

EGI-InSPIRE

OPERATIONAL LEVEL AGREEMENTS WITHIN THE EGI PRODUCTION INFRASTRUCTURE

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Abstract

MS429 describes the advancements made in PY4 with respect to EGI Operational Level Agreements for services provided by EGI.eu, RPs and RCs, the current status of performance reporting and the PY5 work plan. It also provides information about the status of Service Level Agreements established with external Technology Providers.

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I. DELIVERY SLIP

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II. DOCUMENT LOG

Issue	Date	Comment	Author/Partner
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III. 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.

IV. 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>

V. TERMINOLOGY

A complete project glossary is provided at the following page: <http://www.egi.eu/about/glossary/>. Additional Operations specific terms are provided at the Operations glossary page: <https://wiki.egi.eu/wiki/Glossary>.

VI. 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.

VII. EXECUTIVE SUMMARY

Operational Level Agreements (OLAs) are defined in the Information Technology Infrastructure Library [ITIL] and describe how IT groups work together to meet IT service level requirements.

The purpose of an OLA is to optimize the delivery of IT services to customers and users. It is an internal agreement that defines how two different units within an organization will work together to support the delivery of a set of IT services to customers and users. The framework includes three OLAs: the Resource Centre OLA, the Resource infrastructure Provider OLA and the EGI.eu OLA.

During PY4 a set of improvements have been introduced in terms of monitoring and reporting. The main achievement is introduction of EGI.eu OLA [EGIOLA], an agreement between each of EGI core services and activities' providers and EGI.eu to cover the provision and support of the services being part of Federated Operations EGI.eu service.

The service management processes and the OLA framework will further evolve in PY5 by:

- extending the reporting capabilities of the Operations Portal with RP service reports, EGI.eu service reports,
- implementing an improvement plan of the OLA framework and service management processes of EGI.eu to satisfy a set of requirements for federated infrastructures in compliance to ISO/IEC 20000,
- creation of SLA/OLA framework to supporting provisioning of agreed resources to the EGI users as a result of EGI Resource Allocation activity.

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1 INTRODUCTION

EGI operation services are distributed and comprehend Global Services and Local Services [ARCH], where different stakeholders play the role of service provider to different groups of customers.

Crucial to EGI is the maximization of the Quality of Service provided by these services and experienced by an end-user. Services have to comply with a minimum set of requirements to jointly offer a reliable, secure and highly available service infrastructure. These requirements are defined by the OLA framework, which supports service management at various levels: Resource Centre (RC), Resource infrastructure Provider (RP) and EGI.eu. The framework is comprised of three agreements defining the minimum set of services and the corresponding minimum performance provided by Resource Centres, Resource infrastructure Providers (EIROs and NGIs) and EGI.eu.

- 1) The Resource Centre OLA (RC OLA) [RCOLA]. This agreement is defined between a Resource Centre (RC) and the respective Resource infrastructure Provider (RP).
- 2) The Resource infrastructure Provider OLA (RP OLA) [RPOLA]. This agreement is defined between a Resource infrastructure Provider (RP), its respective Resource Centres (RCs), and EGI.eu.
- 3) The EGI.eu OLA (which is to be distinguished from the top level EGI OLA framework) [EGIOLA]. This agreement is defined between EGI Core services and activates providers and EGI.eu that are offered to the EGI partners and the RPs.

The milestone summarizes the advancements made in PY4 with respect to EGI Operational Level Agreements for services provided by EGI.eu, RPs and RCs, the current status of performance reporting and the PY5 work plan.

A more detailed overview of the EGI OLA framework is given in section 2. The description of the EGI.eu OLA is provided in Section 3. Section 4 provides an update on the current targets for Resource Centres and Resource infrastructure Provider services. The related reporting mechanisms are described in section 5. Section 6 presents the PY5 work plan, and Section 7 concludes the deliverable.

