User Guide: fn_utilities_v2.0.0

Table of Contents

Release History

Version	Date	Notes
2.0.0	7/2020	Numerous fixes, improved Rules and workflows and only Python 3 supported
1.0.15	5/2020	Bug fixes
1.0.14	5/2020	Shell Command support for Remote Linux Execution

App Host Setup

This app is available for use in App Host.

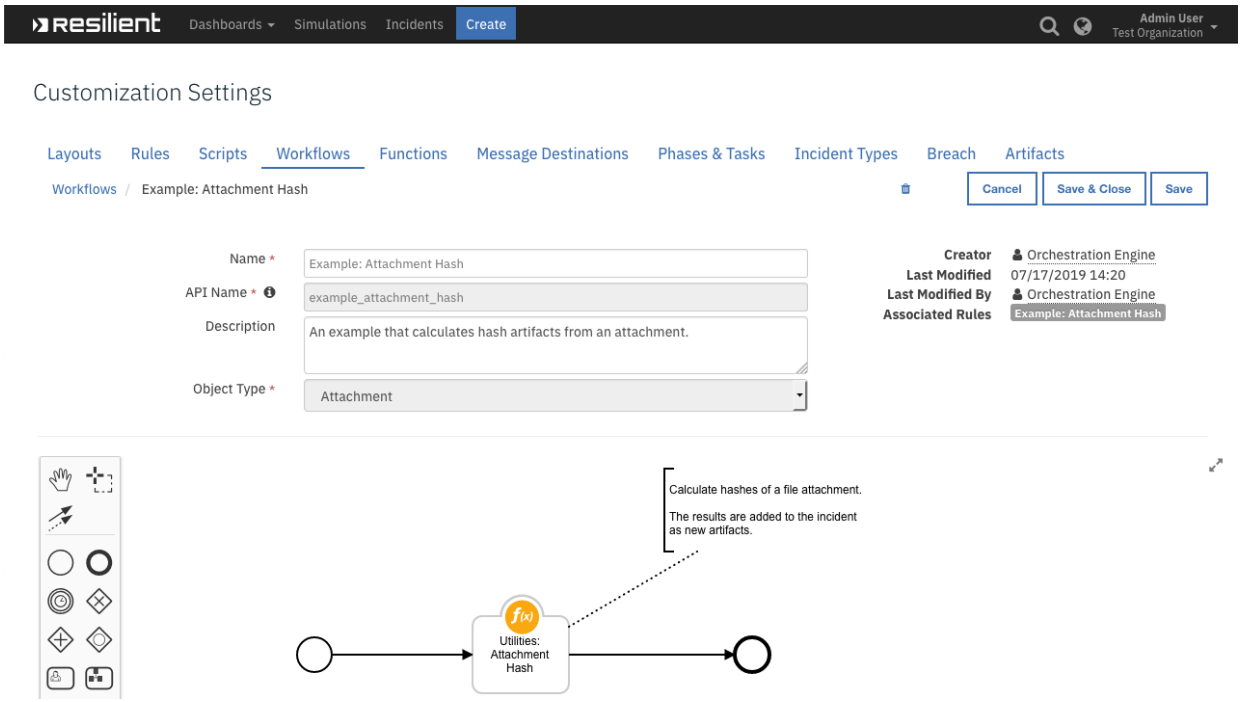
When using Shell Command, several Linux commands have been installed on the container including: dig, nslookup, traceroute and whois. These commands can be specified within the app.config file directly such as: nslookup=nslookup "". Other commands not loaded within the container can be accessed via remote shell execution. See the section Function - Utilities: Shell Command for more information.

Integration Server Setup

Note: this version of fn_utilities will only run in a Python 3 environment. This is due to changes in dependent python packages with Python 2's end of life. If you continue to use Python 2 in your Integration Server environment, use previous versions of this app.

Function - Utilities: Attachment Hash

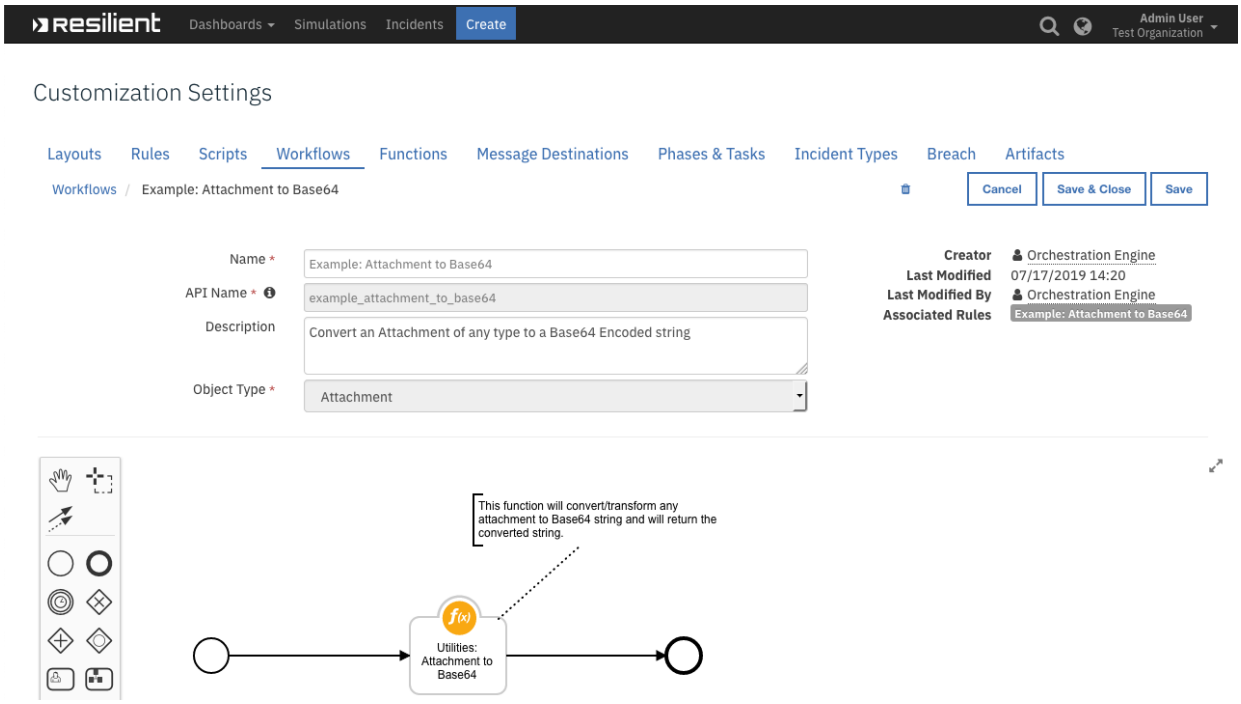
Calculate hashes for a file attachment. Returns md5, sha1, sha256 and other hashes of the file content. Those hashes can then be used as artifacts or in other parts of your workflows.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Attachment to Base64

Reads a file attachment in the incident, and produces a base64-encoded string with the file attachment content. This content can then be used in combination with other workflow functions to create an artifact, a new file attachment, or to analyze the contents using various tools.

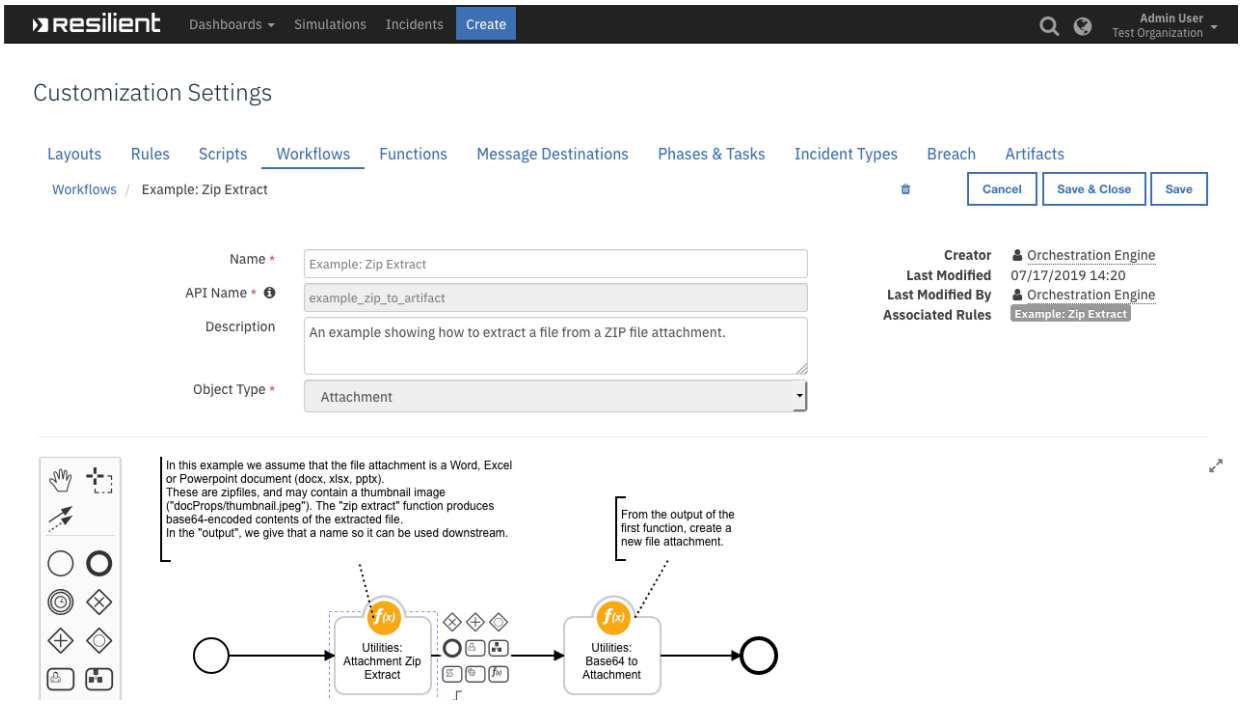


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Attachment Zip Extract

Extracts a file from a ZIP file attachment, producing a base64 string.

