User Guide: fn_datatable_utils_v1.1.0

Table of Contents

Release Notes

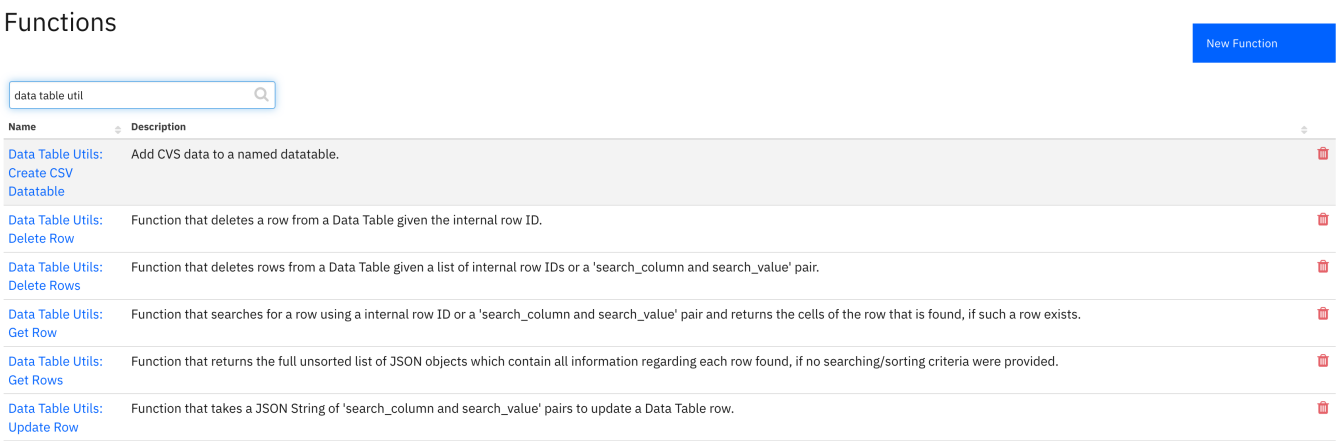
v1.1.0

- Added support for App Host Added Functions:
- `dt_utils_get_row`
- `dt_utils_get_rows`
- `dt_utils_delete_row`
- `dt_utils_delete_rows`
- `dt_utils_create_csv_table`

v1.0.0

- Initial Release

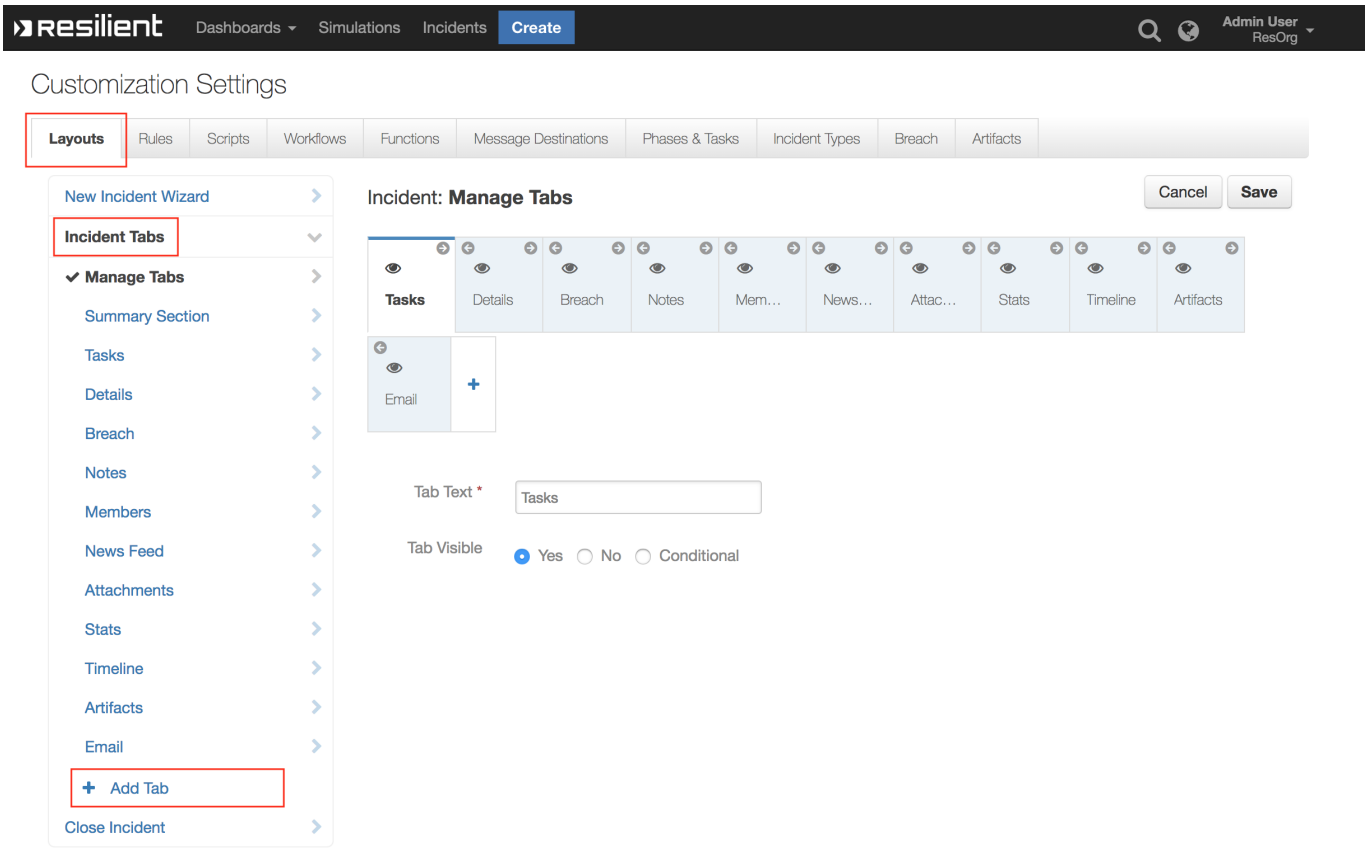
This package contains 6 functions that help you manipulate IBM Resilient Data Tables

