Amdahl 580 Systems

Product Enhancement

Amdahl has expanded the top end of its 580 processor line with the addition of three new high-performance systems: the 5890-200 and 5890-300 dual processors and the 5890-600 four-way multiprocessor. These three processors offer increased main memory and I/O channel capacity and, according to Amdahl, an increase in throughput capacity of 1.2 to 3.6 times that of the dual processor 5870. The increase in throughput is due mainly to the use of a five-instruction pipeline, two high-speed buffers per CPU (a 64KB operand buffer and a 32KB instruction buffer) to maximize execution rate, 16-byte wide data paths between system components, denser packaging to reduce access time and data paths, and larger main storage configurations. Along with the enhancements to throughput, Amdahl has augmented the 5890's reliability, availability, and serviceability (RAS) by extending the 580 Series technology. Improvements include isolated error circuits allowing for easier problem resolution; reduced circuitry connections through the use of functional packaging; enhanced error recovery capability, allowing correction or bypassing of errors; greater use of LSI circuitry to replace basic logic boards; on-board power and cooling monitoring; and the ability to vary central processing units, I/O channels, and portions of main storage off-line to minimize the effect of component failure.

Compatibility with the lower end of the 580 Series is continued through the support of both System/370 and 370/XA architectural modes, and the current releases of MVS/370, MVS/XA, VM/SP HPO, and Amdahl's version of Unix System V Release 2 (UTS/V).

The following chart summarizes the functional characteristics of the Amdahl 5890 Series.

FUNCTIONAL CHARACTERISTICS

MODEL	5890-200	5890-300	5890-600
SYSTEM CHARACTERISTICS			
Date announced	October 22, 1985	October 22, 1985	October 22, 1985
Announced delivery date	1st quarter 1987	2nd quarter 1986	3rd quarter 1987
Field upgradable to	5890-200 and 5890-600	5890-600	—
Relative performance (based on a 5870 = 1.0)	1.2 to 1.4	1.7 to 1.9	2.9 to 3.6
Number of processors	2	2	4
Cycle time, nanoseconds	15	15	15
Word size, bits	64	64	64
Operating systems	MVS/370, MVS/XA, VM/SP	MVS/370, MVS/XA, VM/SP	MVS/370, MVS/XA, VM/SP
MAIN MEMORY			
Type	256K-bit NMOS	256K-bit NMOS	256K-bit NMOS
Minimum capacity, bytes	64M	64M	128M
Maximum capacity, bytes	256M	256M	512M
Increment size	64M and 128M*	64M and 128M*	64M and 128M*
Cycle time, nanoseconds	—	—	—
HIGH SPEED BUFFERS			
Operand (per CPU)	64K bytes	64K bytes	64K bytes
Instruction (per CPU)	32K bytes	32K bytes	32K bytes
INPUT/OUTPUT CONTROL			
Number of channels:			
Byte multiplexer	16	16	32
Block multiplexer	32 to 64**	32 to 48**	64 to 128**

*Main storage is available in 32MB increments up to 128MB, 64MB increments up to 256MB, and 128MB increments up to a maximum of 512MB.
**Block multiplexer channels are available in 8-channel increments up to 48 channels, 16-channel increments up to 64 or 96 channels, and 32 channel-increments up to a maximum of 128 channels.

The target market for the 5890 Series will be those Amdahl users who are currently running a 5870 or 5880 and need the additional capacity of the 5890, and of course, Amdahl will also be trying to attract IBM's potential 3090 Series customers. When comparing the price/performance of the Amdahl and IBM offerings, the 5890-200 is roughly equivalent to the 3090-200 in performance, and about 18 percent less in cost, while the 5890-300 costs about the same as the 3090-200, and is, according to Amdahl, about 32 percent more powerful. The 5890-600 probably will have the most appeal, with 30 percent more computing power than the 3090-400 at an equivalent cost.

The long lead times for the 5890-600 and 5890-200 will definitely have a negative effect on potential sales, but we can expect Amdahl to better the announced delivery dates once the production line settles down. Specifically, the 5890-300 has a delivery date of the second quarter of 1986; the 5890-200, first quarter 1987; and the 5890-600, first quarter 1987. ▷

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▷ Along with adding the three new processors, Amdahl also announced a number of enhancements to the entire 580 line. These included increasing the main storage capacity to 128M bytes for the 5840, 5850, 5860, 5867 and 5880, and to 256M bytes for the 5868 and 5880 multiprocessors. In addition, Amdahl has expanded the availability of the 580/Expanded Storage feature to all 580 Series models and has extended the High-Speed Floating Point feature to the 5840 and 5850 uniprocessors, 5867 dual processor, and 5868 multiprocessor. Amdahl further announced a new 40-channel configuration, and up to 8 byte multiplexer channels for the 5868 and 5880 multiprocessors, along with providing a multiprocessing coupling feature to provide the capability of coupling two previously installed uniprocessors to form a single multiprocessor. Lastly, Amdahl has lowered the purchase price for all current 580 Series models some 8 to 16 percent depending on model and configuration.

