FORCEPOINT

Forcepoint NGFW and AWS Security Hub

Integration Guide

Tom Meaney
Mattia Maggioli
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Version	Date	Author	Notes
0.1	12 December 2019	Tom Meaney	First draft
0.2	12 December 2019	Mattia Maggioli	Review
0.3	17 February 2020	Mattia Maggioli	Updated after changes to ARN
0.4	23 March 2020	Neelima Rai	Added troubleshooting chapter
0.5	22 July 2020	Neelima Rai	Added hardware requirements

Summary

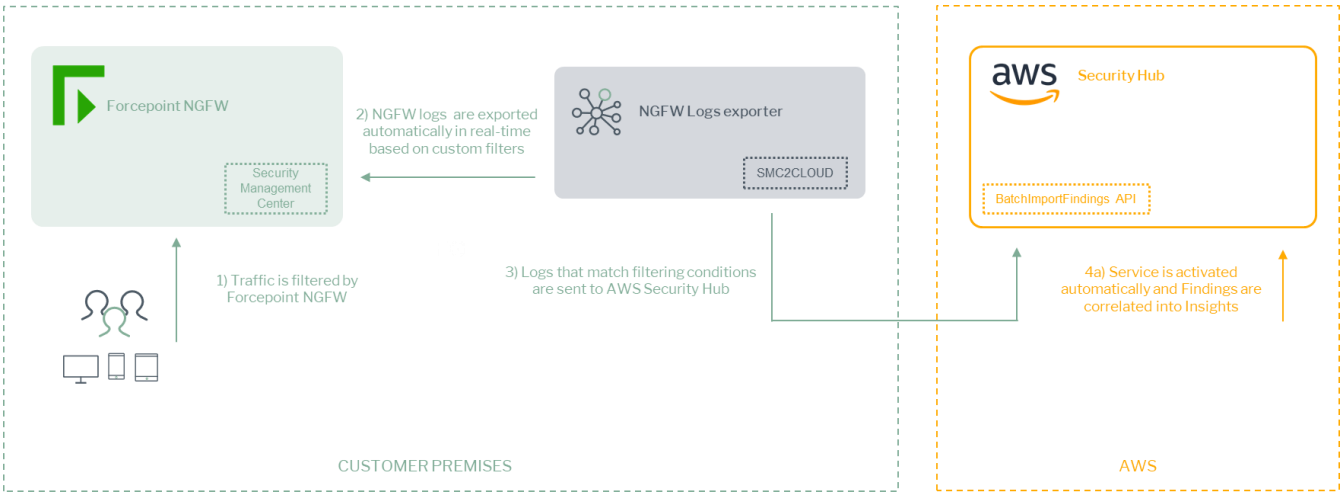
This guide provides step by step instructions to integrate Forcepoint Next Generation Firewall (Forcepoint NGFW) with AWS Security Hub and to export pertinent log data from the NGFW to AWS according to user-configured filters.

The code and instructions provided enable system administrators to automatically

- Export log events from Forcepoint NGFW into AWS Security Hub in real-time
- Ingest logs as “Findings” inside AWS Security Hub and group them into “Insights” using pre-defined examples created programmatically

This interoperability allows centralization of NGFW logs and events, and allows for easy curation of data using “Insights” to group “Findings” by a number of fields (e.g. Severity, type)

A description of the workflow between the components involved in this POC is depicted in this diagram:



Caveats

These implementation instructions are tested with the following product versions

- Forcepoint NGFW 6.5.2
- Forcepoint NGFW Security Management Center (SMC) 6.6.0

The following activities are out of the scope of this document and therefore left to the system administrator, as part of ordinary maintenance procedures to be put in place within the existing infrastructure:

- configuration of appropriate hygiene procedures to handle logs produced during any step of the

solution workflow

- monitoring of the scripts, services and applications involved in the solution

Implementation

The solution described in this chapter requires the following files available at this link: https://frcpnt.com/ngfw-securityhub-latest

