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Analysing and testing -

ETSI initiatives on analysing and testing interoperability in Grids

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Sign up sheets

- Not only OGF attendance sign up sheets,
- but also ETSI attendance sign up sheets
  - ETSI requires me to obtain this on *ETSI's own pro-forma*
- Therefore please make sure you sign up your attendance on ***both*** sheets
- Thank you!

overview

- ETSI and its involvement in Grids (some background)
- ETSI Grid interoperability gap analysis (very brief)
- ETSI Grid plug test 2009 (a bit more detail)
- The way forward

ETSI - the organisation

- **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. Likely to be broad overlap of interest with Enterprise Grids.**
  - **Track record of being responsible for globally applicable standards such as GSM, DECT, ...**

Moving away from traditional telecoms

- Next Generation Networking (NGN)
  - evolution of telecomm networks, generally using IP - involves many standards and will take some time to achieve (sound familiar?)
  - ETSI heavily involved in this along with ITU-T
- recognising importance of distributed computing infrastructures such as Grids and Clouds -
  - e.g. AT&T influential in clouds;
  - e.g. several European telecomms operators active in EU FP6 Grids and other distributed computing projects
- formal Technical Committee TC GRID set up 2006
- co-operation agreement with OGF signed in May 2007

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About ETSI and TC Grid

- Active member of the grid community for a number of years
- (Co)-organized numerous Grids@work events of the past years
- TC Grid is an ETSI Technical Committee
  - Was set up 2006
  - Works on investigating and producing standardized solutions for using, integrating and deploying grid & cloud technology in existing and future telecommunication networks
  - Close collaboration and MoU with other grid SDOs such as OGF
  - like other TCs, this consists of ETSI members
- Set up team of contractors to work on Specialists Task Force on Grids (STF331)
  - These people are not necessarily ETSI members
  - They are people who can provide the specialism that's needed
  - (this is the group that I am a member of)

Some aspects of ETSI TC Grid charter and focus

- Address IT and telecommunications convergence
- Actively involve and support Grid stakeholders
- Develop consensus-based technical specifications and reports
- concerned with:
  - interoperability of Grid solutions
  - and interoperability of Grid with NGN
- NOT trying to duplicate standards development already underway in other bodies
  - Aim is to complement existing work
  - Add ETSI proven experience of:
    - convergence
    - testing methodologies and languages (TTCN-3)
    - test specification writing for interoperability and conformance
    - 15 plug test events per year

ETSI TC Grid Work programme

- [Work items can be added or brought to an appropriate end]
- Inventory of Grid Stakeholders
  - worked on by Specialist Task Force on Grid (STF331 - of which I am a member)
  - 1st version published - being revised at present
- Study of Grid interoperability gaps
  - worked on by STF331
  - I said more about this in presentation to OGF25/EGR
- *Grid interoperability testing framework and plugtest event*
  - *worked on by STF331*
  - *will say more about this in this talk - but note that I am mainly talking about the work of other experts in the team*
- Grid Services and Telecom Networks (NGN)
  - architectural options
  - use cases, requirements analysis and business roles
- Grid Component Model (GCM)
  - interoperability deployment; Application Description; Architectural Description Language - this is the basis of the ETSI Grid plugtest

Grid gap analysis

- 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
- Major categories
  - SLA/QoS; security; charging; service discovery;
  - integration
- Case studies
  - hard to do the analysis without diverse examples
  - online media and entertainment; high performance computing; Integrated Emergency Management; e-Health

Grid gap analysis document - the 1st edition

- You can obtain the document from ETSI 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
- You're welcome to suggest improvements to the document
  - Current publicly available document contains the *problems* - you're welcome to feedback on this in order to contribute to …..
  - Currently (next 1.5 - 2 months) ETSI is working on pathways to *solutions.* We can also accept feedback on the *problems.*

Overview of plugtests

- Date and location
- About ETSI's experience and procedures for testing
- About GCM
- About the ETSI's Grid Plugtest 2009
- A Testing Framework for GCM
- Summary of Approaches for GCM testing
- About the Grid Plugtest test specification

About ETSI's Grid Plugtest 2009

- Planned 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 form than at previous ETSI Grid Plugtests
  - Not programming contest
  - Goal is evaluation of application deployment based on ETSI GCM (Grid Component Model) 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

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About ETSI's testing experience and procedures

