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The World's Top 10 Supercomputers: More than One Story

June 25, 2016

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IDC's Quick Take

The lion's share of the attention surrounding the June 2016 TOP500 list of the world's most powerful supercomputers not surprisingly went to the number 1 finisher, China's awe-inspiring Sunway TaihuLight 93-petaflop system that tripled the prior speed record. Reporters and other industry observers gave scant attention to the more market-relevant news that U.S. vendor Cray, for example, captured 5 of the Top 10 positions and "continues to be the clear leader in the TOP500 list in performance and has a considerable lead with a 19.9% share of installed total performance." The Cray systems, after all, are what all supercomputers, presumably including the Sunway system, aspire to become: production-grade computers with proven histories of enabling big, diverse user communities to run their applications reliably at large scale. Relatively speaking, the impressive Chinese system is still near the start of that exciting journey. It's important to give due credit to China's singular achievement, but no less important to recognize the contributions of the other Top 10 finishers, all with production-grade supercomputers, including China's NUDT (1 position), Japan's RIKEN (1), and IBM (1).

News Highlights

The latest edition of the semi-annual TOP500 list, released earlier this week at the ISC 2016 conference in Frankfurt, Germany, introduced the global HPC community to a stunning new list-topper, the Sunway TaihuLight supercomputer housed at the National Supercomputing Center in Wuxi, China. This early-stage platform deserves triple applause: first for sustaining a record-breaking 93 petaflops on the high-performance LINPACK test that underpins the rankings, second for doing this with an innovative Chinese processor, and third for running multiple applications at large-scale so soon (including three finalists for the prestigious Gordon Bell Prize).

That said, it's important to remember that the Sunway TaihuLight achievement really is an early-stage system that will need time, most likely several years, to test its potential for supporting a large user community with diverse, production-grade computing requirements. Although the plan is to sell multiple copies of the system in various sizes, in the near term, the Sunway TaihuLight supercomputer is likely to have little impact on the market, except perhaps as an excuse for HPC officials in other nations to petition their governments for increased funding to fuel attempts to catch up with the TOP500 benchmark leader.

In contrast, the other Top 10 finishers have been around long enough to demonstrate their impact on the global marketplace. Here the leader is Cray, with 5 of the Top 10 spots on the list and a platform that is already heavily used in some of the world's most demanding production computing environments. As the TOP500 Web site reports, this firm's systems captured a higher share (19.9%) of the aggregate performance of the 500 supercomputers than any other vendor.

IDC's Point of View

IDC believes it's important to give credit where credit is due. Where the latest TOP500 list is concerned, credit is certainly due to China's new Sunway TiahuLight supercomputer for topping the list — and most reports covering the TOP500 results have focused heavily, sometimes exclusively, on this remarkable achievement. What has gotten too little attention, although it has a larger impact on the HPC market today, is the story of the other Top 10 finishers on the list: Cray in particular captured 5 of the Top 10 positions with supercomputers that already support large, diverse user bases in production computing environments. Given that the high-performance LINPACK test that determines TOP500 rankings was never intended to be used as an accurate predictor of performance on a broad spectrum of user applications, IDC considers it especially important to keep TOP500 results in proper perspective.

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