Engineering researchers: Novo-G supercomputer fastest of its type in world

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A supercomputer named Novo-G described by its lead designer as likely the most powerful computer of its kind in the world became operational this week at the University of Florida.

Novo-G gets the first part of its name from the Latin term for "make anew, change, alter," and the second from "G" for "genesis." A "reconfigurable" computer, it can rearrange its internal circuitry to suit the task at hand. Applications range from space satellites to research supercomputers — anywhere size, energy and high speed are important, said Alan George, professor of electrical and computer engineering and director of UF's National Science Foundation Center for High-Performance Reconfigurable Computing.

Traditional computers use so-called "fixed logic devices" to perform a large variety of tasks. But this jack-of-all-trades approach requires a substantial amount of overhead in space and energy, no matter what work needs to be done. On the other hand, special-purpose computers can be built to perform certain tasks very well but are not flexible.

Reconfigurable computers make the best of both worlds, George said. That is because they can rearrange their internal circuitry like Lego blocks, creating the most appropriate architecture for each assignment. As a result, a reconfigurable computer can be from 10 to 100 times faster than other computers its size while using five to 10 times less energy.

Although the concept has been proven, reconfigurable computers remain at the research stage and are not easy to use. One of the main goals of the NSF Center is to pioneer techniques to make reconfigurable computers more accessible.

"It is very powerful technology, but it is also very complicated technology," George said. "We don't want this important technology to be accessible only to experts."

Source: University of Florida (news : web)