

MANAGING INFORMATION SHARING COMMUNITIES

E.103

CIRCL COMPUTER INCIDENT RESPONSE CENTER LUXEMBOURG

MISP PROJECT

<https://www.misp-project.org/>

MARCH 30, 2022 - VO.7



2022-03-30

Managing information sharing communities

MANAGING INFORMATION SHARING
COMMUNITIES

E.103

CIRCL COMPUTER INCIDENT RESPONSE CENTER LUXEMBOURG

MISP PROJECT
<https://www.misp-project.org/>

MARCH 30, 2022 - VO.7



OBJECTIVES OF THIS MODULE

- Tips for joining information sharing communities
- Tips for being a good member in a sharing community
- Tips for building your own sharing community
- Tool for managing a sharing community
 - ▶ Managing organisations and contacts
 - ▶ Maintaining distribution lists (aka sharing groups)
 - ▶ Managing a large cluster of MISPs

Managing information sharing communities

Objectives of this module

- Tips for joining information sharing communities
- Tips for being a good member in a sharing community
- Tips for building your own sharing community
- Tool for managing a sharing community
 - ▶ Managing organisations and contacts
 - ▶ Maintaining distribution lists (aka sharing groups)
 - ▶ Managing a large cluster of MISPs

BEING PART OF AN INFORMATION SHARING COMMUNITY

2022-03-30

Managing information sharing communities

└ Being part of an information sharing community

BEING PART OF AN INFORMATION
SHARING COMMUNITY

There is a wide range of MISP communities type:

- Private sector communities
 - ▶ Private organisations, researchers, central hub
- ISACs communities
 - ▶ Central hub for sectorial or geographical Communities
 - ▶ Examples: GSMA, FIRST.org, CSIRT Network, Banking, etc
- Ad-hoc communities
 - ▶ Often use for exercises such as ENISA or LockedShield

Managing information sharing communities

└ Being part of an information sharing community

└ Joining an information sharing communities

There is a wide range of MISP communities type:

- Private sector communities
 - ▶ Private organisations, researchers, central hub
- ISACs communities
 - ▶ Central hub for sectorial or geographical Communities
 - ▶ Examples: GSMA, FIRST.org, CSIRT Network, Banking, etc
- Ad-hoc communities
 - ▶ Often use for exercises such as ENISA or LockedShield

Considerations before joining a sharing community:

- Understand the community's objectives
 - ▶ Defense, prevention, collaboration, research, specific reporting duties
- Make sure the use-cases are not conflicting
 - ▶ False-positive appetite, maturity levels, topical interests
 - ▶ Detection rules VS threat intelligence VS prevention

Managing information sharing communities

└ Being part of an information sharing community

└ Joining an information sharing communities

Considerations before joining a sharing community:

- Understand the community's objectives
 - ▶ Defense, prevention, collaboration, research, specific reporting duties
- Make sure the use-cases are not conflicting
 - ▶ False-positive appetite, maturity levels, topical interests
 - ▶ Detection rules VS threat intelligence VS prevention

TIPS FOR BEING A GOOD MEMBER OF A SHARING COMMUNITY

- As explained extensively in course e.206, Context is king:
 - ▶ You should try to contextualise as best as you can using:
 - ▶ Normalized vocab: Taxonomies, Galaxies & MITRE ATT&CK
 - ▶ Connected graph using MISP Objects and relationships
 - ▶ Add timeliness with Sightings and `first_seen` / `last_seen`
- Sharing results and reports
- Sharing enhancements or proposals to existing data
- Validating data (sightings) or flagging false positives
- Asking for support from the community

2022-03-30

Managing information sharing communities

- └ Being part of an information sharing community
 - └ Tips for being a good member of a sharing community

- As explained extensively in course e.206, Context is king:
 - ▶ You should try to contextualise as best as you can using:
 - ▶ Normalized vocab: Taxonomies, Galaxies & MITRE ATT&CK
 - ▶ Connected graph using MISP Objects and relationships
 - ▶ Add timeliness with Sightings and `first_seen` / `last_seen`
- Sharing results and reports
- Sharing enhancements or proposals to existing data
- Validating data (sightings) or flagging false positives
- Asking for support from the community

