# AUGMENTING THE ONION

## FACILITATING ENHANCED DETECTION AND RESPONSE WITH OPEN SOURCE TOOLS

Wes Lambert

Defcon 27 Packet Hacking Village, 2019

# ME, MYSELF, AND ONION

- Husband and father of four
  - Co-manager of household operations
- Coffee, Indian food, and FOSS lover
- Senior Engineer, Security Onion Solutions

# INTRODUCTION


- Shift from pure prevention to include detection and response.
- Bad guys WILL get in at some point!
- Even the next-nextest-generation firewall won't save you.

# S/PREVENTION/DETECTION/

- When the bad guys get in, we need some way to find them.
- We need to have a way to retrieve data about our network.
- We need data that is easily digestible.
- We need data that provides context around an event.
- We need to build upon NSM and implement enterprise-wide security monitoring.

# THE (SECURITY) ONION

Open source enterprise security monitoring and log management platform

- **Alert Data** (IDS Alerts) – Snort /Suricata
- **Session Data** (Connections) – Bro
- **Transaction Data** (DNS/FTP/HTTP) - Bro
- **Extracted Content** Data (Files) - Bro
- **Full Content Data** (PCAP) – netsniff-ng
- **Host Data** (Wazuh, Beats, Symon, Autoruns)
- **Alerting** (Email, Slack, Scripts) - Elastalert
- **Data Enrichment and Visualization** (Elastic Stack)

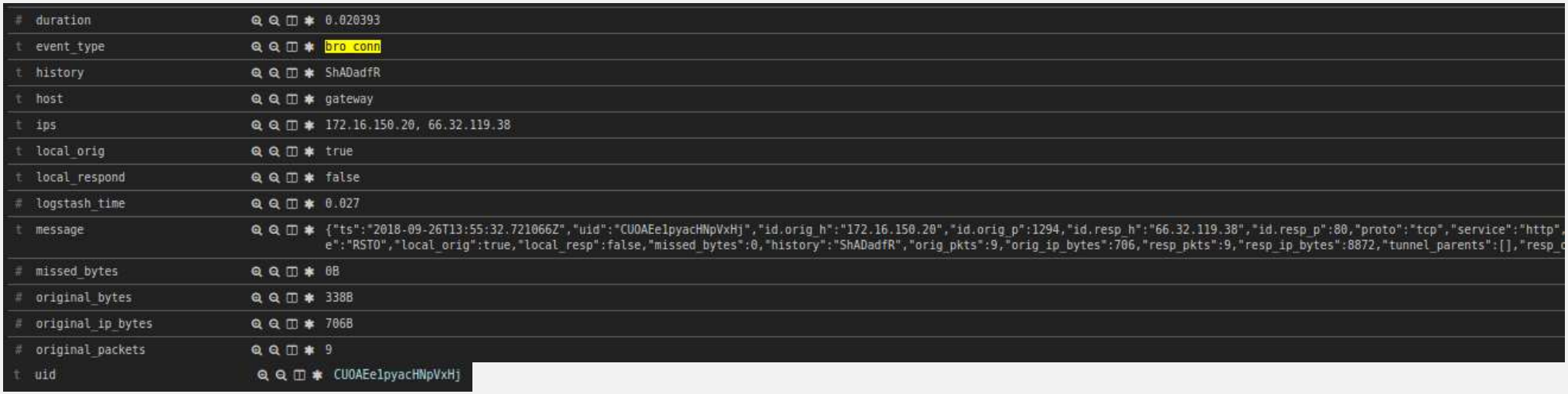
https://securityonion.net

# SECURITY ONION – ALERT DATA

| ST | CNT | Sensor | Alert ID | Date/Time | Src IP | SPort | Dst IP | DPort | Pr | Event Message |
|---|---|---|---|---|---|---|---|---|---|---|
| RT | 1 | so-demo-... | 3.15 | 2012-04-28 02:00:59 | 172.16.150.20 | 1294 | 66.32.119.38 | 80 | 6 | ET INFO Executable Download from dotted-quad Host |
| RT | 1 | so-demo-... | 3.16 | 2012-04-28 02:00:59 | 172.16.150.20 | 1294 | 66.32.119.38 | 80 | 6 | ET POLICY SUSPICIOUS *.doc.exe in HTTP URL |
| RT | 6 | so-demo-... | 3.17 | 2012-04-28 02:00:59 | 66.32.119.38 | 80 | 172.16.150.20 | 1294 | 6 | ET INFO SUSPICIOUS Dotted Quad Host MZ Response |
| RT | 6 | so-demo-... | 3.23 | 2012-04-28 02:00:59 | 66.32.119.38 | 80 | 172.16.150.20 | 1294 | 6 | ET POLICY PE EXE or DLL Windows file download HTTP |

- Generated by matching a pre-defined signature that says this is something of which to be aware.
- Tells us something may have happened – further investigation required to determine if something of significance.

# SECURITY ONION – SESSION DATA



| | | |
|---|---|---|
| # | duration | 0.020393 |
| t | event_type | bro_conn |
| t | history | ShADadfR |
| t | host | gateway |
| t | ips | 172.16.150.20, 66.32.119.38 |
| t | local_orig | true |
| t | local_respond | false |
| # | logstash_time | 0.027 |
| t | message | {"ts":"2018-09-26T13:55:32.721066Z","uid":"CUOAEe1pyacHNpVxHj","id.orig_h":"172.16.150.20","id.orig_p":1294,"id.resp_h":"66.32.119.38","id.resp_p":80,"proto":"tcp","service":"http", e":"RSTO","local_orig":true,"local_resp":false,"missed_bytes":0,"history":"ShADadfR","orig_pkts":9,"orig_ip_bytes":706,"resp_pkts":9,"resp_ip_bytes":8872,"tunnel_parents":[],"resp_ |
| # | missed_bytes | 0B |
| # | original_bytes | 338B |
| # | original_ip_bytes | 706B |
| # | original_packets | 9 |
| t | uid | CUOAEe1pyacHNpVxHj |

- Summary data, similar to Netflow
- Can identify type of traffic (ex. FTP, HTTP, DNS, etc.)
- Can be used to correlate other activity through the UID

# SECURITY ONION – TRANSACTION DATA

| | | |
|---|---|---|
| t | event_type | bro_http |
| t | ips | 172.16.150.20, 66.32.119.38 |
| # | logstash_time | 0.082 |
| t | message | {"ts":"2018-09-26T13:55:32.721499Z","uid":"CUOAEelpyacHNpVxHj","id.orig_h":"172.16.150.20","id.orig_p":1294,"id.resp_h":"66.32.119.38","id.resp_p":80,"trans_depth":1,"method":"GET", g-mechanics.doc.exe","version":"1.1","user_agent":"Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)","request_body_len":0,"response_body_len":8192,"status_code":200,"status_m types":["application/x-dosexec"]} |
| t | method | GET |
| # | port | 44086 |
| # | request_body_length | 0 |
| t | resp_fuids | FQhD1QkAbglllACSi |
| t | resp_mime_types | application/x-dosexec |
| t | uid | CUOAEelpyacHNpVxHj |
| t | uri | /tigers/BrandonInge/Diagnostics/swing-mechanics.doc.exe |
| # | uri_length | 55 |
| t | useragent | Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1) |

- Describes transactions between two hosts
- In this case, HTTP traffic
- Can tie to a unique FUID (File ID) found in files.log