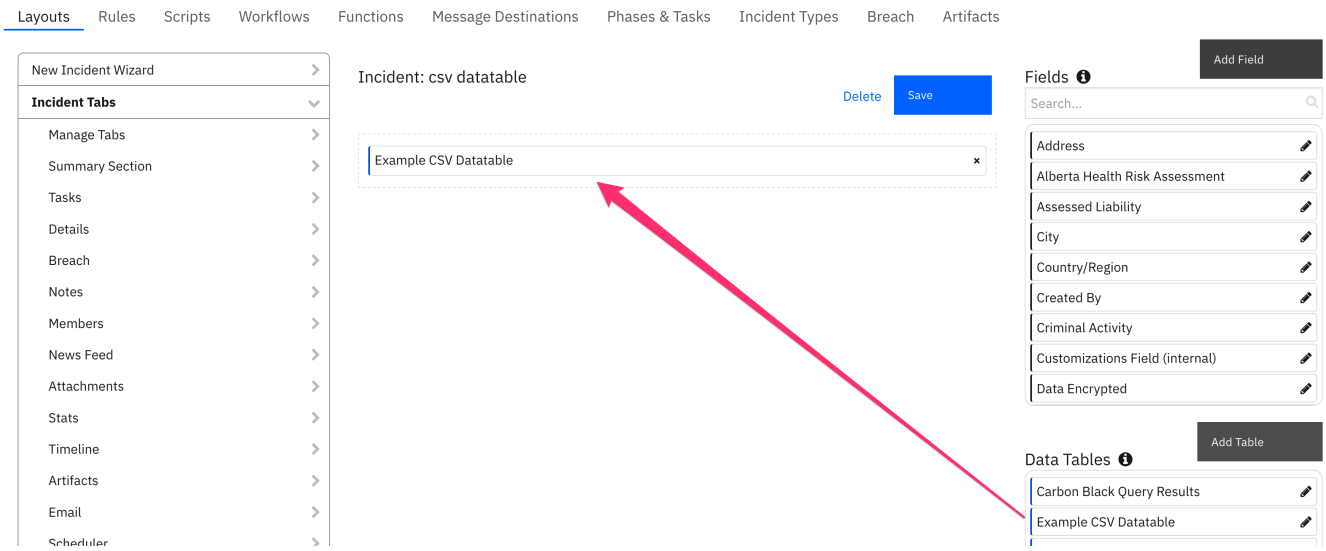


The 6 functions allow you to GET, UPDATE, DELETE a row, GET and DELETE rows in a Data Table, and populate CSV data into a datatable.

Setup

To reference the example datatable, create a new incident tab and drag the `Example CSV DataTable` into the widget area.

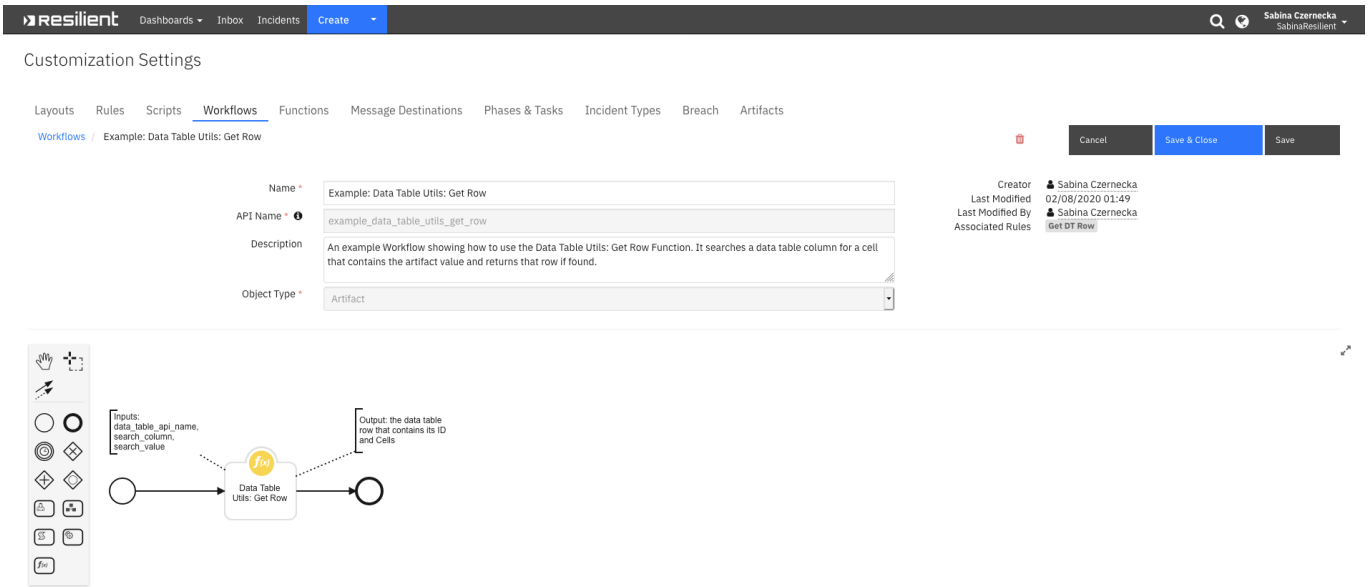




Function - Data Table Utils: Get Row

Function that searches for a row using a internal row ID or a search_column and search_value pair, and returns the information on the row that is found, if such a row exists.