- Different models for your constituents
 - ▶ **Having an account** on a MISP instance
 - ▶ **Hosting** their own instance and connecting to a peer
 - ▶ **Becoming member** of a sectorial MISP community that is connected to multiple peers
- Planning ahead for future growth
 - ▶ Estimating requirements (workforce, hardware requirements)
 - ▶ Deciding early on common vocabularies (i.e. taxonomies)
 - ▶ Offering services through MISP to promote adhesion

Managing information sharing communities

- └ Being part of an information sharing community
 - └ Tips for building your own sharing community

- Different models for your constituents
 - ▶ **Having an account** on a MISP instance
 - ▶ **Hosting** their own instance and connecting to a peer
 - ▶ **Becoming member** of a sectorial MISP community that is connected to multiple peers
- Planning ahead for future growth
 - ▶ Estimating requirements (workforce, hardware requirements)
 - ▶ Deciding early on common vocabularies (i.e. taxonomies)
 - ▶ Offering services through MISP to promote adhesion

TIPS FOR BUILDING YOUR OWN SHARING COMMUNITY

- **Lead by example** - the power of imitation
- Don't block sharing with unrealistic quality controls
 - ▶ You might lose organisations that might turn into valuable contributors
 - ▶ Organisations will start sharing junk to stay above the thresholds
- Encourage **improving by doing**
 - ▶ What should the information look like?
 - ▶ How should it be contextualised?
 - ▶ What do you consider as useful information?
 - ▶ What tools did you use to get your conclusions?
- Side effect is that you will end up **raising the capabilities of your constituents**

Managing information sharing communities

- └ Being part of an information sharing community
 - └ Tips for building your own sharing community

- **Lead by example** - the power of imitation
- Don't block sharing with unrealistic quality controls
 - ▶ You might lose organisations that might turn into valuable contributors
 - ▶ Organisations will start sharing junk to stay above the thresholds
- Encourage **improving by doing**
 - ▶ What should the information look like?
 - ▶ How should it be contextualised?
 - ▶ What do you consider as useful information?
 - ▶ What tools did you use to get your conclusions?
- Side effect is that you will end up **raising the capabilities of your constituents**

TIPS FOR BUILDING YOUR OWN SHARING COMMUNITY

- Convert the passive organisations into actively sharing ones
 - ▶ Help them increase their capabilities
 - ▶ Lead by example
 - ▶ **Give credit where credit is due**
 - Never steal the contribution of your community
 - ▶ Offers the possibility to take over their data via **delegation**
 - Anonymity of organisations might help them building confidence at the beginning

2022-03-30

Managing information sharing communities

└ Being part of an information sharing community

└ Tips for building your own sharing community

- Convert the passive organisations into actively sharing ones
 - ▶ Help them increase their capabilities
 - ▶ Lead by example
 - ▶ **Give credit where credit is due**
 - Never steal the contribution of your community
 - ▶ Offers the possibility to take over their data via **delegation**
 - Anonymity of organisations might help them building confidence at the beginning

TIPS FOR BUILDING YOUR OWN SHARING COMMUNITY

- Encourage sharing of supporting materials, scripts or guidance for protection
- Raise awareness about the benefits of a well modelled, graph-based information
- Again, **context is king!** If possible, make contextualisation a requirement
 - ▶ Users can then filter based on their needs
 - ▶ Classification help your peers to understand why the data is important
 - ▶ And also, why this data can be useful to them

2022-03-30

Managing information sharing communities

└ Being part of an information sharing community

└ Tips for building your own sharing community

- Encourage sharing of supporting materials, scripts or guidance for protection
- Raise awareness about the benefits of a well modelled, graph-based information
- Again, **context is king!** If possible, make contextualisation a requirement
 - ▶ Users can then filter based on their needs
 - ▶ Classification help your peers to understand why the data is important
 - ▶ And also, why this data can be useful to them

DISPELLING THE MYTHS AROUND BLOCKERS WHEN IT COMES TO INFORMATION SHARING

- Sharing difficulties are not really technical issues but often it's a matter of **social interactions** (e.g. **trust**).
 - ▶ You can play a role here: organise regular workshops, conferences, have face to face meetings
- Legal restrictions
 - ▶ "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 restrictions
 - ▶ "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."

2022-03-30

Managing information sharing communities

- └ Being part of an information sharing community
- └ Dispelling the myths around blockers when it comes to information sharing

DISPELLING THE MYTHS AROUND BLOCKERS WHEN IT COMES TO INFORMATION SHARING

- Sharing difficulties are not really technical issues but often it's a matter of **social interactions** (e.g. **trust**).
 - ▶ You can play a role here: organise regular workshops, conferences, have face to face meetings
- Legal restrictions
 - ▶ "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 restrictions
 - ▶ "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."

