Massively Parallel System to address ExaScale needs
- Right system for many-core processors
- The architecture that scales compute, storage and network to ExaScale levels

Programmability and investment protection
- Build on industry standard x86 architecture
- Utilize existing programming models, reuse existing apps
- Preserve investment into optimization for future many-core platforms

Flexible to meet specific customer requirements
- Choice of interconnects and topologies
- Provides options for innovative storage and interconnection designs

Energy efficiency
- Build on proven exhaustive RSC direct liquid cooling technology
- Efficient and innovative power delivery subsystem
- System management and monitoring

RSC PetaStream – Technical Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Massively Parallel Supercomputer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>Intel Many Integrated Core (MIC)</td>
</tr>
<tr>
<td>Performance</td>
<td>1PFLOPS per rack</td>
</tr>
<tr>
<td>Compute resources</td>
<td>1024x Intel® Xeon Phi™ 5120D based nodes (total resources: 61.5K cores, 246K threads)</td>
</tr>
<tr>
<td>Memory</td>
<td>8 TB total nodes memory</td>
</tr>
<tr>
<td>Interconnect</td>
<td>Infiniband FDR 56Gbps / Intel TrueScale Infiniband / 10 GigE</td>
</tr>
<tr>
<td>Local Data Storage</td>
<td>Up to 640x Intel® DC S3500/S3700 SSDs with total capacity up to 0.5PB</td>
</tr>
<tr>
<td>System management</td>
<td>Fully integrated software stack for High Performance Computing “RSC BasIS”: Single System Management Point, Flexible Software Configuration System, Complex Supercomputer and Data Center view and management system. Intel® Node Manager Technology</td>
</tr>
<tr>
<td>Operating System</td>
<td>Linux (RedHat, SUSE, Debian, CentOS, Scientific Linux), MS Windows</td>
</tr>
<tr>
<td>Job management</td>
<td>SLURM, PBS Pro, Moab, Platform LSF</td>
</tr>
<tr>
<td>Parallel File Systems</td>
<td>Lustre, Panasas, GPFS, FhGFS</td>
</tr>
<tr>
<td>Libraries, Compilers and Tools</td>
<td>Intel® Cluster Studio XE 2013</td>
</tr>
<tr>
<td>Power type</td>
<td>400V DC power supply system from Emerson Electric</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Up to 400kW per rack</td>
</tr>
<tr>
<td>Form factor</td>
<td>Dual side access rack</td>
</tr>
<tr>
<td>Cooling</td>
<td>RSC direct liquid cooling system: up to 400kW per Cabinet; Customer cooling system direct integration supported</td>
</tr>
<tr>
<td>Dimensions</td>
<td>H 2.2m (86.6 in.) x W 1.0m (39.4 in.) x D 1.0m (39.4 in.)</td>
</tr>
<tr>
<td>Power</td>
<td>400/230V (three-phase, neutral and ground)</td>
</tr>
</tbody>
</table>
RSC PETASTREAM MASSIVELY PARALLEL SUPERCOMPUTER PHILOSOPHY

**Compute chip**
- 60 x86 cores / 240 threads
- > 1 TFLOPS peak perf.
- 352 GB/s peak mem. BW
- 30 MB shared cache

**Compute node**
- One compute chip
- 8GB of RAM
- 64Gbps IO bandwidth
- Linux μOS

**Compute module**
- Several compute nodes
- Over 300 Gbps external IO bandwidth
- Direct liquid cooling of all components
- Integrated node management
- Effective DC power

**System**
- Path to ExaScale
- Scalable/modular: tailored to customer’s needs
- Flexible network options
- Based on COTS components

**Cabinet**
- Over 1PLOPS peak performance
- 250K threads
- 400+ kW
- Integrated management
- 1m² / 10.8 ft² space

ABOUT RSC GROUP
RSC Group is Russia’s and CIS leading developer and provider of next-generation supercomputing 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. Performance and scalability of RSC Tornado based solutions are Intel® Cluster Ready certified. For more information please visit www.rscgroup.ru/en.

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Web: www.rscgroup.ru; E-mail: hq@rsc-tech.ru; Tel: +7 (495) 640-3107