EGI-InSPIRE

Annual Report on the status of Software Provisioning activity

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This deliverable provides an overview of the activities carried out by the SA2 tasks during PY3. The document describes the status of the Unified Middleware Distribution (UMD) releases, the processes contributing to the UMD software provisioning and the activities of the Federated Clouds task force.

I. COPYRIGHT NOTICE

II. DELIVERY SLIP

	Name	Partner/Activity	Date
From	Peter Solagna	EGI.eu/SA2	2013-04-03
Reviewed by			
Approved by			

III. DOCUMENT LOG

Issue	Date	Comment	Author/Partner
1	25-03-2013	Initial version.	Peter Solagna, EGI.eu
2	03-04-2013	Version 0.9 for external review (with contributions from task leaders).	Peter Solagna, EGI.eu
3	24-03-2013	Implemented reviewers comments, final	

IV. APPLICATION AREA

This document is a formal deliverable for the European Commission, applicable to all members of the EGI-InSPIRE project, beneficiaries and Joint Research Unit members, as well as its collaborating projects.

V. DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the authors. The procedures documented in the EGI-InSPIRE "Document Management Procedure" will be followed: https://wiki.egi.eu/wiki/Procedures

VI. TERMINOLOGY

A complete project glossary is provided at the following page: http://www.egi.eu/about/glossary/.

VII. PROJECT SUMMARY

To support science and innovation, a lasting operational model for e-Science is needed – both for coordinating the infrastructure and for delivering integrated services that cross national borders.

The EGI-InSPIRE project will support the transition from a project-based system to a sustainable pan-European e-Infrastructure, by supporting 'grids' of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI-InSPIRE will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area.

EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example within the ESFRI projects. Additional support will also be given to the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities.

The objectives of the project are:

1. The continued operation and expansion of today's production infrastructure by transitioning to a governance model and operational infrastructure that can be increasingly sustained outside of specific project funding.
2. The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
3. The support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities.
4. Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
5. Mechanisms to integrate existing infrastructure providers in Europe and around the world into the production infrastructure, so as to provide transparent access to all authorised users.
6. Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids) and heterogeneous resources (e.g. HTC and HPC) into a seamless production infrastructure as they mature and demonstrate value to the EGI community.

The EGI community is a federation of independent national and community resource providers, whose resources support specific research communities and international collaborators both within Europe and worldwide. EGI.eu, coordinator of EGI-InSPIRE, brings together partner institutions established within the community to provide a set of essential human and technical services that enable secure integrated access to distributed resources on behalf of the community.

The production infrastructure supports Virtual Research Communities (VRCs) – structured international user communities – that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.

VIII. EXECUTIVE SUMMARY

This Annual Report on the status of the Software Provisioning activity summarises activities in the second year of the EGI-InSPIRE project in WP5/SA2 "Provisioning the Software Infrastructure". It covers the general EGI.eu (and EGI-InSPIRE) IT support; activities that have taken place to implement and to enact the Software Provisioning activity; and providing and populating a central EGI software repository. This report also includes a summary of the activities that have taken place in the EGI Federated Clouds Task Force.

The software provisioning infrastructure and all the workflows have been successfully extended to support multiple major releases for Unified Middleware Distribution (UMD) and multiple operating system platforms for UMD-2. The additional workload generated by these extensions in the UMD software offer has been mitigated by a further optimization of the SA2 processes, including quality criteria definition, verification and the releases composition for the UMD repositories.

Significant results have also been produced by the EGI Federated Cloud Task with SA2. The work has reached a good level of integration with the EGI operational infrastructure and interoperability between different cloud middleware. The second part of the year the user community engagement intensified, integrating two new use cases in the test bed.

The future plans section describes how the tasks will evolve in the next 12 months, also reacting to the changes in the EGI technological ecosystem that will start with the end of the EMI and IGE projects.

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1 INTRODUCTION

This deliverable is the third annual report of the Software provisioning activity. It covers the activities that took place in the time period starting from April 2012 to March 2013, and follows on from the previous annual report D5.6 [R1]. The tasks described in this deliverable are: definition of quality criteria, verification of software conformity to quality criteria, provisioning of software repositories and support infrastructure and the Federated Clouds Task Force.

Section 2 provides a summary of the achievements and main activities carried out by the SA2 tasks during the year.

Section 3 provides individual summaries of all the UMD updates released during the year, plus the SAM and CA distributions. The section also analyses the effort required for the verification of software updates.

Section 4 attempts to provide a quantitative analysis of the benefits of the UMD software provisioning, starting from the quality of the software delivered by the technology providers and the number of issues or bugs identified during the process.

Section 5 describes the plans for the next year grouped by SA2 tasks.

2 SOFTWARE PROVISIONING

This section contains the achievements and most relevant activities carried out by the SA2 tasks during the past year.