That string can then be used as input to subsequent functions that might write it as a file attachment, such as a malware sample artifact.

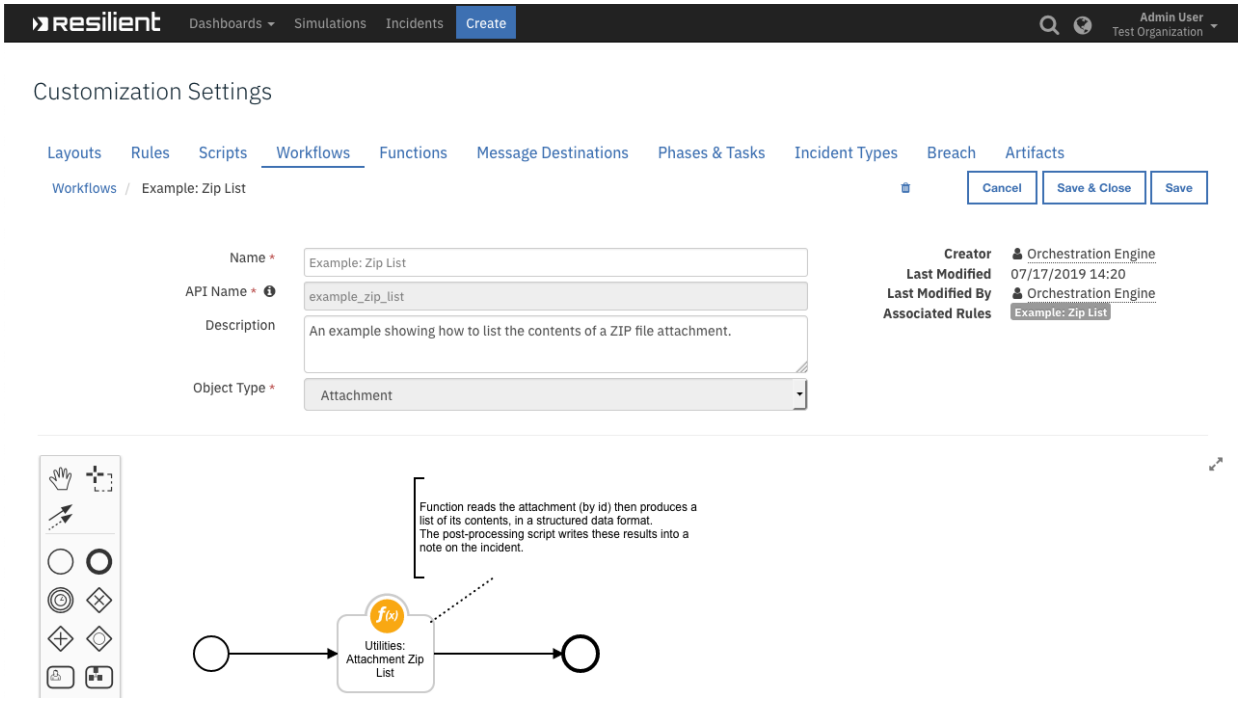


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Attachment Zip List

Reads a ZIP file and produces a list of the compressed files, and a list with detailed information about each file.

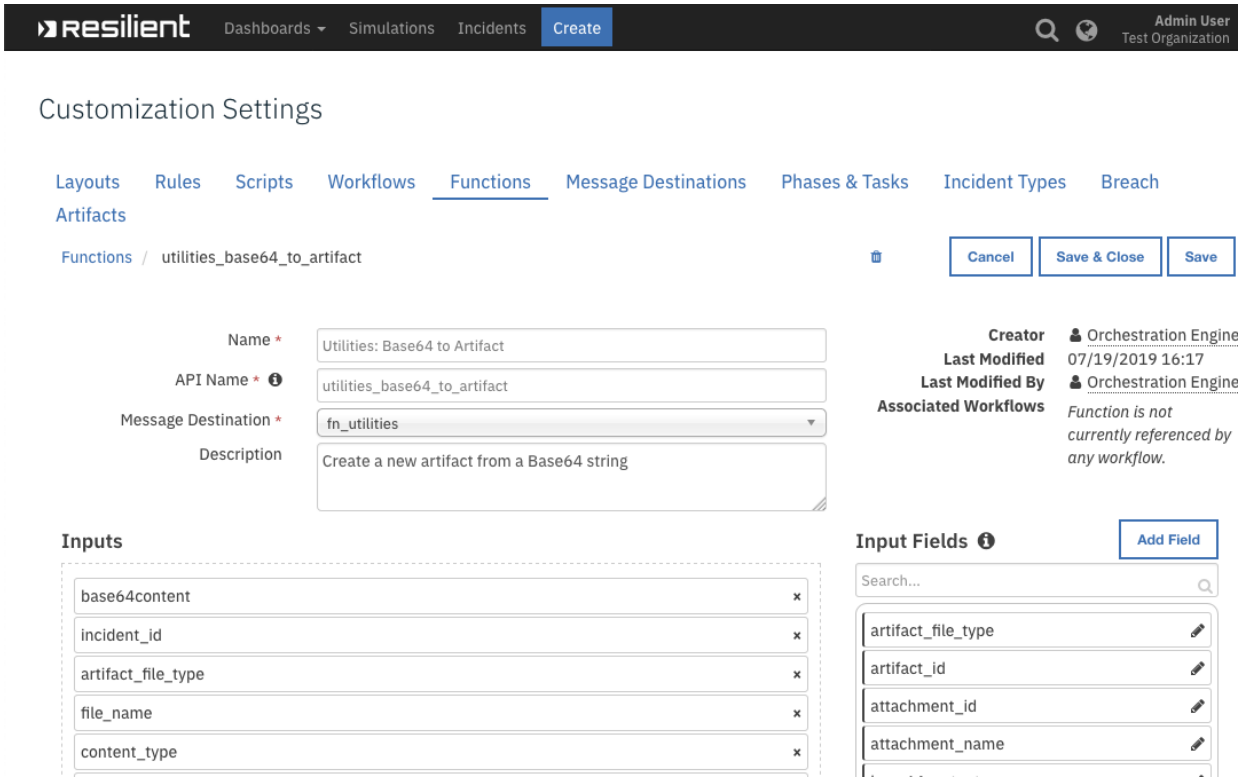
Note: The contents of password protected Excel spreadsheets cannot be listed.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Base64 to Artifact

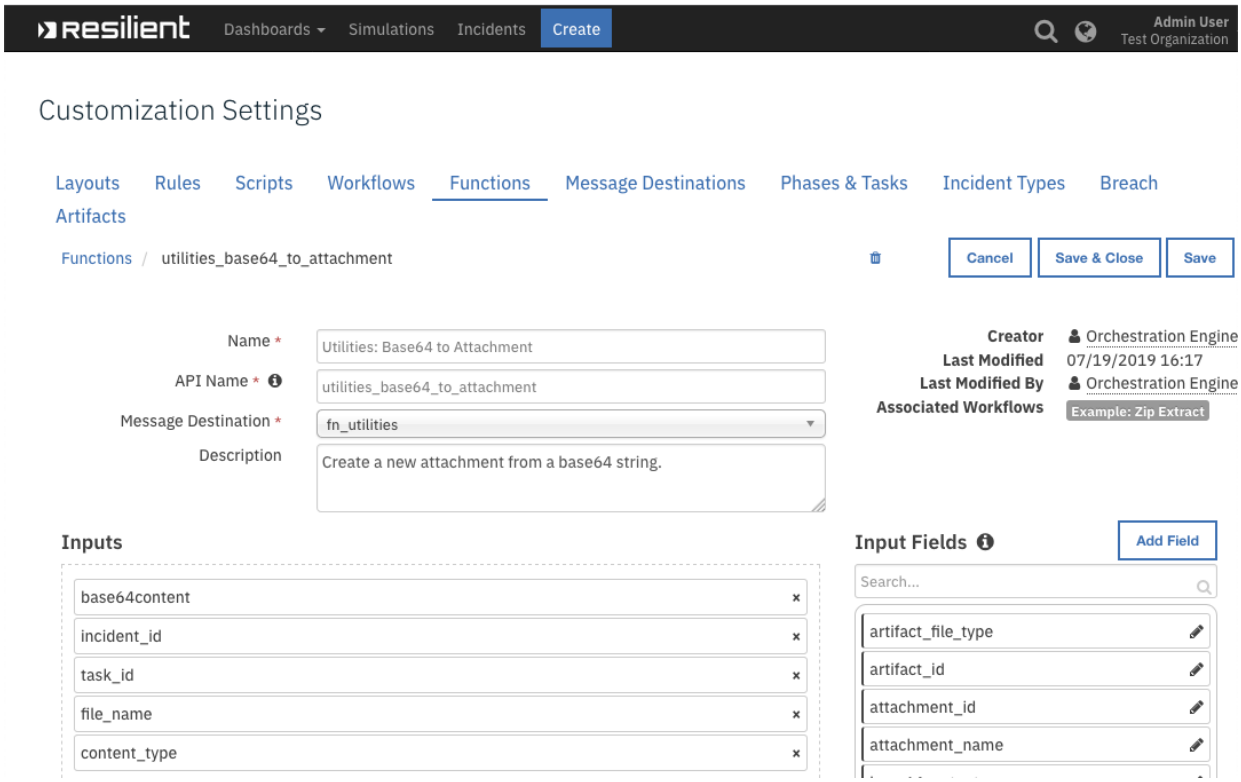
Creates a new artifact from a Base64 string. You can also specify the artifact type and description.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Base64 to Attachment

Creates a new attachment from a base64 string. You can also specify the file name and content type to use.