2 SLAS WITH TECHNOLOGY PROVIDERS

External Technology Providers are responsible for ensuring the maintenance, evolution and support of the software components that are deployed in EGI for the implementation of its Platform architecture, which currently comprises: the Core Infrastructure Platform, the Cloud Infrastructure Platform, Community Platforms and the High-throughput Data Analysis Platform and the Collaboration Platform [MS518].

Engagement with Technology Providers is ensured via the establishment of MoUs and service level agreements, whose purpose is to guarantee third level support in incident management through the EGI helpdesk system GGUS¹. This is particularly important to guarantee the provisioning of reliable and secure services by making sure that incidents, critical issues and vulnerabilities are handled in a timely manner.

EGI has collaborations with the following partners²:

- *Poznan Supercomputing and Networking Centre*: since October 2012 EGI.eu and PSNC work together to enable the vision of providing European scientists and international collaboration for sustainable distributed computing services to support their work through the integration of the QosCosGrid (QGG) middleware stack into EGI. This will expand the EGI capabilities with mechanisms for advanced reservation and co-allocation of heterogeneous resources that will enable users to develop more advanced user interfaces to perform their digital research with EGI.
- *University of Virginia Alliance for Computational Science and Engineering*: since July 2012 University of Virginia is collaborating with EGI to provide a robust, well-designed, user-centric software and components around Genesis-II middleware for integration within EGI and for use by its scientific user communities.
- *Alliance for Permanent Archives*: since February 2014 EGI is engaged with APA to ensure the provisioning of consultancy and training services about digital preservation for EGI user communities through the EGI Distributed Competence Centre and to liaise with scientific communities, memory institutions and industrial communities for capturing and analysing their requirements and promoting solutions and corresponding service offerings in the area of digital preservation, and to define processes for the certification and distribution of APA software through EGI channels.
- *SAGA Project* (Simple API for Grid Applications): since April 2011 EGI and SAGA collaborate to provide robust, well-designed, user-centric services to scientific user communities, in particular to create and maintain the SAGA API specification documents, to ensure the deployment and support of the SAGA API and its middleware bindings, and to create higher level of programming abstractions based on SAGA.

The service level agreements previously established with the European Middleware Initiative and the Initiative for Globus in Europe expired in April 2013 with the end of the EC projects that supported the respective consortia and development activities.

Since then EGI is liaising with individual Product Teams or clusters of collaborating Product Teams formerly participating to the EMI and IGE projects. The UMD Release Team ensures cooperation on the discussion of software development and release plans.

Lightweight Service Level Agreements were established for software components, defining the type of third-level support ensured through the EGI helpdesk GGUS.

¹ <http://helpdesk.egi.eu/>

² <http://www.egi.eu/community/collaborations/#tp>

2.1 Support Service Levels

There are three different levels of service in GGUS, each defining different response times: Base, Medium and Advanced. Product Teams can choose the support level ensured in GGUS through their respective Support Unites (SUs). SUs that do not vote for any level of service explicitly are assumed to provide Base support.

The level of service is impacting the ticket priority colours in GGUS and the warnings that are automatically sent to SUs if 75% of the maximum response time of the level of service is over. Through automated e-mails supporters are notified in case the agreed response times are expiring.

51 different SUs with the respective Product Teams are active in GGUS.

The GGUS service level specifications and the support levels guaranteed by the Product Teams are documented on wiki³.

³ https://wiki.egi.eu/wiki/FAQ_GGUS-QoS-Levels

3 SLAS AND OLAS WITH SERVICE PROVIDERS

During PY4 the SLA and OLA framework further developed for the service management of both user-facing and support services provided internally by the EGI Collaboration.

The Quality of Service (i.e. as perceived by an end-user) and its maximization are of crucial importance from the EGI perspective. It is therefore important that the providers of services and resources within EGI commit to a minimum set of requirements to jointly offer a reliable, secure and highly available service infrastructure.

EGI.eu is the mediator responsible of establishing SLAs with user communities for user-facing services, and with Resource Infrastructure Providers for the support services allowing transnational access.

