The PACS-CS Project

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Abstract: We describe our plan to build a large-scale parallel system with a peak speed of 14.3Tflops for lattice QCD at the Center for Computational Sciences, University of Tsukuba, as a successor to the current 0.6Tflops CP-PACS computer. The system will consist of 2560 nodes connected by a 16x16x10 three-dimensional hyper crossbar network. Each node has a single low-voltage 2.8GHz Xeon processor and 2GBytes of memory with 6.4GBytes/sec bandwidth, and 160 GBytes of disk in RAID1 mode. The network link in each of the three directions is made of dual Gigabit Ethernet with the peak throughput of 250MByte/sec. Hence each node has an aggregate network bandwidth of 750MByte/sec. The system will run under Linux and SCore, and an extension of the PM driver is developed for the network. Benchmark results for the arithmetic and network performances will be reported, and the physics program on the system is discussed. The installation and start of operation is scheduled in the first quarter of Japanese Fiscal 2006 (April-June 2006).