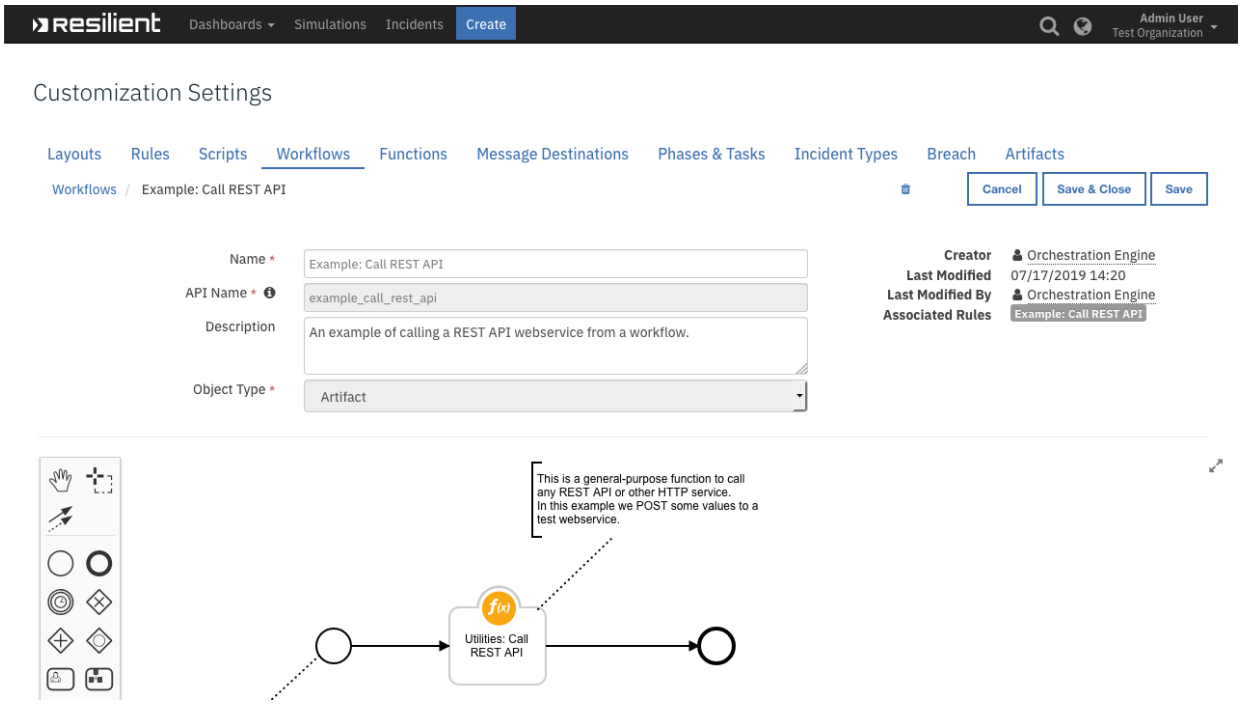


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Call REST API

This function calls a REST web service. It supports the standard REST methods: GET, HEAD, POST, PUT, DELETE and OPTIONS.

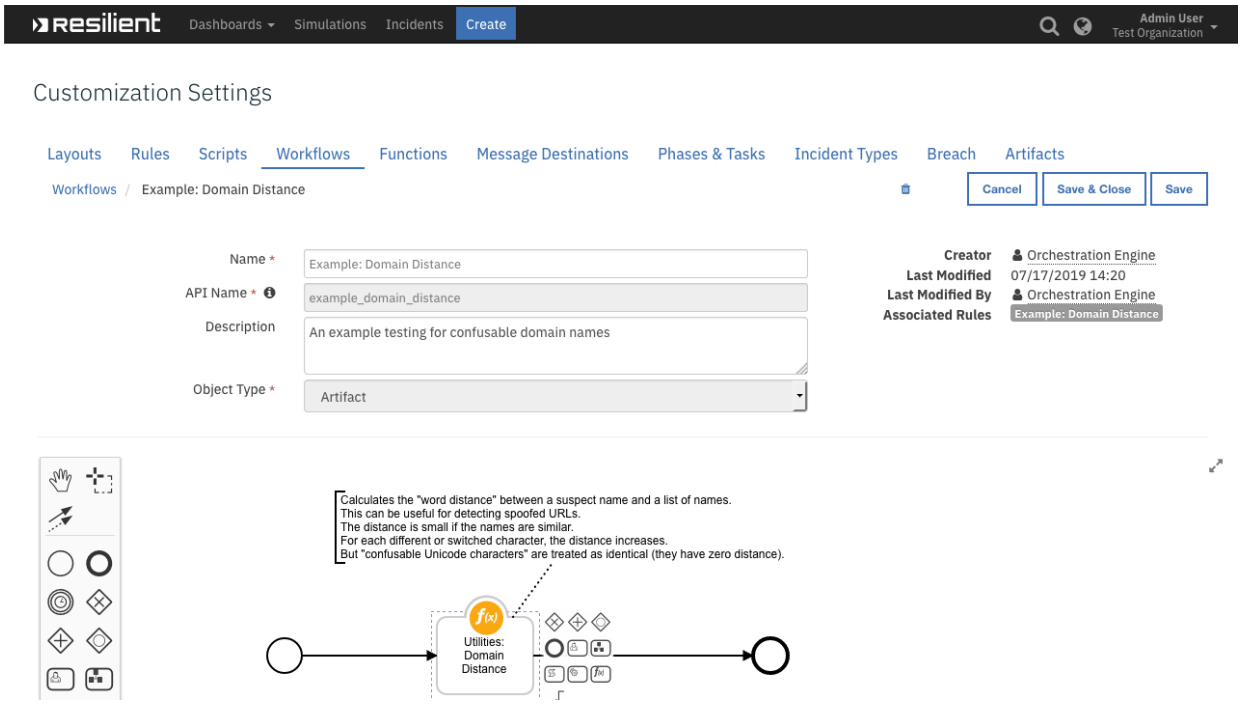
The function parameters determine the type of call, the URL, and optionally the headers, cookies and body. The results include the text or structured (JSON) result from the web service, and additional information including the elapsed time.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Domain Distance

Identifies similarity between a suspicious domain name and a list of valid domain names. Low distance result indicates a possible spoof attempt. For example, www.ibm.com and www.1bm.com would have a low distance. This can used for URLs, DNS names and email addresses.

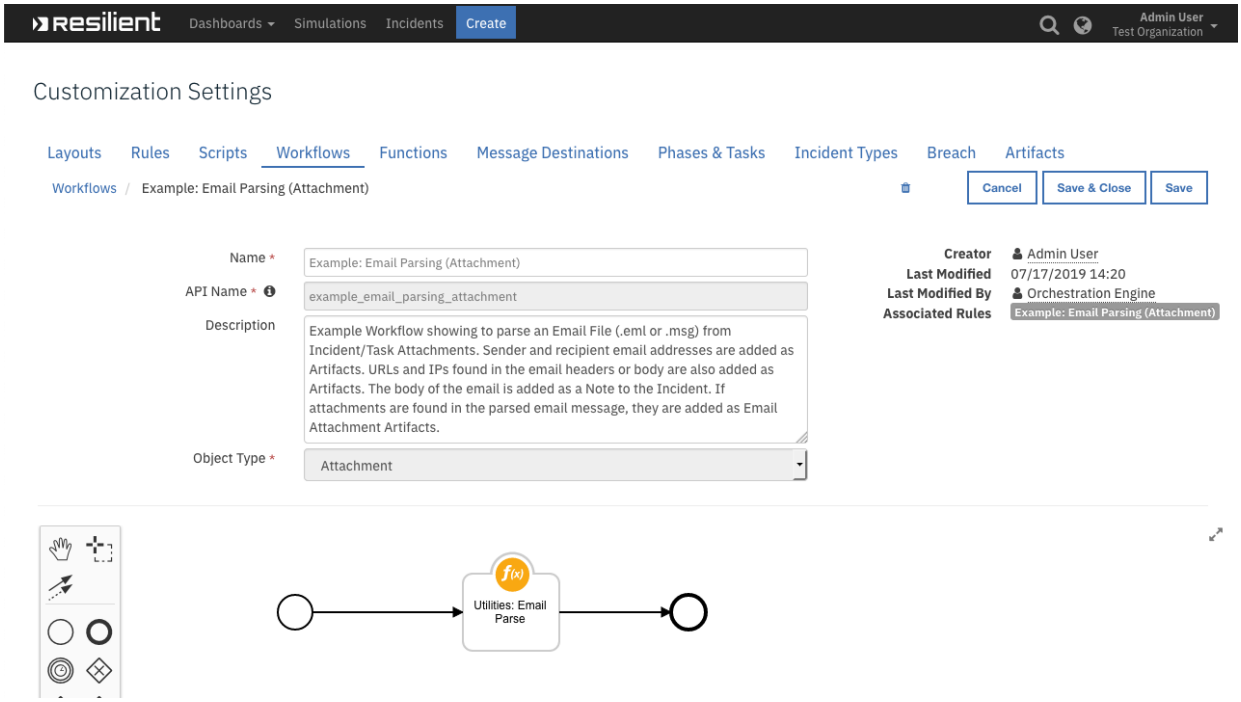


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Email Parse

Extracts message headers and parts of the message body from an email message (.eml or .msg).

