# EGI-InSPIRE

## RESOURCE CENTRE
## OPERATIONAL LEVEL AGREEMENT

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Abstract

This document formalizes the operational services which a Resource Centre provides and the respective quality parameters, and the corresponding services of the Resource Infrastructure Provider.




## I. COPYRIGHT NOTICE



## II. DELIVERY SLIP

| | Name | Partner/Activity | Date |
|---|---|---|---|
| **From** | D. Zilaskos | AUTH/SA1 | |
| **Reviewed by** | **Reviewers:** | | |

## III. DOCUMENT LOG

| Issue | Date | Comment | Author/Partner |
|---|---|---|---|
| 1 | 22-07-2010 | First draft: porting to EGI template | D. Zilaskos/AUTH |
| 2 | 14-03-2011 | Second draft: porting to new terminology, update of whole document according to OMB decisions | D. Zilaskos/AUTH |
| 3 | 15-03-2011 | References updated, 1st 2nd and 3rd line support terminology fixed, removed references to min amount of resources, and gLite-specific references, added DTEAM and OPS mandatory support | T. Ferrari/EGI.eu |

## IV. APPLICATION AREA

This document is applicable to all certified Resource Centres that are part of EGI.




**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.

## TABLE OF CONTENTS

# 1 INTRODUCTION

EGI is a provider of resources and services to the European academic community and others. This Operational Level Agreement (OLA) is intended to specify the constraints imposed on a Resource Centre and the respective Resource Infrastructure Provider in order to ensure an available and reliable grid infrastructure [ARCH].

This document obsoletes the "EGEE III Service Level Agreement between ROCs and Sites" [SLA].

## *1.1 Document Amendment Procedure*

The Resource Centre OLA is a document discussed and approved in the framework of the EGI Operations Management Board (OMB) [TOR]. Amendments, comments and suggestions must be sent to the EGI Operations Management Board. Changes introduced are documented in the Release Notes available at [RN].

## *1.2 Terminology*

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119.

### 1.2.1 Resource Centre (Site)

The Resource Centre – also known as Site – is the smallest resource administration domain in EGI. It can be either localized or geographically distributed. It provides local resources and the Grid functional capabilities necessary to make those resources accessible to authorized users such as Security, Information, Storage, Data Access, Compute etc. Access is granted by exposing common interfaces to users.

### 1.2.2 Resource Centre Operations Manager

The Resource Centre Operations Manager leads the local grid operations, and is the official technical contact person in the connected organisation. He/she is locally supported by a team of Resource Centre administrators. The Resource Centre Operations Managers is responsible of the enforcement of the Resource Centre OLA, the EGI policies and procedures by the Resource Centre.

### 1.2.3 Resource Infrastructure

A Resource Infrastructure is a federation of Resource Centres.

### 1.2.4 Resource Infrastructure Provider

The Resource Infrastructure Provider is the legal organisation that is responsible of establishing, managing and of operating directly or indirectly the operational services to an agreed level of quality needed by the Resource Centres and the user community. It holds the responsibility of integrating them in EGI to enable uniform resource access and sharing for the benefit of their consuming end-users. The Resource Infrastructure Provider liaises locally with the Resource Centre Operations Managers, and represents the Resource Centres at an international level. Examples of Resource Infrastructure Provider are the European Intergovernmental Research Institutes and the National Grid Infrastructures (NGIs).

The Resource Infrastructure Provider is responsible for appointing an Operations Manager who is the contact point for all operational matters and represents the Resource Infrastructure Provider within the OMB.

### 1.2.5 National Grid Initiative

National Grid Infrastructures are legal organizations that (a) have a mandate to represent their national Grid community in all matters falling within the scope of EGI.eu, and (b) are the only organization having the mandate described in (a) for its country and thus provide a single contact point at the national level.

### 1.2.6 Virtual Organization

A Virtual Organization (VO) is a grouping of users and optionally resources, often not bound to a single institution, who, by reason of their common membership and in sharing a common goal, are given authority to use a set of resources.

### 1.2.7 Unified Middleware Distribution

The Unified Middleware Distribution (UMD) is the integrated set of software components that EGI makes available from technology providers within the EGI Community. These components are distributed to provide an integrated offering for deployment on EGI.

