A Resource Allocation-centric Grid Operation Model

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Is EGEE Infrastructure a Grid?

Grid is a system that coordinates resources that are not subject to centralized control...

...using standard, open, general-purpose protocols and interfaces...

...to deliver nontrivial qualities of service.

by Ian Foster (“What is the Grid? A Three Point Checklist”, 2002)

EGEE Infrastructure is a system that coordinates resources from different ROCs/NGIs/sites ...

...using some protocols and interfaces...

...to deliver reliable infrastructure.

Where we are with QoS:

- SLA between the Infrastructure and sites: defining of a production service level
- SLA for HEP experiments
  - defining level of resources contributed by each site
  - agreed and signed with enormous effort
  ..besides resources provided on best-effort bases.
Starting Point: EGEE Operation Model

- VOs and User Groups DB (VO Identification Cards)
- Services and Resources (GOC DB)
- Infrastructure Availability/Reliability Reports Generator (GridView)
- Resource Usage Monitoring ("Accounting")
- Service Availability Monitoring (SAM)
- Resource Allocation
- Resource Configuration
- Infrastructure Information System (BDII)
The Next Step: Deliver reliable services for users

- Providing resources to users with required qualities of services
- Required = specified in Service Level Agreement
Resource Allocation-related Operation Model

- VOs and User Groups DB
- Services and Resources DB
- Resource Allocation Service
  - Authorization & Roles
  - SLA Planning & Negotiation
  - SLA Monitoring & Accounting
- SLA Execution
- Resource Usage Monitoring
- Service Functional and Quality Monitoring
- Resource Configuration
- Infrastructure Information System
SLA Planning and Negotiation: Tool

- Resource Allocation Dashboard for VOs and Resource Providers
- Traceable SLA negotiation process
- V1.2 deployed in CIC Portal used for CE ROC and for seed resources operation
- V2.0 with NGI-role support in alfa testing

http://grid.cyfronet.pl/bazaar
SLA Execution

- Resource/Services are configured according to the SLA:
  - Limits
  - Priorities
  - Reservations
  - Quotas
  - Software required
  - ....

- Verification of a site configuration by a VO is required

- Only sites having an agreed, active SLA with a VO with verified configuration are available in Infrastructure Information System
  - this prevent not-verified resources to be put into 'production'
SLA Monitoring

- Infrastructure monitoring results are used to monitor SLA metrics
  - Critical tests
  - Availability/reliability
  - ....

- Accounting data are used to verify SLA metrics:
  - Resource level
  - Failed job ratio
  - Waiting time
  - ....

- Option to suspend a site that breaks its SLA

- Feedback about sites/VOs can be published
EGEE built a reliable infrastructure, the next step would be a reliable services for users delivered with non-trivial qualities of service.

Resource allocation-centric operation model has been proposed.

PL-Grid (Polish NGI) is building a prototype of the new operation model and tools that support it:
- Grid Resource Bazaar – a dashboard for SLA management
- Filters for Grid Information System
- SLA monitoring based on Infrastructure monitoring and accounting system