- fp-ngfw-exporter-cloud-v1.tar.gz

The **fp-ngfw-exporter-cloud-v1.tar.gz** contains all files necessary to setup and run the **SMC2CLOUD** service which automatically queries, processes and uploads logs to AWS. We suggest deploying this service on an Ubuntu 18.04 machine with at least 1 GB RAM, 1 vCPU and 250 MB of free storage for the integration, the instructions provided in this document are based on this operating system and the following packages

- Python3.x

The software packages and related dependencies are automatically installed by the **install.sh** script provided inside the **fp-ngfw-exporter-cloud-v1.tar.gz** file, which will execute the following commands as part of the deployment script:

python3 get-pip.py
python3 -m pip install --user virtualenv
python3 -m venv venv
source venv/bin/activate
python3 -m pip install -r requirements.txt
mkdir /opt/ngfw_2_cloud
cp -r ./ /opt/ngfw_2_cloud*
cp /opt/ngfw_2_cloud/SMC2CLOUD.service /lib/systemd/system/SMC2CLOUD.service
systemctl daemon-reload
systemctl enable SMC2CLOUD
systemctl start SMC2CLOUD

Step 1 – Register a user in AWS and retrieve credentials

If you already have AWS credentials, skip this section and go to Step 2.

In order to submit logs into AWS Security Hub we need a few parameters to perform all calls using AWS **BatchImportFindings** API and to setup the integration:

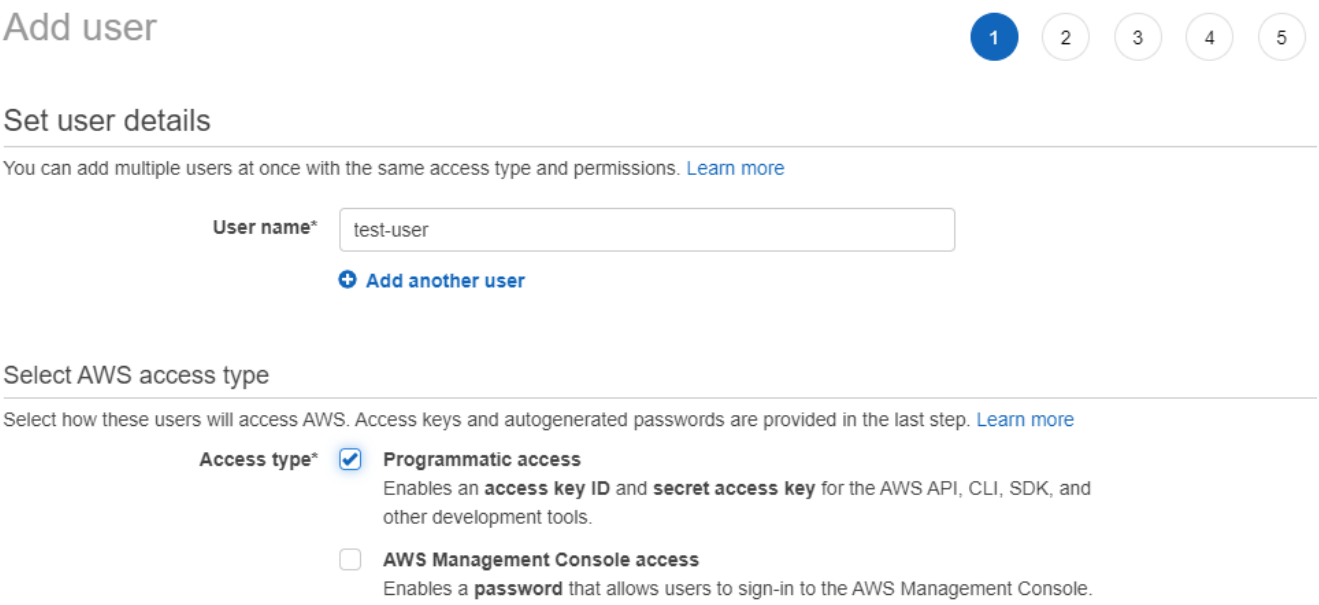
- Aws Account Id
- AWS access key ID
- AWS secret access key
- Region name

