# CVE Search Function for IBM Resilient

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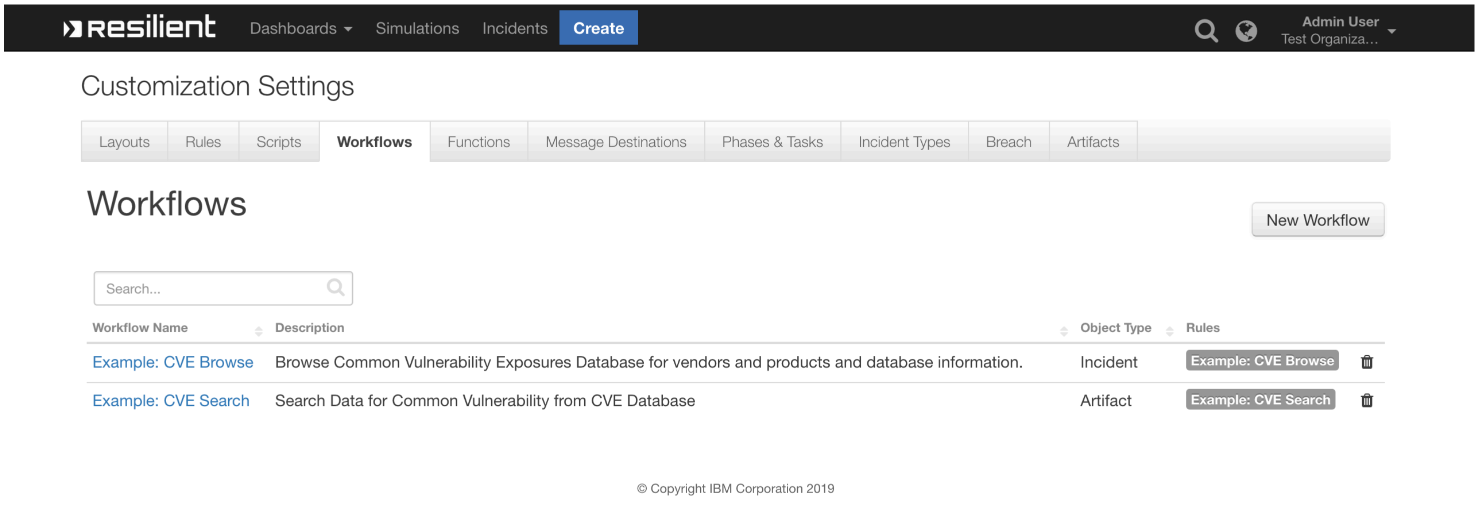
## About This Package:

**This package contains Resilient functions that allows one to search for Common Vulnerability Exposures (CVE).**

- This package implements different ways to search the CVE database such as:
  - Browse product and vendor categories
  - Search CVE's by product and vendor
  - Search by specific CVE ID
  - Retrieve last 30 CVE's
- This package makes use of the following CVE API call to get information on a given query `https://cve.circl.lu/api/{search param}/{vendor name}/{product name}`
- For more information, see the circl website



Customization Settings

Workflows

| Workflow Name | Description | Object Type | Rules |
|---|---|---|---|
| Example: CVE Browse | Browse Common Vulnerability Exposures Database for vendors and products and database information. | Incident | Example: CVE Browse |
| Example: CVE Search | Search Data for Common Vulnerability from CVE Database | Artifact | Example: CVE Search |

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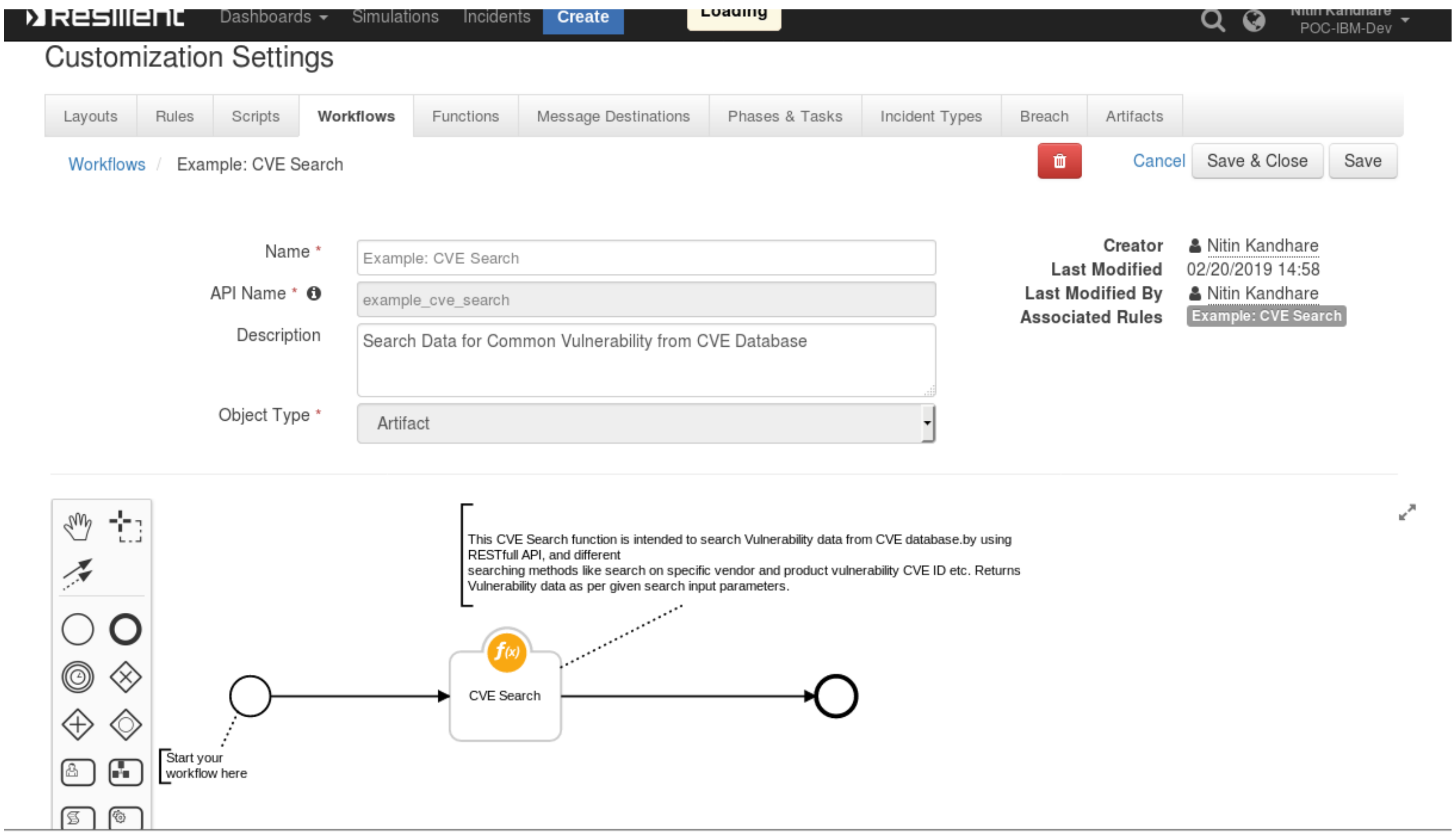
## CVE Search Function Layout:



