MISP Concepts Cheat sheet

Glossary

Correlations: Links created automatically whenever an `Attribute` is created or modified. They allow interconnection between `Events` based on their attributes.

Correlation Engine: Is the system used by MISP to create correlations between `Attribute` 's value. It currently supports strict string comparison, SSDEEP and CDIR blocks matches.

Caching: Is the process of *fetching* data from a MISP instance or feed but only storing hashes of the collected values for correlation and look-up purposes.

Delegation: Act of transfering the ownership of an `Event` to another organisation while hidding the original creator, thus providing anonymity.

Deletion (hard/soft): *Hard deletion* is the act of removing the element from the system; it will not perform revocation on other MISP instances. *Soft deletion* is the act flagging an element as deleted and propagating the revocation among the network of connected MISP instances.

Extended Event: `Event` that extends an existing `Event` , providing a combined view of the data contained in both `Events` . The owner of the extending `Event` is the organisation that created the extension. This allows anyone to extend any `Events` and have total control over them.

`Galaxy` **Matrix**: Matrix derived from `Galaxy Clusters` belonging to the same `Galaxy` . The layout (pages and columns) is defined at the `Galaxy` level and its content comes from the `Galaxy Clusters` meta-data themselves.

Indicators: `Attribute` containing a pattern that can be used to detect suspicious or malicious activity. These `Attributes` usually have their `to_ids` flag enabled.

Orgc / Org: *Creator Organisation* (**Orgc**) is the organisation that created the data and the one allowed to modify it. *Owner Organisation* (**Org**) is the organisation owning the data on a given instance and is allowed to view it regardless of the distribution level. The two are not necessarily the same.

Publishing: Action of declaring that an `Event` is ready to be synchronised. It may also send e-mail notifications and makes it available to some export formats.

Pulling: Action of using a user on a remote instance to fetch the accessible data and storing it locally.

Pushing: Action of using an uplink connection via a *sync. user* to send data to a remote instance.

Synchronisation: Is the exchange of data between two (or more) MISP instances throught the *pull* or *push* mechanisms.

Sync. filtering rule: Can be applied on a synchronisation link for both the *pull* and *push* mechanisms to block or allow data to be transfered.

Sync. User: Special role of a user granting addional sync permissions. The recommanded way to setup *push* synchronisation is to use *sync users*.

Proposals: Are a mechanism to propose modications to the creating organisations (**Orgc**). If a path of connected MISP instances exists, the `Proposal` will be synchronised allowing the creator to accept or discard it.

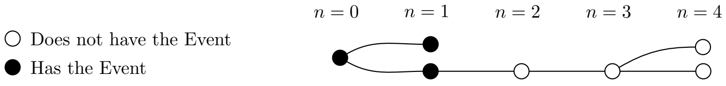
Distribution

Controls who can see the data and how it should be synchronised.

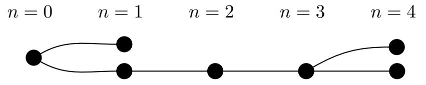
Organisation only: Only members of your organisation

This community: Organisations on this MISP instance

Connected Communities: Organisations on this MISP instance and those on MISP instances synchronising with this one. Upon receiving data, the distribution will be downgraded to `This community` to avoid further propagation. ($n \leq 1$)



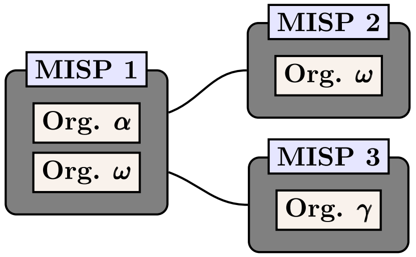
All Communities: Anyone having access. Data will be freely propagated in the network of connected MISP instances. ($n = \infty$)



Sharing Groups: Distribution list that exhaustively keeps track of which organisations can access the data and how it should be synchronised.

