



European Grid Initiative

RESOURCE INFRASTRUCTURE PROVIDER OPERATIONAL LEVEL AGREEMENT v1.1

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Abstract

This document defines the responsibilities of a EGI Resource infrastructure Provider and the minimum set of services and the corresponding service levels and targets to be provided.



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IV. 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

This Operational Level Agreement (OLA) – also referred to as Agreement in this document, is to obtain agreement between a Resource infrastructure Provider, its respective Resource Centres, and EGI.eu on the Resource infrastructure Provider commitments, the services to be provided and service levels and targets needed to ensure an available and reliable grid infrastructure.

1.1 Document Amendment Procedure

The Resource infrastructure Provider OLA is a document discussed and approved in the framework of 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 [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.

More information is provided in the document describing the EGI Operations Architecture [ARCH].

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

1.2.1 Resource Centre (Site)

The Resource Centre (RC) – also known as Site – is the smallest resource administration domain in EGI. It can be either localised or geographically distributed. It provides local resources and the functional capabilities [UMD] necessary to make those resources securely accessible to end-users. Access is granted by exposing common interfaces to users.

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.

The Resource Centre Operations Manager is responsible for 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 (RP) 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 the 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 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 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 is the contact point for all operational matters and represents the Resource infrastructure Provider within the OMB. He/She is appointed by the Resource infrastructure Provider.

The Resource Infrastructure Operations Manager is responsible for the enforcement of the Resource infrastructure Provider OLA, and of the EGI policies and procedures as applicable.

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 at a local level, 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 Resource Centre is certified if it conforms to the requirements specified in the EGI Resource Centre Registration and Certification Procedure [PR09].

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.

1.2.11 UMD-compliant Middleware

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

1.2.12 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 other 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.

1.2.13 Availability

Availability of a service instance, service or a Resource Centre over a given period is defined as the fraction of time the same was UP during the known interval in the given period [QOS].

1.2.14 Reliability

Reliability of a service instance, service or a Resource Centre over a given period is defined as the ratio of the time interval it was UP over the time interval it was supposed (scheduled) to be UP during the known interval in the given period [QOS].

1.2.15 ROD Performance Index

Provide definition

1.2.16 Incident and Problem

The Incident is an unplanned interruption to a service or reduction in the quality delivered by a service. A Problem is the cause of one or more Incidents¹.

¹ 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



2 PARTIES TO THE AGREEMENT

The parties to this agreement are:

- the Resource infrastructure Provider (represented by the Resource Infrastructure Operations Manager).
- EGI.eu (represented by the Chief Operations Officer), also representing the other EGI Resource infrastructure Providers.

3 DURATION OF THE AGREEMENT

This Agreement is valid as long as the Operations Centre of the Resource infrastructure Provider is operating within EGI, i.e. it is registered in GOCDB [GOC]. The approval of this Agreement is a prerequisite for the start of the creation of a new Operations Centre as defined in procedure PROC02 [PR02].

The Resource infrastructure Provider retains the right to terminate the Agreement at any time. If parties agree to end the Agreement, then the Resource infrastructure Provider is no longer part of EGI and it is decommissioned [PR03].

4 SCOPE OF THE AGREEMENT

This Agreement covers the commitments made by a Resource infrastructure Provider to its Resource Centres and EGI.eu, and it is applicable to all Resource infrastructure Providers that successfully completed the Operations Centre creation procedure [PR02] meeting 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 the framework defined by a Resource infrastructure Provider MoU [MOU].

This Agreement does not cover agreements that user groups might have with Resource infrastructure Providers; those MUST be detailed in user-specific agreements.

5 RESPONSIBILITIES

This section defines the responsibilities of the Resource infrastructure Provider.