Customization Settings

Workflows / Example: CVE Search

Name * Example: CVE Search

API Name * example_cve_search

Description Search Data for Common Vulnerability from CVE Database

Object Type * Artifact

Creator Nitin Kandhare

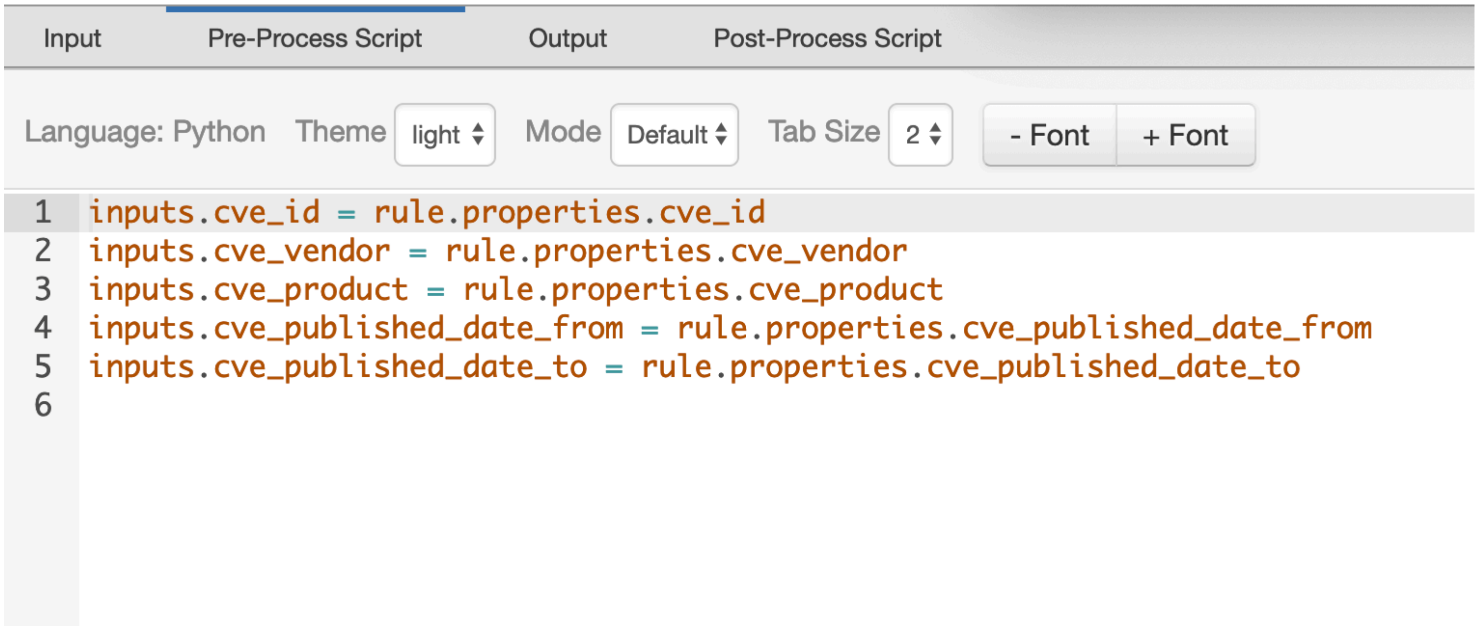
Last Modified 02/20/2019 14:58

Last Modified By Nitin Kandhare

Associated Rules Example: CVE Search

This CVE Search function is intended to search Vulnerability data from CVE database.by using RESTfull API, and different
searching methods like search on specific vendor and product vulnerability CVE ID etc. Returns Vulnerability data as per given search input parameters.