# SECURITY ONION – EXTRACTED CONTENT

| | | |
|---|---|---|
| t | _type | doc |
| t | analyzer | PE, EXTRACT, SHA1, MD5 |
| # | depth | 0 |
| 💻 | destination_ip | 172.16.150.20 |
| t | destination_ips | 172.16.150.20 |
| # | duration | 0.005689 |
| t | event_type | bro_files |
| t | extracted | /nsm/bro/extracted/HTTP-FQhD1QkAbglllACSi.exe |
| ◑ | extracted_cutoff | false |
| 💻 | file_ip | 66.32.119.38 |
| t | fuid | FQhD1QkAbglllACSi |
| t | host | gateway |
| t | ips | 172.16.150.20 |
| t | is_orig | false |
| t | local_orig | false |
| # | logstash_time | 0.082 |
| t | md5 | e2c33fa7a3802289d46a7c3e4e1df342 |
| t | message | {"ts":"2018-09-26T13:55:32.722724Z","fuid":"FQhD1QkAbglllACSi","tx_hosts":["66.32.119.38"],"rx_hosts":["172.16.150.20"]<br>["PE","EXTRACT","SHA1","MD5"],"mime_type":"application/x-dosexec","duration":0.005689,"local_orig":false,"is_orig":fals<br>0,"timedout":false,"md5":"e2c33fa7a3802289d46a7c3e4e1df342","sha1":"d8fd563fbbdea43c78841ccca49e8c5a3fe47cbc","extracte<br>e} |
| t | mimetype | application/x-dosexec |

- EXEs, etc. extracted from network traffic for future analysis
- Send to Cuckoo Sandbox, FSF (File Scanning Framework), or Strelka
- Be cautious about types of files to extract (performance-wise)

# SECURITY ONION – FULL CONTENT

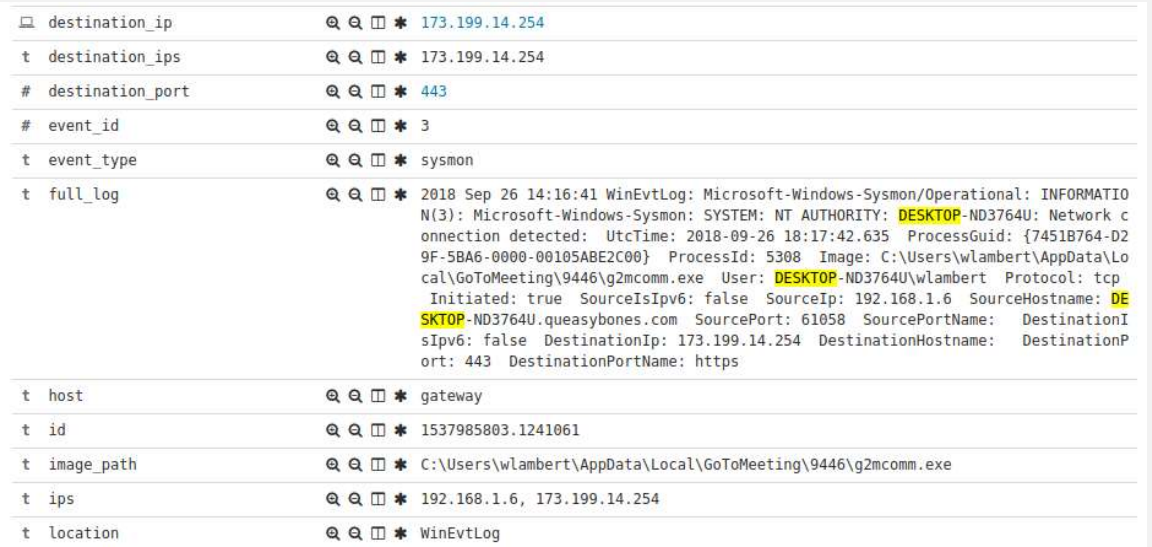
```
Sensor Name: so-demo-ens34-1
Timestamp: 2012-04-28 02:00:59
Connection ID: .so-demo-ens34-1_15
Src IP:          172.16.150.20
Dst IP:          66.32.119.38
Src Port:        1294
Dst Port:        80
OS Fingerprint: 172.16.150.20:1294 - Windows 2000 SP2+, XP SP1+ (seldom 98)
OS Fingerprint:   -> 66.32.119.38:80 (distance 0, link: ethernet/modem)

SRC: GET /tigers/BrandonInge/Diagnostics/swing-mechanics.doc.exe HTTP/1.1
SRC: Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, application/x-shockwave-flash, */*
SRC: Accept-Language: en-us
SRC: Accept-Encoding: gzip, deflate
SRC: User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)
SRC: Host: 66.32.119.38
SRC: Connection: Keep-Alive
SRC:
SRC:
DST: HTTP/1.1 200 OK
DST: Date: Fri, 27 Apr 2012 17:40:31 GMT
DST: Server: Apache/2.2.16 (Ubuntu)
DST: Last-Modified: Sat, 14 Apr 2012 09:34:10 GMT
DST: ETag: "42d3b-2000-4bda04a8ed053"
DST: Accept-Ranges: bytes
DST: Content-Length: 8192
DST: Keep-Alive: timeout=15, max=100
DST: Connection: Keep-Alive
DST: Content-Type: application/x-msdos-program
DST:
DST: MZ.....@.....!..L.!This program cannot be run in DOS mode.
DST:
DST: $.....n...n...n..wq...n...N...n..Rich.n.....PE..L.....G.....@..... .....<.....
..`.data...-.....@.....L.....@...j.....%..@.D.....Z.....L.....ExitProcess.kernel32.dll.
.....U...0...`3.....t....3...@...D.....n
```

- Start with alert/session/transaction data and drill-down for more context.
- Observe the entire stream of communication with generated transcripts.
- Manually carve objects out of the transcript or using something like NetworkMiner or Wireshark (against pcap) using a Security Onion analyst VM.

# SECURITY ONION – HOST DATA

- **Wazuh** – Host-based FIM (File Integrity Monitoring), Log transport
- **Winlogbeat** – Windows Logs
- **Filebeat** – Web server logs (ISS, Apache, Nginx), Application Logs
- **Sysmon** (via Wazuh/WLB)
- **Autoruns** (via Wazuh/WLB)
- **OSQuery** (not native at the moment)



| | | |
|---|---|---|
| destination_ip | | 173.199.14.254 |
| t | destination_ips | 173.199.14.254 |
| # | destination_port | 443 |
| # | event_id | 3 |
| t | event_type | sysmon |
| t | full_log | 2018 Sep 26 14:16:41 WinEvtLog: Microsoft-Windows-Sysmon/Operational: INFORMATION(3): Microsoft-Windows-Sysmon: SYSTEM: NT AUTHORITY: DESKTOP-ND3764U: Network connection detected: UtcTime: 2018-09-26 18:17:42.635 ProcessGuid: {7451B764-D29F-5BA6-0000-00105ABE2C00} ProcessId: 5308 Image: C:\Users\wlambert\AppData\Local\GoToMeeting\9446\g2mcomm.exe User: DESKTOP-ND3764U\wlambert Protocol: tcp Initiated: true SourceIsIpv6: false SourceIp: 192.168.1.6 SourceHostname: DESKTOP-ND3764U.queasybones.com SourcePort: 61058 SourcePortName: DestinationIsIpv6: false DestinationIp: 173.199.14.254 DestinationHostname: DestinationPort: 443 DestinationPortName: https |
| t | host | gateway |
| t | id | 1537985803.1241061 |
| t | image_path | C:\Users\wlambert\AppData\Local\GoToMeeting\9446\g2mcomm.exe |
| t | ips | 192.168.1.6, 173.199.14.254 |
| t | location | WinEvtLog |

