

8. Notification

Drupal core provides logging capabilities through its `watchdog()` function which basically operates by registering system events, such as available updates, security issues, and user account events which can be, then, notified to administrators, researchers, and collaborators. Severity of events on Drupal is determined after the RFC3164 (which specifies the BSD syslog protocol). PECE has specific needs, however, that require extending the standard email notification system of Drupal.

Automated notification capabilities are handled on PECE by security modules (as explained in the “Data Access and Security” section) and messaging modules. These capabilities include the ability to report all sorts of events to the user on various levels: **system level** (related to the platform itself), **account level** (related to specific users), and **content level** (related to additions, modifications, and deletion of artifacts). PECE's notification system follows “user roles” when addressing specific users with respect to the nature of the event. It also supports notifications that are addressed to research groups via PECE's group functionality: OG member subscribe and OG new content creation, change, or deletion.

There are two types of notification: **email** and **in-system**, respectively, notifying users and administrators based on their email contact or upon log-in (as shown below as an example, the information about last successful log-in):

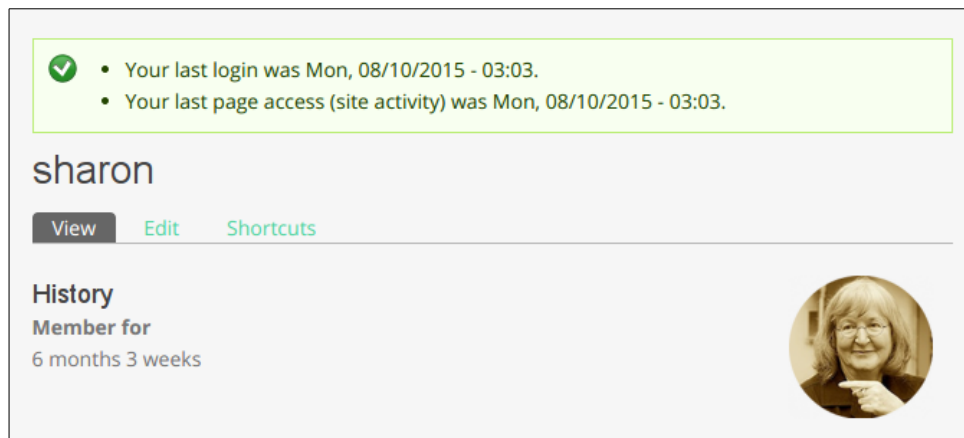


Figure X. Successful authentication in-system notification.

This type of notification is not only useful for security reasons (as explained in the section on “Data Security and Access Control”) but also for keeping users and administrators informed about the overall activity on the website with relation different types of content.

Email notifications are by default configured to display: subject string, site name, addressee name, notification body text, and link (if relevant to a piece of content that was created, modified, deleted or expired). They can address individual user accounts or groups.

The table below describes the configuration of PECE's notification system in regards to scope, notification message, type, and addressee:

Scope	Notification Message	Type	Addressee
System	update	<i>email</i>	admin
	successful or failed backup	<i>email</i>	admin
	disk almost full (90%)	<i>email</i>	admin
User Accounts	creation (by admin)	<i>email</i>	researcher, collaborator
	awaiting approval	<i>email</i>	researcher, collaborator
	blocking	<i>email</i>	researcher, collaborator
	activating	<i>email</i>	researcher, collaborator
	cancelling	<i>email</i>	researcher, collaborator
	deletion	<i>email</i>	researcher, collaborator
	break-in attempt	<i>email</i>	admin
	password recovery	<i>email</i>	researcher, collaborator
	last login date/time	<i>in-system</i>	admin, researcher, collaborator
	last site activity date/time	<i>In-system</i>	admin, researcher, collaborator
Artifacts	creation	<i>in-system</i>	group
	change	<i>in-system</i>	content creator, group
	deletion	<i>in-system</i>	content creator, group
	expiration	<i>email</i>	content creator

Notifications are sent automatically depending on the configuration described above. They are configured and triggered by the “rules” module which monitors the system log and executes an action. Here is an example of an exported machine-actionable rule for notifying a particular user that his or her artifact has expired:

```
"rules_pece_artifact_expired" : {
  "LABEL" : "PECE Artifact Expired",
  "PLUGIN" : "reaction rule",
  "OWNER" : "rules",
  "REQUIRES" : [ "rules", "node_expire"],
  "ON" : { "node_expired" : [] },
  "DO" : [
```

```
{ "mail" : {
  "to" : [ "node:author:mail" ], "subject" :
  "[[site:name]]: \u0022[node:title]\u0022 has expired",
  "message" : "Dear [node:author],\r\n\r\nThe content for the
               artifact [node:title] has expired on
               [node:field-expirationdate].\r\nYou can access
               the artifact at thisURL:\r\n[node:url]\r\n\r\n
               This is an automatic notification from PECE\u0027s
               [site:name].\r\n\t"} }
```

This rule, for instance, is executed every time an artifact is modified in the system. It collects the title of the node that was modified and reports to the author of the node. Another example is the notification of a modification in an artifact if the modification was not performed by the author him or herself:

```
"rules_pece_artifact_change" : {
  "LABEL" : "PECE Artifact Change",
  "PLUGIN" : "reaction rule",
  "OWNER" : "rules",
  "REQUIRES" : [ "rules" ],
  "ON" : { "node_update" : [ ] },
  "IF" : [
    { "NOT data_is" : { "data" : [ "node:author" ],
      "value" : [ "site:current-user" ] } }
  ],
  "DO" : [
    { "drupal_message" : { "message" : "Artifact
      \u0022[node:title]\u0022 has been updated." } }
  ]
}
```

For these two examples, notifications are generated as an email and as a system status messages.

One important observation regarding the notification system is that the logging function is pre-configured differently for the two main types of PECE distribution: **distro package format** (tar.gz) and **distro virtual machine (VM) image**. For the former, the core module “dblog” is used for logging events on the database whereas for the latter, `syslog` at the OS level is used instead for better performance. This technical difference does not impact the management or usage of the system (except for the a small decrease in performance when using “dblog”).

Instruction for developers: Notification depends on the module “rules” (7.x-2.9). The core module “dblog” has to be configured (via `/admin/config/development/logging`) to “error messages to display” to `none` and maintain the default setting of “1000” for the option “Database log messages to keep”. Also, the module “rules” has to be activated for the

notification system to work. The configuration files provided in the appendix should be imported via configuration interface for the “rules” module. Configuration for displaying artifacts (creation, update, deletion, and expiration) will be done with “views” for organic groups. Only *in-system* and *email* notifications will be set-up with this additional configuration file.