- Often within a community, **smaller bubbles** of information sharing will form
 - ▶ e.g: Within a national private sector community, a dedicated community for financial institutions
 - ▶ If an incident involves multiple organisations
- MISPs sharing group serve this purpose mainly
- If you are building your own community, consider bootstrapping these specific sharing community
 - ▶ Organisations can self-organise, but you are probably the ones with the know-how to get them started

Managing information sharing communities

- └ Being part of an information sharing community
- └ Managing sub-sharing communities

- Often within a community, **smaller bubbles** of information sharing will form
 - ▶ e.g. Within a national private sector community, a dedicated community for financial institutions
 - ▶ If an incident involves multiple organisations
- MISPs sharing group serve this purpose mainly
- If you are building your own community, consider bootstrapping these specific sharing community
 - ▶ Organisations can self-organise, but you are probably the ones with the know-how to get them started

COMMUNITY MANAGEMENT AND ORCHESTRATION TOOL

2022-03-30

Managing information sharing communities

└ Community management and orchestration tool

COMMUNITY MANAGEMENT AND ORCHESTRATION TOOL

- MISP is just one part of the puzzle
- Information sharing presumes knowledge of contacts
- Creating reusable community-specific distribution list need to be maintained
- Fleet management for larger organisations needs additional work

Cerebrate is an open-source tool meant to address these challenges

- MISP is just one part of the puzzle
 - Information sharing presumes knowledge of contacts
 - Creating reusable community-specific distribution list need to be maintained
 - Fleet management for larger organisations needs additional work
- Cerebrate is an open-source tool meant to address these challenges

WHAT IS CEREBRATE?



- Open source **community management and orchestration** tool
- Central tool for the Melicertes 2 project (Co-funded by the EU as a CEF project)
 - ▶ Project for the CSIRT network building a common set of tools and services for the national CSIRTs
 - ▶ Flexible to support a wide range of communities
- Tight **integration** with various open-source tools
- Planned as the primary MISP management tool

2022-03-30

- Managing information sharing communities
 - └ Community management and orchestration tool
 - └ What is Cerebrate?

WHAT IS CEREBRATE?



- Open source **community management and orchestration** tool
- Central tool for the Melicertes 2 project (Co-funded by the EU as a CEF project)
 - ▶ Project for the CSIRT network building a common set of tools and services for the national CSIRTs
 - ▶ Flexible to support a wide range of communities
- Tight **integration** with various open-source tools
- Planned as the primary MISP management tool

WHY DO WE NEED CEREBRATE FROM A MISP PERSPECTIVE

■ Deficiencies in our current tool chain

- ▶ Do I really have to jump through hoops and long e-mail chains to **onboard new members**?
- ▶ How do I **find trusted information** on who an organisation is in MISP?
- ▶ How can I **manage a large cluster of MISPs** without tedious manual labour?
- ▶ If I run a community through MISP, how can I reuse my member information for other community tasks such as mailing lists?
- ▶ Information signing has been on the MISP roadmap for a long time - where do we get ground truths for a community from?

2022-03-30

Managing information sharing communities

└ Community management and orchestration tool

└ Why do we need Cerebrate from a MISP perspective

- Deficiencies in our current tool chain
 - ▶ Do I really have to jump through hoops and long e-mail chains to **onboard new members**?
 - ▶ How do I **find trusted information** on who an organisation is in MISP?
 - ▶ How can I **manage a large cluster of MISPs** without tedious manual labour?
 - ▶ If I run a community through MISP, how can I reuse my member information for other community tasks such as mailing lists?
 - ▶ Information signing has been on the MISP roadmap for a long time - where do we get ground truths for a community from?

WHAT ISSUES IS CEREBRATE TRYING TO TACKLE?

■ Community management

- ▶ **Repository** of organisations and individuals
- ▶ Management of **sharing groups**
- ▶ **Exchange** of contact and sharing group information
- ▶ Cryptographic key lookup for **information signing**

■ Local tool management

- ▶ Instrumentation of **local tool interconnections**
- ▶ Local tool **fleet management**
- ▶ **Feeding** the local tools with Cerebrate data

2022-03-30

Managing information sharing communities

└ Community management and orchestration tool

└ What issues is Cerebrate trying to tackle?