# SECURITY ONION - ALERTING

```
# From example_rules/example_frequency.yaml
es_host: elasticsearch
es_port: 9200
name: Security Onion ElastAlert - New IDS Event!
type: frequency
index: "*:logstash-ids*"
num_events: 1
timeframe:
    minutes: 1
filter:
- term:
    event_type: "snort"

# Only count number of records, instead of bringing all data back
use_count_query: true
doc_type: 'doc'

alert:
- "debug"
```

- Provides mechanism to extend information gathered to another platform for notification or analysis
- Email
- Elastalert – create a rule to trigger
  - Email
  - Slack
  - JIRA
  - Python script(s)

# SECURITY ONION – SIGMA ALERTING

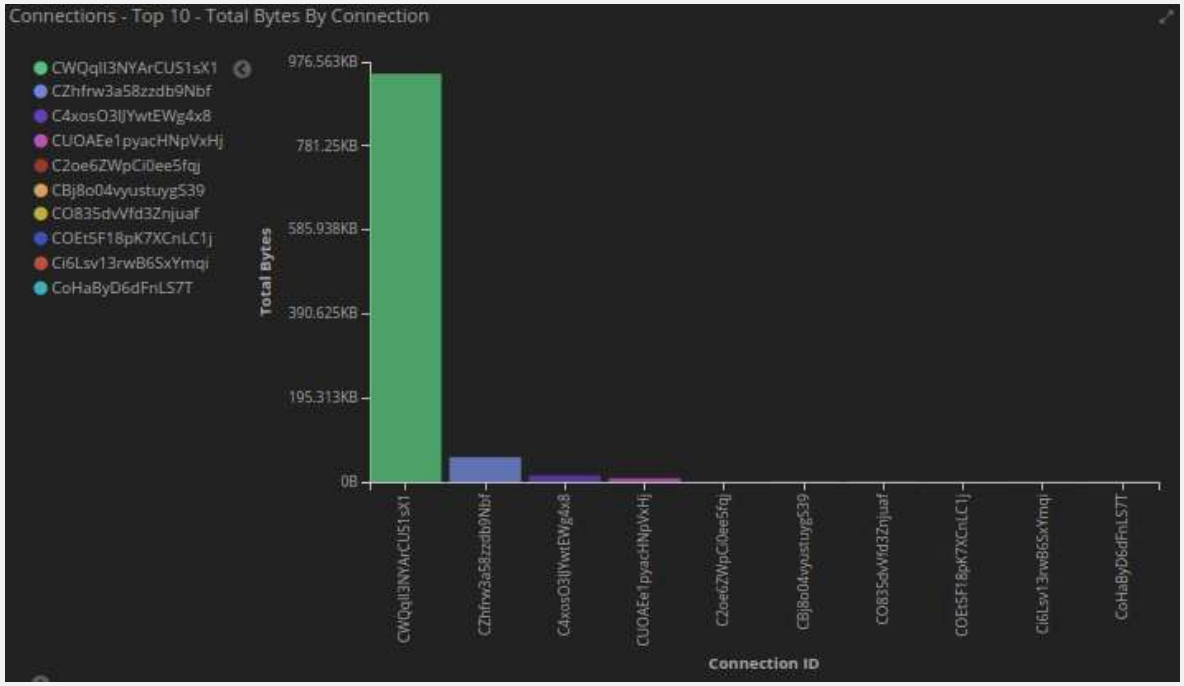
- Use sigmac.py to convert standard Sigma rules to a format Security Onion understands
- Implement Sigma rules via Elastalert
- Could also add in MITRE ATT&CK Techniques/IDs

```
alert:
- debug
description: Detects suspicious DNS queries known from Cobalt Strike beacons
filter:
- query:
    query_string:
      query: query.keyword:(aaa.stage.* post.1*)
index: logstash-bro-*
name: Cobalt-Strike-DNS-Beaconing_0
priority: 2
realert:
  minutes: 0
type: any
```

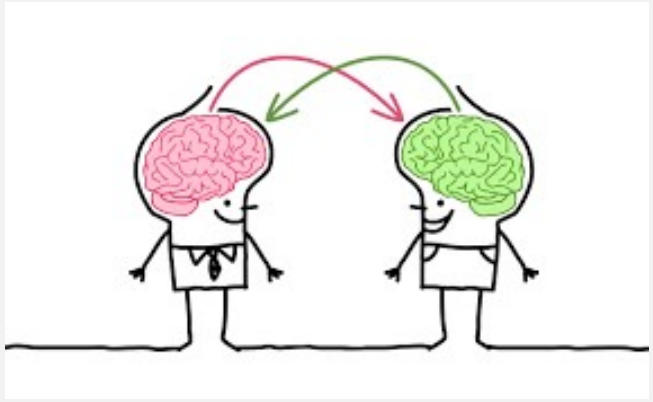
https://github.com/weslambert/securityonion-sigma

# SECURITY ONION – ENRICHMENT AND VISUALIZATION

- Enrich records with GeoIP and other plugins info in Logstash pipeline
- Create custom enrichment aligning with corporate IT inventory or data
- Visualize data and correlations in Kibana
- Get to answers faster



# MISP



- Platform for sharing threat intel
- Provides correlation of IOCs/events
- Ability to import/export various types of data w/ a feature-rich API (integrations galore!)

https://misp-project.org/

# MISP - EVENT

## ZeuS IP blocklist (Standard) feed

| | |
|---|---|
| Event ID | 4 |
| Uuid | 5b8fefcd-3844-46e9-b86b-6652f63d180b |
| Org | ORGNAME |
| Owner org | ORGNAME |
| Contributors | |
| Email | admin@admin.test |
| Tags | osint:source-type="block-or-filter-list" x + |
| Date | 2018-09-05 |
| Threat Level | Undefined |
| Analysis | Completed |
| Distribution | Your organisation only |
| Info | ZeuS IP blocklist (Standard) feed |
| Published | Yes |
| #Attributes | 109 |
| Last change | 2018/09/05 05:01:33 |
| Extends | |
| Extended by | |
| Sightings | 0 (0) - restricted to own organisation only. |
| Activity | |

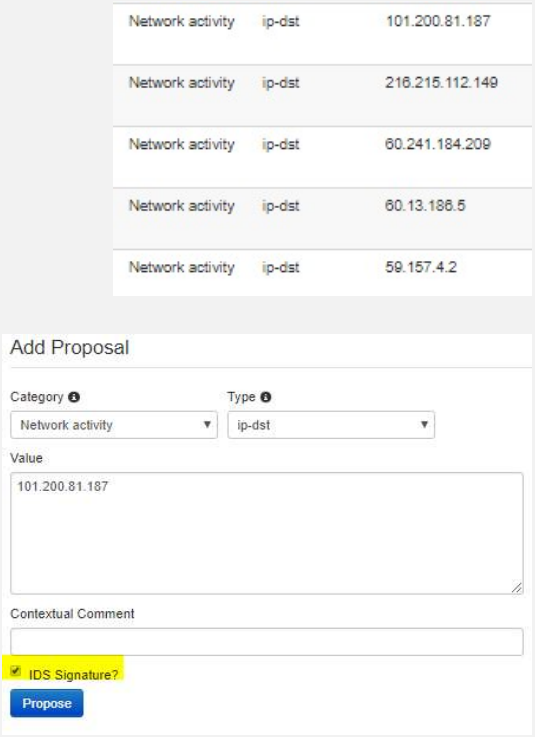
| | | |
|---|---|---|
| Network activity | ip-dst | 101.200.81.187 |
| Network activity | ip-dst | 216.215.112.149 |
| Network activity | ip-dst | 60.241.184.209 |
| Network activity | ip-dst | 60.13.186.5 |
| Network activity | ip-dst | 59.157.4.2 |

