



# European Grid Initiative

## RESOURCE CENTRE OPERATIONAL LEVEL AGREEMENT v. 1.1

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### Abstract

This document defines the responsibility of an EGI Resource Centre that is in certified, uncertified or suspended status, and the minimum set of applicable services and the respective service levels and targets that a Resource Centre is required to provide in EGI depending on the status.



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## II. DELIVERY SLIP

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## III. DOCUMENT LOG

Please see the Resource Centre OLA v1.0 Release Notes at [REL].

Issue	Date	Comment	Author/Partner
1.0	03 Jun 2011	Approval of v. 1.0 by OMB	T. Ferrari/EGI.eu D. Zilaskos/AUTH
1.1	15 Mar 2012	Approval of v. 1.1 by OMB	T. Ferrari/EGI.eu



## ORGANIZATION

To support science and innovation, a lasting operational model for e-Infrastructure is needed – both for coordinating the infrastructure and for delivering integrated services that cross national borders. The objective of EGI.eu (a foundation established under Dutch law) is to create and maintain a pan-European Grid Infrastructure in collaboration with National Grid Initiatives (NGIs) in order to guarantee the long-term availability of a generic e-infrastructure for all European research communities and their international collaborators.

In its role of coordinating grid activities between European NGIs, EGI.eu will:

- Operate a secure integrated production grid infrastructure that seamlessly federates resources from providers around Europe
- Coordinate the support of the research communities using the European infrastructure coordinated by EGI.eu
- Work with software providers within Europe and worldwide to provide high-quality innovative software solutions that deliver the capability required by our user communities
- Ensure the development of EGI.eu through the coordination and participation in collaborative research projects that bring innovation to European Distributed Computing Infrastructures (DCIs)

The EGI.eu is supporting 'Grids' of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI.eu will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit the user communities within the European Research Area.

EGI will collect user requirements and provide support for the current and emerging user communities. 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 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, 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 – structured international user communities – that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.



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## 1 INTRODUCTION

The Resource Centre Operational Level Agreement (OLA) – also referred to as Agreement in this document, is to obtain agreement between a Resource Centre and the respective Resource Infrastructure Provider on the commitments needed to ensure an available and reliable grid infrastructure.

### 1.1 Document Amendment Procedure

The Resource Centre OLA is discussed and approved by the EGI Operations Management Board (OMB) [TOR]. Amendments, comments and suggestions must be addressed to the OMB by opening a GGUS [GGUS] ticket to the Service Level Management support unit.

Changes introduced are documented in the Release Notes available at [REL].

The Resource Infrastructure Operations Manager will promptly inform his/her Resource Centre administrators about changes introduced to the requirements, service levels and targets defined in this document, and will ensure that the impact of the changes is understood.

### 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.

More information about the entities defined in the sections below is available in [ARCH].

For a complete list of term definitions see [GLO].

#### 1.2.1 Resource Centre (Site)

The Resource Centre – also known as Site – is a resource administration domain in EGI. It can be either localised or geographically distributed. It provides a minimum set of local or remote UMD-compliant capabilities [UMD].

See section 5.1 for more information on the Resource Centre responsibilities.

#### 1.2.2 Resource Centre Operations Manager

The Resource Centre Operations Manager leads the Resource Centre operations, and is the official technical contact person in the connected organisation. He/she is locally supported by a team of Resource Centre administrators.

#### 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 responsible for any matter that concerns the respective Resource Infrastructure. It provides, manages and operates (directly or indirectly) all the operational services required to an agreed level of quality as required by the Resource Centres and their user community. It holds the responsibility of integrating these operational services into EGI in order to enable uniform resource access and sharing for the benefit of their users. The Resource Infrastructure Provider liaises locally with the Resource Centre Operations Managers, and represents the Resource Centres at an international level. Examples of a Resource Infrastructure Provider are the



European Intergovernmental Research Institutes (EIRO) and the National Grid Initiatives (NGIs) – see section 1.2.7.

### **1.2.5 Resource Infrastructure Operations Manager**

The Resource Infrastructure Operations Manager represents his/her Resource Centres within the OMB and at an EGI international level. He/She is appointed by the Resource Infrastructure Provider.

### **1.2.6 Operations Centre**

The Operations Centre offers operations services on behalf of the Resource Infrastructure Provider. The operations services are delivered locally in collaboration with the relevant Resource Centres and globally with EGI.eu.

