SA2: “Networking Support”

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Information Society and Media

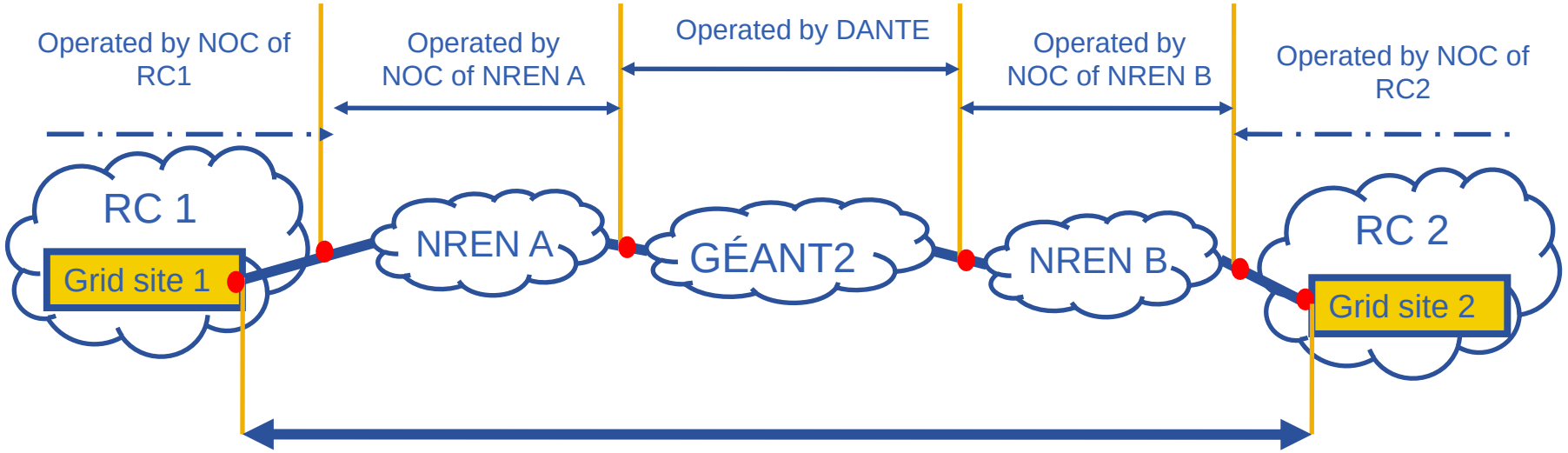
Outline

- **A brief description of SA2**
- **SA2 activities:**
  - The EGEE Network Operations Centre (ENOC)
  - Network Service Level Agreement (SLA)
  - IPv6 support within EGEE
  - Relations with LCG and support for the LHC optical private network
  - The Technical Network Liaison Committee
- **The main achievements and future plans**

SA2: “Networking Support”

- **SA2 is the network activity in EGEE-II**
  - 7 partners: CNRS, GRNET, RRC-KI, DFN, DANTE, GARR, SRCE
  - A small activity (160 PMs, ~ 1% of the total budget)
- **An interface with the network:**
  - Operational interface
    - Ensure the daily relations with the network infrastructures: ENOC, SLA, IPv6 tasks
  - Relational interface
    - Ensure the “higher level” of interactions with the network providers: LCG, TNLC tasks

