option is not checked, the date/time is appended after the file extension
12	Limit action to	Define include and exclude wildcards
13	Success on	<ul> <li>Success condition : select one of these option:</li> <li>Success when all works fine</li> <li>Success when at least x files moved (specify x in the limit field below)</li> <li>Success when number of errors lesser than (specify the max number of errors in the limit field below)</li> </ul>

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14	Nr errors lesser than	This field is used to set limits for the last two options above.
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# 4.2 File Compare

### 4.2.1 Description

File Compare is a Process Entry in the File Management Plugin for Process Studio Processes. You can use the File compare process entry to compare the contents of 2 files and control the flow of the process by it. When the contents of the files are the same the success outgoing hop will be followed, else the failure hop will be followed.

### 4.2.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	File name 1	The name and path of the file of the first file to compare.
	File name 2	The name and path of the file of the second file to compare.
	Add filename to	Adds the filename(s) read to the result of this process entry. A unique list is being kept in memory that can be used in the next process entry in a process.

# 4.3 Create a folder

### 4.3.1 Description

Create a folder is a Process Entry in the File Management Plugin for Process Studio Processes. This process entry creates a folder at the specified location.

### 4.3.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Folder name	The name of the folder to create (can be a full path)
3	Fail if folder exists	If you enable this option, this process entry will fail if the specified folder already exists.

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#### 4.4 Unzip file

#### Description 4.4.1

Unzip file is a Process Entry in the File Management Plugin for Process Studio Processes. Unzip file process entry can unzip a file or folder.

#### 4.4.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Source files	You can specify the list of source (zip) files in this section Get args from previous : check this option if you want to use the list of result files (from a previous process entry) as the list of files to unzip (bug - it takes the first field of the result row instead of the result files) Zip file name : the name of the zip file or a folder if you want to use a wildcard Source wildcard: if the previous option is a folder, you can enter a regular expression wildcard here <b>Note:</b> The regex is compared against the absolute path of the file and a complete match MUST be made For example to match "/folder/test.zip" a regex of "te.\.zip" will come up empty. Use ".*te.\.zip" instead to account for the folders ahead of it. ** For Windows file paths, the direction of the slashes will be reversed in the match, so use "\" instead of "\\".
3	Unzipped files	This section allows us to specify what to do with the unzipped files Use zipfile name as root directory : check this if you want to create a separate directory for each zip filename (same name as file) Target directory : the target directory to unzip in Create folder : check this if you want to create the target folder Include wildcard : use this regular expression to select the files in the zip archives to extract Exclude wildcard : use this regular expression to select the files in the zip archives to extract Include date in filename : Include the current date in the unzipped filenames (format yyyyMMdd) Include time in filename : Include the time (format HHmmss)



		Specify the date time format yourself: allows you to specify the date time format yourself (default is: yyyyMMdd'_'HHmmss) If files exists: select the action to take if the target (unzipped) file exists: skip, overwrite, etc. After extraction : select the action to take after zip file extraction: Do nothing, Delete files, Move files Move files to: if the previous option is "Move files", you can select the target directory here.
4	Advanced	Add extracted file to result: add the extracted file names to the list of result files of this process entry for use in the next process entries. Success condition: allows to specify the success factor of this process entry: when everything went well or if there were only X errors or if there were at least Y files extracted.

# 4.5 Delete file

## 4.5.1 Description

Delete file is a Process Entry in the File Management Plugin for Process Studio Processes. Delete file process entry can be used to deletes a file.

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	File name	The name and path of the file to delete.
3	Fail if file doesn't exist	The process entry will follow the failure outgoing hop when the file to be deleted does not exist anymore and this option is switched on. The default is off.

### 4.5.2 Configurations

# 4.6 Write to file

### 4.6.1 Description

Write to file is a Process Entry in the File Management Plugin for Process Studio Processes. Write to file is a Process Entry can write text content to an existing or new file or append text to an existing file.

# 4.6.2 Configurations



No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	File:	
1	File name	Enter or browse the filename to write to.
2	Create parent folder	Enable checkbox to create file structure.
3	Append file	Enable checkbox to append to file.
	Content:	
1	Encoding	Select the character encoding of your text from drop down list.
2	Text	Provide the text to write to file

# 4.7 Folders Compare

### 4.7.1 Description

Folders Compare is a Process Entry in the File Management Plugin for Process Studio Processes. Folders Compare process entry compares two files or two folders. It can compare file size, file content and in case of folders it can include and compare all subfolders to determine if the content is identical; the result will either be true or false.

### 4.7.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Include Subfolders	Also compare the content of sub-folders.
3	Compare	Specify what to compare: All, Only files, Only folders, or Let me specify
4	Wildcard	If you chose Let me specify in the previous option, you can specify the regular expression of files to compare.
5	Compare file size	Check this to compare file size, in opposed to just comparing folder names.
6	Compare file content	Checks if files have the same content. <b>Note:</b> this may cause slower processing speeds.

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7	File/Folder name 1	This is the first file or folder to compare
8	File/Folder name 2	This is the second file or folder to compare

# 4.8 Create Zip file

# 4.8.1 Description

Create Zip files is a Process Entry in the File Management Plugin for Process Studio Processes. Create Zip file Process Entry creates a standard ZIP archive using the options you specify in the configurations.

## 4.8.2 Configurations

General Tab

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Source Files:	
1	Get arguments from previous	This checkbox takes the filename specification from the result rows of a previous process entry. This is what will be taken from the rows The first field has to contain the filename or folder. The second field should contain the inclusion wildcard The third field should contain the exclusion wildcard The fourth field should contain the target zip file (this can be different for each file)
2	Source Directory/File	The source directory of the files to be zipped
3	Include Wildcard(RegExp)	The wildcard (regular expression) of the files to include in the zip archive
4	Exclude Wildcard(RegExp)	The wildcard (regular expression) of the files to exclude from the zip archive
5	Include sub-folders?	Enable this option to search files in sub-folders
	Zip File:	
1	Zip file name	The full name of the destination archive
2	Create parent folder	Create the parent folder if it doesn't exist
3	Include date in filename	Add the date to the file name

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4	Include time in filename	Add the time to the file name
5	Specify date time format	Allows you to specify the date/time format mask,
6	Date time format	The date time format mask, like yyyy/MM/dd HHmmss
7	Show filename	Shows an example filename based on the options you specified
Adva	anced Tab	
No.	Field Name	Description
	Advanced:	
1	Compression	The compression level to be used (Default, Best Compression, Best speed)
2	If zip file exists?	The action to take when there already is a file at the target destination.
3	After zipping	The action to take after zipping
4	Move files to	The target directory to move the source files to after zipping
5	Create folder	Create the folder to move to
6	Stored source path depth	This is the part of the source file path which is taken over in the ZIP file archive structure: 0 : /process-studio/work/transfer/input/project/file.txt 1 : file.txt 2 : project/file.txt 3 : input/project/file.txt 4 : transfer/input/project/file.txt 5 : work/transfer/input/project/file.txt 6 : process-studio/work/transfer/input/project/file.txt 7 : process-studio/work/transfer/input/project/file.txt 8 : process-studio/work/transfer/input/project/file.txt
	Result file name:	
1	Add zip file to result	Enable this option to add the target zip file(s) to the result

# 4.9 Copy files

# 4.9.1 Description

Copy Files is a Process Entry in the File Management Plugin for Process Studio Processes. Copy files Process Entry can copy one of more files or folders from a source environment to a destination environment.

