Formulating a Template Based Static Coalition Protocol in the a Multi-Agent Grid System– A^{3P}viGrid

Avinash Shankaranarayanan

School of ICT
Institute for Integrated and Intelligent Systems [IIIS]
Griffith University
Gold Coast, QLD – 9726,
Australia

avigrid@gmail.com

Abstract. The Field of Distributed computing and artificial intelligence are much-researched fields and are as old as the popularization and usage of personal computers. The last few years have been exciting times for researchers and scientists alike due to the phenomenal advancements in computing and computational sciences. The field of Multi agent systems tries to add the "intelligence factor" into goal-based programs, which tend to communicate and negotiate using agent languages such as KQML. The primary problems such as resource and service discovery models, load balancing and scheduling, brokering, etc are prevailing in grid systems due to bottlenecks such as bandwidth and network traffic in communication infrastructures and their associated costs in fabricating a scalable and cost effect Grid services infrastructure. This paper is an extension of many different architectural schematics (CBReM, CBWeB, gridCoED, AviGrid) and load balancing schemes [Eager et al 3 algorithms, Mitzenmacher randomness Algorithms, ICHU, CoED, gridCoED, A^{3p}viLoad] previously researched on that tends to provide a template based static coalition framework along with a formulated protocol to evaluate optimal/possible predetermined static coalitions for Multi Agent based peer to peer Grid computing systems. The A^{3p}viGrid is based on a Web / Grid services based schematic. The primary goals of the paper is to apply grid based static coalition formation concepts to agents and agent based grid systems; add efficient load balancing and scheduling (A^{3p}viLoad Scheduler) schemes; to provide a replacement solution to resource discovery models by applying application oriented directory services; minimize message passing of state information updates and economic brokering services to the agent aware adhoc p2p virtual interconnect grid computing system or A^{3p}vigrid grid system.

Keywords: Multi Agent Systems, A3pviGrid, AviLoad, KQML, gridCoed, CBReM, CBWeB