An example Rule and Workflow exist for using this function on the example datatable from an artifact value.



▶ Inputs:

Name	Type	Required	Example	Tooltip
`dt_utils_datatable_api_name`	`text`	Yes	–	The API name of the Data Table
`dt_utils_row_id`	`number`	No	–	The internal ID of the row to be retrieved
`dt_utils_search_column`	`text`	No	–	The API name of the column to search
`dt_utils_search_value`	`text`	No	–	The cell value to search for within the search column
`incident_id`	`number`	Yes	–	-

▶ Outputs:

```
results = {
    # TODO: Copy and paste an example of the Function Output within this
code block.
    # To view the output of a Function, run resilient-circuits in DEBUG
mode and invoke the Function.
    # The Function results will be printed in the logs: "resilient-
circuits run --loglevel=DEBUG"
}
```

▶ Workflows

▶ Example Pre-Process Script:

```
# Data Table Utils: Example: Get Row

#####################
### Define Inputs ###
#####################

# The ID of this incident
inputs.incident_id = incident.id

# The api name of the Data Table to update
inputs.dt_utils_datatable_api_name = "dt_utils_test_data_table"

# The column api name to search for
inputs.dt_utils_search_column = "dt_col_name"

# The cell value to search for
inputs.dt_utils_search_value = artifact.value

## Alternatively you can get the row by its ID by defining this input:
# inputs.dt_utils_row_id = 3
```

▶ Example Post-Process Script:

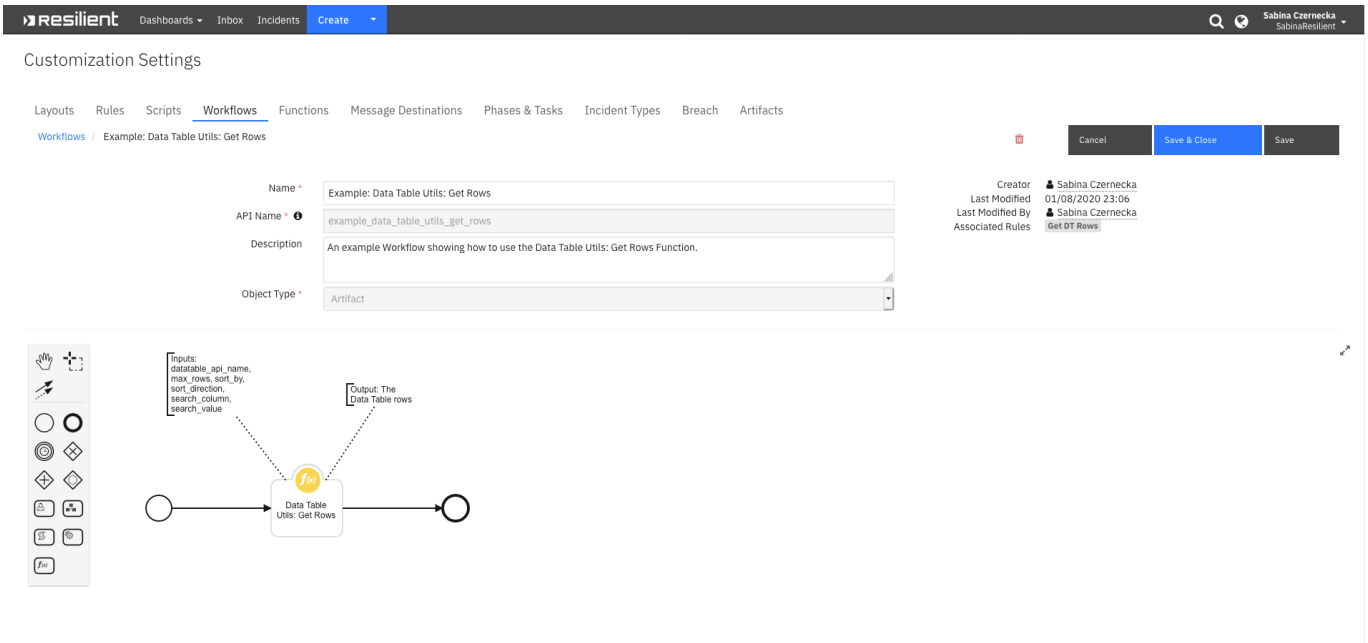
```
search_value = results.inputs["dt_utils_search_value"]
note_text = u"<b>Result from Example: Data Table Utils: Get Row</b><br>
search value: {0}".format(search_value)
if results.success:
note_text = u"{0} <br>{1}".format(note_text, str(results["row"]))
else:
note_text = u"{0} <br>No row found.".format(note_text)

incident.addNote(helper.createRichText(note_text))
```

Function - Data Table Utils: Get Rows

Function that returns the full list of rows in a datatable based on the search value. List sorting is possible using the sort_by and sort_direction input fields.

An example Rule and Workflow exist for searching the example datatable based on an artifact value.



