

Virtualized Web Portals in EGI Federated Cloud

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Security

Motivation

- ▶ Various views
 - ▶ Users, service operator
- ▶ Different requirements
- ▶ We only show low-level bricks, always consider your needs

Security functions

- ▶ Protection of information sent
 - ▶ encryption and/or integrity protection
- ▶ Authentication (of client and/or server)
- ▶ Access control

Security in Web Portals

- ▶ Two possible levels to address security requirements
 - ▶ Application itself (framework)
 - ▶ Web server (application container)
- ▶ Well-established approaches to security for www
- ▶ Protection of information
 - ▶ HTTP over TLS/SSL (https)
- ▶ Authentication
 - ▶ X.509 certificates, password-based
 - ▶ Single Sign-On
- ▶ Access control
 - ▶ Fine-grained (usually ad-hoc on application level)
 - ▶ Coarse grained (usable in container)
 - ▶ Based on authenticated identity or additional information

Using TLS for Web Portals

Enabling TLS

- ▶ Server-based authentication and channel encryption
- ▶ Client-side authentication also possible (out of scope for today)
- ▶ Requirements:
 - ▶ Digital certificate by a recognized CA
 - ▶ Automated process of getting the credentials

Certification Authority

- ▶ Key cornerstone of traditional PKI
- ▶ CAs available differ in many aspects and certificate types
- ▶ IGTF provide a global trust platform for eScience but not accepted by common applications
- ▶ Let's encrypt CA available (if it matches the requirements)

Security Assignment #1

- ▶ Deploy client to obtain X.509 server credentials from Let's encrypt CA
- ▶ Enable TLS/SSL support in Apache

The screenshot shows a web browser window with the URL `https://cloud255-18.cent-sc.cz`. The page has a dark header with a "User Management" button and a greeting "Hi, John Hacker". The main content area is divided into two sections: "Submit a new computation" on the left and "View a computation" on the right. The "Submit a new computation" section contains a form with the following fields: "Title" (text input), "Description" (text area), "File with model/models:" (with a "Choose File" button), "File with experiment data:" (with a "Choose File" button), "q range:" (a slider from 0 to 0.5), "Calculation type:" (with radio buttons for "Random walk" and "Stochastic tunneling", where "Random walk" is selected), and "Calculation steps:" (text input with "500"). At the bottom of this section is an "Advanced settings" link with a right arrow. The "View a computation" section is currently empty, displaying the text "No computations yet".

Enable TLS in Portal

Short Recap

- ▶ Start from the configuration you finished yesterday
- ▶ Continue to use your Docker container ([radimpesa/mustweek2017](#))
- ▶ Weapons are available from [git@github.com:ICS-MU/westlife-mustweek2017.git](https://github.com/ICS-MU/westlife-mustweek2017.git)
- ▶ For slides see the [talks/](#) directory

Actions to perform

- ▶ Start with two provided scripts
 - ▶ [letsencrypt_setup.sh](#) – introducing let's encrypt client
 - ▶ [https_setup.sh](#) – enables TLS/SSL in Apache
- ▶ Both scripts are simplified, more care is needed for production use
- ▶ Extend saxsPortal to run these scripts during deployment

Authentication & Access control

Basic requirements

- ▶ Authentication is sufficiently user friendly
- ▶ Portal does not implement its own mechanisms for AAI
- ▶ Mechanisms work with dynamic portals

Solution

- ▶ Utilization of federated authentication
- ▶ Authentication mediated by the *IdP-SP Proxy* of West-Life
- ▶ Configured on side of Apache, i.e. transparent for application

Guide to federated AAI

- ▶ *Training for service providers* by AARC project

Federated AAI – Summary

Key terms

- ▶ Service Provider – SP
- ▶ Identity Provider – IdP
- ▶ Metadata (for SP and IdP)
- ▶ IdP-SP Proxy
- ▶ SAML
- ▶ Shibboleth, SimpleSAMLPhp, ...

Enabling SAML on SP

- ▶ Configure SAML support on web server (or application)
- ▶ Enable selected IdP(s) (add corresponding metadata)
- ▶ Register with federation and/or IdP directly

Security Assignment #2

- ▶ Enable SAML on the portal and link it with the West-Life IdP-SP Proxy

Actions to perform

- ▶ Start with `saml_setup.sh`
- ▶ Extend saxsPortal to run the script
- ▶ After the portal is deployed perform additional steps:
 - ▶ Send SP metadata to IdP
 - ▶ You can find metadata of your SP at `https://\$HOSTNAME/mellon/metadata`
 - ▶ Check that the link is correct, and let us know
 - ▶ Verify the authentication after the SP has been registered
 - ▶ Visit `https://\$HOSTNAME/auth_test/`
 - ▶ You should be redirected to IdP (`auth.west-life.eu`)
 - ▶ Use your credentials to log in
 - ▶ You should be redirected back to SP and see an environment dump