Milestone M14

Work Package 4, Milestone 4.4: Second deployment of the consolidated Platform

Besides operating and maintaining the existing application portals and infrastructure, the consolidation work of WP4, after what already described in the previous documents delivered for Milestone M12 and Deliverable D4.3, was progressing in the following directions:

- deployment of the Onedata service storage solution
- virtualization of portals using emerging cloud orchestration technology
- implementation of the West-Life SSO solution

The work progress is tracked at the WP4 wiki pages [1]. This document is a snapshot of the information available there at the time of this milestone, i.e. October 2017. A more detailed description will be provided in the next project deliverable document D4.5: Report on the progress of the deployment of consolidated platform and its interactions with infrastructure due at month 26, i.e. by December 2017.

The following interfaces/services have been integrated in the consolidated infrastructure and available for use by other WPs.

Onedata service providers

Onedata is a global data access solution for science developed by INDIGO-DataCloud project. With Onedata, users can perform heavy computations on huge datasets; access their data in a dropbox-like fashion regardless of its location; publish and share their results with public or closed communities.

INFN partner in July 2017 has provided a Onedata experimental storage space for West-Life users. The storage available at INFN-PADOVA data centre consists of 14.6 TB. West-Life users can obtain a storage space by login at the Onezone server [2] hosted at INFN-CNAF centre.

Thanks to the collaboration with the INDIGO-DataCloud project, West-Life users can at first register with the IAM service instance provided by INDIGO, and the use it as authentication method for automatically obtaining an account on the Onedata system. Username/password, SAML and Google identities are supported by IAM service.

The documentation with the instructions for West-Life users on how to use the Onedata storage is available at the West-Life main web site [3].

MU partners has also set up a Onedata experimental storage space at their data centre, and tested its use in an application environment.

Cloud orchestration service

Development of automated portal setup and operation via cloud orchestration services continued. We followed the directions outlined in D4.1, using Cloudify as the primary tool.

We use the deployment of Gromacs portal [4] as the showcase, which demonstrates all the supported features, and where the primary documentation and usage guidelines are maintained. Besides numerous minor improvements and bug fixes, two principal features were added:

- Support for GPU: the templates may request GPU enabled cloud machines via OCCI at sites where this functionality is supported. Appropriate vendor (NVIDIA™) kernel drivers and libraries are installed, both CUDA and accelerated OpenGL remote rendering is available.
- Deployment via Cloudify Manager: unlike "one shot" deployment with Cloudify CLI, Cloudify Manager is a permanently running service which monitors the whole deployment and can react to various events (e.g. a node is restarted automatically when it dies). Also the deployment (e.g. number of worker nodes) can grow or shrink dynamically.

Alternate approach using solutions of H2020 INDIGO-DataCloud project was tested as well. Unfortunately, these project products appear not to be mature enough to be usable without extensive support of the INDIGO team. Therefore this direction of development in West-life was abandoned for the time being.

West-Life AAI

The development of AAI activities focused on proper support of identity and group management for the West-Life community. The Perun system was selected as the tool to facilitate the activities and appropriate setting was configured at the Perun service operated by Masaryk University and CESNET [5]. The configuration makes it possible to maintain the West-Life user base, including arbitrary group management and life-cycle control.

The West-Life AAI Proxy was enhanced to support the Perun system so that attributes about the user can be made available to end services. Following user's consent to release them, the Proxy sends a set of basic attributes (user's name, email address, unique identifier) that are assigned to the user. A list of groups that the user is member of is also released as part of the attribute set.

The Proxy supports multiple authentication methods for users but always maintains a single identifier as well as a set of attributes, regardless the actual authentication method used. Therefore, even if a user uses different authentication mechanisms, they are still recognized as single person by the end service.

The utilization of the Proxy made it possible to perform basic checks even before a user accesses an end service. When the user is accessing a service, the Proxy first checks that the user is already registered with the West-Life community maintained by the Perun IdM

service. Users that are not known to the system are requested to either register or link their current identity with an existing user record. Users that are already registered with Instruct will be provided with a straightforward procedure to get members of the West-Life user base that will not require additional approval by community maintainers.

The WP4 team provided a guide for users [6] describing typical operations. There is also documentation intended for service operators [7] with information about how to enable support for federated authentication and SSO using SAML. A training session was held at the All Partner's meeting held in Amsterdam at the end of August 2017, which presented the main principles of integration.

As a first result, the INFN-PADOVA-STACK OpenStack based cloud instance of the EGI Federated Cloud has been made accessible through the West-Life SSO AAI mechanism. West-Life users with a minimum of familiarity with the OpenStack Horizon Dashboard [8] can now login at the endpoint [9] and create their own Virtual Machines. Moreover, West-Life SSO has been already enabled in a number of application portals, such as the ones listed in the next section that integrated the technology to be available via the West-Life proxy. The technology was also integrated with the West-Life Repository and Virtual Folder components.

WP5 portals upgraded for using WP4 services

A number of WP5 portals have been upgraded to make use of the above services:

Gromacs

Gromacs portal was extensively modified to include:

- support for automated cloud deployment
- user authentication using West-Life SSO
- migration to newer software version (5.1 currently)
- support for GPU

The new portal is available in pre-production testing mode at the site [10].

Scipion Web Tools (SWT) and Scipion

SWT is not yet integrated with West-Life SSO but, as pointed out in Milestone M18 document, there is a plan to integrate it in such a way that, when a user access the SWT from the VRE where he was already authenticated he should be able to access other West-Life services, such as the common data repository.

A preliminary version of automated cloud deployment of Scipion is available [11]. Currently the deployment configures a cloud virtual machine with access GPU, and it sets up the full-featured desktop Scipion version running in TurboVNC [12] server using VirtualGL [13] for hardware accelerated rendering.

User friendly web portal wrapping the functionality of the Scipion cloud deployment and the VNC access is under development [14].

PowerFit/DisVis

A Proof of Principle connection to the IdP has been implemented for DisVis using pysaml2. The SSO mechanism will in a next step be integrated in a general authentication module for all flask-based portals hosted at UU later this year.

Virtual Folder

WP6 - Virtual Folder local deployment configuration was integrated into West-life SSO. There is need to amend existing user's configuration in public VF deployment therefore migration is in the process of design and technical decision. An implementation of the Virtual Folder access has been demonstrated in the development version of the DisVis web portal.

FANTEN

FANTEN adopted the West-Life SSO for users who want to upload their input files from the Virtual Folder.

PDB-REDO

The West-Life SSO has been added a log-in option.

References

[1] http://internal-wiki.west-life.eu/w/index.php?title=WP4
[2] https://onezone.cloud.cnaf.infn.it
[3] https://about.west-life.eu/network/west-life/documentation/egi-platforms/onedata-storage
[4] https://github.com/ICS-MU/westlife-cloudify-gromacs/wiki
[5] https://perun.cesnet.cz/westlife/gui/
[6] http://internal-wiki.west-life.eu/w/index.php?title=Registering_new_account_and_linking_identities
[7] http://internal-wiki.west-life.eu/w/index.php?title=Enabling_SAML2_for_end_services
[8] https://docs.openstack.org/horizon/latest/user/index.html
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[10] https://gromacs.westlife.dyn.cerit-sc.cz/html/main.php
[11] https://github.com/ICS-MU/westlife-cloudify-scipion
[12] https://turbovnc.org/
[13] https://virtualgl.org/
[14] http://github.org/ICS-MU/westlife-cloudify-scipion-web