## CVE Search Pre-Process Script

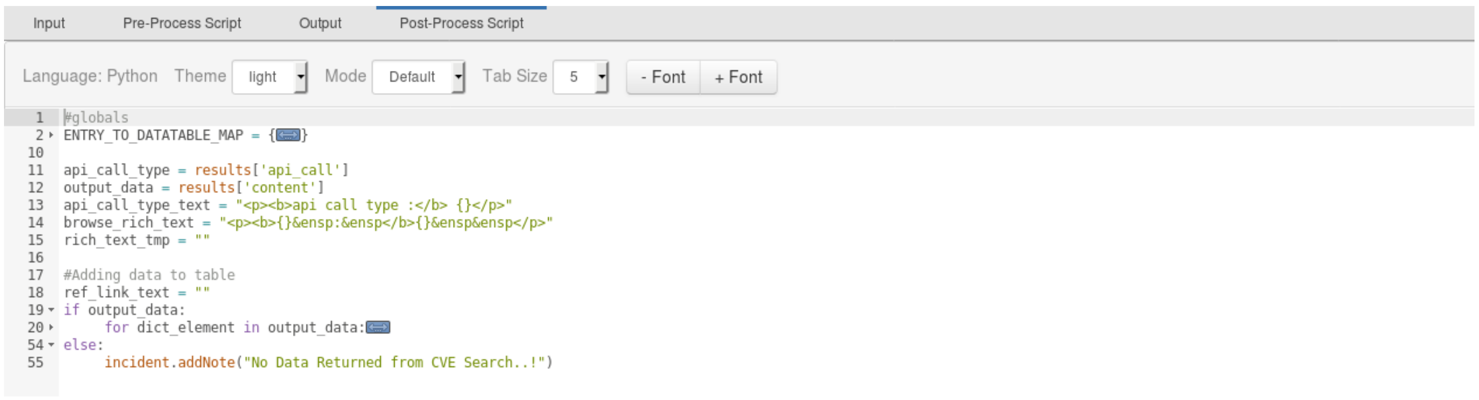


Language: Python Theme light Mode Default Tab Size 2

```python
inputs.cve_id = rule.properties.cve_id
inputs.cve_vendor = rule.properties.cve_vendor
inputs.cve_product = rule.properties.cve_product
inputs.cve_published_date_from = rule.properties.cve_published_date_from
inputs.cve_published_date_to = rule.properties.cve_published_date_to

```

## CVE Search Post-Process Script



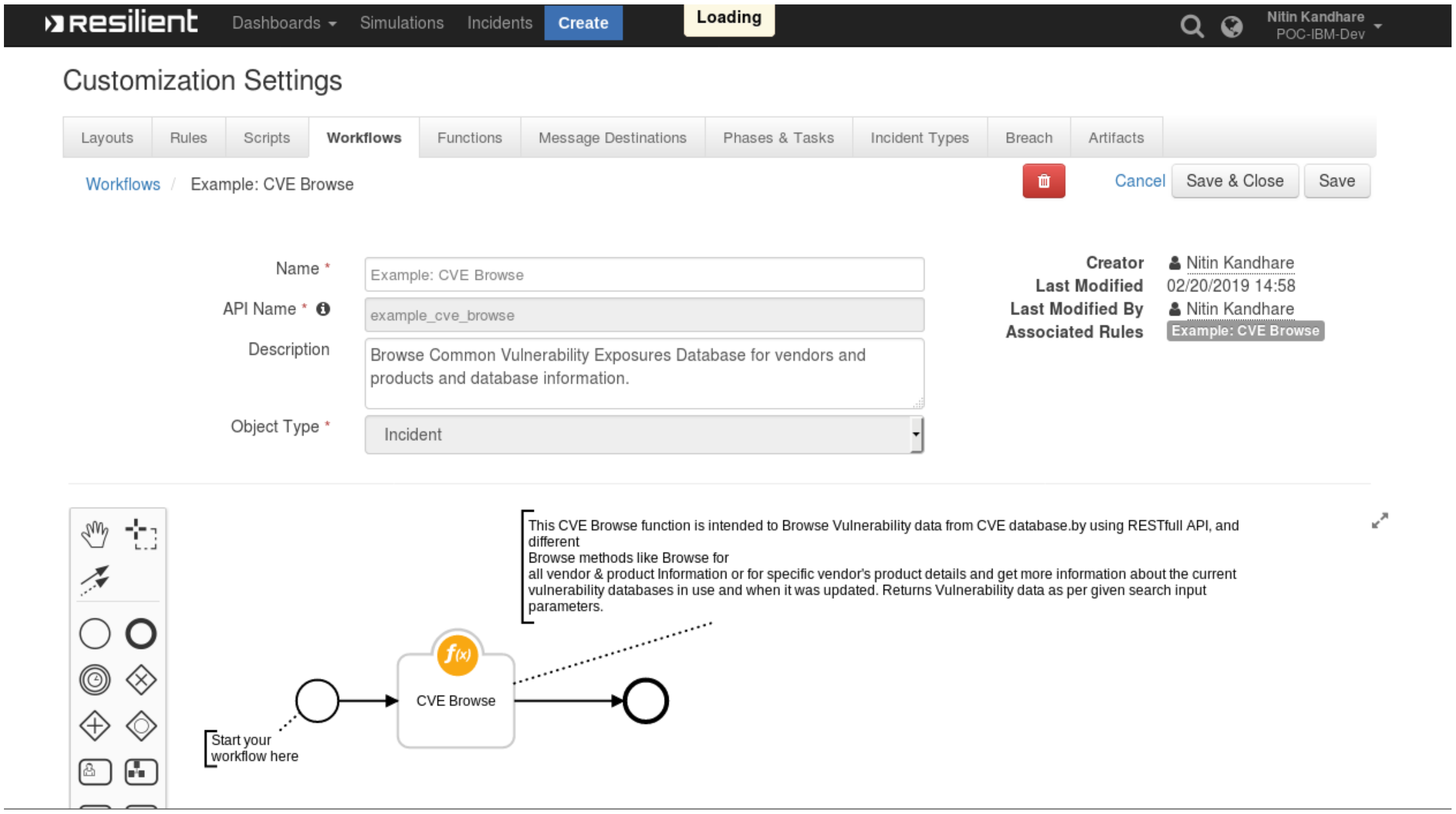
Language: Python Theme light Mode Default Tab Size 5

```python
#globals
ENTRY_TO_DATATABLE_MAP = {}

api_call_type = results['api_call']
output_data = results['content']
api_call_type_text = "<p><b>api call type :</b> {}</p>"
browse_rich_text = "<p><b>{}&ensp:&ensp</b>{}&ensp&ensp</p>"
rich_text_tmp = ""

#Adding data to table
ref_link_text = ""
if output_data:
     for dict_element in output_data:
else:
     incident.addNote("No Data Returned from CVE Search..!")
```

