EGI-InSPIRE

UMD Quality Criteria
v2

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Abstract

This document describes the Generic Quality Criteria that all software of the UMD distribution must meet.



Document Log

Issue	Date	Comment	Author/Partner
v0.1	02/11/2010	First draft	Enol Fernández
v1.0	03/11/2010	Changed Management, Traceability and Monitoring section	Enol Fernández
v1.1	03/11/2010	Added Probe description in GEN_MON_1	Enol Fernández
v1.2	11/11/2010	Some formatting update	Enol Fernández
v1.3	31/01/2011	Better test specification	Enol Fernández
1.4	09/02/2011	Review of criteria	Enol Fernández
2 DRAFT 1	24/06/2011	Preparation of new release	Enol Fernández
2	02/08/2011	Reorganisation, added new criteria.	Enol Fernández

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1 CRITERIA TEMPLATE

Criterion Name	
ID	**GENERIC_TEMPLATE**
Description	Provide a description of the criterion captured in this template.
Mandatory	YES/NO
Applicability	Specify which appliances/products must meet this criterion.

Input from Technology Provider	Describe here what is expected from the TP to fulfil the criterion	
Test Description	**Pre-condition**	Describe here the preconditions of the test
	Test	Describe in this field what the actions should the test perform
	Expected Outcome	Describe the expected outcome of the test execution, including any outputs.
Pass/Fail Criteria	Criteria that will determine whether if passes or not verification.	
Related Information	Resources found elsewhere (e.g. web pages, Wiki entries, publications and papers) which help to describe the requirement in further detail.	
Revision Log	Give the history of the changes in the criterion.	

2 DOCUMENTATION

Services in UMD must include a comprehensive documentation written in a uniform and clear style. All Quality Criteria described below may be met by a single document that contains all the requested sections.

Functional Description	
ID	**GENERIC_DOC_1**
Description	All products must provide a document with a brief functional description of the product.
Mandatory	NO
Applicability	All products

Input from Technology Provider	Document (or link) with a general description of the product that includes: • Purpose of the product • Capabilities meet by the product
Pass/Fail Criteria	The document should exist and contain the requested information.
Related Information	
Revision Log	V2: clarified the required documentation

Release Notes	
ID	**GENERIC_DOC_2**
Description	All products must provide a document with the release notes.
Mandatory	YES
Applicability	All products

Input from Technology Provider	Document (or link) with release notes of the product. They must include major the changes in the product: bug fixes, new features.
Pass/Fail Criteria	The document should exist and contain the requested information.
Related Information	
Revision Log	

User Documentation	
ID	**GENERIC_DOC_3**
Description	All products must provide a document describing how to use it.
Mandatory	NO
Applicability	All products with end-user tools and services.

Input from Technology Provider	Document (or link) with user guide describing the functionality of the software and how to use it.
Pass/Fail Criteria	The document should exist and contain the requested information.
Related Information	
Revision Log	

Online help (man pages)	
ID	**GENERIC_DOC_4**
Description	All products with end user command line tools must include man pages or online help.
Mandatory	NO
Applicability	All products with command line tools.

Input from Technology Provider	Man pages with information about the usage of commands. If man pages are not available, comprehensive help options must be included with the command with information about the usage (i.e. –h/--help option)
Pass/Fail Criteria	Online help should be available (man pages or command line help)
Related Information	
Revision Log	

API Documentation	
ID	**GENERIC_DOC_5**
Description	Public API of product/appliances must be documented.
Mandatory	NO
Applicability	All products with public API.

Input from Technology Provider	Documentation (or link) of the API of the product. The documentation *should* cover all the existing public functionality of the API.
Pass/Fail Criteria	The document should exist and contain the API documentation. If the product implements a well-known or standard API, any missing functionality must be documented.
Related Information	
Revision Log	V2: review of the description

Administrator Documentation	
ID	**GENERIC_DOC_6**
Description	Products must provide an administrator guide describing installation, configuration and operation of the system.
Mandatory	NO
Applicability	All products managed by an administrator.

Input from Technology Provider	Documentation (or link) with requested documentation.
Pass/Fail Criteria	The document should exist and contain the requested information.
Related Information	
Revision Log	

Service Reference Card	
ID	**GENERIC_DOC_7**
Description	For each of the services that a product runs, document its characteristics with a reference card.
Mandatory	NO
Applicability	All products that need services for operation.