# 4.9.2 Configurations



Files	Files Tab		
No.	Field Name	Description	
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.	
2	Source Environment	<ul> <li>Indicates the file system or specific cluster on which the item you want to input can be found. Options are Local and <static>.</static></li> <li>Local: Specifies that the item specified in the File/Folder field is in a file system that is local to Process Studio.</li> <li><static>: Specifies that the item specified in the File/Folder field should use the path name in that field, exactly. Use this if you already know a file path and you simply want to copy and paste it into the window.</static></li> </ul>	
3	Source File/Folder* *	The file or directory to copy from. If you choose an option other than <static> in the Source Environment field, click the button in the field to view the Open File window.</static>	
4	Wildcard	Defines the files that are copied in regular expression terms (instead of static file names), for instance: .*\.txt would be any file with a .txt extension.	
5	Destination Environment	Indicates the file system or specific cluster where you want the file to be placed. Options are Local and <static>. Local: Specifies that the item specified in the File/Folder field is in a file system that is local to Process Studio. <static>: Specifies that the item specified in the File/Folder field should use the path name in that field, exactly. Use this if you already know a file path and you simply want to copy and paste it into the window.</static></static>	
6	Destination File	Indicates the name of the destination environment. If you choose an option other than <static> in the Destination Environment field, click the button in the field to view the Open File window.</static>	
Setti	ngs Tab		
No.	Field Name	Description	
1	Include Subfolders	If selected, all subdirectories within the chosen directory will be copied as well	
2	Destination is a file	Determines whether the destination is a file or a directory	



3	Copy empty folders	If selected, will copy all directories, even if they are empty the Include Subfolders option must be selected for this option to be valid. (Wildcard MUST be blank for this to work)
4	Create destination folder	If selected, will create the specified destination directory if it does not currently exist
5	Replace existing files	If selected, duplicate files in the destination directory will be overwritten
6	Remove source files	If selected, removes the source files after copy (a move procedure)
7	Copy previous results to arguments	Copies the previous results to arguments.
8	Add files to result files name	Any files that are copied will appear as a result from this step; shows a list of files that were copied in this step
Oper	n File Tab	
No.	Field Name	Description
1	Open from Folder	Indicates the path and name of the directory you want to browse. This directory becomes the active directory.
2	Up One Level	Displays the parent directory of the active directory shown in the Open from Folder field.
3	Delete	Deletes a folder from the active directory.
4	Create Folder	Creates a new folder in the active directory.
5	Name	Displays the active directory, which is the one that is listed in the Open from Folder field.
6	Filter	Applies a filter to the results displayed in the active directory contents.

# 4.10 Add Result Filenames

### 4.10.1 Description

Add Result Filenames is a Process Entry in the File Management Plugin for Process Studio Processes. Add Result Filenames process entry adds a set of files or folders to the result list of the process entry. That list of filenames can then be used in the following process entries in the process.

# 4.10.2 Configurations

No.	Field Name	Description
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1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Include subfolders	Include subfolders of the selected folders
3	Copy previous results to?	Passes the results of the previous entry to the arguments of this entry.
4	Clear result filenames?	This option clears the list of result files (from previous process entries) before creating a new list.
5	File/Folder	Specify the list of files or folders with wildcards (regular expressions) in this grid. You can add a different source/destination on each line. <b>Note:</b> You can use the Add button to add a line to the Files/Folders list.

#### 4.11 **Delete folders**

#### Description 4.11.1

Delete folders is a Process Entry in the File Management Plugin for Process Studio Processes. Delete folders Process Entry deletes one or more folders and all its contents.

#### 4.11.2 **Configurations**

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Settings	Copy previous results to args: Enable this option if the folders you want to delete come from the result files of the previous process entry in the process.
	Success on	<ul> <li>Success condition : select one of :</li> <li>When no error reported : everything deleted just fine</li> <li>When at least x folders processed : specify x in the Limit field below</li> <li>When the number of errors less than : specify the max nr of errors in the limit field below</li> </ul>
	Folders	<ul> <li>This is the list of all the folders to delete. You can use the Folder field and these buttons to maintain the list:</li> <li>Add : add Folder field to the list of folders</li> <li>Folder : select a folder</li> <li>Delete : remove the selected folders from the list</li> </ul>



	•	Edit : move the selected folder to the Folder field for editing

# 4.12 Delete files

## 4.12.1 Description

Delete files is a Process Entry in the File Management Plugin for Process Studio Processes. Delete files Process Entry deletes files or folders (can include subfolders) as specified.

### 4.12.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Include Subfolders	Also delete the subfolders in the folder selection
3	Copy previous results to args?	Enable this if the set of files comes from a previous process entry (as part of the result files)
4	File/Folder	The file or folder to delete <b>NOTE:</b> don't forget to hit the "Add" button to add the file to the list of Files/folder
5	Wildcard	The regular expression matching files to delete if the previous option is a folder. For example to delete all files ending in .dat, the regular expression would be ".*\.dat\$".
6	Files/Folders	The complete list of files/folders to delete

# 4.13 Delete Result Filenames

### 4.13.1 Description

Delete Result Filenames is a Process Entry in the File Management Plugin for Process Studio Processes. Delete Result Filenames process entry deletes all filenames or filenames filtered with wildcard(RegEx), that are in the result files list of the last process entry.

# 4.13.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.

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2	Limit action to	Enable this feature if you want to limit the deletion to certain filenames in the result file list.
3	Wildcard	The regular expression to limit the files to delete
4	Exclude wildcard	The regular expression to exclude certain files from being deleted.

# 4.14 Wait for files

### 4.14.1 Description

Wait for files is a Process Entry in the File Management Plugin for Process Studio Processes. Wait for files Process Entry waits for a file. This process entry will sleep and periodically check whether the specified file exists. Once the file is available the flow will continues. The process entry can either wait indefinitely for the file or timeout after a certain time.

