



Improved Server Economics with New Generation Broadwell CPUs

Ultra SuperServers Equipped with New Generation Broadwell CPUs Achieve Best Price / Performance

Highest Performance and Efficiency Servers

Improvements in performance and cost between new Intel® Xeon® Broadwell (BDW) and current Haswell (HSW) generation CPU-based Supermicro 1U Ultra server solutions were measured using two benchmark tests and three different CPU types. Test environments and configurations were identical; memory speed used with the BDW CPUs was 2400MHz and for the HSW CPUs was 2133MHz. The results show that the cost and performance savings using BDW can equal up to 32%. The configurations tested are shown in Table 1 below:

System	CPU	Memory	SSD	Benchmark
New Generation Broadwell Server	2 Intel® Xeon® E5-2697A v4 (16C, 2.6GHz, 145W)	8x 8GB DDR4-2400 MHz	1x 480GB SATA 2.5" SSD	High-Performance LINPACK (HPL) and SPEC® CFP2006
Current Generation Haswell Server	2 Intel® Xeon® E5-2697 v3 (14C, 2.6GHz, 145W)	8x 8GB DDR4-2133 MHz		
New Generation Broadwell Server	2 Intel® Xeon® E5-2690 v4 (14C, 2.6GHz, 135W)	8x 8GB DDR4-2400 MHz		
Current Generation Haswell Server	2 Intel® Xeon® E5-2690 v3 (12C, 2.6GHz, 135W)	8x 8GB DDR4-2133 MHz		
New Generation Broadwell Server	2 Intel® Xeon® E5-2630 v4 (10C, 2.2GHz, 85W)	8x 8GB DDR4-2400 MHz		
Current Generation Haswell Server	2 Intel® Xeon® E5-2630 v3 (8C, 2.4GHz, 85W)	8x 8GB DDR4-2133 MHz		

Table 1: 1U Ultra Server Configurations Tested

Results

Server performance was measured using the High Performance Linpack (HPL) and SPEC® CFP2006 benchmarks with three different Intel® Xeon® CPU Types: Segment Optimized, Advanced, and Standard. Broadwell improvements were calculated and graphed, and range from 11% to 32%. Since HSW and BDW Type CPUs are comparable in price, the

performance improvements are also comparable to the price improvements for equivalent performance.



Figure 1: Supermicro 1U Ultra (SYS-1028U-E1CRTP+)

CPU Generation	CPU Type	CPU SKU	HPL	SPEC® CFP2006	
				SPECfp®_rate_base2006	SPECfp®_Rate2006
BDW	Segment Optimized	E5-2697A v4	1138	915	942
HSW		E5-2697 v3	911	807	830
BDW	Advanced	E5-2690 v4	1004	865	892
HSW		E5-2690 v3	829	777	799
BDW	Standard	E5-2630 v4	694	657	674
HSW		E5-2630 v3	527	556	570

Table 2: Benchmark Results

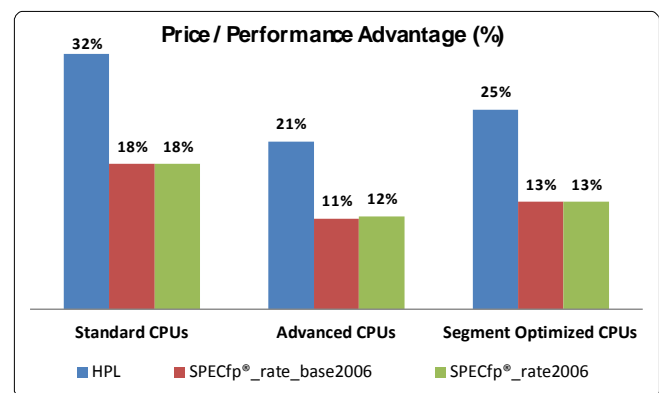


Chart 1: New Generation Broadwell Server Price/Performance Advantage