Overview

This integration uses netMiko to access network devices, such as firewalls, to run command-line queries and execute firewall configuration settings. SSH is used to access the hosts and results from the operations are returned as a Resilient incident note.

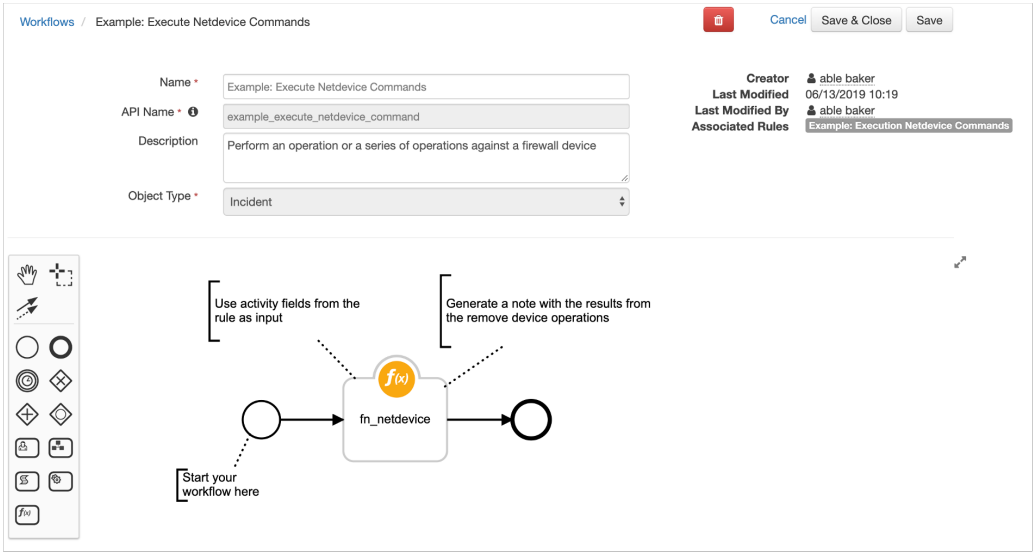
This implementation utilizes all the functionality of netMiko including:

- Multiple host execution
- Configuration setting execution with commits
- Result parsing using TextFSM templates

For more information on netmiko, refer to the documentation here

Components

- Function: fn_netdevice
- Message Destination: fn_netdevice
- Workflow: Example: Execute Netdevice Commands
- Rule: Example: Execute Netdevice Commands



Installation

To install, unzip the downloaded file from the App Exchange.

Run `[sudo] pip install fn_netdevice-<version>.tar.gz` to add the package to your python libraries

Run `resilient-circuits customize -l fn-netdevice` to add the Resilient components (rules, workflows, functions, etc.)

Run `resilient-circuits codegen -u -l fn-netdevice` to add configuration data to your app.config file.

These sections are added:

```
[fn_netdevice]
# specify the directory if using textFSM templates
#template_dir=

# for each network device to communicate with, define it's section below to match the
 device_ids field in the function input parameter
#[device_id]
#device_type=<see devices defined here https://github.com/ktbyers/netmiko/blob/master
/netmiko/ssh_dispatcher.py>
#ip=
#username=
#password=
#port=22
#secret=<leave commented for default of no secret>
#verbose=False
#use_commit=False
```

Copy, uncomment, rename and configure each [device_id] section one per each device you'll be accessing. Passwords can be stored in your keystore using the $password convention as documented in the Function Developer's Guide

After installation, the package will be loaded and ready for execution by invoking `resilient-circuits run`.

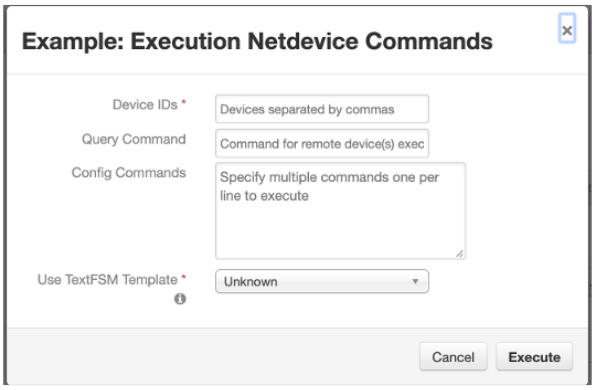
To uninstall, run `[sudo] pip uninstall fn-netdevice`

Function Execution

When running the sample rule and workflow, a dialog is presented to enter:

- Devices IDs (comma separated)
- Query Command (optional)
- Configuration Commands (optional, but specify either query command and/or configuration commands)
    - specify mutiple commands on separate lines

- Use TextFSM Templates (associated with Query Commands)
    - Note: Specify the template directory using the app.config setting `template_dir` when setting this value to `Yes`