In order to find the account ID for the account that will be used to integrate with AWS Security Hub

1. Log in to AWS console
2. Click on your username in the top right corner and select **My Account**, look for **Account Id** at the top of the page and store the ID in a safe location as it is required for configuring the service in the next steps of this guide

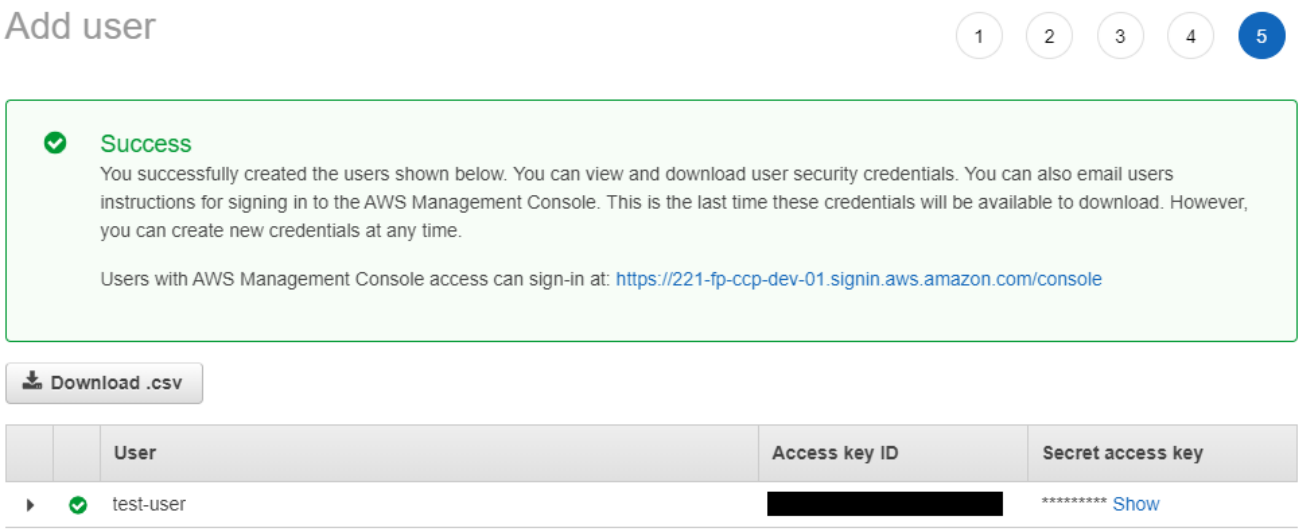
Then we need to create a user and retrieve the keys

3. Navigate to the AWS management console
4. Search for **IAM** and open it
5. Open the **Users** section and **Add User** in the top left
6. Enter a name for the new user and select **Programmatic access** in the **Access type** section



7. Add the user to the correct group(s) that have access to AWS Security Hub

8. Add tags if required in your organization (tags are not required by this integration)
9. Review the details and then click **Create user**
10. In the next screen you will be presented with your created user along with your **Access Key ID and Secret Access Key,** save these or the CSV file in a secure location



Step 2 – Configure SMC to allow connection from API clients

We need to enable API access in order to export logs from the Security Management Center. The instructions to **Enable SMC API** can be found in the official documentation at this link:

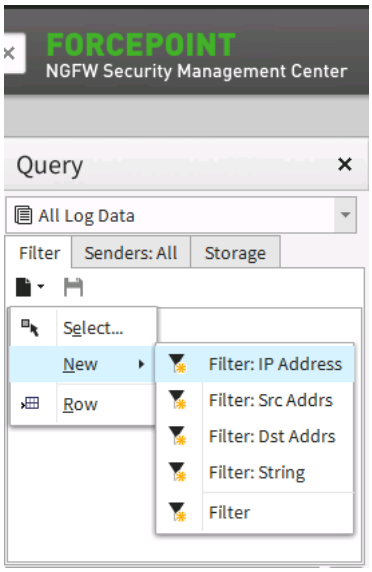
https://www.websense.com/content/support/library/ngfw/v66/rfrnce/ngfw_660_rg_smc-api_b_en-us.pdf

