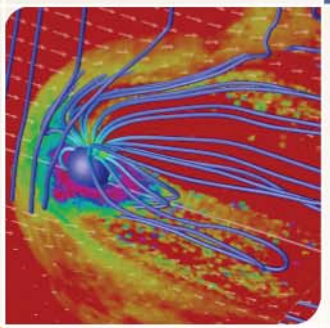
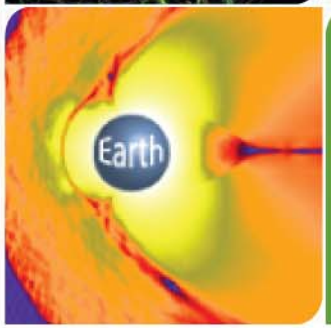
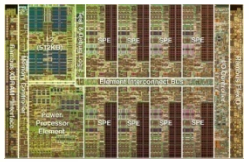


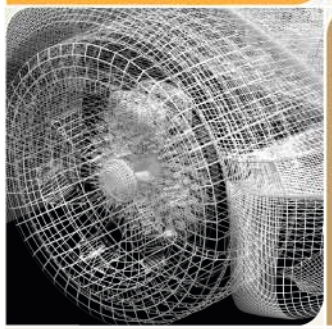



Sony-Toshiba-IBM Cell Center of Competence @ Georgia Tech



David A. Bader, Director



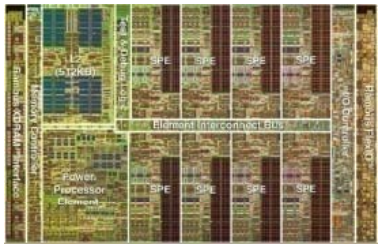

SONY TOSHIBA IBM

Georgia Tech College of Computing

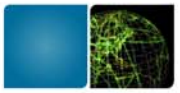
Computational Science and Engineering

2nd Annual Cell/B.E. Workshop

- Co-Chairs:
  - David A. Bader, Georgia Tech
  - Santosh Pande, Georgia Tech
- Steering Committee:
  - Doreen Anding, IBM
  - David A. Bader, Georgia Tech
  - Alex Chow, IBM
  - Austin Noronha, Sony
  - Santosh Pande, Georgia Tech
  - Kenji Suzuki, Toshiba
  - Bob Szabo, IBM
  - Yasu Yokote, Sony
- Local Arrangements
  - Carolyn Young
  - Della Phinisee



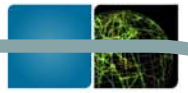
Georgia Tech College of Computing


Program Highlights

- Keynote Talk
- Technical Sessions
  - STI Centers of Competence, Plans and Successes
  - Applications for Low-Cost Cell/B.E. Clusters
  - Digital Media and Visualization Applications for Cell/B.E.
  - Programmability 1: Language and Compiler
  - Programmability 2: Programming Model and Common Runtime
  - Programmability 3: ISV Programmability Framework and Tooling
- Georgia Tech Poster Session (Klaus Atrium)

SONY TOSHIBA IBM

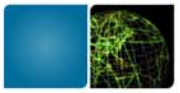

2nd Annual Workshop on Software and Applications for the Cell/B.E. processor

Program Change: JULY 10, 2:00PM (TODAY)

Bruce D'Amora (IBM TJ Watson Research Center)

Cell/B.E. Servers: A Platform for Real Time Scalable Computing and Visualization

(replaces talk by Sheldon Brown)


Logistics

- Free Wireless (SSID: Gtwireless)
  - See help desk in atrium
  - SSD is not broadcast, must enter SSID and WEP key
- Restrooms
  - Exit to the Atrium, turn left, and turn left again
- Refreshments and Lunch in Atrium
  - Morning and afternoon breaks
  - Lunch
  - Visit poster sessions
- Shuttle Bus
  - Leaves this evening at 5:30pm to take guests back to the Marriott Residence Inn
  - Tomorrow morning starting at 7am, will pick up guests from hotel
- Need any additional help?
  - See Carolyn and Della at the Registration Desk

Military Supercomputer Sets Record

June 9, 2008, John Markoff

SAN FRANCISCO — An American military supercomputer, assembled from components originally designed for video game machines, has reached a long-sought-after computing milestone by processing more than 1.026 quadrillion calculations per second.

The new machine is more than twice as fast as the previous fastest supercomputer, the I.B.M. BlueGene/L, which is based at Lawrence Livermore National Laboratory in California.

The new $133 million supercomputer, called Roadrunner in a reference to the state bird of New Mexico, was devised and built by engineers and scientists at I.B.M. and Los Alamos National Laboratory, based in Los Alamos, N.M. It will be used principally to solve classified military problems to ensure that the nation's stockpile of nuclear weapons will continue to work correctly as they age. The Roadrunner will simulate the behavior of the weapons in the first fraction of a second during an explosion.

Before it is placed in a classified environment, it will also be used to explore scientific problems like climate change. The greater speed of the Roadrunner will make it possible for scientists to test global climate models with higher accuracy.