EQUIPMENT PRICES

		Purchase Price ($)	Monthly Maint. ($)	Monthly Rental ($)
PROCESSORS AND MAIN MEMORY				
Model 5890-200	CPU Complex; includes one 64KB and one 32KB buffer per CPU, block- and byte-mux channels, 1 operator console, 1 power distribution unit, 580/Extended Storage, 580/VM Performance Assist; I/O channels and main memory options are listed below.			
	With 64M bytes main memory and:			
	32 I/O channels	4,250,000	15,250	354,170
	40 I/O channels	4,380,000	15,450	365,000
	48 I/O channels	4,510,000	15,650	357,830
	64 I/O channels	4,770,000	16,050	397,500
	With 96M bytes main memory and:			
	32 I/O channels	4,538,000	15,575	378,170
	40 I/O channels	4,668,000	16,775	389,000
	48 I/O channels	4,798,000	15,975	399,830
	64 I/O channels	5,058,000	16,375	421,500
	With 128M bytes main memory and:			
	32 I/O channels	4,826,000	15,900	402,170
	40 I/O channels	4,956,000	16,100	413,000
	48 I/O channels	5,086,000	16,300	423,830
	64 I/O channels	5,346,000	16,700	445,500
	With 192M bytes main memory and:			
	32 I/O channels	5,306,000	16,550	442,170
	40 I/O channels	5,436,000	16,750	453,000
	48 I/O channels	5,566,000	16,950	463,830
	64 I/O channels	5,826,000	17,350	485,500
	With 256M bytes main memory and:			
	32 I/O channels	5,786,000	17,200	482,170
	40 I/O channels	5,916,000	17,400	493,000
	48 I/O channels	6,046,000	17,600	503,830
	64 I/O channels	6,306,000	18,000	525,500
Model 5890-300	CPU Complex; includes one 64KB and one 32KB buffer per CPU, block- and byte-mux channels, 1 operator console, 1 power distribution unit, 580/Extended Storage, 580/VM Performance Assist; I/O channels and main memory options are listed below.			
	With 64M bytes main memory and:			
	32 I/O channels	5,000,000	16,350	416,170
	40 I/O channels	5,130,000	16,550	427,500
	48 I/O channels	5,260,000	16,750	438,330
	64 I/O channels	5,520,000	17,150	460,000
	With 96M bytes main memory and:			
	32 I/O channels	5,280,000	16,675	440,670
	40 I/O channels	5,418,000	16,875	451,500
	48 I/O channels	5,548,000	17,075	462,330
	64 I/O channels	5,808,000	17,475	484,000

▷

	Purchase Price ($)	Monthly Maint. ($)	Monthly Rental ($)
With 128M bytes main memory and:			
32 I/O channels	5,576,000	17,000	464,670
40 I/O channels	5,706,000	17,200	475,500
48 I/O channels	5,836,000	17,400	486,330
64 I/O channels	6,096,000	17,800	508,000
With 192M bytes main memory and:			
32 I/O channels	6,056,000	17,650	504,670
40 I/O channels	6,186,000	17,850	515,500
48 I/O channels	6,316,000	18,050	526,330
64 I/O channels	6,576,000	18,450	548,000
With 256M bytes main memory and:			
32 I/O channels	6,536,000	18,300	544,670
40 I/O channels	6,666,000	18,500	555,500
48 I/O channels	6,796,000	18,700	566,330
64 I/O channels	7,056,000	19,100	588,000

Model 5890-600 CPU Complex; includes one 64KB & one 32KB buffer per CPU, block- and byte-mux channels, 2 operator consoles, 2 power distribution unit, 580/Extended Storage, 580/VM Performance Assist; I/O channels and main memory options are listed below.

	Purchase Price ($)	Monthly Maint. ($)	Monthly Rental ($)
With 128M bytes main memory and:			
64 I/O channels	9,330,000	27,400	777,500
80 I/O channels	9,590,000	27,800	799,170
96 I/O channels	9,850,000	28,200	820,830
128 I/O channels	10,370,000	29,000	864,170
With 192M bytes main memory and:			
64 I/O channels	9,906,000	28,050	825,500
80 I/O channels	10,166,000	28,450	847,170
96 I/O channels	10,426,000	28,850	868,830
128 I/O channels	10,946,000	29,650	912,170
With 256M bytes main memory and:			
64 I/O channels	10,482,000	28,700	873,500
80 I/O channels	10,742,000	29,100	895,170
96 I/O channels	11,002,000	29,500	916,830
128 I/O channels	11,522,000	30,300	960,170
With 384M bytes main memory and:			
64 I/O channels	11,442,000	30,000	953,500
80 I/O channels	11,702,000	30,400	975,170
96 I/O channels	11,962,000	30,800	996,830
128 I/O channels	12,482,000	31,600	1,040,170
With 512M bytes main memory and:			
64 I/O channels	12,402,000	31,300	1,033,500
80 I/O channels	12,662,000	31,700	1,055,170
96 I/O channels	12,992,000	32,100	1,076,830
128 I/O channels	13,442,000	32,900	1,120,170 □