Programming of Supercomputers

Assignment 2:

Parallel Debugging and

Performance Analysis

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SuperMUC Maintenance Extension

- Assignment 2 will also be performed on SuperMUC Phase 1 fat nodes
- **Deadlines:**
  - Assignment 1 deadline: 13.09.2018 at 23:59
  - Assignment 2 deadline: 27.09.2018 at 23:59

Assignment 2

- 3 parts
  - Parallel programming challenges
  - Parallel debugging with TotalView
  - Performance analysis with Vampir

Introduction to TotalView

- Commercial product from Rogue Wave Software
- GUI and CLI interfaces included
  - We will use the GUI
- Support for distributed memory applications with MPI
- Support for parallel codes with OpenMP
- Available on SuperMUC for all users
  - '*totalview*' module
  - Make sure you login to the Phase 1 fat nodes only
  - Login with:
    - ssh -YC wm.supermuc.lrz.de

Introduction to Vampir

- Display and analyze performance data
- Show dynamic run-time behavior graphically
- Provide statistics and performance metrics

- Use Vampir to visualize:
  - application execution during a given time in a given process/thread
  - communication patterns during application execution
  - imbalances in computation, I/O or memory usage
  - effect of imbalances on the parallel execution of application
- '*vampir/9.0*' module available on SuperMUC

Questions?