## CVE Browse Function Layout:



Customization Settings

Workflows / Example: CVE Browse

Name * Example: CVE Browse

API Name * example_cve_browse

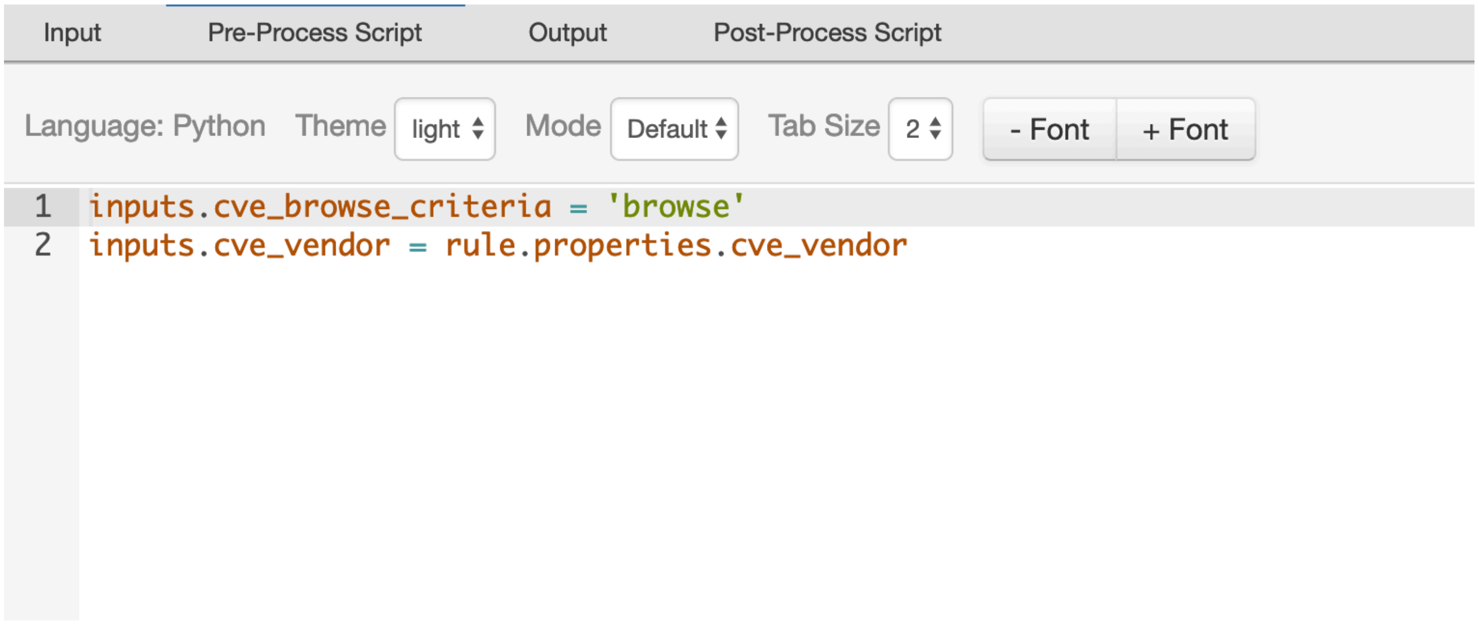
Description Browse Common Vulnerability Exposures Database for vendors and products and database information.

Object Type * Incident

Creator Nitin Kandhare
Last Modified 02/20/2019 14:58
Last Modified By Nitin Kandhare
Associated Rules Example: CVE Browse

This CVE Browse function is intended to Browse Vulnerability data from CVE database.by using RESTfull API, and different
Browse methods like Browse for
all vendor & product Information or for specific vendor's product details and get more information about the current vulnerability databases in use and when it was updated. Returns Vulnerability data as per given search input parameters.