# 4.14.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	File name	The name and path of the file to wait for.
3	Maximum timeout	The maximum timeout in number of seconds, or 0 to wait indefinitely. This is the number seconds after which the flow will continue even if the file was not created. When the timeout is reached the "Success on timeout" option will determine whether the outgoing success or failure hop will be followed.
4	Check cycle time	The time in seconds between checking for the file. The file will be checked for in the start of the execution and then every "check cycle time" seconds until the maximum timeout is reached. A process can only be stopped every "check cycle time" as else the process entry step will be sleeping. A check cycle time of 30 or 60 seconds seems to be a good trade-off between the period until the file is detected and the required CPU usage.
5	Success on timeout	This option determines what to do when the "Maximum timeout" has been reached and the file has not been found. If enabled,

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		the process entry will evaluate successfully, and the outgoing success hop will be followed.
6	File size check	When this is switched on, once the process entry detects the specified file, and will only continue if the file size hasn't changed the last check "cycle time seconds". This is useful in cases where a file is created in the final place, and another process is still writing to the file. (As a best practice, files should be written to a temporary location, and then moved when completed)

# 4.15 Move files

## 4.15.1 Description

Move files, is a Process Entry in the File Management Plugin for Process Studio Processes. Move files Process Entry can move a number of files and/or folders to alternate locations on your file system. This works also on remote file systems (via VFS, e.g. with FTP).

# 4.15.2 Configurations

Gen			
No.	Field Name	Description	
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.	
2	Settings	Include Subfolders: also move the content of sub-folders Move empty folders : also move empty folders Simulate: don't actually move anything, just see if it's possible at all. Copy previous results to args: use the result files from the previous process entry (entries) as files and/or folders to move.	
3	Files / Folders	You can specify the list of files or folders with destinations and wildcards in this grid. You can add a different source/destination on each line. <b>NOTE:</b> You can use the "Add" button to add a line to the Files/Folders list	
Dest	Destination file Tab		
No.	Field Name	Description	
1	Destination file	<ul> <li>Create destination folder : use this option to create the destination folder</li> <li>Destination is a file</li> </ul>	

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		<ul> <li>Do not keep folder structure : flatten the sub-folder structure if any sub-folders are used</li> <li>Add date to destination filename (yyyyMMdd or 20091231)</li> <li>Add time to destination filename (HHmmss or 235959)</li> <li>Specify date time format : allows you to specify your own date-time format. The default is yyyyMMdd'_'HHmmss</li> <li>Add date before extension</li> <li>If destination file exists: select one of these options: <ul> <li>Do nothing</li> <li>Overwrite destination file</li> <li>Create file with unique name</li> <li>Delete source file</li> <li>Move source file to folder : use the lower part of the dialog (next option in this grid)</li> <li>Fail</li> </ul> </li> </ul>
2	Move to folder	<ul> <li>Destination folder : the target folder to move to</li> <li>Create folder</li> <li>Add date</li> <li>Add time</li> <li>Specify format : allows you to specify your own date-time format. The default is yyyyMMdd'_'HHmmss</li> <li>If file exists in destination folder: select one of these options:</li> <li>Do nothing</li> <li>Overwrite file</li> <li>Unique name</li> <li>Fail</li> </ul>
Adva	Inced Tab	Deparintion
1		Success condition : select one of these option:
	0000000 011	<ul> <li>Success condition : select one of these option.</li> <li>Success when all works fine</li> <li>Success when at least x files moved (specify x in the limit field below)</li> <li>Success when number of errors lesser than (specify the max number of errors in the limit field below)</li> </ul>
2	Result files name	Add files to result files name: add the target file names to the list of result files of this process entry for use in the next process entries.

#### 4.16 **Create file**



# 4.16.1 Description

Create file is a Process Entry in the File Management Plugin for Process Studio Processes. Create file Process Entry can create an empty file.

# 4.16.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	File name	The name and path of the file to create an empty file.
3	Fail if file exists	The process entry will follow the failure outgoing hop when the file to be created already exists (empty or not) and this option is switched on. The default is on.



# 5 Conditions

# 5.1 Check Webservice availability

## 5.1.1 Description

Check Webservice availability is a Process Entry in the Conditions Plugin for Process Studio Processes. Check Webservice availability Process Entry checks if a given URL (e.g. a Webservice URL) is valid, can be connected to and data can be read from it. If it connects within the given timeout and data can be read, it returns 'true', else 'false'.

### 5.1.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	URL	Specifies the URL to validate.
3	Connect timeout (ms)	The connect timeout in ms. The value is depending on the quality of service of this URL and experiences.
4	Read timeout (ms)	After connection, the process entry tries to read data. This value gives the read timeout in ms. The value is depending on the quality of service of this URL and experiences.

# 5.2 Check files locked

### 5.2.1 Description

Check files locked is a Process Entry in the Conditions Plugin for Process Studio Processes. This process entry goes over a list of files to see if they are locked by another process. This is verified by renaming a file to the same name as before. On some operating systems (MS Windows systems in particular) this operation fails if the file is locked.

# 5.2.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Settings: Include subfolders	Enable this option to also check files in subfolders of specified folders

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3	Settings: Copy previous results to args?	Pass the result rows of a previous process entry execution to the files list of this entry.
4	Files/Folders	Here you can list a series of files or folders with wildcards. The wildcards are Java Regular expressions. For instance .*\.txt would check any file with a .txt extension. Please note that you can use the Delete/Edit buttons to edit the list. You can also use the File/Folder and Wildcard entries right above the list to add new entries, browse for files and so on

# 5.3 Columns exist in a table

### 5.3.1 Description

Columns exist in a table is a Process Entry in the Conditions Plugin for Process Studio Processes. This process entry verifies that one or more specified columns exist in a database table.

# 5.3.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Connection	The database connection to use
3	Schema name	The schema of the table to use
4	Table name	The name of the table to use
5	Columns	The list of column names to verify (one or more)

# 5.4 Wait for

### 5.4.1 Description

Wait for is a Process Entry in the Conditions Plugin for Process Studio Processes. You can use the Wait for Process Entry to wait for a delay time before running the next process entry.

## 5.4.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several

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		times; and each instance of the entry must have a unique name.
2	Wait for	The delay to wait
3	Unit time	Specify the unit time (second, minute and hour)

#### 5.5 **Evaluate files metrics**

#### Description 5.5.1

Evaluate files metrics is a Process Entry in the Conditions Plugin for Process Studio Processes. Evaluate files/folders total size or files/folders count in a given path.

#### 5.5.2 Configurations

General Tab

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Settings:	
1	Source files	<ul><li>Files/Folders</li><li>Filenames result</li><li>Previous result row</li></ul>
2	Wildcard	Wildcard is active if "Filenames result" is chosen above.
3	File Result field	This field is active if "Previous result row" is chosen above. Result rows field that contains file/folder name.
4	Wildcard result field	This field is active if "Previous result row" is chosen above. Result rows field that contains wildcard.
5	Include subfolders result	This field is active if "Previous result row" is chosen above. Result rows field that contains include subfolders information.
6	Evaluate	
7	File/Folder source	If "Files/Folders" is chosen in Source files above this field and the following fields are active. Select the Files/Folders to evaluate metrics.
8	Wildcard	Filter Files/Folders using wildcard.
	Files/Folders:	This tabular section contains all the Files/Folders chosen above.