To put the performance of the machine in perspective, Thomas P. D'Agostino, the administrator of the National Nuclear Security Administration, said that if all six billion people on earth used hand calculators and performed calculations 24 hours a day and seven days a week, it would take them 46 years to do what the Roadrunner can in one day.

The machine is an unusual blend of chips used in consumer products and advanced parallel computing technologies. The lessons that computer scientists learn by making it calculate even faster are seen as essential to the future of both personal and mobile consumer computing.

The high-performance computing goal, known as a petaflop — one thousand trillion calculations per second — has long been viewed as a crucial milestone by military, technical and scientific organizations in the United States, as well as a growing group including Japan, China and the European Union. All view supercomputing technology as a symbol of national economic competitiveness.

By running programs that find a solution in hours or even less time — compared with as long as three months on older generations of computers — petaflop machines like Roadrunner have the potential to fundamentally alter science and engineering, supercomputer experts say. Researchers can ask questions and receive answers virtually interactively and can perform experiments that would previously have been impractical.

"This is equivalent to the four-minute mile of supercomputing," said Jack Dongarra, a computer scientist at the University of Tennessee who for several decades has tracked the performance of the fastest computers.

Each new supercomputing generation has brought scientists a step closer to faithfully simulating physical reality. It has also produced software and hardware technologies that have rapidly spilled out into the rest of the computer industry for consumer and business products.

Technology is flowing in the opposite direction as well. Consumer-oriented computing began dominating research and development spending on technology shortly after the cold war ended in the late 1980s, and that trend is evident in the design of the world's fastest computers.

The Roadrunner is based on a radical design that includes 12,960 chips that are an improved version of an I.B.M. Cell microprocessor, a parallel processing chip originally created for Sony's PlayStation 3 video-game machine. The Sony chips are used as accelerators, or turbochargers, for portions of calculations.

The Roadrunner also includes a smaller number of more conventional Opteron processors, made by Advanced Micro Devices, which are already widely used in corporate servers.

"Roadrunner ... aboratory. "Technology is coming from the consumer electronics market and the innovation is happening first in terms of cellphones ...

The innovatic... are.

Roadrunner, ... ools because it has three types of processors. Programmers have to figure out how to keep all of the 116,640 processor cores in the ...

"We've prove... way of c...

Solving that p... cores. Th...

"If Chevy wins... scientist c...

Those who w...

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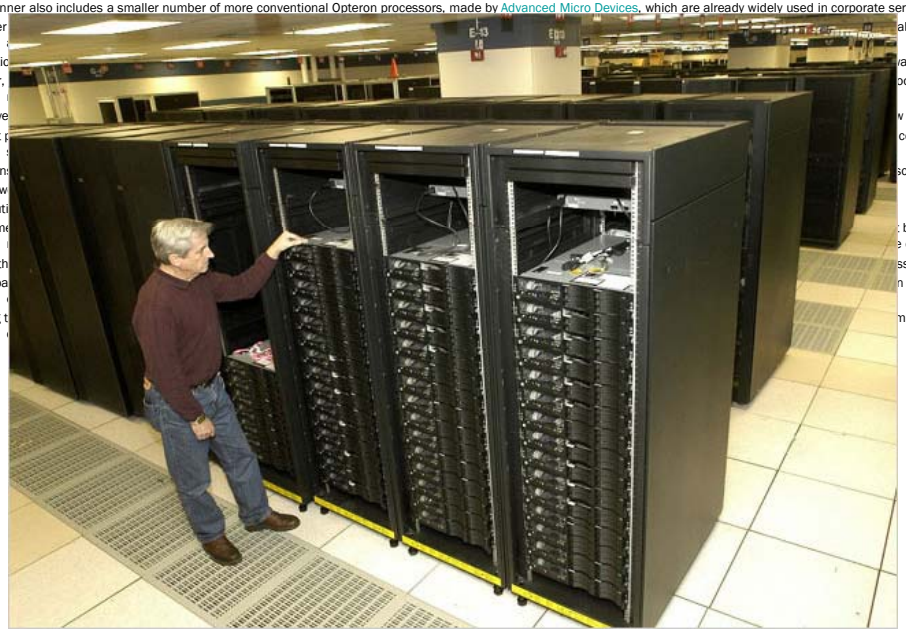
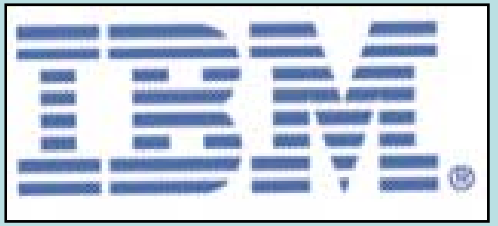


The Roadrunner supercomputer costs $133 million and will be used to study nuclear weapons.



The New York Times

Georgia Tech College of Computing

Keynote Speaker: Allen McPherson

The Cell at Los Alamos: Ray Tracing to Roadrunner

- Allen McPherson (BS CS, Southern Illinois University; MS CS Univ of New Mexico) is a visualization researcher at Los Alamos National Laboratory. His research interests include
  - hardware-accelerated rendering
  - visualization and rendering algorithms
  - parallel computing

Allen McPherson

Los Alamos National Laboratory