

Department of Computer Science
University of Houston

SEMINAR SPRIL 2011

WHEN: FRIDAY, APRIL 15, 2011

WHERE: PGH 563

TIME: 11:00 AM

SPEAKER: Dr. Ron Brightwell, Sandia National Laboratories

Host: Dr. Barbara Chapman

Title:

A Perspective on Operating and Runtime Systems for Exascale Computing

Abstract:

Exascale computing platforms will likely require more sophisticated runtime systems than today's large-scale parallel machines. Issues such as massive on-node parallelism, power, and resiliency will likely require a much more dynamic and adaptive approach to resource allocation and management. These challenges are compounded by the changing environment of extreme-scale computing. Alternative parallel programming models beyond distributed-memory message-passing are needed, but converging on a single, universal approach is unlikely, especially in the near-term. The landscape of hardware is also changing, with chip vendors exploring a variety of approaches for node-level architectures. The traditional usage model for a large parallel computing platform is also being challenged by new application paradigms and analysis functionality. This talk will discuss some of the important challenges facing operating and runtime systems for exascale computing and offer a perspective on some fundamental capabilities needed for enabling application performance and scalability.

Bio:

Ron Brightwell received his BS in mathematics in 1991 and his MS in computer science in 1994 from Mississippi State University. He joined Sandia National Laboratories in 1995 and is currently Technical Manager of the Scalable System Software Department. While at Sandia, he has designed and developed software for lightweight compute node operating systems and high-performance networks on several large-scale massively parallel systems, including the Intel Paragon and TeraFLOPS, and the Cray T3 and XT series of machines. He has authored more than 60 refereed journal and conference publications. His research interests include high-performance, scalable communication interfaces and protocols for system area networks, operating systems for massively parallel processing machines, and parallel program performance analysis libraries and tools. He is a Senior Member of the IEEE and the ACM.