Any attachments found are added to the incident as artifacts if utilities_parse_email_attachments is set to True.



Supporting Outlook .msg files

- This function relies on mail-parser>=3.9.3.

For Integrations Servers:

- To support parsing of Outlook email files (.msg), you need to install the msgconvert tool.
- msgconvert is a tool written in Perl and can be found in Email::Outlook::Message (Centos/RHEL).
- See https://github.com/SpamScope/mail-parser for more information on the packaged used.

Install msgconvert on CentOS/RHEL based systems:

```
$ sudo yum install cpan
$ sudo cpan -fTi install Email::Outlook::Message
```

For App Host Environments:

- The packages required to parse Outlook .msg files is built into the container.

▶ Inputs:

▶ Outputs:

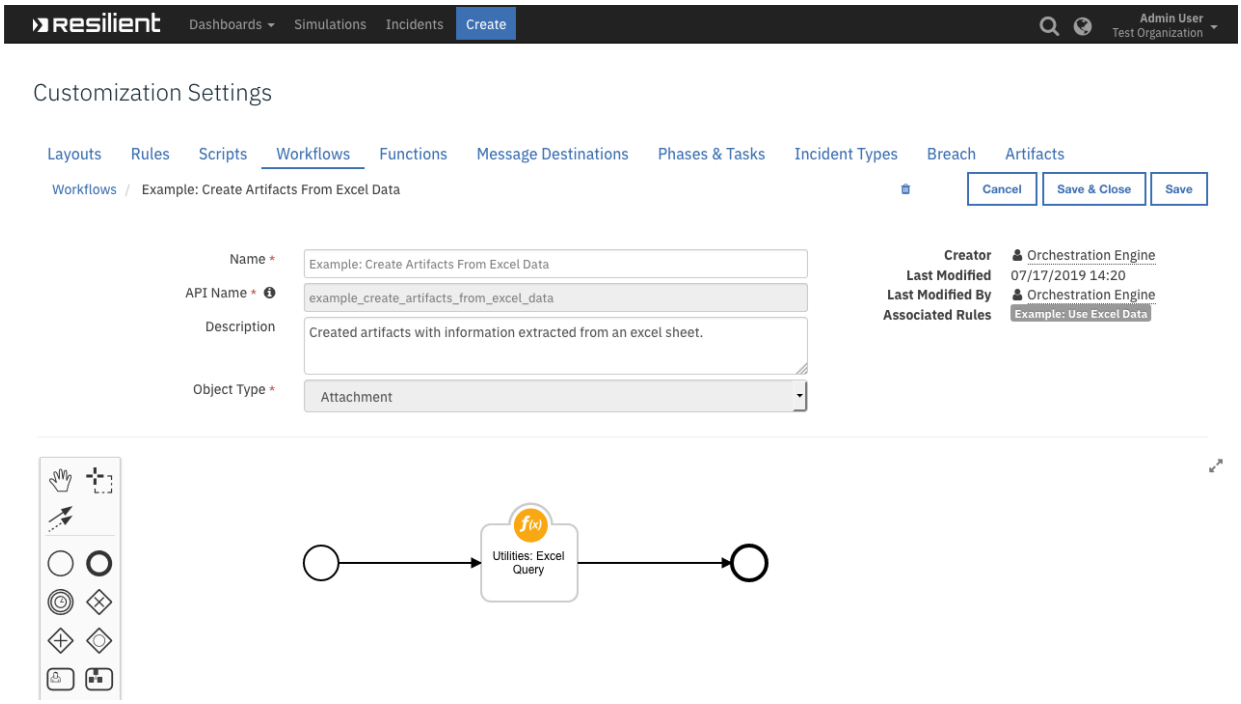
▶ Example Pre-Process Script:

▶ Example Post-Process Script:

Function - Utilities: Excel Query

Extracts ranges of data or named ranges specified by the user from a Microsoft Excel document.

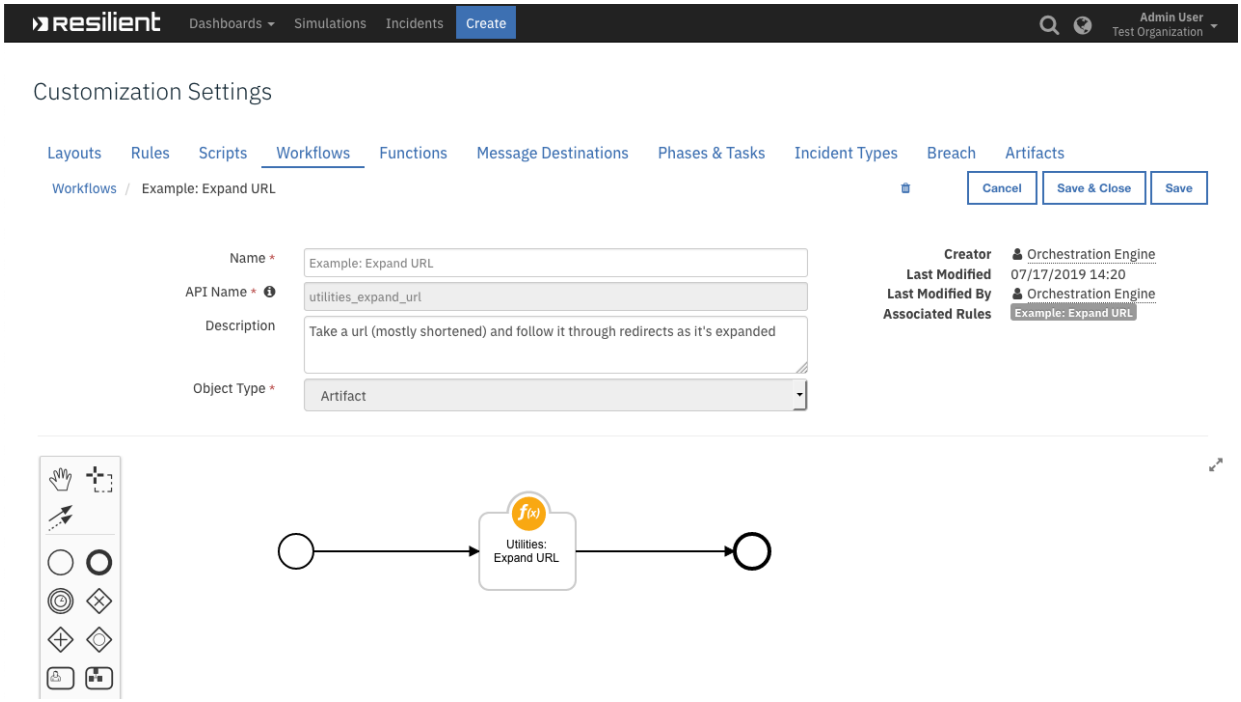
The function uses a Python library called openpyxl (http://openpyxl.readthedocs.io/en/stable/) to interface with Excel files.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Expand URL

Takes a shortened URL and follows it through redirects as it expands. The results include each URL, which are added to a new artifact.

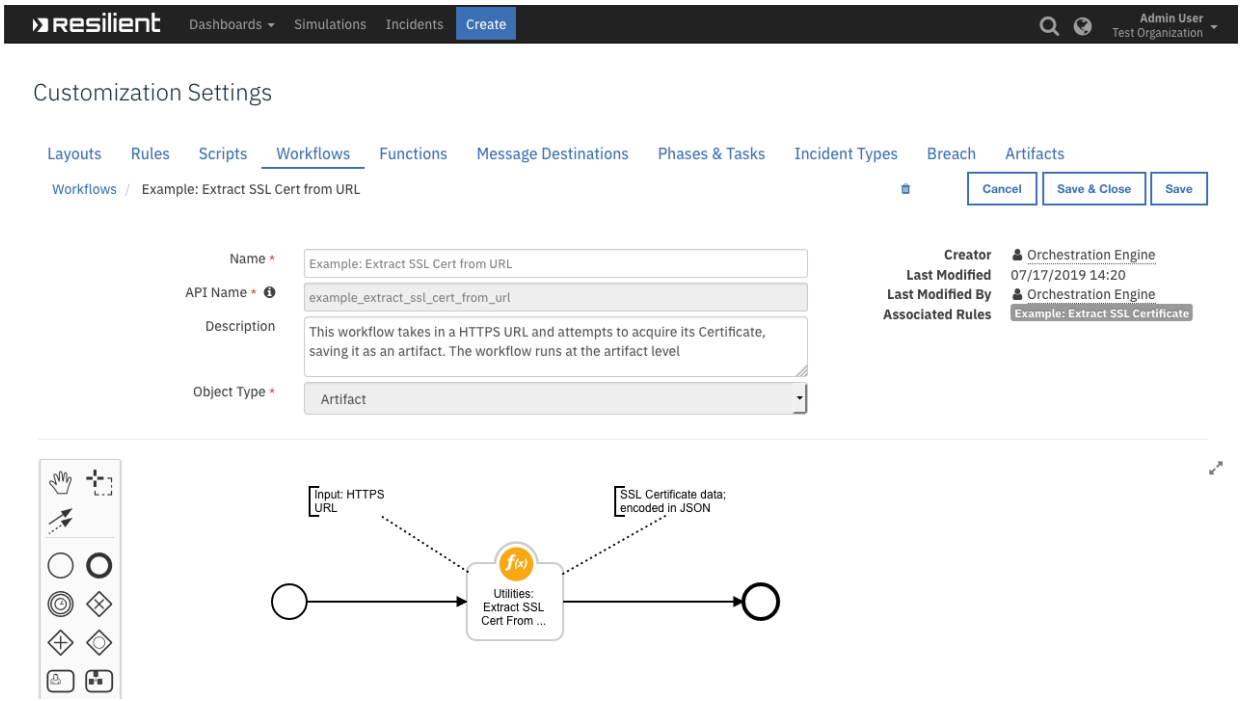


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Extract SSL Cert From Url

This function takes in a HTTPS URL or DNS input, establishes a connection and then attempts to acquire the SSL certificate. If successful, the function then saves the certificate as an artifact of type 'X509 Certificate File'. Works on most URLs including those with self-signed or expired certificates.

