

# MISP CORE DEVELOPMENT HANDS-ON EXERCISE

BUILDING A SMALL NIFTY FEATURE FOR THE MISP CORE

CIRCL / TEAM MISP PROJECT



MISP PROJECT



2022-09-13

MISP core development hands-on exercise

MISP CORE DEVELOPMENT HANDS-ON EXERCISE

BUILDING A SMALL NIFTY FEATURE FOR THE MISP CORE

CIRCL / TEAM MISP PROJECT



## SOME PRACTICAL THINGS FIRST...

- If you'd like to take a peak at the main files already implemented:  
<https://github.com/iglocska/misp-dev-training-cheat-sheet>
- Full implementation:  
[https://github.com/MISP/MISP/tree/dev\\_session/app](https://github.com/MISP/MISP/tree/dev_session/app)

2022-09-13

## MISP core development hands-on exercise

└─ Some practical things first...

- If you'd like to take a peak at the main files already implemented:  
<https://github.com/iglocska/misp-dev-training-cheat-sheet>
- Full implementation:  
[https://github.com/MISP/MISP/tree/dev\\_session/app](https://github.com/MISP/MISP/tree/dev_session/app)

## LET'S TRY TO DEVELOP A FEATURE TOGETHER

- Idea: Users should have the option to set alert filters for the publish alert e-mails
- By default receive all alerts as before
- If a filter is set, check if the alert is interesting for us or not

2022-09-13

## MISP core development hands-on exercise

└─ Let's try to develop a feature together

- Idea: Users should have the option to set alert filters for the publish alert e-mails
- By default receive all alerts as before
- If a filter is set, check if the alert is interesting for us or not

# HOW TO ENSURE THAT THE FEATURE IS USEFUL FOR THE COMMUNITY AT LARGE?

- Always try to think in reusable systems instead of fixing a single issue
  - ▶ Much higher chance of getting a PR merged if it doesn't just cover your specific use-case
  - ▶ Try to stay two steps ahead, see how your feature can be reused for other tasks

2022-09-13

## MISP core development hands-on exercise

- └ How to ensure that the feature is useful for the community at large?

- Always try to think in reusable systems instead of fixing a single issue
  - ▶ Much higher chance of getting a PR merged if it doesn't just cover your specific use-case
  - ▶ Try to stay two steps ahead, see how your feature can be reused for other tasks

- Allow users to set preferences for certain views
- For high level users, all the technical details are sometimes wasted
- Simply not being interested in certain types of data points
- Non-standard MISP deployments (island only MISP instances, etc)
- User pre-sets for certain settings

2022-09-13

## MISP core development hands-on exercise

### └ User settings - a long overdue feature

- Allow users to set preferences for certain views
- For high level users, all the technical details are sometimes wasted
- Simply not being interested in certain types of data points
- Non-standard MISP deployments (island only MISP instances, etc)
- User pre-sets for certain settings

# OBJECTIVES OF THE FEATURE

- User should be able to do the following with filter rules:
  - ▶ set
  - ▶ get
  - ▶ remove
  - ▶ index
- Filter rules should be flexible - we do not want to anticipate all possible settings in advance
- Ensure that the system is easy to extend and reuse

## Objectives of the feature

- User should be able to do the following with filter rules:
  - ▶ set
  - ▶ get
  - ▶ remove
  - ▶ index
- Filter rules should be flexible - we do not want to anticipate all possible settings in advance
- Ensure that the system is easy to extend and reuse

## BEFORE WE START WITH ANYTHING...

- Update our MISP instance (git pull origin 2.4)
- Fork github.com/MISP/MISP (via the github interface)
- Add a new remote to our fork:
  - ▶ via username/password auth: git remote add my\_fork <https://github.com/iglocska/MISP>
  - ▶ via ssh: git remote add my\_fork [gitgithub.com:iglocska/MISP.git](https://github.com/iglocska/MISP.git)
- Generally a good idea to work on a new branch: git checkout -b dev\_exercise
- Enable debug in MISP

## MISP core development hands-on exercise

└ Before we start with anything...