- 15 plugtests in 2008
  - e.g.
    - VoIP speech quality test event
    - RFID interoperability
    - Car2Car
    - NGN/IMS
- in-house team of experts in conformance and interoperability testing and standards assessment
- strategic approach which includes:
  - both conformance testing and interoperability testing - both are needed
  - well defined stages (next slide)

ETSI's testing - stages

- well defined stages:
  - spec of base standard or profile
  - Requirement Catalogue
  - Implementation Check List
  - Identification of Test Group Structure
  - Specification of Test Purposes
  - Specification of Test Descriptions
  - Specification of Test Cases
  - Validation of Test Cases
- Test specifications are supported by a language for test specifications (TTCN3)

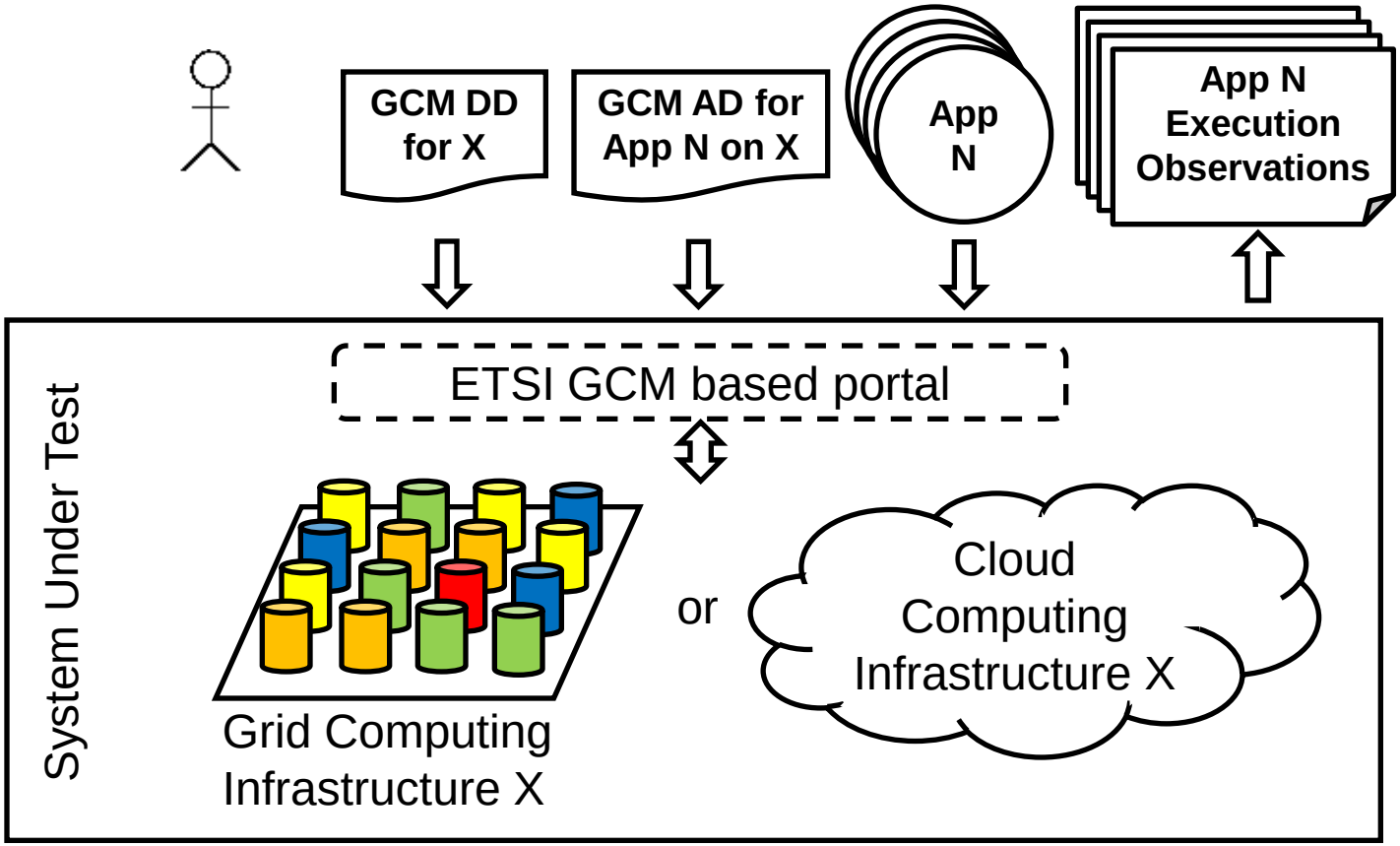
About GCM

- Collection of Grid Component Model standards
  - Developed by ETSI Technical Committee Grid
- Goal is to define one way of specifying deployment of applications on any grid infrastructure based on XML descriptors
  - Orthogonal but convertible to other web service based approaches popular in the grid community
- Deployment Descriptor (DD) - TS 102 827
  - Defines a XML schema for computing infrastructure and its access
- Application Descriptor (AD) - TS 102 828
  - Defines XML schema for deploying different types of application onto infrastructures (executable, virtual node, and grid component based)
- Fractal Architecture Description Language (ADL) - TS 102 829?
  - Defines a XML schema for specifying grid applications in terms of distributed, communicating components

A Framework for GCM Testing

- Each grid or cloud infrastructure will be tested during the Plugtest in the same way
  - Inputs are infrastructure specific: GCM DD and AD as well as one application per test
  - Observation of applications will be used as test results
- Use one of four approaches to support GCM testing
  1. Direct support by infrastructure for GCM based deployment
  2. Implement a “GCM-based portal” that converts GCM DD and AD information to interactions via the infrastructure specific interface for deploying applications
  3. Use existing or create new integration with available GCM based, open source meta scheduler based on infrastructure specific deployment interface
  4. Manually convert GCM DD and AD information during the Plugtest into interactions via the infrastructure specific interface for deploying applications

Illustration of Approaches for GCM Testing



About the Grid Plugtest test specification

- Currently under development in ETSI TC Grid
- Will be published as its own ETSI Technical Specification (TS)
- Test specification focuses on characteristics of interest to the telecommunication industry when deploying applications
  - Example:
    Ensure that a grid infrastructure is able to cope with a deployment where the resource requested by the application exceeds the available resources at the time of deployment