EGI OLA framework incorporates three types of OLAs (Figure 1):

- 1) The **Resource Centre OLA (RC OLA)** [RCOLA]. This agreement is defined between a Resource Centre (RC) and the respective Resource infrastructure Provider (RP), who provides the services for the federation of Resource Centres.
- 2) The **Resource infrastructure Provider OLA (RP OLA)** [RPOLA]. This agreement is defined between a Resource infrastructure Provider (RP), its respective Resource Centres (RCs), and EGI.eu. The RP OLA defines the minimum services at a national level that are required to NGIs to be part of a pan-European infrastructure.
- 3) The **EGI.eu OLA** (which is to be distinguished from the top level EGI OLA framework) [EGIOLA] defines the service levels of the “EGI Core Activities”, which are the services also known in EGI-InSPIRE as “EGI Global Tasks” which in PY4 evolved into a catalogue of services. This agreement is defined between EGI Core services and activates providers and EGI.eu that are offered to the EGI partners and the RPs.

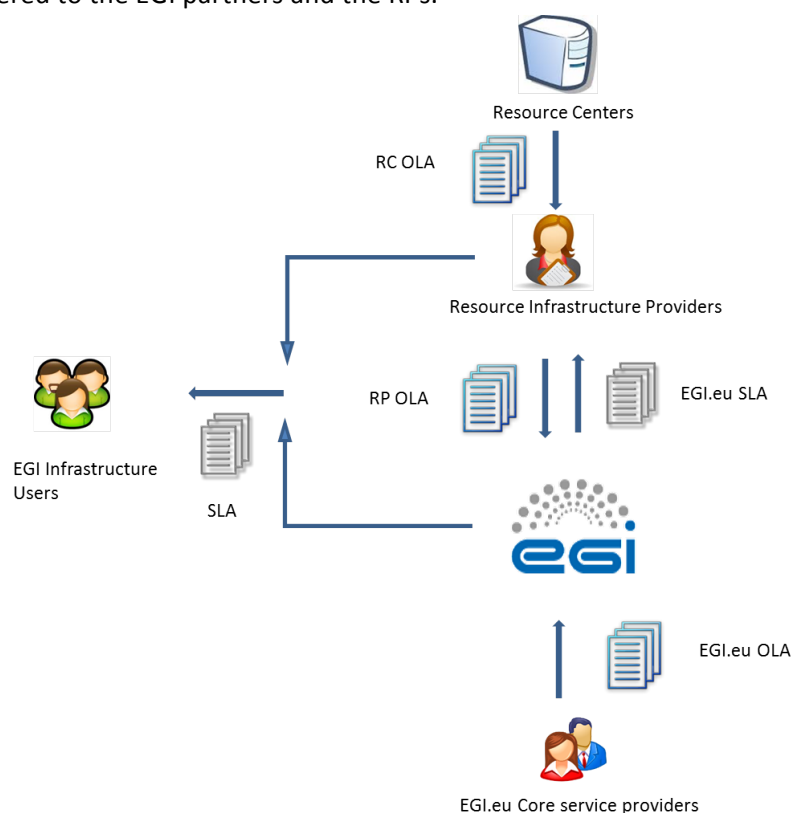


Figure 1. EGI OLA framework.

The RC OLA and RP OLA were already in place at the end of PY3, and were revised and updated in PY4.

The following sections define the EGI core activities and concentrate on the new EGI.eu OLAs established with the respective providers.

3.1 EGI Core Activities

During PQ14 the technical profile and costs of the EGI-InSPIRE operations and technical Global Tasks were reviewed in preparation to a change in funding structure from May 2014 after the end of PY4. These tasks (currently delivered through SA1 and SA2) will evolve into support services – the so-called “EGI Core Activities” – that will still be delivered by partners of the EGI collaboration, but will no longer rely on EC project funding.

The technical profile and the related service level targets are defined on wiki⁴.

Following the bidding process outlined at the EGI Council in June 2013, by the 19th July 2013 bids had been received for all the identified services or activities. At least one proposal was received for each of Core EGI Activities. Costs and technical specifications of the activities were reviewed in October and the budget and selected partners were approved by the EGI.eu Executive Board in October.