5.1 Resource infrastructure Provider

The main responsibilities of the Resource infrastructure Provider are:

- to adhere to all applicable security policies and procedures defined in [POL] and to other policy documents referenced therein;
- to provide a service desk either by using one GGUS support unit [GGUS], or by using a system which is interfaced with GGUS;
- to register Resource Centres and their administrators in GOCDB and in the available helpdesk facilities as applicable;
- to provide first and second-level support by helping in the resolution of advanced and specialised 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;
- to monitor progress of incident and problem records and to ensure that Resource Centres work on records opened against them;
- to respond to incident and problem records from Resource Centres in a timely manner;
- to provide the operational services defined in Chapter 6 and ensure their interoperation with



- the EGI.eu ones as applicable;
- to ensure that the provisioning of services [GLO] SHALL NOT in itself create any intellectual property rights in software, information and data provided to the services or in data generated by the services;
 - to manage and coordinate Grid operations of the Resource Infrastructure through its Operations Centre, and to participate to the OMB [TOR];
 - to ensure that the operational services provided by its Resource Centres are in compliance with the EGI Resource Centre OLA [RCO]. This includes the monitoring of the Service levels provided by its production Resource Centres ensuring that the minimum targets are met;
 - to coordinate and support the deployment of UMD-compliant middleware by the Resource Centres;
 - to raise any issues deemed necessary by the Resource Centres to the attention of the OMB, Technology Providers, deployment, monitoring, and/or certification teams and to ensure that these issues are properly dealt with;
 - to collect requirements from the respective Resource Centres and to promote the interoperations between them;
 - to coordinate local operational security activities and provide operational security support;
 - to contribute to the development and maintenance of EGI documentation (manuals, procedures, best practices, etc.);
 - to ensure the accuracy and the protection of information published by its Services [GLO], including accounting and monitoring.

The Resource infrastructure Provider **MUST** provide, using GOCDB, the 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 GOCDB (own and of their Resource Centres).

5.2 EGI.eu

EGI.eu is responsible for providing Global Services, for ensuring the coordination of the EGI operations and for promoting their advancement according to needs of the EGI ecosystem. The EGI.eu Global Services and the related level targets will be defined in a separate document – the EGI.eu Operational Level Agreement.

In this agreement, EGI.eu represents the interests of the other EGI Resource infrastructure Providers, which are direct or indirect end-users of the services described in this document.

6 DESCRIPTION OF SERVICES COVERED

This section defines a subset of the Local Services [ARCH] currently offered by the Resource infrastructure Providers.

The Services that are offered by a certified Resource Centre **MUST** be specified in the GOCDB, **MUST** be monitored by the Resource Infrastructure Provider local Service Availability Monitoring system [SAM], and the usage accounted centrally (where applicable) through a UMD-compliant middleware implementing the Accounting Capability [UMD].

More services will be progressively added to this Agreement as soon as assessment and reporting mechanisms of the related service level targets will be available.

Services indicated as *required* **MUST** be provided. These can be either offered locally by the Operations Centre itself, or provided by a third party (such as EGI.eu, an external Operations Centre, etc.).

Optional services **CAN** be provided depending on the local needs. Even if optional, such services **MUST** conform to the service targets and service hours specified in this document.

6.1 Grid Services

6.1.1 RC Grid Services

Required: Yes

Type of deployment: Local

Resources contributed by the Resource Centres to the Resource Infrastructure are made accessible through Grid access services such as the Computing Elements and the Storage Elements. These have to be available and to be reliably accessible.

Service Targets

- **Minimum Availability/Reliability** of the Resource Infrastructure: **70%/75%**

Service hours

- **24 hours/7 days**

6.1.2 RP Grid Service: Information Discovery

Required: Yes

Type of deployment: Local

A EGI top-level Information Discovery Service is provided for resource and service discovery, and for the collection of static and/or dynamic information about the infrastructure. This information is required by various Grid services, SAM and other operational tools, and various end-user application platforms.