1	File/Folder source	The File/Folder
2	Wildcard	The wildcard applied to filter files/folders
3	Include subfolders	Select Y/N to include or exclude subfolders
Adva	inced Tab	
No.	Field Name	Description
	Success on:	
1	Scale	In terms of Bytes, KBytes, Mbytes, GBytes
2	Success when	<ul> <li>If value is greater than</li> <li>If value is different from</li> <li>If value is small than</li> <li>If value is smaller or equal</li> <li>If value is greater than</li> <li>If value is greater than or equal</li> <li>If value is between</li> <li>If value is in list</li> <li>If value is not in list</li> </ul>
3	Value	Provide a value for the item selected above.

# 5.6 Check Db Connections

### 5.6.1 Description

Check Db Connections is a Process Entry in the Conditions Plugin for Process Studio Processes. This process entry allows you to verify connectivity with one or several databases within a given Wait time.

### 5.6.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Connection	List of connections.
3	Wait	After the connection was opened, wait x (s, min, hrs).
4	Units of Time	Specify the unit of measurement for the length of time to remain connected.
5	Get connections	Get available connects.

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# 5.7 File Exists

## 5.7.1 Description

File Exists is a Process Entry in the Conditions Plugin for Process Studio Processes. File Exists process entry to verify that a specified file exists on the server on which Process Studio is running. You must provide the file name. Process Studio returns a True or False value depending on whether or not the file exists.

The File Exists process entry result could be a trigger or signal to launch a workflow or process.

### 5.7.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name
2	Filename	The name and path of the file to check for.

# 5.8 Evaluate rows number in a table

### 5.8.1 Description

Evaluate rows number in a table is a Process Entry in the Conditions Plugin for Process Studio Processes. You can get the number of rows in a target table by connecting to the table or you can write a custom SQL statement to get the number of rows. You can you evaluate the number of rows and branch the process based on the evaluation.

### 5.8.2 Configuration

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Connection	Name of the database connection on which the target table resides.
3	Target schema	The name of the Schema for the table to write data to.
4	Target table name	Name of the target table.
	Success Condition:	
1	Success when rows count	For the success condition you can check the number of rows if they are:

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		<ul> <li>Equal to</li> <li>Different from</li> <li>Smaller than</li> <li>Smaller or equal to</li> <li>Greater than</li> <li>Greater or equal to</li> </ul>
2	Limit	Give a numerical limit for the conditions above.
	Custom SQL:	
1	Custom SQL	Check this option when you want to specify a custom SQL statement in the below field
2	Use variable substitution	Variables in the SQL statements will be substituted.
3	Clear list of result rows	Clears the internal list of result rows before executing.
4	Add rows to result	Adds all rows returned from the SQL statement within the internal list of result rows. This list of result rows can then be used in subsequent process entries to loop over or e.g. within a workflow by the Get rows from result step.

#### 5.9 Checks if files exist

#### **Description** 5.9.1

Checks if files exist, is a Process Entry in the Conditions Plugin for Process Studio Processes. Checks if files exist can be used to check for existence of one or more files/folders.

#### 5.9.2 **Configurations**

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	File/folder name	Browse file/folder and "ADD"
	Files/Folders:	This is a tabular section.
1	File/folder	Shows all the files/folders chosen and added above.

#### 5.10 Check if a folder is empty

#### 5.10.1 Description

Check if a folder is empty is a Process Entry in the Conditions Plugin for Process Studio Processes. This process entry checks if a folder is empty i.e. there are no regular files or subfolders in the folder.

### 5.10.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Folder name	The name of the folder to verify for emptiness.
3	Limit search to	Limits the search for files to those with a certain wildcard (regular expression)
4	Wildcard	The wildcard (regular expression) to limit the files to look for with, for example: .*\.txt\$

# 5.11 Simple evaluation

# 5.11.1 Description

Simple evaluation is a Process Entry in the Conditions Plugin for Process Studio Processes. Simple evaluation evaluates the contents of a variable or a field in the result stream (If the result stream has multiple rows, the first row will be evaluated.). You can draw a main hop and an error handling hop from this step to handle true or false results of Simple Evaluation.

# 5.11.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Evaluate	Select this to evaluate a 'variable set before' or 'Field from previous result'.
	Source:	
1	Evaluate	Choose 'variable set before'.
2	Variable name	Enter the variable name using the usual syntax
3	Туре	The type of your variable
	Success On:	

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4	Success when variable set	When this option is selected, the true path is followed when the variable is set. <b>Note:</b> The process entry checks if the variable is defined, so an empty or null value is also true. When testing this within Process Studio you need to delete the line with the variable in the variables section of the Execute a process window. And remember: Once this variable is set, the variable keeps existing, even when deleting it from the list.
5	Success condition	Select the condition to be met for a successful result.
6	Value	Value to compare the variable to.
	Source:	
1	Evaluate	Field from previous result
2	Field name	Enter the field name from the result row
3	Туре	The type of your field
	Success On:	
4	Success condition	Select the condition to be met for a successful result (Equal/Non equal/etc.)
5	Value	Value to compare the field to

## 5.12 Table exists

### 5.12.1 Description

Table exists is a Process Entry in the Conditions Plugin for Process Studio Processes. Table Exists process entry checks if a specified table exists on a database. You must provide a connection and the table name. Process Studio returns a True or False value depending on whether or not the table exists.

**Note:** This process entry performs one check and then moves on. If you want to poll until the tables appear, use Evaluate rows number in a table process entry which has a polling interval parameter.

### 5.12.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Connection	The name of the connection to connect to the database.

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3	Schema name	The table's schema name.
4	Table name	The table name to check for existence.

# **6** Scripting Entries

### 6.1 Shell

### 6.1.1 Description

Shell is a Process Entry in the Scripting Plugin for Process Studio Processes. Use the Shell process entry to execute a shell script on the host where the process is running. The Shell process entry is platform agnostic; you can use a batch file in windows, shell script in UNIX, and so on. When you use a Shell process entry, Process Studio makes a Java call to execute a program in a specified location. The return status is provided by the operating system call. For example, in batch scripting a return value of 1 indicates that the script was successful; a return value of 0 (zero) indicates that it was unsuccessful. You can pass command line arguments and set up logging for the Shell process entry.