- Update our MISP instance (git pull origin 2.4)
- Fork github.com/MISP/MISP (via the github interface)
- Add a new remote to our fork:
  - ▶ via username/password auth: git remote add my\_fork <https://github.com/iglocska/MISP>
  - ▶ via ssh: git remote add my\_fork [gitgithub.com:iglocska/MISP.git](https://github.com/iglocska/MISP.git)
- Generally a good idea to work on a new branch: git checkout -b dev\_exercise
- Enable debug in MISP

## ■ Storage:

- ▶ Single key/value table for all settings
- ▶ Each user should be able to set a single instance of a key
- ▶ Values could possibly become complex, let's use JSON!
- ▶ Add timestamping for traceability
- ▶ Consider which fields we might want to look-up frequently for indexing

2022-09-13

## MISP core development hands-on exercise

### └ Implementation

- Storage:
  - ▶ Single key/value table for all settings
  - ▶ Each user should be able to set a single instance of a key
  - ▶ Values could possibly become complex, let's use JSON!
  - ▶ Add timestamping for traceability
  - ▶ Consider which fields we might want to look-up frequently for indexing



## ■ The table structure:

- ▶ id int(11) auto increment //primary key
- ▶ key varchar(100) //add index!
- ▶ value text //json
- ▶ user\_id int(11) //add index!
- ▶ timestamp int(11) //add index!

## ■ Tie it to into the upgrade system (app/Model/AppModel.php)

## ■ Test our upgrade process! Check the output in the audit logs

### └─The database changes we need

- The table structure:
  - ▶ id int(11) auto increment //primary key
  - ▶ key varchar(100) //add index!
  - ▶ value text //json
  - ▶ user\_id int(11) //add index!
  - ▶ timestamp int(11) //add index!
- Tie it to into the upgrade system (app/Model/AppModel.php)
- Test our upgrade process! Check the output in the audit logs

## ■ Outline of the changes needed:

- ▶ New Controller (UserSettingsController.php)
- ▶ New Model (UserSetting.php)
- ▶ New Views (setSetting, index)
- ▶ Add new controller actions to ACL
- ▶ Update the e-mail alert system to use the functionality

### └ Checklist

- Outline of the changes needed:
  - ▶ New Controller (UserSettingsController.php)
  - ▶ New Model (UserSetting.php)
  - ▶ New Views (setSetting, index)
  - ▶ Add new controller actions to ACL
  - ▶ Update the e-mail alert system to use the functionality

## CREATE THE NEW MODEL SKELETON

- location: `/var/www/MISP/app/Model/UserSetting.php`
- Create basic skeleton
- Add model relationships (`hasMany/BelongsTo`)
- Use the hooking functionality to deal with the JSON field (`beforeSave()`, `beforeFind()`)
- Add a function that can be used to check if a user should get an alert based on filters (`checkPublishFilter()`)
- Add a function to check if a user can access/modify a setting (`checkAccess()`)

2022-09-13

## MISP core development hands-on exercise

### └─ Create the new Model skeleton

- location: `/var/www/MISP/app/Model/UserSetting.php`
- Create basic skeleton
- Add model relationships (`hasMany/BelongsTo`)
- Use the hooking functionality to deal with the JSON field (`beforeSave()`, `beforeFind()`)
- Add a function that can be used to check if a user should get an alert based on filters (`checkPublishFilter()`)
- Add a function to check if a user can access/modify a setting (`checkAccess()`)

- location: `/var/www/MISP/app/Model/UserSetting.php`
- Create basic skeleton
- Set pagination rules
- Define CRUD functions (exceptionally, we diverge here from the norm)
  - ▶ `setSetting()`
  - ▶ `getSetting()`
  - ▶ `index()`
  - ▶ `delete()`

### └─ Create the Controller skeleton

- location: `/var/www/MISP/app/Model/UserSetting.php`
- Create basic skeleton
- Set pagination rules
- Define CRUD functions (exceptionally, we diverge here from the norm)
  - ▶ `setSetting()`
  - ▶ `getSetting()`
  - ▶ `index()`
  - ▶ `delete()`

## ■ setSetting():

- ▶ Accepted methods: ADD / POST
- ▶ Separate handling of API / UI
- ▶ POST should create/update an entry
- ▶ GET should describe the API

└ Start with an API only approach at first

- setSetting():
  - ▶ Accepted methods: ADD / POST
  - ▶ Separate handling of API / UI
  - ▶ POST should create/update an entry
  - ▶ GET should describe the API

■ `getSetting()`:

- ▶ Accepted methods: GET
- ▶ Retrieves a single setting based on either ID or setting key and user\_id
- ▶ Encode the data depending on API/UI
- ▶ Accepted methods: GET
- ▶ List all settings
- ▶ Filter user scope on demand
- ▶ Filter available scopes based on role