Role of the ENOC

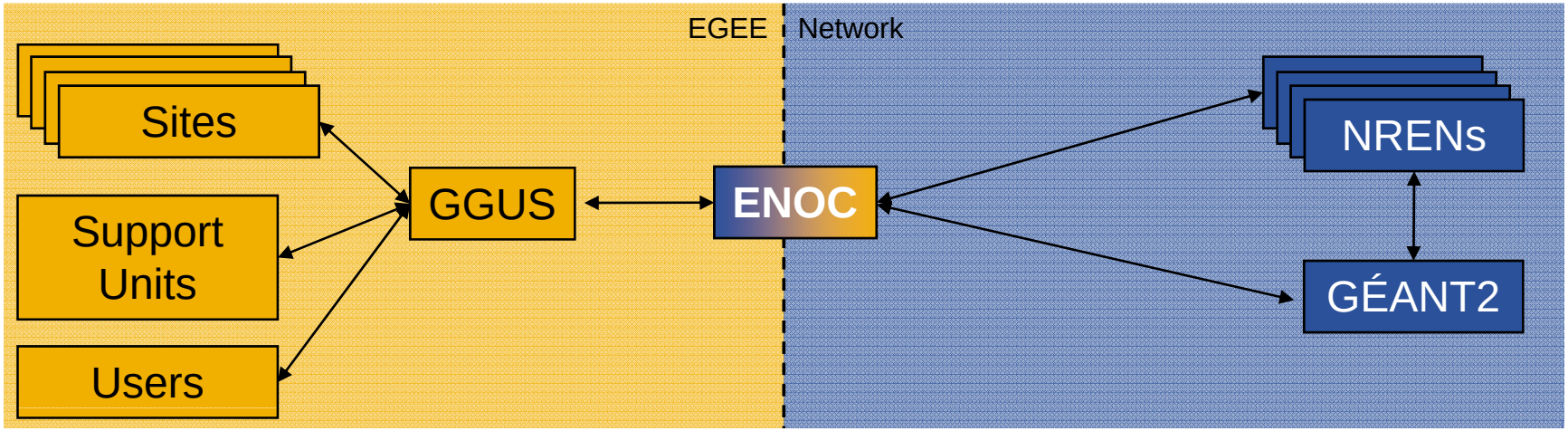


ENOC ensuring E2E connectivity for Grid sites on the whole path

- **ENOC ensuring E2E connectivity for Grid sites**
- **Assess the impact on the Grid of network trouble**
- **Troubleshoot problems**
  - Provide support to users
  - Identify the faulty domain
- **Assess the network connectivity of the Grid sites**

The ENOC

- A single point of contact between EGEE and the NRENs where EGEE and the network can exchange operational information
- A Network support unit in GGUS



Interface with the EGEE user support:

- Receive tickets assigned to ENOC by the GGUS 1st level support
- Troubleshoot them provided that the ENOC has access to suitable monitoring tools
- Contact identified faulty domains or reassign ticket to the associated site if this is local network issue

Interface with network providers:

- Collect tickets from NRENs
- Assess impact on the grid infrastructure
- Forward to GGUS tickets that seem relevant

Status of the ENOC

- **Fully implemented during EGEE-II :**
  - 2 FTEs dedicated to it in a single place
  - Procedures (MSA2.1 - ITIL) and tools (MSA2.3) described in details
- **Interface with network providers:**
  - Now **14 NRENs + NorduNet** (Nordic countries)**, GÉANT2 and the E2ECU**: 4 more NRENs + NorduNet and the E2ECU than at the beginning of EGEE-II
  - **Steady state**: ~800 tickets per month (~20% of interesting tickets), ~2500 emails per month
- **Interface with the EGEE user support**
  - Provide an interface to follow up issues (for support units and users)
  - Follow up the issue until solved
- **Assessment of the impact of an incident:**
  - **Thanks to the Network Operational Database**
  - Down to the site level
- **Scalability greatly improved: effort invested towards a high level of automation of the procedures**

