Grid Operations

LCG Grid Deployment Board

FNAL, 9th October 2003

John Gordon
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Outline

- Recent Progress
- Future work

Progress to Date

- Website
- Monitoring Activities
- Reporting
- Accounting

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Website

- Main structure is in place
- Pages on
  - participating institutions,
  - contact information
  - and monitoring fully operational
- Marker pages for SLAs, News, Security and Meetings
- Uses GridSite for updating

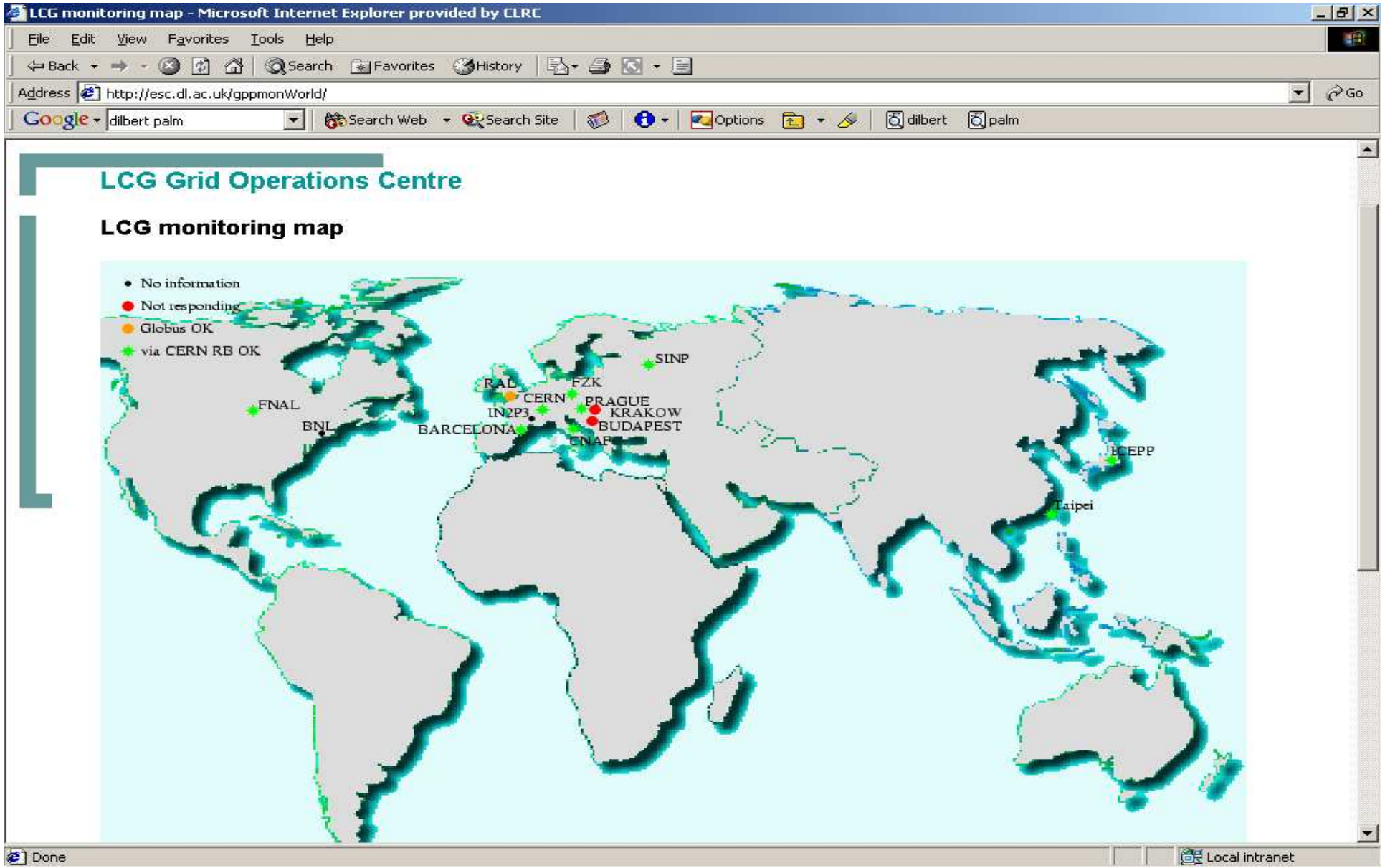
Monitoring Activities

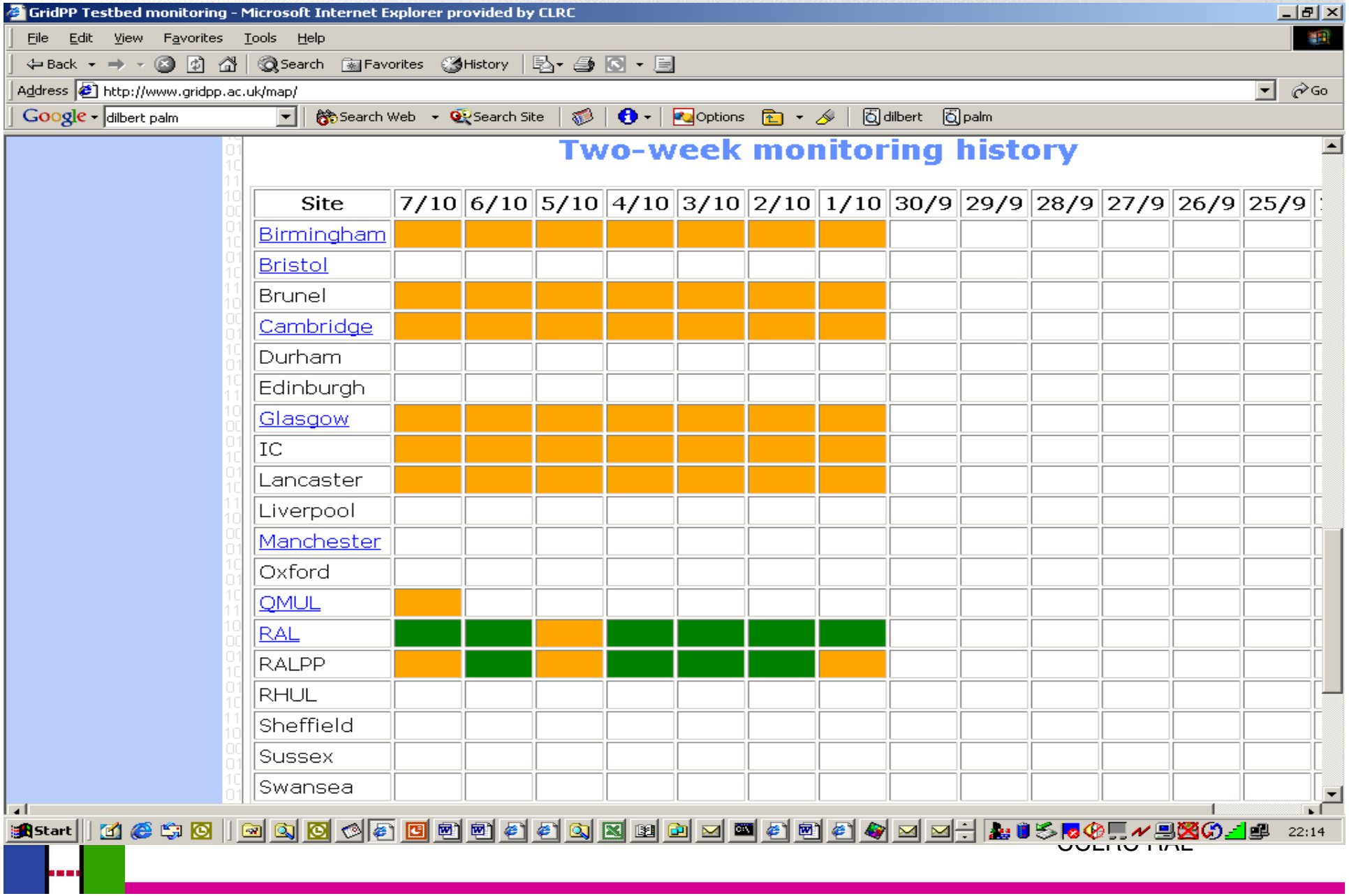
- Installed a variety of monitoring tools to gain experience of them on a Production Grid
  - Gppmon
  - MapCenter
  - GridICE
  - CE_mon
  - RB_mon
  - Mona Lisa

Gppmon

- Submits jobs every hour via globus and CERN RB
- Coloured dots on map on GOC web
- Static list of sites,
  - but easy to update; currently fully up to date
- Most useful at this stage for quick check of status of CE and RB
- Needs history;
  - available in later version but not yet implemented
- How to check all RBs?
  - Segmented dots? One map per RB?
  - Fewer sites/RB?

GPPmon


LCG monitoring map - Microsoft Internet Explorer provided by CLRC
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://esc.dl.ac.uk/gppmonWorld/
Go
Google dilbert palm
Search Web Search Site
Options
dilbert
palm
LCG Grid Operations Centre
LCG monitoring map
No information
Not responding
Globus OK
via CERN RB OK
SINP
RAL
FZK
CERN
PRAGUE
IN2P3
KRAKOW
BUDAPEST
FNAL
BNL
BARCELONA
CNAF
ICEPP
Taipei
Done
Local intranet

