



Press Release

New RSC solutions: 3rd Gen Intel Xeon Scalable support, RSC Tornado AFS, RSC Storage on-Demand with DAOS and RSC Tornado AI

ISC 2021, June 24th, 2021 — RSC Group, the leading Russian and worldwide well-known developer and integrator of innovative high-dense and energy-efficient solutions for HPC (high-performance computing), data centers, cloud platforms and storage-on-demand systems, presented its latest solutions at ISC 2021 Digital Event, the largest European supercomputer conference and exhibition. They include RSC Tornado computing nodes based on the latest 3rd Gen Intel Xeon Scalable processors and Intel Optane DC persistent memory 200 series, RSC Tornado AFS, RSC Storage on-Demand solution with DAOS support and RSC Tornado AI solution for artificial intelligent systems.

RSC Tornado with 3rd Gen Intel Xeon Scalable

New generation of RSC Tornado solution is oriented on a wide range of demanding scientific research workloads and applied tasks. The updated portfolio of integrated software-defined and reconfigurable solutions targets classic HPC systems, efficient storage and data processing and will help create AI/ML/DL (Artificial Intelligence, Machine Learning, Deep Learning) systems. RSC Tornado solution provides the industry highest x86 architecture computing density of 967.45 TFLOPS per rack (+37% vs. previous generation), distributed node storage system RSC Storage on-Demand with volume of 2.45PB per rack (+36% vs. previous generation) with 3.67 TB/s IO bandwidth (2x vs. previous generation) and leading energy efficiency with 100% “hot water” liquid cooling of all electronic components, horizontal scalability from small systems with a few servers to huge clusters or server farms containing many thousands of server nodes. RSC Tornado solutions provide additional cost optimization benefits through support of open standards and new Intel server products.

RSC Tornado solution based on 3rd Gen Intel Xeon Scalable processors (up to 40 cores, TDP 270W), Intel Optane DC persistent memory 200 series, Intel SSDs and high-speed fabric 200 Gb/s has leading footprint and computing density (up to 153 nodes in one standard 42U rack), high energy efficiency and provides stable operation of computing nodes in “hot water” mode with cooling agent temperature up to +65°C at inlets of switching nodes and interconnects. Operation in “hot water” mode enables all-year free cooling (24x365) using only dry coolers running at ambient air temperature up to +50°C, and complete elimination of chillers. As the result, average power usage efficiency factor (PUE) is less than 1.04, which is an outstanding score for HPC industry.

RSC Tornado AFS storage with high-availability features

RSC introduced the new RSC Tornado AFS intelligent storage system with high-availability features for building up of high-capacity storage. This solution provides high reliability and data availability by combining RSC Tornado AFS nodes in functional pairs. In the case one of the servers of a pair goes down, the second server would be able to provide full functionality of its storage elements. This approach enables high-reliability

storage of up to 2PB in 2U form-factor with 64x Intel SSD P5316 NVMe drives in EDSFF.L design (nicknamed “ruler”). Data storage volume per 1 rack with 42 nodes of RSC Tornado AFS is 41.3PB with access speed of 1 TB/s.

Storage nodes also include two Intel Xeon Scalable, Intel Optane SSD drives and Intel Optane DC Persistent Memory modules. RSC Tornado AFS supports 100% “hot water” liquid cooling with PUE as low as 1.04.

In multi-layered storage systems this solution supports “warm data” layer.

RSC Storage on-Demand with DAOS support

RSC Storage on-Demand solutions support NFS, Lustre and DAOS file systems for distributed data storage. New Intel's open source DAOS (Distributed Asynchronous Object Storage) storage system enables the highest performance of working with data of various types. This solution is optimal for AI (ML/DL) segment. It enables multi-layered storage systems based on Lustre file system within Disaggregated Composable Infrastructure and flexible management of NVMe drive pools as well as DAOS-based storage systems with external distributed NVMe drive pool. This approach to DAOS realization enables high-performance storage with flexible capacity ratios between Intel Optane DC Persistent Memory modules and NVMe drives connected to DAOS server. This effectively provides flexible “on-demand” configurations for specific user workloads. RSC's specialists used their experience in composable disaggregated solutions for DAOS management. It is now possible to use convenient RSC BasIS orchestration platform's user interface (UI) for DAOS-based systems.

RSC Tornado AI

RSC Tornado AI solution is oriented for creation of artificial intelligence (AI) and machine learning (ML) systems. It is a 1U node based on RSC Tornado architecture with 100% liquid cooling. The solution is based on 2x 3rd Gen Intel Xeon Scalable processors and up to 4x NVidia A100 accelerators. One rack with 42 RSC Tornado AI nodes provides compute performance up to 1.895 Petaflops and 104.83/209.66 POPS (INT8/INT4). RSC Tornado AI solution is optimized to work with distributed RSC Storage on-Demand system.

Composable distributed RSC Tornado infrastructure enables the most efficient solution for specific user workloads, including computer simulations and machine learning parts. Usage of distributed RSC Storage on-Demand system helps users to get optimal configurations for specific workload types within seconds.

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About RSC Group

RSC Group is the leading Russian and well-known worldwide developer and integrator of full cycle innovative, ultra-high-dense, scalable, energy-efficient and hyper-converged solutions for high-performance computing (HPC), data centers, cloud platforms and intelligent data storage on-demand systems based on Intel architecture, innovative RSC liquid cooling technology and a number of its own know-hows. Since 2018, RSC participates in ‘National Champions’ priority project implemented by the Ministry of Economic Development of Russian Federation.

RSC has the potential to create the most energy efficient solutions with record-breaking power usage effectiveness (PUE), the highest computing density in the industry with standard x86-based processors, to use fully green design, provide the highest solution reliability, noise-free operation of computing modules, 100% compatibility and guaranteed

scalability with unmatched low cost of ownership and low power consumption. RSC specialists also have the experience of developing and implementing an integrated software stack of solutions to improve work efficiency and application of supercomputer systems from system software to vertically oriented platforms based on cloud computing technologies. RSC is a Titanium member of Intel® Partner Alliance Program, has Intel® Select Solution for Simulation and Modeling, Intel® Select Solution for Professional Visualization certifications, participates in Intel® Fabric Builders Program, has Intel® HPC Data Center Specialist status and Intel® Solutions for Lustre Reseller Elite status. Performance and scalability of RSC Tornado based solutions are proved by Intel® Cluster Ready certification.

For more information please visit RSC website www.rscgroup.ru.

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