### **1.2.7 National Grid Initiative**

National Grid Initiatives are legal organisations 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 organisation having the mandate described in (a) for its country and thus provide a single contact point at the national level.

### **1.2.8 Virtual Organization**

The Virtual Organization (VO) [GLO] is a group of people (e.g. scientists, researchers) with common interests and requirements, who need to work collaboratively and/or share resources (e.g. data, software, expertise, CPU, storage space) regardless of geographical location. They join a VO in order to access resources to meet these needs, after agreeing to a set of rules and policies that govern their access and security rights (to users, resources and data).

### **1.2.9 Certified Resource Centre**

A Certified Resource Centre is a Resource Centre that conforms to the requirements specified in the “Resource Centre Registration and Certification Procedure” [PROC09].

For more information on Resource Centre status see [GOC].

### **1.2.10 Unified Middleware Distribution**

The Unified Middleware Distribution (UMD) is the integrated set of software components contributed by technology providers and packaged for deployment as production-quality services in EGI [UMD].

### **1.2.11 Capability**

A capability is the ability of an IT Service to carry out an activity. A capability may be 1) functional if providing an Activity for the direct benefit of the User; 2) operational if providing an Activity for supporting the Operations of an IT Infrastructure; 3) security if related to security aspects. A Capability may depend on others Capabilities. A Capability is defined and delivered by one or more Interfaces supported by one or more technology providers. Examples of functional Capability are user management, authentication and authorization, and job submission. Examples of non-functional capabilities are messaging, accounting, and monitoring.



### **1.2.12 UMD-compliant Middleware**

UMD-compliant Middleware is the software that provides one of more UMD capabilities, and complies with the UMD supported interfaces specified in the UMD Roadmap [UMD]. It is mandatory that UMD-compliant software supports Monitoring and Accounting.



## 2 PARTIES TO THE AGREEMENT

The parties to this Agreement are the Resource Infrastructure Provider (represented by the Resource Infrastructure Operations Manager) and the Resource Centre (represented by the Resource Centre Operations Manager).

## 3 DURATION OF THE AGREEMENT

Once approved, this Agreement is valid for as long as the Resource Centre is part of the EGI production infrastructure, i.e. until the production Resource Centre registered in the central configuration repository GOCDB<sup>1</sup> with production status equal to “PRODUCTION”, is not turned into CLOSED status [GOC].

The Resource Centre retains the right to terminate the Agreement at any time. If parties agree to end the Agreement, then the production Resource Centre is no longer part of EGI, i.e. the Resource Centre is closed or changed into a test site (GOCDB production status equal to “TEST”).

## 4 SCOPE OF THE AGREEMENT

This agreement covers the commitments made by a Resource Centre with respect to its Resource Infrastructure Provider and EGI.

Unless differently specified in the document or in EGI policies and procedures, this agreement is applicable to all Resource Centres that are associated to a Resource Infrastructure Provider that meets one of the following conditions:

- the Resource Infrastructure Provider is a Participant or Associated Participant in *The European Grid Initiative Foundation* [STA];
- the Resource Infrastructure Provider collaborates with EGI.eu in a framework defined by a Resource Infrastructure Provider MoU [MoU].

and are either CERTIFEID, UNCERTIFIED<sup>2</sup>, or SUSPENDED.

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

## 5 RESPONSIBILITIES

This section defines the responsibilities of the Resource Centre.

### 5.1 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 maintain accurate information on the services they provide in GOCDB [GOC];
- to adhere to all applicable security policies and procedures defined in [POL] and to other policy documents referenced therein;
- to adhere to all applicable operations procedures defined in [PROC];
- to ensure that the provisioning of services [GLO] by the Resource Centre SHALL NOT in itself create any intellectual property rights in software, information and data provided to the

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<sup>1</sup> <https://goc.egi.eu/>

<sup>2</sup> Note that the approval of the Resource Centre OLA is a necessary condition for a Resource Centre to get from CANDIDATE to UNCERTIFIED status [PROC09].



services provided by the Resource Centre, or in data generated by the services provided by the Resource Centre;

- to adhere to criteria and service level targets that are defined in this Agreement as applicable;
- to run UMD-compliant Middleware supported by the respective Resource Infrastructure Provider. Certified Resource Centres are encouraged to stay abreast of updates in order to benefit from the latest improvements and features;
- to respond to GGUS tickets in a timely manner (see Section 8).