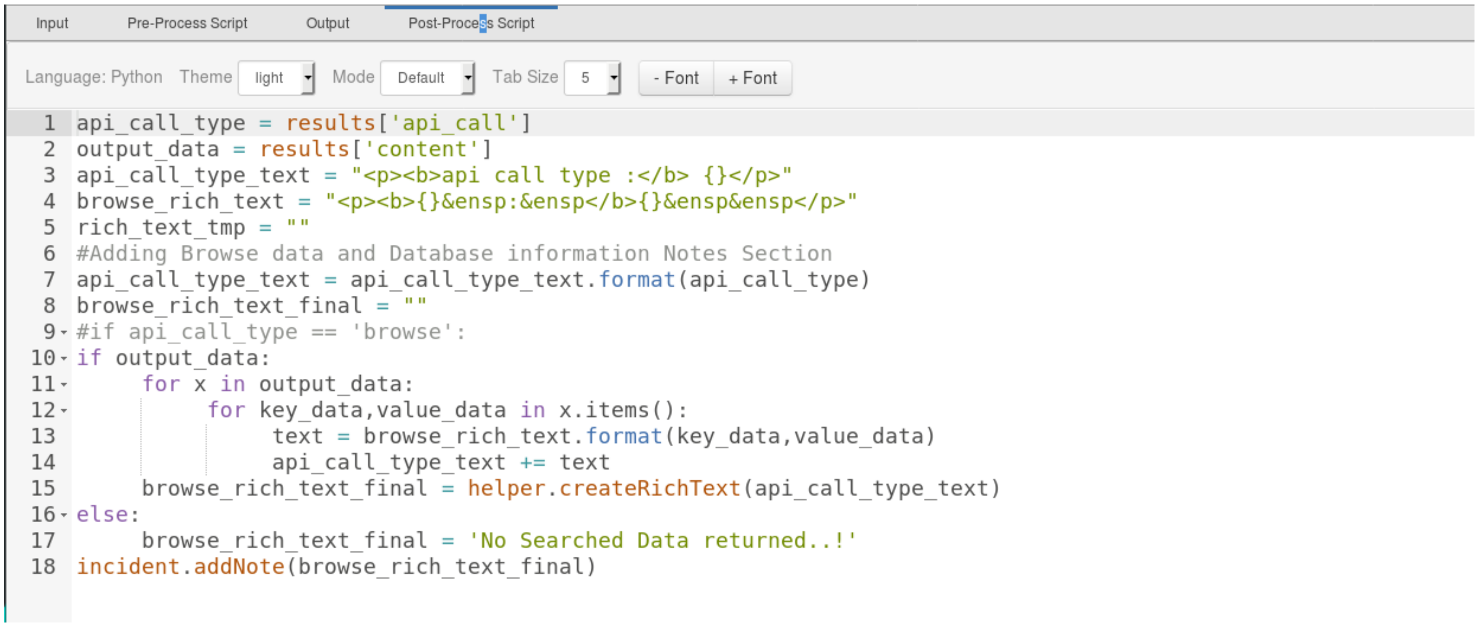
## CVE Browse Pre-Process Script



Language: Python Theme light Mode Default Tab Size 2

```
inputs.cve_browse_criteria = 'browse'
inputs.cve_vendor = rule.properties.cve_vendor
```

## CVE Browse Post-Process Script



```
api_call_type = results['api_call']
output_data = results['content']
api_call_type_text = "<p><b>api call type :</b> {}</p>"
browse_rich_text = "<p><b>{}&ensp:&ensp</b>{}&ensp&ensp</p>"
rich_text_tmp = ""
#Adding Browse data and Database information Notes Section
api_call_type_text = api_call_type_text.format(api_call_type)
browse_rich_text_final = ""
#if api_call_type == 'browse':
if output_data:
     for x in output_data:
          for key_data,value_data in x.items():
               text = browse_rich_text.format(key_data,value_data)
               api_call_type_text += text
     browse_rich_text_final = helper.createRichText(api_call_type_text)
else:
     browse_rich_text_final = 'No Searched Data returned..!'
incident.addNote(browse_rich_text_final)
```

## Prerequisites:

- Resilient Appliance >= v31.0.0
- Integrations Server running resilient_circuits >= v30.0.0

## Installation

This package requires that it be installed on a RHEL or CentOS platform using the resilient-circuits framework.

- Download the `.zip` file from the XForce App Exchange and extract it. You will find a file called: `fn_cve_search-<version>.tar.gz`
- Copy this file to your Integrations Server
- To install the package, run: `$ pip install fn_cve_search-<version>.tar.gz`
- To import the function, example rules, data tables and workflows into your Resilient Appliance, run: `$ resilient-circuits customize -l fn-cve-search`
- To update your `app.config` file with the required CVE Search configurations, run: `$ resilient-circuits config -u`
- Access your `app.config` file and review the parameters added. Edit the `max_results_display` counter value to limit the maximum number of search results to display on table.

```
[fn_cve_search]
# Flag display maximum CVE Entries on the resilient table
max_results_display = 50
# Base URL of Common Vulnerability Exposures Data Base.
cve_base_url = https://cve.circl.lu/api
```

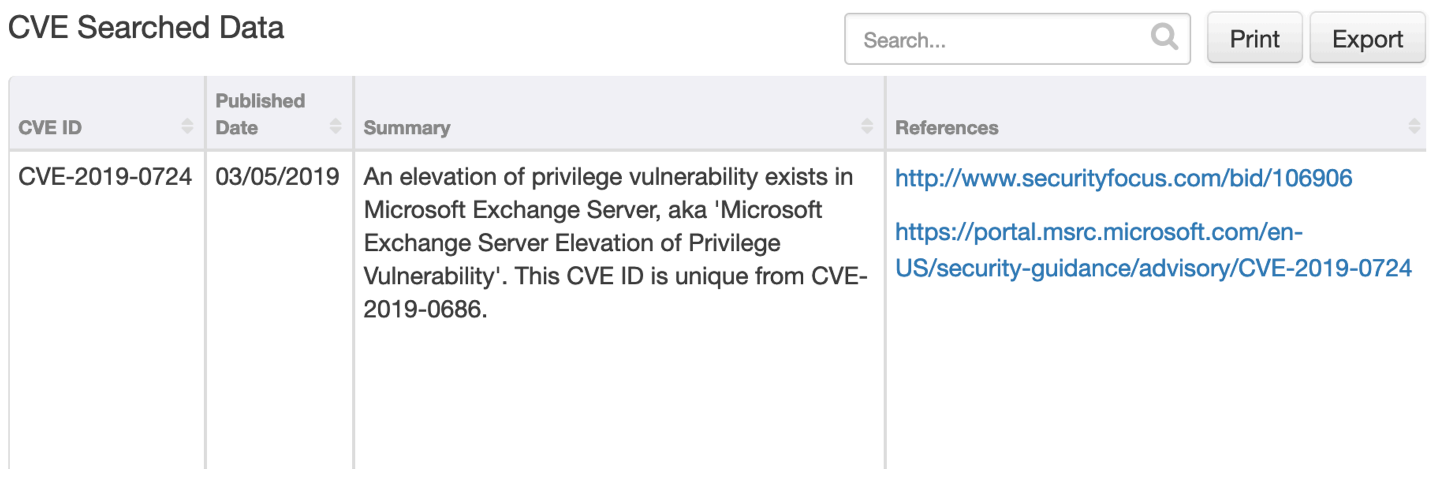
- To uninstall CVE Function from Resilient, run:

```
$ pip uninstall fn_cve_search
```

# Data Table

## Data Table Utils: CVE Searched Data

This table will contain the results of the CVE searches.