- For each test requirements on GCM DD and AD specification as well as the application to be deployed will be described
- A reference application implementation for each of the tests will be made available in the electronic annex of this document
  - Implementations are expected to be developed in Q2/2009

Way forward

- **OGF GIN and ETSI TC GRID cooperation?**
  - **Feel free to feedback and express interest - can use me as an *initial* contact (julian.gallop@stfc.ac.uk) on the following**
    - **gap analysis and solution identification will be worked on over next two months - how to obtain the document is in the slides - feedback welcome**
    - **Grid plug test Nov 30 to Dec 2**
      - **Grid infrastructure providers and Grid software providers should consider attending - if anyone in audience interested do make contact.**
      - **This will require preparation and dialogue with the test experts.**
  - **At next OGF (May), ETSI (through an STF331 colleague of mine) could provide an update and more detail:**
    - **about the gap analysis**
    - **and about the November/December plug test**
  - **We also prepared to make use of the mailing list when/if useful.**

- Thank you !
- Any questions / suggestions for the future?

- **Subsequent slides available if needed**

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
  - ETSI TC Grid gap analysis
    - focussed on interoperability
    - so the gap analysis is not necessarily
      - what features+functions are required
      - but instead, of those features+functions that are required, what are the gaps and overlaps that hinder interoperability

Grid gap analysis - major categories

- SLA and QoS
- Security
- Charging
- Service Discovery
- other - including integration

Grid gap analysis - case studies

- It would have been hard to get a grip without making use of examples. But they need to be diverse.
- Online media and entertainment
  - some relevant NGN standards here
  - real time constraints
- Integrated Emergency Management (IEM)
  - used as demonstrator in EU Project (Akogrimo, 2007)
  - critical application with some demanding QoS required
  - access to application Grid services provided and used by multiple organisations - VO critical here
  - mobile services
- High Performance Computing
  - traditional area of interest for Grids
- e-Health
  - critical security and accuracy requirements

Grid gap analysis - examples

- A few examples of gaps and overlaps
  - integration of Grid standards is a problem - how does a Grid application service provider coordinate multiple Grid standard 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 description terminology 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.
  - Standards overlap issues e.g. DMTF&CIM (Telecomms) / GLUE (OGF)
- Organizational issues
  - ETSI will need to work with bodies such as OGF
  - But the ETSI Grid Specialists Task Force (STF331) which prepares the report is a transitory group of experts
  - ETSI TC Grid is a (more) permanent body