Step 3 – Creating custom log filters from SMC

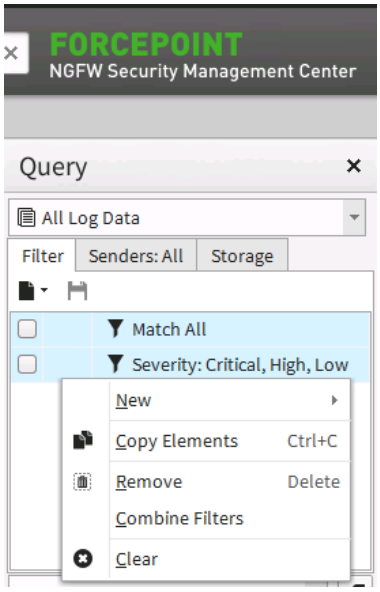
Since AWS Security Hub charges based on the number of **Insights** sent, it is important to control what logs are forwarded from the NGFW into AWS.

This integration package enables the filtering of logs based on customizable queries. Queries can be built using the SMC interface and then exported in a format that can be passed directly to the **SMC2CLOUD** service. By doing so, users will be able to find in AWS Security Hub the same logs they would see applying the filters in the SMC interface.

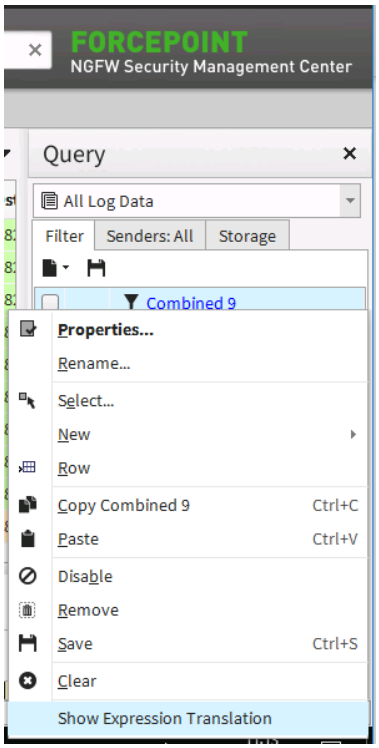
1. Open the SMC log view
2. Find the filter side bar and create a new filter, validate it returns what is required by clicking **Apply**



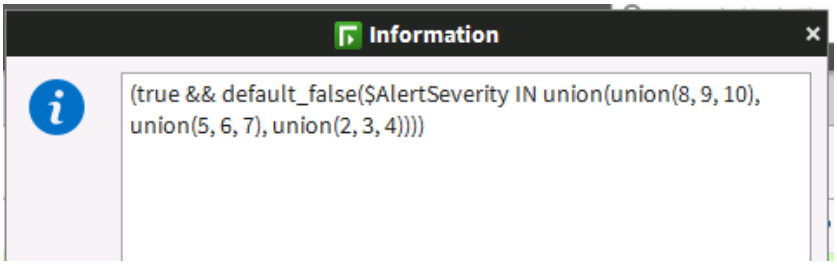
3. If you have two entries in the filter view after creating your filter, select both, right click them and select ‘Combine Filters’



4. After you combine the filters you will have one entry titled **Combined <x>** where x is some numerical value that increments after each combined filter
5. Now we need to export our filter in a format that can be used by our integration tool. Right click on the combined filter and select **Show Expression Translation**



6. A dialog will pop up with a textual representation of the filters we just created



7. Copy this line of text exactly as it is in the dialog box and store it in a safe location: this will be required during the installation steps of the **SMC2CLOUD** service.