### 6.1.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Insert script	Enable this checkbox when you want to execute the script in the <b>Script</b> tab instead of executing the <b>Script file name</b> . This is also useful, when you want to execute operating system commands like <b>dir</b> , <b>Is</b> or <b>ipconfig</b> without giving a specific path. This option creates a temporary script in the working directory and executes it. <b>Note:</b> Variables are resolved within the script when given.
3	Script file name	The filename of the shell script to start, should include full path else \${user.dir} is used as path.
4	Working directory	Specify the directory that will be used as working directory for the shell script. The working directory only becomes active when the shell script starts so "Filename" should still include the full path to the script. When the field is left empty or the working directory is invalid \${user.dir} will be used as working directory.
5	Specify log file	Enable to specify a separate logging file for the execution of this workflow

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6	Append logfile	Enable to append to the logfile as opposed to creating a new one
7	Name of log file	The directory and base name of the log file (for example C:\logs)
8	Extension of the log file	The filename extension (for example: log or txt)
9	Include date in filename?	Adds the system date to the filename. (_20051231)
10	Include time in filename?	Adds the system time to the filename. (_235959)
11	Loglevel	Specify the logging level for the execution of the shell.
12	Copy previous results to arguments?	The results from a previous workflow can be sent to the shell script using the "Copy rows to result" step. (as arguments)
13	Execute once for every input row	This implements looping. If the previous process entry returns a set of result rows, you can have this shell script executed once for every row found. One row is passed to this script at every execution in combination with the copy previous result to arguments. The values of the corresponding result row can then be found on command line argument \$1, \$2, (%1, %2, %3, on Windows)
14	Arguments table	Specify the strings to use as arguments for the shell script.

## 6.2 SQL

## 6.2.1 Description

SQL is a Process Entry in the Scripting Plugin for Process Studio Processes. Use the SQL process entry to execute an SQL script. You can execute more than one SQL statement, as long as they are separated by semi-colons.

The SQL process entry is flexible; you can perform procedure calls, create and analyze tables, and more. Common uses associated with the SQL process entry include truncating tables, drop index, partition loading, refreshing materialized views, disabling constraints, disabling statistics, and so on.

### 6.2.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Database Connection	The database connection to use.

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3	SQL from file	Enable this option to load the SQL statement from a file given by the SQL filename
4	SQL filename	The filename for the file with SQL statements.
5	Send SQL as single statement?	Enable this option to not separate the statement by semicolons. This is often useful when a script is given or multiple statements should be processed and committed as one single statement.
6	Use variable substitution?	Enables variables to be used in the SQL Script.
7	SQL script	The SQL script to execute. Multiple statements can be separated by semicolons.



## 6.3 Evaluation (using Java Script)

### 6.3.1 Description

Java Script is a Process Entry in the Scripting Plugin for Process Studio Processes. JavaScript process entry to calculates a boolean expression. The result can be used to determine which step will be executed next. You can use functions, procedure calls, ANDs, ampersands, ORs, EQUALs, etc. The JavaScript process entry evaluates and returns a true or false.

### 6.3.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Java Script	The result of a JavaScript process entry is either true or false. In other words, it needs to end with a boolean expression. Here are a few possible evaluations to end your script with : lines_input > 100 or true or parent_process.getVariable("INPUT_DIRECTORY").equals("/tmp")

# 7 XML

## 7.1 XSD Validator

### 7.1.1 Description

XSD Validator is an entry in the XML Plugin for Process Studio processes. This entry validates XML source (files or streams) against XSD (XML Schema Definition).

### 7.1.2 Configurations

No.	Field Name	Description
1	Process entry name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	XML File name	Specify or browse for the XML file.
3	Browse	Click to browse the XML file.
4	XSD File name	Specify or browse for the XSD file.

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5 DIUWSE	5	Browse
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Browse for the XSD file.

#### Check if XML file is well formed 7.2

#### 7.2.1 Description

XSL Transformation is a step in the XML Plugin for Process Studio Workflows. This step checks if one or several XML files is/are well formed.

#### Configurations 7.2.2

No.	Field Name	Description
1	Process entry name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

General	Tab:

No.	Field Name	Description
	Settings:	
1	Include subfolders	Select checkbox to include sub-folders.
2	Copy previous results to args	Check this to pass the results of the previous entry to the arguments of this entry. Be careful, arguments must be in the same order as that of arguments i.e. i. source folder/file ii. wildcard
3	File/Folder source	Specify a File/Folder source or browse.
	Add	Click to add the file/folder to the Files/Folders table.
	File	Click to browse a file.
	Folder	Click to browse a folder.
4	Wildcard(RegExp)	Specify the regular expressions wildcard to match. Only files that match the wildcard can be checked.
	Files/Folders:	
5	Files/Folder Source	Specify the file or folder to process. If it is a folder Process Studio will fetch only if 'Include subfolders' is checked.
6	Wildcard(RegExp)	Specify the regular expressions wildcard to match. Only files that match the wildcard can be moved.



Del	lete	Select a record in the this table and click the delete button to delete the record.
Edi	it	Select a record in the this table and click the edit button to edit the record.

Adv	Advanced Tab:		
No.	Field Name	Description	
	Success On:		
1	Success Condition	Select a success condition from the list.	
		Success if all files are well formed Success if at least x files are well formed Success when number of bad formed files lesser than	
2	Nr files	Specify the number of files in case the second or third options are selected in the Success Condition.	
	Result files name:		
4	Add filenames	Select an option from the drop-down list for adding filenames to the result. Add all filenames Add only well formed filenames Add only bad formed filenames	

#### 7.3 **XSL** Transformation

#### 7.3.1 Description

XSL Transformation is a step in the XML Plugin for Process Studio Workflows. This step transforms XML stream using XSL (eXtensible Stylesheet Language).

#### 7.3.2 Configurations

No.	Field Name	Description
1	Process entry name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.

General Tab:		
No.	Field Name	Description
	Files:	



1	Get filenames from previous result	Select checkbox to get filenames from result of the previous process entry. Be careful the order is the following, i. XML File Name ii. XSL File Name iii. Output File Name Enabling checkbox disables the three fields below.
2	XML File Name	Specify or browse for the input XML file.
3	Button: Browse	Click to Browse for the input XML filename.
4	XSL File Name	Specify the source XSL filename path or browse for it.
5	Button: Browse	Click to Browse for the source XSL filename.
6	Output File Name	This field is enabled by default when the 'XSL source defined in a' checkbox is unselected. Specify the source XSL filename path or browse for it.
7	Button: Browse	Click to Browse for the source XSL filename.
	Settings:	
6	Transformer factory	Select from JAXP or SAXON
7	If file exists	Select an option from the list to handle duplicate output files, Create new with unique name Do Nothing Fail
8	Add output filename to result	Check this option if you want to add output filename to the result and attach it to mail.

### Advanced Tab:

No.	Field Name	Description
	Output Properties:	Tabular list of Properties.
1	Name	Select a Property name from the list.



		Name wethod version encoding
		standalone indent omit-xml-declaration doctype-public doctype-system media-type
2	Value	Specify a property value.
	Parameters:	Tabular list of parameters.
4	Name	Specify a parameter name.
5	Value	Specify a parameter value.

#### 7.4 **DTD Validator**

#### 7.4.1 Description

DTD Validator is an entry in the XML Plugin for Process Studio processes. This entry validates XML source (files or streams) against DTD (Document Type Definition).

#### Configurations 7.4.2

No.	Field Name	Description
1	Process entry name	Specify the name of the step as it appears in the workflow workspace. This name has to be unique in a single workflow.
2	XML File name	Specify or browse for the XML file.
3	Browse	Click to browse the XML file.
4	DTD Intern	Enable checkbox for internal DTD if elements are declared within the XML files. Enabling the checkbox disables the DTD file name below.
5	DTD File name	Specify or browse for the DTD file.
6	Browse	Browse for the DTD file.