Since the Deployed Middleware Support Unit (DMSU) task has been moved to the SA1 activity, this document does not contain an update from the DMSU, and it can be found in the SA1 deliverable [R2].

2.1 Quality Assurance: Definition of the UMD quality criteria

The quality criteria team has continued with the improvement of the QC document (QC document) by following the requirements that have been collected from the user and operations community, as well as requirements generated during the software verification process. The new criteria are then published in a new release of the QC document. This release triggers changes in other documents, such as the mapping tables of the criteria vs. the products in UMD, and the wiki pages with the how-to for the verifiers.

The main quality QC document has a release cycle of 6 months, with public drafts every two months, the list of draft and final documents is available in Table 1. The drafts are peer reviewed by the technology providers, in order to both check the acceptability of the criteria and to disseminate the future changes well in advance among the developers. New releases are announced through the proper channel to reach the developers working in the technology provider projects, in order to let them know which criteria are used to verify their products.

During PY3 one major achievement for the quality criteria team has been the consolidation of the how-to for the verifiers: a set of wiki pages with the practical steps to be performed to verify the criteria mapped to a capability or to a specific product. These documentation tools – which need to be updated after every new release of the QC document – positively influenced the verification activity, easing the process and reducing the effort required for the verification of a component.

During PY2 the main inputs for the QC document came from the operations community for criteria related to security and information discovery and from new technology providers.

- Security: EGI relies for the user and host authentication on a PKI infrastructure, which will migrate during the next year to a new signature algorithm for the certificates (SHA-1 $\rightarrow$ SHA-2). The UMD components must provide support for this family of hashing algorithms, and upon request of EGI Operations the 4th release of the QC document included this criterion.
- Information discovery: In the 4th release requirements were also consolidated criteria for the verification of the GLUE2 schema published by the services. As GLUE2 is considered by EGI the standard for the service description data, the relevant products are requested to publish correct GLUE2 information.
- New technology providers: EGI.eu signed an MoU with **Poznan Supercomputing and Networking Center (**PNSC) for the technology provisioning of the QosCosGrid[1] (QCG) middleware stack, the 5th release of the QC document released also the mapping of the criteria vs. the new products, as well as new criteria to verify the new capabilities shipped with the QCG software.

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[1] QosCosGrid main site: http://www.qoscosgrid.org

Revision	Publication date	References
Release 4 1st draft	21-5-2012	• Document link [https://documents.egi.eu/public/ShowDocument?docid=1153&version=2]
Release 4 2nd draft	20-7-2012	• Document link [https://documents.egi.eu/public/ShowDocument?docid=1153&version=3]
Release 4 final version	20-9-2012	• Document link [https://documents.egi.eu/document/1153] • Release notes [https://wiki.egi.eu/wiki/EGI_Quality_Criteria_Release_4]
Release 5 1st draft	20-10-2012	• Document link [https://documents.egi.eu/secure/ShowDocument?docid=1421&version=1]
Release 5 2nd draft	20-12-2012	• Document link [http://documents.egi.eu/document/1665]
Release 5 final draft	20-2-2013	• Document link: [https://documents.egi.eu/document/1421]

Table 1: Quality criteria documents

Following the release schedule the next update of the QC document will be in August 2013.

2.2 Quality Control: Verification of conformance criteria

Verification is performed in a test environment using a private cloud deployed at CESGA. During PY2, the technical infrastructure has been improved by enabling authorized verifiers to instantiate virtual machines by themselves using OCCI interface commands. This streamlined the verification process, making the verifiers able to work independently within their own timelines.

The verification tools has been updated after every QC document release as have the document templates used by verifiers to document the verification. The templates provide a set of comprehensive Quality Criteria for each product being tested, which are automatically generated to produce documents tailored on the components that are being tested.

In order to optimize the verification process the new products releases are labelled depending on the changes introduced, and the number of checks to be performed depends on the release category:

- **Major releases:** May not be backward compatible. Verifiers must actively assess all assigned quality criteria (from the quality criteria verification product templates), test the new features and install the new product from scratch (or upgrade if it's supported by the product).
- **Minor releases:** Backward compatible releases. Verifiers only check quality criteria affected by update changes the rest of quality criterion should be left in blank or just add a comment: "Minor release, this quality criterion was already verified". Verifiers still perform a package update and installation from scratch.
- **Revision releases:** Backward compatible releases. These releases include only bug fixes (without new features or major changes). The verifier only checks new package installation and upgrades.

Since major releases are not frequent the verification effort can be reduced performing only the relevant checks.

