==============================

Non-Cooperative Scheduling Considered Harmful in Collaborative Volunteer Computing Environments

Arnaud Legrand - CLOUDSHARE

Advances in inter-networking technology and computing components have enabled Volunteer Computing (VC) systems that allows volunteers to donate their computers' idle CPU cycles to a given project. BOINC is the most popular VC infrastructure today with over 580,000 hosts that deliver over 2,300 TeraFLOP per day. BOINC projects usually have hundreds of thousands of independent tasks and are interested in overall throughput. Each project has its own server which is responsible for distributing work units to clients, recovering results and validating them. The BOINC scheduling algorithms are complex and have been used for many years now. Their efficiency and fairness have been assessed in the context of throughput oriented projects. Yet, recently, burst projects, with fewer tasks and interested in response time, have emerged. Many works have proposed new scheduling algorithms to optimize individual response time but their use may be problematic in presence of other projects. The commonly used BOINC scheduling algorithms are unable to enforce fairness and project isolation. Burst projects may dramatically impact the performance of all other projects (burst or non-burst). To study such interactions, we present a detailed, multi-player and multi-objective game theoretic study

==============================