Information Sharing and Taxonomies

Practical Classification of Threat Indicators using MISP

CIRCL
Computer Incident
Response Center
Luxembourg

Alexandre Dulaunoy -
TLP:WHITE

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From Tagging to Flexible Taxonomies

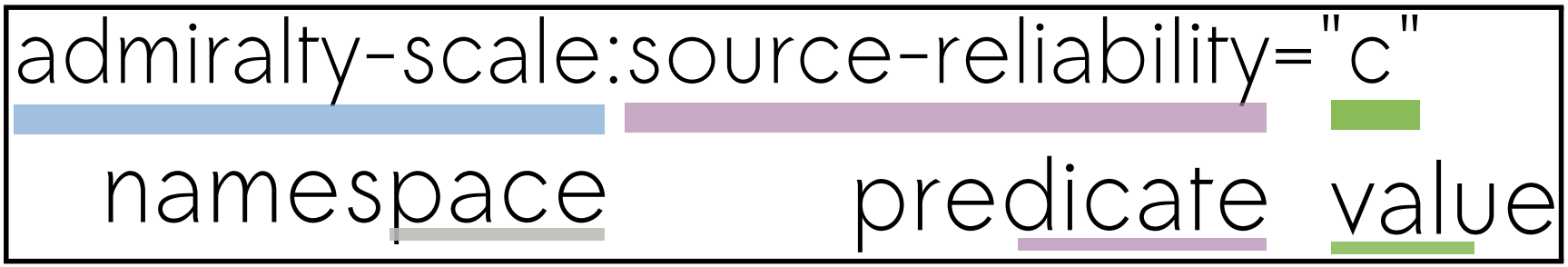
OSINT - Cyberthreats BlackEnergy2

Event ID	2910
Uuid	568e7167-4e00-4654-b5f8-4b23950d210f
Org	CIRCL
Owner org	CIRCL
Contributors	
Email	alexandre.dulaunoy@circl.lu
Tags	tlp:white x Type:OSINT x +
Date	2016-01-07
Threat Level	Medium

- Tagging is a simple way to attach a classification to an event.
- In the early version of MISP, tagging was local to an instance.
- **Classification must be globally used to be efficient**.
- After evaluating different solutions of classification, we build a new scheme using the concept of machine tags.

Machine Tags

- Triple tag or machine tag was introduced in 2004 to extend geotagging on images.



- A machine tag is just a tag expressed in way that allows systems to parse and interpret it.
- Still have a human-readable version:
  - admiralty-scale:Source Reliability="Fairly reliable"

MISP Taxonomies

- Taxonomies are implemented in a simple JSON format.
- Anyone can create their own taxonomy or reuse an existing one.
- The taxonomies are in an independent git repository[1].
- These can be freely reused and integrated in other threat intel tools.

[1] https://www.github.com/MISP/misp-taxonomies/

Existing Taxonomies

- NATO - **Admiralty Scale**
- CIRCL Taxonomy - **Schemes of Classification in Incident Response and Detection**
- eCSIRT and IntelMQ incident classification
- EUCI **EU classified information marking**
- Information Security Marking Metadata from DNI (Director of National Intelligence - US)
- NATO Classification Marking
- OSINT **Open Source Intelligence - Classification**
- TLP - **Traffic Light Protocol**
- Vocabulary for Event Recording and Incident Sharing - **VERIS**
- and many more like ENISA, Europol, or the draft FIRST SIG Information Exchange Policy.

Want to write your own taxonomy? 1/2

```
1  {
2    "namespace": "admiralty-scale",
3    "description": "The Admiralty Scale (also called the NATO
         System) is used to rank the reliability of a source and
         the credibility of an information.",
4    "version": 1,
5    "predicates": [
6      {
7        "value": "source-reliability",
8        "expanded": "Source Reliability"
9      },
10     {
11       "value": "information-credibility",
12       "expanded": "Information Credibility"
13     }
14   ],
15 ....
```

Want to write your own taxonomy? 2/2

```
{
  "values": [
    {
      "predicate": "source-reliability",
      "entry": [
        {
          "value": "a",
          "expanded": "Completely reliable"
        },
....
```

- Publishing your taxonomy is as easy as a simple git pull request on misp-taxonomies[2].