▶ Inputs:

Name	Type	Required	Example	Tooltip
`dt_utils_datatable_api_name`	`text`	Yes	–	The API name of the Data Table
`dt_utils_max_rows`	`number`	No	–	The maximum number of rows to be returned
`dt_utils_search_column`	`text`	No	–	The API name of the column to search
`dt_utils_search_value`	`text`	No	–	The cell value to search for within the search column
`dt_utils_sort_by`	`text`	No	–	The API name of the column to sort by
`dt_utils_sort_direction`	`select`	No	–	-
`incident_id`	`number`	Yes	–	-

▶ Outputs:

```
results = {
    # TODO: Copy and paste an example of the Function Output within this code block.
    # To view the output of a Function, run resilient-circuits in DEBUG mode and invoke the Function.
    # The Function results will be printed in the logs: "resilient-circuits run --loglevel=DEBUG"
}
```

▶ Workflows

▶ Example Pre-Process Script:

```
# Data Table Utils: Example: Get Rows

#####################
### Define Inputs ###
#####################

# The ID of this incident
inputs.incident_id = incident.id

# The api name of the Data Table to update
inputs.dt_utils_datatable_api_name = "dt_utils_test_data_table"

# The number of max rows to return
if rule.properties.dt_utils_max_rows:
inputs.dt_utils_max_rows = rule.properties.dt_utils_max_rows
else:
inputs.dt_utils_max_rows = 0

# The direction of the sort
if rule.properties.dt_utils_sort_direction:
inputs.dt_utils_sort_direction = rule.properties.dt_utils_sort_direction
else:
inputs.dt_utils_sort_direction = "ASC"

# The api name of the column to sort by
if rule.properties.dt_utils_sort_by:
inputs.dt_utils_sort_by = rule.properties.dt_utils_sort_by
else:
inputs.dt_utils_sort_by = None

# The column api name to search for
inputs.dt_utils_search_column = "dt_col_name"

# The cell value to search for
inputs.dt_utils_search_value = artifact.value
```

▶ Example Post-Process Script:

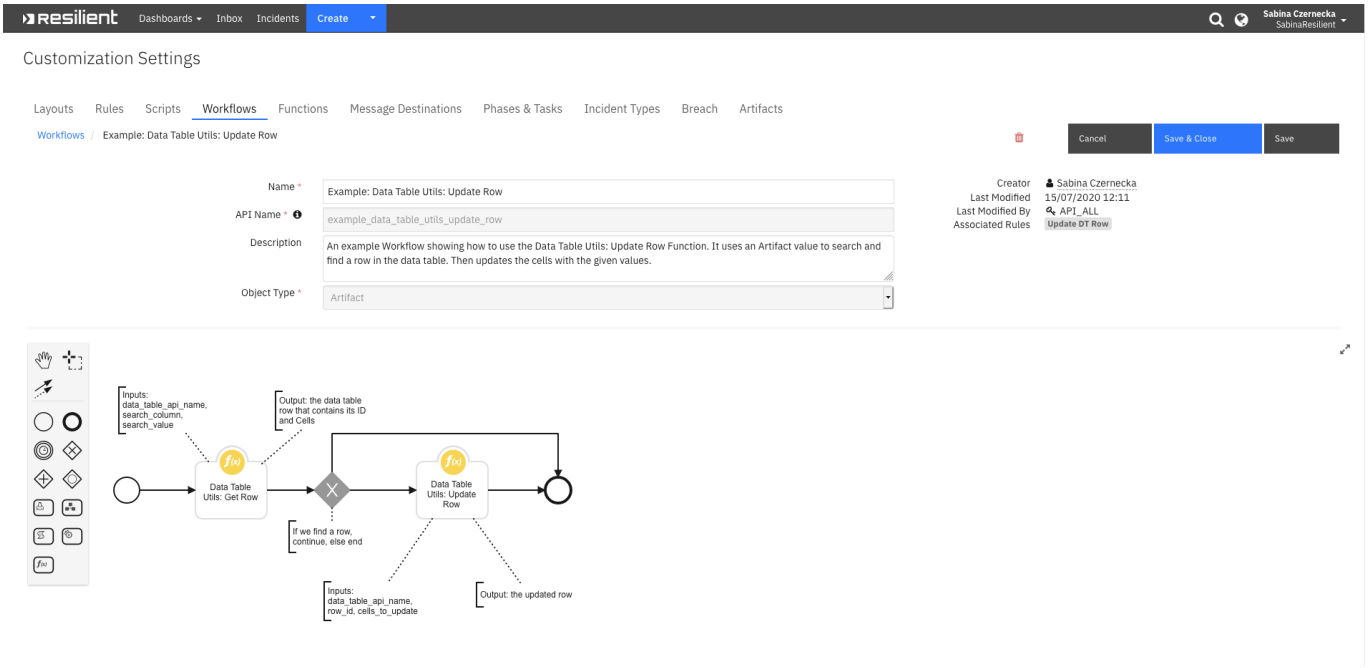
```
if not results.success:
incident.addNote(helper.createRichText("<b>Result from Example: Data Table
Utils: Delete Rows</b><br>No rows found."))
```

Function - Data Table Utils: Update Row

Function that takes a string-encoded JSON String of 'search_column and search_value' pairs to update a Data Table row.

When used on a datatable, specify dt_utils_row_id = 0 to refer to the currently referenced datatable row.

Two sets example Rule and Workflow are available for changing the example datatable from an artifact value and directly from a row in the datatable.



