



For the Week of December 14th, 2009



U.S. DEPARTMENT OF
ENERGY



OAK RIDGE NATIONAL LABORATORY

MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

Denovo Uses Jaguar to Test Its Muscle for Reactor Problems

Radiation transport code runs largest known simulations of a nuclear reactor

- Denovo, a new parallel solver for radiation transport developed at ORNL, is contributing to the design of radiation-tracking tools to deal with deadly threats to national security.
- Developed 2 years ago by ORNL's Tom Evans, the code is evolving to tackle more complex tasks that require a state-of-the-art supercomputer such as Jaguar.
- Evans received a 5-million-hour allocation during Jaguar's 2009 Early Science Program—the team ran the largest-known simulations of a nuclear reactor.
- Calculations were done to determine when a reactor reaches and sustains a chain reaction and to determine the optimal safeguards, critically important research in both the design of next-generation reactors and improvement of existing ones.

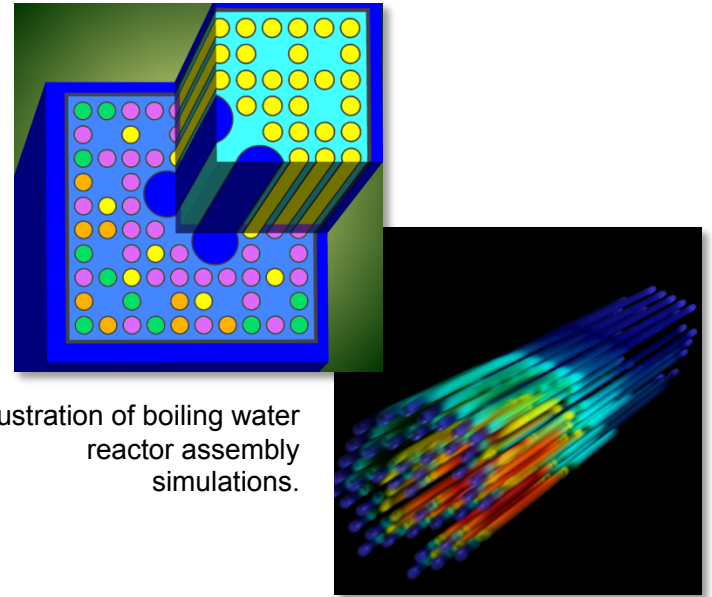


Illustration of boiling water reactor assembly simulations.

Workshop Prepares Users for Upgraded Cray XT5 Machines

Users get chance to test-drive two of the world's fastest supercomputers

- A workshop held at ORNL December 7-9 helped users and developers acclimate to an upgrade from four- to six-core AMD processors in both Jaguar and Kraken.
- While both systems are located at ORNL, Jaguar is owned by the DOE-supported OLCF and Kraken is funded by the NSF and managed by the University of Tennessee.
- Representatives from over 20 organizations attended the workshop which included lectures by staff members of the OLCF, UT, Cray, and AMD. The workshop also featured hands-on sessions allowing participants to access Jaguar using their own codes.



Jeff Larkin of Cray speaks to users at the recent six-core workshop held at ORNL.

“We have these workshops periodically to educate and re-educate the users on the best way to make use of the resources that we have.”

-Ricky Kendall, group leader for the scientific computing group at the OLCF

CPUs to GPUs

Researcher discusses next-generation of supercomputing at Oak Ridge seminar

- On Dec. 15, 2009, Pacific Northwest National Laboratory researcher Oreste Villa spoke about effective methods of utilizing graphic processing units (GPUs) in high-performance computing.
- Villa's talk was part of the OLCF Seminar Series. The series hosts monthly presentations covering areas of interest in high-performance computing, with a focus on petascale computing.
- The HPC community anticipates future computer architectures to make substantial use of GPUs, which crunch data much faster than central processing units (CPUs).



Oreste Villa, PNNL

“These kinds of investigations are important because they explore and help delineate the capabilities of GPUs for specific application areas in high-performance computing.”

– Donald Frederick, User Assistance and Outreach Group at the OLCF

BOF Seeks User Assistance Excellence

HPC Centers meeting evolving

- The fourth HPC Centers birds-of-a-feather (BOF) gathered at SC09 to brainstorm best practices for user assistance departments at some of the country's HPC centers.
- 57 participants, representing user assistance personnel from government agencies and several universities participated.
- Beginning in January 2010, the BOF will go from its semiannual physical meeting to monthly teleconferences, though they will continue to meet physically at conferences.



OLCF User Support Specialist Bobby Whitten

“What started as a birds-of-a-feather has now reached critical mass and this collaboration promises to bring user assistance to the next level.”

-OLCF User Support Specialist Bobby Whitten