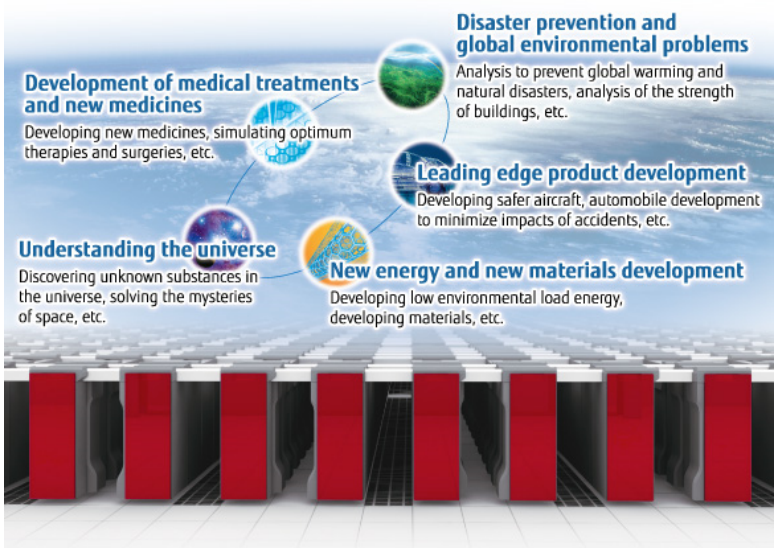
In-House Implementation of Advanced Green ICT

- R&D
- Offices
- Manufacturing
- Data Centers
- Environmental Management
- Topics

Topics — Green Reference for Tomorrow

Creation of a prosperous future now only dreamt of by the supercomputer "K computer"

Application fields for the K computer



Top of Page

Supercomputer "K computer" took first place in World

On June 20, 2011, the K computer, which RIKEN and Fujitsu have been developing jointly since 2006, won first place on the TOP500 list released at the 26th International Supercomputing Conference, ISC'11 (held in Hamburg in Germany). The TOP500 ranked K computer, which was at the configuration stage, consisted of 672 computer racks (68,544 CPUs) and had achieved the world's top speed of 8.162 petaflops.

When it is completed in 2012, it will reach 10 petaflops[*1] (10 quadrillion floating-point operations per second). If it reaches this goal, it will be capable of large-scale computer simulations indispensable for the advance of science and technology.

*1 10 peta (10 to the power of 16) corresponds to the Japanese language unit represented by a Chinese character pronounced Kei (京), so this supercomputer is called the "K computer."

Installing its system boards at an angle creates a flow of air through each rack, efficiently exhausting heat.

System	Target Performance... 10 petaflops Number of CPUs ..... More than 80,000 Total Memory..... More than 1 petabyte
CPU	SPARC64™VIIIfx (8 cores, 128 gigaflops)
Interconnect	6-dimensional mesh/torus Topology(Tofu)

Related Links

- Environmental Management
- Environmental and Social Contribution Activities
- Environmental Communication

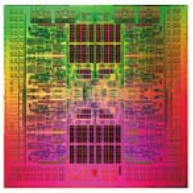
The "K computer," now being developed jointly by RIKEN and Fujitsu, took first place on the 37th TOP500 list (photograph taken at a press conference in Japan)

Top of Page

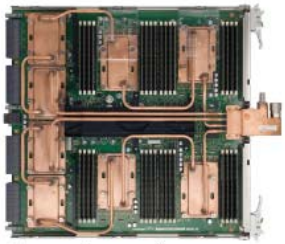
High Performance and reliability achieved plus low electric power consumption

When the K computer is completed, it will be equipped with more than 80,000 SPARC64™ VIIIfx CPUs designed and developed by Fujitsu. An important challenge was limiting electric power consumption while maintaining their high performance and reliability. Low electric power consumption was ensured at the CPU design stage by raising the degree of integration of its circuits to lower the number of components and reduce the size of the circuits.

It was also designed so that when the CPU's are performing calculations, circuits which need not operate do not waste electric power. Moreover water cooling reduces the heat generated by the CPUs to lower its electric power consumption and prolong the lifetime off its components.



High performance and reliability along with low electric power use
Newly Developed CPU, SPARC64™VIIIfx.



Water cooling greatly improves stability and environmental performance

Will contribute to breakthroughs in science and technology

The K computer not only features superior environmental performance, but its overwhelming calculation capacity is expected to contribute to the resolution of global environmental problems which now confront mankind. The K computer will contribute to breakthroughs in science and technology in many fields including predicting and preparing measures for climate change, preventing disasters by tsunami etc., predicting change of ocean currents caused by global warming, developing materials with low environmental loads, innovating industry by reducing resource consumption, and so on.

More Topics »

Top of Page