▶ Inputs:

Name	Type	Required	Example	Tooltip
`dt_utils_cells_to_update`	`text`	Yes	–	A JSON String containing the column names and cell values to update
`dt_utils_datatable_api_name`	`text`	Yes	–	The API name of the Data Table
`dt_utils_row_id`	`number`	No	–	The internal ID of the row to be retrieved
`incident_id`	`number`	Yes	–	-

▶ Outputs:

```
results = {
    # TODO: Copy and paste an example of the Function Output within this code block.
    # To view the output of a Function, run resilient-circuits in DEBUG mode and invoke the Function.
    # The Function results will be printed in the logs: "resilient-circuits run --loglevel=DEBUG"
}
```

▶ Workflows

▶ Example Pre-Process Script:

```
# Data Table Utils: Example: Update Row
import java.util.Date as Date

#######################################
### Define pre-processing functions ###
#######################################
def dict_to_json_str(d):
"""Function that converts a dictionary into a JSON string.
   Supports types: basestring, bool, int and nested dicts.
   Does not support lists.
   If the value is None, it sets it to False."""

json_entry = '"{0}":{1}'
json_entry_str = '"{0}":"{1}"'
entries = []

for entry in d:
  key = entry
  value = d[entry]

  if value is None:
    value = False

  if isinstance(value, list):
    helper.fail('dict_to_json_str does not support Python Lists')

  if isinstance(value, basestring):
    value = value.replace(u'"', u'\\"')
    entries.append(json_entry_str.format(key, value))

  elif isinstance(value, bool):
    value = 'true' if value == True else 'false'
    entries.append(json_entry.format(key, value))

  elif isinstance(value, dict):
    entries.append(json_entry.format(key, dict_to_json_str(value)))

  else:
    entries.append(json_entry.format(key, value))

return '{0} {1} {2}'.format('{', ','.join(entries), '}')

# S T A R T

# The ID of this incident
inputs.incident_id = incident.id

# The api name of the Data Table to update [here it is taken from previous
Get Row Function]
inputs.dt_utils_datatable_api_name = "dt_utils_test_data_table"

# Refer to the existing row (value: 0)
```

```
inputs.dt_utils_row_id = 0

# The column api names and the value to update the cell to
inputs.dt_utils_cells_to_update = dict_to_json_str({
"datetime": Date().getTime(),
"text": "Done"
})
```

▶ Example Post-Process Script:

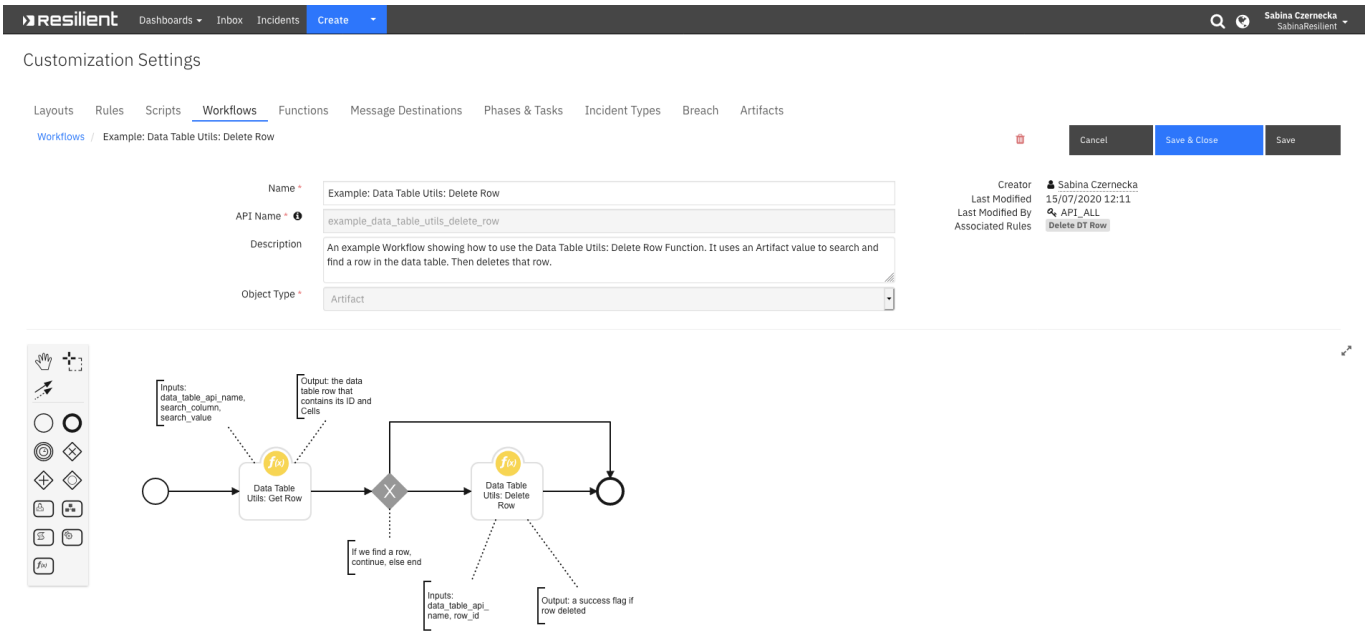
```
None
```

Function - Data Table Utils: Delete Row

Function that deletes a row from a Data Table given the internal row ID.

When used on a datatable, specify dt_utils_row_id = 0 to reference the currently referenced datatable row. The delete operation will be delayed as the workflow will first terminate before the row is deleted.

An example Rule and Workflow are available for deleting datatable rows based on an artifact value and against a row in the example datatable.



