

Procope 2004
HA-DSM

Meeting in Ulm
September 8th, 2004

Kerrighed Status

- Since March 2004
 - Kerrighed V1.0rc5: all SSI properties (assuming no reconfiguration and no node failure)
 - Configurable scheduler
 - Process migration
 - Thread, communicating processes
 - DSM, cooperative file cache, remote paging
 - Distributed file system exploiting cluster disks
 - Process checkpointing
 - Parallel applications support
 - OpenMP (Omni), MPI (MPICH), Posix multithreaded applications

Work done in Kerrighed Prototype

- Integration of new functionalities
 - Kerfs (Kerrighed distributed file system)
 - Dynamic streams: sockets, pipes
- Kerrighed robustness
 - A lot of debugging
- Kerrighed optimization
- Experimentations with industrial applications
- Performance evaluation
 - Comparison with OpenMosix & OpenSSI

Kerrighed Roadmap

- September 2004: Kerrighed V1.0
 - Current functionalities & successful execution of 3 industrial applications
- November 2004: Integration of Kerrighed in OSCAR software suite (demo at SC '04)
- January 2005
 - Hierarchical DSM on top of a federation of Kerrighed clusters (demo, preliminary research prototype)
 - Basic implementation of global coordinated checkpointing for parallel applications

Kerrighed Roadmap

- August 2005
 - High availability of Kerrighed OS (V2.0)
 - Management of node addition
 - Management of node eviction
 - Fault tolerance
 - Kerrighed on a 64-bit architecture (Opteron)
 - Port to Linux 2.6

Cluster Federation

- On-going work on a highly-available data sharing service
 - Memory coherence protocol based on a P2P network tolerating multiple failures
- Work about to start on resource discovery and allocation
 - Investigation of a fully distributed approach in a highly dynamic environment
 - Design of resource allocation algorithms

HA-DSM

- Only the basic scheme implemented by the end of 2004
- In 2005
 - Focus on high availability mechanisms
 - Renaud Lottiaux & Pascal Gallard (research engineers with a constrained R&D agenda)
 - Work on optimizations (depends on our manpower)
 - No PhD student dedicated to fault tolerance issues
 - Difficult to hire students for short training related to Kerrighed implementation (kernel level developments)

HA-DSM

- A meeting may be organized by the end of 2004 in Rennes (December)
- Budget (French side)
 - A 664 € travel budget remains to be spent in 2004