



Enabling Grids for E-science

SA2: “Networking Support”

EGEE-II EU Review
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Information Society
and Media

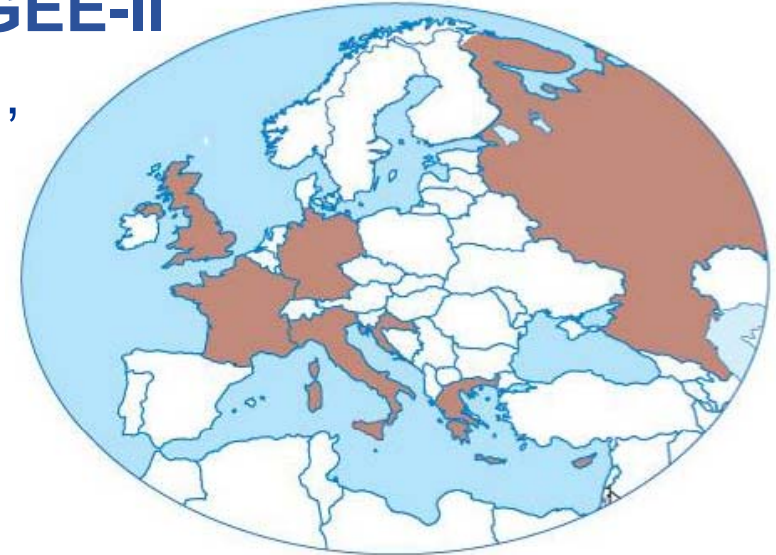


- **A brief description of SA2**
- **SA2 activities:**
 - The EGEE Network Operations Centre (ENOC)
 - Network Service Level Agreement (SLA)
 - IPv6 support within EGEE
 - Relations with LCG and support for the LHC optical private network
 - The Technical Network Liaison Committee
- **The main achievements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

SA2 Partners

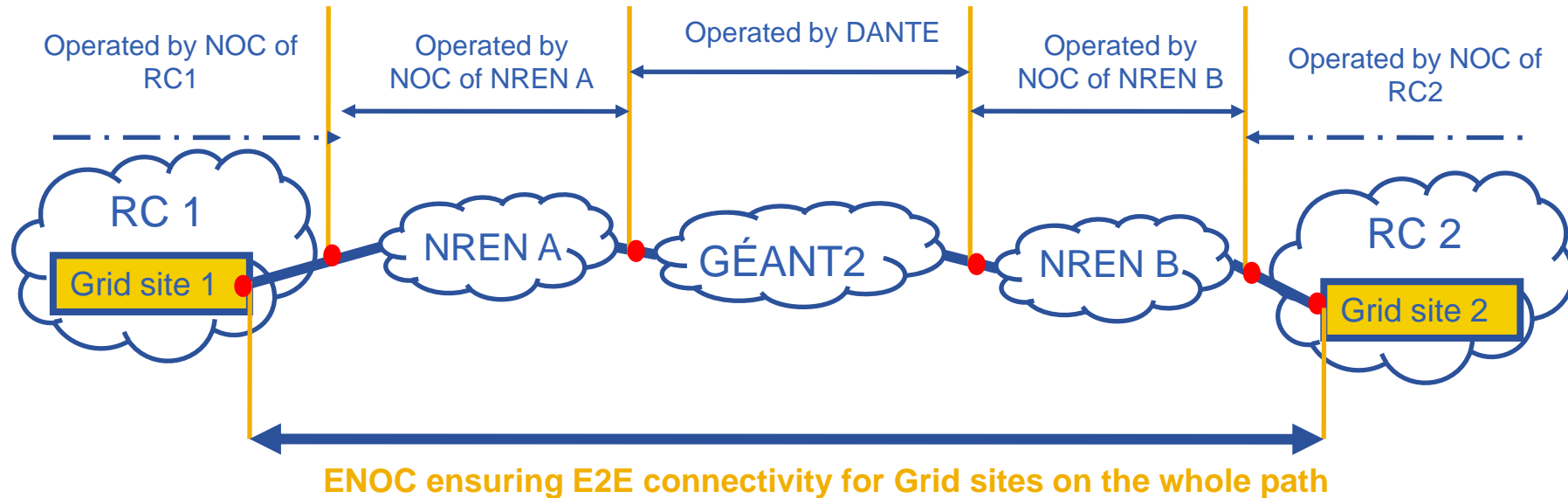
- **SA2 is the network activity in EGEE-II**