▶ Inputs:

Name	Type	Required	Example	Tooltip
dt_utils_datatable_api_name	text	Yes	-	The API name of the Data Table

Name	Type	Required	Example	Tooltip
dt_utils_row_id	number	No	-	The internal ID of the row to be retrieved. Specify 0 when used on a datatable.
incident_id	number	Yes	-	-

▶ Outputs:

```
results = {
    # TODO: Copy and paste an example of the Function Output within this
code block.
    # To view the output of a Function, run resilient-circuits in DEBUG
mode and invoke the Function.
    # The Function results will be printed in the logs: "resilient-
circuits run --loglevel=DEBUG"
}
```

▶ Workflows

▶ Example Pre-Process Script:

```
# Data Table Utils: Example: Delete Row

######################
### Define Inputs ###
######################

# The ID of this incident
inputs.incident_id = incident.id

# The api name of the Data Table [here it is taken from previous Get Row
Function]
inputs.dt_utils_datatable_api_name =
workflow.properties.row_to_delete.inputs.dt_utils_datatable_api_name

# The ID of the row to delete [again, taken from previous Get Row
Function]
inputs.dt_utils_row_id = workflow.properties.row_to_delete.row["id"]
```

▶ Example Post-Process Script:

```
# {'success': True, 'inputs': {'incident_id': 2150,
'dt_utils_datatable_api_name': 'dt_utils_test_data_table',
'dt_utils_row_id': 821}, 'row': {'success': True, 'title': None,
'message': None, 'hints': []}}
if results.success:
note = u"Row id: {} removed from datatable: {} for artifact:
```

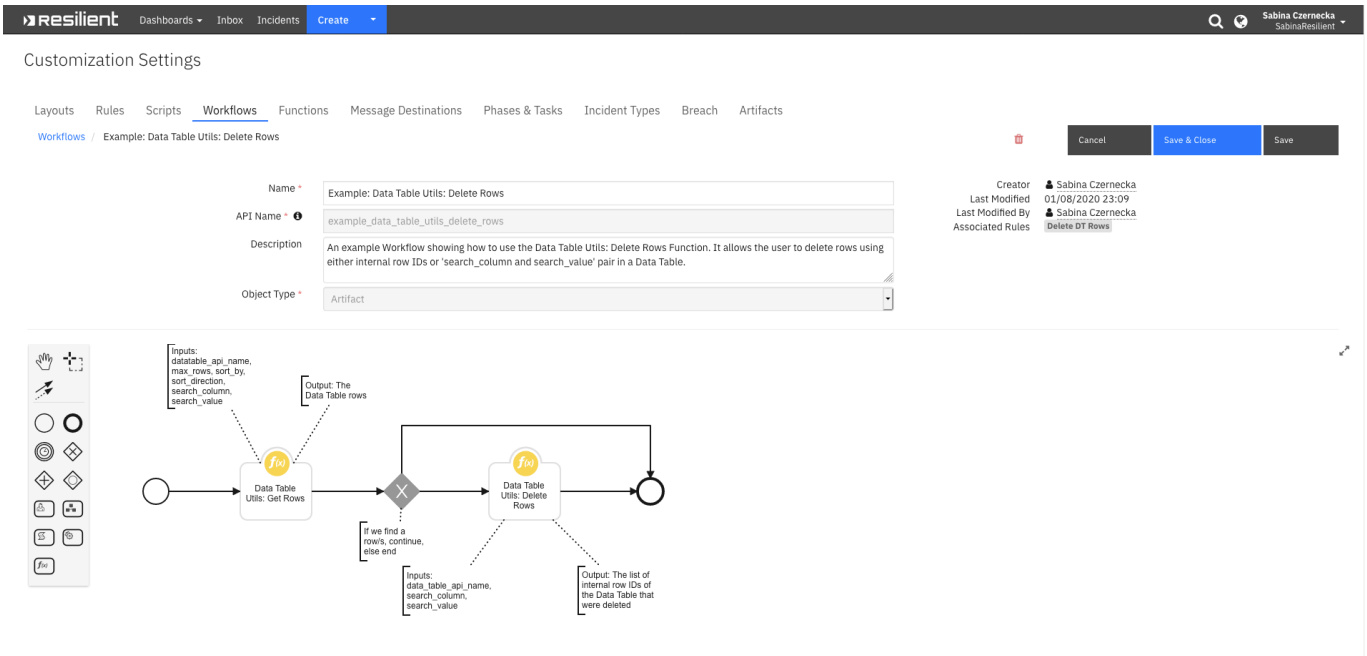
```
{}".format(results.inputs['dt_utils_row_id'],
results.inputs['dt_utils_datatable_api_name'], artifact.value)
else:
note = u"Artifact: {} not found in datatable: {}".format(artifact.value,
results.inputs['dt_utils_datatable_api_name'])

incident.addNote(note)
```

Function - Data Table Utils: Delete Rows

Function that deletes rows from a Data Table given a list of internal row IDs or a 'search_column and search_value' pair.

An example Rule and Workflow are available for deleting datatable rows based on an artifact value.