[2] https://github.com/MISP/misp-taxonomies

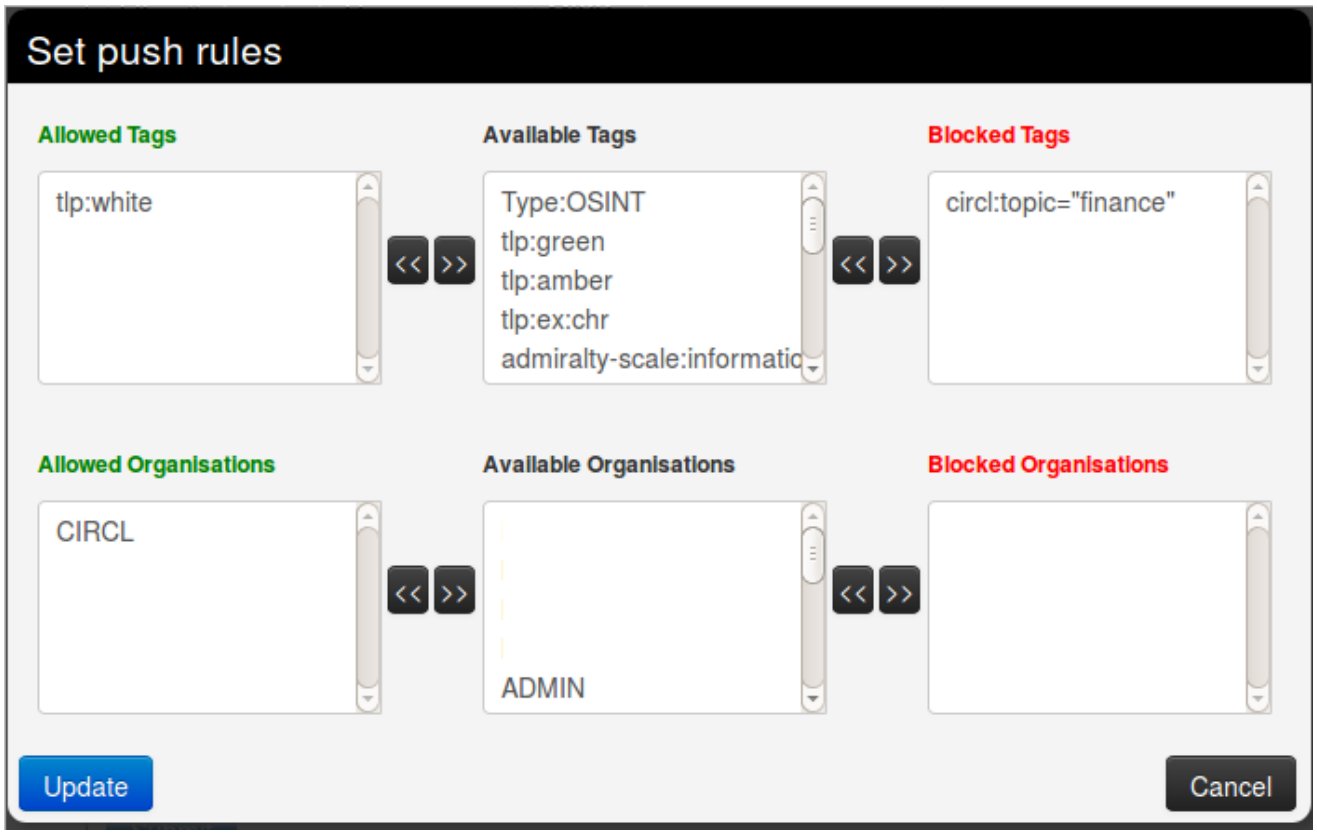
How are taxonomies integrated in MISP?

10	✖	TO:HIDE		2	
9	✖	TODO		8	
11	✖	TODO:VT-ENRICHMENT		9	
1	✔	Type:OSINT		932	
18	✔	admiralty-scale:information-credibility="1"	admiralty-scale	0	
19	✔	admiralty-scale:information-credibility="2"	admiralty-scale	1	
20	✔	admiralty-scale:information-credibility="3"	admiralty-scale	3	
21	✔	admiralty-scale:information-credibility="4"	admiralty-scale	0	
22	✔	admiralty-scale:information-credibility="5"	admiralty-scale	1	
23	✔	admiralty-scale:information-credibility="6"	admiralty-scale	2	

- MISP administrator can just import (or even cherry pick) the namespace or predicates they want to use as tag.
- Tags can be exported to other instances.
- Tags are also accessible via the MISP REST API.

Filtering the distribution of events among MISP instances

- Applying rules for distribution based on tags:



Other use cases using MISP taxonomies

- Tags can be used to set events for further processing by external tools (e.g. VirusTotal auto-expansion using Viper).
- Ensuring a classification manager classies the events before release (e.g. release of information from air-gapped/classified networks).
- Enriching IDS export with tags to fit your NIDS deployment.

Future functionalities related to MISP taxonomies

- Sighting support (thanks to NCSC-NL) is integrated in MISP allowing to auto expire IOC based on user detection.
- Adjusting taxonomies (adding/removing tags) based on their score or visibility via sighting.
- Simple taxonomy editors to help non-technical users to create their taxonomies.
- Filtering mechanisms in MISP to rename or replace taxonomies/tags at pull and push synchronisation.
- More public taxonomies to be included.

The dilemma of false-positive

- False-positive is a common issue in threat intelligence sharing.
- It's often a contextual issue:
  - false-positive might be different per community of users sharing information.
  - organization might have their own view on false-positive.
- Based on the success of the MISP taxonomy model, we build misp-warninglists.

MISP warning lists

- misp-warninglists are lists of well-known indicators that can be associated to potential false positives, errors or mistakes.
- Simple JSON files

```
1  {
2    "name": "List of known public DNS resolvers",
3    "version": 2,
4    "description": "Event contains one or more public DNS
         resolvers as attribute with an IDS flag set",
5    "matching_attributes": [
6      "ip-src",
7      "ip-dst"
8    ],
9    "list": [
10     "8.8.8.8",
11     "8.8.4.4",...]
12 }
```

MISP warning lists

- The warning lists are integrated in MISP to display an info/warning box at the event and attribute level.
- This can be enabled at MISP instance level.
- Default warning lists can be enabled or disabled like **known public resolver**, **multicast IP addresses**, **hashes for empty values**, **rfc1918**, **TLDs** or **known google domains**.
- The warning lists can be expanded or added in JSON locally or via pull requests.
- Warning lists can be also used for **critical or core infrastructure warning**, **personally identifiable information**...

Q&A

- `https://github.com/MISP/MISP`
- `https://github.com/MISP/misp-taxonomies`
- `https://github.com/MISP/misp-warninglists`
- info@circl.lu (if you want to join one of the MISP community operated by CIRCL)
- PGP key fingerprint: CA57 2205 C002 4E06 BA70 BE89 EAAD CFFC 22BD 4CD5