

Advances in High-Performance Computing: The Race to the Top

Tarek El-Ghazawi,
Professor and IEEE Fellow
The George Washington University
Washington DC, USA

Abstract

In recent years, the world has seen an unprecedented international race for the leadership in supercomputing. Over the past decade or so, the top ranking supercomputer has been moving in circles every several months between the US, Japan and China. In addition, over almost one decade, the speed of the top supercomputer has risen four orders of magnitude and is moving rapidly to be measured in exaflops, or million trillion calculations per second, units that are not used today by industry. The secret behind this international out-of-control race is perhaps because leadership in supercomputing means technological and eventually economic leadership. This talk will provide a quick in-depth characterization to the advances in High-Performance Computing in the past 20 years. In the light of this, it will also provide some projections, future trends, and identify some of the open research issues in High-Performance Computing.