The funding of the EGI Core Activities through EGI-InSPIRE is as follows:

- 50% of in-kind contribution from the partner responsible of technically delivering the task;
- 25% EGI Council membership fees;
- 25% EC contribution.

As of May 2014, EGI Core Activities will totally only rely on NGI funding:

- 60% of in-kind contribution provided by the partner responsible of delivering the activity;
- 40% EGI Council membership fees.

In accordance with the EGI sustainability plan, the EGI Core Activities will no longer require EC funding from May 2014. EGI Core Activities provide services that will be available to all participants in EGI.eu who provide participant fees, and to the integrated Resource Infrastructures that engage with EGI through MoUs⁵. All participating NGIs are therefore able to benefit from a high quality set of global core services, delivered 24/7 on behalf of the community by the providers.

The EGI core activities include the following services and tasks.

Table 1. Catalogue of EGI Core Activities.

Name of service	Overview
1. Message Broker Network	The message broker network is a fundamental part of the operations infrastructure ensuring message exchange for monitoring, the operations dashboard and accounting. As such it is a critical infrastructure component whose continuity and high availability configuration must be ensured.
2. Operations Portal	EGI.eu provides a central portal for the operations community that offers a bundle of different capabilities, such as the broadcast tool, VO management facilities, a security dashboard and an operations dashboard that is used to display information about failing monitoring probes and to open tickets to the Resource Centres affected. The dashboard also

⁴ https://wiki.egi.eu/wiki/Core_EGI_Activities

⁵ <https://www.egi.eu/infrastructure/resource-providers/index.html#integrated>

	supports the central grid oversight activities. It is fully interfaced with the EGI Helpdesk and the monitoring system through messaging. It is a critical component as it is used by all EGI Operations Centres to provide support to the respective Resource Centres. The Operations Portal provides tools supporting the daily running of operations of the entire infrastructure: grid oversight, security operations, VO management, broadcast, availability reporting.
3. Accounting Repository	The EGI Accounting Infrastructure is distributed. At a central level it includes the repositories for the persistent storage of usage records. The central databases are populated through individual usage records published by the Resource Centres, or through the publication of summarised usage records. The Accounting Infrastructure is essential in a service-oriented business model to record usage information.
4. Accounting Portal	The EGI Accounting Infrastructure is distributed. At a central level it includes the repositories for the persistent storage of usage records. The central databases are populated through individual usage records published by the Resource Centres, or through the publication of summarised usage records. The Accounting Infrastructure is essential in a service-oriented business model to record usage information. The Accounting Portal provides data accounting views for users, VO Managers, NGI operations and the general public.
5. Central monitoring services	Infrastructure operations requires in some cases monitoring activities to be run centrally to support specific activities, like monitoring of UserDN publishing in accounting records, GLUE information validation, and of software versions of deployed middleware.
6. SAM central services	Central systems are needed for accessing and archiving infrastructure monitoring results of the services provided at many levels (Resource Centres, NGIs and EGI.EU), for the generation of service level reports, and for the central monitoring of EGI.eu operational tools and other central monitoring needs.
7. Service registry (GOADB)	EGI relies on a central registry (GOADB) to record information about different entities such as the Operations Centres, the Resource Centres, service endpoints and the contact information and roles of people responsible for operations at different levels. GOADB is a source of information for many other operational tools, such as the broadcast tool, the Aggregated Topology Provider, the Accounting Portal, etc.
8. Operations support services	Auxiliary services and activities are needed for the good running of Infrastructure Services. Examples of such services are VOMS service and VO membership management for infrastructural VOs (DTEAM, OPS), the provisioning of middleware services needed by the monitoring infrastructure (e.g. top-BDII and WMS), and catch-all services for emerging user communities and activities for service level management, service level reporting and service management in general.
9. Security monitoring and security operations support tools	EGI is an interconnected federation where a single vulnerable place may have a huge impact on the whole infrastructure. In order to recognise the risks and to address potential vulnerabilities in a timely manner, the EGI Security Monitoring provides an oversight of the infrastructure from the security standpoint. Also, sites connected to EGI differ significantly in the level of security and detecting weaknesses exposed by the sites allows the EGI security operations to contact the sites before the issue leads to an incident. Information produced by security monitoring is also important during assessment of new risks and vulnerabilities since it enables to identify the scope and impact of a potential security incident.

