

DARPA High Productivity Computing Systems Program  
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**Abstract**

The DARPA High Productivity Computing Systems (HPCS) program is focused on providing a new generation of economically viable petascale computing systems for the national security and industrial user communities. The HPCS program is developing systems that deliver increased value to users at a rate commensurate with the rate of improvement in the underlying technologies. In support of this program, the MIT Lincoln Laboratory led HPCS Productivity Team has initiated a fundamental reassessment of how we define and measure performance, programmability, portability, robustness and ultimately, productivity in the High Performance Computing (HPC) domain. The value of a HPC system to a user includes many factors, such as execution time on a particular problem, software development time, direct hardware costs and indirect administrative and maintenance costs. The recently announced HPC Challenge benchmark suite is the first of several high performance computing evaluation tools developed by the HPCS Productivity Team. The HPC Challenge contains components that specifically stress processors, memory bandwidth, network bandwidth and network latency. This talk will present an overview of the DARPA HPCS Program and will provide an in-depth analysis of recent HPC Challenge results obtained from the largest computing systems in the world.