

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 transferring the ownership of an **Event** to another organisation while hiding 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 through 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 transferred.

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

Proposals: Are a mechanism to propose modifications 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.

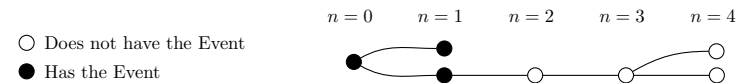
Distribution

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

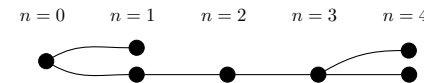
Organisation only: Only members of your organisation

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. ($n \leq 1$)



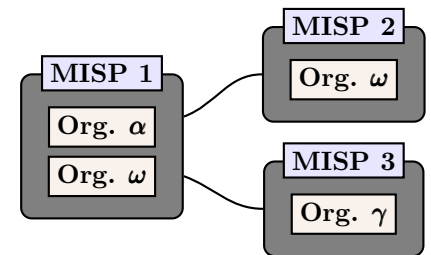
All Communities: Anyone having access. Data will be freely propagated in the network of connected MISP instances. ($n = \infty$)



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

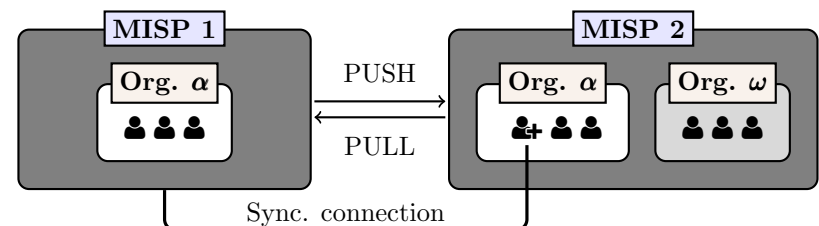
Sharing Group configuration	
Organisations	Org. α Org. ω Org. γ
Instances*	MISP 1 MISP 2 MISP 3

*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 usually 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 instantiated 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 occurrence, 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 formatted 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.

Taxonomies

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

Purpose: Enable efficient 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

Knowledge 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-likelihood.

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** \rightarrow **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 grouping multiple elements into a single collection

Usecase: Grouping **Events** together if they are part of the same campaign

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"
- tip:amber
- PAP:RED
- phishing:techniques="email-spoofing"
- phishing:distribution="spear-phishing"

> Intelligence Visualization Widgets

Event report: Email from source

From: cstg@circl.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 address provided to be searched for the school of the CEO's daughter, sending the mail from a quoted address (gm.doe@luxembourg.edu.lu). John [personal] [last-name] [last-name] is a teacher of the student. The email was received from throwaway-email-provider.com (137.221.106.104).
 The email contained a malicious file (find it attached) that would by to download a secondary payload from [url=https://evilprovider.com/this-is-not-malicious.exe] (also attached, resolves to 2067.8300460.c052354e7690da7e5). It looks like the sample is trying to exploit vulnerability CVE-2015-5465 after a brief stage, the secondary payload has a hardcoded C2 at https://evilsender.com:2066 (118.217.182.36) to which it tries to write 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]

The Event Graph shows a network of entities and their relationships. Key entities include 'email_provider', 'ip:118.217.182.36', 'url=https://evilprovider.com/this-is-not-malicious.exe', 'url=https://evilsender.com:2066', and 'url=https://evilsender.com:2066'. Relationships are shown as directed edges between these entities.

The Event Timeline shows a sequence of events over time. Key events include 'payload_delivery' at 11:25, 'payload_delivery' at 11:26, and 'payload_delivery' at 11:27. The timeline is displayed as a horizontal bar chart with a time axis from 11:24 to 11:30.

> Attributes

<input type="checkbox"/>	2021-11-25	Payload delivery	ip-src	118.217.182.3
<input type="checkbox"/>	2021-11-25	Payload delivery	url	https://evilprovider.com/this-is-not-malicious.exe

> Objects

<input type="checkbox"/>	2021-12-09	Object name: file	References: 1	Referenced by: 1
<input type="checkbox"/>	2021-12-09	Payload delivery	malware-sample: malicious.exe	malware-sample: ft1a3e62de12faecce82b4f599cc1fdcd
<input type="checkbox"/>	2021-12-09	Payload delivery	filename: malicious.exe	filename: filename
<input type="checkbox"/>	2021-12-09	Payload delivery	md5: md5	ft1a3e62de12faecce82b4f599cc1fdcd
<input type="checkbox"/>	2021-12-09	Payload delivery	sha1: sha1	d836f2ee449b74913d1efc615eeb459b65e4f791
<input type="checkbox"/>	2021-12-09	Payload delivery	sha256: sha256	d90401420908dbb4b3468a306467e8fffc57577ce9d5ee016578f6a3ada12e
<input type="checkbox"/>	2021-12-09	Other	size-in-bytes: size-in-bytes	751328

Representation of an incident in MISP

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`