# User Guide: fn\_datatable\_utils\_v1.1.0

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## Release Notes

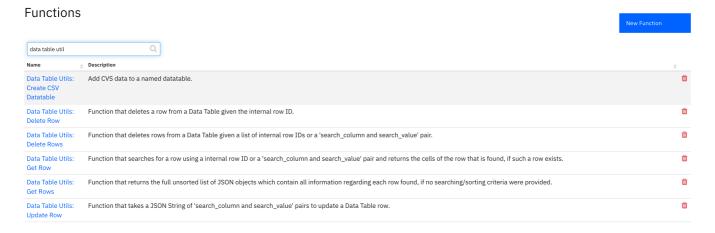
#### v1.1.0

- 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

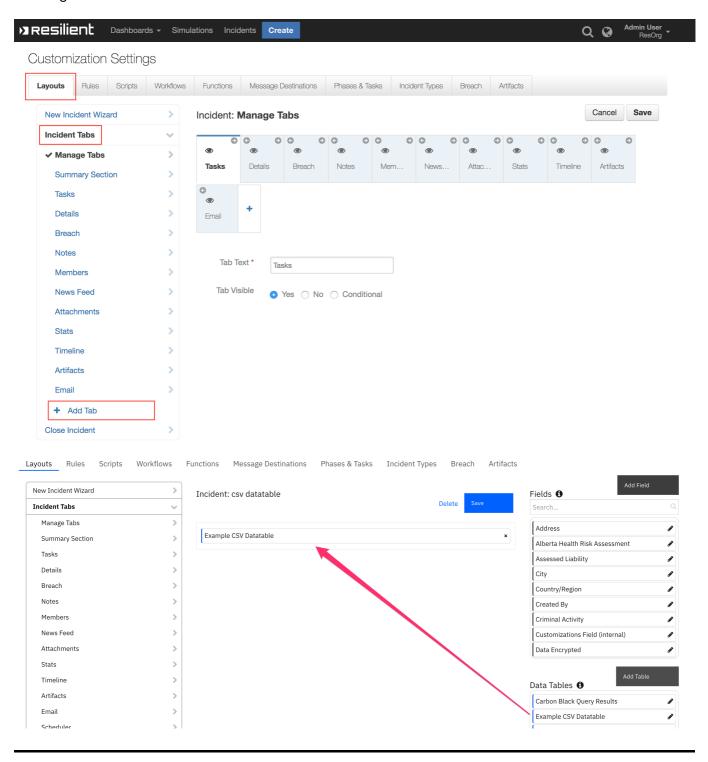
## This package contains 6 functions that help you manipulate IBM Resilient Data Tables



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

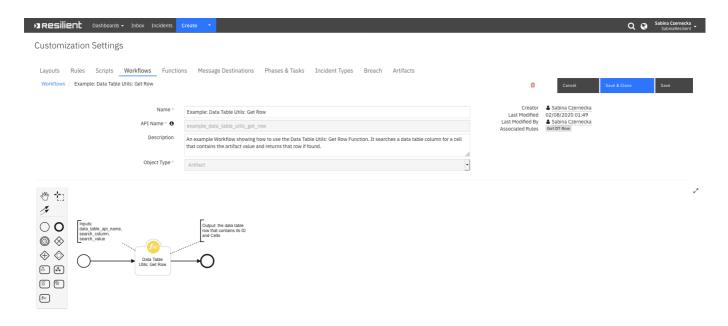
To reference the example datatable, create a new incident tab and drag the Example CSV DataTable into the widget area.



# 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	_	-

```
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:

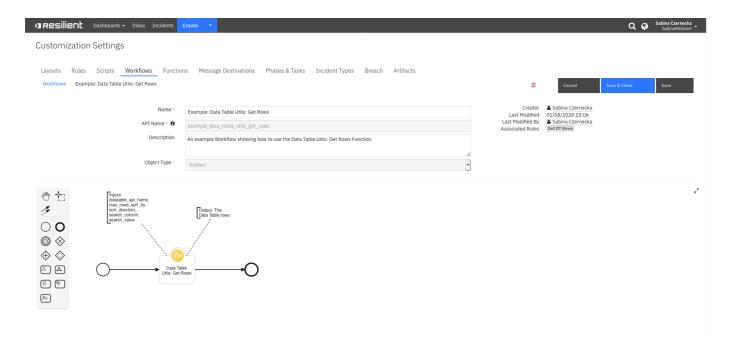
#### ► Example Post-Process Script:

```
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>
format(note_text, str(results["row"]))
else:
note_text = u"{0} <br>
note_text = u"{0} <br>
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	Туре	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
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:

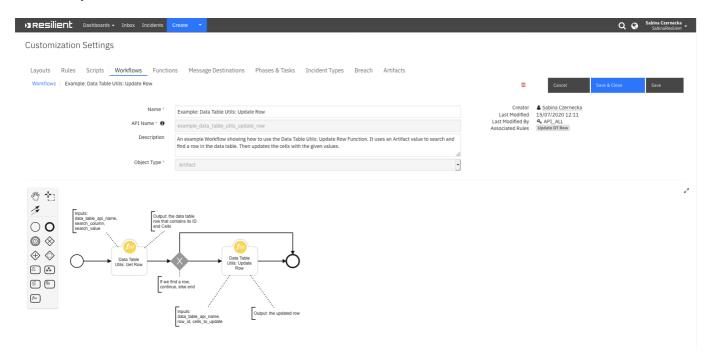
```
if not results.success:
incident.addNote(helper.createRichText("<b>Result from Example: Data Table
Utils: Delete Rows</b><br>No rows found."))
```