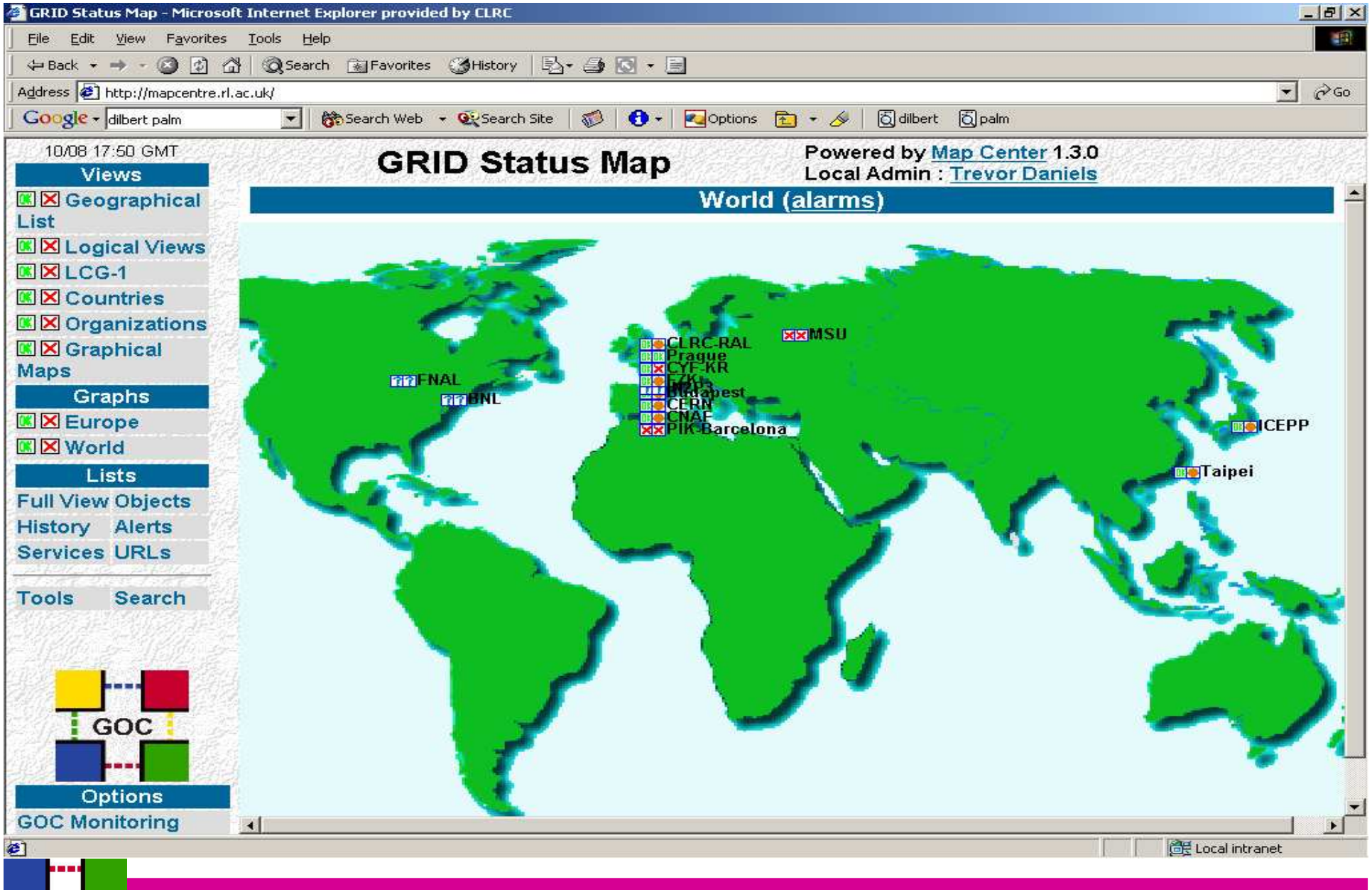


Site	7/10	6/10	5/10	4/10	3/10	2/10	1/10	30/9	29/9	28/9	27/9	26/9	25/9
Birmingham													
Bristol													
Brunel													
Cambridge													
Durham													
Edinburgh													
Glasgow													
IC													
Lancaster													
Liverpool													
Manchester													
Oxford													
QMUL													
RAL													
RALPP													
RHUL													
Sheffield													
Sussex													
Swansea													

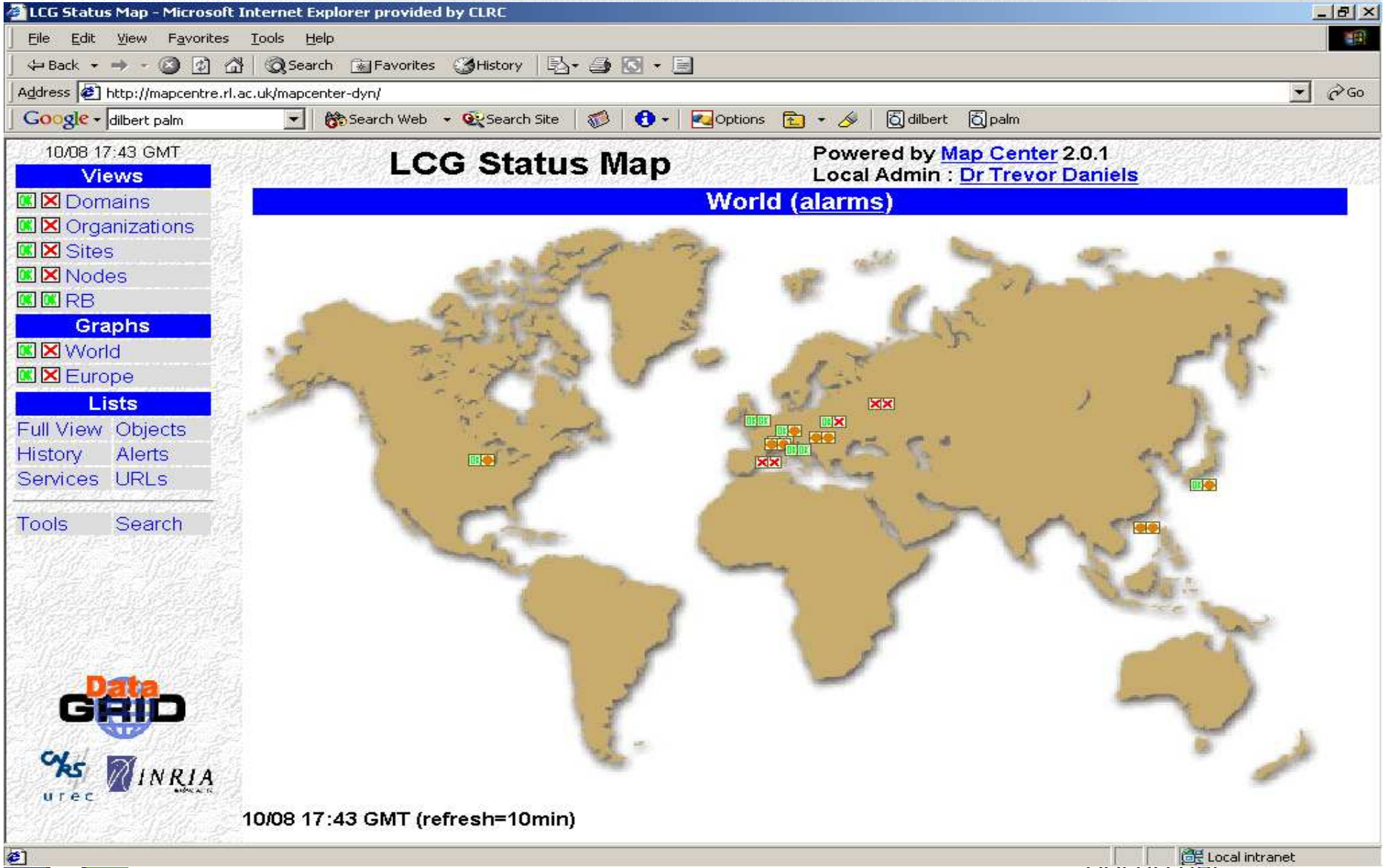
MapCenter

- Checks IP/UDP ports, no sensors.
  - Set up with help from Franck Bonnassieux
- Static version running , breaks occasionally
- Difficult to update
  - tricky format, needs root
- dynamic version added to website,
  - but shows only services in MDS
  - These are MDSs, BDIIs, CEs and SEs.

