

20 TFlops Supercomputer to be Built by IBM for U.S. military, Sandia and Cray Inc. building 100TFlops Machine

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Red Storm, an air-cooled supercomputer, is being developed by Sandia and Cray Inc. By the end of 2005, the machine should be capable of [100 teraflops](#). At the same time, [IBM](#) announced that the Department of Defense (DoD) has selected new high-performance computing (HPC) systems from IBM for deployment at the Naval Oceanographic Office (NAVOCEANO) Major Shared Resource Center (MSRC) that, when deployed, are expected to include the fastest supercomputer in the US military, and one of the fastest supercomputing clusters in the world.

"The new IBM systems at NAVOCEANO will enable DoD scientists and engineers to solve complex problems previously impossible with smaller systems," said Cray Henry, Director of the DoD HPC Modernization Program. "We are particularly pleased to acquire a nearly 3,000 processor system -- the largest single system that we have ever fielded. The tremendous size of this system will allow us to explore, as never before, the limits of scalability for our key applications and our ability to harness the massive power of ultra-scale HPC systems."

The new supercomputers are designed to substantially enhance the Navy's ability to perform global scale modeling and simulation to carry out its diverse mission, maximizing support to the Fleet worldwide and to the nation. The largest of the new systems is expected to run at a peak speed of 20 trillion mathematical operations per second, and will do so in the NAVOCEANO environment where operational resilience and

high availability are of paramount importance. Typical operational availability of the systems is expected to be over 99%.

"Operational availability and resilience of these new systems will be critical elements of our support to the Navy and the Department of Defense," said Steve Adamec, NAVOCEANO MSRC Director. "In combination with the tremendous increase in computational power, we now have an unparalleled ability to quickly bring one of the world's premiere HPC environments to bear on some of the nation's most pressing computational needs, with extremely high confidence that critical systems and services will be available at all times."

The NAVOCEANO MSRC has a unique focus within the DoD HPC Modernization Program, spanning both operational and R&D computing needs of the DoD. This includes support of some of the world's most computationally intensive R&D projects, known as "Challenge Projects," representing some of the most critical research within DoD. These diverse R&D projects include new military aircraft, ship and vehicle designs, improved missile and projectile design, and advanced research in global high-resolution meteorology and oceanography.

"This immense supercomputing capability will give the NAVOCEANO MSRC the performance needed to push its HPC capabilities to a new level," said Dave Turek, vice president, Deep Computing, IBM. "These sophisticated computational capabilities will help to produce improved, more realistic simulations and analyses during a very critical period for the US military."

The NAVOCEANO supercomputing solution consists of IBM eServer p655 systems connected together with IBM's clustering technology. Each of the new HPC systems is based on POWER4+ microprocessors and utilizes the AIX operating system environment.

Having been termed the first 'server on a chip,' IBM continues to invest in the POWER architecture to offer customers open, innovative technology solutions through AIX, OS/400 or Linux operating systems that complement the growing demand for 64-bit applications. IBM's family of POWER microprocessors is among the most widely used in the industry. In addition to being the force behind IBM's pSeries, iSeries and JS20 BladeCenter servers, the microprocessor technology can be found in Nintendo game consoles, Apple computers, and some of the world's most powerful supercomputers and storage systems.

The TOP500 List is compiled and published by Jack Dongarra from the University of Tennessee, Erich Strohmaier and Horst Simon of NERSC/Lawrence Berkeley National Laboratory and Hans Meuer of the University of Mannheim (Germany). The entire list can be viewed at www.top500.org.

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