Information Sharing and Taxonomies

Practical Classification of Threat Indicators using MISP

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Quick MISP introduction

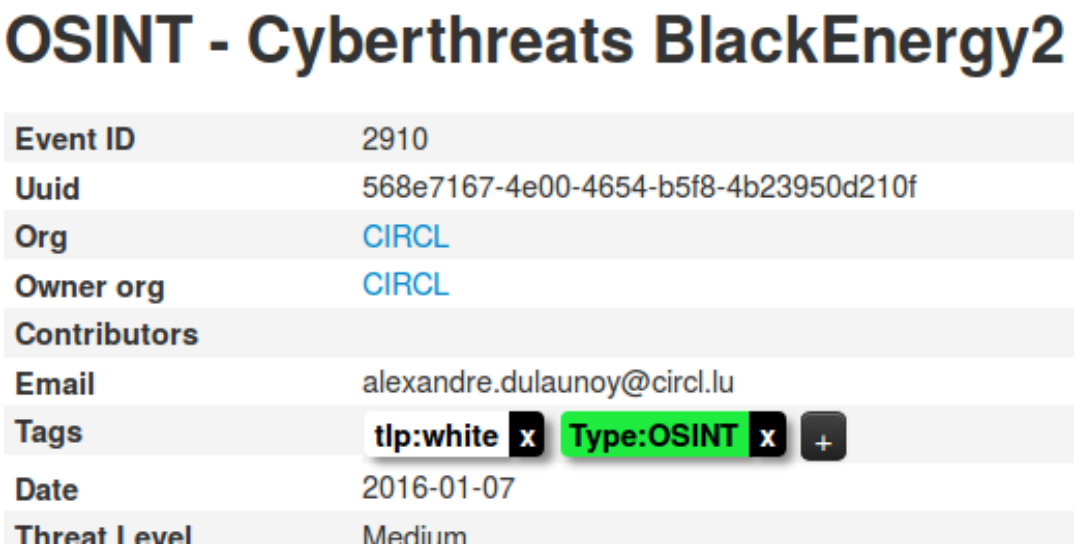
- MISP[1] is an IOC and threat indicators sharing software.
- MISP has **many functionalities** e.g. flexible sharing groups, automatic correlation, free-text import helper, event distribution and collaboration.
- CIRCL operates multiple MISP instances with a significant user base (around 300 organizations with 700 users).
- After some years of trial-and-error, we share in this presentation a specific **new MISP feature introduced in 2.4 called taxonomies**.

[1] https://github.com/MISP/MISP

Sharing Difficulties

- Legal restriction
  - "Our legal framework doesn't allow us to share information."
  - "Risk of information leak is too high and it's too risky for our organization or partners."
- Practical restriction
  - "We don't have information to share."
  - "We don't have time to process or contribute indicators."
  - "Our model of classification doesn't fit your model."
  - "Tools for sharing information are tied to a specific format, we use a different one."

From Tagging to Flexible Taxonomies



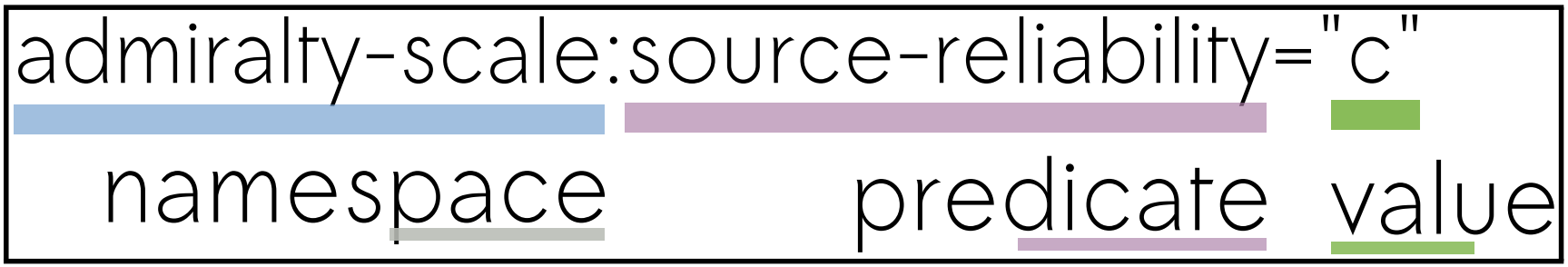
OSINT - Cyberthreats BlackEnergy2

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.
- 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[2].
- These can be freely reused and integrated in other threat intel tools.