10. Security coordination	Security is recognised as an important aspect of e-Infrastructures and requires co-ordination between the EGI participants at various levels, in particular for the prevention and handling of incidents.
11. 1st & 2nd level support	EGI provides support to users and operators through a distributed helpdesk with central coordination (GGUS). The central helpdesk provides a single interface for support. Software-related tickets that reach the second level of support are analysed and if necessary are forwarded to 3rd line support units only when there are clear indications of a defect (in software, documentation, etc.).
12. Collaboration tools/IT support	The task provides the following services for the EGI collaboration, all the services requiring authentication must interface with SSO: EGI.eu Web site hosting and CMS maintenance; EGI main events dedicated webspace; EGI SSO; Including shibboleth access for third party services using SSO as ID provider; Wiki; Mailman; Forum; DocumentDB Indico; RT; Instant messaging (Jabber); RT must interface with the UMD software provisioning system. Tight cooperation with the provider of the UMD infrastructure is expected; Main DNS for egi.eu domain
13. Acceptance criteria	The quality criteria are the functional and non functional requirements that a product must fulfill to be released in UMD, these include generic requirement applicable to every product, and specific requirements applicable to the capabilities supported by a component.
14. Staged Rollout	The Staged Rollout is a procedure by which certified updates of the supported middleware are first tested by Early Adopter (EA) sites before being made available to all sites through the production repositories. This procedure permits to test an update in a production environment that exposes the product to more heterogeneous use cases than the certification and verification phase. This allows the discovery of potential issues and potentially to add mitigation information to the UMD release notes.
15. Software provisioning infrastructure	The software provisioning infrastructure provides the technical tools to support the UMD release process from pulling packages from the developers repositories to the build of a release.
16. Incident management helpdesk (GGUS)	EGI provides support to users and operators through a distributed helpdesk with central coordination (GGUS). The central helpdesk provides a single interface for support. The central system is interfaced to a variety of other ticketing systems at the NGI level in order to allow a bi-directional exchange of tickets.

3.2 Overview of costs

The following table provides an overview of the consortia selected for the delivery of the core activities and the respective annual costs.

Table 2. EGI Core Activity yearly costs.

Service/Activity	Bidders	Sub task	Extra costs (hardware and travel)	PMs/year	Cost for EGI.eu (Euro/year)	Total Activity Cost (EGI.eu, 40%)	Total Activity Cost (EGI.eu 40% and NGI)
Message broker network	GRNET		0	2.5	6300	10620	26550
	SRCE		0	2.5	4320		
Operations Portal	CNRS		3500	24	62840	62840	157100
	GRNET		0	0	0		
Accounting repository	STFC		4800	12	38188	38188	95469
Accounting portal	CESGA		0	6	10152	10152	25380
EGI central monitoring services	GRNET		0	6.5	16380	25884	64710
	SRCE		0	5.5	9504		
SAM central services	SRCE		2500	10	18280	63960	159900
	GRNET		0	10	25200		
	CNRS		0	8	20480		
Service Registry (GOCDB)	STFC		5581	6	32385	32385	80963
Operations Support Services	GRNET		0	2	5040	26160	65400
	CYFRONET		0	6	21120		
Security monitoring	CESNET		0	4	10240	10240	25600

Security coordination	STFC	SPG	5000	4	20236	89348	223371
		SVG	3000	4	16030		
	FOM	IGTF OGF	5000	2	12688		
		IRTF	3000	5	20400		
	SNIC	IRTF	3000	5	19994		
1st and 2nd level support	IberGrid		0	12	27072	62912	157280
	CESNET		0	14	35840		
Collabortion tools	CESNET		0	12	30720	30720	76800
Acceptance criteria	Ibergrid		0	10	22560	22560	56400
Staged rollout	Ibergrid		0	10	22560	22560	56400
Software provisioning infrastructure	GRNET		0	13	32760	51096	127740
	CESGA		12000	6	18336		
GGUS	KIT		18000	12	49896	49896	124740
TOTAL					606089	606089	1523803

4 EGI.EU OLA

To support the establishment of the EGI Core Activities from May 2014, the EGI set of Operational Level Agreement was completely reviewed in collaboration with the FedSM project [FSM].