Example of common log queries

- All events matching a severity of Critical, High or Low

  (true && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7), union(2, 3, 4))))

- All events matching a specific **rule tag** (the number in red being the rule tag)

  (true && default_false((($RuleId & 0x1fffff) | (($RuleId & 0x7fffffe00000000) >> 12)) == 2097162))

- All events with an action matching “Terminate” or “Block”

  (true && default_false($Action IN union(9, 13)))

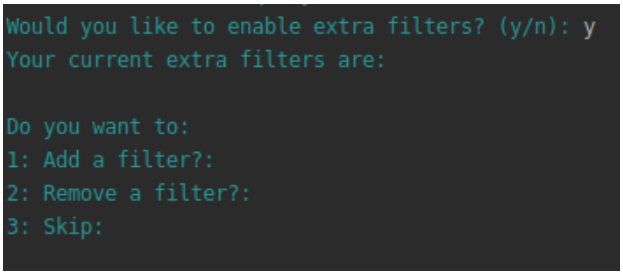
- Any System Alert events
  (true && defined($Alert))

- All Anomalies with severity Critical or High
  ((true && defined($AnomalySituation)) && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7))))

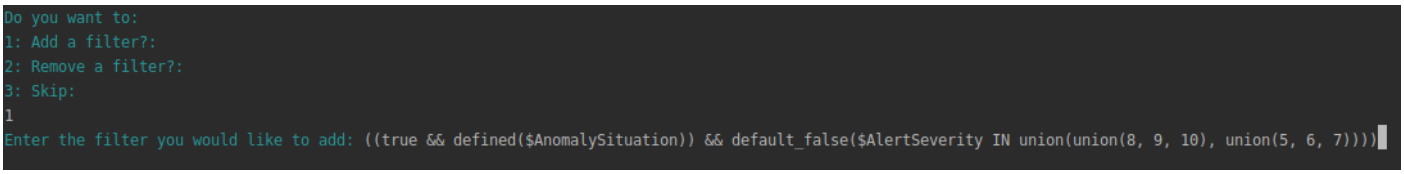
Adding extra filters

During the configuration step the install wizard will ask for a **default filter**, since at least one filter is needed in order to match NGFW logs that will be forwarded to AWS Security Hub. User can also add **extra filters** so that the filtering process can be performed in a modular way, and filters can be selectively removed at a later stage without editing the syntax of the **default filter**.

1. Choose ‘y’ and you will be presented with this screen



2. When you choose to add a filter, paste the filter syntax in the terminal



3. Once you have hit enter the configuration process will continue

Removing extra filters

During the configuration step you will be asked if you want to add extra filters. In this case, choose **y** also if you want to remove existing filters

```
Would you like to enable extra filters? (y/n): y
Your current extra filters are:
1 : ((true && defined($AnomalySituation)) && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7))))
2 : ((true && defined($AnomalySituation)) && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7))))
3 : ((true && defined($AnomalySituation)) && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7))))

Do you want to:
1: Add a filter?:
2: Remove a filter?:
3: Skip:
```

1. Select option 2 to remove a filter
2. Enter the number of the filter you want to remove

```
Do you want to:
1: Add a filter?:
2: Remove a filter?:
3: Skip:
2
Enter the index of the filter you would like to remove: 2
Your updated extra filters are:
1 : ((true && defined($AnomalySituation)) && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7))))
2 : ((true && defined($AnomalySituation)) && default_false($AlertSeverity IN union(union(8, 9, 10), union(5, 6, 7))))
```

3. The filter at the selected will be deleted and the configuration process will continue

Step 4 – Configuration and installation of the SMC2CLOUD service

1. cd to the directory containing **fp-ngfw-exporter-cloud-v1.tar.gz**
2. Decompress the above file with the command **tar -xvzf fp-ngfw-exporter-cloud-v1.tar.gz**
3. There will be a new folder created with the name **fp-ngfw .** cd to **fp-ngfw**
4. Make **install.sh** executable with the command **chmod u+x install.sh**
5. Run **sudo ./install.sh**
6. Fill in the requested details during the configuration step
7. Wait for the installation to complete
8. Run **sudo systemctl status SMC2CLOUD.service** to verify the service has been created and is running properly