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 the Resource Centre contact details in GOCDB.

## **5.2 Resource Infrastructure Provider**

For a definition of the Resource Infrastructure Provider responsibilities see the Resource infrastructure Provider OLA [RP-OLA].

## **6 HARDWARE AND CONNECTIVITY CRITERIA**

The certified Resource Centre **MUST** ensure sufficient computational and storage resources and network connectivity to support the proper operation of its services, as indicated by passing all relevant Nagios OPERATIONS tests<sup>3</sup>.

## **7 DESCRIPTION OF SERVICES COVERED**

The Services that are offered by a certified 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 (where applicable) through a UMD-compliant middleware implementing the Accounting Capability [UMD].

The Resource Centre **MUST** provide access to a minimum set of UMD-compliant Capabilities as follows [UMD]:

- at least **one** local or remote service to publish information on the Functional Capabilities provided by the Resource Centre into the site Information Discovery System (e.g. site-BDII);
- at least **one** Functional Capability (e.g. File Transfer, Storage Management, Data Access, Metadata Catalogue, Compute, additional Information Discovery capability). If the Compute Capability is provided, then also Storage Management (either local or off-site) is needed.

### **7.1 Monitoring, Troubleshooting and User Group Support**

The Resource Centre **MUST** support a way to enable service monitoring and security monitoring. Resource Centres supporting the VO concept **MUST** enable the OPS VO.

The Resource Centre **MUST** support a way to enable testing and troubleshooting from outside the Resource Centre. Resource Centres supporting the VO concept **MUST** enable the DTEAM VO.

Each Resource Centre **MUST** enable and support at least one either national or global non-monitoring/troubleshooting user group (e.g. represented by a VOMS VO), which **MUST** be registered in the Operations Portal<sup>4</sup>.

<sup>3</sup> [https://wiki.egi.eu/wiki/SAM\\_Tests](https://wiki.egi.eu/wiki/SAM_Tests)

<sup>4</sup> <https://operations-portal.egi.eu>



Resource Centres are encouraged to support as many user groups as needed. Specific agreements between Resource Centres and individual user groups are covered in separate agreements.

## 7.2 Service Levels and Targets

Certified Resource Centres **MUST** commit to achieve the availability and reliability [QOS] herein specified.

Availability and reliability statistics depend on uptime and on unscheduled/scheduled downtime. Availability of a Resource Centre is calculated as uptime per month, based on monthly/weekly/daily statistics.

Reasonable steps must be taken to ensure that scheduled downtimes are kept, so that availability is at 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 can help to 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 SAM monitoring system, only a subset of Capabilities is taken into account for availability and reliability (Compute, Storage Management, and Information Discovery<sup>5</sup>).

For a Resource Centre to be available, Information Discovery, Storage Management (if provided) and Compute Capabilities (if provided) **MUST** be available (the algorithm takes the logical AND of all service types). If a Resource Centre has several instances of a Capability, the service is deemed to be available if any of the instances are available (logical OR). Availability figures are affected by scheduled downtimes, which **SHOULD** be kept to a minimum [QOS].

- 1. The Resource Centre MUST be available (UP) at least 70% of the time per month (daily availability is measured over 24 hours).**
- 2. Resource Centre reliability MUST be at least 75% per month.**

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.

Missing any of these service level targets on an incident constitutes a violation (see section 11).

## 7.3 Service Hours

A certified Resource Centre **MUST** offer the services specified in this section with an intended availability of 24/7.

## 8 SUPPORT

Incidents are unplanned interruptions to an IT Service or reductions in the Quality of an IT Service. A problem is a cause of one or more incidents<sup>6</sup>.

The EGI Helpdesk is a distributed system with central coordination [GGUS]. Through the EGI Helpdesk incident and problem reports can be submitted, tracked and escalated, and statistics can be generated. Statistics from GGUS are used to determine the responsiveness and the efficiency in incident and problem tracking.

<sup>5</sup> [https://wiki.egi.eu/wiki/Availability\\_and\\_reliability\\_tests](https://wiki.egi.eu/wiki/Availability_and_reliability_tests)

<sup>6</sup> Information Technology Infrastructure Library (ITIL). ITIL ® is a Registered Community Trade Mark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.

## 8.1 Service Levels and Targets

Certified Resource Centres **MUST** commit to achieve the availability and reliability [QOS] herein specified.

