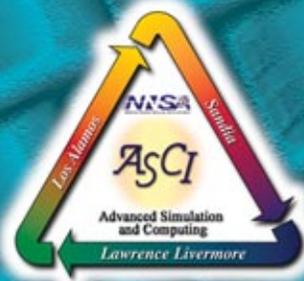


ASCI UPDATE

August 2001



ASCI White Unveiled

On August 15 Lawrence Livermore National Laboratory hosted a dedication ceremony for ASCI White, the Department of Energy, National Nuclear Security Administration's newest supercomputer. Capable of performing 12.3 trillion mathematical operations per second, White is now the fastest supercomputer in the world. This accomplishment represents the next giant step in the NNSA's Advanced Simulation and Computing (historically referred to as ASCI) program's 10-year plan to build faster computers that can produce better nuclear weapons simulations of the nation's nuclear deterrent in the absence of underground testing.

The ceremony was attended by DOE/NNSA, IBM Corporation, and scientists and administrators from Livermore, Los Alamos, and Sandia national laboratories. The news media were represented by seven TV crews, five local reporters, CNN, and both major wire services. Researchers demonstrated White's compute power with high-resolution three-dimensional simulations.

In his opening remarks, Livermore's ASCI Program Leader David Nowak acknowledged the contributions of the scientists and administrators who played essential roles in ASCI White's success. In addition, NNSA Administrator General John Gordon, IBM's

Managing Director for the U.S. Federal Government Anne Altman, University of California Vice President for Laboratory Management John McTague, and LLNL Director

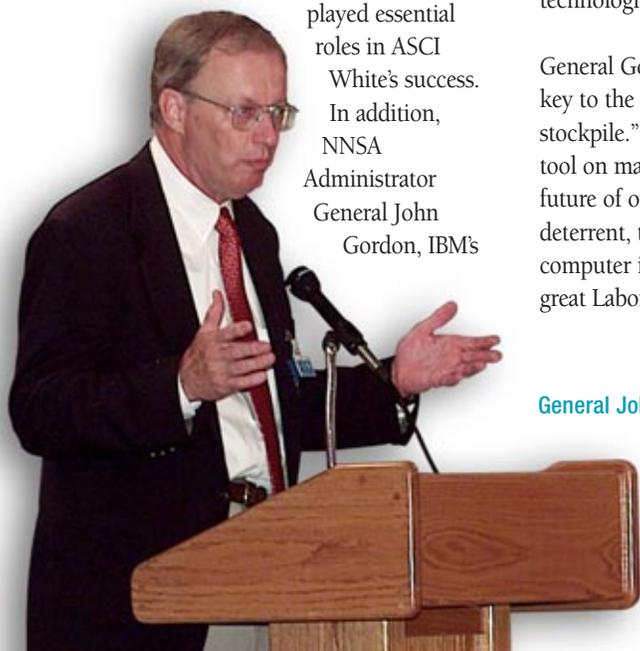


NNSA Administrator General John Gordon (far left), IBM Managing Director for U.S. Federal Government Anne Altman, and University of California Vice President John McTague at the dedication ceremony.

Bruce Tarter each spoke, recognizing the integration efforts between LLNL and its IBM partner, the pursuit and achievement of essential milestones in ASCI's stockpile stewardship responsibilities, and the Tri-Lab utilization of ASCI White's advanced three-dimensional modeling capability and visualization technologies.

General Gordon stated that ASCI White is "the key to the country's mission of maintaining the stockpile." He called ASCI White an important tool on many levels, including "the sustained future of our national security and nuclear deterrent, the future of science and the computer industry, and the future of this great Laboratory."

General John A. Gordon addresses a standing-room-only audience at the ASCI White Dedication Ceremony.



Reminder...

Remember to register for SC2001. The SC2001 submission deadline is September 21, 2001. Visit the ASCI at SC2001 website for information: <http://www.sandia.gov/supercomp/index.html>. To register, see <http://www.sc2001.org/registration.shtml>. If you have questions, LLNL's point of contact is Jean Shuler at jshuler@llnl.gov. You may also visit the SC2001 homepage for more information: <http://www.sc2001.org/index.shtml>.

Upcoming events...

Alliance reviews: University of Utah, Sept. 6-7
University of Illinois, Sept. 11-12
University of Chicago, Sept. 13-14
Stanford University, Sept. 17-18
Caltech University, Sept. 19-20

Who's Who in ASCI APPS...

NNSA
Bob Thomas
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Los Alamos
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The Facts

ASCI White

- ▶ With a price tag of \$110 million, the ASCI White IBM supercomputer is 40,000 times more powerful than the average personal computer.
- ▶ It can perform 12.3 trillion operations per second. Its terascale capabilities provide scientists with an essential component to safeguarding the aging nuclear weapons stockpile in the absence of underground testing.
- ▶ It contains 8192 microprocessors in 512 shared memory nodes interconnected with high-bandwidth, low-latency interconnect, requiring over 49 miles of cable.
- ▶ Each node contains 16 Power3-II CPUs built with IBM's latest semiconductor technology (silicon-on-insulator and copper interconnects). The computer's total memory is 4 terabytes, or 4000 gigabytes. It can hold the equivalent of 300,000,000 books—six times the holdings of the Library of Congress.
- ▶ White sits on the raised-floor of a 20,000 sq. ft. computer room that is large enough to hold two full-sized basketball courts. The computer room is cooled by 31 air conditioners—enough cooling power for 675 homes.

Anne Altman called ASCI White “the triumph of vision, perseverance, and plain old-fashioned hard work.” John McTague recognized the Tri-Lab ASCI effort to produce “spectacular technological achievements” such as ASCI White. He further noted that the three NNSA laboratories that make up the Tri-Lab effort—LLNL, LANL, and Sandia—must continue to operate as a system “to better serve the nation.” At the conclusion of the ceremony, LLNL Director Bruce Tarter noted that ASCI White was really doing the work of stockpile stewardship, “which is delivering what it was designed to do. This is the place at which you can say the program is a success.”

The computational milestones established by the NNSA/Tri-Lab Advanced Simulation and Computing program require the capability to run calculations that involve hundreds and thousands of processors possibly for weeks at a time. The computer resources at Livermore, Los Alamos, and Sandia are networked, and researchers at the three sites share time on these systems to complete essential simulations. The addition of the ASCI White system has tripled capability and more than doubled the total capacity of much-needed computing resources.

It was not an easy task, however. Anne Altman said there were some “excruciatingly difficult problems” in the early design phases of ASCI White. A problem with the processor cards required remanufacturing. “At times we pushed the technology and the technology pushed back,” she said. “We solved many of our problems and built the most powerful computer in the world.”

While ASCI White will be used only for national defense work, the NNSA programs that produced White and that have consistently defied the technologically impossible for almost a decade have also revitalized the computing industry. Nearly 300 supercomputer systems were sold last year to support industry in fields such as weather forecasting, aerospace and biological sciences.



IBM Managing Director for U.S. Federal Government Anne Altman and LLNL ASCI Program Leader David Nowak cut the ASCI White cake at a patio reception following the dedication ceremony.