# 2 PARTIES TO THE AGREEMENT

The parties to this agreement, which is not legally binding, are:

| | |
|---|---|
| **Resource Infrastructure Operations Manager:** | |
| **Resource Centre Operations Manager:** | |

# 3 DURATION OF THE AGREEMENT

This OLA is valid for as long as the Resource Centre is part of the European Grid Infrastructure, i.e. the Resource Centre is registered in the central configuration repository GOCDB[1] as being certified for production.

# 4 AMENDMENT PROCEDURE

The OLA may be amended at any time if there is mutual agreement by both parties. This will usually take the form of a signed and dated OLA addendum.

# 5 SCOPE OF THE AGREEMENT

This OLA covers the commitments made by a Resource Centre with respect to its Resource Infrastructure Provider and EGI, and correspondingly, the commitments that a Resource Infrastructure Provider makes to its member Resource Centres.

This OLA is applicable to all certified Resource Centres that belong either to a NGI or EIRO (in Europe) or to an external Resource Infrastructure Provider that is collaborates with EGI via a Resource Infrastructure Provider MoU [MoU].

Global and Local infrastructure services [ARCH] are out of scope of this OLA. Similarly, this OLA does not cover the relationship that specific VOs might have with Resource Centres; those should be detailed in VO-specific agreements.

# 6 RESPONSIBILITIES

This section defines the responsibilities of each party. The overall task for all concerned is to operate, support, and manage a production quality grid infrastructure across the European Research Area.

## *6.1 Resource Infrastructure Provider*

The main responsibilities of the Resource Infrastructure Provider are:

- to provide helpdesk facilities either by using GGUS[2] support units to create a national helpdesk within GGUS, or by providing a national helpdesk which is interfaced with GGUS;
- to register Resource Centre administrators in the available helpdesk facilities;
- to provide first and second-level support by helping in the resolution of advanced and specialized operational problems that cannot be solved by Resource Centre administrators. If necessary, the Resource Infrastructure Provider will propagate and follow-up problems with higher-level operational or development teams;

[1] https://goc.egi.eu/

[2] https://gus.fzk.de/pages/home.php

- to monitor progress of tickets, to ensure that Resource Centres work on tickets opened against them;
- to respond to tickets from Resource Centres in a timely manner (see Section 11);

Resource Infrastructure Providers manage and support the deployment of UMD software on sites, and are also responsible for registering new Resource Centres. Their administrative tasks include:

- to maintain accurate GOCDB entries for the Operations manager and their deputies;
- to adhere to the operational procedures, manuals and policies agreed between EGI.eu, the EGI Resource Infrastructure Providers and the Resource Centres. The policies and procedures of EGI are periodically reviewed, and are published at [POL], manuals are available at [MAN].
- to raise any issues deemed necessary by the Resource Centres to the attention of the OMB, Technology Providers, deployment, monitoring, and/or certification teams, to ensure that these issues are properly dealt with;

The Resource Infrastructure Provider MUST provide, using GOCDB, details (name, phone number, e-mail address) of a set of contact points for security, operational and administrative matters. The Resource Infrastructure Provider is responsible for ensuring the accuracy of the contact details in the GOCDB database.

### *6.2 Resource Centre*

Resource Centres provide second-level support to users, have one or several Resource Centre administrators, and have a designated security officer. Resource Centres are expected:

- to adhere to the Grid Site Operations Policy and other policy documents referenced therein; to relevant procedures and manuals;
- to maintain accurate information on the services they provide in GOCDB;
- to adhere to the Grid Site Operations Policy [RPC], and other policy documents referenced therein;
- to adhere to the requirements stated in the Grid Security Policy [GSP];
- to adhere to the criteria and metrics that are defined in this OLA;
- to run supported versions of middleware [UMD]. Sites are encouraged to stay abreast of grid middleware updates in order to benefit from the latest improvements and features;
- to respond to GGUS tickets in a timely manner (see Section 11).

The Resource Centre MUST provide, using GOCDB, details (name, phone number, e-mail address) of a set of contact points for security, operational and administrative emergencies. The Resource Centre is responsible for ensuring the accuracy of Resource Centre contact details in the GOCDB database.

