

## Prioritizing Threat Intelligence

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## Prioritizing Threat Intelligence

Not all threat intelligence indicators are equal. Some require immediate response, while others can be addressed as time and availability permits. As a result, you must triage and rank threats by severity.

In HCP, you assign severity by associating possibly complex conditions with numeric scores. Then, for each message, you use a configurable aggregation function to evaluate the set of conditions and to aggregate the set of numbers for matching conditions. This aggregated score is added to the message in the `threat.triage.level` field.

## Understanding Threat Triage Rule Configuration

The goal of threat triage is to prioritize the alerts that pose the greatest threat and need urgent attention. To create a threat triage rule configuration, you must first define your rules.

Each rule has a predicate to determine whether or not the rule applies. The threat score from each applied rule is aggregated into a single threat triage score that is used to prioritize high risk threats.

Following are some examples:

<b>Rule 1</b>	If a threat intelligence enrichment type <code>zeusList</code> is alerted, imagine that you want to receive an alert score of 5.
<b>Rule 2</b>	If the URL ends with neither <code>.com</code> nor <code>.net</code> , then imagine that you want to receive an alert score of 10.
<b>Rule 3</b>	For each message, the triage score is the maximum score across all conditions.

These example rules become the following example configuration:

```
"triageConfig" : {
  "riskLevelRules" : [
    {
      "name" : "zeusList is alerted"
      "comment" : "Threat intelligence enrichment type zeusList is alerted."
      "rule":
        "exists(threatintels.hbaseThreatIntel.domain_without_subdomains.zeusList)"
      "score" : 5
    }
    {
      "name" : "Does not end with .com or .net"
      "comment" : "The URL ends with neither .com nor .net."
      "rule": "not(ENDS_WITH(domain_without_subdomains, '.com') or
        ENDS_WITH(domain_without_subdomains, '.net'))" : 10
      "score" : 10
    }
  ]
  , "aggregator" : "MAX"
  , "aggregationConfig" : { }
}
```

You can use the `'reason'` field to generate a message explaining why a rule fired. One or more rules may fire when triaging a threat. Having detailed, contextual information about the environment when a rule fired can greatly assist actioning the alert. For example:

**Rule 1**

For hostname, the value exceeds threshold of value-threshold, receive an alert score of 10.

This example rule becomes the following example configuration:

```
"triageConfig" : {
  "riskLevelRules" : [
    {
      "name" : "Abnormal Value"
      "comment" : "The value has exceeded the threshold",
      "reason": "FORMAT('For '%s' the value '%d' exceeds threshold of '%d',
hostname, value, value_threshold)"
      "rule": "value > value_threshold",
      "score" : 10
    }
  ],
  "aggregator" : "MAX",
  "aggregationConfig" : { }
}
```

If the value threshold is exceeded, Threat Triage will generate a message similar to the following:

```
"threat.triage.score": 10.0,
"threat.triage.rules.0.name": "Abnormal Value",
"threat.triage.rules.0.comment": "The value has exceeded the threshold",
"threat.triage.rules.0.score": 10.0,
"threat.triage.rules.0.reason": "For '10.0.0.1' the value '101' exceeds
threshold of '42'"
```

where

**riskLevelRules**

This is a list of rules (represented as Stellar expressions) associated with scores with optional names and comments.

<b>name</b>	The name of the threat triage rule.
<b>comment</b>	A comment describing the rule.
<b>reason</b>	An optional Stellar expression that when executed results in a custom message describing why the rule fired.
<b>rule</b>	The rule, represented as a Stellar statement.
<b>score</b>	Associated threat triage score for the rule.

**aggregator**

An aggregation function that takes all non-zero scores representing the matching queries from riskLevelRules and aggregates them into a single score.

You can choose between:

<b>MAX</b>	The maximum of all of the associated values for matching queries.
<b>MIN</b>	The minimum of all of the associated values for matching queries.
<b>MEAN</b>	the mean of all of the associated values for matching queries.
<b>POSITIVE_MEAN</b>	The mean of the positive associated values for the matching queries.

## Perform Threat Triage Using the Management Module

You can triage and rank threats by severity using the Management module.

### Before you begin

Ensure that the enrichment is working properly.