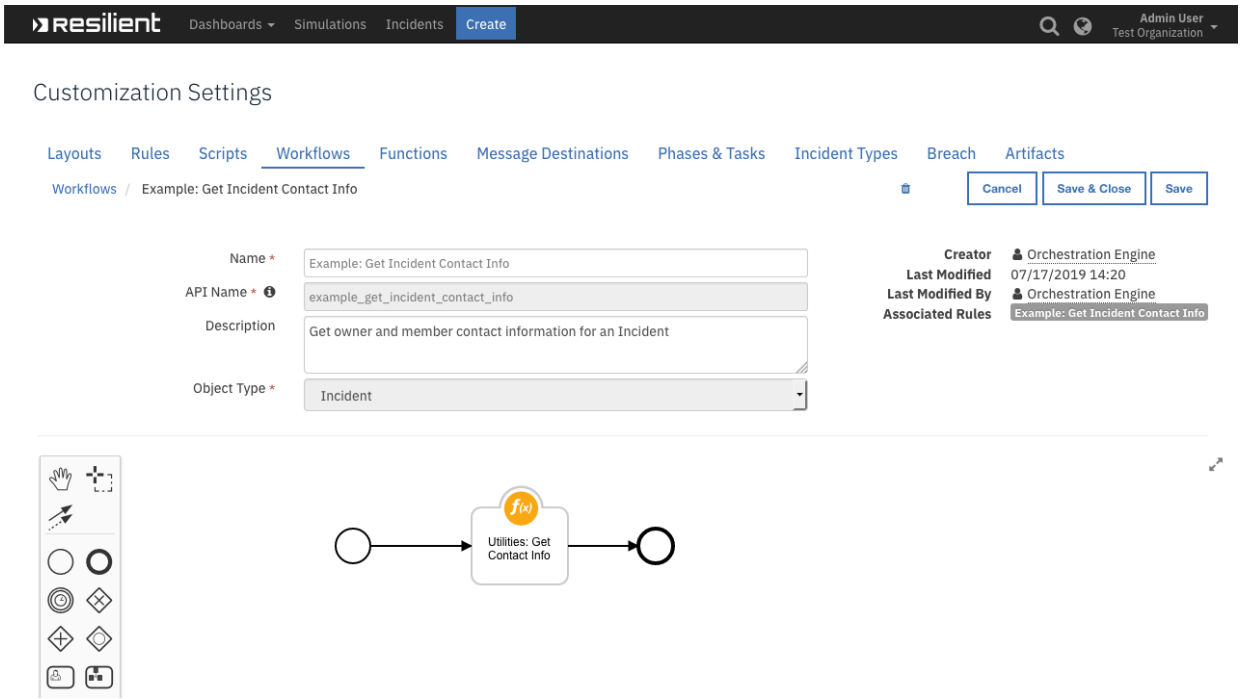
The output of this function is a string representation of the certificate saved in PEM format.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Get Contact Info

Retrieves contact information of the owner and members of an incident or task.



- Inputs:
- Outputs:

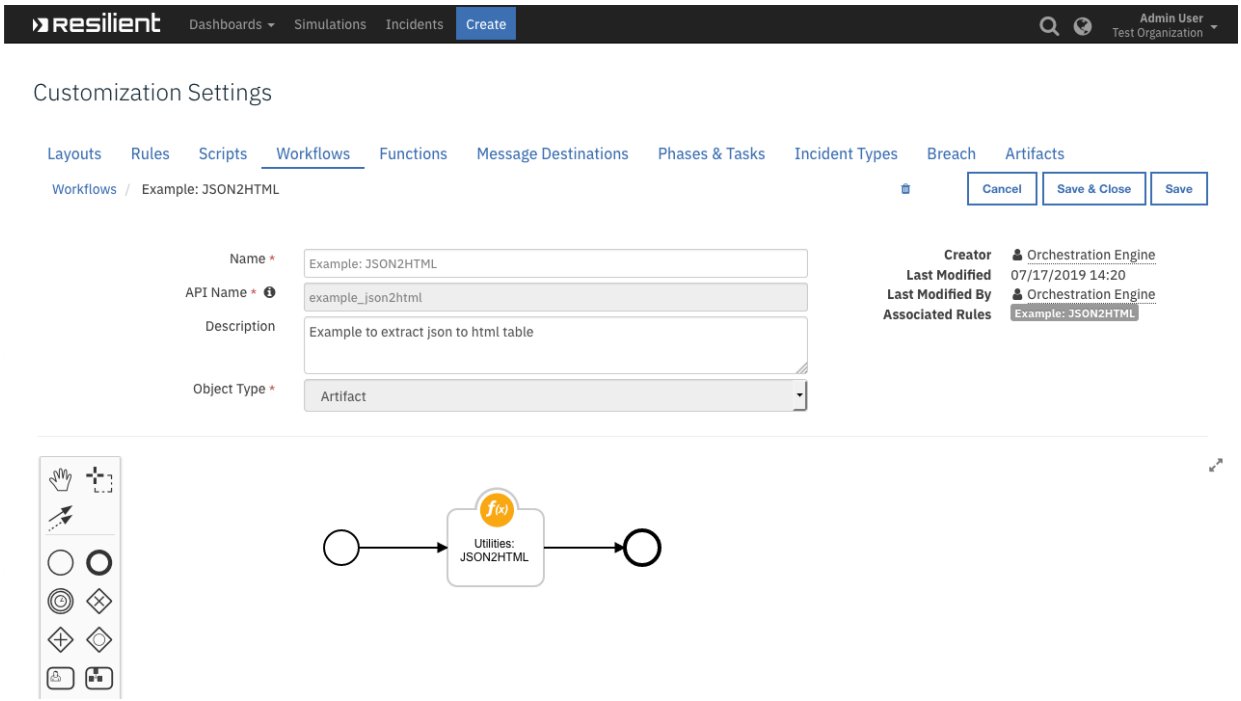
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: JSON2HTML

Produces an HTML representation of JSON data. All data is converted into tables of key / value pairs or lists.

Provides an optional parameter json2html_keys to limit the JSON data to display.

For the example below, specifying key1.key2.key3 only converts the JSON data associated with that key path.



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

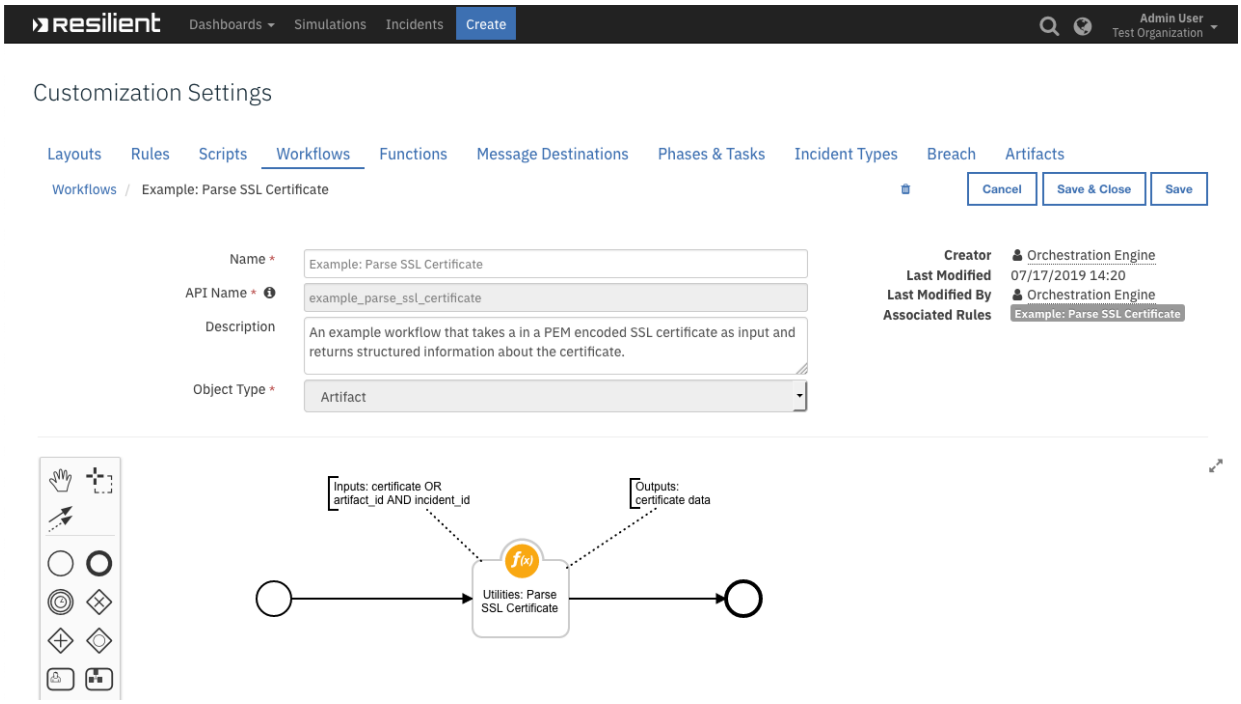
Function - Utilities: Parse SSL Certificate

This function produces the structured data from a provided SSL certificate. Three inputs are accepted by the function. There are two defined ways to use this function for parsing certificates.

