

Sun Introduces New Metric for Server Efficiency

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Evaluating a new server for your data center is no longer simply a matter of measuring raw performance. With today's increasing demands, you also need to consider how much power, air conditioning and space a server consumes. While traditional metrics are good for calculating throughput, they don't consider these new power and space demands in the equation.

Sun Microsystems introduced a new metric for the next generation of the Internet: the new SWaP (space, wattage and performance) metric that assesses the efficiency and effectiveness of rack-optimized server deployments in a datacenter. According to industry analysts, energy consumption and space utilization are among the biggest cost centers and constraints to growth for IT managers. SWaP is the first industry metric to incorporate these characteristics as considerations in evaluating servers in the datacenter.

As customers attempt to expand their server capacity to deliver numerous web and application services, they are running out of power and space in the datacenter. Sun developed SWaP to measure the effectiveness and impact of its rack-optimized servers in a typical datacenter environment in response to the potential constraints on deploying more racks of servers caused by power and space shortages.

Sun started using SWaP as a design point for its next generation of servers several years ago - the result is the new UltraSPARC T1 processor-based Sun Fire T1000 and T2000 servers with CoolThreads

technology. The SWaP analysis concluded the Sun Fire T1000 and T2000 servers far surpass systems from IBM, Dell and HP with up to five times the performance compared to previous generation systems, in some cases using one-fifth the energy and using one-quarter the space, while delivering equivalent or higher levels of performance.

"SWaP is an objective, three-dimensional metric that provides a more comprehensive and realistic way to assess today's servers, because it evaluates efficiency of the server within the real constraints of space and power consumption," said Sarang Ghatpande, program manager and research analyst, Ideas International. "Further, SWaP is flexible as it can be readily applied to any datacenter environment using widely available industry standard data points or user-defined equivalent parameters."

SWaP = Performance/ (Space x Power)

The formula Sun developed, $SWaP = \text{performance} / (\text{space} \times \text{power})$, is a simple calculation that allows any customer to run the metric and use the results to compare systems from different vendors. All of the data used to populate the SWaP metric is publicly available. Space: The space a server occupies can be measured by the rack unit height of the system; information found on a company's web site. Wattage: Metrics on the server's power consumption can be obtained using data from actual benchmark runs or vendor site planning guides, recorded in watts. Estimated system power consumption from calculators or datasheets can be also used to assess wattage. Performance: Information about the level of performance or throughput a server maintains can come from any industry-standard or ISV benchmark. Based on the SWaP metric, the Sun Fire T2000 was shown to be 4 times more efficient than IBM's x346 and 11 times more efficient than HP's rx4640. Additionally, the Sun Fire T1000 was shown to be four times more efficient than Dell's PowerEdge SC1425.

Link: www.sun.com/servers/coolthreads/swap/#intro

Source: Sun

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