Typically Contains:

- Owner/Org
- Email
- Date
- Tags
- Info
- Threat Level
- Analysis Status
- Attributes
- Publish Status
- Sightings

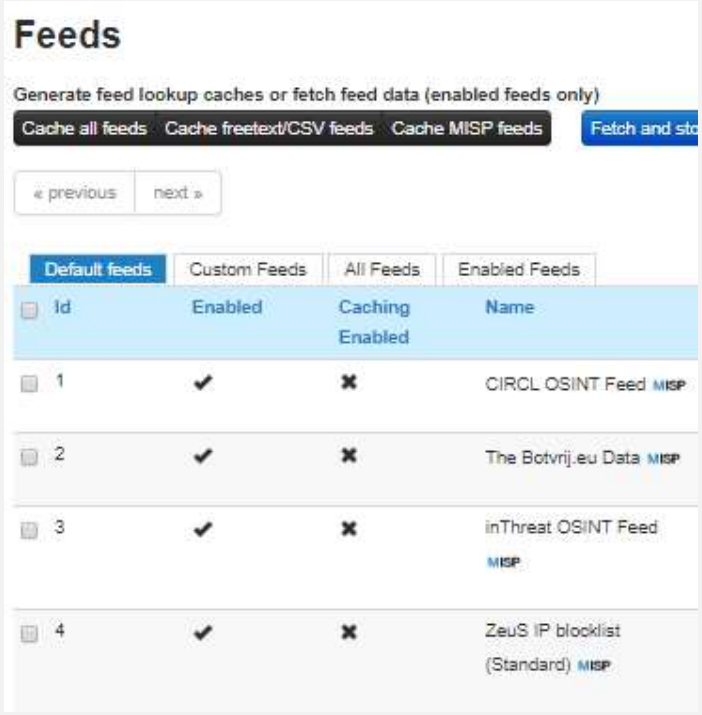
# MISP - ATTRIBUTES

- An event can contain several, if not, many attributes (and of different types).
- Correlation can be performed among events and their attributes.
- Can be a source/destination IP address, hash, registry key, filename, etc.



# MISP - FEEDS

- HUGE list of default feeds available, including:
  - ZeuS IP blocklist (Standard)
  - Malwaredomainlist
  - Phishtank
- Integrate custom feeds
- Utilize feed attributes in IDS signatures



# MISP - SIGNATURES

## Export

Export functionality is designed to automat
MD5/SHA1 values of file artifacts. Support

Simply click on any of the following button

| Type | Last Update | |
|---|---|---|
| JSON | N/A | |
| XML | N/A | |
| CSV_Sig | N/A | |
| CSV_All | N/A | |
| Suricata | 18 seconds ago | |
| Snort | N/A | |
| Bro | 1 second ago | |
| STIX | N/A | |

- Export IDS signatures generated by attributes from feeds or your own added attributes and use them with Snort or Suricata
- Export Bro Intel data to feed in to the Bro Intel Framework

**Zeus Blocklist**:

alert ip $HOME_NET any-> 101.200.81.187 any (msg: "MISP e4 [] Outgoing To IP: 101.200.81.187"; classtype:trojan-activity; sid:4000041; rev:1; priority:4; reference:url,/events/view/4;)

# MISP - API

- PyMISP (client)
- Automation
  - NIDS Export (Snort/Suricata + Bro)
  - Elasticsearch enrichment
  - Add sightings
  - Manage users
  - Get/search/delete event data

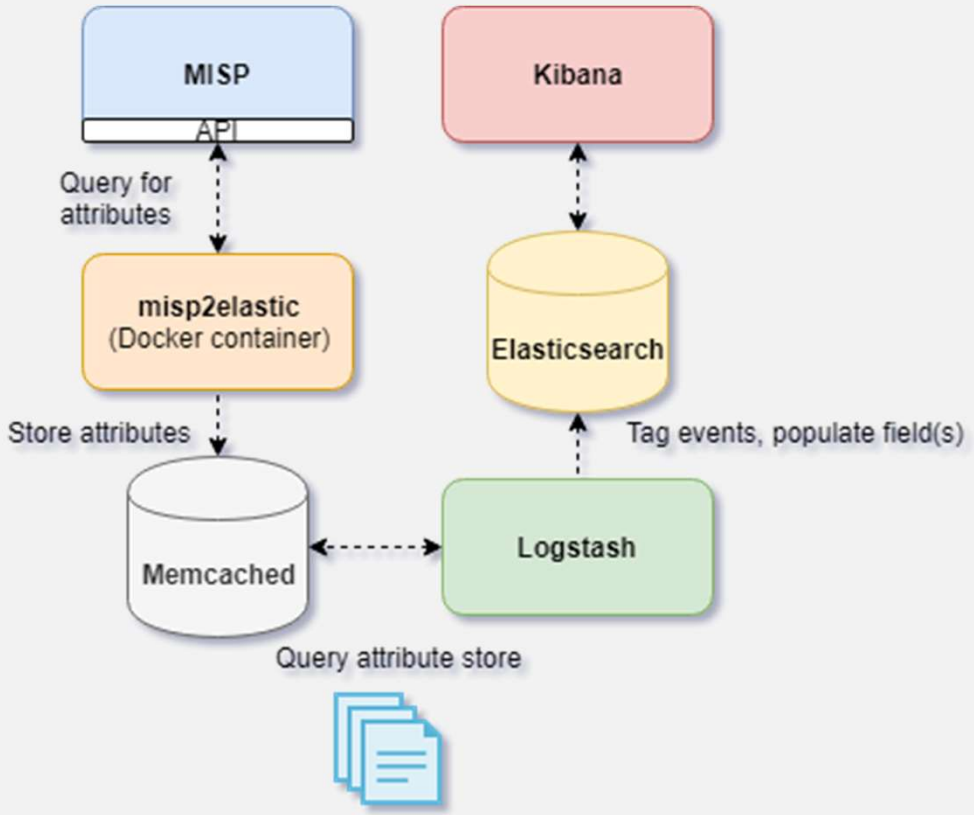
# MISP – ELASTICSEARCH ENRICHMENT

- Dockerized method to interact with MISP API to look for attribute matches
- Utilize local Memcached instance (Docker) for caching
- Have Logstash perform lookup in Memcached
- Populate log events with correlated threat data
- Shout-out to @DCSecuritydk for the idea/original implementation!

