S(o)OS Newsletter

Issue #2

One Interface For Them All: How To Handle The Future Amount Of Resources?

The heterogeneity and complexity of modern IT infrastructures is constantly increasing - this does not only apply to the internet and modern data / cloud centers, but also to modern cluster systems and even personal computers: with multi- and even many-core technologies, as well as accelerators and GPU programming, any computer essentially incorporates multiple processing units that can in principle be individually addressed and used. But it does not end with the processing units - modern systems also incorporate multiple different communication modes, strongly varying memory / storage hierarchies, variety of additional devices etc. With the opening of utility computing over the internet, this complexity has increased manifold as principally tasks and data can be outsourced to remote computers, with an according penalty in access time (bandwidth and latency constraints).
Read more…

Many-Core Programs for Single-Brained Programmers

The impact of contention on performance of data structures is generally underestimated. To leverage concurrency in applications, we have first to rethink existing data structures to tolerate the contention induced by multiple cores running irregular applications. Transactional memory is known to be promising for cache-coherent multi-cores since a while now. Not only was it proved efficient when implemented in software, it has even been adopted in hardware for the new generation of IBM supercomputers, namely Blugene/Q, and Intel has just announced publicly the release of its TM-oriented instruction set extension. Read more…

Resource discovery for manycore systems

Future generations of the processors will not be able to enhance their single-thread performance exponentially. Instead, they will scale the number of processing cores. In consequence, application software will no longer get faster execution speeds automatically with each hardware upgrade, but will have to be adapted to the higher level of parallelism exposed by the CPU. It means that to use the benefit of the many-core improvement in hardware we should upgrade our traditional concepts of applications, operating systems and compilers towards massively distributed environments. Read more…

Scalable real-time schedulers for many-cores

SCHED_DEADLINE is an open-source implementation of an EDF-based resource-reservation scheduler for the Linux kernel, that can be used to enhance predictability in the timing behaviour for real-time and multimedia workloads running on the Linux OS. Read more…

Building up the Service-oriented Operating System

The S(o)OS Project Deliverable D5.3 "First Set of OS Architecture Models" reports the results of the preliminary investigations about general Operating System (OS) architecture models that will make it easier for developers to code applications on massively parallel and distributed systems as expected to be available in 10-15 years in the future. The document discusses the OS architecture model in terms of subcomponents ("OS modules"), their interconnections and interdependencies and behaviour. To this end, a small set of target application scenarios are described which are useful to highlight particularly critical requirements posed by the applications on the OS. Read more…

FET Through The Keyhole
FET Newsletter 01/12

Future and Emerging Technologies

SEVENTH FRAMEWORK PROGRAMME

Discussing TeraScale Computing #2

S(o)OS participated to the collaboration workshop on "Computing Architectures, Software tools and nano-Technologies for Numerical and Embedded Scalable Systems" (CASTNESS) held in January 2012 in Paris, putting together the European Projects belonging to the TERACOMP Future and Emerging Technologies (FET) call on terascale systems. Read more…

RELATED NEWS FROM AROUND THE WORLD

Details on IBMs latest BlueGene/Q system available. Read more…	**Programming features for a parallel world.** Read more…

Don't want to miss an issue? Subscribe here

Home | News | Publications | Events | Contact