Automation procedure 1/3

Network ticket's handling

18 NRENs + GÉANT2

~ 800 tickets/month
~ 2500 e-mails/month

translate, homogenize, sort

Trouble tickets DB

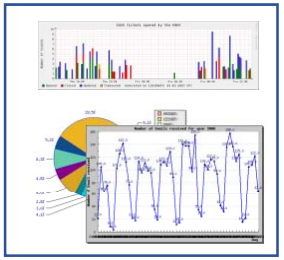
Network topology DB

Impact assessment, filtering

Internal tools

Dashboard

Statistics

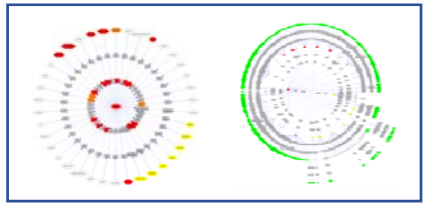


Sharing

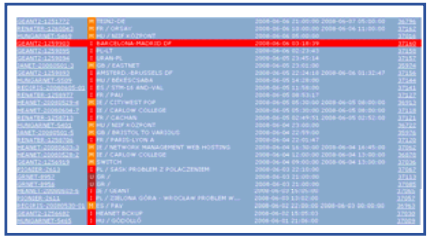
GGUS

GGUS Global Grid User Support

Maps



Public dashboard



https://ccenoc.in2p3.fr/TTdrawlight/

Automation procedure 2/3

Monitoring tool: DownCollector

https://ccenoc.in2p3.fr/DownCollector/

Select Grid site | Select Grid node

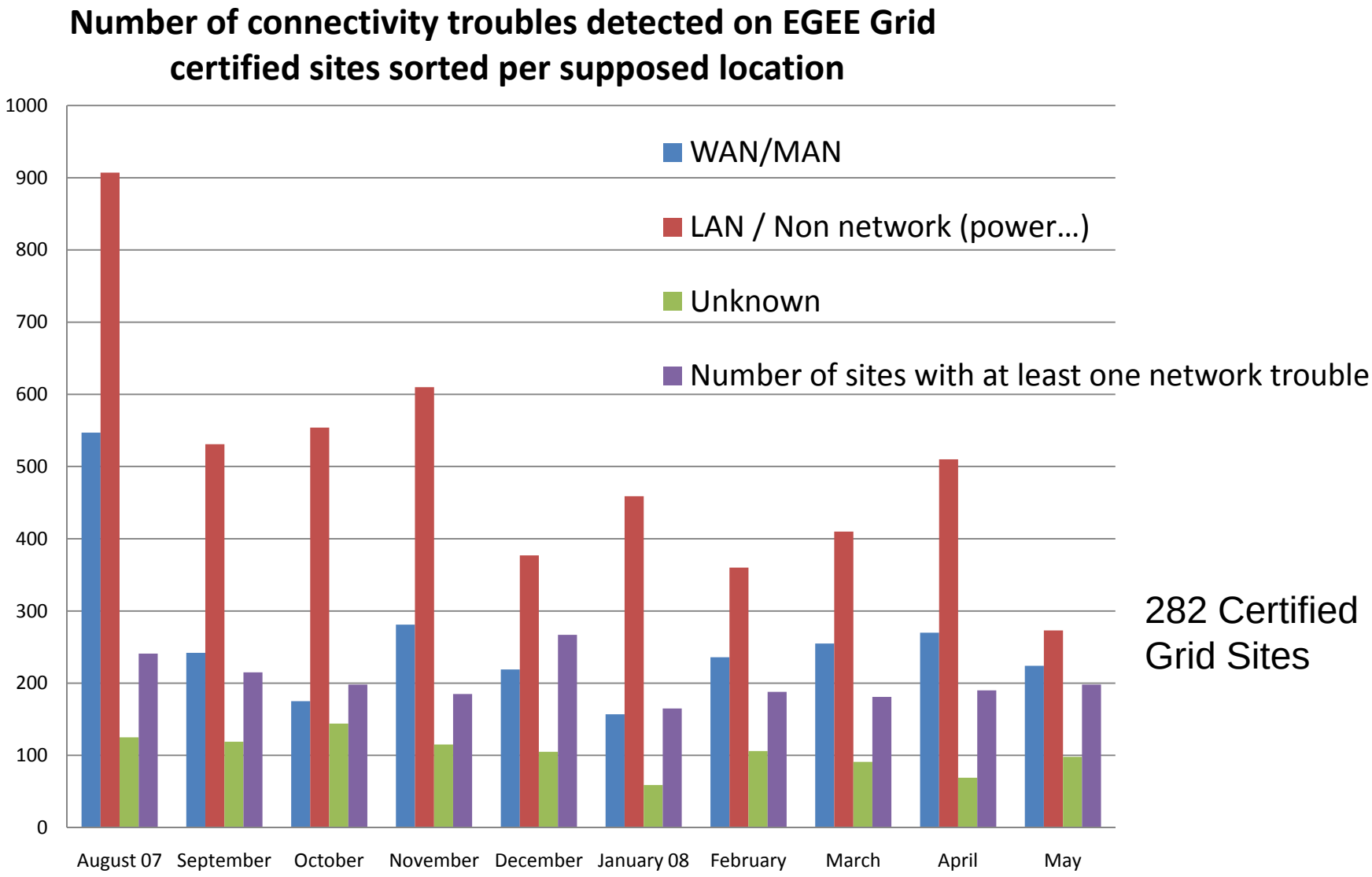
[Troubles] [Central Troubles] **[Explanations]** **[BDIIs not OK]** **[Sites with all nodes unreached]** [Monitored nodes not reached]
[Central GRID services] **[GOCDB3]** **[Nodes/Sites in scheduled downtime into GOCDB3]** [Networks headnodes] **[TCP ports tested]**

