November 14th, 2011
Information Technology Center, The University of Tokyo

Fujitsu's PRIMEHPC FX10 with 1.13 PFLOPS starts operation at the University of Tokyo in April 2012

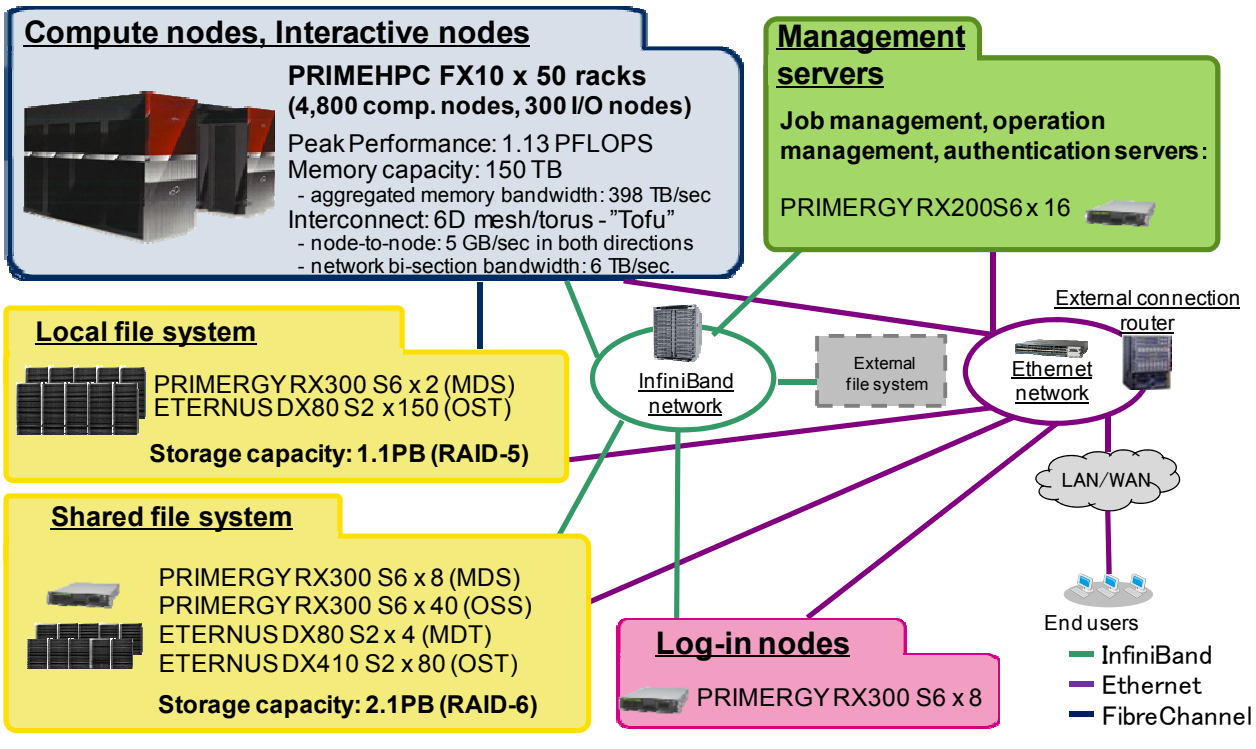
Supercomputing Division, Information Technology Center, The University of Tokyo (SCD/ITC, http://www.cc.u-tokyo.ac.jp/) announced today that a contract for its next generation supercomputing system, starting its operation on April 2nd, 2012, will be awarded to Fujitsu Limited. The multi-year supercomputing contract includes delivery of a Fujitsu PRIMEHPC FX10 massively parallel supercomputer. The new system will deliver a peak performance of 1.13 PFLOPS, equivalent to 1.13 quadrillion calculations per second.

Like SCD/ITC's current 140-TFLOPS Hitachi HA8000 Cluster System (T2K/Tokyo), the new system will help advance research and education in various areas of science and engineering, such as earth sciences, astrophysics, seismology, climate modeling, materials science, energy physics, biology, and fluid/solid dynamics. The new system will be also open for users in industry.

The new system consists of 4,800 computing nodes of SPARC64™ IXfx processors based on SPARC64™ V9 specification with HPC-ACE (Arithmetic Computational Extensions). SPARC64™ IXfx is a successor of SPARC64™ VIIIfx for K computer in RIKEN Advanced Institute for Computational Science (AICS), and attains very high efficiency with 2 GFLOPS/W.

CPU	SPARC64™ IXfx 1.848 GHz	SPARC64™ VIIIfx 2.000 GHz
Number of Cores/Node	16	8
Size of L2 Cache/Node	12 MB	6 MB
Peak Performance/Node	236.5 GFLOPS	128.0 GFLOPS
Memory/Node	32 GB	16 GB
Memory Bandwidth/Node	85 GB/sec (DDR3-1333)	64 GB/sec (DDR3-1000)

Total peak performance of the new system will be 1.13 PFLOPS, total memory capacity is 150 TB, and aggregate memory bandwidth is 398 TB/sec. 4,800 compute nodes are connected via 6-dimensional mesh/torus interconnect - "Tofu." New system has two file systems. One is a local file system for staging with 1.1 PB of capacity and 131 GB/sec of aggregate I/O performance, and the other is a shared system for storing data with 2.1 PB and 136 GB/sec.