In conformance with the service management best practices, the EGI.eu OLA document [EGISLA] created during PY3 has been recognized as EGI.eu SLA between EGI.eu and Resource Infrastructure Providers (the NGIs and EIROs). This SLA is complemented by a set of EGI.eu OLAs, one OLA for each EGI Core Activity, which were established between EGI.eu and the selected consortia.

Newly created EGI.eu OLA [EGIOLA] is the agreement between each provider of an EGI core service/activity and EGI.eu to cover the provision and support being part of the “Federated Operations Solution”⁶.

Federated Operations consist of operational tools, processes and people necessary to guarantee standard operation of heterogeneous infrastructures from multiple independent providers, with a lightweight central coordination. This includes, for example, the monitoring, accounting, configuration and other services required to federate service provision for access by multiple research communities. A federated environment is the key to uniform service and enables cost-efficient operations, while allowing resource centres to retain responsibility of local operations.

EGI core services and activities have been evaluated within the EGI Council for long-term strategic impact and decisions and potential sustainability models for what services and activities should be offered and funding models to support them. The EGI core services and activities provided by EGI.eu partners were re-bid in 2013⁷. With all partners EGI.eu OLA has been agreed and signed covering each of the EGI core service and activities separately.

The documents define aspects such as: scope, service hours, service components, support, service level targets, limitations and constraints, communication, reporting and escalation, additional responsibilities, customer responsibilities and review process.

⁶ <http://www.egi.eu/solutions/fed-ops/index.html>

⁷ https://wiki.egi.eu/wiki/Core_EGI_Activities

5 SERVICE LEVEL TARGETS

EGI Service Level Management Support Unit (SLM) is responsible within the EGI Incident Management tool (GGUS) for ensuring that all IT Service Management Processes, Operational Level Agreements etc. are appropriate for the agreed Service Level Targets.

The following service targets are constantly monitored:

- Availability which is defined as the percentage of time that the service was up and running appropriately.
- Reliability which is defined as the percentage of time a service is up and running appropriately, excluding periods of scheduled intervention
- Unknown which is defined to be the percentage of time where there is no monitoring information regarding the status of the service.

While Availability measures the level of correct functionality delivered by a set of capabilities, Reliability estimates the quality of problem/incident management of a service.

5.1 Resource Centres

It is mandatory that EGI certified Resource Centre (RCs) provide the following monthly targets, based on ROC_CRITICAL profile:

Table 3. RC service level targets as defined in the RC OLA.

Availability	must be above 70%
Reliability	must be above 75%
Unknown	must be below 10%

During PY4 it was agreed to increase the threshold to Availability: 80% and Reliability: 85%. Technical implementation of this change will take place during PY5.

5.2 Resource infrastructure Providers

It is mandatory that EGI RPs comply with the following monthly targets:

Table 4. RP service level targets as defined in the RP OLA.

Top-BDII Availability	must be above 99%
Top-BDII Reliability	must be above 99%
ROD performance index	must not exceed 10

During PY4 all Resource Infrastructure Providers registered their NGI core services under NGI core services groups or sites in GOC DB [GSG]. As a result of this action a complete list of services which should be monitored in terms of SLM has been defined. In PY5 monitoring and reporting for all services are planned to be developed.

5.3 EGI.eu

The Service Targets for each EGI Core service and activities may differ due to the criticality and available support level of the services. Technical services targets have been defined in percentage of availability and reliability, and support priority. Human services targets are defined according to support priority.