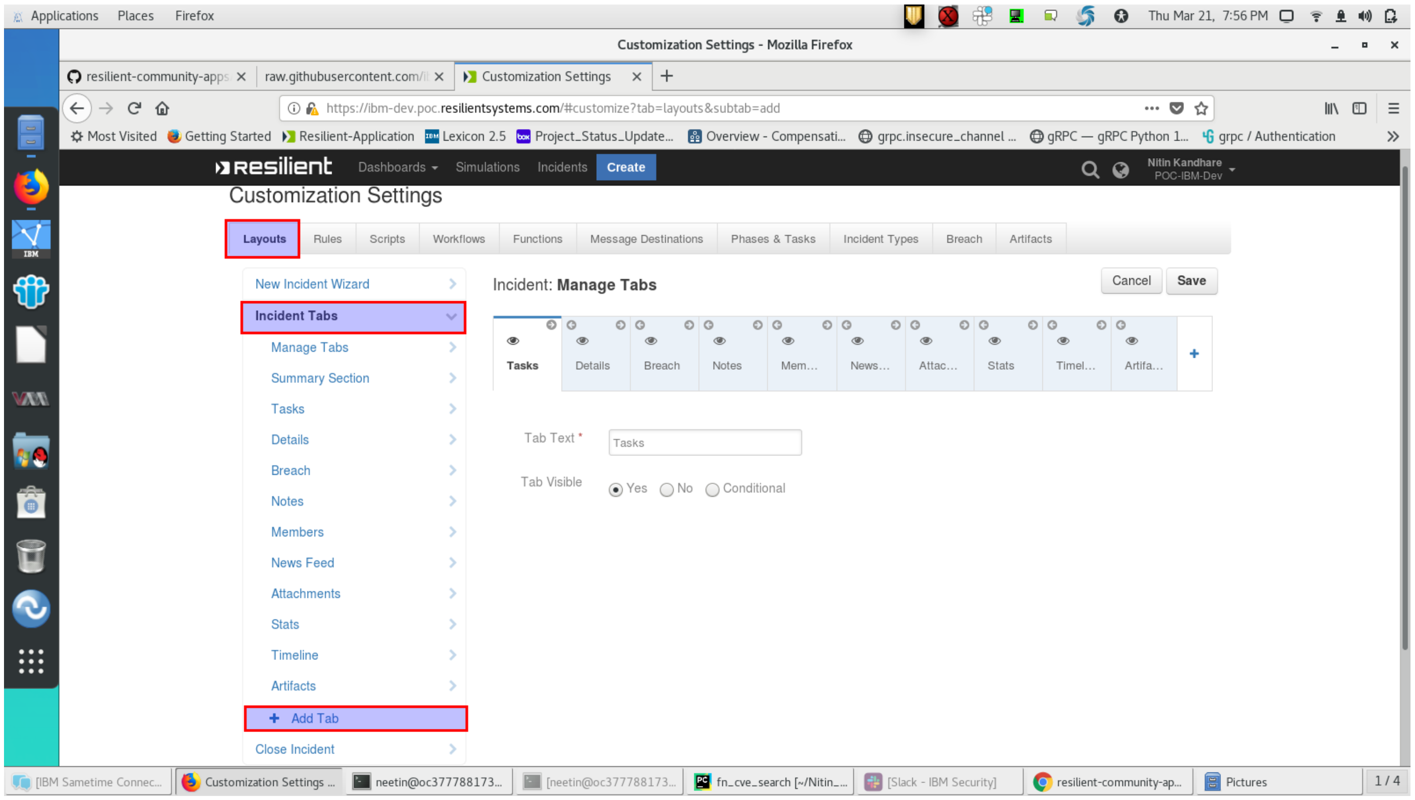
CVE Searched Data

| CVE ID | Published Date | Summary | References |
|---|---|---|---|
| CVE-2019-0724 | 03/05/2019 | An elevation of privilege vulnerability exists in Microsoft Exchange Server, aka 'Microsoft Exchange Server Elevation of Privilege Vulnerability'. This CVE ID is unique from CVE-2019-0686. | http://www.securityfocus.com/bid/106906 https://portal.msrc.microsoft.com/en-US/security-guidance/advisory/CVE-2019-0724 |

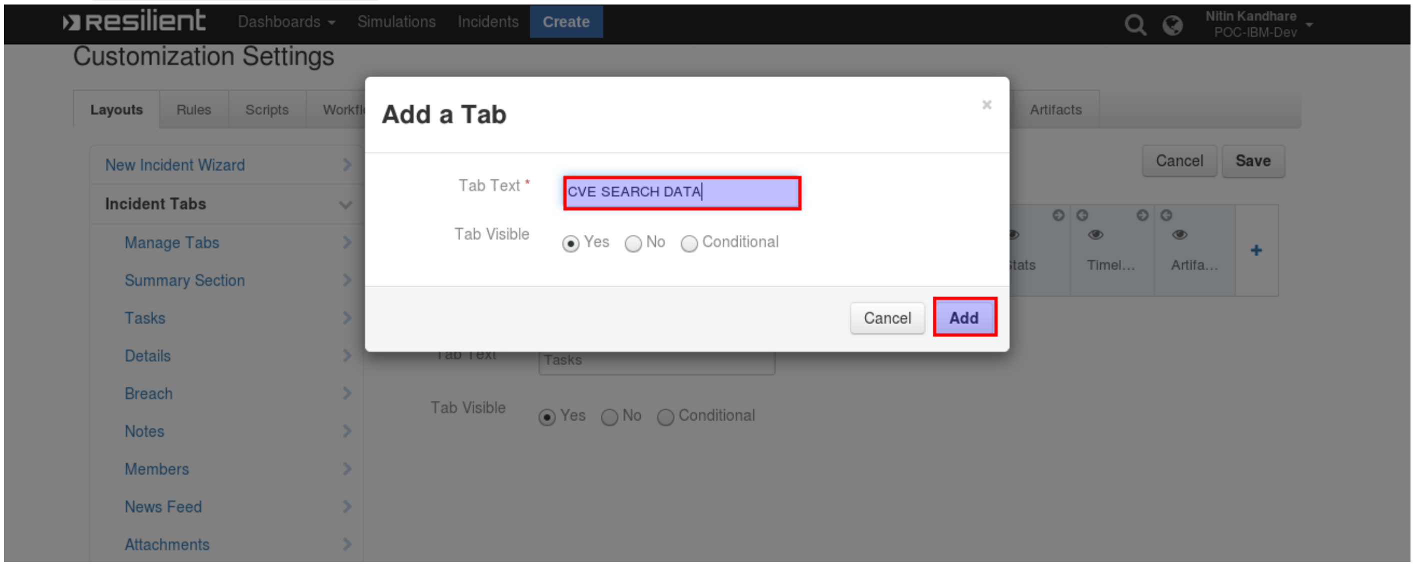
### Display the Data Table in an incident

