EGI-InSPIRE

UMD OPERATIONS CAPABILITIES QUALITY CRITERIA v1.4

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Abstract

This document describes the Quality Criteria for the Operations Capabilities identified in the UMD Roadmap.

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Document Log

Issue	Date	Comment	Author/Partner
1.0	03/11/2010	First draft	Enol Fernández
1.1	04/11/2010	Added configuration modules QC	Enol Fernández
1.2	11/11/2010	Formatting and review of some criteria, changed name from monitoring to Operational	Enol Fernández
1.3	31/01/2011	Added Nagios failover configuration and APEL QC	Álvaro Simón
1.4	08/02/2011	Review of Accounting portal criteria.	Álvaro Simón

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1 MONITORING CAPABILITY

This section documents the Specific Quality Criteria for the monitoring system (NAGIOS) and the web portal to check the results.

1.1 *Nagios Configuration Generation*

Generation of Nagios Configuration Files	
ID	**MON_NCG_1**
Mandatory	
Applicability	Nagios Configuration Generator (NCG) component
Related Requirements	None

Description	
The NCG must be able to generate a correct configuration for Nagios that includes all the hosts and services to be monitored.	
Input from TP	
Test for the generator of configuration files for Nagios.	
Test 1	
Pre-condition	Configured system.
Test	Generate Nagios configuration files according to the information available in the databases.
Expected Outcome	Working Nagios configuration files.
Pass/Fail Criteria	
Pass if the testsuite is provided and passes.	
Related Information	
History	

Generation of Failover Nagios Configuration	
ID	**MON_NCG_2**
Mandatory	
Applicability	Nagios Configuration Generator (NCG) component
Related Requirements	None

Description
The NCG must be able to understand a redundant service configuration for Nagios that includes failover capability.

- Several WMS
- Robot certificates
- Several VOs and VOMSES

Input from TP
Test for the generator of configuration files for Nagios.

Test 1	
Pre-condition	Configured system.
Test	Generate Nagios configuration files according to the information available in the databases.
Expected Outcome	Working Nagios redundant configuration files using failover services.

Pass/Fail Criteria
Pass if the testsuite is provided and passes.

Related Information

History

1.2 Visualization Portal (MyEGI)

Resource Summary View	
ID	**MON_PORTAL_1**
Mandatory	
Applicability	MyEGI monitoring visualization portal
Related Requirements	None

Description
Provide a view of the summary status of resources, that provides the following basic information: • Site of the resource • Resource name • Type of service • Current status • Link to detailed and historical views • Use colors to display the status of the resource.

Input from TP
Summary view example in visualization portal.

Test 1	
Pre-condition	Configured system.
Test	Browse the summary view of resources.
Expected Outcome	All requested information is provided

Pass/Fail Criteria
Pass if the resource summary view is provided for any selected resource with all the information specified above.

Related Information

History

Resource Detail View	
ID	**MON_PORTAL_2**
Mandatory	
Applicability	MyEGI monitoring visualization portal
Related Requirements	None

Description	
Provide a detailed view of the current status for resources that shows the results of the last execution of all the probes. Include all information requested in the summary view plus: - List of probes executed - Detailed results of probes - Last execution time for probe - Link to historical view	
Input from TP	
Summary view example in visualization portal.	

Test 1	
Pre-condition	Configured system.
Test	Browse the detailed view of resources.
Expected Outcome	All requested information is provided

Pass/Fail Criteria	
Pass if the detailed view is provided for any selected resource with all the information specified above.	
Related Information	
History	

Resource Historical View	
ID	**MON_PORTAL_3**
Mandatory	
Applicability	MyEGI monitoring visualization portal
Related Requirements	None

Description	
Provide a historical view of the probes executed at resources. Show graphically in a timeline the results for the probes. For any given probe show the detailed view fields when selected.	
Input from TP	
Historical view example in visualization portal.	
Test 1	
Pre-condition	Configured system.
Test	Browse the historical view of resources.
Expected Outcome	All requested information is provided
Pass/Fail Criteria	
Pass if the historical view is provided for any selected resource with all the information specified above.	
Related Information	
History	

Resource Filters	
ID	**MON_PORTAL_4**
Mandatory	
Applicability	MyEGI monitoring visualization portal
Related Requirements	None

Description
Provide ways to filter the information shown in the web interface for all the possible views of the portal. At least, the displayed resources should be filtered by the following constrains: • status of resource (select just one status or several) • type of service • supported VO • site which the resource belongs to • specific name of resource • for historical view, range of dates which will be used for the information.