#### **Utility Entries** 8

## 8.1 Truncate tables

### 8.1.1 Description

Truncate Tables is a Process Entry in the Utilities plugin for Process Studio Processes. This process entry allows you to truncate one or several tables at once without writing any SQL command.

### 8.1.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Connection	Name of the database connection on which the tables reside. Use "Edit" and "New" to edit and/or create a new connection.
3	Previous results to args?	Check this option if you want to get in a dynamic way tables to truncate from results of previous process entry. <b>Note:</b> The first field has to be the table name and the second one the schema (leave it Null if it's not needed).
4	Click here to return tables name list	This button will return all tables defined on the connection. Select tables (one or several) and press "OK". Tables name will be automatically added to "Selected tables" grid.
5	Selected tables grid	Specify here the tables to truncate (insert it manually or use the previous button). If the table is in a different schema that the default one, please specify the schema name.
6	Delete	Remove entries from grid (select one several entries and click on this button to remove it).
7	ОК	Click on this button to save process entry settings changes
8	Cancel	Discard process entry settings changes

## 8.2 Display Msgbox Info

### 8.2.1 Description

Display Msgbox Info is a Process Entry in the Utilities plugin for Process Studio Processes. This process entry displays a message box in a process. You can easily see where you are in the process. This entry is only available when using the Graphical User Interface of Process Studio to execute the process.

The message box displays "OK" and "Cancel" buttons.

Clicking on "OK" exits on the green hop

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- Clicking on "Cancel" exits on the red hop
- When running this entry from a non-Graphical User Interface, the entry always exits on the green hop.

0.2.			
No.	Field Name	Description	
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.	
2	Message title	The title of the message	
3	Message body	The message to display	

#### 8.2.2 Configurations

## 8.3 Evaluate rows number in a table (Wait for SQL)

#### 8.3.1 Description

Wait for SQL is a Process Entry in the Utilities plugin for Process Studio Processes. The Wait for SQL process entry scans a database and checks if the specified database table meets user-defined conditions.

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Connection	Identifies the database connection to use
3	Target schema	Name of the table schema to evaluate
4	Target table name	Name of the table to evaluate
5	Success when rows count	Defines the evaluation method used to compare the number of rows with the given value
6	Value	Defines the value used for the evaluation
7	Maximum timeout	After this timeout period, the process entry continues with a fail, by default, or success, if the Success on timeout option is checked
8	Check cycle time	Sets the amount time between evaluations
9	Success on timeout	Defines process entry success behavior when timeout is reachedwhen checked, reaching the maximum timeout limit

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		causes the process entry to succeed. When left unchecked, reaching the maximum timeout limit causes the process entry to fail.
10	Custom SQL	Enables the use of custom SQL queries
11	Use variable substitution	Replaces environment variables in the SQL script with their actual value
12	Clear list of result rows before execution	Clears the list of result rows before running this process entry
13	Add rows to result	Includes returned rows to the result set

### 8.4 Abort process

#### 8.4.1 Description

Abort process is a Process Entry in the Utilities plugin for Process Studio Processes. Abort process Entry aborts a process.

### 8.4.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Message	Message to add in log when aborting

## 8.5 Ping a host

### 8.5.1 Description

Ping a host is a Process Entry in the Utilities plugin for Process Studio Processes. Ping a host process entry to pings a host using the ICMP protocol. The result it true when the host is reachable, otherwise false.

### 8.5.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Host name/IP	The name or the IP address of the host to ping

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3	Ping type	Classic ping: This calls the ping as a command line of the operating system. The result is true when no packets (defined in the "Nr. packets to send" option) are lost. System ping: This option uses the Java implemented methods. The result is true when the host name can be resolved and the host is reachable within the given timeout period. System ping then classic ping: try both options (first the system ping and when that fails, try the classic ping)
4	Timeout (ms)	The timeout in ms when the system ping option is used.
5	Nr. packets to send	The number of packets to send (by default 2, only used by the Classic ping option).

## 8.6 Write to Log

#### 8.6.1 Description

Write to Log is a Process Entry in the Utilities plugin for Process Studio Processes. Write to Log Process Entry writes log messages to the PROCESS STUDIO logging system. Log messages may include Process Studio variables that are replaced at run time.

#### 8.6.2 Configurations

No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
2	Log level	The logging level to use
3	Log subject	The subject to use in the logging line(s)
4	Log message	The log message to write to the log

## 9 File Transfer

### 9.1 Get file via FTPS

#### 9.1.1 Description

Get a file with FTPS is a Process Entry in the File Transfer plugin for Process Studio Processes. Get a file with FTPS Process Entry gets files from a remote directory with FTP secure over SSL.

#### 9.1.2 Configurations

**Process Specification Tab** 

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No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Server:	
1	FTP server name / IP address	The name of the SFTP server or the IP address
2	Server Port	The TCP port to use. This is usually 22
3	User name	The user name to log into the SFTP server
4	Password	The password to log into the SFTP server
5	Proxy host	Proxy server host name
6	Proxy port	Proxy server port number
7	Proxy username	Proxy server account user name
8	Proxy password	Proxy server account password
9	Connection type	<ul> <li>Select from the list:</li> <li>FTP</li> <li>Implicit SSL</li> <li>Authentication SSL</li> <li>Implicit SSL with crypted FTP connection</li> <li>Authentication TLS</li> <li>Implicit TLS</li> <li>Implicit TLS with crypted FTP connection</li> </ul>
	Advanced:	
10	Binary mode?	Enable if files must be transferred in binary mode
11	Timeout	The FTP server timeout in seconds
12	Use active FTP connection	Enable if you are connecting to the FTP server using Active mode; you must set your firewall to accept connections to the port that your FTP client will open. The default is Passive mode.

#### 9.2 **Delete files via FTP**

#### 9.2.1 Description

FTP Delete is a Process Entry in the File Transfer plugin for Process Studio Processes. FTP Delete Process Entry deletes files on a remote host via FTP.



