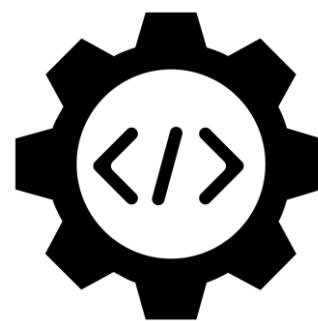


2015

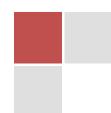
# SAFAX

## Administrator Manual



User Management    [Statistics](#)    [Issues](#)    Register Service

TU/e Security Group





## Table of Contents

Introduction .....	2
List of Acronyms and Definitions .....	3
List of Acronyms.....	3
List of Definitions .....	3
Administrators .....	4
User Administration.....	5
User Management .....	5
User Registration Activation .....	6
Statistics .....	7
User Statistics.....	7
Demo Statistics .....	8
Performance Statistics .....	8
UCON Performance Statistics .....	10
Issues Management.....	11
Register Service.....	12
View Existing Services .....	13
View Existing Service Interfaces.....	14
Modify Existing Services.....	15
Modify Existing Service Interfaces .....	15
Remove Existing Services .....	15
Remove Existing Service Interfaces .....	15
Add/ Register New Services .....	15
Add/ Register New Service Interfaces .....	15
References .....	16



## Introduction

Cloud storage services have become increasingly popular in recent years. Users are often registered to multiple cloud storage services that suit different needs. However, the ad-hoc manner in which data sharing between users is implemented leads to issues for these users. For instance, users are required to define different access control policies for each cloud service they use and are responsible for synchronizing their policies across different cloud providers. Users do not have access to a uniform and expressive method to deal with authorization. Current authorization solutions cannot be applied *as-is*, since they cannot cope with challenges specific to cloud environments.

In order to address these challenges we have developed SAFAX [1], an extensible authorization framework offered as a service. SAFAX provides a novel XACML-based architectural framework tailored to the development of extensible authorization services for clouds. The key design principle underlying SAFAX is that all components are loosely coupled services, thus providing the flexibility, extensibility and scalability needed to manage authorizations in cloud environments. SAFAX's architecture allows users to: *a)* deploy their access control policies in a standard format; *b)* in a single location; and *c)* augment policy evaluation with information from user selectable external trust services.

In order to ease the management of policies and configuration of policies, SAFAX provides users with a Graphical User Interface (referred as SAFAX GUI) that communicates with the SAFAX services.

This document presents the functionalities for administrators provided by the SAFAX GUI.



---

### List of Acronyms and Definitions

**List of Acronyms**

CH: Context Handler

GUI: Graphical User Interface

PAP: Policy Administration Point

PEP: Policy Enforcement Point

PIP: Policy Information Point

SAFAX: eXtensible Authorization Framework As a Service

UDF: User Defined Function

### List of Definitions

Administrator: a user who is responsible for the management of SAFAX.



## Administrators

Administrators in SAFAX are users responsible for the management of users and SAFAX configurations. They can activate user registration requests, add a user to a group, view statistics, manage the issue tracker and change service registry settings.

An administrator account is a registered account that is assigned to an admin group (see Section ‘User Management’).

Functionalities for administrators are accessible through the Administration tab in the header of the SAFAX GUI (Figure 1).

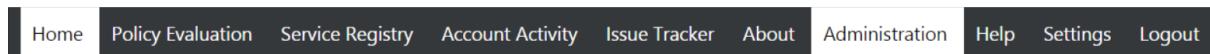


Figure 1 SAFAX GUI Menu

The following sections are then displayed (Figure 2):

- User Admin
- Statistics
- Issues
- Register Service



Figure 2 Functionalities under Administration Tab



# User Administration

## User Management

All users within SAFAX are displayed in the scrollable vertical list. Administrators can type a user name to search for a certain user (Figure 3).

The screenshot shows a search interface titled 'Find Users'. A search bar contains the placeholder 'Users' and a magnifying glass icon. Below the search bar is a scrollable list of user IDs. The visible list includes:  
035bac839ef244c2ab9a995a8411e8f9  
0c18dddbd917405cb0af8471f3a48936  
14ef07fb5bc542709787bd67c83fa105  
15b83850ce11479c9bb3ca4bb79a2346  
206f3f9ed7774936a2a87c135e661419  
...  
The list is scrollable, indicated by a vertical scrollbar on the right.

Figure 3 A list of Users under User Management Tab

When a user is selected, administrator can view and/or edit user information:

- *Username*,
- *Full Name*,
- *Email*,
- *Group*

Administrators can also change a user's password (Figure 4).

