

Adaptive High-Level Scheduling in a Generic Parallel Runtime Environment

J. Berthold¹, A. Al Zain², and H-W. Loidl³

¹ Fachbereich Mathematik und Informatik
Philipps-Universität Marburg, D-35032 Marburg, Germany
berthold@mathematik.uni-marburg.de

² School of Mathematical and Computer Sciences
Heriot-Watt University, Edinburgh EH14 4AS, Scotland
ceeatia@macs.hw.ac.uk

³ Institut für Informatik,
Ludwig-Maximilians-Universität München, Germany
hwloidl@tcs.ifi.lmu.de

Abstract

We present the design and prototype implementation of a run-time environment (RTE) for the implicitly parallel execution of high-level languages. In our design a micro-kernel provides basic infrastructure, such as garbage collection, but all complex RTE operations, including the handling of parallelism, are implemented on a separate system level. By choosing a high-level language, (Concurrent) Haskell, as system-level language, we obtain a prototype in the form of an executable specification that is easier to maintain and more flexible than conventional RTEs. In particular, components can be easily replaced. We demonstrate the flexibility of this approach by presenting different variants of the scheduling component in our RTE.