- Community management
 - ▶ **Repository** of organisations and individuals
 - ▶ Management of **sharing groups**
 - ▶ **Exchange** of contact and sharing group information
 - ▶ Cryptographic key lookup for **information signing**
- Local tool management
 - ▶ Instrumentation of **local tool interconnections**
 - ▶ Local tool **fleet management**
 - ▶ **Feeding** the local tools with Cerebrate data

CEREBRATE: WHAT IS AVAILABLE CURRENTLY?

- A set of Common functionalities
- Contact Database
- Sharing group management
- Cerebrate to Cerebrate synchronisation
- Mailing list management
- Local tool orchestration - integration modules
- Inbox system
- Local tool fleet management

2022-03-30

Managing information sharing communities

└ Community management and orchestration tool

└ Cerebrate: What is available currently?

- A set of Common functionalities
- Contact Database
- Sharing group management
- Cerebrate to Cerebrate synchronisation
- Mailing list management
- Local tool orchestration - integration modules
- Inbox system
- Local tool fleet management

- Index of Organisations and Individuals
- Flexible meta-data model (community specific, constituency, etc)
- Content aware search functionalities

2022-03-30

- Managing information sharing communities
 - └ Community management and orchestration tool
 - └ Cerebrate: Contact database

- Index of Organisations and Individuals
- Flexible meta-data model (community specific, constituency, etc)
- Content aware search functionalities

CEREBRATE: CONTACT DATABASE

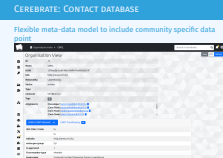
Flexible meta-data model to include community specific data point

The screenshot displays the 'Organisation View' for 'CIRCL' in the Cerebrate Contact Database. The interface includes a search bar at the top and a sidebar with navigation icons. The main content area shows a detailed view of the organisation, including its ID, Name, UUID, URL, Nationality, Sector, Type, Contacts, Tags, and Alignments. Below this, there are tabs for 'ENISA CSIRT Network' and 'CSIRT Constituency'. The bottom section lists various meta-data points and their values.

Meta-data Point	Value
ISO 3166-1 Code	lu
website	http://www.circl.lu/
enisa-geo-group	EU
is-approved	1
first-member-type	Member
team-name	Computer Incident Response Center Luxembourg

2022-03-30

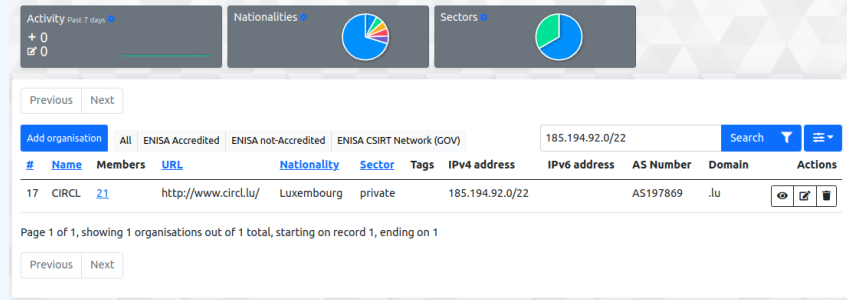
- Managing information sharing communities
 - Community management and orchestration tool
 - Cerebrate: Contact database



1. Cerebrate includes a system to support meta-data that can be attached to existing entities
2. This system is composed of a meta-template which defines additional data-points
3. It can be used to create new structures unknown to a default Cerebrate installation