- 7 partners: CNRS, GRNET, RRC-KI, DFN, DANTE, GARR, SRCE
- A small activity (160 PMs, ~ 1% of the total budget)



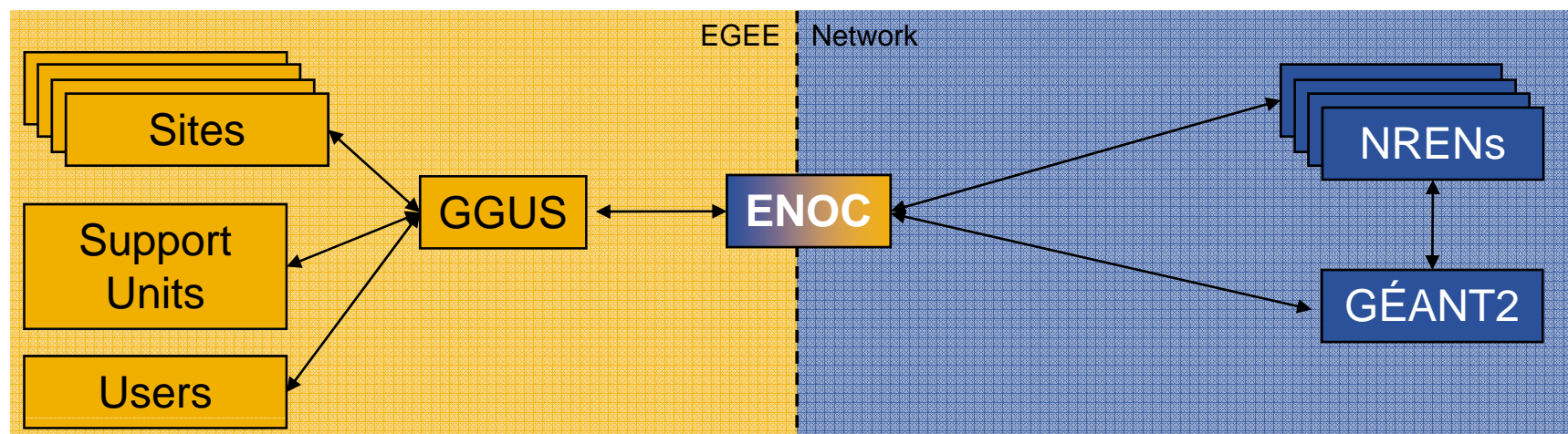
- **An interface with the network:**

- 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



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

- 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:

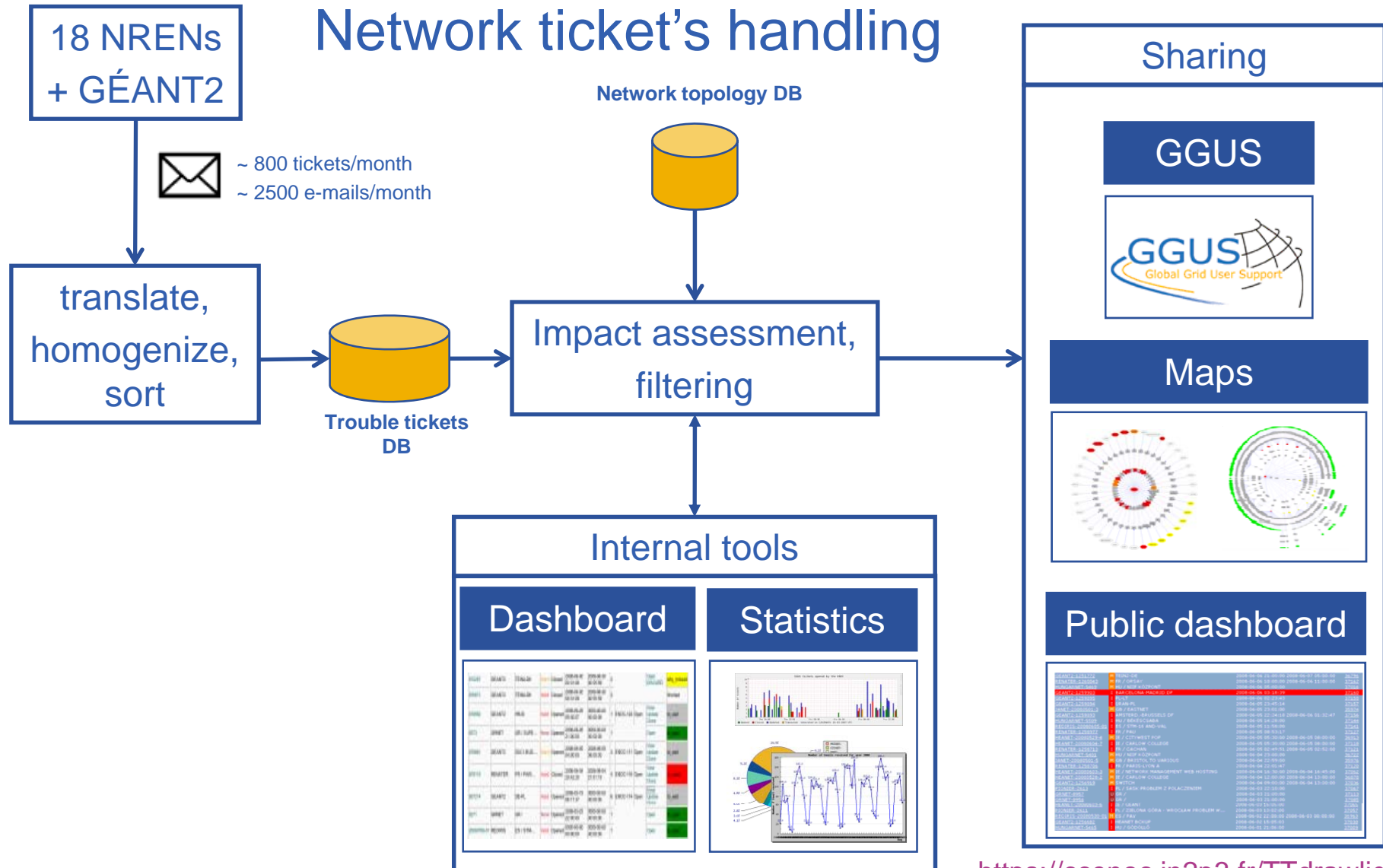
- Receive tickets assigned to ENOC by the GGUS 1st level support
- Troubleshoot them provided that the ENOC has access to suitable monitoring tools
- Contact identified faulty domains or reassign ticket to the associated site if this is local network issue

Interface with network providers:

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

- **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**

Network ticket's handling



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

Monitoring tool: DownCollector

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

Select Grid site Select Grid node

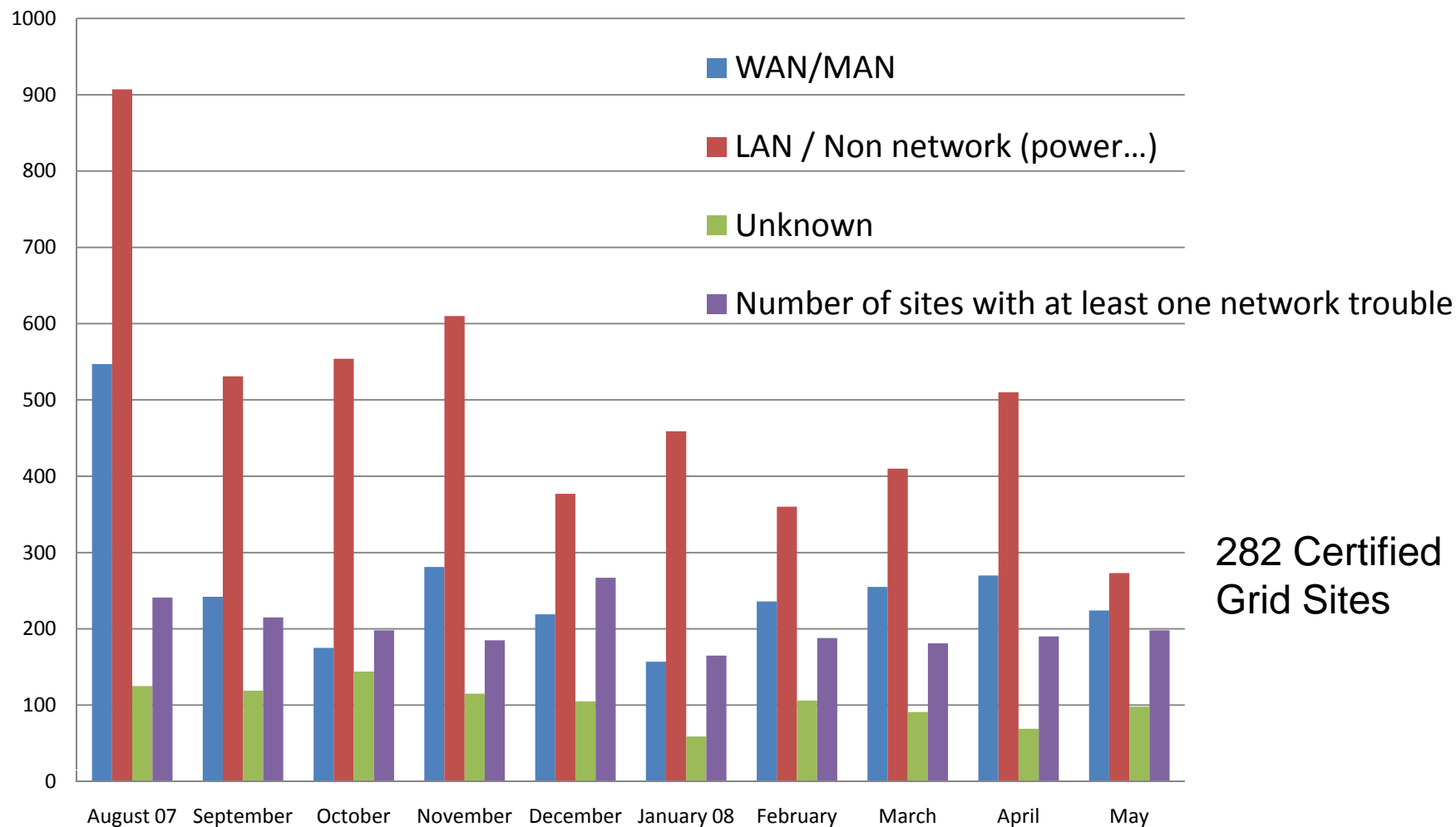
[\[Troubles\]](#) [\[Central Troubles\]](#) [\[Explanations\]](#) [\[BDIIs not OK\]](#) [\[Sites with all nodes unreachable\]](#) [\[Monitored nodes not reached\]](#)
[\[Central GRID services\]](#) [\[GOCDB3\]](#) [\[Nodes/Sites in scheduled downtime into GOCDB3\]](#) [\[Networks headnodes\]](#) [\[TCP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

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

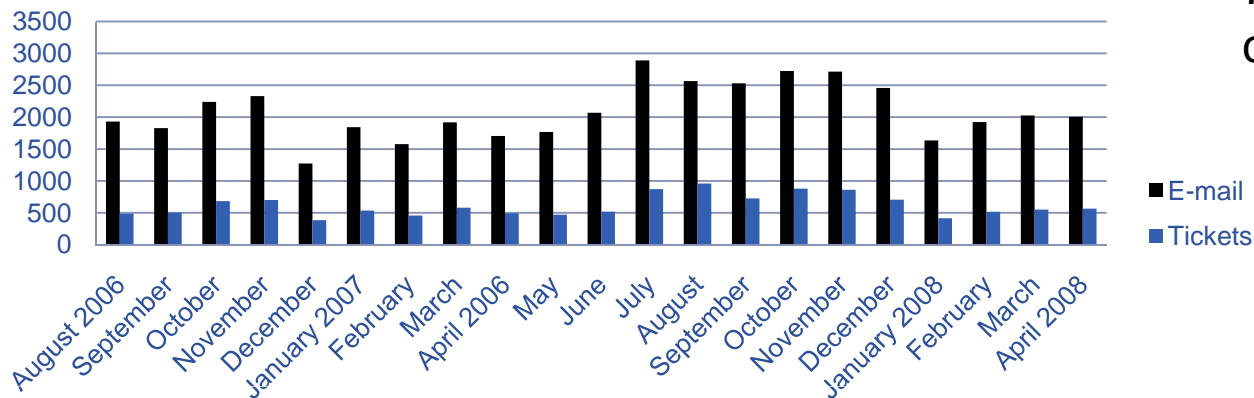
Trouble ID	Site	Current status	Date started UTC	Date ended UTC	Date updated UTC	Downtime	Location
ENOC-TD-44762	INFN-ROMA2	UNREACHED	2008-06-03 23:32:19		2008-06-04 07:24:17	7 hours 51 minutes 58 seconds	ON-SITE
ENOC-TD-38252	UKI-LT2-IC-HEP-PPS	UNREACHED	2008-04-14 15:06:17		2008-06-04 07:24:34	50 days 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

