Press release

Salomon, the most powerful supercomputer in the Czech Republic, celebrates its first anniversary

Ostrava, 5th October, 2016 – Within a year since Salomon was put into operations, 435 projects for 448 users have been successfully solved using this supercomputer. As part of the process, more than 135 million core hours, which is more than 3,800 years of continuous operation of a laptop with four very powerful cores, have been spent. Its 2 PETAFLOPS of theoretical peak performance are utilized by scientists such as chemists, astrophysicists, or mathematicians as well as mechanical engineers.

"It is very easy for any applicant within the Czech research and scientific community to apply for the computing time on Salomon. All they need to do is submit their project to one of our grant calls, which are announced three times a year. The soonest grant call is scheduled in October," says Martin Palkovič, Managing Director of the IT4Innovations National Supercomputing Center, where the Salomon supercomputer is operated.

The Salomon supercomputer has already been supporting projects in many scientific fields. Experts from many prestigious Czech scientific institutions such as CEITEC, Czech Academy of Sciences, Charles University, Czech Technical University in Prague, Brno University of Technology, Masaryk University, and many others, including IT4Innovations itself, use Salomon for highly varied projects. Projects include drug design, ultrasonic wave propagation through the human body in tumour treatment, heat transmission inside planets and their moons, simulation of probes for controlling fusion reactors, precipitation outflow modelling for flood simulations, predictions of contact fatigue wear, and many others. These projects are specific and therefore require the use of the supercomputer for their computations. They cannot be computed on a PC or laptop, even if the scientists had more of them available at the same time.

The components of the Salomon supercomputer started to arrive at the data room in the building of IT4Innovations National Supercomputing Center in March, 2015. Upon the necessary tests, the supercomputer was officially put into operation in the presence of the representatives of the Government and regional authority, high representatives of the university, and top HPC

experts in September, 2015. At that time, Salomon ranked 40th in the TOP 500 list of the most powerful supercomputers in the world and 14th most powerful supercomputing system in Europe. , Salomon is currently ranked as the 55th most powerful supercomputer.

Technical specifications of the Salomon supercomputer:

- 2 PFLOPS theoretical peak performance
- 1008 compute nodes with 24,192 Intel Xeon (Haswell EP) compute cores and 129 TB RAM
- 864 Intel Xeon Phi 7120 accelerators with 52,704 cores and 13.8 TB RAM in 432 accelerated compute nodes
- Shared disk storages of HOME with 500 TB and SCRATCH with 1.69 PB data storage capacity
- FDR InfiniBand computer network with the total bandwidth of 56 GB/s and the topology of 7D SGI Enhanced hypercube
- 3 000 TB tape capacity for backup
- 2 dedicated nodes for accelerated remote visualizations
- SMP/NUMA SGI UV2000 compute node with 3.25 TB RAM, 112 compute cores and 3 TFLOPS theoretical peak performance
- 40 GB/s redundant Internet connection
- CentOS and RHEL distribution
- PBS Professional workload manager and job scheduler

IT4Innovations National Supercomputing Center provides Czech and foreign research teams, from both academia and industry, with state-of-the-art HPC technologies and services. IT4Innovations currently operates two supercomputers - Anselm (94 TFLOPS, installed in Summer 2013) and Salomon (2 PFLOPS, installed in Summer 2015). IT4Innovations is also a research center with strong international connections. The key research areas of IT4Innovations are big-data processing and analysis, development of parallel scalable algorithms, engineering problems, and nanotechnologies.

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