With UMD 2.0.0, released in July 2012, several changes were made in the verification process. To support new OS platforms (Debian6 or Scientific Linux 6) and to configure the UMD-2 repositories, the verification team has created a new set of virtual machines (VM) golden copies to instantiate the new Virtual Machines in a short time. Contextualization scripts were also modified to include configuration templates for the most used IGE and EMI products. New configuration templates have been included into each new VM root directory after the first boot. These templates could be used by the verifiers to deploy a quick configuration testing in a few minutes; the configuration includes the test-bed services endpoints and also a standard configuration ready to be used as a small grid site.

Once a product is tested the virtual image is stored in order to quickly instantiate a working instance of the service, for example to perform some functional cross-service tests.

UMD, starting from version 2.0.0, is supporting multiple platforms, the policy for software verification agreed by the SA2 members, is to perform QA criteria verification for all the platforms supported by a product release, and then to require – for the release in UMD- a successful staged rollout report submitted for at least one of the supported operating system.

All the changes have been included satisfactorily during the year, and verification efficiency has been improved substantially, more than 420 products (considering the different o.s. supported) were verified during the year.

2.3 Provision of a Software Repository and support tools

During PY3 task SA2.4 continued to support SA2 software provisioning activities. The main achievement of the year was the extension of the internal workflow to support multiple platforms and multiple UMD repositories (UMD-1 and UMD-2).

The detailed activities are described in the following sections.

2.3.1 Request Tracker (RT)

Regarding RT the tasks implemented during PY3 are the following:

- Consolidation of the user/group rights for all RT queues, to make more trustworthy the authorization system.
- Implementation of Debian packages dependency resolver module for the Bouncer[2], to automate the import of Debian packages.
- Extension of the RT queues dedicated to software provisioning with new data labels such ReleaseType, TPBundleVersion and TargetUMD
- Deployment of PGP support for RT-IR
- Added Support for IGE 32bit packages/repositories to fulfil the requirements of some user communities using 32bit libraries.

2.3.2 Repository Front-end

After the major developments of PY2 the frontend the frontend has been relatively stable during PY3.

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[2] Bouncer is a script that imports the product packages creating the required references for the UMD provisioning process. More information available in MS506: https://documents.egi.eu/document/503

- Updated the post creation plugin to cater for Debian support.
- General admin support for the web front end throughout the year: word press upgrades, minor changes in the content and minor bug fixes and enhancements and update of the look and feel to match the look of the main EGI website.

2.3.3 Repository Back-end

The repository back-end is the subsystem of the EGI software repository that handles the business layer of the New Software Release workflow. The repositories have been extended to support multiple platforms and two new stable testing repositories have been created. The **untested** and **testing** repositories contain the products under verification and staged rollout respectively. Previously the testing repositories were volatile, created ad-hoc for every product submitted to UMD process. Stable testing repositories simplify the work of verifiers and early adopters, and can also be used by production sites to retrieve urgent updates before they are released in UMD (although this practice is discouraged).

A Repo gadget has been developed and integrated into EGI RT system, the gadget offers the ability to the verifiers to change release metadata for a group of products in the process, without the need to edit them one by one.

Other tasks implemented include:
- The system has been extended to allow the specification of a custom version number for the product to be displayed in the front-end. In this way even when the internal UMD versioning differs, user will be able to see the original version as set by the technology provider. Discrepancies in version numbers between technology providers and UMD generated some confusion in the past.
- Mirroring facilities implemented to distribute the tarball version of EMI-WN and EMI-UI – produced by NGI_UK – through UMD repositories.
- Repository statistics
  - Implementation of the statistics web application that is able to provide dynamic reports per day, week, month, year, country or package
  - Import of web servers logs from the files to the statistics application database. Process of logs with the statistics application
- Other minor bug fixes and enhancements have been implemented during the reporting period.

2.3.4 IT support

IT support faced mainly routine user support, e.g. setting up email lists and groups and changing configuration of the various systems (Indico, MediaWiki, DocDB, OpenCMS) to support new features. During this year IT support deployed a new forum tool to host discussion groups. This new site is now in production and synchronized with the EGI SSO database.

The other activities carried out by the IT support are:
- Added IPv6 Support to all EGI web services
- Performed regular monthly updates of the inspire-members group from PPT Excel table
- Decommission of GGUS interface, the interface is still maintained for potential future use
- Installed and maintained a Shibboleth identity provider for the Grid federation
- Monthly updates of inspire-members list from PPT
- Implemented deletion of user for EGI SSO
- On-going back office administration, maintenance and user support.

2.4 Federating Institutional Private Clouds

The federated clouds task force was formally recognized at the beginning of the year as an EGI-InSPIRE task, under the SA2 technology coordination umbrella, and integrated in the EGI InSPIRE DoW.

The two main goals of the task force are:

- Technological integration: (guidelines for the) interoperability between cloud platforms and integration with the EGI Core Infrastructure Platform.
- Recruitment of user communities that would be willing to be early adopter of the federated test bed.

