

The Challenges, Issues and Problems in Efficient Operation and Management of Grid Computing

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Grid Computing is going to be the most sort after system in very near future. There are a large number of Challenges, Issues and Problems which we have to solve for making Grid Computing a Reliable, Always Available and Maintainable [RAM]. The author has been working on some of these issues and presents some critical Challenges, Issues and Problems in this paper. The foremost is the speed and the bandwidth.

Though a very good speed and bandwidth is available between USA-Europe and USA- Asia but a very insignificant slow speed and bandwidth is available between Asia and Europe. In such circumstances a user in Asia cannot scale the application from a part of a single server to many servers by defining all the requirement of memory and bandwidth required for his/her scientific search in the field of Physics, Chemistry and Biology. Other problems are can a big application be executed simultaneously on many grids. The author has seen and gone through misery of waiting for hours due to traffic jam on a dedicated grid even in a LAN, MAN and WAN.

The solution to handle these challenges, issues and problems are that the applications should be cloned together with its state, database and content if any and sent from one congested grid to other lightly loaded grid automatically around the world. The role of site administrator's is to solve problems reported in a timely fashion. Time-to-fix constraints depends on the site's criticality - more CPUs more critical the site. CPU < 3 days for response after that time the ticket is "escalated" that is team checks if there's progress at the site and takes appropriate action. From that reason it is good to be in the habit of sending a replay for the ticket to inform user that he at least started to work on the issue. The grid must remember to answer to all addresses (reply-to-all); that way grid operator will keep support@ggus.org in the CC-list allowing your reply to reach the user. In fact we have to build a reliable common infrastructure from firewalls, automatic load balancers, web servers, application servers, database servers, etc. and deploy multiple applications on them.

That way the ticket history will be updated in the system for everyone's convenience. The other address in the CC-list is a "Follow up list" which is used by Grid Operator on Duty to track the issue, problems and challenges raised by the users. In addition all the tools and hardware as well as software used by the Grid Operator on Duty [GOD] team to detect problems, issues and challenges should be Highly Efficient, Reliable, Available and Maintainable [HERAM]. This is made possible by using the state of art on condition system health monitoring system [OCSHMS]. The author has successfully implanted this system for hardware in many organisations and this paper deals in details the philosophy and the application of the system for Grid Computing.