Latest 20 connectivity troubles affecting **Certified Grid sites** raised by DownCollector:

Trouble ID	Site	Current status	Date started UTC	Date ended UTC	Date updated UTC	Downtime	Location
ENOC-TD-44762	INFN-ROMA2	UNREACHED	2008-06-03 23:32:19		2008-06-04 07:24:17	7 hours 51 minutes 58 seconds	ON-SITE
ENOC-TD-38252	UKI-LT2-IC-HEP-PPS	UNREACHED	2008-04-14 15:06:17		2008-06-04 07:24:34	50 days 16 hours 18 minutes 17 seconds	ON-SITE
ENOC-TD-44798	HG-03-AUTH	REACHED	2008-06-04 06:24:35	2008-06-04 06:28:48	2008-06-04 06:28:48	4 minutes 13 seconds	ON-SITE
ENOC-TD-44788	UB-LCG2	REACHED	2008-06-04 05:24:22	2008-06-04 05:36:50	2008-06-04 05:36:50	12 minutes 28 seconds	ON-SITE
ENOC-TD-44778	IL-IUCC	REACHED	2008-06-04 01:15:07	2008-06-04 02:30:51	2008-06-04 02:30:51	1 hour 15 minutes 44 seconds	ON-SITE
ENOC-TD-44777	IL-BGU-PPS	REACHED	2008-06-04 01:14:54	2008-06-04 02:30:51	2008-06-04 02:30:51	1 hour 15 minutes 57 seconds	OFF-SITE
ENOC-TD-44776	WEIZMANN-LCG2	REACHED	2008-06-04 01:14:41	2008-06-04 02:30:51	2008-06-04 02:30:51	1 hour 16 minutes 10 seconds	OFF-SITE
ENOC-TD-44775	IL-BGU	REACHED	2008-06-04 01:14:28	2008-06-04 02:30:51	2008-06-04 02:30:51	1 hour 16 minutes 23 seconds	ON-SITE
ENOC-TD-44772	IL-BGU	REACHED	2008-06-04 01:02:57	2008-06-04 01:06:50	2008-06-04 01:06:50	3 minutes 53 seconds	OFF-SITE
ENOC-TD-44771	IL-IUCC	REACHED	2008-06-04 01:02:45	2008-06-04 01:06:50	2008-06-04 01:06:50	4 minutes 5 seconds	OFF-SITE
ENOC-TD-44770	IL-BGU-PPS	REACHED	2008-06-04 01:02:30	2008-06-04 01:06:50	2008-06-04 01:06:50	4 minutes 20 seconds	OFF-SITE
ENOC-TD-44769	WEIZMANN-LCG2	REACHED	2008-06-04 01:02:18	2008-06-04 01:06:50	2008-06-04 01:06:50	4 minutes 32 seconds	OFF-SITE
ENOC-TD-44747	ESA-ESRIN	REACHED	2008-06-03 19:04:17	2008-06-03 20:26:48	2008-06-03 20:26:48	1 hour 22 minutes 31 seconds	ON-SITE
ENOC-TD-44743	ESA-ESRIN	REACHED	2008-06-03 18:12:18	2008-06-03 19:02:47	2008-06-03 19:02:47	50 minutes 29 seconds	ON-SITE
ENOC-TD-44729	wuppertalprod	REACHED	2008-06-03 13:40:20	2008-06-03 13:46:48	2008-06-03 13:46:48	6 minutes 28 seconds	OFF-SITE
ENOC-TD-44724	UB-LCG2	REACHED	2008-06-03 12:46:28	2008-06-03 12:56:52	2008-06-03 12:56:52	10 minutes 24 seconds	ON-SITE
ENOC-TD-44718	INFN-TRIESTE	REACHED	2008-06-03 11:04:34	2008-06-03 11:24:49	2008-06-03 11:24:49	20 minutes 15 seconds	OFF-SITE
ENOC-TD-44716	TW-NTCU-HPC-01	REACHED	2008-06-03 10:56:42	2008-06-03 11:00:56	2008-06-03 11:00:56	4 minutes 14 seconds	ON-SITE
ENOC-TD-44715	VICTORIA-LCG2	REACHED	2008-06-03 10:56:37	2008-06-03 11:00:56	2008-06-03 11:00:56	4 minutes 19 seconds	ON-SITE
ENOC-TD-44714	TW-NCUHEP	REACHED	2008-06-03 10:56:33	2008-06-03 11:00:56	2008-06-03 11:00:56	4 minutes 23 seconds	ON-SITE