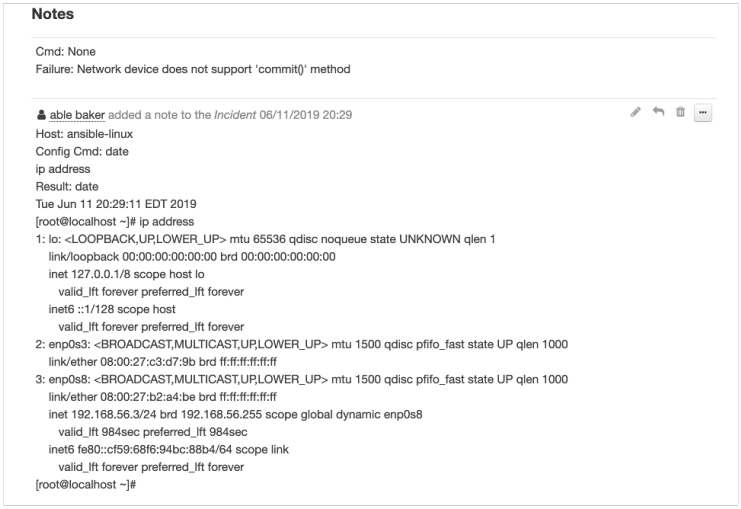


Result Payload

The payload returned from a query will return similar to the following example. Each host accessed is listed under 'content'. Reference the `send_command` (Query Command) and `send_results`, and `config_command` and `config_results` in your Workflow Post-Process Script. When using `Use TextFSM`, the `send_results` data will reflect the results returned from your matching template.

```
{
  'version': '1.0',
  'success': True,
  'reason': None,
  'content': {
    'ansible-linux': {
      'send_command': 'date',
      'send_result': 'Tue Jun 11 20:43:37 EDT 2019',
      'config_command': 'ip address\nnetstat',
      'config_result': 'ip address\n1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noq
ueue state UNKNOWN qlen 1\n    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00\
```

```
n    inet 127.0.0.1/8 scope host lo\n       valid_lft forever preferred_lft forever\n
    inet6 ::1/128 scope host \n       valid_lft forever preferred_lft forever\n2: enp
0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000\n
    link/ether 08:00:27:c3:d7:9b brd ff:ff:ff:ff:ff:ff\n3: enp0s8: <BROADCAST,MULTICA
ST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000\n    link/ether 08:00:27
:b2:a4:be brd ff:ff:ff:ff:ff:ff\n    inet 192.168.56.3/24 brd 192.168.56.255 scope gl
obal dynamic enp0s8\n       valid_lft 1187sec preferred_lft 1187sec\n    inet6 fe80::
cf59:68f6:94bc:88b4/64 scope link \n       valid_lft forever preferred_lft forever\n[
root@localhost ~]# netstat\n-bash: netstat: command not found\n[root@localhost ~]# ',
      'status': 'success'
    }
  },
  'raw': '{"ansible-linux": {"send_command": "date", "send_result": "Tue Jun 11 20:43
:37 EDT 2019", "config_command": "ip address\\nnetstat", "config_result": "ip address
\\n1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1\\n    l
ink/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00\\n    inet 127.0.0.1/8 scope hos
t lo\\n       valid_lft forever preferred_lft forever\\n    inet6 ::1/128 scope host
\\n       valid_lft forever preferred_lft forever\\n2: enp0s3: <BROADCAST,MULTICAST,U
P,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000\\n    link/ether 08:00:27:c3
:d7:9b brd ff:ff:ff:ff:ff:ff\\n3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500
qdisc pfifo_fast state UP qlen 1000\\n    link/ether 08:00:27:b2:a4:be brd ff:ff:ff:f
f:ff:ff\\n    inet 192.168.56.3/24 brd 192.168.56.255 scope global dynamic enp0s8\\n
      valid_lft 1187sec preferred_lft 1187sec\\n    inet6 fe80::cf59:68f6:94bc:88b4/6
4 scope link \\n       valid_lft forever preferred_lft forever\\n[root@localhost ~]#
netstat\\n-bash: netstat: command not found\\n[root@localhost ~]# ", "status": "succe
ss"}}',
  'inputs': {
    'netdevice_ids': 'ansible-linux',
    'netdevice_config_cmd': 'ip address\nnetstat',
    'netdevice_send_cmd': 'date'
  },
  'metrics': {
    'version': '1.0',
    'package': 'fn-netdevice',
    'package_version': '1.0.0',
    'host': 'Marks-MBP.fios-router.home',
    'execution_time_ms': 7137,
    'timestamp': '2019-06-11 20:43:48'
  }
}
```



Development

This template project was generated by

```
resilient-circuits codegen -p fn_netdevice -m fn_netdevice --rule 'Example: Execution
 Netdevice Commands'
```

To package for distribution,

```
python ./fn_netdevice/setup.py sdist
```