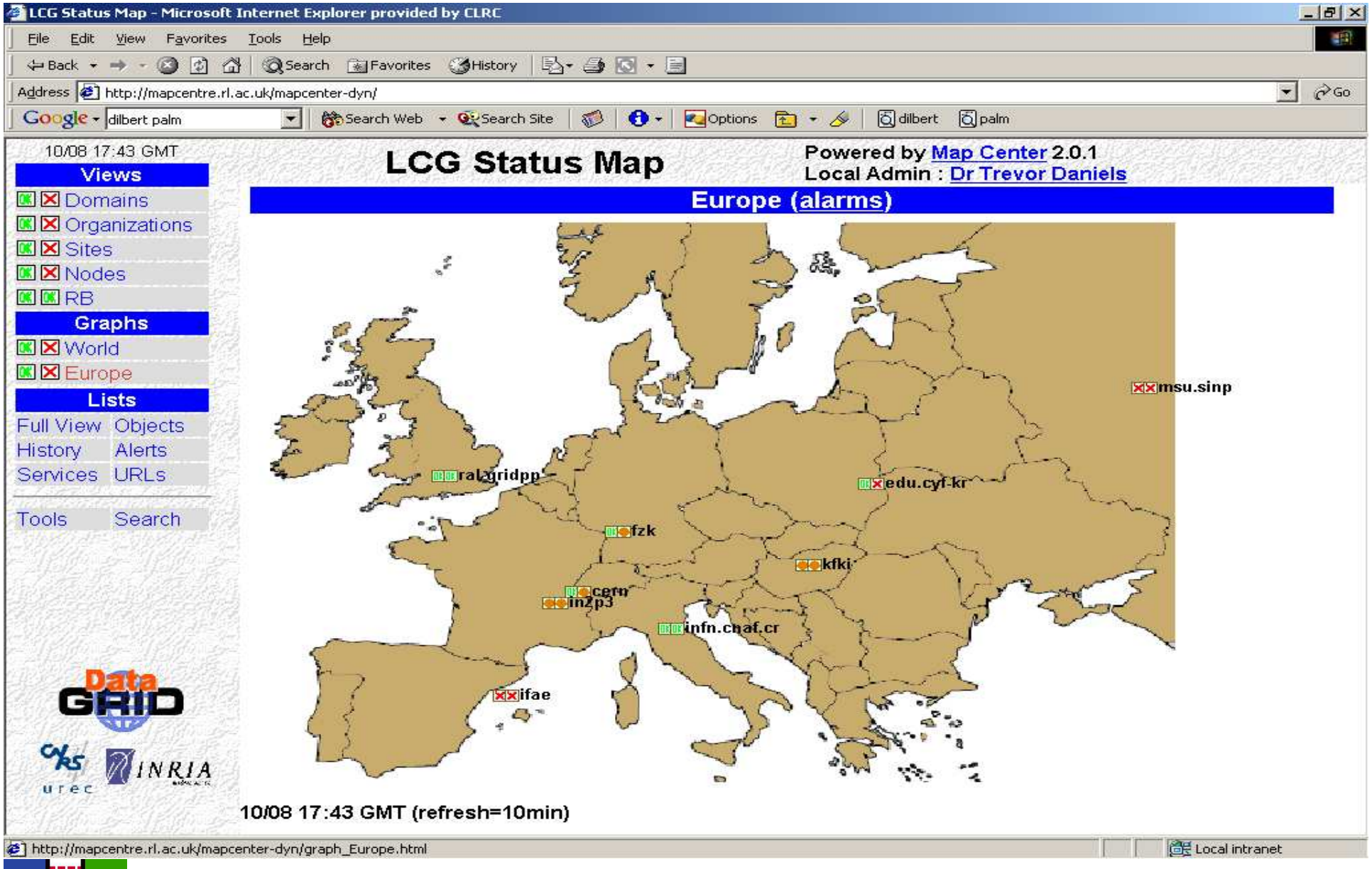
LCG Static MapCenter



LCG MapCenter



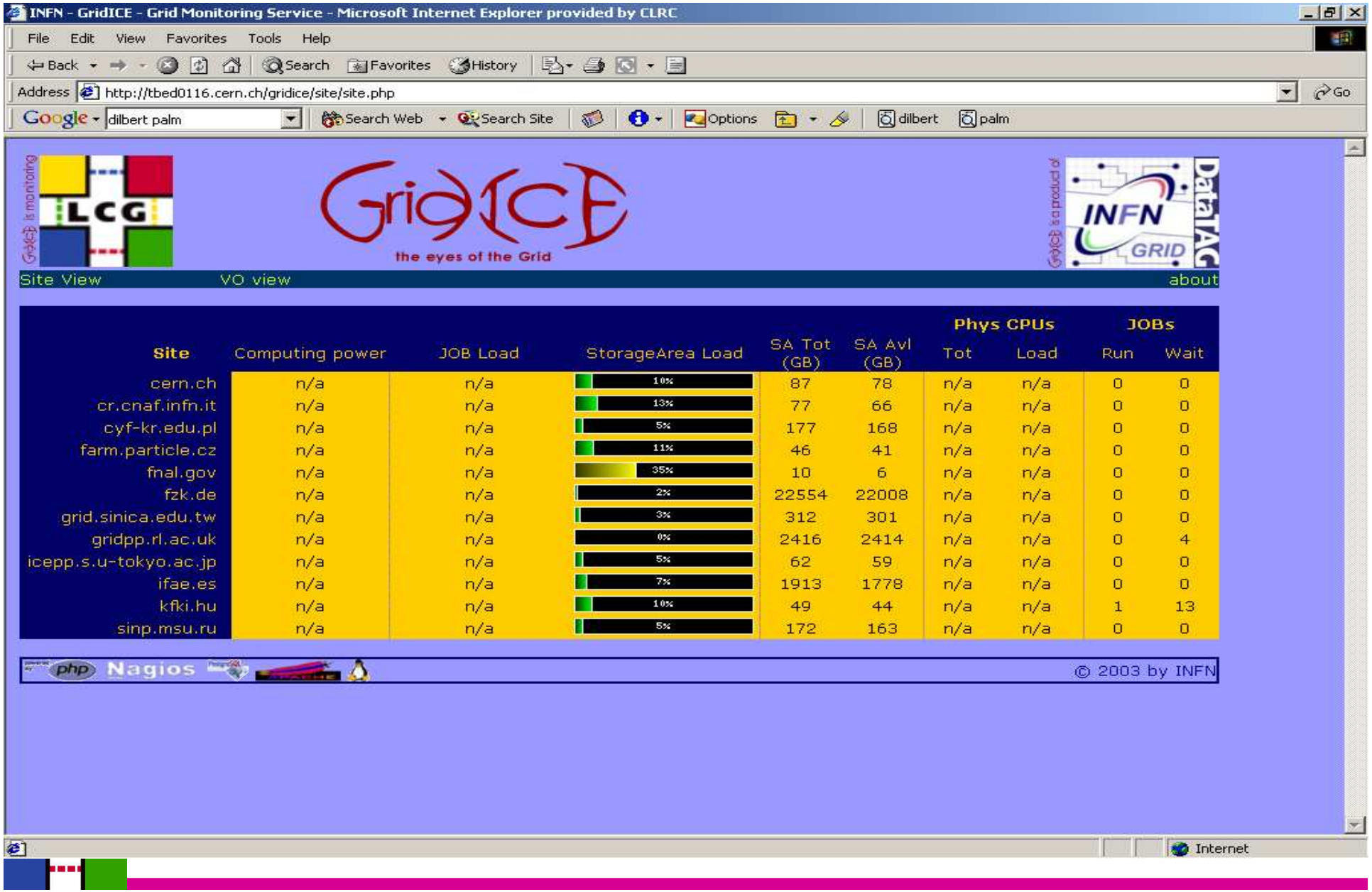
LCG MapCenter



GridICE

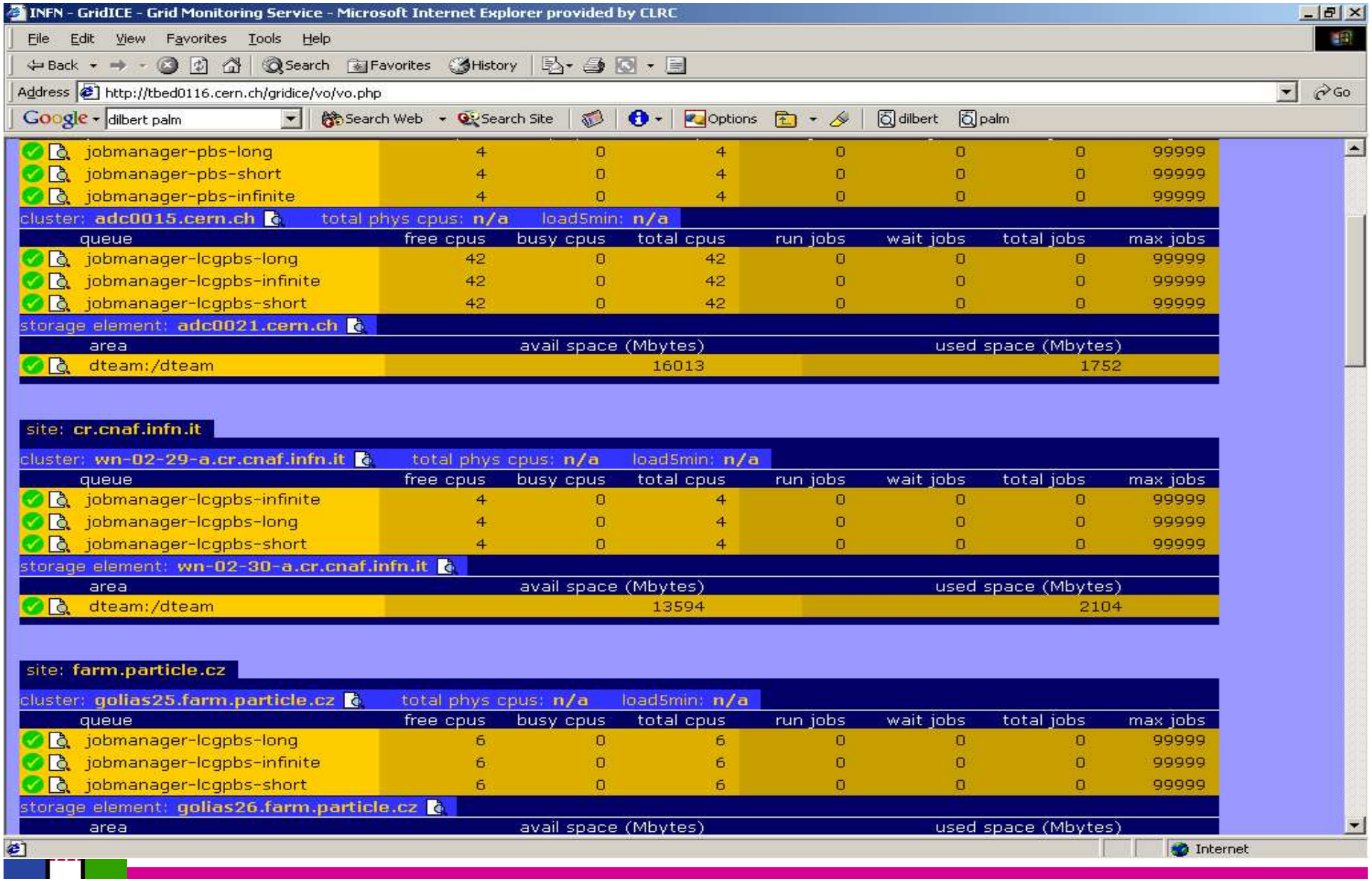
- Running at CERN
- history of jobs run useful
- accurately shows gppmon jobs running every hour in dteam
- Shows several hundred Alice, Atlas, CMS and LHCb jobs submitted at end Sep in two batches
- pattern in all 4 is the same, so presumably a test
- mainly shown waiting
- no obvious real use of LCG1 observed yet

