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Press Release

RSC creates 1.1 PFLOPS supercomputer for St. Petersburg State Polytechnical University on the basis of newest Intel® Xeon® E5-2600 v3 processor and Intel® Xeon Phi™ coprocessor

St. Petersburg State Polytechnical University creates one of the most powerful supercomputing centers in Russia based on a heterogeneous system with RSC direct liquid cooling and peak performance over 1.1 Petaflops. It will include the most advanced supercomputer system based on revolutionary ultra-dense massively parallel solution RSC PetaStream™ and a cluster system based on RSC Tornado architecture. The SPbSPU supercomputing center is the first CIS project based on the newest Intel® Xeon® E5-2600 v3 server processor

St. Petersburg, September 10th, 2014. — RSC Group, the leading developer and integrator of innovative solutions for HPC segment and data centers in Russia and CIS region has announced the project to create the most innovative and one of the most powerful supercomputing centers in Russia for St. Petersburg State Polytechnical University (SPbSPU) with peak performance over 1.1 Petaflops. It is the first project in CIS based on the newest Intel® Xeon® E5-2600 v3 server processor. Supply and testing of equipment for the project will be completed by the end of 2014 and official launch of the new SPbSPU supercomputer center is planned for 2015.

The purpose of supercomputer center is to improve competitiveness of SPbSPU as one of leading Russian educational and scientific institutions using supercomputer technologies to solve relevant scientific tasks, develop hi-tech industrial products and train engineering staff with high competence in mutli-discipline R&D.

"We have been thoroughly preparing for large-scale modernization of computing resources of our university and creation of the most innovative supercomputer center. We provide broadest features of supercomputer technologies to students, teachers and research teams of SPbSPU. We are sure that supercomputer center's resources will be efficiently used to solve educational and scientific tasks and to develop innovative technologies. Knowledge and skills of students in using supercomputing technologies will be especially useful for unleashing scientific, industrial and economical potential of St. Petersburg and North-Western Russia, – said Alexander Rechinsky, teaching and guiding principal of the St. Petersburg State Polytechnical University. – The

Polytechnical University has long-standing and productive connections with leading industrial enterprises of St. Petersburg and the North-Western Region. Therefore, supercomputer center as the largest data center in the North-Western Region was supported by the Governor and by the Government of St. Petersburg. We hope that supercomputer center will become regional HPC center and that its resources will be used for revolutionary scientific and technical breakthroughs."

Scientists of SPbSPU and other R&D organizations of St. Petersburg and Russia will be able to use supercomputer center's capabilities to solve relevant scientific tasks in the fields of mechanics, hydrodynamics, aerodynamics, solid physics, plasma physics, material science, electronics, computing and quantum chemistry, biophysics and biotechnologies. Developers and engineers of the university and industrial enterprises will be able to use its CAD/CAM systems to design new machinery and vehicles for power industry, aircraft industry, biotechnologies, electronics. For students and teachers the Center will become the technology base for deep training of specialists in the fields of computer science and computer engineering.

"SPbSPU will have the most innovative and one of the largest supercomputer centers in Russia based on a heterogeneous system with RSC direct liquid cooling containing a supercomputer system based on revolutionary high-density massively parallel solution RSC PetaStream and a powerful cluster system based on RSC Tornado architecture. Our solutions have set the world records of computing and power density per volume. We are sure that unique and extensive experience of RSC specialists in development of highly efficient direct liquid cooling technologies and ultra-dense integration of supercomputer solutions based on industry standard server components will enable implementation of this project at the highest level involving usage of the latest supercomputer technologies including the newest Intel Xeon E5-2600 v3 processor that was recently launched by Intel", – said Alexey Shmelev, COO of the RSC Group.

A powerful cluster system based on RSC Tornado architecture with direct liquid cooling will be created for SPbSPU within the scope of the project. Its peak performance will be about 830 Teraflops, and some of its resource will also provide cloud, VDI (Virtual Desktop Infrastructure) and graphical services. The HPC complex will be based on the newest high-performance Intel Xeon E5-2600 v3 server processors, Intel® S2600KP and Intel® S2600WT server boards for this generation of processors and latest Intel® SSD DC S3500 drives for corporate data centers, including performance leading Intel® SSD DC P3700 drives based on NVM Express architecture.