└─ `getSetting / index`

- `getSetting()`:
  - ▶ Accepted methods: GET
  - ▶ Retrieves a single setting based on either ID or setting key and user\_id
  - ▶ Encode the data depending on API/UI
  - ▶ Accepted methods: GET
  - ▶ List all settings
  - ▶ Filter user scope on demand
  - ▶ Filter available scopes based on role

## ■ delete():

- ▶ Accepted methods: POST / DELETE
- ▶ Deletes a single entry based on ID or setting key
- ▶ Encode the data depending on API/UI

└ delete

- delete():
  - ▶ Accepted methods: POST / DELETE
  - ▶ Deletes a single entry based on ID or setting key
  - ▶ Encode the data depending on API/UI

- Tie functions into checkAccess():
  - ▶ Check if user is allowed to execute actions and throw exceptions if not
  - ▶ Add it to: setSetting() / getSetting() / delete()
- Consider that:
  - ▶ Site admins have full reign
  - ▶ Org admins can manage their own users
  - ▶ Everyone else can self-manage

### └ Add the ACL functionalities

- Tie functions into checkAccess():
  - ▶ Check if user is allowed to execute actions and throw exceptions if not
  - ▶ Add it to: setSetting() / getSetting() / delete()
- Consider that:
  - ▶ Site admins have full reign
  - ▶ Org admins can manage their own users
  - ▶ Everyone else can self-manage



- Use the REST client
- Expectations
  - ▶ GET on /setSetting and /delete describing our endpoints
  - ▶ POST /setSetting with "key": "publish\_filter", "value": "Event.tags":"%sofacy%" should return newly added or modified filter
  - ▶ GET on /index should list our entries, GET on /getSetting should show an individual entry
  - ▶ DELETE on /delete should delete the entry

### └─ Test the functionalities

- Use the REST client
- Expectations
  - ▶ GET on /setSetting and /delete describing our endpoints
  - ▶ POST /setSetting with "key": "publish\_filter", "value": "Event.tags":"%sofacy%" should return newly added or modified filter
  - ▶ GET on /index should list our entries, GET on /getSetting should show an individual entry
  - ▶ DELETE on /delete should delete the entry

### ■ We now have a rudimentary CRUD, let's add some simple UI views

- ▶ setSetting as a simple form
- ▶ index should use the parametrised generators (IndexTable)
- ▶ Add both views to the menu systems (side-menu, global menu)
- ▶ Don't forget about sanitisation and translations!

### └ Start adding the UI components

- We now have a rudimentary CRUD, let's add some simple UI views
  - ▶ setSetting as a simple form
  - ▶ index should use the parametrised generators (IndexTable)
  - ▶ Add both views to the menu systems (side-menu, global menu)
  - ▶ Don't forget about sanitisation and translations!

# ADD THE CHECKPUBLISHFILTER() FUNCTION TO THE E-MAILING

- Trace the code path of the e-mail sending to understand the process
- Decide on the best place to inject our check
- Don't break the flow of the process!
- What do we have access to at this point? What format are they in?

2022-09-13

## MISP core development hands-on exercise

└─ Add the checkPublishFilter() function to the e-mailing

- Trace the code path of the e-mail sending to understand the process
- Decide on the best place to inject our check
- Don't break the flow of the process!
- What do we have access to at this point? What format are they in?

## TEST IF OUR CODE WORKS CORRECTLY

- Do we see any notices / errors?
- Is our code easily accessible?
- Consider other roles! Can users/org admins do things we don't want them to do?
- Is our code-base breaking the default behaviour?
- Is our update script working as expected?

2022-09-13

## MISP core development hands-on exercise

└─ Test if our code works correctly

- Do we see any notices / errors?
- Is our code easily accessible?
- Consider other roles! Can users/org admins do things we don't want them to do?
- Is our code-base breaking the default behaviour?
- Is our update script working as expected?

# PUSH OUR CODE TO OUR FORK AND CREATE A PULL REQUEST

- git status to check what changed / got added
- git add /path/to/file to add files we want to commit
- git commit (format: is "new/fix/chg: [topic] My description")
- git push my\_fork
- Create pull request from the github interface
- Wait for Travis to run, update the code if needed

2022-09-13

## MISP core development hands-on exercise

└─ Push our code to our fork and create a pull request

- git status to check what changed / got added
- git add /path/to/file to add files we want to commit
- git commit (format: is "new/fix/chg: [topic] My description")
- git push my\_fork
- Create pull request from the github interface
- Wait for Travis to run, update the code if needed