Table 5. EGI.eu OLA service level targets.

Component	Service level parameter	Target
Overall service (unless identified separately below)	Availability	97%
	Reliability	98%
1st and 2nd Level Support	1 st Level Support: Maximum time to assign a ticket to a support unit within support hours	1 working hour
	1 st Level Support: Maximum response time to tickets that are internally handled by 1st level support	1 working hour
	2 nd Level Support: Support priority	Advanced
Acceptance criteria	Incremental definition	New document version is produced every year, following two public drafts.
	Verification of acceptance criteria	The verification activities must support the UMD releases. The estimated number of products to verify in one year is 200 PPA.
	Support priority	Base
Accounting and Metric Portal	Accounting Portal availability	99%
	Accounting Portal reliability	99%
	Accounting Portal: Support priority	Medium
	Metric Portal: Support priority	Best effort
Accounting Repository	Availability	99%
	Reliability	99%
	Support priority	Medium
Catch-all services	Support priority	Medium
Collaboration tools/IT support	DNS: Availability	99%
	Other: Availability	90%
	Reliability	99%
	Support priority	Medium
Incident management helpdesk (GGUS)	Availability	99%
	Reliability	99%
	Support priority	Medium
Message Broker Network	Availability	95%
	Reliability	95%
	Support priority	Medium

Monitoring Central services	Availability	99%
	Reliability	99%
	Support priority	Medium
Operations Portal	Availability	99%
	Reliability	99%
	Support priority	Medium
Operations Support	Support priority	Medium
SAM central services	Availability	99%
	Reliability	99%
	Support priority	Medium
Service registry (GOADB)	Availability	99%
	Reliability	99%
	Support priority	Medium
Security coordination	Support priority	Medium
Software Provisioning Infrastructure	UMD repositories, web front-end, the community repository: Availability	90%
	Other: Availability	75%
	Reliability	90%
	Support priority	Medium
Security monitoring and related support tools	Availability	99%
	Reliability	99%
	Support priority	Medium
Staged Rollout	Support priority	Base

The support priorities are explained as follow:

- Base service defines a response time of 5 working days regardless of the ticket priority level.
- Medium support priority is as follow:

Ticket Priority	Response time
Less urgent	5 working days
Urgent	5 working days
Very Urgent,	1 working day
Top Priority	1 working day

- Advanced support priority is as follow:

Ticket Priority	Response time
Less urgent	5 working days
Urgent	1 working day

Very Urgent,	1 working day
Top Priority	4 working hours

6 REPORTING

The Service Availability Monitoring [SAM] is the grid monitoring and availability/reliability calculation system of EGI. The SAM monitoring infrastructure is used to monitor the resources and services within the production infrastructure; ad-hoc monitoring probes are developed for new integrated services with the purpose of checking the functionality exposed by their public interfaces.

6.1 RC OLA reporting

6.1.1 Extensions for GLOBUS, UNICORE, Desktop Grid and QCG

During PY4 Nagios probes for Globus, UNICORE, Desktop Grid and QCG distributed within the SAM release, have been added in the profile for the availability and reliability calculation.

For sites deploying mixed middleware versions a unified availability calculation algorithm has been implemented. A combination of service metric results for different middleware services exposing the same capability should be applied.

6.1.2 Extensions for Cloud Resources

Nagios probes for Cloud resources have been added to Operations profile in PY4. In PY5 it is foreseen to introduce them into the availability and reliability calculation.

6.2 RP OLA reporting

6.2.1 Extensions for all NGI core services

So far RP OLA reporting is based on one service (Top-BDII) and it is essential to extend this list to cover all NGI core services. To provide such information development work has started in PY4 by extending EGI Operations Portal tool.

6.3 EGI.eu OLA reporting

In order to track the availability performance of the operational tools maintained by EGI-InSPIRE partners on behalf of EGI.eu, the services endpoints were added to GOCDB, and described with a specific set of service types. The services were grouped under EGI.eu Operations Centre entity⁸ in order to produce availability calculation using the existing SAM infrastructure.