Content aware search functionalities: CIDR block search

ContactDB Organisation Index

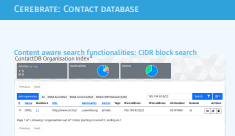


2022-03-30

Managing information sharing communities

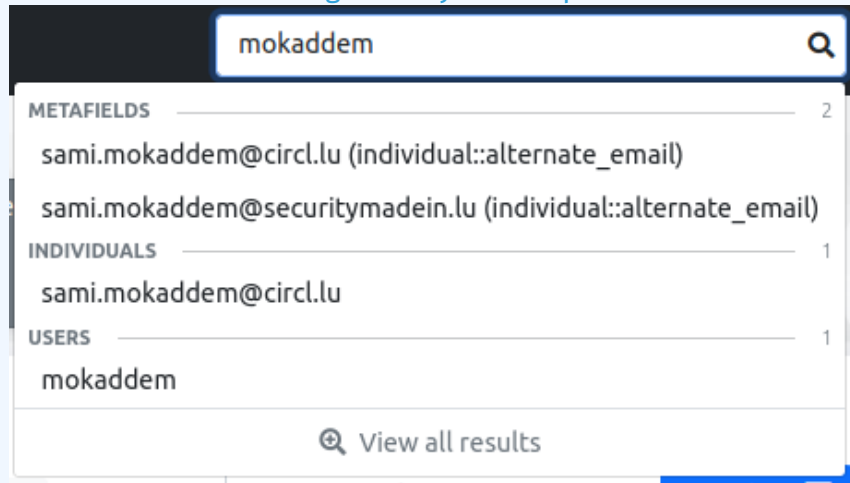
└ Community management and orchestration tool

└ Cerebrate: Contact database

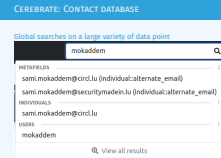


1. The meta-template system also support different data type
2. In this screenshot, we can a search for an IP address and the matching CIDR block is returned

Global searches on a large variety of data point



- Managing information sharing communities
 - Community management and orchestration tool
 - Cerebrate: Contact database



1. The tool allows users to search in a multiple of scope at the same time

CEREBRATE: SHARING GROUP MANAGEMENT

Allow to define sharing groups composed of organisations that can be download from another Cerebrate or from MISP

The screenshot shows the 'SharingGroup view' for 'Test Sharinggroup'. The group is associated with the 'CIRCL' organisation and is active. Below the details, the 'Organisations' section lists two members: CERT.be and CIRCL.

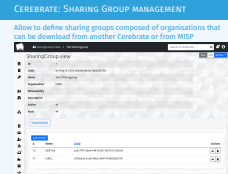
ID	UUID	Name	Organisation	Releasability	Description	Active	local
1	ee19cb12-531b-463d-87d6-b37df6b3e730	Test Sharinggroup	CIRCL			✓	✓

#	Name	UUID	Actions
13	CERT.be	acd27f7f-3dae-4481-b431-807431259c30	
17	CIRCL	55f6ea5e-2c60-40e5-964f-47a8950d210f	

2022-03-30

Managing information sharing communities
└ Community management and orchestration tool
└ Cerebrate: Sharing Group management

1. In this screenshot, we can see a sharing group composed of two organisations: CIRCL and cert.be



CEREBRATE: SHARING GROUP MANAGEMENT

Sharing groups can also be generated based on filters via the reusable blueprints

```
#19: Non-sanctioned financial organisations {
  "AND": {
    "OR": {
      "org_sector": "Financial",
      "sharing_group_id": 127
    },
    "NOT": {
      "org_nationality": [
        "Russia",
        "Russian Federation",
        "Belarus",
        "Republic of Belarus"
      ]
    }
  }
}
```

2022-03-30

Managing information sharing communities

└ Community management and orchestration tool

└ Cerebrate: Sharing Group management



1. In this screenshot, we can see a sharing group blueprint definition where
2. Organisation of the RU nationality are excluded
3. Organisation from the "Financial" sector are included
4. All organisation contained in the sharing group 127 are included

CEREBRATE: SYNCHRONISATION

CEREBRATE-CEREBRATE

Mechanism to exchange contact data via synchronisation

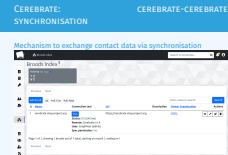
The screenshot displays the 'Broods Index' page in the Cerebrate application. At the top, there's a search bar labeled 'Search in Cerebrate...'. Below it, the 'Broods Index' title is followed by an activity summary: 'Activity Past 7 days' with '+ 0' and '- 0'. A table lists the broods, with one entry for 'cerebrate.misp-project.org'. The table columns are '#', 'Name', 'Connection test', 'Url', 'Description', 'Owner Organisation', and 'Actions'. The 'Connection test' column shows a 'Run' button and status details: 'Status: OK (243 ms)', 'Remote: Cerebrate v1.4', 'User: GraphMan (admin)', and 'Sync permission: Yes'. The 'Url' column shows 'https://cerebrate.misp-project.org'. The 'Owner Organisation' column shows 'CIRCL'. The 'Actions' column has icons for view, edit, and delete. At the bottom, it says 'Page 1 of 1, showing 1 broods out of 1 total, starting on record 1, ending on 1'.

