

# Adaptive Scheduling Solution for Grid Meta-Brokering\*

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## Abstract

The nearly optimal, interoperable utilization of various grid resources play an important role in the world of grids. Though well-designed, evaluated and widely used resource brokers have been developed, these existing solutions still cannot cope with the high uncertainty ruling current grid systems. To ease the simultaneous utilization of different middleware systems, researchers need to revise current solutions. In this paper we propose advanced scheduling techniques with a weighted fitness function for an adaptive Meta-Brokering Grid Service, which enables a higher level utilization of the existing grid brokers. We also set up a grid simulation environment to demonstrate the efficiency of the proposed meta-level scheduling solution. The presented evaluation results show that the proposed novel scheduling technique in the meta-brokering context delivers better performance.

**Keywords:** grid computing, meta-brokering, scheduling, grid service, random number generator function

## 1 Introduction

Ten years ago a new computing infrastructure called the Grid was born. Ian Foster et. al. made this technology immortal by publishing the bible of the Grid [1] in 1998. Grid Computing has become an independent research field since then: currently grids are targeted by many world-wide projects. A decade is a long time: though the initial goal of grids to serve various scientific communities by providing a robust hardware and software environment is still unchanged, different middleware solutions have been developed (Globus Toolkit [2], EGEE [3], UNICORE [4], etc.). The realizations of these grid middleware systems formed production grids that are mature enough to serve scientists having computation and data intensive applications. Nowadays research directions are focusing on user needs: more efficient utilization and interoperability play the key roles. To solve these problems

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