[2] 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**

Want to write your own taxonomy? 1/2

```
{
  "namespace": "admiralty-scale",
  "description": "The Admiralty Scale (also called the NATO
      System) is used to rank the reliability of a source and
      the credibility of an information.",
  "version": 1,
  "predicates": [
    {
      "value": "source-reliability",
      "expanded": "Source Reliability"
    },
    {
      "value": "information-credibility",
      "expanded": "Information Credibility"
    }
  ],
....
```

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[3].

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

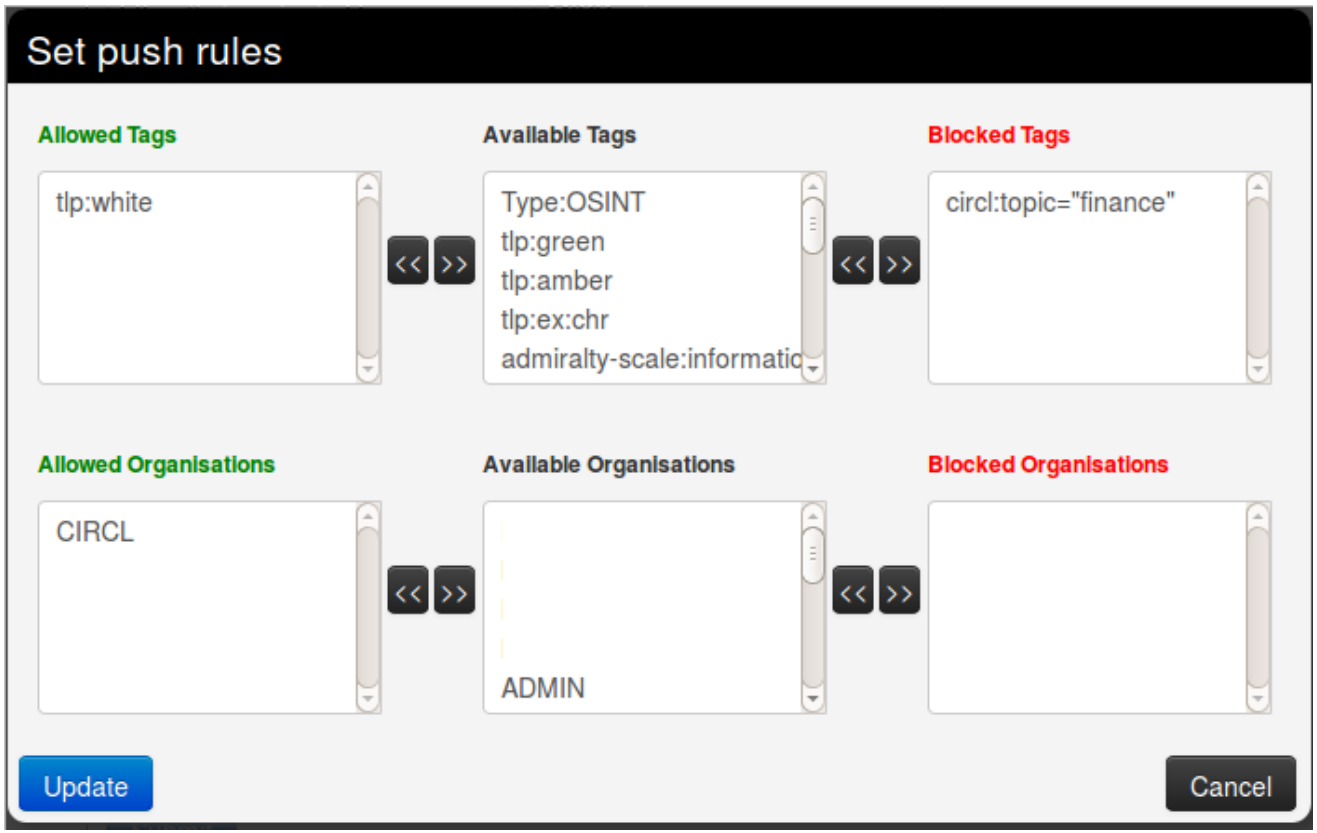
How are taxonomies integrated in MISP?

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) will be 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.
- More public taxonomies to be included.

Q&A

- https://github.com/MISP/MISP
- https://github.com/MISP/misp-taxonomies
- 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