## 7 HARDWARE AND CONNECTIVITY CRITERIA

The Resource Centre MUST ensure sufficient computational and storage resources and network connectivity to support the proper operation of its services, as indicated by consistently passing all relevant Nagios OPERATIONS tests[3].

## 8 DESCRIPTION OF SERVICES COVERED

The services that are offered by a Resource Centre MUST be specified in the GOCDB, MUST be monitored by the Resource Infrastructure Provider Nagios local monitoring system (SAM), and the usage accounted centrally through a UMD-compatible system.

[3] https://wiki.egi.eu/wiki/SAM_Tests

Resource Centres are encouraged to provide both compute and data management capabilities. However, the minimum requirements in terms of the resources that a Resource Centre MUST provide, is the provisioning of at least **one** UMD-compatible site information query system (local or remote) serving at least **one** UMD-compatible service (local or remote).

# 9 SERVICE HOURS

The Resource Centre should offer the services specified in Section 8 with an intended availability of 24/7. The Resource Centre support service MUST be available during the regular business hours of the Resource Centre's host organization. The Resource Centre service hours MUST be specified in GOCDB. Response times to trouble-tickets are expressed in service hours.

# 10 AVAILABILITY

Resource Centres and Resource Infrastructure Providers MUST commit to achieve the availability and reliability [QOS} of grid services specified in this OLA. Reasonable steps must be taken to ensure that scheduled downtimes are kept to the specified levels. Unplanned outages can have a considerable impact on availability figures, and will also adversely affect jobs that are running at the time. Careful monitoring of resources and the local fabric should help reduce the number of such outages, so Resource Centres are expected to take a proactive role in this domain.

Out of the list of Resource Centre services monitored by the Resource Infrastructure Provider Nagios monitoring system, only a subset of services is taken into account for availability and reliability (compute, data management, local information discovery system[4]).

For a Resource Centre to be available, all of the afore-mentioned services MUST be available (logical AND of all service types). If a Resource Centre has several instances of a service type (e.g. Computing Elements), the service is deemed to be available if any of the instances are available (logical OR). Availability figures include scheduled downtimes, which should be kept to a minimum.

1. **Resource Centre MUST be available (UP) at least 70% of the time per month (daily availability is measured over 24 h).**
2. **Resource Centre reliability MUST be at least 75%per month (Reliability = Availability / (Availability + Unscheduled Downtime))**[5]

Scheduled downtimes MUST be declared in advance in the GOCDB according to the Service Intervention Management manual [MAN02]. Note that Scheduled Downtimes negatively affect availability without impacting reliability.

# 11 SUPPORT

GGUS is the EGI Helpdesk, and as such, provides the mechanism for entering problem reports, tracking and escalating them, and providing statistics. Statistics from GGUS will be used to determine the responsiveness of Resource Centres, and the efficiency of the Resource Infrastructure Provider in problem tracking.

## *11.1 Resource Infrastructure Provider*

The Resource Infrastructure Provider MUST ensure a response to a ticket raised by a Resource Centres is issued within **eight hours** of the ticket having been assigned to it.

[4] https://wiki.egi.eu/wiki/Availability_and_reliability_tests

[5] In the extreme case of a site being in scheduled downtime over the whole period, reliability is considered to be undefined.

### 11.2 Resource Centre

- The Resource Centre will provide at least **one** system administrator who is reachable during service hours.
- The Resource Centre MUST respond to GGUS tickets within **eight hours** of the ticket having been assigned to it, and resolve incidents[6] within **five working days**.
- If a Resource Centre supports alarm tickets[7], they MUST be acknowledged within **four hours**.

Missing any of these metrics on an incident constitutes a violation.

### 11.3 VO Support

- The Resource Centre MUST support the OPS VO for Nagios monitoring and security monitoring.
- The Resource Centre MUST support the DTEAM VO for testing and troubleshooting.

Each Resource Centre MUST support at least **one** non-monitoring VO, either regional or global, which MUST be registered in the operations portal, but Resource Centres are encouraged to support as many VOs as they reasonably can. Specific agreements between Resource Centres and individual VOs should be covered in a separate OLA.