https://www.securitydistractions.com/2019/05/17/enriching-elasticsearch-with-threat-data-part-1-misp/

https://github.com/weslambert/misp2elastic

# MISP – ELASTICSEARCH ENRICHMENT: FLOW

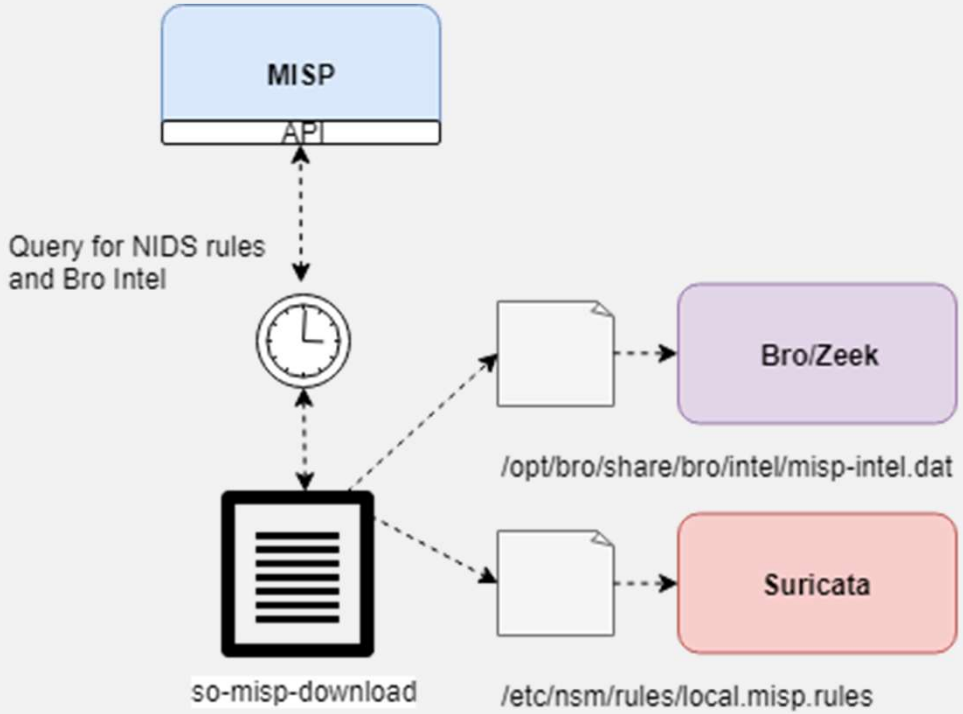


# MISP – NIDS RULES/BRO INTEL

- Interact with MISP export API to export Snort/Suricata rules and/or Bro intel
- Add Snort/Suricata rules to Security Onion's local rules (misp.rules)
- Populate Bro's intel.dat with intel from MISP

https://securityonion.readthedocs.io/en/latest/misp.html?#nids-rules

# MISP – NIDS RULES/BRO INTEL: FLOW

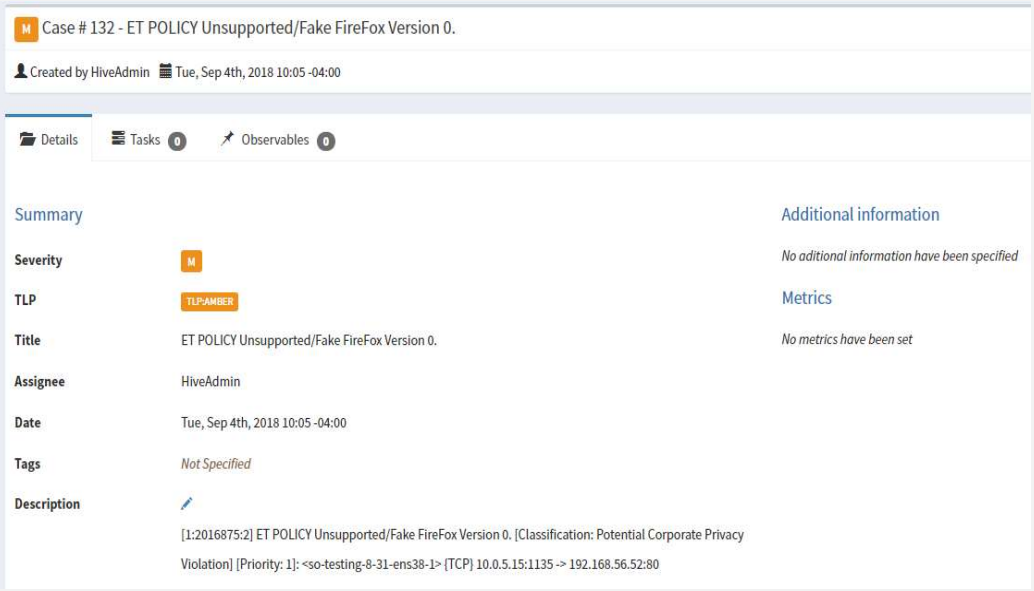


# THE HIVE


- Security Incident Response Platform
- Used for tracking incidents and enriching cases with external data
- Integrates well with MISP
- API

# THE HIVE - CASES

- A declaration of investigation or something out of the ordinary
- Typically populated with information to include one or more observables
- Can assign tags or other additional information

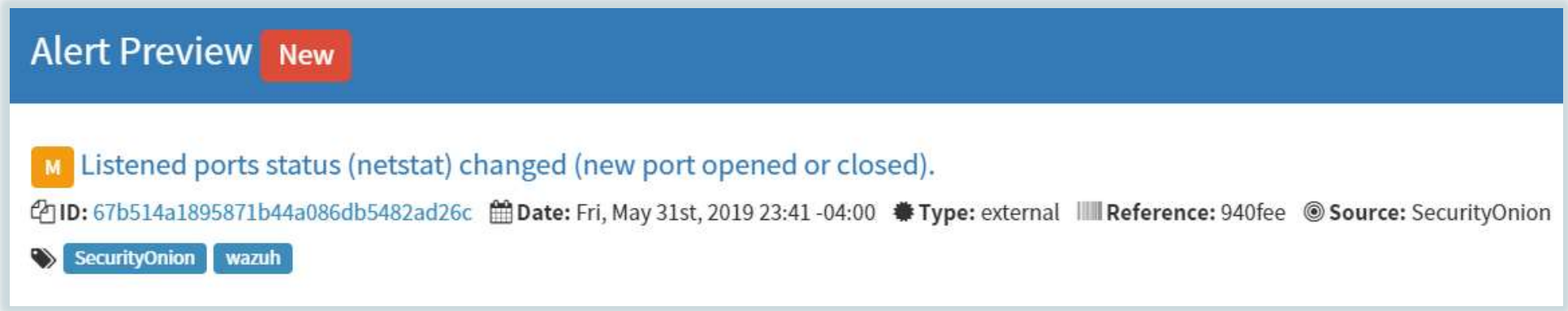


# THEHIVE – CASE TEMPLATES


- Case templates allow us to define initial steps in an investigation
- Saves time
- Allows new (and even seasoned analysts) to quickly get started on investigation/remediation tasks

# THEHIVE - ALERTS

- Can be generated from a noteworthy event (from external source)
- Offers a general overview of a potential threat/incident
- Can be merged into case if further investigation is needed/warranted, or can be discarded if necessary