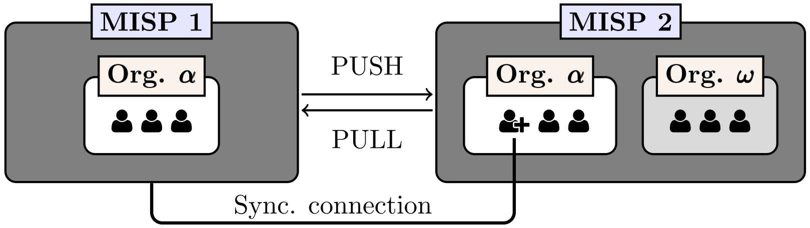
`Sharing Group` configuration	
Organisations	Org. α Org. ω Org. γ
Instances*	MISP 1 MISP 2 MISP 3

*Or enable roaming mode instead



Synchronisation

*The act of **sharing** where everyone can be a consumer and/or a producer.* A one way synchronisation link between two MISP instances. Organisation α created a *sync user* 👤+ on MISP 2 and noted down the generated API Key. A synchronisation link can be created on MISP 1 using the API Key and the organisation of the *sync user*. At that point, MISP 1 can *pull* data from MISP 2 and *push* data to MISP 2.



MISP Data Model Cheat Sheet

🏷 Context such as `Taxonomies` or `Galaxy Clusters` can be attached to the element

⊘ Has a distribution level

⇄ Can be synchronised to/from other instances

✉ Event

🏷 ⊘ ⇄

Encapsulations for contextually linked information.

Purpose: Group datapoints and context together. Acting as an envelop, it allows setting distribution and sharing rules for itself and its children.

Usecase: Encode incidents/events/reports/...

▶ `Events` can contain other elements such as `Attributes` , `MISP Objects` and `Event Reports` .

▶ The distribution level and any context added on an `Event` (such as `Taxonomies`) are propagated to its underlying data.

Attribute

🏷 ⊘ ⇄

Basic building block to share information.

Purpose: Individual data point. Can be an indicator or supporting data.

Usecase: Domain, IP, link, sha1, attachment, ...

▶ `Attributes` cannot be duplicated inside the same `Event` and can have `Sightings` .

▶ The difference between an indicator or supporting data is usualy indicated by the state of the attribute's `to_ids` flag.

MISP Object

⊘ ⇄

Advanced building block providing `Attribute` compositions via templates.

Purpose: Groups `Attributes` that are intrinsically linked together.

Usecase: File, person, credit-card, x509, device, ...

▶ `MISP Objects` have their attribute compositions described in their respective template. They are instanciated with `Attributes` and can `Reference` other `Attributes` or `MISP Objects` .

▶ MISP is not required to know the template to save and display the object. However, *edits* will not be possible as the template to validate against is unknown.

↗ Object Reference

⇄

Relationships between individual building blocks.

Purpose: Allows to create relationships between entities, thus creating a graph where they are the edges and entities are the nodes.

Usecase: Represent behaviours, similarities, affiliation, ...

▶ `References` can have a textual relationship which can come from MISP or be set freely.

👁 Sightings

⇄

Means to convey that an `Attribute` has been seen.

Purpose: Allows to add temporality to the data.

Usecase: Record activity or occurence, perform IoC expiration, ...

▶ `Sightings` are the best way to express that something has been seen. They can also be used to mark *false positives*.

Event Report

⊘ ⇄

Advanced building block containing formated text.

Purpose: Supporting data point to describe events or processes.

Usecase: Encode reports, provide more information about the `Event` , ...

▶ `Event Reports` are markdown-aware and include a special syntax to reference data points or context.

💬 Proposals

⇄

Clone of an `Attribute` containing information about modification to be done.

Purpose: Allow the correction or the creation of `Attributes` for `Events` your organisation does not own.