- The Resource Centre will provide at least **one** system administrator who is reachable during the Operating Hours of the centre.
- The Resource Centre **MUST** respond to tickets within **eight hours** of the ticket having been assigned to it, and **SHOULD** resolve incidents within **five working days**.

Response times to incident and problem records are expressed in GGUS Operating Hours.

Missing any of these service level targets on an incident constitutes a violation (see section 11).

## 8.2 Service Hours

The support services specified in this section **MUST** be available during the regular GGUS Operating Hours of the supporting organisation.

# 9 SERVICE REPORTING AND REVIEWING

EGI.eu reviews Resource Centre availability and reliability statistics on a **monthly** basis. Reports include availability and reliability statistics per Resource Centre and per Operations Centre. These are available at [PERF].

Resource Centres violating the minimum service parameters specified in this document **CAN** be requested by EGI.eu to provide justifications. In this case, the violating partner **MUST** provide a report. Information is exchanged through GGUS tickets [PROC10].

# 10 LIABILITY

Certified Resource Centres violating the minimum required availability for three consecutive calendar months are eligible for suspension.

# 11 SERVICE LEVELS AND TARGETS

Service Levels	Target	Section
Minimum number of UMD-compliant Site Information Discovery Capability	<b>one</b>	7
Minimum number of Functional Capabilities	<b>one</b>	7
Minimum Resource Centre availability	<b>70%</b>	7
Minimum Resource Centre reliability	<b>75%</b>	7
Period of availability/reliability/outage calculations	<b>per month</b>	7
Minimum number of system administrators	<b>one</b>	8
Maximum time to acknowledge GGUS incident and problem records (Resource Infrastructure Provider)	<b>four hours</b>	8
Maximum time to acknowledge GGUS incident and problem records (Resource Centre)	<b>eight hours</b>	8
Maximum time to resolve GGUS incidents	<b>five working days</b>	8
Minimum number of supported user groups	<b>one</b>	8
Tracking of availability conformance	<b>monthly</b>	9

## 12 REFERENCES

[ARCH]	EGI Operations Architecture, EGI-InSPIRE Deliverable D4.1, 2011 ( <a href="https://documents.egi.eu/document/218">https://documents.egi.eu/document/218</a> )
[GGUS]	EGI Helpdesk ( <a href="http://helpdesk.egi.eu/">http://helpdesk.egi.eu/</a> )
[GLO]	The EGI Glossary ( <a href="https://wiki.egi.eu/wiki/Glossary">https://wiki.egi.eu/wiki/Glossary</a> )
[GOC]	GOCDB Input System User Documentation ( <a href="https://wiki.egi.eu/wiki/GOCDB/Input_System_User_Documentation">https://wiki.egi.eu/wiki/GOCDB/Input_System_User_Documentation</a> )
[MAN02]	Service Intervention Management, Manual MAN02 ( <a href="https://wiki.egi.eu/wiki/MAN02">https://wiki.egi.eu/wiki/MAN02</a> )
[PERF]	Availability and reliability statistics ( <a href="https://wiki.egi.eu/wiki/Availability_and_reliability_monthly_statistics">https://wiki.egi.eu/wiki/Availability_and_reliability_monthly_statistics</a> )
[POL]	EGI Policies and Procedures ( <a href="http://www.egi.eu/policy/policies_procedures.html">http://www.egi.eu/policy/policies_procedures.html</a> )
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[PROC10]	Recomputation of SAM results and/or availability/reliability statistics, EGI Operations Procedure PROC10, Oct 2011 ( <a href="https://wiki.egi.eu/wiki/PROC10">https://wiki.egi.eu/wiki/PROC10</a> )
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[SAM]	EGI Service Availability Monitoring ( <a href="https://wiki.egi.eu/wiki/SAM">https://wiki.egi.eu/wiki/SAM</a> )
[STA]	EGI.eu Statutes, May 2010 ( <a href="https://documents.egi.eu/document/18">https://documents.egi.eu/document/18</a> )
[TOR]	Operations Management Board Terms of Reference ( <a href="https://documents.egi.eu/document/117">https://documents.egi.eu/document/117</a> )
[UMD]	UMD Roadmap, EGI-InSPIRE Deliverable D5.2, 2011 ( <a href="https://documents.egi.eu/document/272">https://documents.egi.eu/document/272</a> )