GridICE

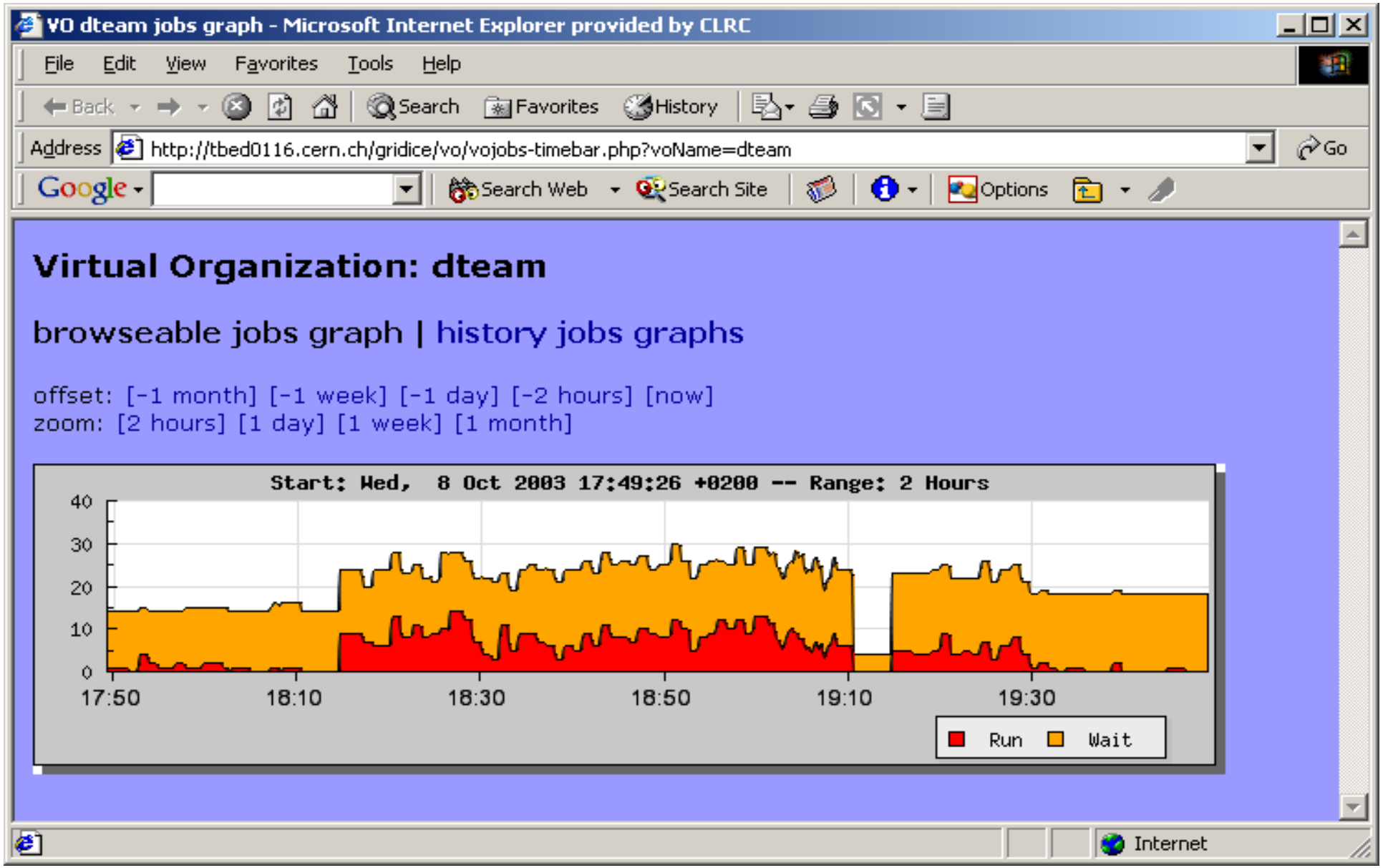


Site	Computing power	JOB Load	StorageArea Load	SA Tot (GB)	SA Avl (GB)	Phys CPUs Tot	Phys CPUs Load	JOBs Run	JOBs Wait
cern.ch	n/a	n/a	10%	87	78	n/a	n/a	0	0
cr.cnaf.infn.it	n/a	n/a	13%	77	66	n/a	n/a	0	0
cyf-kr.edu.pl	n/a	n/a	5%	177	168	n/a	n/a	0	0
farm.particle.cz	n/a	n/a	11%	46	41	n/a	n/a	0	0
fnal.gov	n/a	n/a	35%	10	6	n/a	n/a	0	0
fzk.de	n/a	n/a	2%	22554	22008	n/a	n/a	0	0
grid.sinica.edu.tw	n/a	n/a	3%	312	301	n/a	n/a	0	0
gridpp.rl.ac.uk	n/a	n/a	0%	2416	2414	n/a	n/a	0	4
icepp.s.u-tokyo.ac.jp	n/a	n/a	5%	62	59	n/a	n/a	0	0
ifae.es	n/a	n/a	7%	1913	1778	n/a	n/a	0	0
kfki.hu	n/a	n/a	10%	49	44	n/a	n/a	1	13
sinp.msu.ru	n/a	n/a	5%	172	163	n/a	n/a	0	0

GridICE


INFN - GridICE - Grid Monitoring Service - Microsoft Internet Explorer provided by CLRC
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://tbed0116.cern.ch/gridice/vo/vo.php
Go
Google dilbert palm
Search Web Search Site Options dilbert palm
jobmanager-pbs-long 4 0 4 0 0 0 99999
jobmanager-pbs-short 4 0 4 0 0 0 99999
jobmanager-pbs-infinite 4 0 4 0 0 0 99999
cluster: adc0015.cern.ch total phys cpus: n/a load5min: n/a
queue free cpus busy cpus total cpus run jobs wait jobs total jobs max jobs
jobmanager-lcgpbs-long 42 0 42 0 0 0 99999
jobmanager-lcgpbs-infinite 42 0 42 0 0 0 99999
jobmanager-lcgpbs-short 42 0 42 0 0 0 99999
storage element: adc0021.cern.ch
area avail space (Mbytes) used space (Mbytes)
dteam:/dteam 16013 1752
site: cr.cnaf.infn.it
cluster: wn-02-29-a.cr.cnaf.infn.it total phys cpus: n/a load5min: n/a
queue free cpus busy cpus total cpus run jobs wait jobs total jobs max jobs
jobmanager-lcgpbs-infinite 4 0 4 0 0 0 99999
jobmanager-lcgpbs-long 4 0 4 0 0 0 99999
jobmanager-lcgpbs-short 4 0 4 0 0 0 99999
storage element: wn-02-30-a.cr.cnaf.infn.it
area avail space (Mbytes) used space (Mbytes)
dteam:/dteam 13594 2104
site: farm.particle.cz
cluster: golias25.farm.particle.cz total phys cpus: n/a load5min: n/a
queue free cpus busy cpus total cpus run jobs wait jobs total jobs max jobs
jobmanager-lcgpbs-long 6 0 6 0 0 0 99999
jobmanager-lcgpbs-infinite 6 0 6 0 0 0 99999
jobmanager-lcgpbs-short 6 0 6 0 0 0 99999
storage element: golias26.farm.particle.cz
area avail space (Mbytes) used space (Mbytes)
Internet