- In order to display the CVE Searched datatable in your incident, you must modify your Layout Settings:

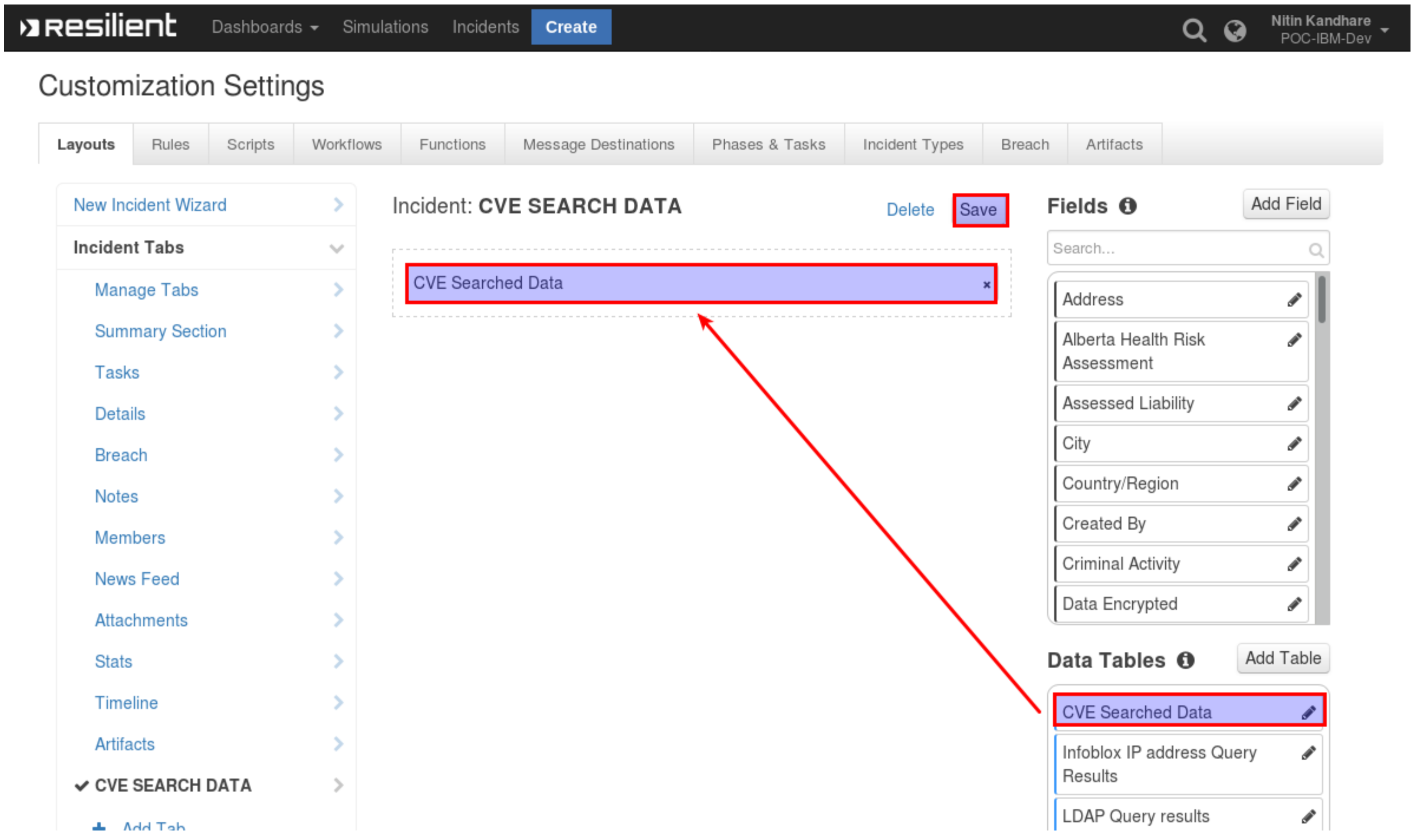
1. Go to **Customization Settings** > **Layouts** > **Incident Tabs** > **+ Add Tab**



2. Enter `CVE SEARCH DATA` and click **Add**



3. **Drag** the Data table into the middle and click **Save**



4. Within an incident, the **CVE Search Data** tab contains the CVE Searched Data Table

# Function Inputs

## CVE Search Function

| Input Name | Type | Example | Info |
|---|---|---|---|
| cve_id | String | CVE-2008-3949 | Specific vulnerability ID |
| cve_vendor | String | microsoft | a vendor name to search for cve |
| cve_product | String | excel | Name of the Product to Search in CVE Database |
| cve_published_date_from | Date Picker | 03/01/2019 | Select CVE Published Date |
| cve_published_date_to | Date Picker | 03/01/2019 | End date range to search cve data |

### CVE Browse Function

| Input Name | Type | Example | Info |
|---|---|---|---|
| cve_browse_criteria | select | Browse | CVE Browse Criteria i.e Browse (for vendors & product information) |
| cve_vendor | text | apple | a vendor name to browse for cve |

## Function Output

- The payload from the function will contain the JSON from the CVE API Call and the name of the API Call

```
results = {
    "content": #JSON returned from CVE API Call,
    "api_call": #"last"/"browse"/"search"/"cve"/"db"
}
```