Input from TP
Resource filters example in visualization portal.

Test 1	
Pre-condition	Configured system.
Test	Test the resource filters available.
Expected Outcome	Resrouces are shown according to the filters tested.

Pass/Fail Criteria
Pass if the resource filters are provided and they work as expected.

Related Information

History

Responsiveness	
ID	**MON_PORTAL_5**
Mandatory	
Applicability	MyEGI monitoring visualization portal
Related Requirements	None

Description
Visualization portal should provide fast response to user requests. Information should be displayed as soon as possible. If too much information is to be shown the portal should use a paginated interface or dynamically load the content.
Input from TP
Test for complex page with dynamic load of information.
Test 1
Pre-condition   Configured system.
Test   Browse complex page (e.g. lots of resources)
Expected Outcome   Page responsiveness is fast enough for navigation. Information is loaded dynamically or shown in a paged interface.
Pass/Fail Criteria
Pass if the resource filters are provided and they work as expected.
Related Information
History

Linkable Views	
ID	**MON_PORTAL_6**
Mandatory	
Applicability	MyEGI monitoring visualization portal
Related Requirements	None

Description
Views should have unique URLs that are independent to the user session. This links should work for different users.
Input from TP
Link example for views.

Test 1	
Pre-condition	Configured system.
Test	Generate view link with user A, try it with user B
Expected Outcome	Both users A and B get the same view results.

Pass/Fail Criteria
Views links must work for different users and/or sessions.
Related Information
History

1.3 Database

Metric List Fetching	
ID	**MON_DB_1**
Mandatory	
Applicability	Metrics Database
Related Requirements	None

Description
The list of metrics to use in each of the services must be fetch at regular intervals from a given central location.
Input from TP
Test of the metric fetch mechanism.

Test 1	
Pre-condition	Configured system.
Test	Fetch metrics from central metric database. Generate list of updates for the current local metric database.
Expected Outcome	Metrics are fetched correctly. A list of updates is generated.

Pass/Fail Criteria
Test must exist and execute correctly
Related Information
History

Resource List Fetching	
ID	**MON_DB_2**
Mandatory	
Applicability	Metrics Database
Related Requirements	None

Description
The list of resources to be tested should be dynamically discovered using the various information systems available. The list of sites to be tested meet the following requirements: • listed in the BDII   • listed in the GOCDB   • status in the GOCDB is Certified
Input from TP
Test of the resource fetch mechanism.

Test 1	
Pre-condition	Configured system.
Test	Fetch resources by quering BDII and GOCDB. List of updates to perform to the local resource DB.
Expected Outcome	Resources are fetched correctly. A list of updates is generated.

Pass/Fail Criteria
Test must exist and execute correctly
Related Information
History

1.4 Probes

The Monitoring Capability executes a set of probes defined by the operations community. These probes must be provided by the TP that implement each capability.

Probe Template	
ID	**MON_PROBE_1**
Mandatory	
Applicability	Monitoring Capability
Related Requirements	None

Description
A template and documentation for the creation of new probes that can be integrated in the monitoring framework must exist.
Input from TP
Template for probes and documentation for the creation and integration of probes into the framework (or link to those documents)
Pass/Fail Criteria
The QC will pass if the template and documentation is available for external developers and is usable for creating new probes.
Related Information
History

1.4.1 Generic Probes

Certificate Lifetime Probe	
ID	**MON_PROBE_GENERIC_1**
Non Mandatory	
Applicability	Applicable to all components that need a host certificate.
Related Requirements	None.

Description Provide a monitoring probe that test the host certificate lifetime for the service is valid.	
Input from TP Certificate Validity Probe.	
Probe Description	
Pre-requirements	None
Input	Host to check
Output	Certificate lifetime or current validity
Output Status	**OK** if certificate is currently valid, **ERROR** otherwise
Pass/Fail Criteria Probe exists and and passes.	
Related Information	
History V1.1 Added probe description.	

