NCCS Snapshot
The Week of August 13, 2007

NATIONAL CENTER
FOR COMPUTATIONAL SCIENCES

Oak Ridge National Laboratory
U.S. Department of Energy

Shedding Light on Exploding Stars

A white dwarf star is destroyed, leaving a radioactive cloud of nickel and other elements that glows as bright as a galaxy for weeks

- **Type Ia supernovas are the biggest thermonuclear explosions in the universe**
- **A team led by Stan Woosley of UC–Santa Cruz is using Jaguar to simulate several aspects of the supernova explosion**
- **Upcoming petascale system at the NCCS will allow the team to examine supernovas with greater accuracy**

"We would like to understand the physics underneath. Type Ia supernovas are still one of the most important pieces of evidence for an accelerating expansion of the universe."

Stan Woosley, University of California–Santa Cruz

Researchers simulate key evidence for an accelerating universe

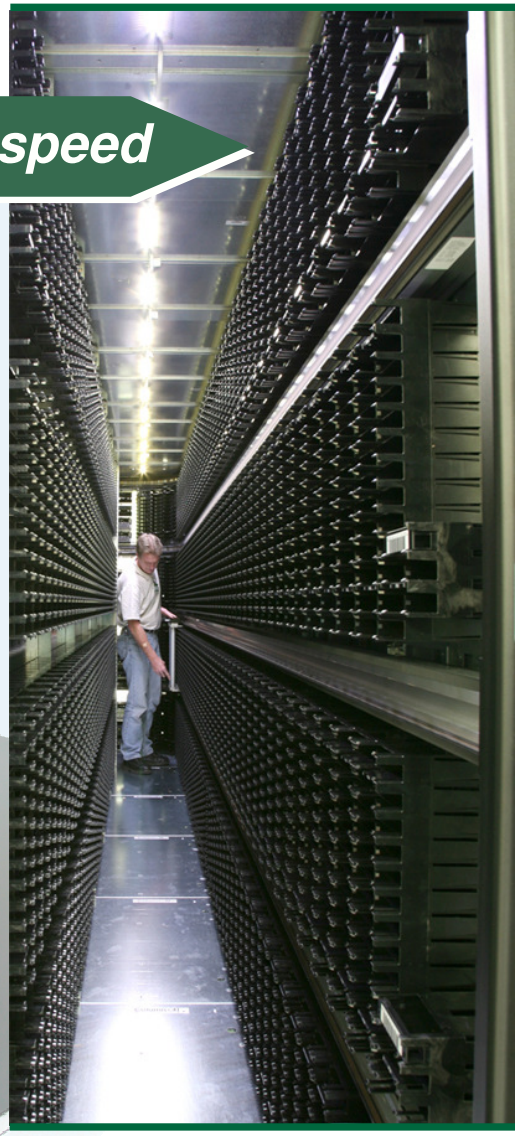
The Fastest Supercomputers Get More Closet Space

High-Performance Storage System adds capacity and speed

- **Supercomputers addressing Grand Challenges need to quickly store massive amounts of data**
- **The High-Performance Storage System meets the big-storage demands of big science**
- **Today the system stores 1.44 petabytes of data—the hard-drive contents of today's typical laptops 9,000 times over**

"Fifteen years ago, [national] labs realized they needed something of this size. They recognized Grand Challenge problems were coming up that would require petaflops of computing power. And they realized those jobs had to have a place to put the data."

Stanley White, National Center for Computational Sciences



Researchers Get a Hand With Next-Generation Codes

Scaling to Petaflops Workshop given by experts from the NCCS, Cray, and AMD

- **Leadership applications must eventually use hundreds of thousands of processors**
- **ORNL workshop brings more than 60 computational scientists up to speed with presentations and hands-on assistance**

"I had some expectations about the workshop, and I would think they were completely met."

Ravindra Uplenchwar,
Stanford Linear Accelerator Center

Workshop Attendees