View troubles for [**Certified** - **Uncertified** - **Candidate**] sites

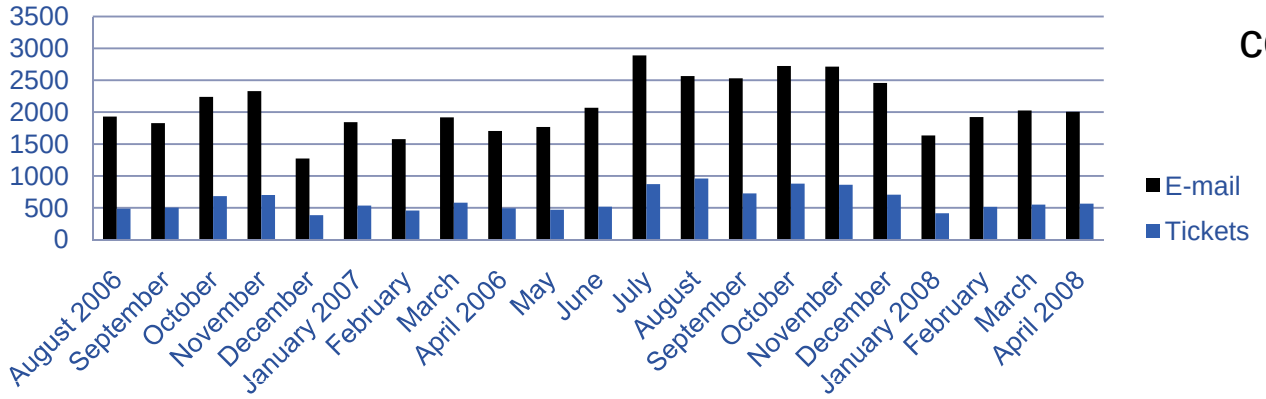
Automation procedure 3/3



282 Certified Grid Sites

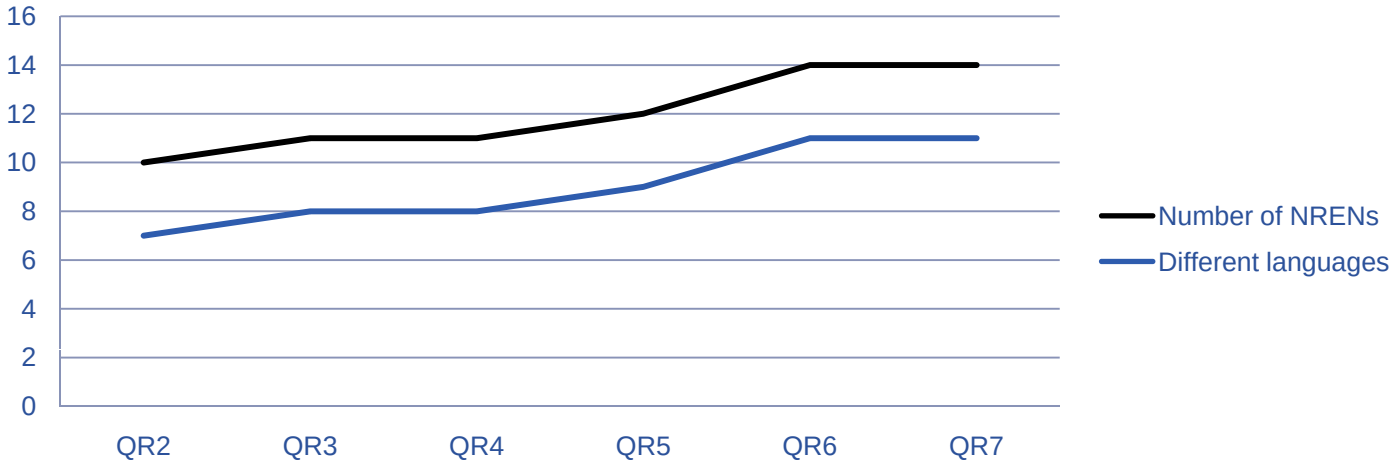
ENOC metrics

E-mails and tickets received from Network providers



75 % of European certified sites included

Number of NRENs sending their tickets to the ENOC



Network SLA 1/2

- **Objective: to enable access for applications to the advanced services provided by the NRENs**
- **Implementation of network Service Level Agreement:**
  - Still a manual process in spite of the Advance Multi-domain Provisioning System tool provided by GEANT
  - Described in DSA2.1, along with procedures for SLA monitoring and troubleshooting
  - Database schema defined to store and manage those SLAs