Service Targets

- The Resource infrastructure Provider must provide at least **one** instance
- **Minimum Availability/Reliability: 99%/ 99%**

Service hours

- **24 hours/7 days**

6.2 Support Services

6.2.1 First and second level support

Required: Yes

Type of deployment: Local

Operational incidents and problems are reported by end-users and the Resource Centre administrators to the Operations Centre of the Resource infrastructure Provider. The Resource infrastructure Provider offers support by helping in the resolution of such incidents and problems, also escalating these to higher-level teams in case of need for specialized support.

Support is provided either centrally by the Operations Centre Support Unit in the EGI Helpdesk [GGUS], or locally through the local helpdesk system when available.

Support activities include support to network performance and connectivity issues as well as security.

Service Target

- Maximum response time to a problem or incident notified to the Resource Provider: **four hours** after the time the record was assigned to the Operations Centre Support Unit.
- Incidents affecting the services provided by the Resource infrastructure Provider **SHOULD** be resolved within **five working days**.

Service hours

- The service **MUST** be available during the regular GGUS Operating Hours of the host organisation of the support provider.
- Response time to incident and problem records is expressed in GGUS Operating Hours.

6.2.2 Grid oversight

Required: Yes

Type of deployment: Local

The Resource infrastructure Provider oversees the smooth operation of the infrastructure, proactively checks the status of the Resource Centres, and monitors the progress of open tickets. This service is delivered by the Regional Operator on Duty team (ROD) [ROD].

Resource Centre operational incident and problem records are automatically escalated to the EGI central oversight after 5 business days from escalation to the Resource infrastructure Provider Operations Manager.

Service targets

- **Maximum monthly ROD performance index [RPI]: 10**

Service hours

- The service **MUST** be available during the regular GGUS Operating Hours of the Operations Centre.

6.3 Human services

6.3.1 Infrastructure management

Required: Yes

Type of deployment: Local

The Resource infrastructure Provider supports the Resource Centres during registration and certification, de-registration, and in case of suspension.

Service targets

- Maximum response time to a request of Resource Centre registration/certification/decommissioning: **4 hours**

Service hours

- The service **MUST** be available during the regular Operating Hours of the Operations Centre.

6.3.2 Service Level Management

Required: Yes

Type of deployment: Local

The Resource infrastructure Provider manages the RC OLA with its Resource Centres and the RP OLA with EGI.eu and the Resource Centres. This includes

- the RC/RP OLA customization if needed, and the negotiation and agreement process;
- the monitoring of the service targets defined in the RC/RP OLA;
- the reporting on violations and the enforcement of the related procedures and policies.

The Resource infrastructure Provider applies the EGI procedures for the management of underperforming Resource Centre and for the re-computation of monitoring results and reports [PR04]. It is also responsible for suspending underperforming Resource Centres as applicable.

Service targets

- All the certified Resource Centres of the Resource Infrastructure accepted the RC OLA;

Service hours

- The service **MUST** be available during the regular Operating Hours of the Operations Centre.

7 SERVICE REPORTING AND REVIEWING

- Availability and Reliability reports of the Resource Infrastructures are generated on a **monthly** basis. Results are grouped per Operations Centre. Reports are publicly available at [PERF].
- ROD Performance indexes are reported monthly in the ROD Newsletter [RNL].
- Quality of support services is reported and reviewed per Operations Centre on a **yearly** basis. They are extracted from the GGUS reporting system to estimate the workload, effectiveness and responsiveness of the Resource infrastructure Provider support services. Reports are available at [NGI] and include information about the following metrics:
 - number of opened tickets;
 - average/median ticket solution time (days);
 - average ticket response time (hours).
- the performance of all the other Local Services is reviewed on **yearly** basis [REP].

8 LIABILITY

Resource infrastructure Providers violating the service targets specified in this document are requested by EGI.eu to provide justifications and a plan for service enhancement.

The violating partner **MUST** provide a status report and a plan for the improvement of the service within one month from the date of notification. Information and progress are tracked via GGUS tickets.

