Mechanical computer-aided design (MCAD) and computer-aided engineering (CAE) systems are integral parts of the design and development process for manufacturers. As MCAD and CAE software tools have become more sophisticated, manufacturers have adopted HPC cluster computing environments to speed processing times and reduce time-to-revenue for new products.

The Connectivity Challenge
HPC cluster environments employ multi-core, multi-processor servers and high-speed storage. But without a high-performance network connecting them, clustered server performance is wasted while data moves through the network bottleneck. In order to maintain a balanced system and to achieve optimal performance for MCAD and CAE simulations, the network interconnect must eliminate this bottleneck and provide high bandwidth with minimum latency.

The Mellanox® Solution
Mellanox’s high-performance InfiniBand connectivity solutions maximize the cluster compute environment’s efficiency and scalability. Mellanox’s 56Gb/s InfiniBand is designed for multi-core, multi-processor environments and can efficiently handle multiple data streams simultaneously while guaranteeing fast and reliable data transfer for each stream. Mellanox InfiniBand enables scalable, fast communication among servers and storage to maximize HPC productivity for manufacturing, speeding development time and reducing time-to-market.

KEY ADVANTAGES

- The world’s fastest interconnect, supporting up to 56Gb/s per port
- Latency as low as 0.7 microseconds
- Full CPU offload with the flexibility of RDMA capabilities to reduce traditional network protocol processing from the CPU and increase the processor efficiency.
- I/O CapEx reduction – one Mellanox adapter carries more traffic with higher reliability than four 10 Gigabit Ethernet adapters.