

SCinet Research Sandbox to Demonstrate Unprecedented HPC Industry Collaboration



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At the Supercomputing 2010 (SC10) conference, Avetec's DICE program will demonstrate through collaboration with government, academic and HPC vendors the performance and effectiveness of applications and file systems utilizing InfiniBand over the real-world wide-area networks (WAN). The Research Sandbox (System Area Network Demonstration) project -- outside the controlled lab environment -- will provide insight for the high performance computing (HPC) community into how such technologies can be applied in real-world settings. The DICE program will share results in real time through its Twitter account @diceprogram during SC10, November 16-18, 2010.

"The entire community has gotten behind this collaboration because it addresses one of the most pressing challenges across all sectors of HPC, and the best way to accelerate discovery is to test across different entities," said Roger Panton, Executive Director of the DICE program.

The project will test encapsulated and encrypted InfiniBand data movement between high performance computing clusters. The demonstration will put to the test 16 leading HPC solutions, which have been embedded in the DICE test bed -- a geographically distributed test environment -- to evaluate and verify the performance and effectiveness of applications and file systems using InfiniBand over the WAN.

The demonstration will connect from SCinet at SC10 in New Orleans to Avetec's Springfield, Ohio facility; NASA Goddard Space Flight Center in Greenbelt, Maryland; and Lawrence Livermore National Laboratory in Livermore, California.

The vendors involved in the demonstration include the following:

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|----------------------|------------------|
| AMP NetConnect | IBM |
| BlueArc | Intel/SuperMicro |
| Brocade | Mellanox |
| CSC | Microsoft |
| Data Direct Networks | Obsidian |
| Force10 | SGI |
| Fusion I/O | Tyco Electronics |
| Hitachi Data Systems | Voltaire |

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In addition, the following research teams have contributed expertise and resources to the Research Sandbox project:

Avetec/DICE	SCinet
ESnet	StarLight Exchange
Lawrence Livermore National Laboratory	The Ohio State University (D.K. Panda)
NASA Goddard Space Flight Center	USA40Net
Sandia National Lab	

The community can expect to see preliminary reports through the DICE program's Twitter log about the following aspects of the Research Sandbox experiment:

- 4x10 gig test with 2 fusion I/O servers that will test paralyzed data movement across either 4 links using TCP/IP versus an extended InfiniBand network with 4 Longbow (language)
- Circuits will be monitored for packet performance on Brocade's 100 gig connection across the show floor using the MLXe router as the core network infrastructure that aggregates research data from multiple HPC clusters geographically located throughout the country via high-density 10 Gigabit and 100 Gigabit connections

"Many organizations' data repositories are growing exponentially, and most of us need to move data efficiently and reliably to geographically disperse locations," said Dan Duffy, Lead HPC Systems Architect at Goddard's NASA Center for Climate Simulation. "This project will leverage the interoperability of a number of products to demonstrate the movement of data, both encrypted and unencrypted, at extremely high throughputs. The goal is to maximize performance and maintain reliability."

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