#### Configurations 9.2.2

Ger	eneral Tab		
No.	Field Name	Description	
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.	
	Server:		
1	Protocol	Select the protocol. Available options are: • FTP • FTPS • SFTP • SSH	
2	FTP server name / IP address	The name of the SFTP server or the IP address	
3	Server Port	The TCP port to use. This is usually 22	
4	User name	The user name to log into the SFTP server	
5	Password	The password to log into the SFTP server	
	Connection type	<ul> <li>Select from the list:</li> <li>FTP</li> <li>Implicit SSL</li> <li>Authentication SSL</li> <li>Implicit SSL with crypted FTP connection</li> <li>Authentication TLS</li> <li>Implicit TLS</li> <li>Implicit TLS with crypted FTP connection</li> </ul>	
	Use proxy		
6	Proxy host	Proxy server host name	
7	Proxy port	Proxy server port number	
8	Proxy username	Proxy server account user name	
9	Proxy password	Proxy server account password	
10	Use public key	Indicates whether or not a public keyfile is to be used.	
11	Key file	If "Use public keyfile" is checked then this field is enabled. The file can be browsed to using the browse button to the right of the	



		field. The Public Key should be in the PEM file format. For PuTTY-based Private Keys, use PuTTYgen to convert the file into "OpenSSH" format.
12	Key passphrase	If "Use public keyfile" is checked then this field is enabled. If a passphrase is required then enter it here.
Files	Tab	
No.	Field Name	Description
	Advanced:	
1	Timeout	The FTP server timeout in seconds
2	Use active FTP connection	Enable checkbox to use an active FTP connection.
	Remote:	
1	Copy previous results to args	If files to send are dynamically generated by another workflow or if you want to identify files to send, check this option. Process Studio will select files list from previous result rows (not result files) and send theses files.
2	Remote Directory	The remote directory on the SFTP server from which we get the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
3	Wildcard (regular expression)	Specify a regular expression here if you want to select multiple files.
	Success Condition:	
1	Success on	<ul> <li>Select from list:</li> <li>All works fine</li> <li>At least we delete x files</li> <li>Nr errors less than</li> </ul>
2	Limit files	Put a numerical limit on the choice above.
Sock	s Proxy Tab	
No.	Field Name	Description
	Proxy:	
1	Host	Socks Proxy host name
2	Port	Socks Proxy port number
3	Username	User name associated with the Socks Proxy account
4	Password	Password associated with the Socks Proxy account

## 9.3 Get files with SecureFTP

## 9.3.1 Description

Get a file with SFTP is a Process Entry in the File Transfer plugin for Process Studio Processes. Get a file with SFTP process entry retrieves one or more files via an FTP server using the Secure FTP protocol.

# 9.3.2 Configurations

Gen	eral lab	
No.	Field Name	Description
1	Process Entry name	Specifies the unique name of the process entry on the workspace area. A process entry can be placed on the canvas several times, yet it represents the same process entry.
2	SFTP-server name / IP	The name of the SFTP server or the IP address
3	Port	The TCP port to use. This is usually 22
4	User name	The user name to log into the SFTP server
5	Password	The password to log into the SFTP server
6	Use private keyfile	Indicates whether or not a private keyfile is to be used.
7	Private key filename	If "Use private keyfile" is checked then this field is enabled. The file can be browsed to using the browse button to the right of the field. The Private Key should be in the PEM file format. For PuTTY-based Private Keys, use PuTTYgen to convert the file into "OpenSSH" format.
8	Key passphrase	If "Use private keyfile" is checked then this field is enabled. If a passphrase is required then enter it here.
9	Proxy type	Select from the list: HTTP/SOCKS5
10	Proxy host	Proxy server host name
11	Proxy port	Proxy server port number
12	Proxy username	Proxy server account user name
13	Proxy password	Proxy server account password
14	Compression	Select from the list: none/zlib
Files	Tab	
No.	Field Name	Description
	Source (remote) files:	
1	Copy previous results to args	If files to send are dynamically generated by another workflow or if you want to identify files to sent, check this option.

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		PROCESS STUDIO will select files list from previous result rows (not result files) and send theses files.
2	Remote Directory	The remote directory on the SFTP server from which we get the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
3	Wildcard (regular expression)	Specify a regular expression here if you want to select multiple files.
4	Group: Last Modified On (UTC Time) From	Specify a date-time here if you want to select files that are last modified from this time. (Supported DateTime format: "yyyy- MM-dd hh:mm:ss a")
5	То	Specify a date-time here if you want to select files that are last modified to this time. (Supported DateTime format: "yyyy-MM-dd hh:mm:ss a")
6	Remove files after retrieval	Enable checkbox to delete the remote file after the file is transferred.
	Target (local) files:	
1	Target Directory	The remote directory on the SFTP server from which we get the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
2	Create target folder	Check this option if the destination folder does not exist and should be created.
3	Add filenames to result	If checked the name of the file is added to the result stream.

#### 9.4 Put files via FTP

#### 9.4.1 Description

Put a file with FTP is a Process Entry in the File Transfer plugin for Process Studio Processes. Put a file with FTP Process Entry puts files to a remote directory via FTP server.

#### Configurations 9.4.2

General Tab		
No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.



	Server:	
1	FTP server name / IP address	The name of the SFTP server or the IP address
2	Port	The TCP port to use. This is usually 22
3	User name	The user name to log into the SFTP server
4	Password	The password to log into the SFTP server
5	Proxy host	Proxy server host name
6	Proxy port	Proxy server port number
7	Proxy username	Proxy server account user name
8	Proxy password	Proxy server account password
	Advanced:	
1	Binary mode?	Select checkbox to enable binary mode.
2	Timeout	The FTP server timeout in seconds
3	Use active FTP connection	Enable checkbox to use an active FTP connection.
4	Control Encoding	Select control character encoding from the list.
Files	Tab	
No.	Field Name	Description
	Source (local) files:	
1	Local directory	The directory on the machine on which Process Studio runs from which you want to ftp the files from
2	Wildcard (Regular expression)	Specify a regular expression here if you want to select multiple files.
3	Remove files after transferal	Enable checkbox to remove files after transferal
4	Don't overwrite files	Enable checkbox if you don't want files to be overwritten.
	Target (remote) files	The target remote file.
1	Remote directory	The remote directory on the FTP server to which we put the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
Sock	ks Proxy Tab	
No.	Field Name	Description
	Proxy:	



1	Host	Socks Proxy host name
2	Port	Socks Proxy port number
3	Username	User name associated with the Socks Proxy account
4	Password	Password associated with the Socks Proxy account

## 9.5 Get files via FTP

### 9.5.1 Description

Get a file with FTP is a Process Entry in the File Transfer plugin for Process Studio Processes. Get a File with FTP process entry retrieves one or more files from the specified remote directory via an FTP server.

**Note:** Some FTP servers do not allow files to be FTP'ed when they contain certain characters (spaces for example). Therefore, when choosing filenames for files to be FTP'ed, be sure to check upfront whether your particular FTP server is able to process your kind of filenames.