Number of connectivity troubles detected on EGEE Grid certified sites sorted per supposed location

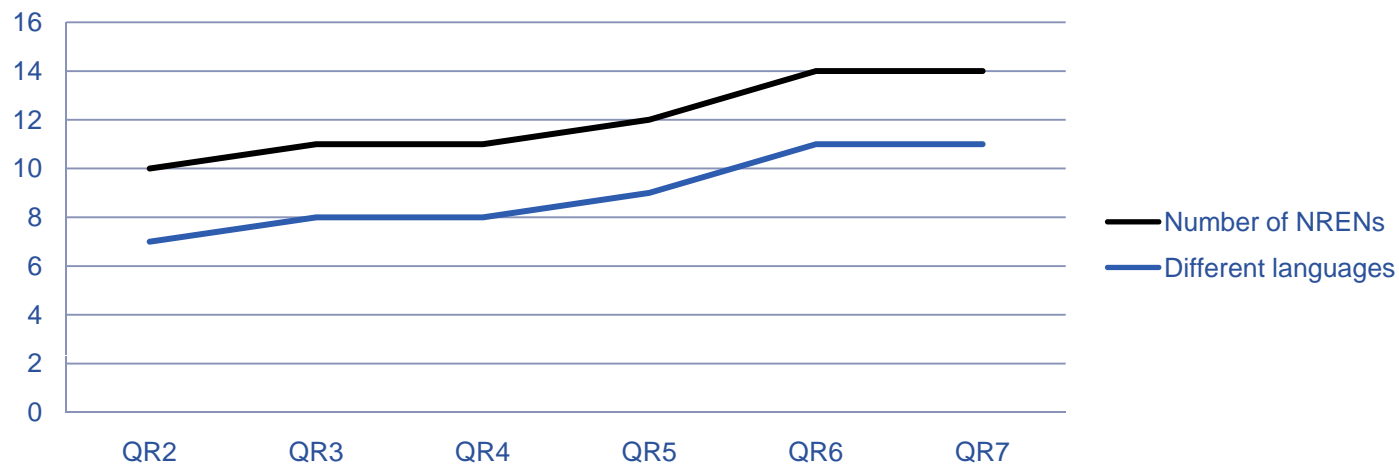


E-mails and tickets received from Network providers



75 % of European certified sites encompassed

Number of NRENs sending their tickets to the ENOC



- **Objective: to enable access for applications to the advanced services provided by the NRENs**
- **Implementation of network Service Level Agreement:**
 - Almost completely manual 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

- **Application usage:**
 - Assessment of the SLA establishment and monitoring procedures
 - A GRIDCC 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**

- **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
 - Port a first gLite component on IPv6: BDII (several versions)
 - Include IPv6 compliance tests and information in the building process of gLite (ETICS)
 - Assessment of the IPv6 compliance of the about 80 gLite external components
 - IPv6 training course and presentation (JRA1/SA3)

- **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

The LHC Optical Private Network



<https://ccenoc.in2p3.fr/ASPDrawer/>

- **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**

- **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
- **LCG / LHCOPN**
 - Formalize the OPN operational model, deploy operational tools
- **Issue: the leaving of the activity manager**
 - A new activity manager has taken the lead of the activity.

- **ENOC running** (<https://ccenoc.in2p3.fr/>)
 - More NRENs involved
 - Scalability and **high level of automation** (DownCollector)
 - Integration 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 component (BDII) 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