Most of the operational tools development teams already delivered probes to test the functionalities of their tools. The probes have been integrated in the SAM infrastructure [SAM] together with a new profile OPS_MONITOR_CRITICAL⁹ to contain the relevant probes to be used for the availability/reliability calculation of the central tools. The results of EGI Global services monitoring are provided by MyEGI¹⁰.

The Operations Portal will be responsible for the calculation of EGI.eu performance statistics and the generation of monthly reports.

⁸ https://goc.egi.eu/portal/index.php?Page_Type=View_Object&object_id=12607&grid_id=0

⁹ http://grid-monitoring.cern.ch/myegi/sam-pi/metrics_in_profiles/?vo_name=ops&profile_name=OPS_MONITOR_CRITICAL

¹⁰ <https://grid-monitoring.cern.ch/myegi/>

7 FUTURE WORK

RP and EGI.eu reports. A new availability and reliability reporting module is being developed by the Operations Portal to make EGI.eu and RP monthly reports available by the Operations Portal. Currently RP reports are manually generated by extracting statistics for the top-BDII service from the SAM Programmatic Interface. These reports will be improved in two ways. As service topology information of NGIs and EIROs is now complete and provided by GOCDB, a larger number of services will be included in the RP monthly reports. Reports will be computed and provided by the Operations Portal. Different reports will be generated: for the technical services (i.e. top-BDII, VOMS, WMS and other grid service endpoints) and for the operational tools (i.e. SAM instances, regional accounting databases etc.).

Evolving OLAs and SLAs. During PY4 in collaboration with the FedSM project [FSM], with creation of EGI.eu OLAs, the OLA framework has been completed. Future work will focus on SLA framework: EGI.eu SLA (between EGI.eu and RP) and User SLA (between EGI.eu, RP and Users).

Creating a SLA framework for technology product teams and users. As reported in Section 2, after end of EMI and IGE projects, technology providers represented by those projects has been contacted to agree on service level support provided to EGI users. First agreement has been completed and each of Technology Product team has declared level of support in EGI helpdesk system (GGUS)¹¹ and automatic mechanism has been developed in EGI helpdesk system to track and report if the agreement is fulfilled. The current lightweight agreements will be replaced by SLA to officially document the agreements established by both parties.

In PY4 EGI has started a resource allocation activity that will simplify the allocation of compute and storage in a distributed environment by reaching an agreement between users and Resource Centers concerning the parameters and conditions of use. This activity will be supported by SLA and OLA framework to assure provisioning of resources to the EGI users. The SLA and OLA framework is being implemented in the e-GRANT tool [EGRANT] – being developed through the SA4 mini-projects – to allow researchers to request a given amount of compute and storage resources for a given amount of time. e-GRANT handles all activities involved in Resource Allocation Process which leads to SLA signing.

¹¹ https://wiki.egi.eu/wiki/FAQ_GGUS-QoS-Levels

8 CONCLUSIONS

This milestone summarizes the advancements made in PY4 with respect to EGI Operational Level Agreements and Service Level Agreements for services provided by EGI.eu, RPs and RCs, the current status of performance reporting and the PY5 work plan.

The OLA and SLA framework defines the service quality levels and the responsibilities of delivering quality services to the end users. The OLAs have been defined as middleware independent as possible to be applied to the middleware stacks currently in use by the infrastructure. With the integration of other middleware types in the EGI infrastructure, the framework will be updated to be compatible with the new services, as part of an evolution process developed within the Operations Management Board.

In PY4 a new OLA was defined and approved: the EGI.eu OLA, concerning the EGI.eu core services.

As the GOCDB service groups are widely deployed by the NGIs to group their core services it is now possible to extend the RP OLA to include more core services in the RP OLA, on top of the Top-BDII, to have a more precise picture of the quality level of the service provisioning.

The main task for PY5 will be the extension of the current reporting framework to include RP, Cloud resources and EGI.eu Core service; these will be provided by the Operations Portal availability and reliability module under implementation.

9 REFERENCES

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