9 SERVICE LEVELS AND TARGETS

Type of service	Service	Service Level and Target	Deployment M=Mandatory O=Optional L=Local C=Central	Tracking
Grid Services	RC Grid Services	Overall Availability/Reliability: 70%/75%	M, L	Monthly
	Information Discovery System	Number of instances: one Availability/Reliability: 99%/99%	M, L	Monthly
Support	First and second-level support	Maximum incident/problem record acknowledgement time: 4 hours	M, L	Yearly
	Oversight	Maximum ROD Performance Index: 10	M, L	Monthly
Human	Infrastructure Management	Maximum incident/problem record acknowledgement time: 4	M, L	NA



		hours		
	Service Level Management	100% of the certified Resource Centres endorse the RC OLA	M, L	NA

10 REFERENCES

[ARCH]	EGI Operations Architecture, EGI-InSPIRE Deliverable D4.1, 2011 (https://documents.egi.eu/document/218)
[GGUS]	EGI Helpdesk (http://helpdesk.egi.eu/)
[GLO]	EGI Glossary v1.0 (http://wiki.egi.eu/wiki/Glossary_V1)
[GOC]	GOCDDB Input System User Documentation (https://wiki.egi.eu/wiki/GOCDDB/Input_System_User_Documentation)
[MAN]	EGI Operations Manuals (https://wiki.egi.eu/wiki/Operations_Manuals)
[MET]	NGI Assessment Reports (https://wiki.egi.eu/wiki/EGI-inSPIRE_SA1#NGI_Assessment)
[MOU]	Resource infrastructure provider MoU template (https://documents.egi.eu/document/215)
[NGI]	NGI Annual Reports (https://wiki.egi.eu/wiki/EGI-inSPIRE_SA1#NGI_Assessment)
[PERF]	Availability and Reliability statistics (https://wiki.egi.eu/wiki/Availability_and_reliability_monthly_statistics)
[POL]	EGI Policies and Procedures (http://www.egi.eu/policy/policies_procedures.html)
[PR02]	Operations Centre Creation, EGI Procedure PROC 02 (https://wiki.egi.eu/wiki/PROC02)
[PR03]	Operations Centre decommission, EGI Procedure PROC03 (https://wiki.egi.eu/wiki/PROC03)
[PR04]	Quality Verification of monthly Availability/Reliability statistics (https://wiki.egi.eu/wiki/Availability_and_reliability_monthly_statistics#Process_for_quality_verification)
[PR09]	Resource Centre Registration and Certification Procedure, EGI Procedure PROC09 (https://wiki.egi.eu/wiki/PROC09)
[QOS]	Sonvane, D.; Kalmady, R.; Chand, P. et al.; Computation of Service Availability Metrics in Gridview (https://twiki.cern.ch/twiki/pub/LCG/GridView/Gridview_Service_Availability_Computation.pdf)
[RCO]	EGI Resource Centre Operational Level Agreement, May 2011 (https://documents.egi.eu/document/31)
[REP]	NGI Annual Reports (https://wiki.egi.eu/wiki/EGI-inSPIRE_SA1#NGI_Assessment)
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[RNL]	ROD Newsletters (https://documents.egi.eu/document/298)

[ROD]	Regional Operator on Duty (https://wiki.egi.eu/wiki/Operations/ROD)
[RPI]	ROD Performance Index definition (https://wiki.egi.eu/wiki/Grid_operations_oversight/ROD_performance_index)
[SAM]	Service Availability Monitoring (https://wiki.egi.eu/wiki/SAM)
[STA]	EGI.eu Statutes, May 2010 (https://documents.egi.eu/document/18)
[SLA]	Operations Management Board Terms of Reference (https://documents.egi.eu/document/117)
[TOR]	Operations Management Board Terms of Reference (https://documents.egi.eu/document/117)