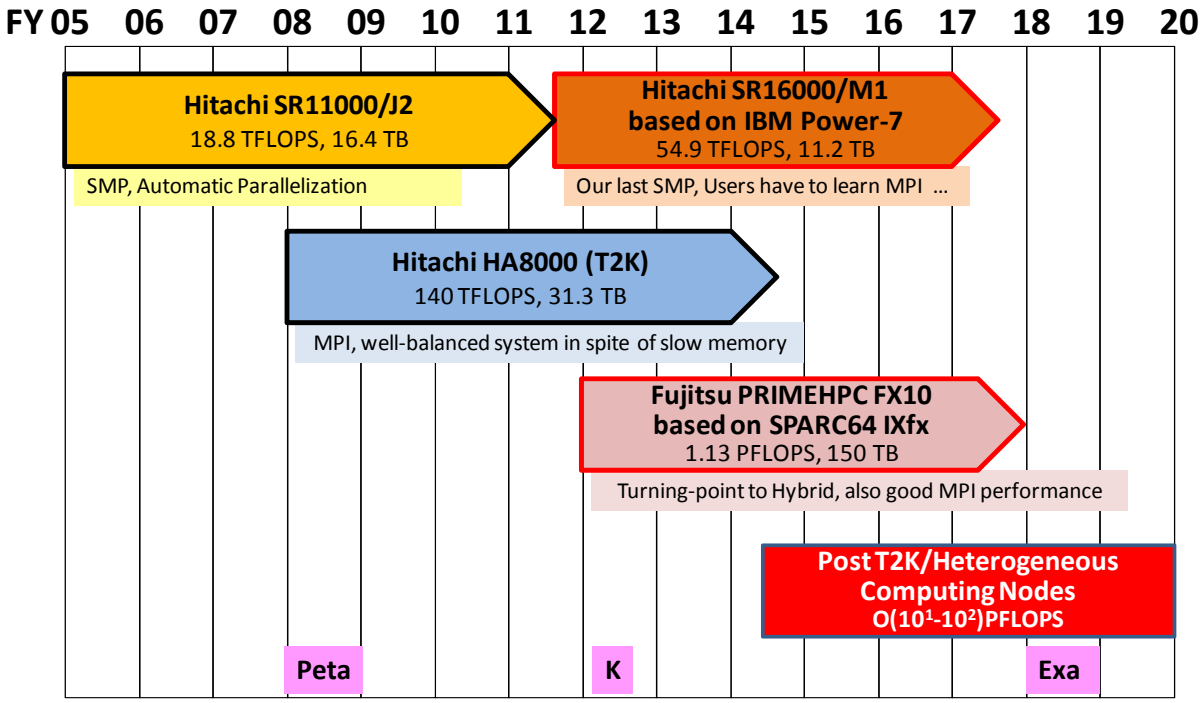


Supercomputing Division, Information Technology Center, The University of Tokyo (SCD/ITC)

SCD/ITC (http://www.cc.u-tokyo.ac.jp/) was originally established as the Supercomputing Center of the University of Tokyo in 1965, which is the oldest academic supercomputer center in Japan. In 1999, Information Technology Center (ITC) was organized, and the Supercomputing Center became the Supercomputing Division (SCD) of ITC, with other three divisions. Three main missions of SCD/ITC are (i) services for operations of supercomputers and supporting more than 1,500 users from both of inside and outside of the university, (ii) research, and (iii) education. Currently, SCD/ITC consists of 15 faculty members and 8 technical staffs, and is operating two systems of supercomputers (Hitachi SR16000/M1 based on Power7 architecture with 54.9 TFLOPS of peak performance, and Hitachi HA8000 Cluster System (T2K/Tokyo) with 140.1 TFLOPS). SCD/ITC is also a part of HPCI (High-Performance Computing Infrastructure) operated by Japanese Government, which consists of facilities of academic supercomputer-centers in Japan and K computer in Kobe connected through network. Moreover, it is a core organization of "Joint Usage/Research Center for Interdisciplinary Large-Scale Information Infrastructures" which consists of eight academic supercomputer centers in Japan.

SCD/ITC has been installing a new supercomputing system every three years. *Post T2K system* with heterogeneous computing nodes is expected to be $O(10^1\text{-}10^2)$ PFLOPS of peak performance, and will be installed in FY.2014 or FY.2015. Post T2K system is considered as a *post-petascale* system, and a milestone to *exascale* system, which is expected to be developed by the end of the decade.

Fujitsu PRIMEHPC FX10 also plays an important role for paradigm shift from single-level parallel programming models (*e.g.* pure MPI) to multi-level hybrid parallel programming models (*e.g.* MPI+OpenMP/CUDA/OpenCL etc.), which will be more generally used in post-petascale and exascale systems.



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