

Revisiting the Dragonfly Topology : Interconnect in High-Performance Computing

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Abstract –

High-radix routers in high-performance computing were proposed to exploit the increasing router pin bandwidth and silicon photonics enables continuing increase of bandwidth. However, given the high-radix routers and increasing bandwidth, the interconnect architecture needs to properly exploit the advantages. A new interconnect topology, Dragonfly, was proposed 10 years ago to take advantage of the high-radix routers and the signaling technology and the prior research on Dragonfly topology has also been implemented in real systems. In this talk, I will re-visit the Dragonfly topology and in particular, the benefits and the challenges associated with the topology. In addition, I will try to answer if the Dragonfly is the most efficient topology for high-performance computing today and signaling technology continue to evolve.

Bio –

John Kim is an associate professor in the School of Electrical Engineering at KAIST. He received his Ph.D. from Stanford University and his B.S. and M.Eng from Cornell University. Prior to graduate school, John has worked on the design of several processors at Motorola and Intel. His research interest includes computer architecture, interconnection networks, and mobile systems. His work on the Dragonfly topology was selected as an IEEE Micro Top Pick and has received a Google Faculty Research Award.