How to orchestrate multiple services in grid environments to provide adaptivity under resource and service availability uncertainty?

Problem Formulation

Proposed Solution

Resources are connected via two-level hierarchical networks. The first level is a wide area network that connects local area networks or virtual organizations at the second level.

- The solution proposed intend leverage resource utilization and provide efficient execution of application service base.
- Policy definition to different levels allow to the users to direct the service execution and to the resources define its utilization mechanisms.
- Similar proposals deal indistinctly with the provisioning and orchestration problem under controlled environments, whereas our model deal with uncertain factors such as: user demands, resource availability, among others, besides to complement the orchestration mechanism with provisioning of virtual resources.

Methodology

The gateway modular design allows integration of different uncertain programming techniques to deal with unknown factors to affect the resource availability in a grid environment.

Virtual Resources to bottom level

- GridFTP Service
- IDA Service
- Monitor Service
- File Utility

Appropriate physical nodes will provide the minimal infrastructure to allocate virtual environments to fulfill the deployment service requirements.

Conclusion

- The proposed redundancy scheme and its subsequent deployment as a grid service improves reliability.
- That work is considered as an initial proof of concept for a more complex project related to the design and implementation of adaptive resource allocation and migration.

References