The first goal must be – at least partially – achieved for the user engagement to take place, allowing users to access the cloud resources in a federation-like test-bed.

The main steps achieved towards the technical integration were:

- Accounting: Within the task force a new draft standard for an accounting usage record -the Cloud Accounting Record (CAR) - has been developed. This profile is undergoing a peer-review updating process while the cloud test accounting infrastructure is being merged within the EGI production- grade APEL service.
- Information discovery: new service types have been created in GOCDB to describe cloud resources and services. Most of the service instances that make up the testbed are now registered. Cloud resource providers are also publishing the details of the services they are operating using the GLUE2 information schema – which is being extended to fully support cloud resources – and the information are aggregated in a Top-BDII operated by EGI.
- Monitoring: The SAM service has been extended to perform basic checks for the availability of the interfaces exposed by cloud services. The configuration of the dedicated SAM instance[3] is automatized retrieving the list of the services to monitor from the GOCDB.
- Interoperability: The integration of cloud resources within the production infrastructure is being completed by making available two general-purpose OCCI clients that will allow every EGI user to access federated cloud resources in a transparent and standardized way. The Task Force has been pushing requirement for the OCCI implementations currently available, establishing a close relationship with the OCCI development community. CDMI has been confirmed as the common interface for cloud storage management in EGI. Plugins for X509 authentication are being developed for the main cloud platforms used in the federation: Openstack and Opennebula.

Engagement with user communities:

- A dedicated VO has been set up (fedcloud.egi.eu) to be supported in all the resource providers, to be used by early adopter users.
- Support for the testbed users can now be delivered through a dedicated support unit in the EGI helpdesk (GGUS).
- Two use cases proposed by user communities have been successfully supported in the testbed and two more are in the pipeline. More information available at [R3].

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[3] Test results of cloud monitoring: https://test30.egi.cesga.es/nagios

3 PROCESSED SOFTWARE RELEASES

The Unified Middleware Distribution (UMD) software provisioning process – driven by SA2 and supported by the SA1.3 task for staged rollout – in the time period covered by this document has provisioned about 100 product releases made available in the UMD repositories through one major release (UMD 2.0.0) and 17 scheduled or emergency updates. UMD repository is a single entry point available for the resource centres to download and deploy the grid middleware, the distributed components of the Service Availability Monitoring (SAM) infrastructure and the trust anchors releases for the PKI based authentication system in production in EGI.

This section provides an overall picture of the releases in the UMD repository over the past year, and about the effort spent by SA2.3 verifiers to check the software released by the technology providers versus the quality criteria defined by SA2.2.

UMD Update	Number of product updates	Verification effort [h]	Average verification effort per product [h]
UMD-1.7.1	*1*	*0.0*	*0.0*
UMD-1.8.0	4	9.0	2.3
UMD-1.8.1	*1*	*10.0*	*10.0*
UMD-1.9.0	9	64.0	7.1
UMD-1.9.1	*2*	*2.0*	*1.0*
UMD-1.10.0	6	14.0	2.3
UMD-2.0.0	26	170.0	6.5
UMD-2.1.0	36	223.0	6.2
UMD-2.1.1	*2*	*2.0*	*1.0*
UMD-2.2.0	23	120.5	5.2
UMD-2.2.1	*2*	*3.0*	*1.5*
UMD-2.2.2	*2*	*2.0*	*1.0*
UMD-2.3.0	28	235.2	8.4
UMD-2.3.1	*13*	*25.0*	*1.9*
UMD-2.4.0	38	177.0	4.7

Table 2: verification effort for the UMD updates described in this document. Emergency releases are in *italic*.

Table 2 shows the number of components, total and average verification effort per component for the UMD releases of the past year. Staged rollout effort cannot be efficiently tracked as early adopters are providing unfunded effort, and the staged rollout deployment may require different time based on the number of users accessing the service. Excluding revision and emergency releases – which often includes only revision updates from technology providers that require limited effort – the overall average effort to verify a single component is about 6 hours. The average amount of effort required for UMD-2 releases is slightly higher than for UMD-1. UMD-1 latest releases did not provide new features, but only bug fixes and they could be considered revision updates, this explains the reduced effort required from the verifiers.

The peak of 8.4 hours/product reported for UMD 2.3.0 is caused by the verification of AMGA v 2.3.0, which required 48 hours of work for each platform: SL5 and SL6.

The total amount of time spent for verification during the past year is about 1020 hours.

3.1 UMD

In July 2012, SA2 provided the second major release of the Unified Middleware Distribution. UMD 2.0.0 was the first release supporting multiple operating system platforms (SL5, SL6 and Debian6) with the majority of the products have been released from the beginning for SL5 and SL6, and several of them also for Debian6. These changes required previous procedures to be adapted as well as the repositories and the software provisioning technical infrastructure to be extended. Supporting multiple platforms also meant that more items needed to be processed and as a result a greater effort was needed during the verification phase.