Usecase: Disable the IDS flag, Correct errors

▶ As `Proposals` are sync., if the creator organisation is connected to the MISP instance from where the `Proposal` has been created, it will be able to either *accept* or *discard* it.

𝓣 Taxonomies

Machine and human-readable labels standardised on a common set of vocabularies.

Purpose: Enable efficent classification globally understood, easing consumption and automation.

Usecase: Provide classification such as: TLP, Confidence, Source, Workflows, Event type, ...

▶ Even though MISP allows the creation of free-text tags, it's always preferable to use those coming from `Taxonomies` , if they exists.

Galaxies

Act as a container to group together context described in `Galaxy Clusters` by their type.

Purpose: Bundle `Galaxy Clusters` by their type to avoid confusion and to ease searches.

Usecase: Bundle types: Exploit-Kit, Preventive Measures, ATT&CK, Tools, Threat-actors, ...

Galaxies Clusters

⊘ ⇄

Kownledge base items used as tags with additional complex meta-data aimed for human consumption.

Purpose: Enable description of complex high-level information for classification.

Usecase: Extensively describe elements such as: threat actors, countries, technique used, ...

▶ `Galaxy Clusters` can be seen as an enhanced `Taxonomy` as they can have meta-data and relationships with other `Galaxy Clusters` .

▶ Any `Galaxy Clusters` can contain the following:

- `Cluster Elements`: Key-Value pair forming the meta-data.

Example: `Country:LU`, `Synonym:APT28`, `Currency:Dollar`, `refs:https://*`, ...

- `Cluster Relations` (🏷 ⇄ ⊘): Enable the creation of relationships between one or more `Galaxy Clusters` .

Example: Threat actor `X is similar` to threat actor `Y` with `high-likelyhood`.

Analyst Notes

Text element that can be attached to many element

Purpose: Share and add an analysis to any MISP data
Usecase: Describe information about specific details, annotate elements
▶ Any user can attach `Analyst Notes` to data they don't own. For example: `Events` , `Attributes` , `Galaxy Clusters` , ···
▶ The note is actually attached to the target's UUID

Analyst Opinions

Text element with a numerical opinion that can be attached to many element

Purpose: Share and add an opinion to any MISP data
Usecase: Provide feedback to third-parties, Coordinate and Collaborate
▶ Basically the same as a `Analyst Note`
▶ The numerical value of the `Analyst Opinion` is $\in [0, 100]$. where 50 is the neutral point. Any values < 50 are considered negatives, values > 50 are considered positives.

