SAFAX Overview
SAFAX Architecture
SAFAX Features
SAFAX Overview

- SAFAX is an eXtensible Authorization Service
- XACML Compliant
- Tailored specifically for cloud environments
- Can consume information from additional trust sources during policy evaluation – extensible
- Includes a User Interface for Policy Administration
XACML provides extensibility points through the use of “User Defined Functions”.

There are many different implementations of XACML available.

XACML standard is underspecified – and it does not pose too many constraints on the implementations.
Current XACML Implementations – based on SUN XACML, HERAS-AF or Balana are implemented as Monolithic Components.

Extensions are typically bundled with the implementation.

They cannot consume external information during policy evaluation.

Major stumbling blocks – when applied in cloud environments.
SAFAX - AZaaS

- XACML compliant policy evaluation engine
- Can cater to traditional and cloud provisioning models
- Modular, Extensible, Flexible, Scalable and Interoperable
- Offers Authorization As A Service (AZaaS)
SAFAX Architecture
Domain specifies a data set managed by a user
Domain Owner is a user to whom the domain belongs.
Domains Controller is typically the host which controls multiple user domains (e.g. Cloud providers)
SAFAX Architecture

- Provides different users a single point to deploy their access control policies
- Provides flexibility to users to configure their PDPs and trust services
- Relieves domain controllers from custom solutions
- Developers can extend the PDP by registering new trust services
  - Reputation scores, Credentials etc.
Router directs the request from DC to the PDP assigned to the user

PDPC allows users to configure their PDPs
  - version, implementation, external trust services

PAP allows Domain Owners to deploy their policies

PDP uses the trust service repository to make service invocations
SAFAX Architecture

- External Services must conform to API specifications
  - RESTful
  - JSON/XML
- Services must be registered with SAFAX
  - Unique Function Identifier (URN)
  - Service Endpoint (URI)
  - Method call type (POST/GET)
  - Input parameters number
  - Output Parameter type
  - Message format
SAFAX Implementation

- Developed in JAVA
- Jersey as Service Framework
- Tomcat as Application Server
- MySQL for persistence
- JSON and XML for messaging
- Browser based GUI for demonstration purposes
  - HTML
  - CSS
  - JS
  - AJAX
- PDP Implementation
  - HERAS-AF
USING SAFAX

- Users can create PROJECTS
  - Each project contains DEMOS
    - Each demo contains POLICIES
    - Demos can be configured according to user preferences
  - Users can evaluate their policies against access requests
  - Users can review their actions and analyze the logs generated by SAFAX
- SAFAX comes with an integrated Issue Reporting tool
  - Users can report bugs or request for new features
SAFAX Tutorial – Creating Projects

SAFAX
A Flexible and Extensible Authorization Service

Projects

Start a new Project

mickey
mouse

Project Name

Unique Project Name

Project Description

Project Homepage

Make Private

Assign members to project

Find Users

Assigned Users

Create Project
SAFAX Tutorial – Creating Projects
You can keep your projects private.
SAFAX Tutorial – Creating Projects

You can share your project with other users.
**SAFAX Tutorial – Creating Demos**

<table>
<thead>
<tr>
<th>Projects</th>
<th>No Demos</th>
</tr>
</thead>
<tbody>
<tr>
<td>mickey mouse</td>
<td><img src="image" alt="Sample Project" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demo Name</th>
<th>Unique Demo Name</th>
</tr>
</thead>
</table>

| Demo Description | |
|------------------| |

<table>
<thead>
<tr>
<th>Create Demo</th>
</tr>
</thead>
</table>
SAFAX Tutorial – Creating Demos
SAFAX Tutorial – Creating Demos
SAFAX Tutorial – Creating Demos

Upload XACML Policies
SAFAX Tutorial – Creating Demos

Configure your demos
SAFAX Tutorial – Creating Demos

Run the Demos
SAFAX Tutorial – Evaluating Policies
Choose Your Demo
SAFAX Tutorial – Evaluating Policies

Upload XACML Requests
SAFAX Tutorial – Evaluating Policies

SAFAX
A Flexible and Extensible Authorization Service

DEMONS

- test9
- test2
- test1
- in4stars test1231
- in4stars test1231

Sample Demo

Request

Response

  <Result>
    <Decision>Permit</Decision>
    <Status><StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
</Response>

Analyze Trace
### SAFAX Tutorial – Evaluating Policies

You can see detailed logs using Analyze Trace.
SAFAX Tutorial – Analyzing Trace

SAFAX Tutorial

A Flexible and Extensible Authorization Service

Options

Activity

TU/e - Security Group
Choose a request to view the detailed log