TECHNISCHE UNIVERSITÄT DRESDEN

Zentrum für Informationsdienste und Hochleistungsrechnen

EINLADUNG

zum

ZIH - KOLLOQUIUM

Title: **Analysis, implementation and application of non-blocking collective operations for MPI**

Referent: **Torsten Höfler**
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Zeit: **Mittwoch, den 17. Oktober 2007, 11:00 Uhr**
Ort: **Willers-Bau A 217 links**

Abstract:

Optimizing parallel applications is a tricky task and many well-known techniques are available for programmers. Non-blocking communication is a one of the common optimization schemes and leverages the parallelism of the communication and computation hardware. Another very important programming and optimization technique is the use of collective communication that enables the utilization of special hardware support and performance portability between different parallel computers. Both techniques are available in the current MPI standard. However, little research has been done in combining both techniques to leverage the full potential of parallel architectures. Our approach is to extend the MPI API with non-blocking collectives that are currently implemented using the non-blocking point-to-point features of MPI and advanced communication algorithms. We describe our publicly available reference implementation and discuss its performance with regards to several icrobenchmarks and natural limitations for the maximum achievable overlap. We will also discuss programming schemes to optimize common kernel structures in parallel applications using the non-blocking interface.

gez. Prof. Dr. Wolfgang E. Nagel