### Procedure

1. On the sensor panel, in the Threat Triage field, click



The screenshot shows a configuration window for a Snort rule. The left pane is titled "snort" and contains the following fields:

- NAME \***: A text input field containing "snort".
- Parser Type \***: A dropdown menu set to "Snort".
- SCHEMA**: A table showing the rule's components:

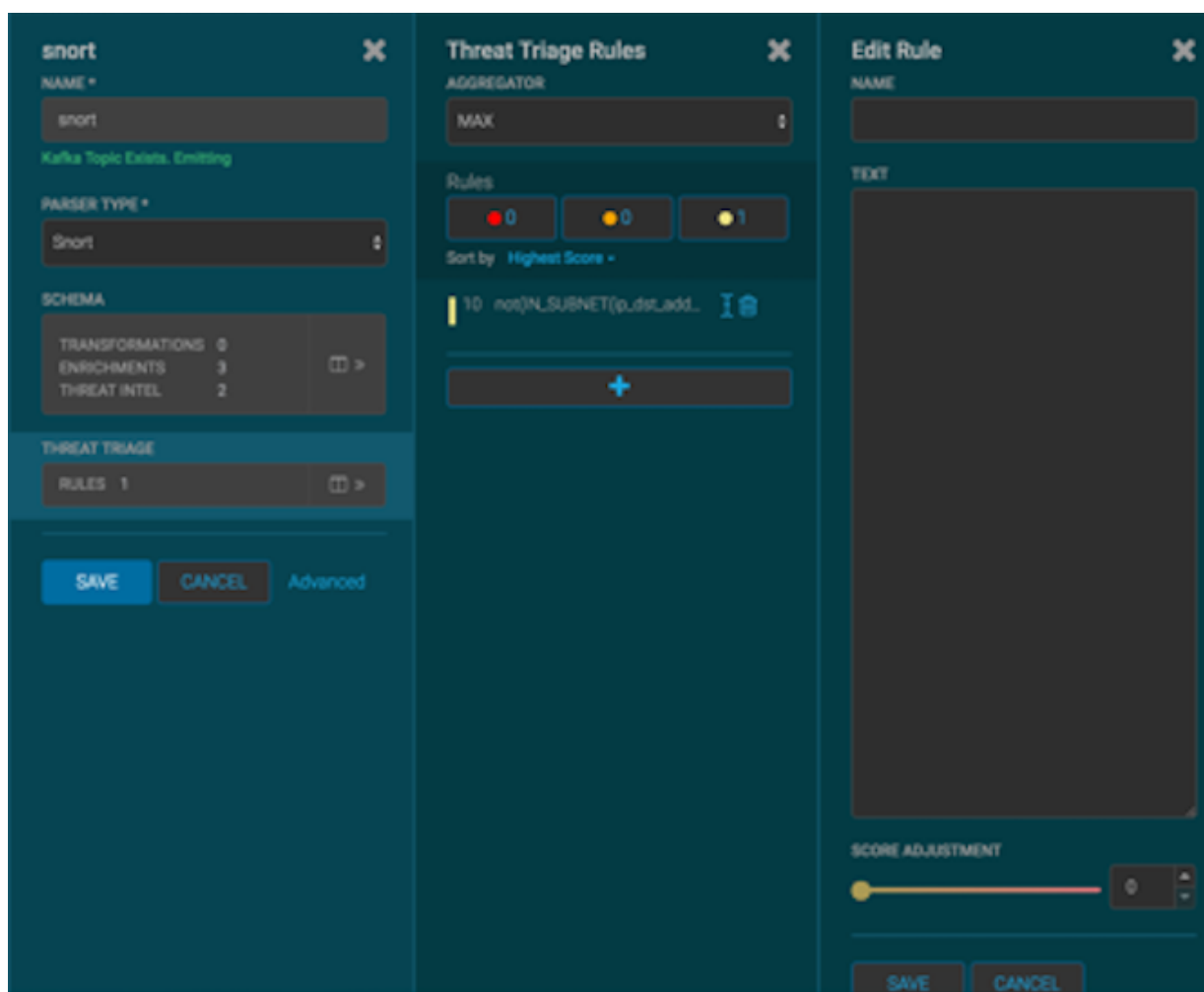
TRANSFORMATIONS	1	
ENRICHMENTS	4	☰ >
THREAT INTEL	2	
- THREAT TRIAGE**: A section with a "RULES 1" indicator and a "☰ >" icon.

The right pane is titled "Threat Triage Rules" and contains:

- AGGREGATOR**: A dropdown menu set to "MAX".
- Rules**: Three buttons representing rule counts: a red button with "0", a yellow button with "0", and a green button with "1".
- Sort by**: A dropdown menu set to "Highest Score".
- Rule List**: A single rule entry with a yellow bar, the number "10", and the rule text "not(IN\_SUBNET(ip\_dst\_add...)".
- Bottom Bar**: A large button with a blue "+" sign for adding new rules.

At the bottom of the left pane, there are three buttons: "SAVE", "CANCEL", and "Advanced".

2. To add a rule, click +.



3. Assign a name to the new rule in the NAME field.
4. In the Text field, enter the syntax for the new rule:

```
Exists(IsAlert)
```

5. Use the **SCORE ADJUSTMENT** slider to choose the threat score for the rule.
6. Click **SAVE**.

The new rule is listed in the Threat Triage Rules panel.