Network SLA 2/2

- **Application usage:**
  - Assessment of the SLA establishment and monitoring procedures
  - A GRIDCC (Grid enabled Remote Instrumentation with Distributed Control and Computation) application using SLA was monitored and the result reported in DSA2.2

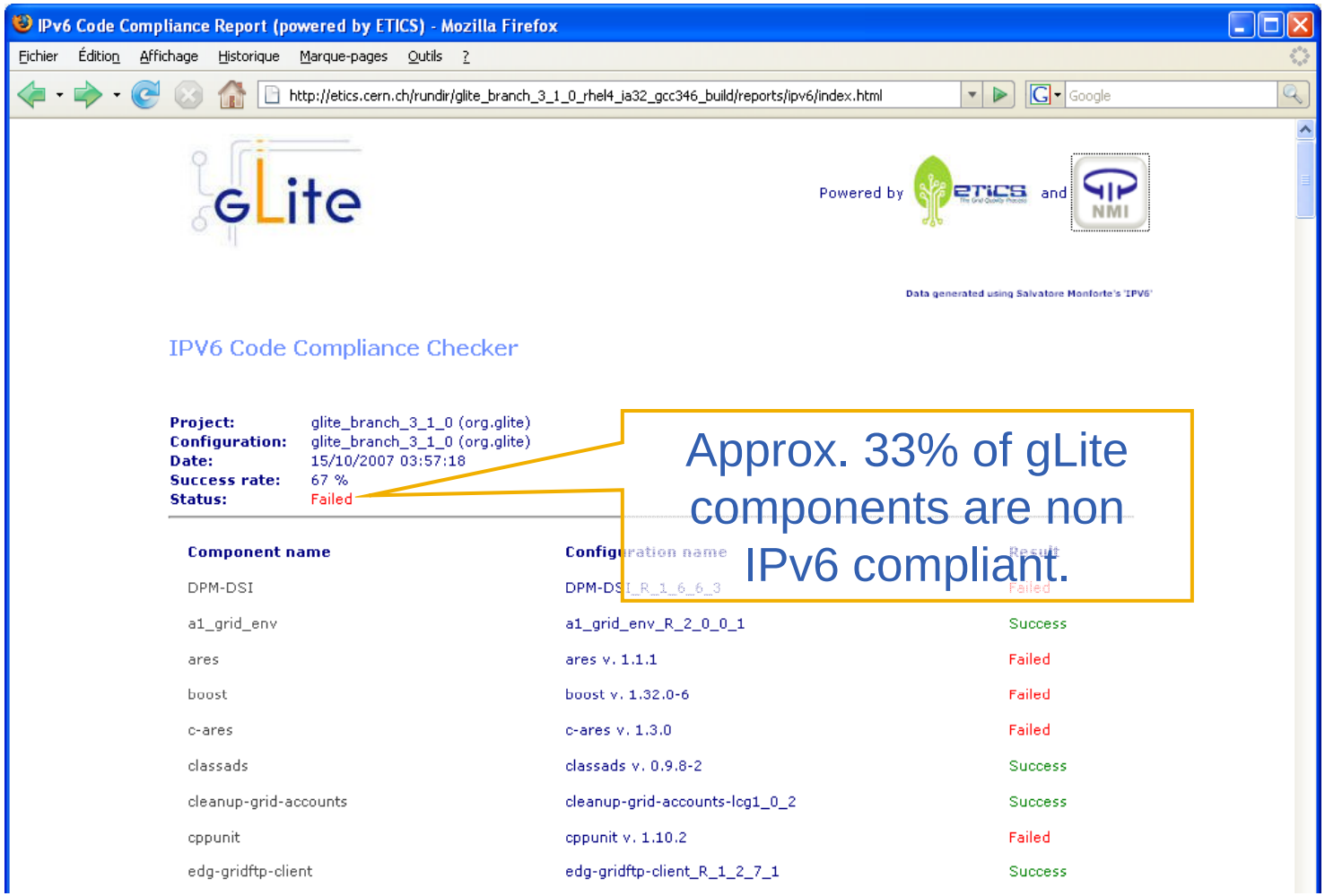
- **SA2 monitors the needs of applications for advanced network services, in collaboration with NA4 especially for new applications**