The screenshot shows a form for editing a user's details. The fields are as follows:  
User Name: stuer  
Full Name: Julian Stuer  
email: stuer@hm.edu  
Password: (empty field)  
Confirm Password: (empty field)  
Assign Groups:  
Find Groups: User Group (with search icon) and a list of groups (empty).  
Assigned Groups: registered (in a scrollable list).  
Below the form is a red horizontal bar with the text 'SAFAX'.

Figure 4 Detailed View of a Specific User



## User Registration Activation

When a new user register an account in SAFAX, the name, user id and email are displayed in the Activation Requests.

An administrator can approve or delete the request as shown in Figure 5.

The screenshot shows a user interface titled "Activation Requests". It displays a single activation request for a user named "new\_user" with the email "new\_user@gmail.com". Below the request are two buttons: "Approve" and "Delete".

Activation Requests	
new_user@gmail.com	
New User	
new_user	
<button>Approve</button>	<button>Delete</button>

Figure 5 Activation Request under User Management Tab



## Statistics

The Statistics Tool allows administrators to view statistics about the use of SAFAX by selecting the *Statistic* pannel (Figure 6). Statistics concerns:

- User statistics: provides information about SAFAX users.
- Demo statistics: which provides information about the demos created in SAFAX.
- Performance statistics: which provides information about the performance of SAFAX.

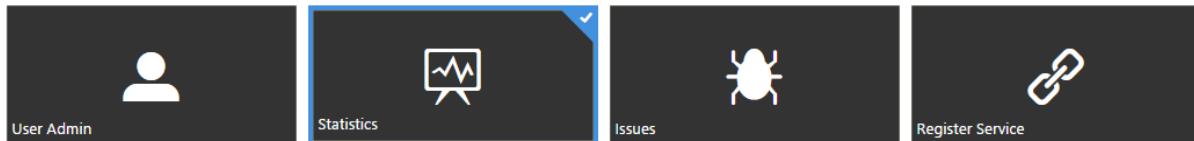


Figure 6 SAFAX Statistics Tool

### User Statistics

This view holds statistics about SAFAX users (Figure 7). Registered users are grouped into:

- *Administrators*: responsible for establishing and managing user accounts and demos.
- *Students*: responsible for creating demos and uploading XACML policies.
- *Staff*: responsible for creating demos and uploading XACML policies.
- *Partners*: responsible for creating demos and uploading XACML policies.

The view also provides statistics about unregistered users (bottom of Figure 7). In particular:

- *Total guest*: the total number of guess sessions, including both active and not active guests.
- *Active Guests*: guess sessions that are currently using SAFAX. After 16.6 minutes of inactivity, an active guest is removed.

User Statistics	
Total Registered Users:	30
Administrators:	5
Students:	13
Staff:	6
Partners:	2
Total Guests:	34
Active Guests:	0

Figure 7 User Statistics View



## Demo Statistics

This view holds statistics about SAFAX projects and demos (Figure 8). In particular, this view provide information about:

- *Total Project*: the total number of projects created
- *Total Demos*: each project contains many demos. This is the total number of demos created.
- *Demos per Project*: the average number of demos per project
- *Demos per User*: the average number of demos created by users
- *Demos with Trust Policies*: the total number of demos configured with trust policies
- *Demos with Requests*: the total number of demos configured with XACML request

Demo Statistics

Total Projects: 22
Total Demos: 49
Demos Per Project: 2.23
Demos Per User: 1.63
Demos with Trust Policies: 17
Demos with Requests: 30

Figure 8 Demo Statistics View

## Performance Statistics

This view holds statistics about SAFAX services performance time (Figure 9). Administrators can choose all users or a specific user to view the evaluation time relating to these users. Administrators can also choose a period of time.

The view displays information of the policy evaluation performed within SAFAX:

- *Number of evaluations*
- *Total evaluation time*

It also shows the average performance for each service component: PEP, PIP, PAP, CH, PDP, and UDF.

The performance of the PEP starts when the PEP receives an XACML request from the SAFAX GUI. It ends when the PDP finishes evaluates the request, send back the result to the CH, and finally the CH send back the result to the PEP.

The performance of the CH starts when the CH receives an XACML request from the PEP. It ends when the PDP finishes evaluates the request and send back the result to the CH.

The performance of the PIP starts when the PIP receives a request from the CH to get additional attributes. It ends when the PIP finishes getting the values of the attributes.

The performance of the UDF starts when the UDF receives a calling function request from the PDP. It ends when the UDF finishes calling the function.