Option 1 involves providing a JSON-encoded representation of a certificate. In this case the certificate input parameter should be this JSON string.

Option 2 involves providing a certificate file for parsing. When the rule is triggered on an artifact, both the incident_id for that incident and the artifact_id for the specified certificate file must be provided.

NOTE: The Parse SSL Certificate function expects a certificate of type PEM. If you require a way to get a PEM formatted certificate from a URL, consider using this in conjunction with the Extract SSL Cert from URL function.

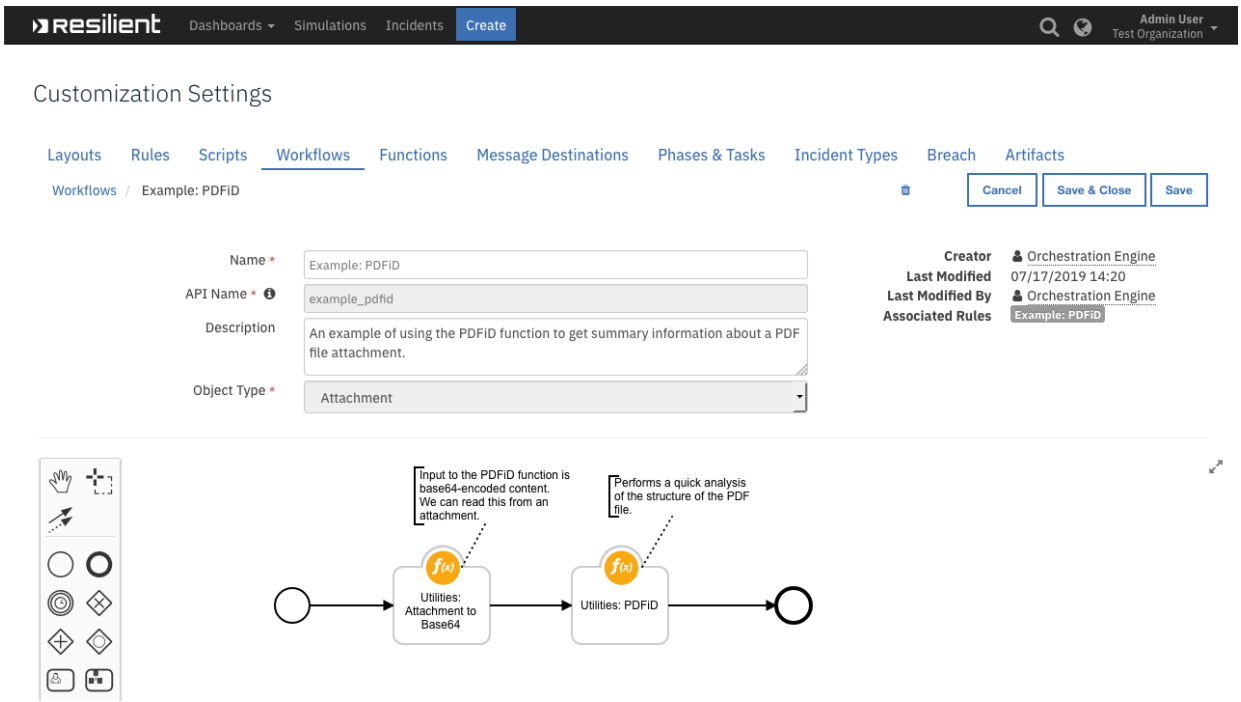


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: PDFiD

Produces summary information about the structure of a PDF file, using Didier Stevens' pdfid (https://blog.didierstevens.com/programs/pdf-tools/). The PDF file content should be provided as a base64-encoded string, for example the output from the "Attachment to Base64" function.

This function is useful in initial triage of suspicious email attachments and other files. It allows you to identify PDF documents that contain (for example) JavaScript or that execute an action when opened. PDFiD also handles name obfuscation. The combination of PDF automatic action and JavaScript makes a document very suspicious.

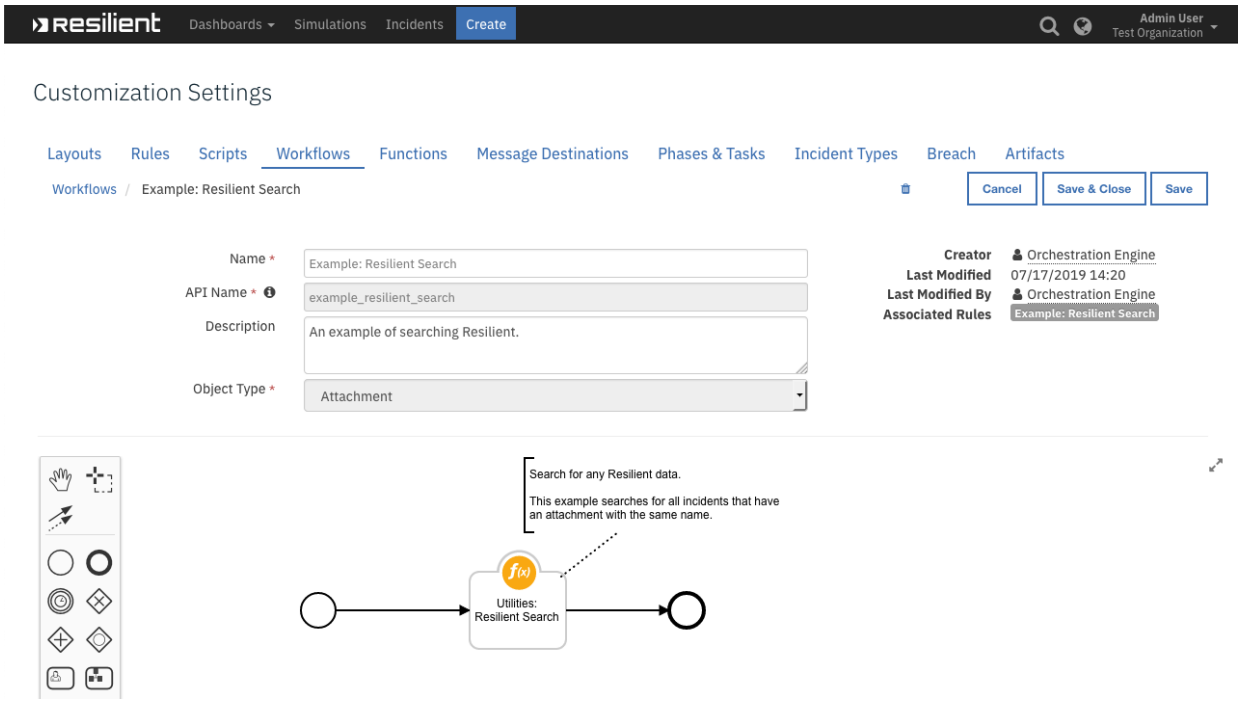


- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

Function - Utilities: Resilient Search

This function searches the Resilient platform for incident data according to the criteria specified, and returns the results to your workflow. It can be used to find incidents containing data that matches any string, incidents currently assigned to a given user, or a very wide range of other search conditions.

NOTE: The search results may include data from incidents that the current Resilient user (the person who triggered the workflow) cannot access. Often your Resilient users have the Default role that allows them to only see incidents where they are members. This function runs with the permissions of your app account, which typically may have much wider access privileges. **Use with caution, to avoid information disclosure.**



- Inputs:
- Outputs:
- Example Pre-Process Script:
- Example Post-Process Script:

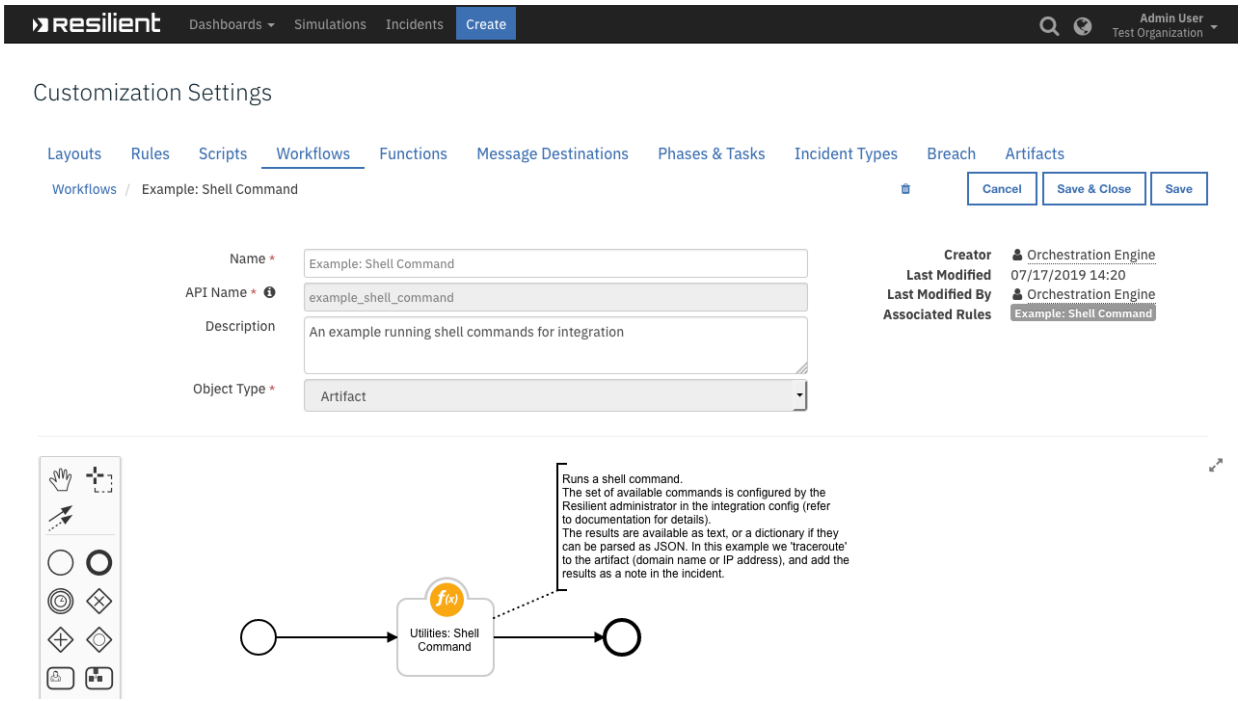
Function - Utilities: Shell Command

This function allows your workflows to execute shell-scripts locally or remotely, and return the result into the workflow. The results include the stdout and stderr streams, the return code, and information about the execution time. If the output of the shell script is JSON, it is returned as structured data. Results can then be added to the incident as file attachments, artifacts, data tables, or any other uses.