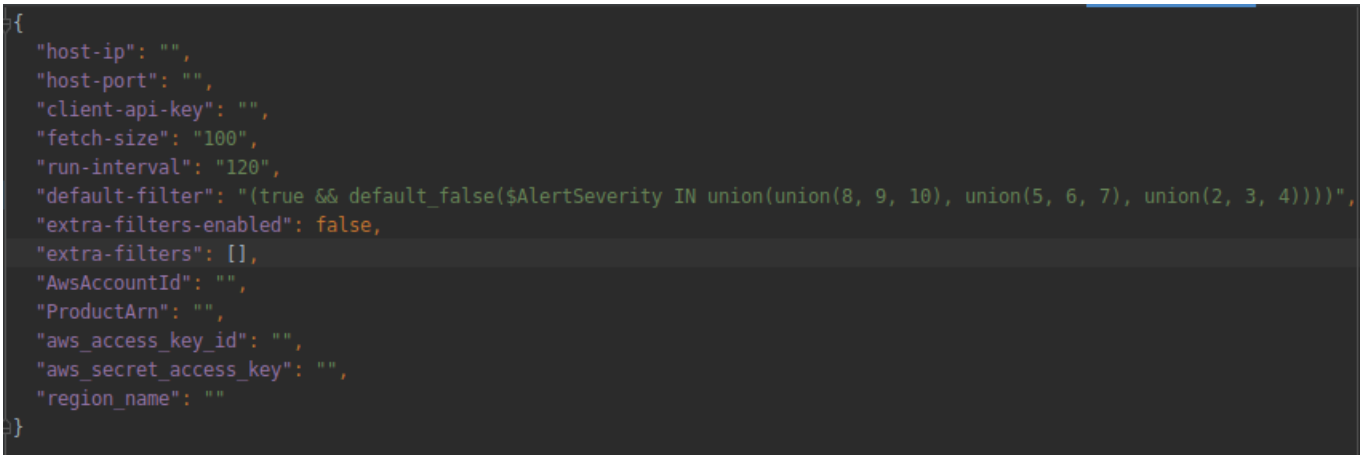
```
● SMC2CLOUD.service - Service to query log events from the NGFW and upload to AWS Security Hub and Azure Sentinel
   Loaded: loaded (/lib/systemd/system/SMC2CLOUD.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2019-12-18 13:59:31 GMT; 5min ago
 Main PID: 13537 (python3.6)
    Tasks: 1 (limit: 4915)
   CGroup: /system.slice/SMC2CLOUD.service
           └─13537 /opt/ngfw_2_cloud/venv/bin/python3.6 /opt/ngfw_2_cloud/ServiceRunner.py
```

Appendix

The following table provides a description of the parameters in the **cfg.json** file that are populated by the installer script upon it first execution:

Parameter	Description	Required
host-ip	IP address of the SMC installation	YES
host-port	Port opened on the SMC for the API client	YES
client-api-key	API key from API client creation	YES
fetch-size	Number of records to retrieve from the SMC logs	YES
run-interval	How often the systemd service will run, fallback is every 900 seconds (15 mins)	NO FALLBACK
default-filter	Default log filter exported from the SMC	YES
extra-filters-enabled	True/False, dependent on customer config	YES
extra-filters	Array of additional filters added as well as the default filter	NO
AwsAccountId	Customer's AWS account ID	YES
aws_access_key_id	Identifier for the AWS access key	YES
aws_secret_access_key	Secret key for the AWS user	YES
region_name	AWS region name chosen for the integration with Security Hub	YES

The file will be created and populated by the installer script.



Troubleshooting

Follow these steps to identify issues impacting the normal operation of the integration described in this document.