1.4.2 Information Services Probes

Information Service Status	
ID	**MON_PROBE_INFO_1**
Mandatory	
Applicability	Applicable to all information publishers (Information Model and Information Discovery Capabilities)
Related Requirements	None.

Description	
Probe dealing with services that publish information about themselves or about other services.	
Input from TP	
Information Service Probe.	
Probe Description	
Pre-requirements	None
Input	Service endpoint to check, type of service (e.g. top level, site level, CE...), freshness limit of information
Output	None
Output Status	**OK** if: • Connection to the ldap server is established and information can be retrieved • Information published is fresh enough (freshness is below the passed parameter) • Information published corresponds to the type of service **ERROR** otherwise.
Pass/Fail Criteria	
Probe must exist and work as expected.	
Related Information	
History	
V1.2 Added Freshness limit as input parameter	

1.4.3 Compute Capability Probes

Compute Capability Probes	
ID	**MON_PROBE_JOBEXEC_1**
Mandatory	
Applicability	Applicable to all Job Execution Capability implementations.
Related Requirements	None.

Description Provide monitoring probes that tests the functionality of the Compute Capability	
Input from TP CE probes as described at: https://tomtools.cern.ch/confluence/display/SAMDOC/CE.	
Pass/Fail Criteria Probes must exist and work as expected.	
Related Information	
History	

CREAM Compute Capability Probes	
ID	**MON_PROBE_JOBEXEC_2**
Mandatory	
Applicability	Applicable to all implementations of the CREAM interface
Related Requirements	None.

Description   Provide monitoring probes that tests the functionality of the Compute Capability
Input from TP   CREAM Probes described at https://tomtools.cern.ch/confluence/display/SAMDOC/CREAMCE+DJS
Pass/Fail Criteria   Probes must exist and work as expected.
Related Information
History

1.4.3.1 WN Probes

Probes that check various functionality that must be provided at the executing nodes. They submit a job to a Compute Capability and the job tests the functionality.

Compute Capability WN Probes	
ID	**MON_PROBE_JOBEXEC_3**
Mandatory	
Applicability	Applicable to all Compute Capability implementations.
Related Requirements	None

Description	
Provide monitoring probes that tests the Worker Nodes.	
Input from TP	
WN probes as described at: https://tomtools.cern.ch/confluence/display/SAMDOC/WN.	
Pass/Fail Criteria	
Probes must exist and work as expected.	
Related Information	
History	

1.4.4 Compute Job Scheduling Probes

Compute Job Scheduling Capability WMS Interface.	
ID	**MON_PROBE_JOBSCH_1**
Mandatory	
Applicability	Applicable to all Job Scheduling Capability implementations with WMS interface
Related Requirements	None.

Descriptio Provide monitoring probes that tests the functionality of the WMS Compute Job Scheduling Capability	
Input from TP WMS probes as described at: https://tomtools.cern.ch/confluence/display/SAMDOC/WMS.	
Pass/Fail Criteria Probes must exist and work as expected.	
Related Information	
History	

1.4.5 File Access Capability Probes

File Access Capability Probes	
ID	**MON_PROBE_STORAGE_1**
Mandatory	
Applicability	Applicable to all Storage Management Capability implementations
Related Requirements	None.

Description
Provide monitoring probes that tests the functionality of the File Access Capability
Input from TP
SRM probes as described at https://tomtools.cern.ch/confluence/display/SAMDOC/SRM.
Pass/Fail Criteria
Probes must exist and work as expected.
Related Information
History

1.4.6 Metadata Catalogue Capability Probes

Metadata Catalogue Capability Probes	
ID	**MON_PROBE_METADATA_1**
Mandatory	
Applicability	Applicable to all LFC Metadata Catalogue Capability implementations
Related Requirements	None.