Input from Technology Provider	Documentation (or link) with requested documentation.
Pass/Fail Criteria	The document must exist and contain the following information for each service:

ServiceName	
Description	Description of the service
Init scripts	List of init scripts for the service, expected run levels
Daemons	List of daemons needed for the service
Configuration	List of configuration files used by the service
Logs	List of log files used by the service
Open ports	List of ports the service uses
Cron	List of crons used by the service
Other information	Any other relevant information about the service.

Related Information	
Revision Log	

Software License	
ID	**GENERIC_DOC_8**
Description	Products must have a compatible license for using them in the EGI Infrastructure
Mandatory	YES
Applicability	All products.

Input from Technology Provider	Product License (link or document).
Pass/Fail Criteria	Pass: if the license is available and is compatible with the EGI infrastructure. For Open Source products, compatible licenses are those accepted by the Open Source Initiative and categorized as "Popular and widely used or with strong communities": - Apache License, 2.0 (Apache-2.0) - BSD 3-Clause "New" or "Revised" license (BSD-3-Clause) - BSD 3-Clause "Simplified" or "FreeBSD" license (BSD-2-Clause) - GNU General Public License (GPL) - GNU Library or "Lesser" General Public License (LGPL) - MIT license (MIT) - Mozilla Public License 1.1 (MPL-1.1) - Common Development and Distribution License (CDDL-1.0) - Eclipse Public License (EPL-1.0) Other licenses accepted by the Open Source Initiative and listed as "Special Purpose" are compatible with the infrastructure (when applicable): - Educational Community License - IPA Font License (IPA) - NASA Open Source Agreement 1.3 (NASA-1.3) - Open Font License 1.1 (OFL-1.1) Any other license, and non Open Source products will be evaluated by the verification team in coordination with the Operations Community.
Related Information	Open Source Initiative Licenses by Category: http://www.opensource.org/licenses/category
Revision Log	V2: Moved from Software Release to documentation.

Release changes testing	
ID	**GENERIC_DOC_9**
Description	Changes in a release of a product must be tested.
Mandatory	YES
Applicability	All Products.

Input from Technology Provider	Tests (or documentation for the test results) for relevant changes described in the product release notes, including bug fixes and any new features.
Pass/Fail Criteria	All the changes in a release *should* be tested especially bug fixes. The granularity of testing will be determined per release basis.
Related Information	MS503: Software Provisioning Process
Revision Log	V2: Better specification of the pass/fail criteria. Moved to documentation criteria

3 SOFTWARE DISTRIBUTION

Source Code Availability	
ID	**GENERIC_DIST_1**
Description	Products should provide their source code.
Mandatory	YES
Applicability	All Open Source Products.

Input from Technology Provider	Source code repository or source distribution of product. The source code of each product of the UMD middleware should follow a coherent and clear programming style that helps in the readability of the code and eases maintenance, testing, debugging, fixing, modification and portability of the software.
Pass/Fail Criteria	Open source products **must** publicly offer their source code and the license with the binaries.
Related Information	
Revision Log	V2: Changed ID (previously GENERIC_REL_2)

Source Distribution	
ID	**GENERIC_DIST_2**
Description	Technology Providers should provide buildable source distributions of products.
Mandatory	YES
Applicability	All Open Source Products.

Input from Technology Provider	Source code distribution (repository or tar.gz/zip or source package) with building documentation. Ideally continuous building server should be in place.
Pass/Fail Criteria	Open source products must publicly offer their source code and the license. Build documentation (or link to it) should be available. Ideally, automatic or continuous build procedures exist.
Related Information	
Revision Log	V2: Merged all source related criteria into this one and Changed ID (previously GENERIC_REL_x). Turned into mandatory.

Binary Distribution	
ID	**GENERIC_DIST_3**
Description	Products must be available in the native packaging format of the supported platform.
Mandatory	YES
Applicability	All Products.

Input from Technology Provider	Binary distribution of product in the native packaging format of the supported platform (RPM, DEB, …)
Pass/Fail Criteria	Binary packages using the standard packaging format of the OS (i.e. RPM, DEB...) must be provided for all the supported OS and/or architectures. Packages *should* follow OS packaging policies (e.g. names of packages, use of filesystem hierarchy, init scripts). Any deviance from the policies must be documented. Second level dependencies (i.e. software not provided by the TP in their repository) **must** be provided by the OS distribution or standard OS repositories (EPEL in SL5). In the case of needing a different version for a specific package or packages from other repositories, the verifier will decide whether to accept or not the packages depending on the reason given for such dependencies on external packages.
Related Information	Verification reports from EMI release 1. #1357: Middleware use standard file locations
Revision Log	V2: Turn to mandatory, better description.to avoid problems found in verification. Changed ID (previously GENERIC_REL_5)

4 SOFTWARE FEATURES

Backwards Compatibility	
ID	**GENERIC_SOFT_1**
Description	Minor/Revision releases of a product must be backwards compatible.
Mandatory	YES
Applicability	All Products.

