

OSU's Network Based Computing Lab Uses DICE Test Bed for Performance Evaluation of Obsidian Routers

By DICE Program

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Avetec's DICE program has successfully completed a study on the effectiveness and efficiency of Longbow E100 devices for encrypted data movement between HPC clusters using a file-level data migration tool called 'dsync.'

Avetec's Data Intensive Computing Environment (DICE) program, along with their partners the Network Based Computing Lab at the Ohio State University and Obsidian Strategics, Inc., has successfully completed a study on the effectiveness and efficiency of Longbow E100 devices for encrypted data movement between high performance computing clusters using a file-level data migration tool called 'dsync.' This technology already enables high performance network connectivity across wide-area networks (WAN), but a study needed to be done to characterize the performance of interconnects for secure and unsecure data transmissions.

"In this work, we conducted experiments on the DICE program's geographically dispersed test bed to evaluate the actual performance of Obsidian Longbow Routing on state-of-the-art InfiniBand clusters," said Dhabaleswar K. Panda, leader of the Network Based Computing Lab. "We used Obsidian Longbow routers to connect two InfiniBand compute clusters, varied the routing ports latency to emulate the effects of different physical distances between the two clusters and evaluated the performance of Obsidian Longbow InfiniBand routers under different workloads, either with or without the hardware encryption feature enabled."

The research team's results include findings on how longer latency affects throughput and dsync and also on the effects of enabling encryption. Through the performance evaluation from the Network Based Computing Lab, the team found that using a higher degree of concurrent IO could help achieve better bandwidth utilization and that better throughput is obtained with larger RDMA buffer size and concurrent RDMA streams, since they can pump more data into the data transfer pipeline to attain efficient bandwidth utilization. In the tests run, enabling hardware encryption did not generate a noticeable impact at the measured performance.

"Clearly encrypted data movement between HPC clusters is a critical need for the community," said Al Stutz, co-leader of the DICE program and Avetec's CIO. "This study allowed the opportunity to put encapsulated InfiniBand products to the test."

To access the performance evaluation report from the Network Based Computing Lab, go to www.diceprogram.org.

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Avetec's Data Intensive Computing Environment (DICE) program independently evaluates hardware and software solutions for enterprise and government with the goal of helping organizations save critical resources and time. DICE helps organizations in high performance computing and IT focus their resources

on technology investments for critical challenges; optimize quality, performance and functionality; correct issues before deployment, reduce risk and cost, test alternatives prior to launch; enhance product and technology validity and marketability; and accelerate product release. For additional information on the DICE program, visit diceprogram.org.

Category Technology, Software, Wireless
Tags osu, dice, Avetec, obsidian, Longbow, networking, encrypted, dsync, wan, migration
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