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EMERGING CHALLENGES FOR EDGECFD SIMULATIONS IN MASSIVELY MULTICORE ARCHITECTURES

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There is a tendency for a growing number of cores per CPU in modern parallel architectures [1,2]. EdgeCFD is a Finite Element software that was developed to take advantage of hybrid, distributed and threaded memory computers [3], however, its algorithms still explores features of non-hybrid systems, where MPI or OpenMP could be used alone. In order to efficiently run in emerging massively multicore architectures, algorithms must change to reduce intra-node communication while increasing the rate of data sharing through memory buses. Moreover, visualization and data storage are also becoming a big bottleneck for future and more complex simulations [4]. This talk exposes such concerns while giving simple alternatives to mitigate these problems in the context of EdgeCFD choices

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