## 12 SERVICE REPORTING AND REVIEWING

OLA conformance is reported on a **monthly** basis. Reports will be available at [PERF], and Resource Centres are responsible to provide justifications for any OLA violations. Similarly, Resource Infrastructure Providers MUST justify any violations on their side, if any.

## 13 PERFORMANCE INCENTIVES AND PENALTIES

Resource Centres found scoring an availability of less than 50% for three consecutive months are eligible to suspension by removing them from the European Production Infrastructure.

## 14 TABLE OF METRICS

| | Value | Section |
|---|---|---|
| Minimum number of site UMD-compatible information system service | **one** | 8 |
| Minimum number of UMD-compatible service other than an EGI compatible information discovery system service | **one** | 8 |
| Minimum Resource Centre availability | **70%** | 10 |
| Minimum Resource Centre reliability | **75%** | 10 |
| Period of availability/reliability/outage calculations | **per month** | 10 |
| Minimum number of system administrators | **one** | 11 |
| Maximum time to acknowledge GGUS tickets (Resource Infrastructure Provider) | **four hours** | |
| Maximum time to acknowledge GGUS tickets (Resource Centre) | **eight hours** | 11 |

[6] We use the ITIL distinction between incidents and problems. An incident can be resolved (quickly) by a site, whereas a problem needs to be escalated and requires more time. The metric pertains only to incidents.

[7] https://gus.fzk.de/pages/docu.php#alarm

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|---|---|---|
| Maximum time to acknowledge GGUS alarm tickets, if applicable | **four hours** | 11 |
| Maximum time to resolve GGUS incidents | **five working days** | 11 |
| Minimum number of supported user-community VOs | **one** | 11 |
| Tracking of SLA conformance | **monthly** | 12 |

Nb. Ticket response times are measured in Resource Centre business hours as defined in the GOCDB.

# 15 SIGNATORIES

Authorized representatives of the parties to this OLA:

**Resource Infrastructure Operations Manager or Deputy Manager:**

Name: | Title: | Date:

**Resource Centre Operations Manager:**

Name: | Title: | Date:

# 16 REFERENCES


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|---|---|
| **[MOU]** | Memorandum of Understanding Template for Resource Infrastructure Providers (https://documents.egi.eu/public/ShowDocument?docid=215) |
| **[ARCH]** | EGI Operations Architecture, EGI-InSPIRE Deliverable D4.1, 2011 (https://documents.egi.eu/document/218) |
| **[TOR]** | Operations Management Board Terms of Reference (https://documents.egi.eu/document/117) |
| **[RN]** | Resource Centre OLA: Release Notes (https://wiki.egi.eu/wiki/Resource_Centre_OLA:_Release_Notes) |
| **[SLA]** | The EGEE-III Service Level Agreement between ROCs and Sites, EGEE-III Project, 2008 (https://edms.cern.ch/document/860386) |
| **[POL]** | EGI Policies and Procedures (https://wiki.egi.eu/wiki/PDT:Policies_and_Procedures) |
| **[MAN]** | EGI Operations Manuals (https://wiki.egi.eu/wiki/Operations_Manuals) |
| **[RCP]** | Grid Site Operations Policy (https://documents.egi.eu/public/ShowDocument?docid=75) |
| **[GSP]** | Grid Security Policy (https://documents.egi.eu/document/86) |
| **[UMD]** | UMD Roadmap, EGI-InSPIRE Deliverable D5.2, 2011 (https://documents.egi.eu/document/272) |
| **[QOS]** | Sonvane, D.; Kalmady, R.; Chand, P. et alt.; Computation of Service Availability Metrics in Gridview, (https://twiki.cern.ch/twiki/pub/LCG/GridView/Gridview_Service_Availability_Computation.pdf) |
| **[MAN02]** | Service Intervention Management, Manual MAN02, (https://wiki.egi.eu/wiki/MAN02_Service_intervention_management) |
| **[PERF]** | Availability and reliability statistics (https://wiki.egi.eu/wiki/Availability_and_reliability_monthly_statistics) |