▶ Inputs:

Name	Type	Required	Example	Tooltip
`dt_utils_datatable_api_name`	`text`	Yes	–	The API name of the Data Table
`dt_utils_rows_ids`	`text`	No	–	The list of internal rows IDs of a Data Table to delete
`dt_utils_search_column`	`text`	No	–	The API name of the column to search
`dt_utils_search_value`	`text`	No	–	The cell value to search for within the search column
`incident_id`	`number`	Yes	–	-

▶ Outputs:

```
results = {
    # TODO: Copy and paste an example of the Function Output within this
code block.
    # To view the output of a Function, run resilient-circuits in DEBUG
mode and invoke the Function.
    # The Function results will be printed in the logs: "resilient-
circuits run --loglevel=DEBUG"
}
```

▶ Workflows

▶ Example Pre-Process Script:

```
# Data Table Utils: Example: Delete Row

#####################
### Define Inputs ###
#####################

# The ID of this incident
inputs.incident_id = incident.id

# The api name of the Data Table, search column, search value [here it is
taken from previous Get Rows Function inputs]
inputs.dt_utils_datatable_api_name =
workflow.properties.rows_to_delete.inputs.dt_utils_datatable_api_name

# The internal IDs of the rows that will be deleted [again, taken from
previous Get Rows Function]
if workflow.properties.rows_to_delete and
workflow.properties.rows_to_delete.rows:
rows_ids = []
for row in workflow.properties.rows_to_delete.rows:
  rows_ids.append(row["id"])
inputs.dt_utils_rows_ids = str(rows_ids)
```

▶ Example Post-Process Script:

```
if results.success:
note = u"<b>Result from Example: Data Table Utils: Artifact: {} Delete
Rows</b><br> {}".format(artifact.value, str(results["rows_ids"]))
else:
note = u"<b>Result from Example: Data Table Utils: Artifact: {} not found
in datatable: {}".format(artifact.value,
results.inputs['dt_utils_datatable_api_name'])

incident.addNote(helper.createRichText(note))

"""
```

```
# {'success': True, 'inputs': {'incident_id': 2150,
'dt_utils_datatable_api_name': 'dt_utils_test_data_table',
'dt_utils_row_id': 821}, 'row': {'success': True, 'title': None,
'message': None, 'hints': []}}
if results.success:
note = u"Row id: {} removed from datatable: {} for artifact:
{}".format(results.inputs['dt_utils_row_id'],
results.inputs['dt_utils_datatable_api_name'], artifact.value])
"""
```

Function - Data Table Utils: Create CSV Datatable

Add CVS data to a named datatable. CSV data can originate from another function or from a referenced attachment with CSV encoded data.

A mapping table is used to map CSV header row labels to datatable column (API) names. For csv_data with headers, either a string-encoded list can be used, referencing the column order of the CSV data for the associated datatable column names:

```
'[null, dt_col_nameA, null, null, dt_col_nameC, dt_col_nameB]'
```

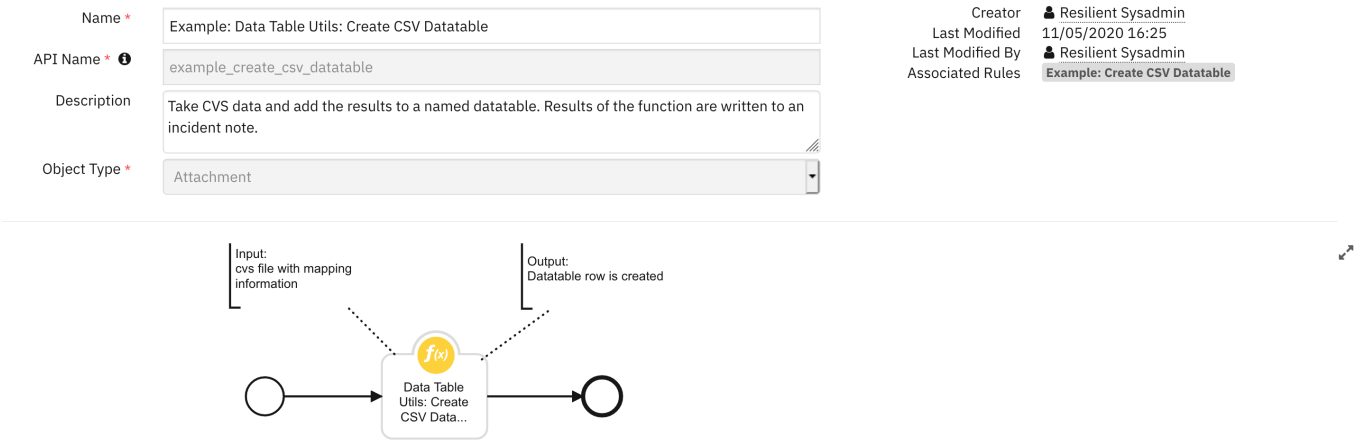
Alternatively, a string-encoded dictionary can be used mapping CSV header names to datatable column names:

```
'{
  "hdr1": "dt_col_name1",
  "hdr2": "dt_col_name2",
  "hdr4": "dt_col_name4"
}'
```

For csv data without headers, the mapping table will contain a string-encoded list referencing the column order of the CSV data for the associated datatable column names. For example:

```
'[null, dt_col_nameA, null, null, dt_col_nameC, dt_col_nameB]'
```

Attempts are made to match the field type of the datatable. CSV data matched to `select` and `multi-select` datatables columns must contain the correct values specified for those columns. String-based date fields will be converted into epoch timestamp values based on a date format pattern (ex. '%Y-%m-%d %H:%M:%S.%f') for `datetimepicker` and `datepicker` datatable column types. See https://strftime.org/ for the formatted values to use. Epoch date field values are also supported.