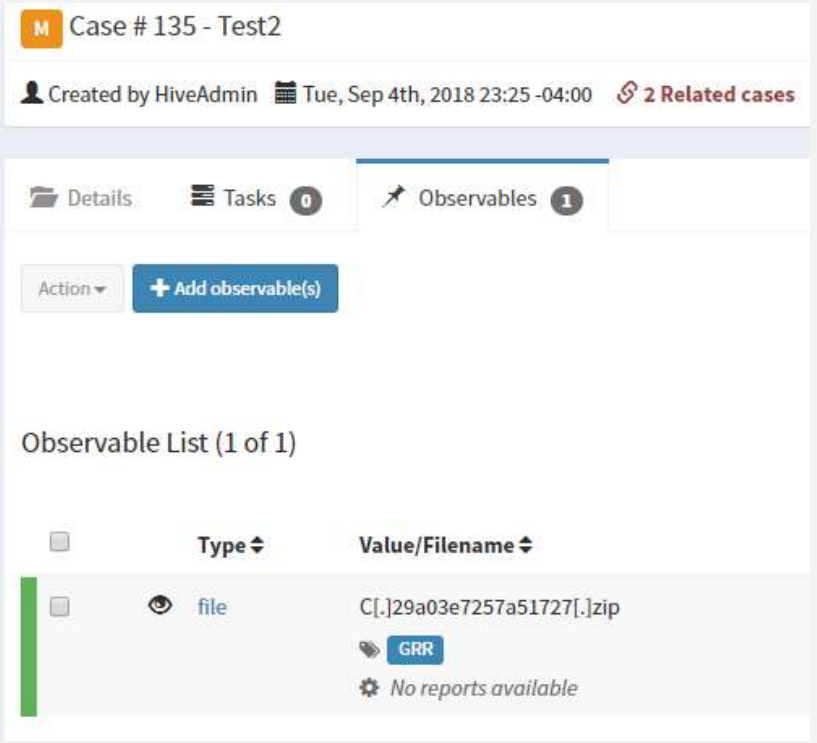


# THE HIVE - OBSERVABLES

- Piece(s) of information attached to an event that can potentially be analyzed by one of the available

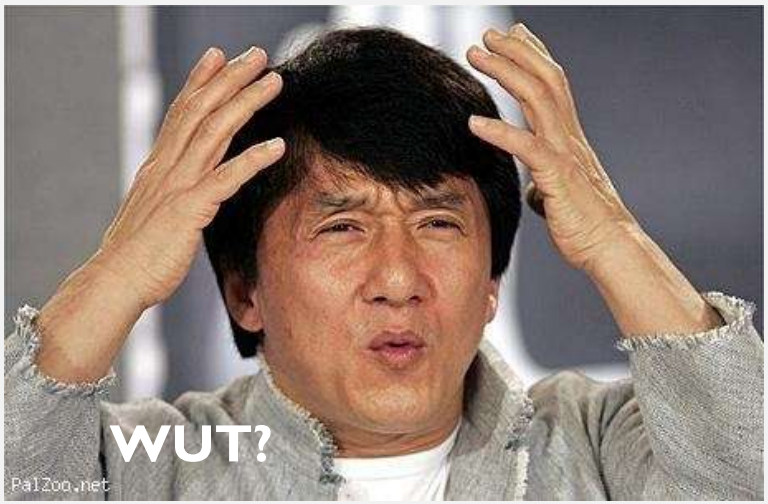
analyzers to gain greater context.

  - Can be a :
    - File
    - Domain
    - IP
    - Hash
    - or something else

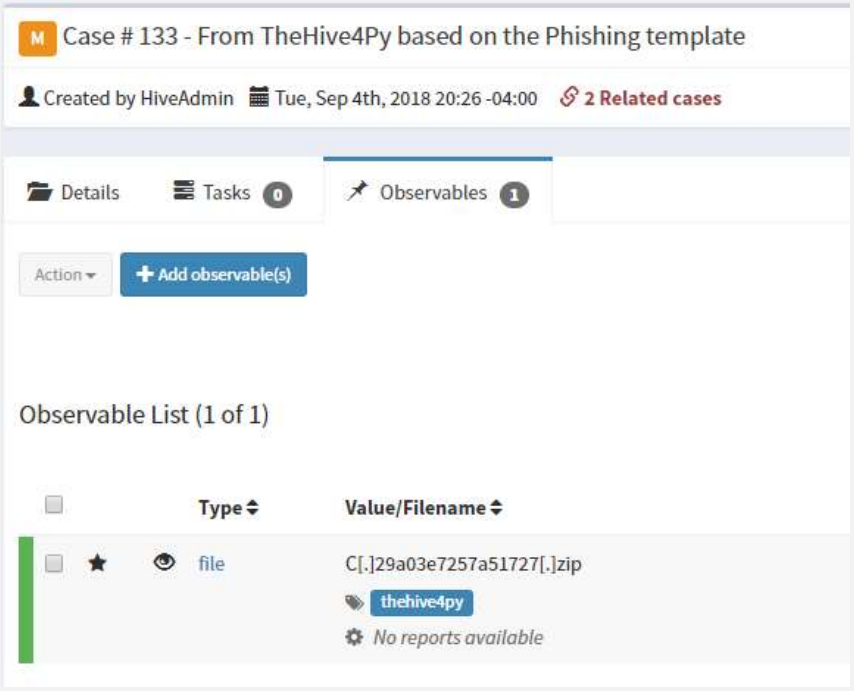


# THE HIVE - ANALYZERS

- Enrich case observables with external data sources
- Analyzers include:
  - Cuckoo (file, URL analysis)
  - Dshield (reputation)
  - EmergingThreats (reputation, malware, etc.)
  - Greynoise (look for scanning activity)
  - Joe Sandbox (file analysis)
  - MISP (query MISP instances)
  - Nessus (scan hosts)
  - and many more!



# THE HIVE - API




- The Hive4Py or custom Python client
  - Create a case
  - Attach observables to a case
  - Attach a task to a case
  - Raise an alert

# THEHIVE - ELASTALERT

```
filter:
- term:
    event_type: "snort"

alert: hivealerter

hive_connection:
  hive_host: http(s)://YOUR_HIVE_INSTANCE
  hive_port: YOUR_HIVE_INSTANCE_PORT
  hive_apikey: APIKEY

hive_proxies:
  http: ''
  https: ''

hive_alert_config:
  title: '{rule[name]} -- {match[alert]}'
  type: 'external'
  source: 'SecurityOnion'
  description: '{match[message]}'
  severity: 2
  tags: ['elastalert, SecurityOnion']
  tlp: 3
  status: 'New'
  follow: True

hive_observable_data_mapping:
  - ip: '{match[source_ip]}'
  - ip: '{match[destination_ip]}'
```

- Automatically send certain types of events to TheHive as alerts
- Define observables to attach
- For more functionality, integrate with custom Python scripting to perform other actions

https://securityonion.readthedocs.io/en/latest/hive.html

# THEHIVE - SOCTOPUS

| | | |
|---|---|---|
| t | TheHive | https://192.168.119.145/soctopus/thehive/alert/ZRLUEGsBk4-MNCkplD11 |
| t | _id | ZRLUEGsBk4-MNCkplD11 |
| t | _index | so-demo:logstash-ossec-2019.06.01 |

| Reference | Type | Status | Title | Source | Severity |
|---|---|---|---|---|---|
| 1b477c | external | New | PAM: Login session opened.<br>SecurityOnion wazuh | SecurityOnion | M |