IPv6

- **In collaboration with the EUChinaGrid and ETICS**
- **Objectives:**
  - Make IPv6 visible in the daily workflow of developers
  - Help them to produce IPv6 compliant software
  - Foster the IPv6 awareness in EGEE
- **Main results of the activity:**
  - Detailed methodology to test a software component in an IPv6 environment
  - Provide an hybrid IPv4-IPv6 testbed to developers teams (CNRS Paris, GARR Rome)
  - Port the first gLite components on IPv6 :
    - BDII (experimental), DPM-LFC
  - Include IPv6 compliance tests and information in the building process of gLite (ETICS)
  - Assessment of the IPv6 compliance of about 80 gLite external components
  - IPv6 training course and presentation (JRA1/SA3)

Current status of gLite 1/2

Internal dependencies:

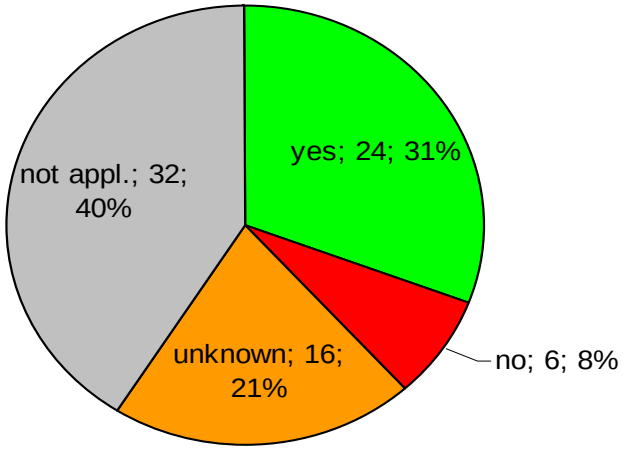


https://etics-repository.cern.ch:8443/repository/.....

Current status of gLite 2/2

- **External dependencies:**

IPv6 compliance of external components



- **Non compliant packages:**

condor	condor v. 6.8.4
dcap	dcap v. 1.2.38
edg-gridftp-client	org.edg.gridftp-client.v1_2_5
mysql-client	mysql-client v. 4.1.20
mysql-devel	mysql-devel v. 4.1.20
udpmon	udpmon v. 1.1.2

