

Grid Interoperability

ETSI review of standards, public grids, and commercial clouds

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on ICT Grid Interoperability

Grid gap analysis - major categories

- Security
- Service and Resource Registry
- Data Management and Movement
- SLA and QoS
- Accounting and Charging

Standards Development Organization

- ❑ **Heard earlier today (paraphrased):**
 - Standards? “Deployed and running code”
- ❑ **IETF**
 - Network level protocols
 - Common internet standards
 - Some overlap with OGF
 - Key standards for grids: X.509
- ❑ **OGF**
 - Focus on grid standards, (roughly) orbiting around WSRF/OGSA
 - BES, JSDL, DRMAA, GridFTP, SRM, and others
- ❑ **DMTF**
 - CIM, OpenVirtualization
- ❑ **OASIS**
 - WS-* standards
- ❑ **W3C**
 - XML standards

Grid Interoperability

- ❑ **Local clusters**
- ❑ **Organization-internal resource sharing**
 - Campus grids, Condor pools
- ❑ **Regional grids**
 - SURA, Boiler Grid, UC-Grid
- ❑ **General purpose national grids**
 - OSG, TeraGrid, UK NGS, Grid5000, D-Grid, NorduGrid, etc.
- ❑ **Trans-national general purpose grids**
 - EGEE, DEISA, others?
- ❑ **Domain specific grids**
 - CAGrid (aka caBIG), ESG, NEES Grid, WLCG

Successful Grid Standards

- ❑ **X.509 and related PKI**
 - widely used, little debate
 - ACs, VOMS, MyProxy still being established
- ❑ **Data Movement and Management**
 - GridFTP, SRM
 - widely used, although still challenges (technical and political)
 - other options exist
- ❑ **Job Submission**
 - DRMAA, JSDL
 - Several independent implementations
 - Gaining momentum
 - Many challengers (standards-based and ad hoc APIs/proprietary)
- ❑ **Resource Modeling**
 - CIM, GLUE
 - Many challengers, not always wide adoption

Potential Grid Standards ...

- ... but not quite there yet
- Logging
 - Resource Usage Service
- WSRF WS-* suite
 - Why not?
- Security
 - XACML, SAML – complexity

Ad hoc and Proprietary Grid Services

- ❑ aka “areas with no recognized standards”
 - “standard” is a software package and version number
- ❑ Information Services
 - BDII, MDS, etc.
 - Key information service for many grid infrastructures
 - No standardized APIs, only implementations
- ❑ Security
 - MyProxy, VOMSD, GUMS
 - Essential for issuing certificates
- ❑ Accounting and Charging
 - Log files and ever changing data base schemas
 - Charging?

Grid Standards and OSG

Survey

- Question: “How important do you think standards are to the success of grid computing”
 - Essential
 - Very important
 - Important
 - Un-important
 - Irrelevant

What standards are important to you now?

What areas do you wish were standardized?

Should OSG be trying to standardize some of the components/services it provides?

More information

❑ The ETSI Grid Interoperability Study has produced 3 reports:

- Survey of Grid Stakeholders and Standards
- Report on Grid Interoperability, Gaps, and Overlaps
- Grid Standards Testing Framework

❑ For more information

- <http://www.etsi.org/WebSite/Technologies/GRID.aspx>
- Contact me: ijstokes@spmetric.com

□ European Telecommunications Standards Institute

- SDO in area of information and communication technology
- *Globally* recognised standards for Information & Communications Technologies including fixed, mobile, radio, broadcast, internet
- Unites almost 700 member organizations, including manufacturers, network operators, administrations, service providers, research bodies and users from 56 countries including the Far East and the US
- Track record of being responsible for globally applicable standards such as GSM, DECT, ...

Grid gap analysis - main focus

□ Main focus of gap analysis

- interoperability gaps and overlaps in Grid standards
- interoperability gaps and overlaps between Grid and NGN standards in an integrated environment
 - hard because relationship between Grid and NGN is still under discussion

□ appears to be different emphasis from the EGR gap analysis

- ETSI TC Grid gap analysis
 - focussed on interoperability
 - clearly some functional scope has to be determined

Grid gap analysis - examples

□ Examples of gaps and overlaps

- integration of Grid standards is a problem - how does a Grid application service provider make sense of multiple Grid specs?
- Availability of commercial offerings of OGF standards
- In a telecomms NGN environment, SLA will not only be required but will be expected to work in complex, multi-provider, long term situations and will need to relate to network QoS (until now service vocabulary in SLA is largely about computation)
- security: X509 in wide use but there are gaps around authorization and security infrastructure operation
- charging: relationship of Grid usage to telecomms charging.

□ Organizational issues

- ETSI will need to work with bodies such as OGF
- But the ETSI Grid STF which prepares the report is a transitory group of experts
- ETSI TC Grid is a (more) permanent body

Grid gap analysis document - the 1st edition

Obtaining the document

Name is:

- Study of ICT Grid interoperability gaps; Part 2: List of identified Gaps

Publications download area - <http://pda.etsi.org/pda/queryform.asp>

- Search term is Grid
- Observe list of documents (not a long list)
- Name of document is:
 - Study of ICT Grid interoperability gaps;Part 2: List of identified Gaps
- Click on download
- You will be asked to register for free

Plugtest brief announcement

- ❑ **To be hosted in Sophia-Antipolis (near Nice), France
Nov 30 to Dec 2**
 - NDA to protect event participants
 - Overall results from Plugtest to be presented at co-located Workshop (Dec 2 and 3)
- ❑ **Different format than previous ETSI Grid Plugtests**
 - Not programming contest – applications used for testing are fixed prior to event
 - Goal is evaluation of application deployment based on ETSI GCM standards onto different grid and cloud computing infrastructures
- ❑ **Intent is to bring key players of telecom community together with grid and cloud infrastructure providers**
 - Event open to participation for commercial as well as open source infrastructure providers, ETSI as well as non-ETSI members
 - Telecom operators and equipment vendors will observe the event