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Press Release

RSC Group presents a new generation RSC Tornado cluster solution

RSC Group has presented the new generation of RSC Tornado cluster solution at the international supercomputer conference ISC'15. The new generation has improved physical and computing density, higher energy efficiency and global record of stable operation in "hot water" mode with +65^{o} C cooling agent temperature

Frankfurt am Main (Germany), International Supercomputing Conference (ISC'15), July 13th, 2015 — RSC Group, the leading Russian developer and system integrator of innovative solutions for high-performance computing (HPC) and data centers has demonstrated a new generation of RSC Tornado cluster solution at the international supercomputing conference ISC'15. The new generation has improved footprint and computing density, energy efficiency, high operational stability of computing nodes in "hot water" mode with +65 ^{o}C cooling agent temperature at node output (setting the current global record of HPC industry). This proves leading positions of RSC Group in the most innovative areas of development of the global supercomputer industry.

Many customers use solutions based on RSC Tornado cluster architecture with liquid cooling developed by RSC Group specialists in production environments for over four years. These solutions are used by the St. Petersburg Polytechnic University named after Peter the Great (SPbPU), Joint Supercomputer Center of the Russian Academy of Sciences (JSCC RAS), South Ural State University (SUSU), Moscow Institute of Physics and Technology (MIPT), Roshydromet and other customers from other industries.

The new generation of RSC Tornado cluster solution has the following improved characteristics:

improved physical density – up to 153 computing nodes per cabinet (previously 128),

improved computing density – over 200 teraflops/m^3 on standard processors and up to 256 GB RAM per node,

improved reliability – independent hydraulic pump modules (hydraulic regulation modules) of the liquid cooling system per a computing domain (up to 9 modules per cabinet) with redundancy level from N+1 to N+N,

improved energy efficiency – provides necessary conditions for stable operation of computing nodes in "hot water mode" at +65 °C temperature at node output (setting current global record in the HPC industry),

new power supply module in computing node form factor providing efficient transformation of 220V AC to 400V DC and supporting parallel operation on common bus,

updated design of computing cabinet with support of new high speed interconnect communication technologies including Mellanox EDR Infiniband, Intel® Omni-Path,

intended support of future Intel Xeon processors and Intel Xeon Phi coprocessors (codenamed Broadwell and Knights Landing architectures).

High availability and accessibility are provided by innovative system of control and monitoring of separate nodes and the entire cluster system, expanded power management, redundancy of power supplies and hydraulic regulation modules. All elements of the system (computing nodes, power supplies, hydraulic regulation modules, etc.) have dedicated controller providing broad capabilities for telemetry and management of each element. Cabinet design supports replacement of hydraulic regulation modules in hot swap mode without interruption of system operation. Liquid cooling of all components ensures their longevity.

Latest innovative approaches in new generation of RSC Tornado cluster solution enabled reduction of infrastructure costs within the scope of computing system development and provided capabilities for more flexible upgrades of single nodes and the entire system.

The new generation of RSC Tornado is based on standard Intel server components including Intel® Xeon® E5-2600 v3 server processors, Intel® S2600KP server boards and Intel® SSD DC S3500/3600/3700 solid-state drives for data centers.

RSC Tornado cluster solution remains industry leader in footprint, computing density, energy efficiency, reliability, accessibility and manageability.

"Unique extensive experience of RSC specialists in development of efficient direct liquid cooling technologies and ultra-high dense integration of supercomputer solutions based on standard server components enabled development and presentation of a new generation of RSC Tornado cluster solution with a number of improved characteristics that are highly demanded by customers using powerful computing centers. In addition to computing and power density records set by our earlier solutions, the new generation of RSC Tornado has set world record of stable operation in "hot water" mode at +65° C," – said Alexey Shmelev, COO of the RSC Group.

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 allows for practical creation of the most energy efficient solutions with record PUE, realization of industry-highest computing density based on x86 standard processors, completely green design, the highest reliability of solutions, complete noiselessness of computing modules, 100 percent compatibility and guaranteed scalability, while ensuring lowest total cost of ownership and small energy consumption. Additionally RSC specialists are experienced in development and implementation of 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 participates in the Intel® Technology Provider Program at Platinum level and Intel® Fabric Builders 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.