GridICE


VO dteam jobs graph - Microsoft Internet Explorer provided by CLRC
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://tbed0116.cern.ch/gridice/vo/vojobs-timebar.php?voName=dteam
Go
Google Search Web Search Site Options
Virtual Organization: dteam
browseable jobs graph | history jobs graphs
offset: [-1 month] [-1 week] [-1 day] [-2 hours] [now]
zoom: [2 hours] [1 day] [1 week] [1 month]
Start: Wed, 8 Oct 2003 17:49:26 +0200 -- Range: 2 Hours
40
30
20
10
0
17:50
18:10
18:30
18:50
19:10
19:30
Run
Wait
Internet

CE_Mon

- Attempts authentication at every CE every 10 mins (globusrun -authenticate-only)
- permits reliability and availability to be calculated from user perspective
- intended to investigate suitability as SLA test
- now believed reliable enough to begin to extract availability and reliability figures
- needs web output developing

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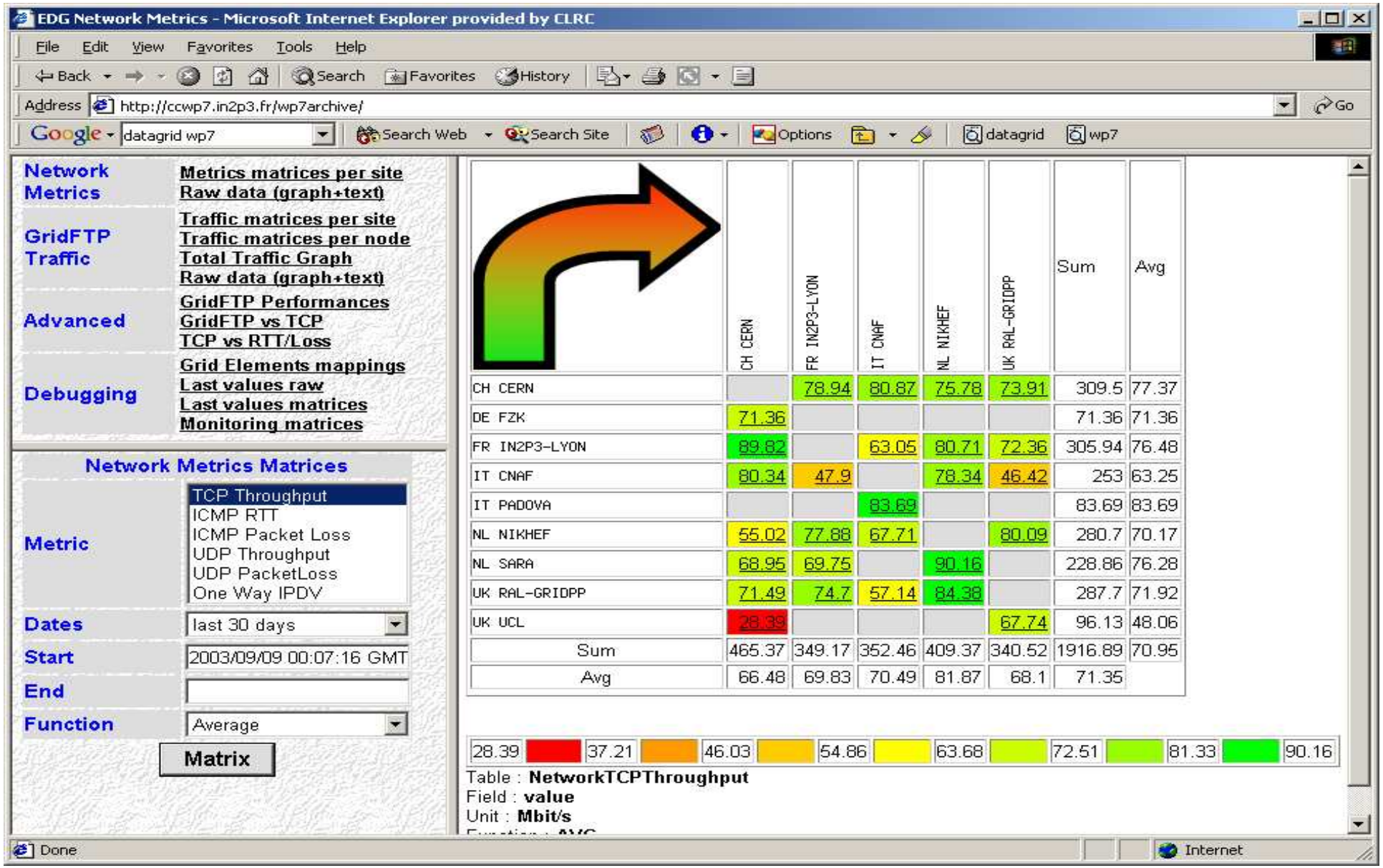
RB_Mon

- Attempts job-list-match every 10 mins to every RB
- permits reliability and availability to be calculated from user perspective
- intended to investigate suitability as SLA test
- not yet quite reliable enough to begin to extract availability and reliability figures
- needs web output developing