Analyst Relationships

Link between two entities using a verb

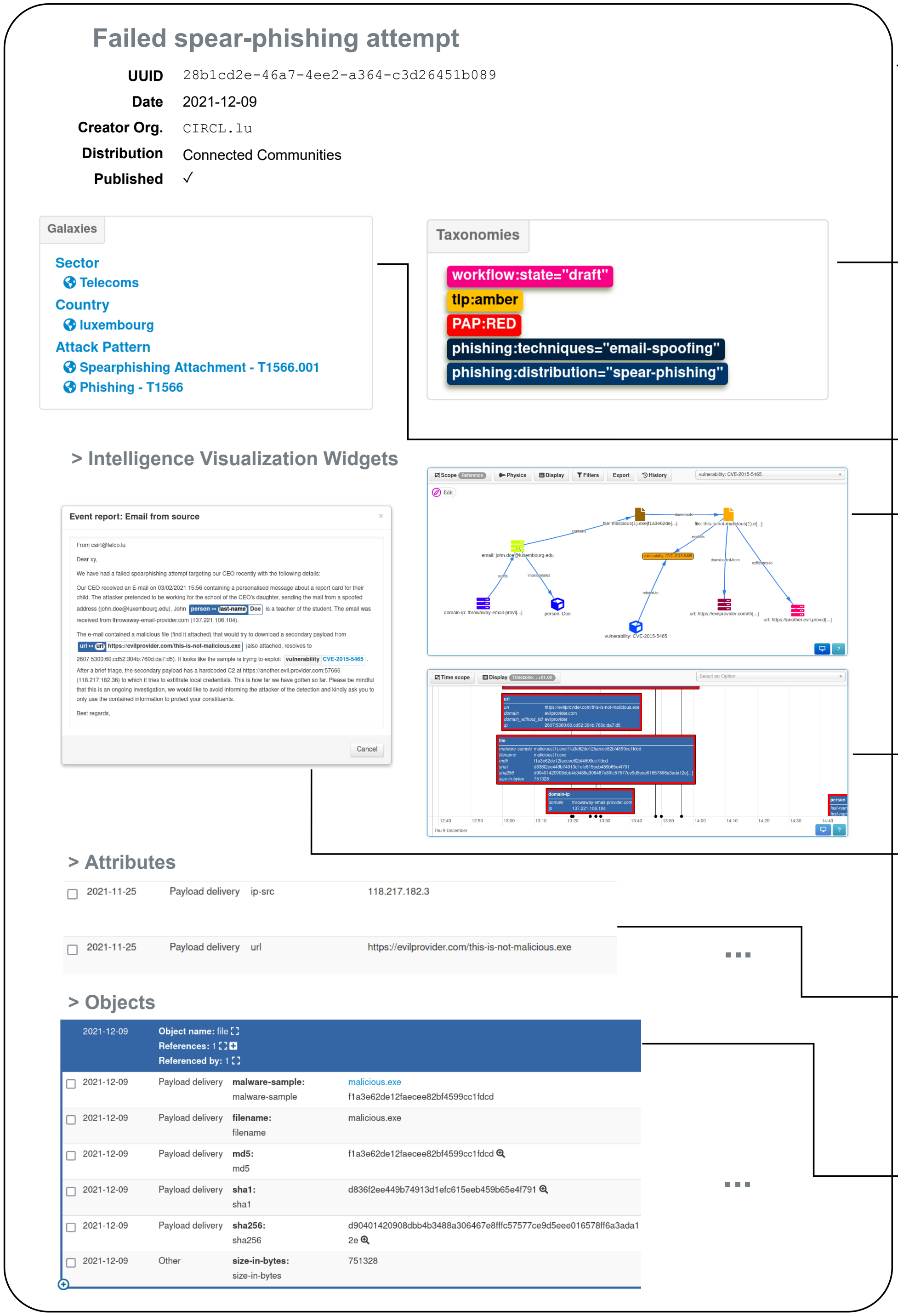
Purpose: Create a relationship between elements
Usecase: Manually create correlation link, add similarities
▶ Basically the same as a `Analyst Note` but includes the target element
▶ Example could be an `Event` → `Event` relationship where one is *Suspected to be part of the same campaign based on HUMINT sources*

Element Collection

Group element into collection

Purpose: Allow groupping multiple elements into a single collection
Usecase: Grouping `Events` together if they are part of the same campaing

Representation of an incident in MISP



Failed spear-phishing attempt

UUID	28b1cd2e-46a7-4ee2-a364-c3d26451b089
Date	2021-12-09
Creator Org.	CIRCL.lu
Distribution	Connected Communities
Published	✓

Galaxies

Sector
- Telecoms

Country
- luxembourg

Attack Pattern
- Spearphishing Attachment - T1566.001
- Phishing - T1566

Taxonomies

- workflow:state="draft"
- tlp:amber
- PAP:RED
- phishing:techniques="email-spoofing"
- phishing:distribution="spear-phishing"

> Intelligence Visualization Widgets

Event report: Email from source ×

From csirt@telco.lu

Dear xy,

We have had a failed spearphishing attempt targeting our CEO recently with the following details:

Our CEO received an E-mail on 03/02/2021 15:56 containing a personalised message about a report card for their child. The attacker pretended to be working for the school of the CEO's daughter, sending the mail from a spoofed address (john.doe@luxembourg.edu). John person ↦ last-name Doe is a teacher of the student. The email was received from throwaway-email-provider.com (137.221.106.104).

