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

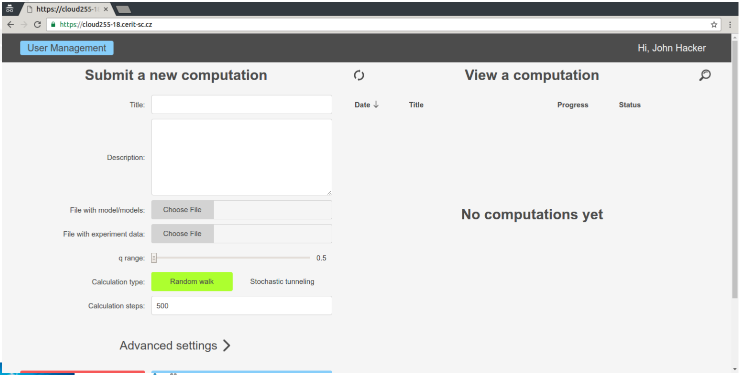
- Server-based authentication and channel encryption
- Client-side authentication also possible (out of scope for today)
- Requirements:
  - Digital certificate by a recognized CA
  - Automated process of getting the credentials

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



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`
- For slides see the `talks/` directory

Actions to perform

- Start with two provided scripts in `security/` directory
    - `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

- Consult *Training for service providers* by AARC project (link)

Federated AAI – Summary

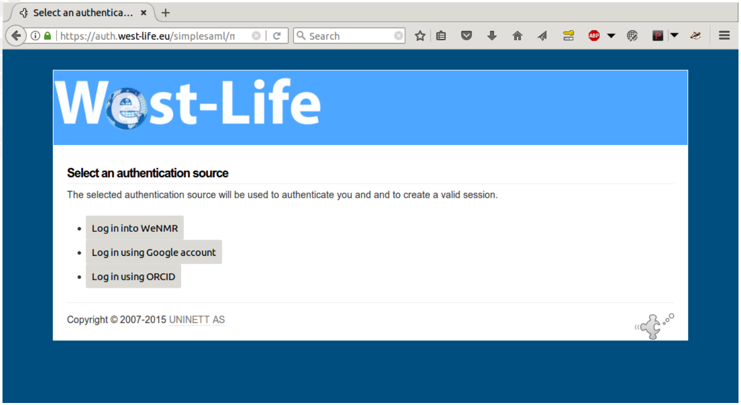
Key terms

- 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

West-Life Idp-SP Proxy Service



Select an authentication source

The selected authentication source will be used to authenticate you and and to create a valid session.

- Log in into WeNMR
- Log in using Google account
- Log in using ORCID

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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

Access Control based on Attributes

- IdP release two pieces of information
  - Information about successful authentication
  - Additional attributes linked to the user
- Attributes provides further information, like name, email attributes, affiliation, . . .
- Attributes issued by a Proxy may also carry VO specific information (group membership, etc.)
- Few catches though
  - Attribute release policy – improved lately
  - Different naming and/or semantics of attribute release by different IdP
- Utilization of attributes for access control
  - Access rules enforced by web server
  - Access control implemented by the application (e.g. mapping to internal identities).

Security Assignment #3

- Take a look at the application and try use attributes returned by the IdP
- Consult `https://$HOSTNAME/auth_test/` to see what attributes are returned by the IdP