▶ Inputs:

Name	Type	Required	Example	Tooltip
`incident_id`	`number`	Yes	`-`	-
`attachment_id`	`number`	No	`-`	-
`dt_csv_data`	`text`	No	`CSV Data`	string of cvs data consisting an optional header row followed by rows of delimiter separated data. Each delimiter separated field may contain quotes.
`dt_datable_name`	`text`	Yes	`Datatable Name`	API name of datatable
`dt_date_time_format`	`text`	No	`E.g. dd/mm/yyyy`	If the CSV data contains date entries, provide the format for the date for conversion to a epoch timestamp.
`dt_has_headers`	`boolean`	No	`-`	boolean True/Yes if the csv_data contains header information to match with the column names of the datatable. If False/No, the data is added to the datatable in column order.
`dt_mapping_table`	`text`	Yes	`Mapping Table`	String formatted json: """{ "column_header": "column_name", ...}""" or string formatted json list: """[dt_colA, null, dt_colB]"""
`dt_start_row`	`number`	No	`-`	first cvs data row to add to the datatable
`dt_max_rows`	`number`	No	`-`	limit the number of rows to include. No value means unlimited.

▶ Outputs:

```
results = {
    # TODO: Copy and paste an example of the Function Output within this
code block.
    # To view the output of a Function, run resilient-circuits in DEBUG
mode and invoke the Function.
    # The Function results will be printed in the logs: "resilient-
circuits run --loglevel=DEBUG"
}
```

▶ Workflows

▶ Example Pre-Process Script:

```
# Data Table Utils: Example: CSV Table
######################
### Define Inputs ###
######################
# The ID of this incident
inputs.incident_id = incident.id
# The api name of the Data Table to update
inputs.dt_datable_name = "dt_utils_test_data_table"
# uncomment attachment_id when reading csv data from an attachmennt
##inputs.attachment_id = attachment.id

# The CSV data. Use either dt_csv_data or attachment_id
data =
u"""hdr_number,hdr_text,hdr_datetime,hdr_boolean,hdr_select,hdr_multiselec
t,hdr_extra
18023,"summary 中国人",6/6/20 8:12,yes,3,"a, b",中"""
data_no_headers = u"""18023,"summary 中国人",yes,6/6/20 8:12,3,"a, b",中"""
inputs.dt_csv_data = data
# A boolean to determine if CSV headers are present
inputs.dt_has_headers = True

## The mapping format should be "cvs_header":"dt_column_name"
mapping = '''{
  "hdr_number": "number",
  "hdr_text": "text",
  "hdr_boolean": "boolean",
  "hdr_datetime": "datetime",
  "hdr_select": "select",
  "hdr_multiselect": "multi_select"
}'''
# mappings of csv data without headers will be a list of data_table column
names. Use null to bypass a csv data column
mapping_no_headers =
'''["number","text","boolean","datetime","select","multi_select"]'''
inputs.dt_mapping_table = mapping
# year - %Y, month - %m, day - %d, hour - %H, minutes - %M, seconds - %S,
```

```
milliseconds - %f, timezone offset - %z'
inputs.dt_date_time_format = "%d/%m/%y %H:%M"
# optional start row csv data. The first data row = 1
#inputs.dt_start_row = 0
# optional max number of csv rows to add relative to dt_start_row
#inputs.dt_max_rows = 5
```

▶ Example Post-Process Script:

```
if results.success:
note_text = u"""Results from Data Table Utils: Create CSV Datatable\nData
Source: {0}\nRows added: {1}\nRows not added: {2}""".format(
results.content.data_source, results.content.rows_added,
results.content.rows_with_errors )
incident.addNote(note_text)
else:
incident.addNote(u"Error: Failed to add rows")
```

Data Table - Example CSV Datatable

This datatable is used for testing purposes to run the example Rules and Workflows. It contains all the different datatable column types for function testing.

Example CSV Datatable

Search... Print Export

name	number	text	datetime	boolean	select	multi_select
1.2.3.4	–	Done	11/05/2020 16:28:00	Unknown	4	a b c d e f
–	–	–	01/13/2020 12:30:00	Unknown	–	–
–	123	summary 中国人	01/02/2020 12:30:00	Yes	1	a
–	124	–	01/03/2020 12:30:00	No	2	a
–	–	ab	01/04/2020 12:30:00	Yes	3	a b c
–	126	abc	01/05/2020 12:30:00	Unknown	4	a b c d

API Name:

dt_utils_test_data_table

Columns:

Column Name	API Access Name	Type	Tooltip
name	`dt_col_name`	`text`	-
text	`text`	`text`	-
number	`number`	`number`	-

Column Name	API Access Name	Type	Tooltip
boolean	`boolean`	`boolean`	-
datetime	`datetime`	`datetimepicker`	-
select	`select`	`select`	-
multi_select	`multi_select`	`multiselect`	-

Rules

Rule Name	Object	Workflow Triggered
Get Data Table Row	artifact	`example_data_table_utils_get_row`
Get Data Table Rows	artifact	`example_data_table_utils_get_rows`
Update Data Table Row	artifact	`example_data_table_utils_update_row`
Update Current Row	dt_utils_test_data_table	`update_row`
Delete Data Table Row	artifact	`example_data_table_utils_delete_row`
Delete Current Row	dt_utils_test_data_table	`example_data_table_utils_delete_row_from_datatable`
Delete Rows by Name	dt_utils_test_data_table	`example_data_table_utils_delete_rows_from_datatable`
Delete Data Table Rows	artifact	

Rule Name	Object	Workflow Triggered
Example: Create CSV Datatable	attachment	`example_create_csv_datatable`