Description Provide monitoring probes that tests the functionality of the LFC Metadata Catalogue Capability
Input from TP SRM probes as described at https://tomtools.cern.ch/confluence/display/SAMDOC/LFC.
Pass/Fail Criteria Probes must exist and work as expected.
Related Information
History

2 ACCOUNTING CAPABILITY

The use of resources within the e-Infrastructure must be recorded for understanding usage patterns by different user communities and by individuals within their communities.

2.1 Generation of Accounting Records

Job Execution Capability Accouting	
ID	**ACC_JOBEXEC_1**
Mandatory	
Applicability	Accounting Appliances for Job Execution Capability (APEL)
Related Requirements	None

Description
The Job Execution Capability must generate accounting records for all the actions of the users into the local resources. These records must include, at least, the following information for all the jobs submitted to the system: • User DN • VO • Job start execution time • Job end execution time • SPECint information • CPU & Wall Time • Number of slots/CPUs used by the job • Job exit status The generation of accounting records must be available for the execution manager supported by the Job Execution Capability implementation. Support is expected for the following systems: • Torque • SGE • Condor • LSF

Input from TP
Test for the generation of records.

Test 1	
Pre-condition	Configured system.
Test	Creation of accounting records
Expected Outcome	Accounting records for all the jobs submitted to the execution manager through the Capability.

Pass/Fail Criteria
Pass if the test is provided and passes for all the Job Execution Capability implementations and execution managers supported. The generation of the records should not compromise the availability

and reliability of the system.
Related Information
History

Job Scheduling Accounting Records	
ID	**ACC_JOBSCH_1**
Not Mandatory	
Applicability	Accounting Appliances for Job Scheduling Capability
Related Requirements	None

Description
The Job Scheduling Capability must generate accounting records for all the actions of the users. These records must include, at least, the following information for each submitted job: • status of job   • submission time   • completion time   • failures   Summary information (number of submitted jobs, success rate, average submission time, etc) should also be provided.

Input from TP
Test for the generation of records.

Test 1	
Pre-condition	Configured system.
Test	Creation of accounting records
Expected Outcome	Accounting records for all the jobs submitted the system through the Capability.

Pass/Fail Criteria
Pass if the test is provided and passes. The generation of the records should not compromise the availability and reliability of the system.

Related Information

History

2.2 Accounting Store and Transmission for Job Execution Appliances.

The accounting information should be stored in a local database and transmitted in regular intervals to a central registry where information of the whole EGI infrastructure is stored.

Local Accounting Store	
ID	**ACC_STORE_1**
Mandatory	
Applicability	APEL Accounting Appliances.
Related Requirements	None

Description
APEL must be able to store the information collected from the execution manager in a site registry database, where information about all the jobs executed at the site is stored. The records must include the following information, as recommended by OGF community:

- ExecutingSite: Site name (example: RAL-LCG2)
- LocalJobID: Local job name (example: 12311.lcgce02.gridpp.rl.ac.uk)
- LCGJobID: Optional default value: NULL)
- LocalUserID: Local user name (example: alicesgm 001)
- LCGUserID: User DN (example:/C=IT/O=INFN/OU=Personal Certificate ..)
- LCGUserVO: Local user group (example: alice)
- ElapsedTime: Job Wall duration (example: P8H24M47S)
- BaseCpuTime: Job CPU duration (example: P8H21M34S)
- ElapsedTimeSeconds: Job Wall duration in seconds (example: 3500)
- BaseCpuTimeSeconds: Job CPU time duration in seconds (example: 3000)
- StartTime: Job start time (example: 2010-03-14T11:06:08Z)
- StopTime: Job stop time (example: 2010-03-14T19:30:55Z)
- StartTimeUTC: Job start UTC time (example: 2010-03-14T11:06:08Z)
- StopTimeUTC: Jobs stop UTC time (example: 2010-03-14T19:30:55Z)
- StartTimeEpoch: Job start time epoch (example: 1079262368)
- StopTimeEpoch: Job stop time epoch (example: 1079292655)
- ExecutingCE: Submit Host (example: lcgce02.gridpp.rl.ac.uk)
- MemoryReal: Used real memory (example: 769548)
- MemoryVirtual: Used virtual memory (example: 1244948)
- SpecInt2000: SpecInt2000 value (example: 40322)
- SpecFloat2000: SpecFloat2000 value (example: 30234)
- EventDate: Event record date (example: 2010-03-14)
- EventTime: Event record time (example: 19:30:55)

Input from TP
Test for the record storage in site registry database.