7. Choose how you want to aggregate your rules by choosing a value from the Aggregator menu. You can choose among the following:

**MAX**

The maximum of all of the associated values for matching queries.

**MIN**

The minimum of all of the associated values for matching queries.

**MEAN**

The mean of all of the associated values for matching queries.

**POSITIVE\_MEAN**

The mean of the positive associated values for the matching queries.

8. If you want to filter threat triage display, use the **Rules** section and the **Sort by** menu below it.  
For example, to display only high-level alerts, click the box containing the red indicator. To sort the high-level alerts from highest to lowest, select **Highest Score** from the **Sort by** menu.
9. Click **SAVE**.

## Perform Threat Triage Using the CLI

As an alternative to using the HCP Management module to perform threat triage, you can use the CLI.

### Procedure

1. Determine the rules you want to implement to prioritize alerts using the configuration guidelines provided in Understanding Threat Triage Rule Configuration.
2. Modify the configuration for the sensor in the enrichment topology.

For example:

```

"trriageConfig" : {
  "riskLevelRules" : [
    {
      "name" : "zeusList is alerted"
      "comment" : "Threat intelligence enrichment type zeusList is alerted."
      "rule":
        "exists(threatintels.hbaseThreatIntel.domain_without_subdomains.zeusList)"
      "score" : 5
    }
    {
      "name" : "Does not end with .com or .net"
      "comment" : "The URL ends with neither .com nor .net."
      "rule": "not(ENDS_WITH(domain_without_subdomains, '.com') or
        ENDS_WITH(domain_without_subdomains, '.net'))" : 10
      "score" : 10
    }
  ]
  , "aggregator" : "MAX"
  , "aggregationConfig" : { }
}

```

3. Log in as root user to the host on which Metron is installed.
4. Modify \$METRON\_HOME/config/zookeeper/sensors/\$DATASOURCE.json to match the configuration on disk:  
Because the configuration in ZooKeeper might be out of sync with the configuration on disk, ensure that they are in sync by downloading the ZooKeeper configuration first:

```

$METRON_HOME/bin/zk_load_configs.sh -m PULL -z $ZOOKEEPER_HOST:2181 -f -o
$METRON_HOME/config/zookeeper

```

5. Validate that the enrichment configuration for the data source exists:

```

cat $METRON_HOME/config/zookeeper/enrichments/$DATASOURCE.json

```

6. In the \$METRON\_HOME/config/zookeeper/enrichments/\$DATASOURCE.json file, add the following to the triageConfig section in the threat intelligence section:

```

"threatIntel" : {
  "fieldMap" : {
    "hbaseThreatIntel" : [ "domain_without_subdomains" ]
  },
  "fieldToTypeMap" : {
    "domain_without_subdomains" : [ "zeusList" ]
  }
}

```



```

    },
    "config" : { },
    "trriageConfig" : {
      "riskLevelRules" : {

        "exists(threatintels.hbaseThreatIntel.domain_without_subdomains.zeusList)" :
        5
          , "not(ENDS_WITH(domain_without_subdomains, '.com') or
        ENDS_WITH(domain_without_subdomains, '.net'))" : 10
          }
        , "aggregator" : "MAX"
        , "aggregationConfig" : { }
      }
    }
  }
}

```

7. Ensure that the aggregator field indicates MAX.
8. Push the configuration back to ZooKeeper:

```

$METRON_HOME/bin/zk_load_configs.sh -m PUSH -z $ZOOKEEPER_HOST:2181 -i
$METRON_HOME/config/zookeeper

```

## View Triaged or Scored Alerts

You can view triaged alerts in the indexing topic in Apache Kafka or in the triaged alert panel in the HCP Metron dashboard.

An alert in the indexing topic in Kafka looks similar to the following:

```

> THREAT_TRIAGE_PRINT(conf)
#####
# Name # Comment # Triage Rule # Score # Reason #
#####
# Abnormal DNS Port # # source.type == "bro" and protocol == "dns" and
  ip_dst_port != 53 # 10 # FORMAT("Abnormal DNS Port: expected: 53, found:
  %s:%d", ip_dst_addr, ip_dst_port) #
#####

```

The following shows you an example of a triaged alert panel in the HCP Metron dashboard

Investigation Module Triaged Alert Panel



Time	sourceType	threat/triage/level	full_hostname	ip_src_addr	ip_dst_addr
June 25th 2016, 17:14:30.453	squid	5	www.actfhaka.com	127.0.0.1	198.50.239.7
June 25th 2016, 17:14:29.196	squid	5	www.actfhaka.com	127.0.0.1	198.50.239.7
June 25th 2016, 17:14:28.025	squid	5	www.actfhaka.com	127.0.0.1	198.50.239.7

For URLs from cnn.com, no threat alert is shown, so no triage level is set. Notice the lack of a **threat.triage.level** field.