The e-mail contained a malicious file (find it attached) that would try to download a secondary payload from url ↦ url https://evilprovider.com/this-is-not-malicious.exe (also attached, resolves to 2607:5300:60:cd52:304b:760d:da7:d5). It looks like the sample is trying to exploit vulnerability CVE-2015-5465 . After a brief triage, the secondary payload has a hardcoded C2 at https://another.evil.provider.com:57666 (118.217.182.36) to which it tries to exfiltrate local credentials. This is how far we have gotten so far. Please be mindful that this is an ongoing investigation, we would like to avoid informing the attacker of the detection and kindly ask you to only use the contained information to protect your constituents.

Best regards,

Cancel

Scope Reference
Physics
Display
Filters
Export
History
vulnerability: CVE-2015-5465
Edit
file: malicious(1).exe|f1a3e62de[...]
downloads
file: this-is-not-malicious(1).e[...]
contains
email: john.doe@luxembourg.edu
exploits
vulnerability: CVE-2015-5465
downloaded-from
exfiltrates-to
sends
impersonates
related-to
domain-ip: throwaway-email-provi[...]
person: Doe
url: https://evilprovider.com/th[...]
url: https://another.evil.provid[...]
vulnerability: CVE-2015-5465
Time scope
Display Timezone: : +01:00
Select an Option

url

url	https://evilprovider.com/this-is-not-malicious.exe
domain	evilprovider.com
domain_without_tld	evilprovider
ip	2607:5300:60:cd52:304b:760d:da7:d5

file

malware-sample	malicious(1).exe|f1a3e62de12faecee82bf4599cc1fdcd
filename	malicious(1).exe
md5	f1a3e62de12faecee82bf4599cc1fdcd
sha1	d836f2ee449b74913d1efc615eeb459b65e4f791
sha256	d90401420908dbb4b3488a306467e8fffc57577ce9d5eee016578ff6a3ada12e[...]
size-in-bytes	751328

domain-ip

domain	throwaway-email-provider.com
ip	137.221.106.104

person

last-nam
first-nam

> Attributes

□	2021-11-25	Payload delivery	ip-src	118.217.182.3
□	2021-11-25	Payload delivery	url	https://evilprovider.com/this-is-not-malicious.exe

...

> Objects

	2021-12-09	**Object name:** file **References:** 1 **Referenced by:** 1		
□	2021-12-09	Payload delivery	**malware-sample:** malware-sample	malicious.exe f1a3e62de12faecee82bf4599cc1fdcd
□	2021-12-09	Payload delivery	**filename:** filename	malicious.exe
□	2021-12-09	Payload delivery	**md5:** md5	f1a3e62de12faecee82bf4599cc1fdcd
□	2021-12-09	Payload delivery	**sha1:** sha1	d836f2ee449b74913d1efc615eeb459b65e4f791
□	2021-12-09	Payload delivery	**sha256:** sha256	d90401420908dbb4b3488a306467e8fffc57577ce9d5eee016578ff6a3ada12e
□	2021-12-09	Other	**size-in-bytes:** size-in-bytes	751328

...

Event: Encapsulates contextually linked information.
Events also have basic information including ownership and access-control
Here: Contains all the information related to the spear-phishing incident.

Taxonomies: Simple label standardised on common set of vocabularies.
Here: Usage of labels to classify the current completeness of the Event, what recipient can do with the information and the category of the incident.

Galaxies & Galaxy-Clusters: Advanced label containing meta-data
Here: The sector affected by the incident as well as the country. The kill-chain of the attack can be described using the MITRE ATT&CK framework

Event Graph: Visualization of the relationships between entities contained in the Event.
Here: The whole story of the attack can be described with relationships defined between Attributes and Objects

Event Timeline: Visualization of the temporality of the data contained in the event.
Here: A timeline of the steps performed during the attack. The time data is taken directly from the Attributes and Objects belonging to the Event.

