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Supercomputer To Utilize Optical Fibers

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Nov. 18, 2002

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Highlighting a radical departure in the design of the fastest computers, the California Institute for Telecommunications and Information Technology plans to announce on Monday that it will use an optical router designed by a Texas company as the heart of a campus-wide supercomputer that will be woven together with optical fibers.

The new design will turn some traditional computing ideas upside down. In the past, computer processors have been the fastest part of a supercomputer, while memory and disk storage have been bottlenecks. In the new design, the communications lines will be the fastest part of the computer and the processors will become slower ''peripherals.''

The new style of supercomputing is called an ''optiputer'' and it will be housed at the University of California at San Diego. The optiputer will initially consist of about 500 processors linked via the optical switching system that will permit parts of the computer to share information at the speed of light. Each of the clusters is based on Intel microprocessors and runs the Linux operating system.

The optiputer is an example of a new trend in advanced computing, known as grid computing, which permits solving complex problems by linking processors that may be separated by thousands of miles.

Chiaro Networks, the maker of the optical router at the heart of the optiputer, is a start-up in Richardson, Tex.

The computer is the brainchild of an organization, led by Dr. Larry Smarr, that is a joint venture of the University of California at San Diego and the University of California at Irvine. Before coming to the California project, Dr. Smarr was the director of the National

Center for Supercomputer Applications in Illinois. That group developed Mosaic, the first popular Web browser, in 1994.

Dr. Smarr's new organization has joined with Chiaro Networks, whose vice president for technology, Steven J. Wallach, is a well-known supercomputer engineer.

''We're moving to an optical-centric world in which the computers are the slow things and you reluctantly add them in,'' Dr. Smarr said.

A version of this article appears in print on , Section C, Page 5 of the National edition with the headline: Supercomputer To Utilize Optical Fibers