- Simple Flask API running in a Docker container that allows analysts to automate certain tasks
- For example, click a link from Kibana to forward an event to TheHive as an alert

https://github.com/weslambert/SOCtopus

# GOOGLE GRR


- Remote live forensics
- Quickly triage incidents and perform analysis remotely across many different hosts
- API for easy integration

https://github.com/google/grr

# GRR - CLIENTS

| Online | Subject | Host | OS Version | MAC | Usernames | First Seen | Client version | Labels | Last Checkin | OS Install Date |
|---|---|---|---|---|---|---|---|---|---|---|
| | C.29a03e7257a51727 | vms-mac-pro.local | 10.11.6 | 00:50:56:c0:00:01<br>00:50:56:c0:00:08<br>00:1f:5b:33:e2:e0<br>00:1f:5b:33:e2:e1<br>00:1f:f3:ff:fe:23:98:0c | vmserver | 2018-08-20 21:31:39 UTC | 3232 | | 2018-09-27 18:18:11 UTC | 2018-08-02 18:47:50 UTC |

**OS**
Darwin , OSX 10.11.6

**Last Local Clock**
2018-09-27 18:18:11 UTC

**GRR Client Version**
3232

**Architecture**
x86_64

**Kernel**
15.6.0

**Memory Size**
28GiB

**Labels**
No labels assigned.

**Users**
(vmserver)

Timestamps

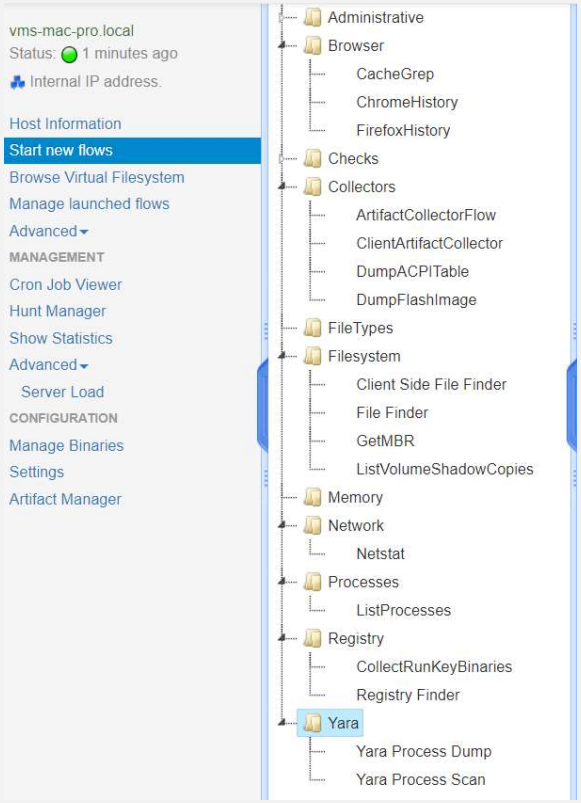
| | | |
|---|---|---|
| **Installation time** | 2018-08-02 18:47:50 UTC | 55 days ago |
| **First seen** | 2018-08-20 21:31:39 UTC | 37 days ago |
| **Last booted** | 2018-08-28 15:49:20 UTC | 30 days ago |
| **Last seen** | 2018-09-27 18:18:11 UTC | 5 minutes ago |

Interfaces

| IF Name | Mac Address | Addresses |
|---|---|---|
| gif0 | | |
| vmnet1 | 00:50:56:c0:00:01 | 192.168.54.01 |
| vmnet8 | 00:50:56:c0:00:08 | 192.168.212.01 |
| en0 | 00:1f:5b:33:e2:e0 | fe80:0000:0000:0000:021f<br>192.168.01.69 |
| en1 | 00:1f:5b:33:e2:e1 | |
| lo0 | | 0000:0000:0000:0000:0000<br>127.00.00.01<br>fe80:0000:0000:0000:0000 |
| stf0 | | |
| fw0 | 00:1f:f3:ff:fe:23:98:0c | |

- Installed on endpoints
- OS / activity info
- Allows for remote data/file retrieval/analysis
- Provides historical info

# GRR - FLOW




- Collect Chrome history
- Look for specific files
- List currently running processes
- List current network connections
- Scan process memory with YARA

# GRR - API

- Python client library available
- Query GRR for client information
- Generate or grant approvals
- Automate the issuance of flows
- Get the results for issued flows

POST /api/clients/**<client_id>**/flows

Start a new flow on a given client.

Parameters

| Parameter |
| --- |
| client_id |
| flow |
| original_flow |

Examples:

/api/clients/C.1000000000000000/flows

*POST body:*

```
{
  "flow": {
    "args": {
      "fetch_binaries": true,
      "filename_regex": "."
    },
    "name": "ListProcesses",
    "runner_args": {
      "notify_to_user": false,
      "priority": "HIGH_PRIORITY"
    }
  }
}
```

# STRELKA

- Real-time file scanning system
- Threat hunting, detection, incident response
- Go and Python 3.6+, gRPC
- Perform file extraction and metadata collection at scale
- Great for pairing with files extracted from sensors, for example extracted files from Bro (/nsm/bro/extracted)