Event Report: Markdown-aware supporting text document to describe events or incidents
Here: The report describe the steps taken by the attacker and provide additional contextual information. It also contains references to Attributes and Object encoded in the Event

Attributes: Basic building block to represent information.
They can have context such as taxonomy and express if they are supportive data or meant for automation. An Event can have multiple Attributes
Here: Two Attributes representing payload delivery. One is an IP address, the other is an URL.

Objects: Advanced building block allowing Attribute composition via predefined templates.
As an Object is an instantiation of its template, it is composed of Attributes that make sense Together. They can also have relationship to other entity contained in the Event
Here: A file object composed of Attributes such as the filename, size and hashes. It also have a relationship

MISP User & Admin Cheat Sheet

- User -

API

`Wildcard` **searches:**

```
POST /attributes/restSearch
{"value": "1.2.3.%"}
```

`Or` **and** `Negation` **searches:**

```
POST /attributes/restSearch
{"tags": ["tlp:white", "!tlp:green"]}
```

`And` **and** `Negation` **searches:**

```
POST /attributes/restSearch
{"tags": {"AND": ["tlp:green", "Malware"], "NOT": ["%ransomware%"]}}
```

`Galaxy Cluster` **metadata searches:**

```
POST /attributes/restSearch
{
    "galaxy.synonyms": "APT29",
    "galaxy.cfr-target-category": "Financial sector"
}
```

Attach tags:

```
POST /tags/attachTagToObject
{
    "uuid": "[Could be UUID from Event, Attribute, ...]",
    "tag": "tlp:amber"
}
```

Timestamps:

`timestamp`: Time of the last modification on the data

- Usecase: Get data was modified in the last t
- E.g.: Last updated data from a feed

`publish_timestamp`: Time at which the event was published

- Usecase: Get data that arrived in my system since t
- E.g.: New data from a feed

`event_timestamp`: Used in the Attribute scope

- Usecase: Get events modified in the last t

Usage:

```
{"timestamp": 1521846000}
{"timestamp": "7d"}
{"timestamp": ["2d", "1h"]}
```

Tips & Tricks

Get JSON Representation: Append `.json` to any URLs to get their content in JSON format. Example: `/events/view/42.json`

- Admin -

Reset Password

API: `POST /users/initiatePasswordReset/[id]` `{"password": "***"}`

CLI: `MISP/app/Console/cake Password [email] [password]`

Reset Bruteforce login protection

CLI: `MISP/app/Console/cake Admin clearBruteforce [email]`

Upgrade to the latest version

All in 1-shot: `MISP/app/Console/cake Admin updateMISP`

Manually:

1. `cd /var/www/MISP`
2. `git pull origin 2.4`
3. `git submodule update --init --recursive`
4. `MISP/app/Console/cake Admin updateJSON`
5. Check live update progress `GET /servers/updateProgress`

Workers

Restart All: `MISP/app/Console/cake Admin restartWorkers`

Add: `MISP/app/Console/cake Admin startWorker [queue]`

Stop: `MISP/app/Console/cake Admin stopWorker [pid]`

Settings

Get: `MISP/app/Console/cake Admin getSetting [setting]`

Set: `MISP/app/Console/cake Admin setSetting [setting] [value]`

Base URL: `MISP/app/Console/cake Baseurl [baseurl]`

Miscellaneous

Clean Caches: `MISP/app/Console/cake Admin cleanCaches`

Get IPs For User ID: `MISP/app/Console/cake Admin UserIP [user_id]`

Get User ID For User IP: `MISP/app/Console/cake Admin IPUser [ip]`

Documentation: `/events/automation`

Logs files location: `MISP/app/tmp/logs`