Week 2

Benjamin Rockstroh

Tue Jun 30 13:44:08 EDT 2009

1 Provenance in Agent-Mediated Healthcare Systems[1]

The paper is about creating an efficient and dynamic way to manage Virtual Organizations (VO). Currently there are different tools for managing dynamic Virtual machines and services, but none specifically focus on optimization for VOs. This study is in particular interest to any VO such as Amazon, Facebook, or any other online organization with a dynamic population and data set.
Provisioning approaches for Service, container, node, and VO-level are all studied. A simple equation is provided to measure the effectiveness.

$$s = \frac{\sum_{i \in P} t_i}{T_S}$$

Were t_i is expected provisioning time (expected time) for a task in P at the container level and T_S is the actual provisioning time.

1.1 Results

With a single VO increasing the number of Nodes will have a greater effect on the node speed, with less of an effect on the overall VO's speed. This is due to the increased security and consistency requirements for the VO-level provisioning inside a VO. When a second VO is added we see the Node-level's rate of speedup to be less, while the VO's rate of speedup nearly doubles.

2 A Framework for Dynamic Service Adaptation in the Grid: Next Generation Software Program Program Progress Report [3]

At the time of this paper dynamic service management on the Grid had not yet been developed. This paper is about creating an architecture for dynamic services on a Grid with the existence of being etended to VOs later on.
This paper is of importance to anyone working with a Grid or with any architecture that wishes to grow and diminish itself as needed.

2.1 Results

For communication SOAP, HTTP, and TCP/IP were compared. SOAP was found to provide a penalty of about a factor of 2 (for WAN transfers). This was considered acceptable if the service is deployed to handle multiple requests (multiple not defined) thus allowing the cost to be amortized.
Having the tomcat server cache the services after they are undeployed greatly reduces the cost of deploying the serves.
Giving a service to few resources is more costly than giving it to many. Therefor over-deployment is favored to under-deployment of a service.

3 Combining the Power of Taverna and caGrid: Scientific Workflows that Enable Web-Scale Collaboration [2]

Creating and managing workflows is an import part of any complex task. As a result of this importance there have been many tools designed to aid in this process. This paper is about one such tool *Taverna Workbench*, and it's importance in the caGrid project.

Taverna provides a graphical interface to manage services created for the ^{my}Grid project. These services communicate using SOAP, and conform to standards set by the ^{my}Grid depending on the purpose of the service.

The paper goes over using Taverna to create a workflow that analyzes a *microarray*.

The purpose of this study was to analyze different workflow management tools and provide a recommendation to the caGrid project. A standard tool did not exist prior to this study, thus providing one will help organize researchers, and make services available to the less technically inclined. Taverna is especially useful because it takes minutes to set up and has a simple and intuitive interface. This should allow researches to quickly create workflows even on the first day using this tool.

References

[1] T. Kifor, L.Z. Varga, J. Vazquez-Salceda, S. Alvarez, S. Willmott, S. Miles, and L. Moreau. Provenance in agent-mediated healthcare systems. *Intelligent Systems, IEEE*, 21(6):38–46, Nov.-Dec. 2006.

[2] Wei Tan, I. Foster, and R. Madduri. Combining the power of taverna and cagrid: Scientific workflows that enable web-scale collaboration. *Internet Computing, IEEE*, 12(6):61–68, Nov.-Dec. 2008.

[3] J.B. Weissman, S. Kim, and D. England. A framework for dynamic service adaptation in the grid: next generation software program progress report. In *Parallel and Distributed Processing Symposium, 2005. Proceedings. 19th IEEE International*, pages 5 pp.–, April 2005.