



Press Release

RSC announces Ice Lake-SP and DAOS object storage support and introduces RSC Tornado AFS high-availability storage

SC20, November 17, 2020 — RSC Group, the leading Russian developer and integrator of innovative ultrahigh-dense energy efficient solutions for HPC, data centers, cloud platforms and storage-on-demand systems has announced a number of new products and features at global supercomputing exhibition [SC20](#). These include support of upcoming Intel server processor co-named Ice Lake-SP in RSC Tornado computational nodes, RSC Tornado AFS high-availability storage, support of new Intel's open source DAOS storage system in RSC Storage on-Demand solutions and a new user interface of RSC BasIS cluster management and orchestration platform.

RSC Tornado with Ice Lake-SP support

At SC20 RSC Group has announced that its high-dense and energy efficient RSC Tornado computing nodes will support Intel 10nm server processors code-named Ice Lake-SP that are expected to go in mass production in Q1 2021. They will support PCI Express 4.0 and Intel® Optane DC 2nd generation memory.

RSC Tornado AFS storage with high-availability features

RSC introduces 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 NVMe drives in EDSFF.L design (nicknamed "ruler"). Storage nodes also include two Intel® Xeon® Scalable 2nd Generation processors, 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.

DAOS support in RSC Storage on-Demand solutions

At SC20 RSC Group announces that its RSC Storage on-Demand solutions will support new Intel's open source DAOS (Distributed Asynchronous Object Storage) storage system that provides the highest speed of data access with various patterns. This solution is optimal for AI (ML/DL) segment. It enables multi-layered storage based on Lustre file system in Disaggregated Composable Infrastructure and flexible management of NVMe disk pools, and enhances these levels with high-performance components based on DAOS.

For many years, the increase of nominal storage performance was mostly achieved by boost of serial read/write operations speed. DAOS addresses restrictions of old approaches to high performance storage based on TCP/IP protocol, Linux core architecture and other bottlenecks when applications need high-speed random data access.

DAOS provides significant performance increase with a number of architectural principles:

- avoid of OS kernel functions, interrupts, context switching on data path from storage device to the point of processing;
- use of Storage Class Memory devices with efficient support of Byte Level Access for meta-data and caches;
- streamline of continuous and block R/W operations to NVMe-based devices.

RSC BasIS Orchestration Platform for High-Performance Composable Storage Architectures

RSC uses its experience of building composable disaggregated solutions in DAOS management with RSC BasIS orchestration platform with the new and much more effective user interface (UI).

Existing DAOS-based solutions required strict hardware-set ratio between processor resources, Intel® Optane™ DC Persistent Memory (PMEM) and SSD drives with NVMe interface. RSC BasIS platform enables composable approach for DAOS management combining servers with PMEM and servers with NVMe devices in pools connected with fast network fabric. Use of high-performance adapters with RDMA support, disaggregation of servers with NVMe-based media and Intel® Optane™ DC Persistent Memory enables on-demand composability without loss of performance.

This approach removes the rigid restriction of PMEM/NVMe ratio in storage servers. Also it significantly increases possible capacity of the storage system. For PMEM capacity, DAOS currently requires having at least 6% of NVMe capacity per server, and this greatly restricts maximum effective number of disks per storage server. At the same time, composable architecture allows connection of unused disks to another server based on DAOS or Lustre.

As well, disaggregation lifts physical server hardware restrictions, like restrictions of PCIe bus lanes that are necessary by both storage media and network adapters and those of server chassis that can hold a limited number of extra devices.

New RSC Storage on-Demand user interface

RSC has developed the new RSC Storage on-Demand user interface that enables on-demand creation of complex multi-layered composable storage systems. This UI supports easy creation of parallel Lustre file system volumes, distributed DAOS storage and their combinations.

RSC will uncover these approaches in its presentation at DUG (DAOS User Group) on November 19 at SC20 conference.

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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 Platinum member of Intel® Technology Provider 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. RSC, PetaStream, RSC BasIS and RSC logos are registered trademarks of the RSC Group in Russia, USA, China, Japan and many European countries.