"The latest server processors of Intel® Xeon® E5 v3 family have set 27 new world records of performance. They provide up to 3 times higher working speed and up to 50% more cores and cache as compared to similar systems of the previous generation. It is the first server platform that supports DDR4 memory. By combining record performance and energy efficiency, Intel Xeon E5-2600 v3 processors set a new performance per watt record. These and other innovations speed up data center deployment, automate its adaptation to increasing workloads, improve efficiency and quality of work in HPC and cloud environments", – said Dmitry Konash, Intel's Regional Director in Russia and CIS.

The second part of the system contains a unique high-density massively parallel RSC PetaStream system with direct liquid cooling with total performance of 270 Teraflops. A unique feature of RSC PetaStream is the massively parallel concept that enables execution of up to 250,000 parallel execution threads on 1024 computing nodes based on x86 architecture in a single cabinet taking 1 square meter, which is the world record of computing and power density and compactness. The system will be based on Intel® server products, including 60-core Intel® Xeon Phi™ 5120D processors and Intel® Xeon® E5-2600 family processors as well as Intel server boards and Intel

SSD DC S3700 solid-state drives for corporate data centers. RSC PetaStream implements an innovative power subsystem based on the leading industry standard of 400V DC power developed in cooperation with Emerson Electric. This subsystem enables power distribution efficiency over 90% improving overall energy efficiency of the system, reduction of operating costs and overall reliability of the complex.

RSC PetaStream enables development of new applications to make breakthroughs in bioengineering, astrophysics, chemistry, electronics and control systems.

The complex also includes parallel data storage systems based on Lustre parallel file system that will support use of up to 1 Petabyte of data and 0.5 PB block-based storage for cloud environments. Both storages use server technologies based on Intel architecture.

RRS-Baltika is the system integrator of the project responsible for developing and deploying the engineering systems.

"Participating in such project is great honor and responsibility for our company. SPbSPU supercomputer center will enable university to solve the most serious and complex tasks in the shortest time frame without involving external resources and will open new horizons for the scientific potential of our city," − said Igor Poltoratsky, CEO of RRS-Baltika.

About SPbSPU

St. Petersburg State Polytechnical University is a multi-functional state educational institution founded in 1899. In 2010, SPbSPU got the status of the National Research University as acknowledgment of its role and potential both in education and multi-disciplinary R&D. SPbSPU always holds the leading positions in the rating of Russian technical universities. It provides bachelor and master programs in over 49 science branches, candidate and doctor programmes in 92 scientific specializations. SPbSPU includes 12 base institutes and supplementary education divisions (in Cheboksary, Sosnovy Bor, Cherepovets), a complex of R&D divisions (combined science and technology institute, scientific and educational centers, numerous specialized scientific and production structures). For additional information visit www.en.spbstu.ru.

About RSC Group

RSC Group is the leading Russian and CIS developer and integrator of innovative HPC and data center solutions based on Intel architecture and technology, advanced liquid cooling and its own extensive know-how. The company's potential provides solid base for creation of the most energy efficient solutions with record PUE, industry-highest computing density based on x86 standard processors, completely green design, highly reliable solutions, completely noiseless computing modules, supporting 100 percent compatibility and guaranteed scalability, while ensuring lowest total cost of ownership and small energy consumption. Additionally RSC specialists are experienced in developing and implementing a complete software solution stack for increased effectiveness and usability of supercomputer systems ranging from system software to vertically oriented platforms on the basis of cloud computing technology.
RSC is the Platinum member of Intel® Technology Provider Program. Performance and scalability of RSC PetaStream and RSC Tornado based solutions are Intel® Cluster Ready certified. For more information please visit www.rscgroup.ru.
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About RRS-Baltika

RRS-Baltika is a system integrator. System integration includes comprehensive support of customer IT infrastructure from design and deployment of new information systems to comprehensive technical support of running systems by means of upgrade and development. The company is based on a team of professionals who have been working in this field for many years. High professional skills of staff result from broad experience of successful deployment of new projects and continuous professional training of employees and managers. The company works in close cooperation with leading hardware and software vendors and can always offer most suitable and innovative solutions to its customers. For more information visit www.rbaltika.ru.