

MISP CORE DEVELOPMENT HANDS-ON EXERCISE

BUILDING A SMALL NIFTY FEATURE FOR THE MISP CORE

CIRCL / TEAM MISP PROJECT



13TH ENISA-EC3 WORKSHOP



2024-10-02

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



13TH ENISA-EC3 WORKSHOP



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

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

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

2024-10-02

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

2024-10-02

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

2024-10-02

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

2024-10-02

MISP core development hands-on exercise

└ Objectives of the feature

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

└ 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

- 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())

2024-10-02

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())

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()`

2024-10-02

MISP core development hands-on exercise

└ 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

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

2024-10-02

MISP core development hands-on exercise

└ 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?

2024-10-02

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?

2024-10-02

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

2024-10-02

MISP core development hands-on exercise

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

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