EMI, the major technology provider of EGI, from April 2012 ceased to produce the release XML files used to automatically import the products in the UMD software provisioning process. XML files are now created at the beginning of the EGI software provisioning process. Specific tools have been developed to minimize the overhead for the SA2 and SA1.3 staff.

In parallel SA2continued to support updates for the first major UMD release, which entered into basic support during PQ10 and security support during PQ11, therefore reducing the number of updated provided by the technology providers. Most of the products in UMD-1 will be unsupported starting from the end of April 2013, with one exception agreed with the dCache product team, who extended the security support of the UMD-1 version of their product to meet the need of several EGI sites, including WLCG Tier-1 and Tier-2,,since their work plan for the update was incompatible with the previous support calendar.

UMD software provisioning is currently processing the products that will compose the third major release of UMD (3.0.0), which is expected at the end of April 2013. Excluding the one product in UMD-1 with extended security support, there is no overlap in the supported periods of UMD-1 and UMD-3.

Every UMD update entails a certain amount of overhead to test the new release with the production repositories and to produce the needed documentation. To reduce such overhead the UMD updates calendar have been regularized during this year, and in PQ10 there were two updates and PQ11 there was one one update for UMD-2. Emergency releases, since they are urgently needed to fix critical bugs or security vulnerabilities, cannot be scheduled.

3.1.1 UMD-1 Updates

3.1.1.1 UMD 1.7.0

Release Date: 28/05/2012

Announcement: http://repository.egi.eu/2012/05/28/release-umd-1-7-0/

Included Products: 11

Rejected/not published products: 1

This update introduced two new products in UMD-1 LFC for Oracle and Globus GRAM5, and nine updates for existing products from both EMI and IGE.

One IGE product was rejected (security-integration) due to an incompatibility with other products in the UMD-1 repository.

3.1.1.2   UMD 1.7.1

Release Date: 23/07/2012

Announcement: http://repository.egi.eu/2012/07/23/release-umd-1-7-1/

Included Products: 1

Rejected/not published products: 0

This emergency released introduced a security update for the WMS service.

3.1.1.3   UMD 1.8.0

Release Date: 07/08/2012

Announcement: http://repository.egi.eu/2012/08/07/release-umd-1-8-0/

Included Products: 4

Rejected products: 0

This update introduced two updates for EMI products (StoRM and CREAM) and one update for an IGE product (GridFTP). In this release was also available a updated version of the package used to configure the UMD repositories on Scientific Linux.

3.1.1.4   UMD 1.8.1

Release Date: 24/08/2012

Announcement: http://repository.egi.eu/2012/08/24/release-umd-1-8-1/

Included Products: 1

Rejected products: 0

This update included a security update for the WMS service

3.1.1.5   UMD 1.9.0

Release Date: 29/10/2012

Announcement: http://repository.egi.eu/2012/10/29/release-umd-1-9-0/

Included Products: 9

Rejected products: 0

This update released two new products in UMD-1 from the IGE technology provider: Gridway and SAGA, and seven updtes for the EMI products, with bug fixes and new functionalities.

3.1.1.6   UMD 1.9.1

Release Date: 19/20/2012

Announcement: http://repository.egi.eu/2012/12/19/release-umd-1-9-1/

Included Products: 2

Rejected products: 0

Emergency release that introduces updates for the following IGE products: GridFTP and GRAM5. This update provides two security vulnerability updates.

3.1.1.7   UMD 1.10.0

Release Date: 19/02/2013

Announcement: http://repository.egi.eu/2013/02/19/release-umd-1-10-0/

Included Products: 5

Rejected products: 0

This regular update of UMD-1 included updates for 5 EMI products, including several bug and security vulnerability fixes.

3.1.2 UMD-2 Releases

3.1.2.1 UMD 2.0.0

Release Date: 10/07/2012

Announcement: http://repository.egi.eu/2012/07/10/release-umd-2-0-0/

Included Products: 11

Rejected/not published products: 1

UMD 2.0.0 is the second Major release of UMD (Unified Middleware Distribution) made available for EGI's production infrastructure. This release introduces support for Scientific Linux 6 and Debian 6 (Squeeze). It includes the first 11 products released in UMD-2, these products were prioritized in agreement with the Operations Management Board.

One product from EMI (LB v3.2.6) was rejected during staged rollout because of installation and configuration issues.

3.1.2.2 UMD 2.1.0

Release Date: 06/08/2012

Announcement: http://repository.egi.eu/2012/08/06/release-umd-2-1-0/

Included Products: 11

Rejected/not published products: 0

The first update of UMD-2 was released one month after the major release, this short release schedule was necessary to include the high priority components that could not be released in UMD 2.0.0. The release contains 10 new products from EMI, one new product from IGE. All the products are supporting SL5 and SL6, several were released for Debian6.