#	Name	Connection test	Url	Description	Owner Organisation	Actions
1	cerebrate.misp-project.org	Run Status: OK (243 ms) Remote: Cerebrate v1.4 User: GraphMan (admin) Sync permission: Yes	https://cerebrate.misp-project.org		CIRCL	View Edit Delete

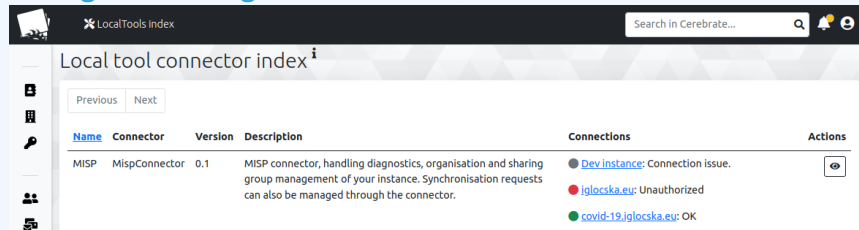
2022-03-30

- Managing information sharing communities
 - Community management and orchestration tool
 - Cerebrate: cerebrate-cerebrate synchronisation

1. Similar to MISP, cerebrate support data exchange to and from other Cerebrate instances



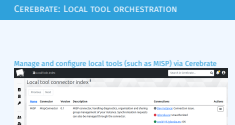
Manage and configure local tools (such as MISP) via Cerebrate



2022-03-30

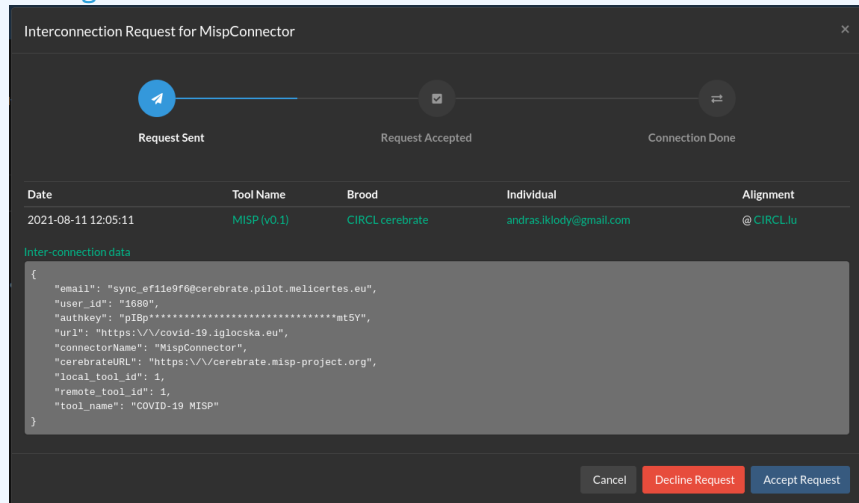
- Managing information sharing communities
 - Community management and orchestration tool
 - Cerebrate: Local tool orchestration

1. The screenshot shows that Cerebrate has a MISP connector
2. This connector is used to control 3 MISP instances where we can see their connection status



CEREBRATE: LOCAL TOOL ORCHESTRATION

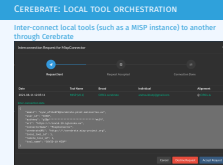
Inter-connect local tools (such as a MISP instance) to another through Cerebrate



2022-03-30

Managing information sharing communities
└ Community management and orchestration tool

└ Cerebrate: Local tool orchestration



1. The screenshot shows a message received from another Cerebrate instance
2. This message request the inter-connection of the local MISP instance with the MISP instance of the remote Cerebrate
3. To have the connection between the two MISP finalized, the user must accept the request, then the initiator must finalize it

- Budapest convention allowed us to have a public inventory of contact information
- Once this data is ingested in Cerebrate, we can make use of the search functionalities to quickly get the information we need

TODO: Include picture of data stored in Cerebrate

2022-03-30

- Managing information sharing communities
 - └ Community management and orchestration tool
 - └ Use case specific to law enforcement

■ Budapest convention allowed us to have a public inventory of contact information
■ Once this data is ingested in Cerebrate, we can make use of the search functionalities to quickly get the information we need
TODO: include picture of data stored in Cerebrate