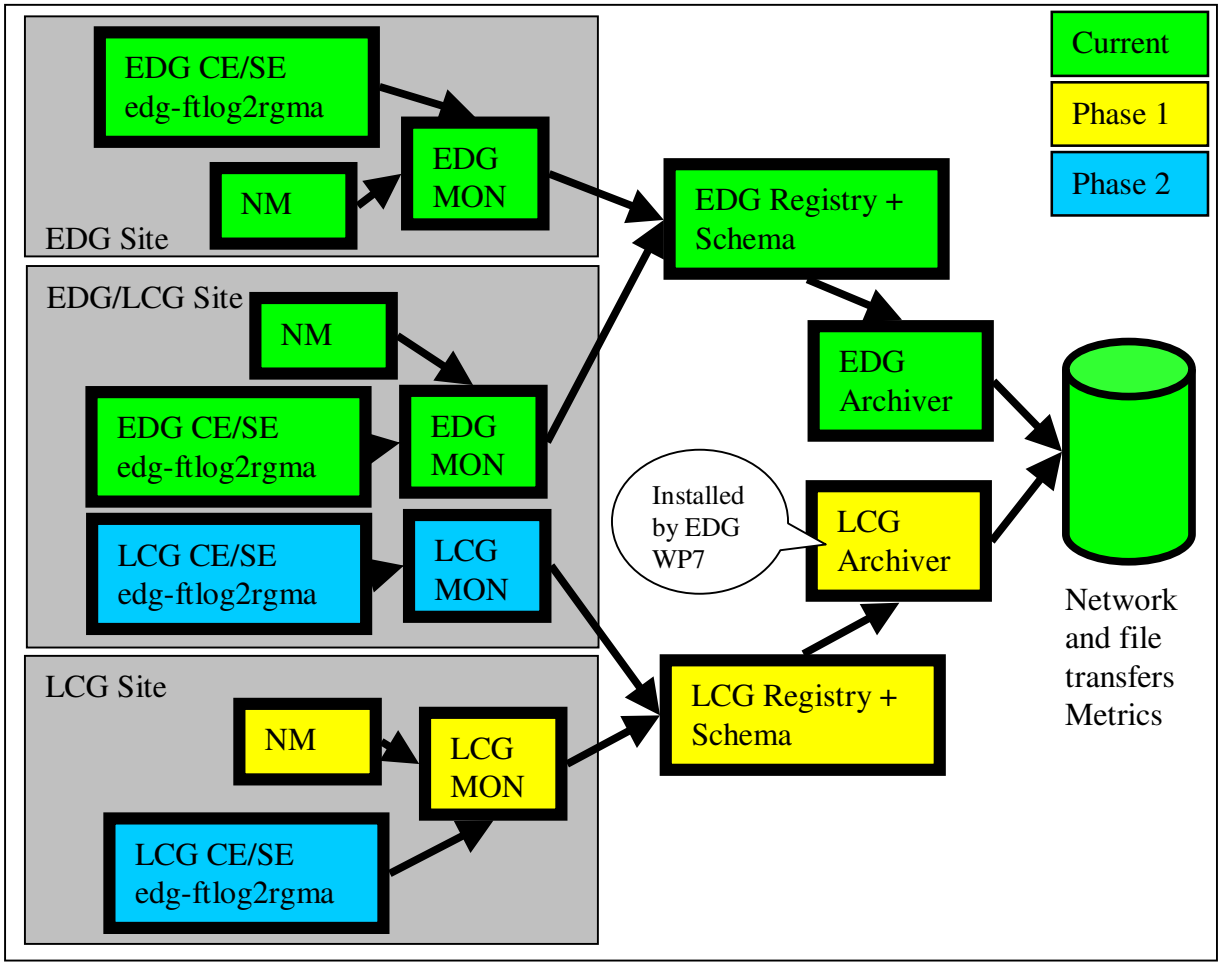
Monitoring Summary

- No single tool to do everything
- Probably need use of several tools for different circumstances
- Need to evaluate Mona Lisa
- Would like to add EDG WP7 tools
  - To non EDG sites
  - Requires R-GMA
  - http://ccwp7.in2p3.fr/wp7archive/

EDG-network monitoring



EDG-WP7 Transition



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Reporting

- RAL using the tools to monitor LCG1
- summaries of gppmon, CE_Mon and RB_Mon sent to LCG-Rollout list twice a week
- so far have helped to diagnose several problems
  - need to set GLOBUS_TCP_PORT_RANGE env variable for globus submits
  - communication problems to Hungary
  - CE queue and site name inconsistencies
  - requirements for firewall to permit access to certain ports

Accounting

- Batch systems already accumulating batch records and/or process accounts in their local formats
- define a schema for interchange of accounting data
- develop two filters to convert from local accounts to schema (eg PBS and LSF)
- Pull data to a central repository (or two)
- Store in an accounting DB
- Display front-ends already exist
  - Release 1 – information for VO
  - Release 2 – information per user
- Planning and evaluation phase

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SLAs

- Many aspects to an SLA
  - Schedule
  - Availability
  - Reliability
  - Performance
  - Throughput
- tests already running for CE and RB
- need script to extract reliability and availability
  - next are MDS servers
- Need discussion on performance and throughput indicators
- Work on agreed definition of SLA template

Security Policy

- drafting for GDB (with Security Group) complete
- some GOC-related procedures remain to be drafted:
- Procedures for Resource Administrators
- Procedures for Site Self-Audit
- Rules for Service Level Agreement

Local Ops and Admin Group

- to be set up (in November?) to discuss GOC operational procedures
- Draft ToR with GOC Steering Group

User Support Liaison

- Met with the GUS from Karlsruhe
- agreed to use single Remedy at Karlsruhe
  - For GUS and GOC
  - Interchange schema later

GOC Rollout

- Plan called for second GOC soon
  - At level of a few staff
- Are we ready for this?
  - cf EGEE with multiple ROCs
  - More staff and more duties
- Agreed there should be combined GUS/GOC if possible
  - What is procedure to decide who?

GOC Steering Group

- Defined but has not yet met
  - Trevor Daniels, Cristina Vistoli, Markus Schulz
  - Rolf Rumler, Claude Wang, Eric Yen
  - Ian Fisk, Bruce Gibbard, John Gordon
- First phone conference 16th October
- Address Priorities
  - Accounting
  - Gap Analysis of Monitoring
  - Wider Operations Group?
    - Forum for sysadmins?
  - Performance indicators for SLA

Future Work

- Web
- Monitoring

Web

- Integrate GOC with LCG web
- Educate people how to update their information
  - Demo of GridSite

Accounting

- Planning and evaluation phase
- Probably two months work
  - Manual prototypes before then
  - Release 1 – information for VO
  - Release 2 – information per user

Monitoring

- Wider use of monitoring
- Leading to gap analysis
  - And possible development
- Extend network monitoring from EDG WP7

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Summary

- A lot of work has gone into a variety of GOC tools and infrastructure
- Now need to
  - engage the wider community
  - commission required developments