Input from Technology Provider	Products must maintain backwards compatibility between releases of the same major version. Ideally, TP provides tests to assure the backwards compatibility of the product.
Pass/Fail Criteria	All the changes in a minor or revision release *must* be backward compatible (test should be done with previous releases of clients within the same major version). Any new features should not introduce changes in the previous features.
Related Information	MS503: Software Provisioning Process IGE QC
Revision Log	

5 SERVICE CRITERIA

5.1 Service Management

UMD products should have mechanisms for managing them, monitoring their status and tracing actions they perform on the system. Ideally, these should be also available remotely, allowing operators to react timely to problems in the infrastructure. This generic criteria for services is the minimum set of service related

Service control and status	
ID	**GENERIC_SERVICE_1**
Description	Services run by the product must provide a mechanism for starting, stopping and querying the status of the services.
Mandatory	YES
Applicability	All products that use services for operations.

Input from Technology Provider	Start/stop mechanism for each of the services following OS conventions. Ideally, provide a test suite for the mechanism as described below.	
Test Description	**Pre-condition**	Service is started
	Test	Start service
	Expected Outcome	No action taken, show a message stating the service is already started.
	Pre-condition	Service is stopped
	Test	Start service
	Expected Outcome	Service is started, show a message when it is started.
	Pre-condition	Service is started
	Test	Stop service
	Expected Outcome	Service is stopped, show a message stating the service is stopped.
	Pre-condition	Service is stopped
	Test	Stop service
	Expected Outcome	No action taken, show a message stating the service is already stopped.
	Pre-condition	Service is stopped
	Test	Check service status
	Expected Outcome	Show a message stating the service is started.

Test Description	**Pre-condition**	Service is started
	Test	Check service status
	Expected Outcome	Show a message stating the service is stopped.
Pass/Fail Criteria	Services run by the product must provide a mechanism for starting, stopping and querying the status of the services following the OS init scripts conventions (e.g. for Linux Distributions, check http://refspecs.freestandards.org/LSB_3.1.0/LSB-Core-generic/LSB-Core-generic/iniscrptact.html). They must work properly in **all** the cases described above. If the OS provides tools for configuring the services (chkconfig in RH based distros), these *should* work out of the box with the init scripts of the services	
Related Information	#2274: Service under RH following SystemV init system	
Revision Log		

5.2 Service logs

Log Files	
ID	**GENERIC_SERVICE_2**
Description	All services should create log files where the service administrator can trace most relevant actions taken.
Mandatory	YES
Applicability	All products that use services for operations.

Input from Technology Provider	List of logs generated by the service (the reference card of service should already include them)
Pass/Fail Criteria	List of logs is provided. They should follow the OS conventions for location and format so they can be treated with the standard tools of the OS (log rotation, collection with syslog, …)
Related Information	This criterion may be further specialized in the specific criteria for each product/capability determining which information must be logged or number/types of logs.
Revision Log	V2. Review of the criteria.

5.3 Service Monitoring

All services in the EGI Infrastructure should provide monitoring probes that can be executed automatically by the EGI monitoring framework (based in Nagios). The probes should check the service responsiveness and correctness (good replies for typical requests).

Particular monitoring probes are defined at the Specific Quality Criteria document for Operations tools [R 2]. The probes that apply to all capabilities (generic probes) are identified as MON_PROBE_GENERIC_*xx*. For specific capabilities there might exist other probes that are described in the same document.

5.4 Service Accounting

All services in the EGI Infrastructure should provide ways of recording the use of resources within the infrastructure. The Accounting Capability described in the Operations Capabilities Criteria document [R 2] specifies the criteria for the different appliances.

5.5 Availability, Reliability and Scalability.

The EGI Infrastructure depends on the uninterrupted performance of the installed software. All products should provide a reliable operation and should be able to handle growing amounts of work in a graceful manner. Specific criteria for the availability, reliability or scalability of appliances may be also defined in the criteria documents for each of the capabilities.

Service Reliability	
ID	**GENERIC_SERVICE_3**
Description	Services must maintain a good performance and reliability over long periods of time with normal operation.
Mandatory	NO
Applicability	All products that use services for operations.