https://github.com/target/strelka

https://cfc-open-source.slack.com/

@jshlbrd

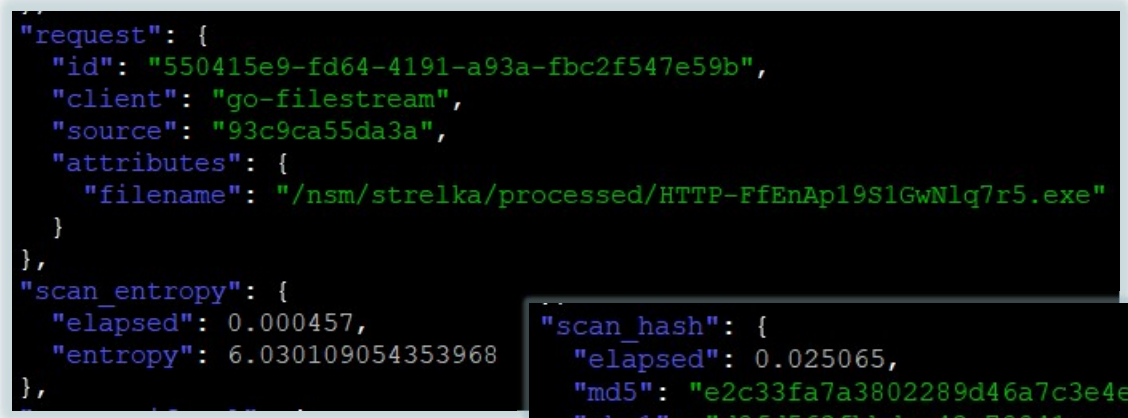
# STRELKA - SCANNERS

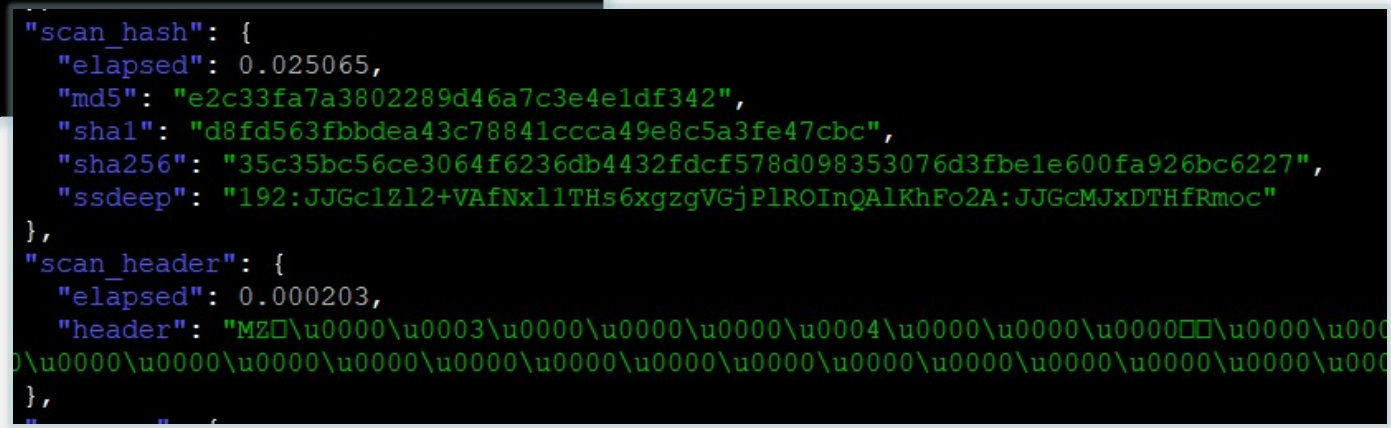
- Scanners are assigned to files based on “flavors” and “tastes”
- Flavors
  - MIME Flavors – libmagic determines which scanners(s) to use
  - YARA flavors – YARA rule matches determine which scanner(s) to use
  - External flavors – assigned by a file request or parent file

# STRELKA – USE CASES

- Extracting nested files
- Identifying malicious scripts
- Identifying suspicious executables
  - Log import functions for Mach-O and MZ files, and segments from ELF files
- Identifying suspicious text
- Interacting with external systems
  - Cuckoo Sandbox
  - MMBot – estimate maliciousness

# STRELKA – SCAN RESULTS



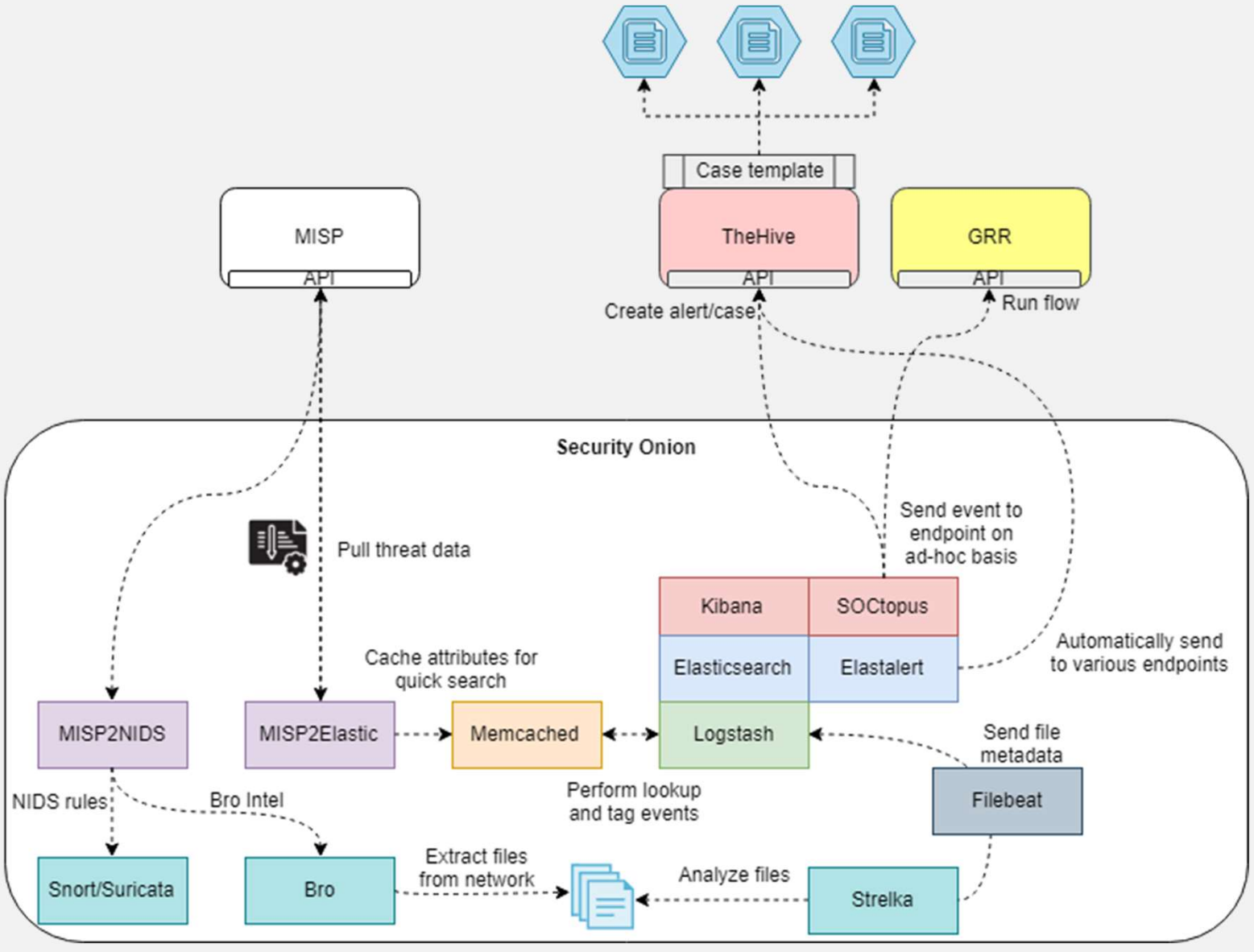

- JSON
- Snake/Camel case
- Built in mgmt./compression

# STRELKA + SECURITY ONION

- Integrate with Security Onion to provide analysis of Bro's extracted files, and greater correlational capability via Kibana
- Correlate with Bro FUID to tie back to original extracted file and see relevant traffic
- Take advantage of aggregations/visualizations to quickly identify anomalies/trends

https://github.com/weslambert/securityonion-strelka

# ALL TOGETHER, NOW


Case template
MISP
API
TheHive
API
GRR
API
Create alert/case
Run flow
Security Onion
Pull threat data
Send event to endpoint on ad-hoc basis
Kibana
SOCtopus
Elasticsearch
Elastalert
Automatically send to various endpoints
Cache attributes for quick search
MISP2NIDS
MISP2Elastic
Memcached
Logstash
Send file metadata
Filebeat
NIDS rules
Bro Intel
Perform lookup and tag events
Snort/Suricata
Bro
Extract files from network
Analyze files
Strelka

# TOOLS

- **ElastAlert -** https://github.com/Yelp/elastalert
- **Fast IR** - https://github.com/certsocietegenerale/FIR
- **FSF -** https://github.com/EmersonElectricCo/fsf
- **Google GRR** - https://github.com/google/grr
- **MISP** - https://misp-project.org/
- **Security Onion** – https://securityonion.net
- **TheHive** - https://thehive-project.org/
- **Security Onion** – https://secruityonion.net
- **Strelka** - https://github.com/target/strelka

# DROP ME A LINE

- **Twitter**:

  @therealwlambert

  @securityonion
- **Github**:

  https://github.com/weslambert