3.1.2.3 UMD 2.1.1

Release Date: 11/09/2012

Announcement: http://repository.egi.eu/2012/09/11/release-umd-2-1-1/

Included Products:

Rejected/not published products: 0

Revision update for UMD-2, this release introduces a critical patch for an internal component of CREAM-CE. It was not a security vulnerability, but a bug reported to affect major VOs using the production infrastructure.

3.1.2.4 UMD 2.2.0

Release Date: 09/10/2012

Announcement: http://repository.egi.eu/2012/10/09/release-umd-2-2-0/

Included Products: 8

Rejected/not published products: 0

The second regular update of UMD-2 introduced 6 new products from EMI and 2 new products from the IGE technology provider. In this released there were also 4 updates for EMI products already in UMD-2, introducing bug fixes and new features.

3.1.2.5 UMD 2.2.1

Release Date: 26/10/2012
Announcement: http://repository.egi.eu/2012/10/26/release-umd-2-2-1/
Included Products: 1
Rejected/not published products: 0
Revision update. UMD 2.2.1 contained GRAM5 first release in UMD-2 from IGE, this releases also solved a dependencies problem that prevented to install EMI-WN and EMI-UI from the UMD-2 repositories.

3.1.2.6 UMD 2.2.2

Release Date: 14/11/2012
Announcement:http://repository.egi.eu/2012/11/14/release-umd-2-2-2/
Included Products: 1
Rejected/not published products: 0
Revision update. This release solves a security vulnerability identified in a client library used by the WMS service.

3.1.2.7 UMD 2.3.0

Release Date: 20/11/2012
Announcement: http://repository.egi.eu/2012/11/20/release-umd-2-3-0/
Included Products: 8
Rejected/not published products: 0
This release included updates – providing bug fixes and new features - for the following products: EMI-WN, EMI-UI, dCache,LB, LFC and UNICORE HILA.
This release also included the following new products: AMGA, EMIR and SAGA from the EMI technology provider.

3.1.2.8 UMD 2.3.1

Release Date: 17/12/2012
Announcement: http://repository.egi.eu/2012/12/17/release-umd-2-3-1/
Included Products: 5
Rejected/not published products: 2
Revision update that introduced 4 updates for EMI products and 1 update for IGE products in UMD-2. These updates included bug fixes and new features, and a security vulnerability fix that triggered the release.
Two products from IGE (GridSafe v1.1.1 and Gridway v5.12.0) were rejected during verification because of packages misconfiguration and compatibility issues with other products already in UMD.

3.1.2.9 UMD 2.4.0

Release Date: 18/02/2013

Announcement: http://repository.egi.eu/2013/02/18/release-umd-2-4-0/

Included Products: 18

Rejected/not published products: 0

This update released for the first time in UMD-2 the WMS service from EMI, and provided 18 updates to products already in the UMD-2 repository. These updates (6 from IGE and 11 from EMI) provided new features and bug fixes.

3.2 EGI Trust Anchors

Total number of updates: 6

Accepted updates: 6

Rejected updates: 0

The IGTF trust anchors releases are distributed through the UMD repository, although they are released asynchronously with independent updates – not in regular UMD releases – they are processed with an identical quality assurance process, which involves both QA criteria verification and staged rollout. Based on the released notes made available by EUGridPMA [4], the staged rollout is focused on sites who have high priority to handle certificates from users using the new CAs.

No releases were rejected during this year.

3.3 Service Availability Monitor (SAM)

The Service Availability Monitor (SAM) in EGI is a distributed infrastructure composed by a central instance and one instance per NGI operated by the NGI staff, plus VO specific or test instances. The updates released by the SAM team, who participates to the EGI JRA1 activity, are made available in the UMD repository after being tested in staged rollout. Being SAM a critical component in the EGI infrastructure, usually the new released is deployed in production-like environment by two or three early adopters before being announced for a wide deployment.

Total number of updates: 4

Accepted updates: 3

- Update 17.1
- Update 19
- Update 20

Rejected updates: 1

- Update 17

Update 17: This SAM update was rejected due to a critical problem in upgrading the backend database schema, and lacking documentation about probes changes.

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[4] EUGridPMA site: http://www.eugridpma.org/

4 IMPACT OF THE SOFTWARE PROVISIONING PROCESS

During PY3 the quality delivered by the EGI technology providers has continued to be high: a very small number of product releases have been rejected during the UMD software provisioning process. This result has been achieved also with the contribution of the tight cooperation between UMD QA team and technology provider and developers.

