Adaptive Provisioning and Orchestration of Grid Services

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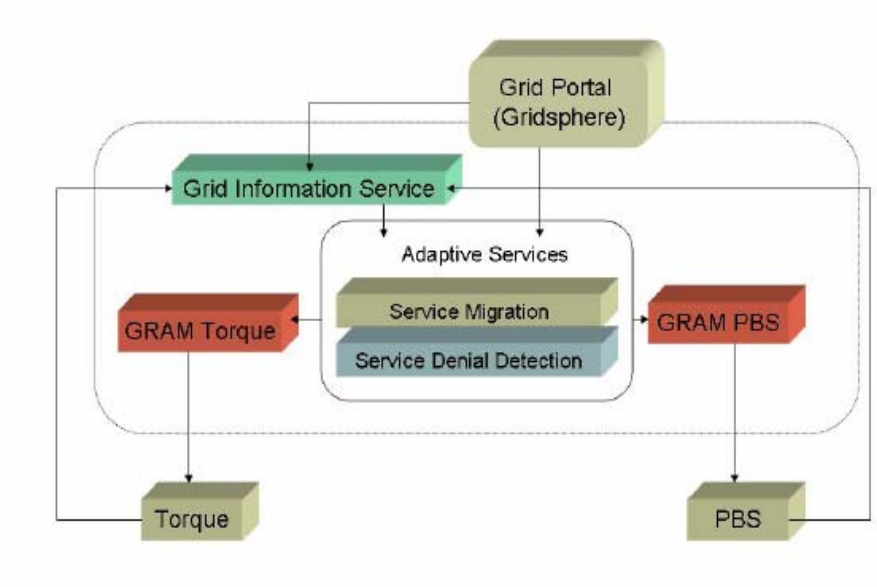
Applications Service Oriented

- Applications service oriented integrate loosely coupled software services.
- Our work focuses on the problem of how multiple services should be orchestrated in grid environments to provide adaptive functionalities.
- We consider uncertain factors in grid environments such as: resource availability and service demands.
- Then, our objectives are:
  - to design a model for adaptive service provision and orchestration
  - to design and implement mechanisms for adaptive denial-of-service detection and migration.

Theoretical solution



- Service Locator (Grid Information Service)
- Adapter Service
- Service Executor (Torque, PBS, Grid Service Adapter)
- Provisioning Service

Theoretical Solution (2)

- **Service Locator** provides endpoint reference to services located into grid virtual organizations.
- **Adapter Service** determine how to achieve optimal resource utilization according to current load, resource availability and historic behavior.
- **Service Executor** run the tasks to the corresponding computational node.
- **Provisioning Service** execute provisioning of new systems and/or services according to adapter service requests.

Development Tools

- **Globus Toolkit:** open source middleware used for building grid systems and applications.
- **Cobbler/Koan:** tools for automated provisioning.
- **Java - Eclipse/GDTE:** Eclipse is our IDE and GDTE is a plug-in to allows easy grid service development.
- **Xen/Linux FC:** Linux is our development platform and Xen is the virtualization tool to provides: easy system deployment and live migration.