### 9.5.2 Configurations

Ger	General Tab			
No.	Field Name	Description		
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.		
	Server:			
1	FTP server name / IP address	The name of the SFTP server or the IP address		
2	Server Port	The TCP port to use. This is usually 22		
3	User name	The user name to log into the SFTP server		
4	Password	The password to log into the SFTP server		
5	Proxy type	Select from the list: HTTP/SOCKS5		
6	Proxy host	Proxy server host name		
7	Proxy port	Proxy server port number		
8	Proxy username	Proxy server account user name		
9	Proxy password	Proxy server account password		
	Advanced:			
1	Binary mode?	Enable if files must be transferred in binary mode		

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2	Timeout	The FTP server timeout in seconds
3	Use active FTP connection	Enable if you are connecting to the FTP server using Active mode; you must set your firewall to accept connections to the port that your FTP client will open. The default is Passive mode.
4	Control encoding	Encoding matters when retrieving file names that contain special characters. For Western Europe and the USA, <b>ISO</b> -8859-1 usually suffices. Select encoding that is valid for your server.
Files	Tab	
No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Remote:	
1	Remote Directory	The remote directory on the SFTP server from which we get the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
2	Wildcard (regular expression)	Specify a regular expression here if you want to select multiple files.
3	Remove files after retrieval?	Delete the remote file after the file is transferred.
4	Move files after retrieval?	Enable checkbox to move files after retrieval
5	Move to a folder	Moves files to specified folder
6	Create a folder	Creates folder that will contain files
	Local:	
1	Target Directory	The remote directory on the SFTP server from which we get the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
2	Include date in filename	Adds the system date to the filename (_20101231)
3	Include time in filename	Adds the system time to the filename (_235959)
4	Specify date time format	Enable to provide your own date/time format; the default is yyyyMMdd'_'HHmmss
5	Date time format	Select date time format
6	Add date before extension	Adds date to the file name before the extension



7	Don't overwrite files	Enable to skip, rename, or fail if a file with an identical name already exists in the target directory
8	If file exists	Action to take if a file with an identical name already exists in the target directory
9	Add filenames to result	If checked the name of the file is added to the result stream.
Adva	inced Tab	
No.	Field Name	Description
	Success Condition:	
1	Success on	Sets conditions of success
2	Limit files	Sets number of files associated with a condition of success
Socks Proxy Tab		
No.	Field Name	Description
	Proxy:	
1	Host	Socks Proxy host name
2	Port	Socks Proxy port number
3	Username	User name associated with the Socks Proxy account
4	Password	Password associated with the Socks Proxy account

#### 9.6 Put files with SecureFTP

#### Description 9.6.1

Put files with SFTP, is a Process Entry in the File Transfer plugin for Process Studio Processes. Put files with SFTP process entry puts one or more files to a remote directory using the Secure FTP protocol.

#### Configurations 9.6.2

General Tab		
No.	Field Name	Description
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.
	Server settings:	
1	SFTP server name / IP	The name of the SFTP server or the IP address



2	Port	The TCP port to use. This is usually 22
3	User name	The user name to log into the SFTP server
4	Password	The password to log into the SFTP server
5	Use private keyfile	Indicates whether or not a private keyfile is to be used.
6	Private key filename	If "Use private keyfile" is checked then this field is enabled. The file can be browsed to using the browse button to the right of the field. The Private Key should be in the PEM file format. For PuTTY-based Private Keys, use PuTTYgen to convert the file into "OpenSSH" format.
7	Key passphrase	If "Use private keyfile" is checked then this field is enabled. If a passphrase is required then enter it here.
8	Proxy type	The proxy type (SOCKS5, HTTP) of the specified proxy server.
9	Proxy host	Proxy server host name
10	Proxy port	Proxy server port number
11	Proxy username	Proxy server account user name
12	Proxy password	Proxy server account password
13	Compression	The compression to use in the file transfer. Current options are "none" and "zlib".
Files Tab		
No.	Field Name	Description
	Source (local) files:	
1	Copy previous results to args	If files to send are dynamically generated by another workflow or if you want to identify files to send, check this option. Process Studio will select files list from previous result rows (not result files, see next option) and send theses files. If the file cannot be found, Process Studio will ignore it. (It takes the first field of the result row as a string field.
2	Copy previous result files to args	If files to send are dynamically generated by another workflow or process entry or if you want to identify files to sent, please check this option. Process Studio will select files from previous files result entry and send theses files. If the file cannot be found, Process Studio will ignore it.
3	Local Directory	The directory on the machine on which Process Studio runs from which you want to ftp the files from

Wildcard (regular Specify a regular expression here if you want to select multiple expression) files.

4



5	Success when no file	Check this option if the process entry has to success when there is no files to process otherwise the process will fail.
6	After SFTP put	Action to take after the file is transferred. Actions are "Do nothing", "Delete file" and "Move file to".
7	Destination folder	Enabled if "After SFTP Put" is set to "Move file to". The destination on the source file for the move is specified here. Use to browse button to browse to destination folder.
8	Create destination folder	Enabled if "After SFTP Put" is set to "Move file to". If the "Destination folder" does not exists check this option to create it.
9	Add filename to result	Enabled if "After SFTP Put" is seet to "Do nothing". If checked the name of the file is added to the result stream.
	Target (remote) files:	
1	Remote Directory	The remote directory on the SFTP server to which we put the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.
2	Create folder	Check this option if the destination folder does not exist and should be created.

## 9.7 Upload files to FTPS

### 9.7.1 Description

Upload files to FTPS is a Process Entry in the File Transfer plugin for Process Studio Processes. Upload files to FTPS Process Entry Uploads files to a remote directory via FTP secure.

## 9.7.2 Configurations

General Tab

Gene			
No.	Field Name	Description	
1	Process Entry name	Specify a unique name for the process entry, on the workspace area. A process entry can be placed on the canvas several times; and each instance of the entry must have a unique name.	
	Server:		
1	FTP server name / IP address	The name of the SFTP server or the IP address	
2	Port	The TCP port to use. This is usually 22	

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3	User name	The user name to log into the SFTP server	
4	Password	The password to log into the SFTP server	
5	Proxy host	Proxy server host name	
6	Proxy port	Proxy server port number	
7	Proxy username	Proxy server account user name	
8	Proxy password	Proxy server account password	
9	Connection type	<ul> <li>Select from the list:</li> <li>FTP</li> <li>Implicit SSL</li> <li>Authentication SSL</li> <li>Implicit SSL with crypted FTP connection</li> <li>Authentication TLS</li> <li>Implicit TLS</li> <li>Implicit TLS with crypted FTP connection</li> </ul>	
	Advanced:		
1	Binary mode?	Select checkbox to enable binary mode.	
2	Timeout	The FTP server timeout in seconds	
3	Use active FTP connection	Enable checkbox to use an active FTP connection.	
Files	Files Tab		
No.	Field Name	Description	
	Source (local) files:		
1	Local directory	The directory on the machine on which Process Studio runs from which you want to ftp the files from	
2	Wildcard (Regular expression)	Specify a regular expression here if you want to select multiple files.	
3	Remove files after transferal	Enable checkbox to remove files after transferral	
4	Don't overwrite files	Enable checkbox if you don't want files to be overwritten.	
	Target (remote) files	The target remote file.	
1	Remote directory	The remote directory on the FTP server to which we put the files. Use the "test folder" button to connect to the remote server and validate that the folder exists.	
Sock	ks Proxy Tab		
No.	Field Name	Description	



	Proxy:	
1	Host	Socks Proxy host name
2	Port	Socks Proxy port number
3	Username	User name associated with the Socks Proxy account
4	Password	Password associated with the Socks Proxy account





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