The performance of the PDP starts when the PDP received an XACML request from the CH. It ends when the PDP finishes evaluates the request and is going to send back the result to the CH.

### Performance Statistics

Select User

Start:  End:

Select PDP

Select PEP

Select PIP

Select CH

Select UDF

**View Statistics**

Number of Evaluations: 154

---

Total Evaluation Time: 5.257 seconds

---

PDP Evaluation Time: 0.672 seconds

---

PEP Evaluation Time: 4.276 seconds

---

PIP Evaluation Time: 0.246 seconds

---

CH Evaluation Time: 3.212 seconds

---

UDF Evaluation Time: 0.288 seconds

**Figure 9 Average Statistics View**

To view the statistics of the evaluations performed using particular service instances, click a service type (PDP, PEP, PIP, CH, or UDF) and tick the service instances of interest from the drop down menu as shown in Figure 10.



The screenshot shows a vertical sequence of six rectangular input fields, each with a light gray header and a dark blue body. From top to bottom, the headers are: "Select PDP", "Select PEP", "Select PIP", "Select CH", and "Select UDF". The "Select PEP" field contains a list of five items, each preceded by a checked checkbox: "PEP", "Transparent PEP", "UCON PEP", "UCON Obligation Service", and "Safax PEP".

Figure 10 Tick to choose a service instance

## UCON Performance Statistics

The performance of a UCON session instance starts when the PEP UCON receives an XACML request from the SAFAX GUI. It only ends when the users request to stop or restart the UCON session. The evaluation time of a UCON sesion is then calculated (Figure 11).

### UCON Performance Statistics

Number of UCON Sessions: 3

UCON Session Time: 36.869 seconds

Figure 11 Tick to choose a service instance



## Issues Management

SAFAX provides an integrated issue reporting tool. It is accessible by selecting the *Issue* panel (Figure 12). Administrators can view a list of reported issues or requested new features by clicking *Issues* icon in the *Administration* tab.

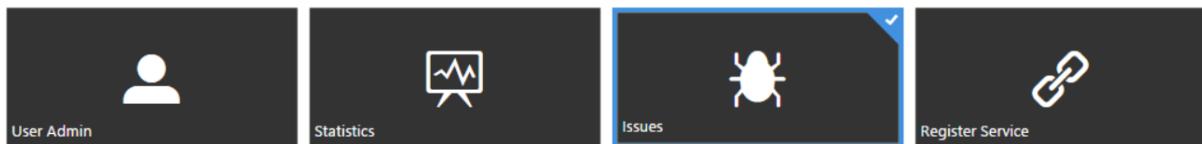


Figure 12 SAFAX Issues Tool

A list of reported Issues is displayed on the screen (Figure 13) and an administrator can mark an issue as resolved by clicking *Mark as Resolved* button on the bottom right of the issue description. Resolved issues are then displayed in the *Issue Tracker* menu (Figure 14).

### Reported Issues

#### Bug: duplicate button in Service Registry

The bug is not 100% repeatable 1. login as admin 2. go to administration -> register service 3. select nl:tue:sec:safax:ch 4. click on register new service interface Cancel appears duplicated. The left button appears to be working correctly; the right button creates some problems: 5. click on right button Cancel 6. click on modify interface result: double "save", double "cancel"

Reported By ~admin

Mark as Resolved

#### Bug: Progress bar does not dissapear when selecting user in User Management

1. login as admin 2. go to administration -> user admin 3. click on alex The progress bar does not dissapear after all data are fetched; the page is still functional (it's not blocked by smth in the back)

Reported By ~admin

Mark as Resolved

#### Bug: create demo button does not make sense in the edit project page

1. click on edit project (any proj) 2. In the "Edit Project Settings" view, there is still the button to add new demos (top right), which is very counter-intuitive

Reported By ~alex.egner

Mark as Resolved

Figure 13 SAFAX Reported Issues waiting for Administrator to resolve



## Reported Issues

### Bug: Progress bar does not disappear when selecting user in User Management

1. login as admin 2. go to administration -> user admin 3. click on alex The progress bar does not disappear after all data are fetched; the page is still functional (it's not blocked by smth in the back)

Reported By ~admin

### Bug: create demo button does not make sense in the edit project page

1. click on edit project (any proj) 2. In the "Edit Project Settings" view, there is still the button to add new demos (top right), which is very counter-intuitive