Technology provider	Product updates submitted to UMD software provisioning process	Rejected
EMI	149	1
IGE	43	3
EUGridPMA	6	0
EGI-InSPIRE JRA1	4	1

Table 3: Number of product updates submitted to the UMD software provisioning process by internal and external technology providers, and the number of rejected updates.

Table 3 shows as the number of critical quality criteria failed during the verification or the number of critical bugs discovered during the staged rollout is very low, less than 1% rejection rate for EMI and less than 7% for IGE.

The number of rejected components is not the only metric that should be considered assessing the positive impact of the UMD quality verification process on the production infrastructure. In most cases the issues identified during verification or staged rollout are not critical, or – even if the problem reported is critical - the developers can provide a workaround to solve the efficaciously mitigate the issue, and the product qualifies for the UMD release.

Verifiers and early adopters open a GGUS ticket to notify the developers about the problem found in the verification process, this communication is streamlined by the EGI helpdesk team in order to reach the product team in due time. The output of this issue handling process can be either the rejection of a product, or the documentation of known issue and – if available- workaround mitigation in the UMD release notes.

Figure 1 shows the trend in the number of tickets opened during the software provisioning process, both from verifiers and early adopters (note that the available data does not cover the full time period of this deliverable, since the statistics have not been extended to cover the latest months). The number of GGUS tickets opened is a good approximation of the number of issues found during the verification of software and the ticket urgency, from "not urgent" to "top priority", provides an high level overview of the criticality of the issue discovered.

During 2012 a total of 76 GGUS tickets were opened by verifiers and early adopters, for a total of 3 top priority, 12 very urgent, 25 urgent and 36 not urgent tickets.

In April the verification process did not generate any ticket, also considering the small number of updates tested by EGI, since the product teams were focused on the release of EMI-3. UMD 2.0.0 was released in July 2012, but EMI released the second major release (EMI 2.0) in May 2012, the verification process started right away and it explains the peak of opened tickets in May. After the UMD 2.0.0 release the software verification activity slowed during summer, also considering the limited release activities of the technology providers during August.
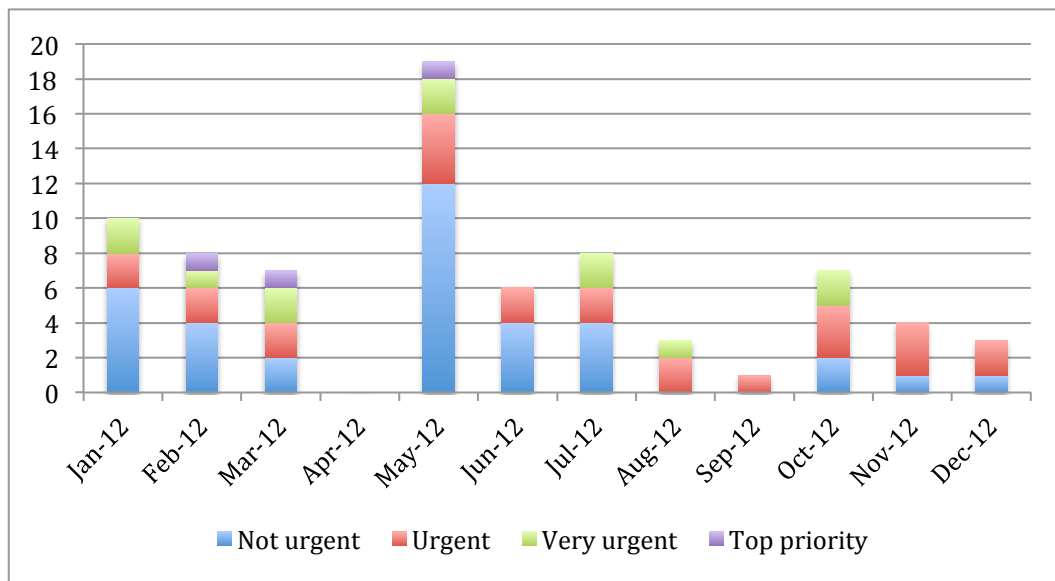
Figure 1: Number of GGUS tickets opened during the software provisioning process of UMD. The data covers the year 2012.

5 PLANS FOR THE NEXT YEAR

During PY4 the main middleware collaborations providing software to EGI will stop as EC funded projects. Bot EMI and IGE are developing follow up activities to continue part of the coordination work currently carried out within their project, as unfunded/best effort activities. The changes in the technology ecosystem will affect EGI at many levels, the interaction with the current partners, the support provided to the operations community and the activities described in this document: the software provisioning process.

The future UMD will contain different repositories for the software released by product teams with a different level of commitment. All the processes within – to different extents – will need to adapt to the new scenario, in order to be more flexible and to scale with a bigger number of – less coordinated – technology providers. Currently, discussions between EGI and the technology providers are ongoing, to define the details of the activities that will continue after the end of their projects, the level of commitment of the different product teams and the additional services that EGI will need to provide to the developers and user/operations communities.