Input from Technology Provider	Long running unattended operation test measuring performance of the product.	
Test Description	**Pre-condition**	Product is properly configured.
	Test	Start service and measure performance during operations.
	Expected Outcome	No significant performance degradation is observed in the system.
Pass/Fail Criteria	Service must not show performance degradation during a 3-day period. The most important parameters to check are: • stable memory usage • throughput and/or response times remain stable during the period of activity (they should be as good or better than at the beginning of the test for similar requests)	
Related Information		
Revision Log	V2: detailed pass/fail criteria	

Service Robustness	
ID	**GENERIC_SERVICE_4**
Description	Services should not produce unexpected results or become uncontrollable when taxed beyond normal capacity.
Mandatory	NO
Applicability	All products that use services for operations.

Input from Technology Provider	Assure that the services taxed beyond normal capacity do not produce unexpected results or become uncontrollable.
Pass/Fail Criteria	Services taxed beyond normal capacity: • should not become unresponsive to normal start/stop operations • must be able to start after a forceful stop • must not expose (potentially sensitive) memory contents to other processes • must not leave sensitive data in world-readable files • must not accept connections that would be refused under normal operating conditions
Related Information	TST_2 from IGE Quality Assurance.
Revision Log	

5.6 Service Configuration

Automatic Configuration	
ID	**GENERIC_SERVICE_4**
Description	Products that provide tools for configuration (yaim) that covers typical deployments must assure tools work as documented.
Mandatory	NO
Applicability	Products with automatic configuration tools

Input from Technology Provider	Tests of the automatic configuration tool (yaim) in typical deployment scenario. The configuration *should* not remove any previous manual configuration done.
Pass/Fail Criteria	Pass if the product can be configured as documented with the provided tool. Resulting configuration *should not* overwrite any previous manual configuration and must prepare the product for operation without extra manual configuration steps (unless clearly documented).
Related Information	Yaim: https://twiki.cern.ch/twiki/bin/view/EGEE/YAIM UMD 1.0.0 Verification Reports.
Revision Log	

6 SECURITY

World Writable Files	
ID	**GENERIC_SEC_1**
Description	Products must not create world-writable files or directories.
Mandatory	YES
Applicability	All products.

Input from Technology Provider	World-writable files and directories are dangerous since they allows anyone to modify them, several vulnerabilities in recent years have been due to world writable files and directories being present when they should not be Technology Provider must assure that they software do not produce world writable files in order to prevent new vulnerabilities being introduced in the future. Ideally a test that checks that those files do not exist should be provided.	
Test Description	**Pre-condition**	Service correctly configured and started
	Test	Check the existence of world writable or unowned files in the system.
	Expected Outcome	No world writable or unowned files exist.
Pass/Fail Criteria	The product does not create world-writable files or directories.	
Related Information	Proposed by the EGI SVG RAT to prevent new vulnerabilities in the future.	
Revision Log	V1.3 Changed test description.	

Directory Traversal Attacks testing	
ID	**GENERIC_SEC_2**
Description	Products should assure that directory traversal exploits are not possible using their interfaces. Special care must be taken to products exposing part of the file system (e.g. file access capabilities) and web services.
Mandatory	YES
Applicability	All products with previous known Directory Traversal exploits (See list at related information), any other product *should* also include this kind of testing.

Input from Technology Provider	A directory traversal (or path traversal) consists in exploiting insufficient security validation/sanitization of user-supplied input file names, so that characters representing "traverse to parent directory" are passed through to the file APIs. The Technology Provider should test that directory traversal attacks are not possible using the product interface. Products that need to run as root user, must have special care in this case of attacks, since they may give access to whole file system.	
Test Description	**Pre-condition**	Service correctly configured and started
	Test	Try to exploit directory traversal in product
	Expected Outcome	No directory traversal succeeds.
Pass/Fail Criteria	Test for directory traversal exploiting do not successfully access the file system.	
Related Information	Advisory-SVG-2011-1569 (https://wiki.egi.eu/wiki/SVG:Advisory-SVG-2011-1569)	
Revision Log		

7 MISCELLANEOUS

Bug Tracking System	
ID	**GENERIC_MISC_2**
Description	TP must enrol as 3rd level support in the EGI Helpdesk.
Mandatory	YES
Applicability	All Products.

Input from Technology Provider	Technology Providers must enrol in GGUS as 3rd level support for the products verified by the Quality Assurance team of EGI. Any further integration with TP-specific bug tracking software is entirely up to the Technology Provider.
Pass/Fail Criteria	Pass if Technology Provider enlisted as 3rd level support in GGUS.
Related Information	IGE QC
Revision Log	

8 REFERENCES

R 1	UMD roadmap: https://documents.egi.eu/public/ShowDocument?docid=100
R 2	UMD Operations Capabilities Quality Criteria Document