Optimised Scheduling of Grid Resources Using Hybrid Evolutionary Algorithms

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Abstract. The present contribution shall illustrate the necessity of planning and optimising resource allocation in a grid. Requirements to be met by a resource management system will be defined. These requirements are comparable with the requirements on planning systems in other fields, e.g. production planning systems. Here, various methods have already been developed for optimised planning. Suitable methods are Evolutionary Algorithms. Based on an example from the field of production planning, the performance of these methods is demonstrated and use in the GORBA resource broker shall be described.

1 Introduction

With the growing acceptance of grid computing, the number of resources in a grid environment and the number of users increase constantly. For the best possible usage of grid resources and most rapid execution, efficient planning of the grid resources is required.

This contribution shall illustrate the use and benefits of modern resource management methods in a grid environment. It will be shown that there still is considerable need for the use of optimisation processes in allocation planning. This gap shall be closed by the global optimising resource broker GORBA (Global Optimising Resource Broker and Allocator) that is currently being developed. The concept of GORBA and the underlying optimisation processes shall be outlined.