Company of T-Platforms

Russian Academy of Sciences
Program Systems Institute

SKIF Cyberia supercomputer ”

Developer: a Russian company of T-Platforms (with the assistance of the Program Systems Institute of the RAS: assembling, development of the service net for the SKIF Cyberia supercomputer complex).

Location: Tomsk state university. The Regional center for collective operation of the high-performance computing resources of the Tomsk state university was set up on the basis of the SKIF Cyberia complex, which allowed the TSU to become the first Russian higher educational institution equipped with a supercomputer center according to the world standards.

Lead time: August 2006 February 16, 2007 (6 months).

Fields of application

- complex ecological monitoring of the atmosphere and hydrosphere;
- river flood control;
- fire and epidemic spread control;
- rational forest and inorganic resources conservation;
- new competitive methods of oil and gas field exploration;
- polluted soil recovery;
- rocket-space engineering design;
- safe mine equipment design;
- creation of new kinds of propellants and ultra-hard surfaces based on nanotechnologies;

Major features of the SKIF Cyberia supercomputer

Number of computing nodes/processors	**286/566 (1132 cores)**
Formfactor of the node	**1U**
Number of assembly cabinets of the computing cluster	**8**
Processor type	**2-core Intel Xeon 5150, 2,66 ГГц**
Peak performance	**12 Tflops**
Linpack benchmark performance	**9.019 Tflops, 75% of the peak**
Price/peak performance	**158 K USD / 1 Tflops**
Type of system net	**Qlogic InfiniPath™**
Message transmission rate between the nodes	**not less than 950 MB/sec**
Latency while transferring data packets	**not more than 2.5 microsec**
Type of managing (auxiliary) network	**Gigabit Ethernet**
Тип сервисной сети	**СКИФ-ServNet**
Оперативная память	**1.1 Тб**
Дисковая память узлов	**22.5 Тб**
Тип системы хранения данных	**T-Platforms ReadyStorage Activ Scale Cluster**
Объем системы хранения данных	**10 Тб**
Занимаемая площадь	**72 м²**
Потребляемая мощность вычислительного кластера	**90 кВт**
Потребляемая мощность установки в целом	**115 кВт**
Вес установки	**16 т**
Суммарная длина кабельных соединений	**более 2 км**

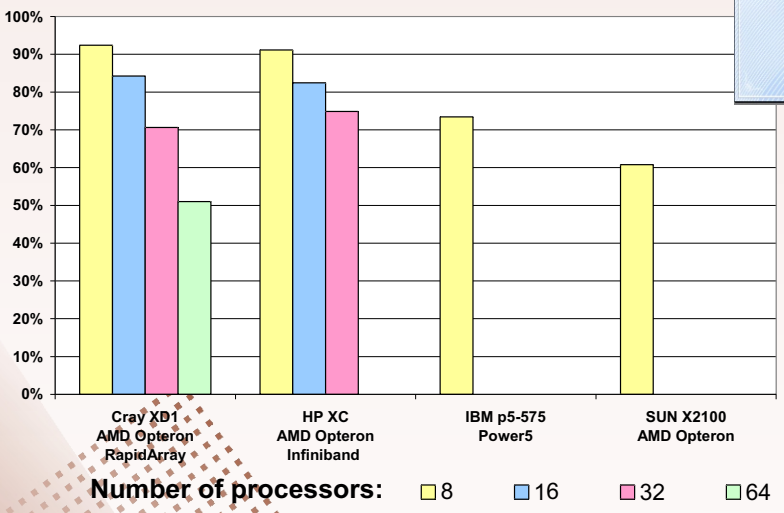
SKIF Cyberia supercomputer

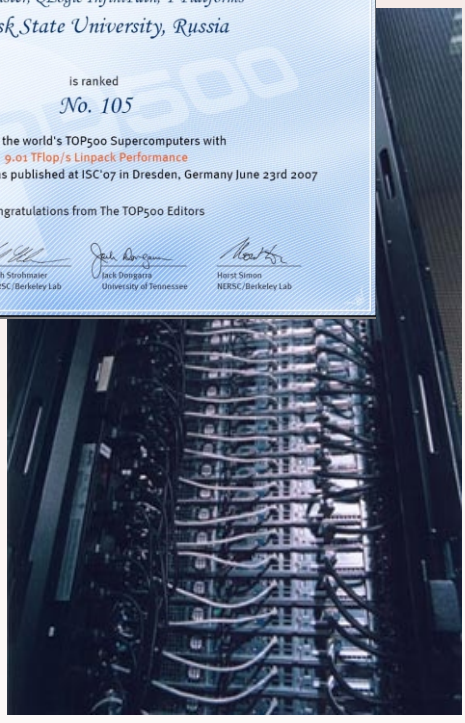
Effectiveness of the SKIF Cyberia on the Linpack benchmark is better than that of the foreign analogues by 8 to 13%

System	Peak performance (TFlops)	Linpack performance (TFlops)	Efficiency	Gflops/GHz
SKIF Cyberia **T-Platforms**	12.00	9.019	75.1%	5.97
		+5.3% +5.3%	+13% +7.7%	+13% +8.5%
Bladecenter Hs21 Cluster **IBM**	12.86	8.564	66.6%	5.30
Endeavor Intel Cluster **Intel**	12.28	8.564	69.7%	5.50

Hydrodynamics problem scalability (STARCD) on the SKIF Cyberia is better than that of foreign analogues (twice and more)

Shown is comparison of problem acceleration for different numbers of processors; problem acceleration on the SKIF Cyberia is taken for 100%.





Developers of the SKIF Cyberia supercomputer

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Moscow,Pereslavl-Zalessky,2007