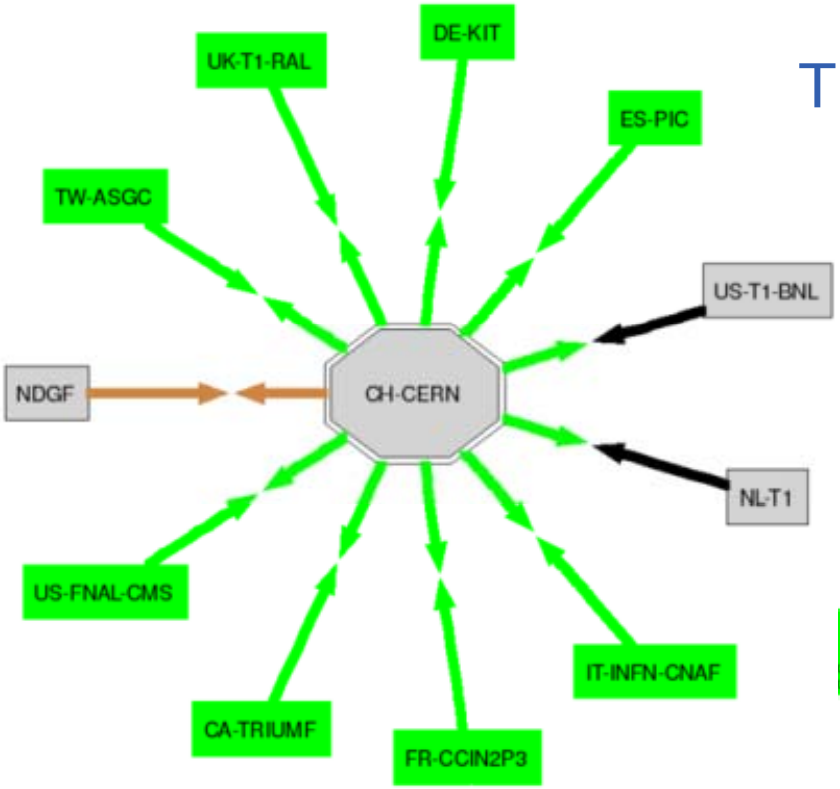
- **Packages with an unknown status:**

bcprov-jdk14	bcprov-jdk14 v. 1.22	**hsqldb**	hsqldb v. 1.7.2.3
boost	boost v. 1.32.0-1.rhel4	**Jglobus**	jglobus v. 1.1
bouncycastle	bouncycastle v. 1.34 jdk 1.5	**joram**	joram v. 4.1.2
db	db v. 4.2.52	**lcg-info-templates**	lcg-info-templates-lcg1_0_15
edg-mkgridmap	org.edg.mkgridmap.v2_6_1	**libhj**	libhj v. 4.1.3
egee-ant-ext	egee-ant-ext v. 0.4.0	**sunxacml**	sunxacml v. 1.2
exist	exist v. 1.1.1	**unixodbc**	unixodbc v. 2.2.11
gssklog-cern	gssklog-cern.HEAD	**wsi-test-tools**	wsi-test-tools v. 1.1

Relation with LCG

- **Standardization of network monitoring data (Nagios)**
- **SA2 provides a part of the LHCOPN support:**
  - Define the LHCOPN operational model (ongoing task)
  - Close collaboration with LCG and DANTE
  - Service level support:
    - Assess the impact of an incident in the OPN
    - Develop a tool to monitor the routing status of the OPN: ASP Drawer

Support of LHCOPN



The LHC Optical Private Network

http://ccenoc.in2p3.fr/ASPDrawer/

Technical Network Liaison Committee

- **TNLC (Technical Network Liaison Committee):**
  - Set up during EGEE in order to ease the technical discussions between EGEE, the NRENs and the GÉANT2 project
  - New terms of references and objectives for EGEE-II (MSA2.2)
  - Participants: EGEE (SA1, SA2), GÉANT2 (represented by DANTE as coordinator of GÉANT2), some of the NRENs involved in the EGEE activities, the NREN PC and CERN.
- **Work mainly focused on:**
  - Trouble ticket
  - Expand the number of the NRENs sending their tickets to the ENOC to improve the coverage of the certified sites
- **Main achievements (MSA2.4):**
  - **Trouble ticket "standardization"**
  - **75 % of European certified sites**

Issues & future plans

- **ENOC**
  - **Issue: lack of monitoring data and troubleshooting tools deployed in the end sites and available for the ENOC**
  - Deploy a network monitoring tools for efficient troubleshooting
  - Trouble tickets model to be implemented as first task in EGEE III
- **Network SLAs**
  - **Issue: low application usage of the SLA**
  - Dissemination work
  - Make the SLA installation procedure more automatic
- **IPv6**
  - Set up all elements needed to handle IPv6 in EGEE: test, building, validation
- **LCG / LHCOPN**
  - Formalize the OPN operational model, deploy operational tools
- **Issue: the departure of the activity manager**
  - A new activity manager has taken the lead of the activity

Main achievements

- **ENOC running (https://ccenoc.in2p3.fr/)**
  - More NRENs involved
  - Scalability and high level of automation (DownCollector)
  - Integration in Grid Operation (COD, etc)
- **Network Operational Database**
  - Important role in many fields (ENOC, LHCOPN, SLA)
- **SLA**
  - Assessment of the SLA establishment and monitoring procedures
- **IPv6**
  - IPv6 testbed provided for gLite developers
  - The first gLite components (BDII/DPM-LFC) ported on IPv6
  - First IPv6 module successfully tested using ETICS
- **TNLC**
  - Support from the NRENs community to the ENOC
  - Standardization network trouble ticket data model
- **LCG / LHCOPN**
  - Standardization networking monitoring data (Nagios)
  - Design and implementation of the LHCOPN operational model (ongoing work)