# 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	_	-

```
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:

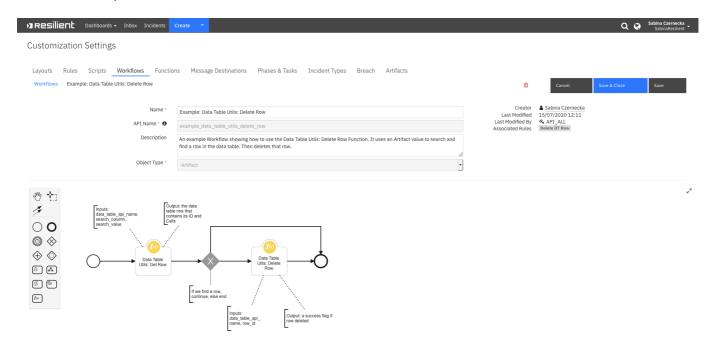
None

# 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

Name	Туре	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:

## ► Example Post-Process Script:

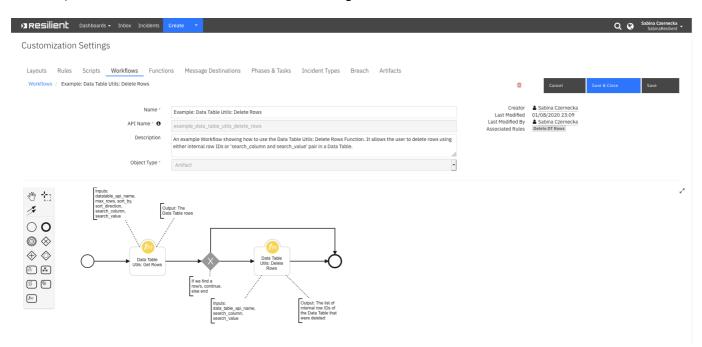
```
# {'success': True, 'inputs': {'incident_id': 2150,
  'dt_utils_datatable_api_name': 'dt_utils_test_data_table',
  'dt_utils_row_id': 821}, 'row': {'success': True, 'title': None,
  'message': None, 'hints': []}}
if results.success:
note = u"Row id: {} removed from datatable: {} for artifact:
```

```
{}".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	_	-

```
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:

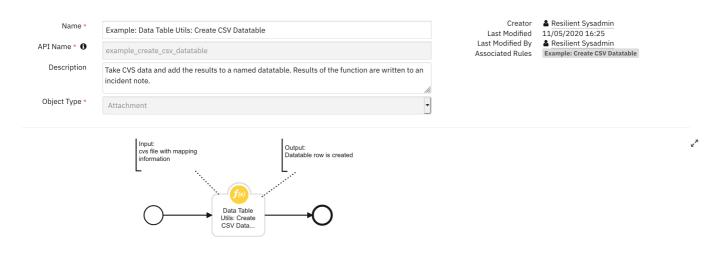
```
if results.success:
note = u"<b>Result from Example: Data Table Utils: Artifact: {} Delete
Rows</b><br> {}".format(artifact.value, str(results["rows_ids"]))
else:
note = u"<b>Result from Example: Data Table Utils: Artifact: {} not found
in datatable: {}".format(artifact.value,
results.inputs['dt_utils_datatable_api_name'])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

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.



## ► Inputs:

Name	Туре	Required	Example	Tooltip
attachment_id	number	No	-	-
dt_csv_data	text	No	CSV Data	string of cvs data consisting an optional header row followed by rows of comma separated data. each comma separated field may contain quotes to allow for embedded commas
dt_datable_name	text	Yes	Datatable Name	string of api name of datatable

Name	Туре	Required	Example	Tooltip
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	No	Mapping Table	String formatted json: """{ "column_header": "column_name",}"""
dt_max_rows	number	No	-	limit the number of rows to include. No value means unlimited.
incident_id	number	Yes	_	-

```
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:

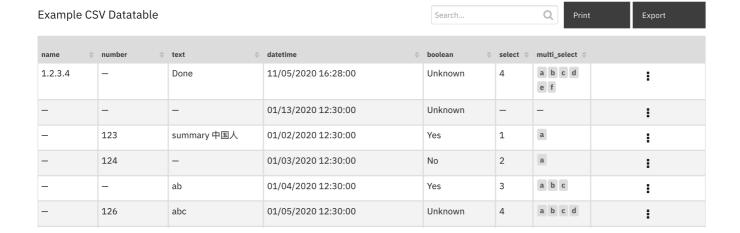
```
inputs.dt_csv_data =
u"""hdr_number,hdr_text,hdr_datetime,hdr_boolean,hdr_select,hdr_multi_sele
ct, hdr extra
18023,"summary 中国人",6/6/2020,yes,3,"a, b",中"""
# A boolean to determine if CSV headers should be used
inputs.dt has headers = True
## The mapping format should be "cvs header": "dt column name".
## Or when headers are absent, a numeric csv data position for the column
order: 0: "dt column name"
mapping = '''{
"hdr_number": "number",
"hdr_text": "text",
"hdr_boolean": "boolean",
"hdr datetime": "datetime",
"hdr select": "select",
"hdr_multi_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"
#inputs.dt max rows = 10
```

#### ► 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.



## **API Name:**

dt\_utils\_test\_data\_table

## **Columns:**

Column Name	API Access Name	Туре	Tooltip
name	dt_col_name	text	-
text	text	text	-
number	number	number	-
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

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