Test 1

Pre-condition	Configured system. Accounting records are correctly generated.
Test	Store accounting records into site registry.
Expected Outcome	Accounting records are stored in the site registry. Log of operations is available.

Pass/Fail Criteria

Pass if the test is provided and passes. The storage of the records should not compromise the availability and reliability of the system.

Related Information

History

Accounting Records Transmission	
ID	**ACC_STORE_2**
Mandatory	
Applicability	APEL Accounting Appliances.
Related Requirements	None

Description
APEL must be able to send the records stored in the site registry to a central registry database by using a messaging system.

Input from TP
Test for the transmission of records to the central registry using ActiveMQ.

Test 1	
Pre-condition	Configured system. Accounting records are correctly generated and stored in local registry.
Test	Send new records to the central registry using ActiveMQ.
Expected Outcome	Only new records are sent to central registry. They are stored correctly there. Log of operations is generated.

Pass/Fail Criteria
Pass if the test is provided and passes. The transmission of the records should not compromise the availability and reliability of the system.

Related Information

History

Periodic Local Registry Store	
ID	**ACC_CRON_1**
Mandatory	
Applicability	APEL Accounting Appliances.
Related Requirements	None

Description
The accounting appliance must periodically submit new accounting records to the local registry using a cron script. This action should be executed daily to check new executed jobs.

Input from TP
Test from TP to verify accounting cron job.

Test 1	
Pre-condition	Configured system.
Test	Send new records to the local registry each day after cron execution.
Expected Outcome	Only new records are sent to local registry. They are stored correctly there. Cron and accounting logs are generated locally.

Pass/Fail Criteria
Pass if the test is provided and passes.

Related Information

History

Periodic Central Registry Update.	
ID	**ACC_CRON_2**
Mandatory	
Applicability	APEL Accounting Appliances.
Related Requirements	None

Description
Cron script located at local registry must be able to submit new accounting records to global accounting registry using a message system. This script should be executed daily to check new executed jobs.
Input from TP
Test from TP to verify accounting cron job.

Test 1	
Pre-condition	Configured system.
Test	Send new records to the global registry each day after cron execution.
Expected Outcome	Only new records are sent to global registry. They are stored correctly there. Cron and accounting logs are generated locally.

Pass/Fail Criteria
Pass if the test is provided and passes.
Related Information
History

2.3 Visualization Portal

Accounting Portal Summary View	
ID	**ACC_PORTAL_1**
Mandatory	
Applicability	Accounting Portal Implementation
Related Requirements	None

Description
Accounting portal provides a front-end view of published CPU resources that have been aggregated into summaries. These summaries may view per: • Site • Countries • VO • NGI • Tier1 / Tier2
Input from TP
Information about new views.
Test 1
Pre-condition   Configured accounting portal.
Test   Browse summaries.
Expected Outcome   Summary views are shown with correct data for all the possible levels.
Pass/Fail Criteria
Pass if the test is the summary view is provided and is correctly generated for all possible levels.
Related Information
History

Accounting Portal Access Policy	
ID	**ACC_PORTAL_2**
Mandatory	
Applicability	Implementations of Accounting Portal
Related Requirements	None

Description	
Sensitive information about VO usage and Users DNs must be encrypted and only accessible to their VO managers via X.509 certificate.	
Input from TP	
Test the access policy for VO managers.	
Test 1	
Pre-condition	Configured accounting portal. Valid VO manager certificate.
Test	Browse VO view with VO usage and user DNs.
Expected Outcome	Information is displayed correctly.
Test 2	
Pre-condition	Configured accounting portal. Valid certificate without VO manager privileges.
Test	Browse VO view.
Expected Outcome	Information is not displayed. Message is shown indicating that the user does not have enough privileges.
Pass/Fail Criteria	
Pass if the test is the access policy is applied correctly.	
Related Information	
History	

Accounting Portal Charts	
ID	**ACC_PORTAL_3**
Mandatory	
Applicability	Implementations of Accounting Portal
Related Requirements	None