Reported By ~alex.egner

## Resolved Issues

### Bug: duplicate button in Service Registry

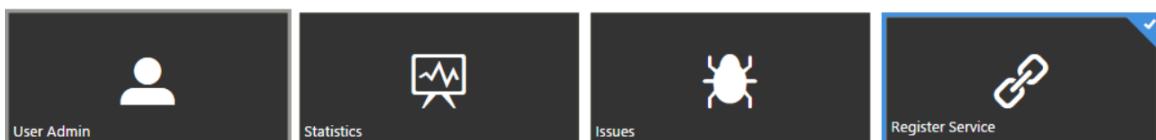
The bug is not 100% repeatable 1. login as admin 2. go to administration -> register service 3. select nl:tue:sec:safax:ch 4. click on register new service interface Cancel appears duplicated. The left button appears to be working correctly; the right button creates some problems: 5. click on right button Cancel 6. click on modify interface result: double "save", double "cancel"

Reported By ~admin

**Figure 14 Issue Tracker View**

## Register Service

A service must be registered with SAFAX in order to be used in the authorization process. Functionalities concerning service registration are accessible through *Register Service* in the *Administration* tab (Figure 15).



**Figure 15 SAFAX Register Service Tool**

Administrators can choose to (Figure 16):

- View existing services
- View existing service interfaces
- Modifying existing services
- Modifying existing service interfaces
- Remove existing services
- Remove existing service interfaces
- Add/ register new services
- Add/ register new service interfaces



Service Action	Register New Service	Modify Service	Remove Service
Service Interface Action	Register New Service Interface		

Figure 16 Service and Service Interface Actions

## View Existing Services

A list of existing services are then displayed in the left of the GUI as shown in Figure 177.



Figure 17 List of Existing Services

Administrators can click a specific service to see more details. In particular, the following information are displayed (Figure 18):

- Service ID
- Service Name
- Service Component
- Service Provider
- Service URL
- Service Description
- Service Dependencies



Service ID	nl:tue:sec:ch
Service Name (URN)	Context Handler - v2
Service Component	ch
Service Provider	TUE
Service URL	http://localhost/ch
Service Description	default
Service Dependencies	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Service List</p> <ul style="list-style-type: none"> <li>nl:tue:sec:pep</li> <li>nl:tue:sec:safax:pdp</li> <li>nl:tue:sec:safax:pap</li> <li>nl:tue:sec:pip</li> <li>urn:ntue:sec:pdp:1.0:udf:repu</li> <li>urn:ntue:sec:pdp:1.0:udf:repu</li> <li>urn:ntue:sec:pdp:1.0:udf:cred</li> </ul> </div> <div style="margin-left: 20px;"> <p>Dependency</p> <div style="border: 1px solid #ccc; padding: 5px; height: 100px;"></div> </div> </div>

Figure 18 View Existing Services

## View Existing Service Interfaces

A service can contains many service interfaces. Administrators can click the arrow button to expand service interface nodes under an existing service. Admistrators can click a specific service interface (Figure 19) to see more details such as:

- Service Interface Name
- Endpoint URL
- Service Type
- Service Parameters
- Return Type
- Service Interface Description

Service Interface Name	evaluate
Endpoint Interface URL	/evaluate
Service Type	<input type="radio"/> GET <input checked="" type="radio"/> POST
Service Parameteres	2
Return type	xml
Service Description	na

Figure 19 View Existing Service Interfaces



## Modify Existing Services

While an existing service is displayed, click *Modify Service* button. Click *Save* to confirm changes. Or click *Cancel* to cancel the action.

## Modify Existing Service Interfaces

While an existing service interface is displayed, click *Modify Interface* button. Click *Save* to confirm changes or click *Cancel* to cancel the action.

## Remove Existing Services

While an existing service is displayed, click *Remove Service* button. Click *Ok* to confirm changes or click *Cancel* to cancel the action.

## Remove Existing Service Interfaces

While an existing service is displayed, click *Remove Interface* button. Click *Ok* to confirm changes or click *Cancel* to cancel the action.

## Add/ Register New Services

While an existing service is displayed, click *Register New Service* button. Enter the following information:

- Service ID
- Service Name
- Service Component
- Service Provider
- Service URL
- Service Description
- Service Dependencies

Finally, click *Save* to confirm changes or click *Cancel* to cancel the action.

## Add/ Register New Service Interfaces

While an existing service is displayed, click *Register New Service Interface* button. The new service interface belongs to the currently selected service. Enter the following information:

- Service Interface Name
- Endpoint URL
- Service Type
- Service Parameters
- Return Type
- Service Interface Description

Finally, click *Save* to confirm changes or click *Cancel* to cancel the action.



---

## References

- [1] S. P. Kaluvuri and A. I. Egner and J. den Hartog and N. Zannone. SAFAX -- an extensible authorization service for cloud environments. *Frontiers in ICT* 2(9), 2015.