New Computing Cluster To Help Scientists Reconstruct The Tree Of Life

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A new supercomputing cluster designed for the phylogenetic research community has been installed at the San Diego Supercomputer Center. The Cluster, a 16 node, 8-way Fusion A8 by Western Scientific, features a total of 128 Opteron processors each with 4 GB memory, for a total of 0.5 TB memory. The cluster was purchased with a grant from the National Science Foundation in support of the CyberInfrastructure for Phylogenetic Research project, a collaboration of biologists, computer scientists, statisticians and mathematicians at 19 institutions whose goal is to understand the evolutionary relationships between all living organisms.

SDSC is home to CIPRes' Central Resource, a team of biologist/programmers implementing a new generation of software tools and databases in support of the National community of Phylogenetics researchers. The SDSC team creates production software releases and tools for database access and data deposition that are publicly available. The project is designing new data formats and data storage techniques and uniting these with new high end computing architectures to speed the prediction of evolutionary relationships. The cluster acquisition represents novel architecture that can provide additional computational muscle required by scientists.

"The goal of the CIPRes project is to push the size limits of phylogenetic reconstruction from evolutionary trees of 100 to 1,000 species to 100,000 species and more," said SDSC project leader Mark Miller, "the problem is that the calculations for large trees are extremely intense in

their demands both for computational power and memory bandwidth. We selected the Fusion A8 for its ability to deliver resources in both areas: the 64-bit 8 way architecture, together with the 32 GB memory allocation per node will provide the folks who model these large trees with plenty of power to push upwards on the size of the trees that can be simulated."

"This new cluster will allow researchers to make significant steps forward in creating new solutions for the difficult computational problems that arise in studying evolutionary relationships, " said Bernard Moret, CIPRes project leader and Professor of Computer Science and of Electrical and Computer Engineering at the University of New Mexico. "And, it will be an open resource for our entire phylogenetic community."

Researchers within the community will be able to access the new cluster system through an allocation process. Formal announcement of the policies and procedures for obtaining such an allocation is scheduled on September 1, 2005, and will be posted on the CIPRes website.

Source: UC San Diego (By Ashley Wood)