- To see the output of each of the API calls for this Function, we recommend running `resilient-circuits` in `DEBUG` mode.
- To do this run: `$ resilient-circuits run --loglevel=DEBUG`

## Pre-Process Script

- CVE Browse

This example sets the `cve_browse_criteria` , `cve_vendor` inputs to the entered vendor name

```
inputs.cve_browse_criteria = 'browse'
inputs.cve_vendor = rule.properties.cve_vendor
```

- CVE Search

This example sets the `cve_id` , `cve_vendor` , `cve_product` , `cve_published_date_from` , `cve_published_date_to` inputs to search selections entered on the rule dialog box. See below for the combinations used in searches.

```
# Specific CVE ID
inputs.cve_id = rule.properties.cve_id
# Name of the Vendor
inputs.cve_vendor = rule.properties.vendor
# Name of the product
inputs.cve_product = rule.properties.product
# Search CVE Data from Date
inputs.cve_published_date_from = rule.properties.cve_published_date_from
# Search CVE Data upto Date
inputs.cve_published_date_to = rule.properties.cve_published_date_to
```

## Post-Process Script

Returned results are parsed within the post-process script as `results.get("content")`. Based on the api_call type, the data is represented as follows:

- `Example: CVE Browse` function data is displayed on incident notes, and
- `Example: CVE Search` function data displayed on the `CVE Searched Data` table.

### CVE Search

```
#globals
ENTRY_TO_DATATABLE_MAP = {
     "cve": "cve_id",
     "pubdte": "published_date",
     "sum": "summary",
     "ref": "references",
     "vc": "vulnerability_configuration",
     "vc2": "vulnerable_configuration_cpe_2_2"
}

api_call_type = results['api_call']
output_data = results['content']
api_call_type_text = "<p><b>api call type :</b> {}</p>"
browse_rich_text = "<p><b>{}&ensp:&ensp</b>{}&ensp&ensp</p>"
rich_text_tmp = ""

#Adding data to table
ref_link_text = ""
if output_data:
     for dict_element in output_data:
          rich_text_tmp = ""
          table_row_object = incident.addRow("cve_data")
          for key_data,value_data in dict_element.items():
               if key_data == 'Published':
                    table_row_object[ENTRY_TO_DATATABLE_MAP["pubdte"]] = int(value_da
ta)
               elif key_data == 'id':
                    table_row_object[ENTRY_TO_DATATABLE_MAP["cve"]] = value_data
               elif key_data == 'summary':
                    table_row_object[ENTRY_TO_DATATABLE_MAP["sum"]] = value_data
               elif key_data == 'references':
                    for link_url in value_data:
                         ref_link_text += '<p><a href="{0}">{0}</a></p>'.format(link_
url)
                    table_row_object[ENTRY_TO_DATATABLE_MAP["ref"]] = ref_link_text
               elif key_data == 'vulnerable_configuration':
                    if value_data:
                         for vc_collection in value_data:
                              if isinstance(vc_collection,dict):
                                   for key_data,value_data in vc_collection.items():
                                        text = browse_rich_text.format(key_data,value
_data)

                                        rich_text_tmp += text
                              else:
                                   rich_text_tmp += "<p>{}</p>".format(vc_collection)
                    else:
                         rich_text_tmp = "No Data"
                    table_row_object[ENTRY_TO_DATATABLE_MAP["vc"]] = rich_text_tmp
               elif key_data == 'vulnerable_configuration_cpe_2_2':
                    rich_text_tmp_2 = ''
                    if value_data:
                         for vc_collection in value_data:
                              rich_text_tmp_2 += "<p>{}</p>".format(vc_collection)
                    else:
                         rich_text_tmp_2 = "No Data"
                    table_row_object[ENTRY_TO_DATATABLE_MAP["vc2"]] = rich_text_tmp_2
else:
     incident.addNote(u"No data returned from CVE Search\n\nCVE-ID: {}\nVendor: {}\nP
roduct: {}".format(rule.properties.cve_id, rule.properties.cve_vendor, rule.propertie
s.cve_product))
```

- CVE Browse

```
api_call_type = results['api_call']
output_data = results['content']
api_call_type_text = "<p><b>api call type :</b> {}</p><p><b>vendor :</b> {} </p>"
browse_rich_text = "<p><b>{}&ensp:&ensp</b>{}&ensp&ensp</p>"
rich_text_tmp = ""
#Adding Browse data and Database information Notes Section
api_call_type_text = api_call_type_text.format(api_call_type, rule.properties.cve_ven
dor)
browse_rich_text_final = ""

if output_data:
     for x in output_data:
          for key_data,value_data in x.items():
               text = browse_rich_text.format(key_data,value_data)
               api_call_type_text += text
     browse_rich_text_final = helper.createRichText(api_call_type_text)
else:
     browse_rich_text_final = 'No searched data returned'
incident.addNote(browse_rich_text_final)
```

## Rules

| Rule Name | Object Type | Workflow Triggered | Activity Fields |
|---|---|---|---|
| Example: CVE Browse | Incident | Example: CVE Browse | CVE Browse Criteria values : Browse, CVE Vendor |
| Example: CVE Search | Incident | Example: CVE Search | CVE Search Criteria |

**CVE functions perform data searches as follows**

1. Browse:
    - If all other inputs are empty, all the vendors in the database are returned.
    - If a vendor name is supplied, all the products associated with the vendor are returned.
2. Search:
    - If a vendor name is supplied, all the vulnerabilities associated with the given vendor are returned up to the given date range and

`max_results_display` flag.

- If a product name is supplied, all the vulnerabilities associated with the given product are returned up to the given date range and `max_results_display` flag.
- If vendor and product name are supplied, all the vulnerabilities associated with the given vendor's product are returned up to the given date range and `max_results_display` flag.
- If a CVE ID is supplied, data related to specific CVE ID is returned.
- If no parameters are supplied, the last 30 latest vulnerabilities from the database are returned up to the `max_results_display` flag.