Validate the prerequisites

Make sure the prerequisites described in the Summary chapter are all satisfied:

- Check the versions of Forcepoint NGFW and SMC in use are listed as compatible:

  Forcepoint NGFW 6.5.2
  Forcepoint NGFW Security Management Center (SMC) 6.6.0

- Verify the integration component correctly operates on a clean Ubuntu 18.04 machine with at least 1 GB RAM, 1vCPU and 250 MB of free storage for the integration
- User must be root to run the installer.sh
- Check the user can download the files necessary to install SMC2cloud service: execute the following command

  wget --content-disposition https://frcpnt.com/ngfw-sentinel-latest

Check network connectivity

Make sure firewalls or other security appliances are not impacting the network connectivity necessary for the operation of all components involved into this integration:

- Check the host machine has network connectivity to NGFW-SMC: execute the following command

  ping -c 5 <smc-ip-here>

  and check the ping is successful

- Check the host machine also has network connectivity to AWS: execute the following command

  ping -c 5 <aws-ip-here>

  and check the ping is successful

Check dependencies are installed

Make sure the software dependencies needed by the components involved into this integration are installed:

- Check the python versions installed on the host Ubuntu machine with the following commands:

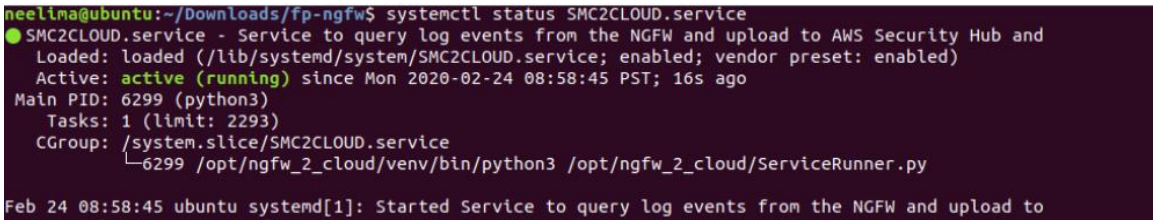
  python --version
  python3 –version

and check the result has both python 2.x and python 3 versions on the host Ubuntu machine

- Check **SMC2CLOUD.service** is installed: execute the following command on the Ubuntu machine

  systemctl status SMC2CLOUD.service

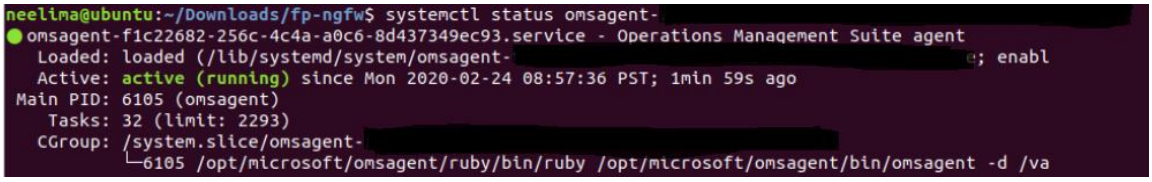
  and check the result is similar to below:



- Check **omsagent** service is installed: execute the following command on the Ubuntu machine (user can use tab to autofill the full name for omsgent servcie)

  systemctl status <omsagent-here>

  and check the result is similar to below:



- If **omsagent** service is not running (or has loaded status): execute the following command:

  journalctl -r

  to see where the install is failing. If you see any error messages with “Connection Refused” or “dpkg”, that could have something to do with the software updates on the Ubuntu machine. Restart the host machine and see if you see any software upgrade request. If you do, please install all the updates.

  Once the problem is identified and rectified, it will be necessary to stop and delete the SMC2CLOUD.service with the following commands:

  systemctl stop SMC2CLOUD.service
  systemctl disable SMC2CLOUD.service
  sudo rm /etc/systemd/system/ SMC2CLOUD.service
  sudo rm /lib/systemd/system/omsagent

and check that the service is stopped with the command:

systemctl status SMC2CLOUD.service

- The user can also make changes to the **cfg.json** file in the **fp-ngfw** folder if the input for any of the configuration parameters is wrong and then restart the service with the below command:

  systemctl restart SMC2CLOUD.service

  Check status of the SMC2CLOUD service with the below command:

  systemctl status SMC2CLOUD.service

  If the above service is running, you should start seeing logs in AWS Security Hub shortly.