These shell commands can be run on any linux or windows platform. Different modes supported:

- Remote Linux execution
- Remote Windows command and powershell execution
- Local command execution of Linux commands such as nslookup, dig, traceroute and whois

- Local execution of Windows Powershell commands if resilient-circuits is installed on a Windows platform.



- For security, the list of available shell commands must be **configured explicitly by the administrator**. To do this, edit the [fn_utilities] section of the app.config file.
- **NOTE:** The parameter values , , may contain spaces, dashes and other characters. In your command configuration, they must be surrounded with double-quotes. Failure to properly quote your command parameters creates a security risk, since the parameter values usually come from artifacts and other untrusted data.

For local and remote Windows environments:

- Remote commands must specify a target Windows machine that has Windows Remote Management (WinRM) enabled. This can be done by running winrm qc in the remote computer's command prompt.
- Remote shells have a max memory that may not be sufficient to run your script; to change this value you must set MaxMemoryPerShellMB.
- For remote powershell scripts, the shell_param1, shell_param2 and shell_param3 values map to $args[0], $args[1], and $args[2] respectively in the Powershell script.

app.config examples:

- Linux Operating Systems basic examples:

```
# Remote Linux and Windows servers:
remote_computer=(usr1:password@192.168.1.186)
remote_computer_windows=(usr2:password@192.168.1.184)

# Remote Windows commands:
traceroute_windows_ps=[\Users\ms\traceroute.ps1]
traceroute_windows_cmd=[tracert.exe -h 10 ]

# Remote Linux command:
tracepath=(tracepath -m 10 '')

# Local Linux server commands:
```

```
nslookup=nslookup ""
dig=dig ""
traceroute=traceroute -m 15 ""
```

- The following examples use the Volatility forensics framework. The first parameter is filename of the memory image, assuming $VOLATILITY_LOCATION is set in the environment (such as in the system unit configuration). The second parameter is the Volatility profile ("Win7SP0x64" etc).

```
imageinfo=python /path/to/vol.py -f "" imageinfo -- output=json
kdbgscan=python /path/to/vol.py -f "" -- profile="" kdbgscan --output=json
psscan=python /pathto/vol.py -f "" -- profile="" psscan --output=json
dlllist=python /path/to/vol.py -f "" -- profile="" dlllist --output=json
```

Running Powershell Scripts Remotely:

To configure running scripts remotely, the user must make these changes to the config file:

- Specify acceptable powershell compatible extensions of script files, comma separated:
  - remote_powershell_extensions=ps1,psc1
- Specify the transport authentication method:
  - remote_auth_transport=ntlm
- Specify remote commands in the config file wrapped in square brackets []:
  - remote_command=[C:\remote_directory\remote_script.ps1]
- Specify a remote computer in the config file to run the script wrapped in parentheses ():
  - remote_computer=(username:password@server)

Examples of remote commands:

```
# Remote commands
remote_command1=[C:\scripts\remote_script.ps1]
remote_command2=[C:\scripts\another_script.ps1]

# Remote computers
remote_computer1=(domain\administrator:password@server1)
remote_computer2=(domain\admin:P@ssw0rd@server2)
```

- These remote commands can then be run in the workflow using the syntax remote_command:remote_computer as the input for shell_command. Examples:
  - remote_command1:remote_computer1 runs remote_command1 remotely on remote_computer1
  - remote_command2:remote_computer1 runs remote_command2 remotely on remote_computer1

▶ Inputs:

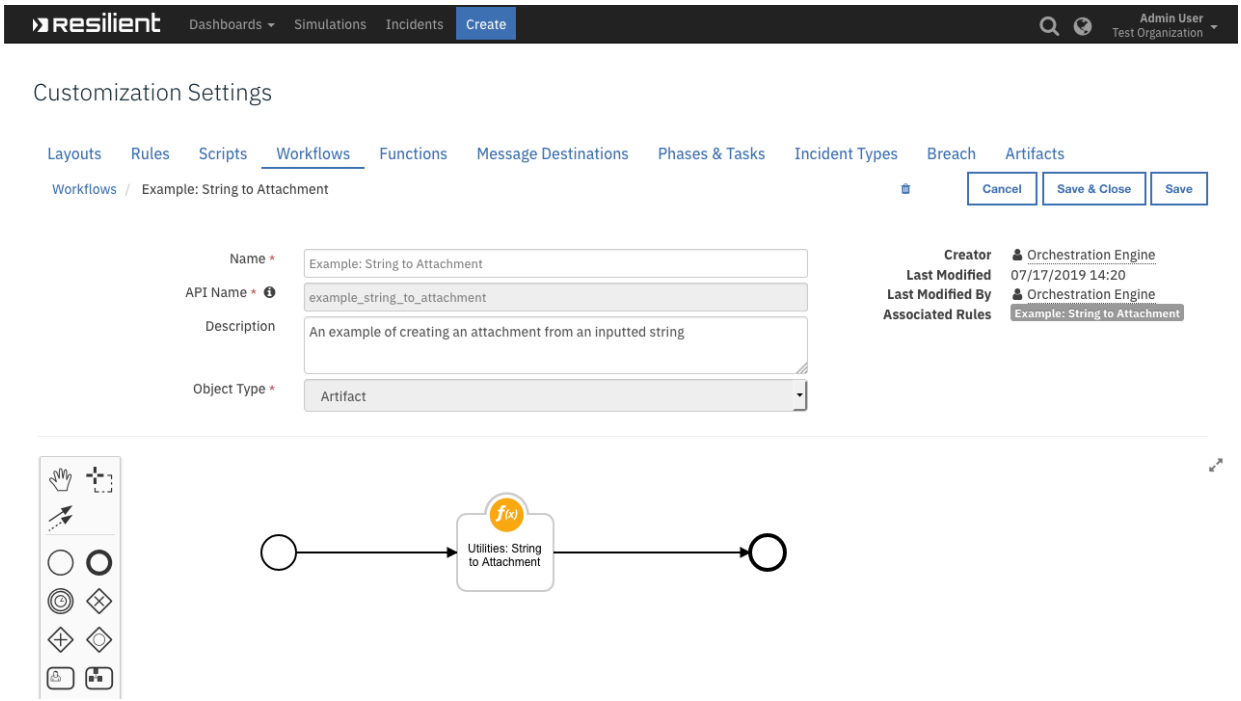
▶ Outputs:

▶ Example Pre-Process Script:

▶ Example Post-Process Script:

Function - Utilities: String to Attachment

Creates a new file (.txt) attachment in the incident or task from a string that your workflow provides as input.



- ▶ Inputs:
- ▶ Outputs:
- ▶ Example Pre-Process Script:
- ▶ Example Post-Process Script:

Function - Utilities: Timer

This function implements a timer (sleep) function that when called from a workflow causes the workflow to pause for the specified amount of time. The function takes one of two parameters as input: utilities_time or utilities_epoch.

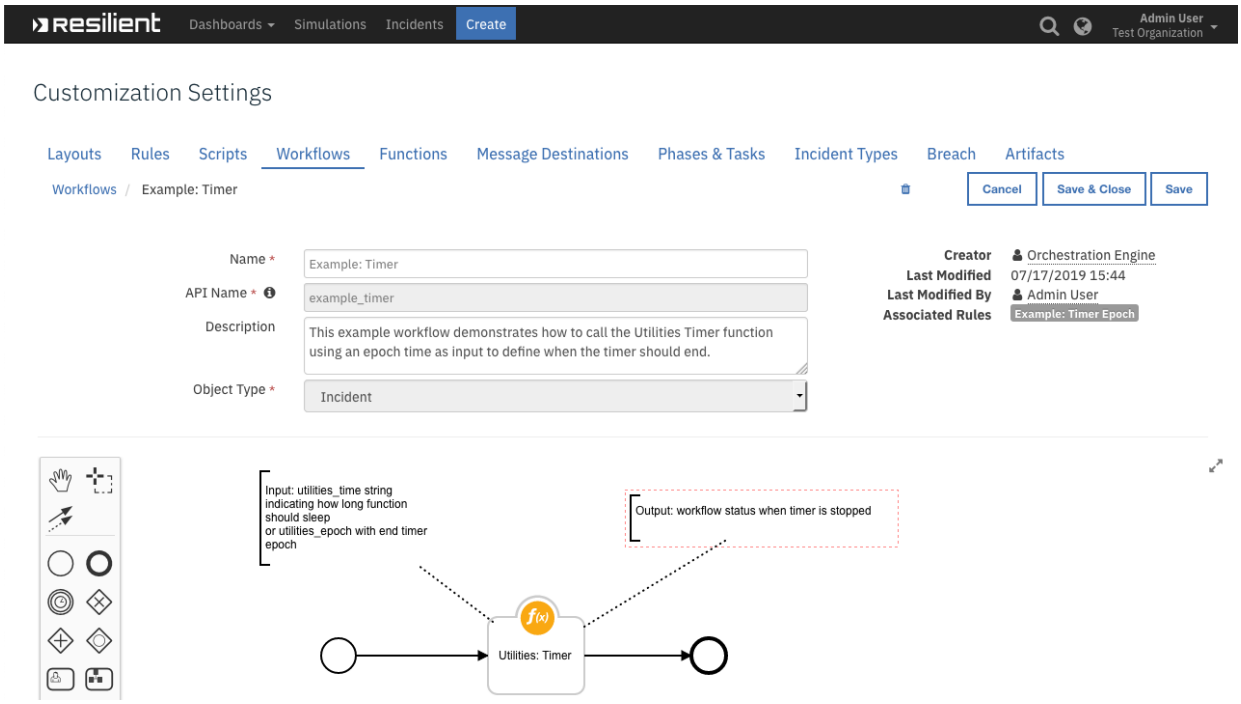
The utilities_time parameter is a string that specifies the total amount of time to pause. The input string is of format time value concatenated with a time unit character, where character is:

- s for seconds
- m for minutes
- h for hours
- d for days

For example: 30s = 30 seconds; 20m = 20 minutes; 5h = 5 hours; 6d = 6 days

The utilities_epoch parameter is the epoch time which the timer function should sleep until that time has passed. An epoch time value is returned from the date time picker UI widget.

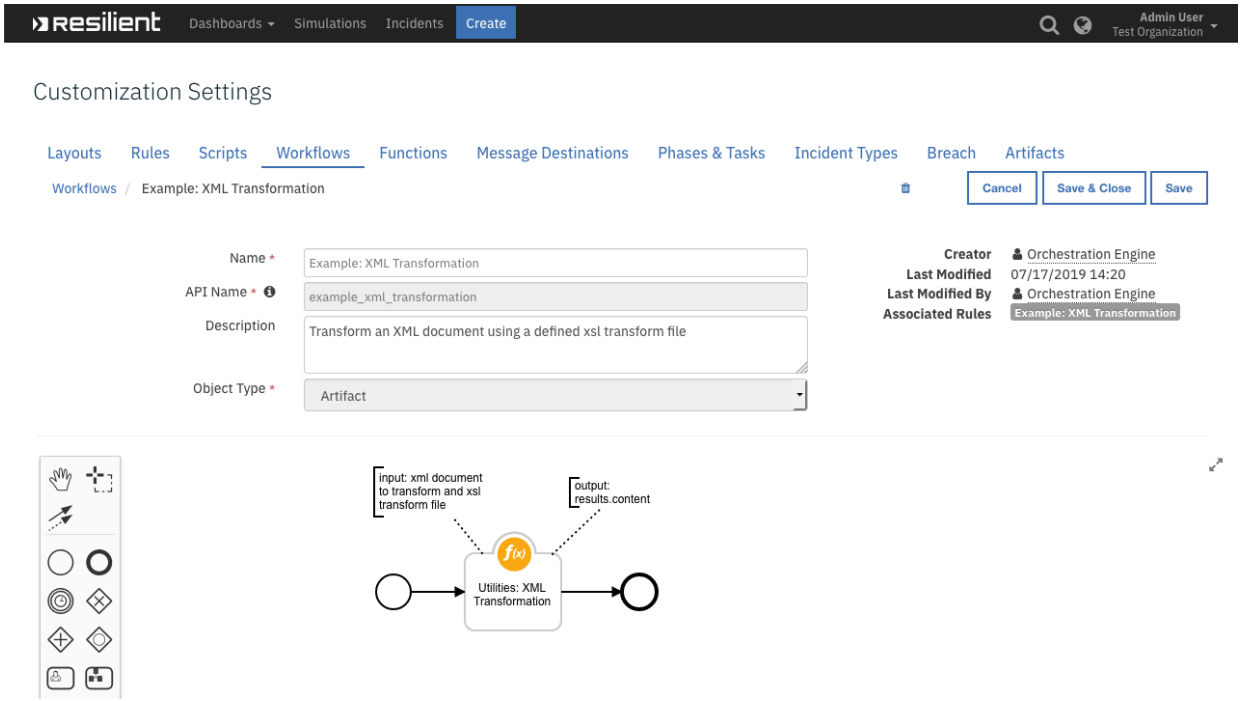
The timer function breaks down the total amount of time to pause into smaller sleep time intervals and checks in-between these sleep intervals whether the workflow has been terminated while the function is running. If the workflow has been terminated, the function will end execution.



- ▶ Inputs:
- ▶ Outputs:
- ▶ Example Pre-Process Script:
- ▶ Example Post-Process Script:

Function - Utilities: XML Transformation

Transforms an XML document using a pre-defined xsl stylesheet and returns the resulting content.

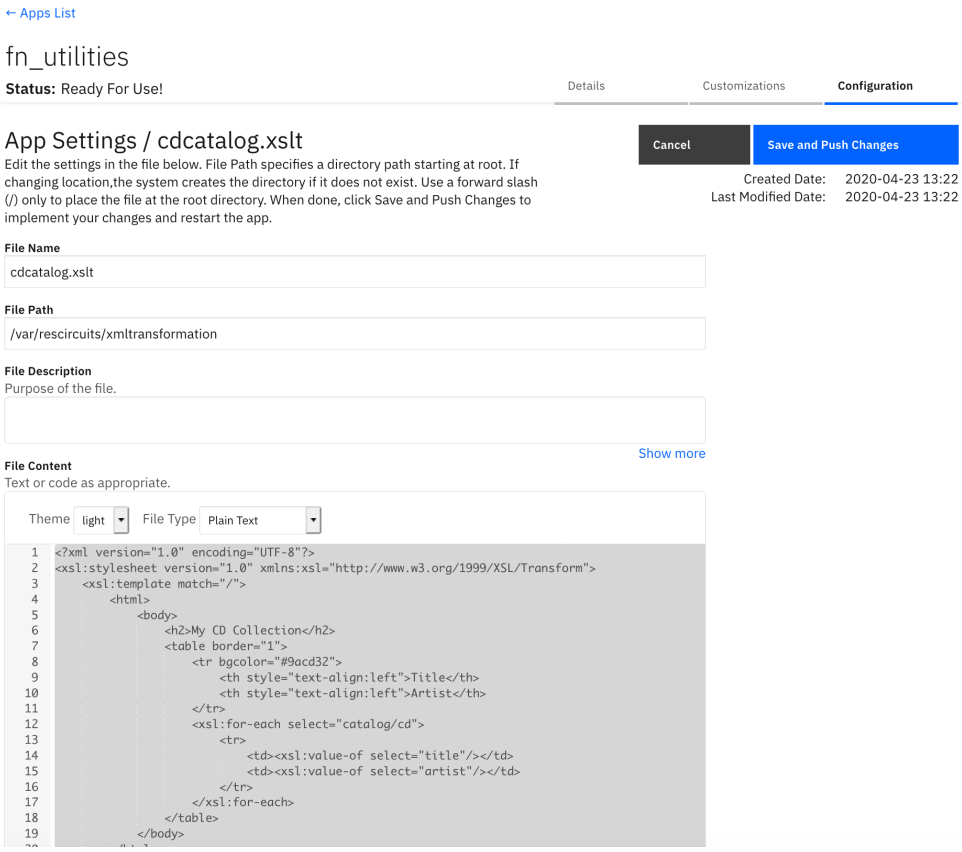


For App Host Environments:

- Set the app.config xml_stylesheet_dir setting as follows:

  xml_stylesheet_dir= /var/rescircuits/xmltransformation

- Add your transformation file to the App Configuration tab to refer to the same directory as used in xml_stylesheet_dir.



- ▶ Inputs:
- ▶ Outputs:
- ▶ Example Pre-Process Script:
- ▶ Example Post-Process Script:

Rules

Rule Name	Object	Workflow Triggered
Example: (Artifact) Attachment to Base64	artifact	example_artifact_attachment_to_base64
Example: Attachment Hash	attachment	example_attachment_hash
Example: Attachment to Base64	attachment	example_attachment_to_base64
Example: Call REST API	artifact	example_call_rest_api
Example: Domain Distance	artifact	example_domain_distance
Example: Email Parsing (Artifact)	artifact	example_email_parsing_artifact
Example: Email Parsing (Attachment)	attachment	example_email_parsing_attachment
Example: Expand URL	artifact	utilities_expand_url
Example: Extract SSL Certificate	artifact	example_extract_ssl_cert_from_url
Example: Get Incident Contact Info	incident	example_get_incident_contact_info
Example: JSON2HTML	artifact	example_json2html
Example: Parse SSL Certificate	artifact	example_parse_ssl_certificate

Rule Name	Object	Workflow Triggered
Example: PDFiD	attachment	example_pdfid
Example: Resilient Search	attachment	example_resilient_search
Example: Shell Command	artifact	example_shell_command
Example: String to Attachment	artifact	example_string_to_attachment
Example: Timer Epoch	incident	example_timer
Example: Timers in Parallel	incident	example_timer_parallel
Example: Use Excel Data	attachment	example_create_artifacts_from_excel_data
Example: XML Transformation	artifact	example_xml_transformation
Example: Zip Extract	attachment	example_zip_to_artifact
Example: Zip List	attachment	example_zip_list