5.1 Quality Assurance: Definition of the UMD quality criteria

In PY4, the SA2.2 team will continue with the production of the QC documents as defined in the roadmap. Releases 6 and 7 will be produced during next year. SA2.2 will adapt the review process of the documents in the forthcoming scenario where the main Technology Providers (EMI and IGE) will not exist anymore. With the following releases, a prioritization of criteria will be produced to aid SA2.3 team to select which criteria to test in the verification process for each kind of release (major, minor, revision). SA2.2 will also continue with the production and update of how-to documents in the EGI.eu wiki with the recommended testing procedures for each criterion. Along with these how-to documents, SA2.2 will produce a set of scripts with automated tests to be used by verifiers to assess the conformance of criteria whenever possible (e.g. GlueSchema compliance).

5.2 Quality Control: Verification of conformance criteria

In PY4, the SA2.3 team will include more Federated Cloud Task fFrce features within the current SA2.3 private cloud. Some SA2.3 verifiers are already using the new OCCI client and rOCCI server to instantiate new verification machines in an automated way. CESGA team is also working to integrate VMcatcher image subscriber tool [R4] with the SA2.3 verification process. The new mechanism will allow automatic publishing of new VM images after a successful verification process. Currently a testing image list is available in a CESGA website[5]. The new verification VM images will include the required software and UMD repositories to configure different services in a short time. Besides SA2.3 team will modify UMD RC testing script. The RC testing script will be available in each new VM after VM image instantiation thanks to the verification contextualisation mechanism. This script could be used by SA2.3 verifiers to identify any package dependency issue before verification process.

5.3 Provision of a software repository and support tools

As EGI's current Technology Providers EMI and IGE, are European projects that will end in April 2013. The software provisioning workflow the repository uses needs to be expanded to be able to

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[5] http://cloud.cesga.es/files/image.list

handle multiple Technology Providers/Product teams (PT) with different levels support commitment. SA2 proposes to classify the prospective technology providers in the following categories depending on their commitment.

PT type	MoU	SLA	PT QA	EGI.eu QA	3rd line support	URT	EGI.eu benefits
Integrated	Y	Y	Y	Y	Y	Y	Y
Contributing	Y	Expected	Y	Equivalent	Expected	Y	Limited
Community	N	N	Optional	Optional	Optional	N	N

Thus the software repository will be expanded to offer the following workflows and corresponding repositories

- Main: This is the existing workflow as it is right now and it will include software from the integrated PT type.
- Contributing: This one will be a variation of the workflow that will be offered as a service to Contributing PT types.
- Community: This repository will implement a simplified workflow to offer the repository as a service, in conjunction with appdb.egi.eu to Community PT types.

Currently the SA2.4 team is developing the backend and frontend extensions needed to allow users to access the community repository. Through the new structure user communities or product teams will be able to release their software in the UMD repositories. Differently from the current UMD workflow, the community repository is entirely managed by the developers who have the responsibility to test and release their products. Moving to being a 'Repository as a Service' model, SA2 does not endorse the content of the community repository; the typical use of this service can be the distribution of user community specific software which does not require a full UMD verification, or for which the product team cannot provide the minimum effort level required by EGI.

6 CONCLUSIONS

This document presented the achievements of the last year of SA2 activities for software provisioning. During PY3, SA2 released one major release (UMD 2.0.0) and 14 UMD updates, plus 6 CA releases and 4 SAM updates. This big workload has been accomplished also by improving the software provisioning process and automate as much as possible the required steps, in order to reduce the overhead. The documentation available for the verification process has been improved, quality criteria are mapped to the relevant products, the template or verification are automatically generated to include only the needed criteria and a set of wiki pages and documents are now available to make easier and quicker the verification of a product.

The main outcome of the year has been the release of the second major release of UMD, which triggered the extension of the software provisioning infrastructure to support repositories for multiple operating systems and multiple major releases. The design work produced during the previous years was solid and enough flexible to be easily adapted to new use cases.

The next year will bring big challenges in the software provisioning of UMD, with the end of the middleware projects. The work to prepare for such transition has started during the last part of the year and will be finalized in the next months, in order to continue to achieve the goal of UMD software provisioning: provide a single set of stable repositories containing reliable software to be used in the production infrastructure.

7 REFERENCES

R 1	D5.6 Annual report on software provisioning activities [https://documents.egi.eu/document/1015]
R 2	D4.8 Annual Report on the EGI Production Infrastructure [https://documents.egi.eu/document/1664]
R 3	Federated Cloud user community wiki pages [https://wiki.egi.eu/wiki/Fedcloud-tf:UserCommunities]
R 4	VM Catcher [https://github.com/hepix-virtualisation/vmcatcher]