Description
Accounting Portal views must include a production global view. This view must include a custom view where users can select how display desired accounting data, users can select these options: • Data to graph: Users can select Norm. Sum CPU in kSI2000-hours, or HEPSPEC-2006 number of jobs, Norm Sum elapsed time in kSI-2000 hours and HEPSPEC-2006 hours or CPU efficiency.   • Data period to view.   • Show data for Region, Date or VO and as function of Region, Date or VO.   • Group results by VO.   • Chart type: Accumulative bar, group bar or lines.   • Scale: Linear or logarithmic.   • A button to exclude operations VOs like dteam and ops.   This general view must include also a list of certified sites which are not publishing accounting data since last 3 months. Accounting Portal views must include different charts and graphs for ease of use.

Input from TP
A production accounting summary view example as presentation page with a default selection.

Test 1	
Pre-condition	Configured System.
Test	Visualize data with charts
Expected Outcome	Charts are correctly generated for the accounting data available based on users selection.

Pass/Fail Criteria
Pass if the charts are correctly generated for all the accounting data available and for all the chart models.

Related Information

History

Accounting Portal Charts	
ID	**ACC_PORTAL_4**
Mandatory	
Applicability	Implementations of Accounting Portal
Related Requirements	None

Description
Accounting Portal views must include a production VO manager view. This view must include a custom view where only VO managers can select and display desired accounting data, available options are: • VO to query including Group and Role.   • NGI/Country to display.   • Order by: Number of jobs, Norm. sum CPU, sum CPU, Norm sum time elapsed and sum. Time elapsed.   • Data period to display   This view generates a list with desired accounting information (including CPU efficiency for each VO group), a percentage pie chart and a bar chart for selected period of time.

Input from TP
A production VO manager view page based on users certificate and DN.

Test 1	
Pre-condition	Configured System.
Test	Visualize data with charts
Expected Outcome	Charts are correctly generated for the accounting data available based on VO managers selection.

Pass/Fail Criteria
Pass if the charts are correctly generated for all the accounting data available and for all the chart models.

Related Information

History

Accounting Portal Charts	
ID	**ACC_PORTAL_5**
Mandatory	
Applicability	Implementations of Accounting Portal
Related Requirements	None

Description
Accounting Portal views must include a production VO member view. This view must include a custom view where only VO members can select and display desired accounting data: • VO including Group and Role. • Order by: Number of jobs, Norm. sum CPU, sum CPU, Norm sum time elapsed and sum. Time elapsed. • Data period to display. This view generates a list with desired accounting information (including CPU efficiency for each VO group), a percentage pie chart and a bar chart for selected period of time.
Input from TP
A production VO members view page based on users certificate and DN.

Test 1	
Pre-condition	Configured System.
Test	Visualize data with charts
Expected Outcome	Charts are correctly generated for the accounting data available based on VO members selection.

Pass/Fail Criteria
Pass if the charts are correctly generated for all the accounting data available and for all the chart models.
Related Information
History

Accounting Portal Charts	
ID	**ACC_PORTAL_6**
Mandatory	
Applicability	Implementations of Accounting Portal
Related Requirements	None

Description
Accounting Portal views must include a production Site Admin view. This view must include a custom view where only site administrators can select and display desired accounting data for their sites, site administrator can select: • Site to display accounting data. • Order by: Number of jobs, Norm. sum CPU, sum CPU, Norm sum time elapsed and sum. Time elapsed. • Data period to display. This view generates a list with desired accounting information (including CPU efficiency for each VO group), a percentage pie chart and a bar chart for selected period of time.

Input from TP
A production VO members view page based on users certificate and DN..

Test 1	
Pre-condition	Configured System.
Test	Visualize data with charts
Expected Outcome	Charts are correctly generated for the accounting data available based on site administrators selection.

Pass/Fail Criteria
Pass if the charts are correctly generated for all the accounting data available and for all the chart models.

Related Information

History

3 REFERENCES

R 1	UMD roadmap: https://documents.egi.eu/public/ShowDocument?docid=100
R 2	Generic UMD Quality Criteria
R 3	Accounting Portal: http://accounting.egi.eu/