

Siemens System 7.800

Product Enhancement

In November 1981, Siemens AG announced enhancement of its System 7.800 with two jumbo mainframes manufactured by Fujitsu, the Models 7.890 and 7.892.

The 7.890 monoprocessor is up to 2.5 times as powerful as the previous largest monoprocessor, Model 7.880-2. Main memory capacity extends from 16 to 64 megabytes.

The dual processor 7.892 likewise offers up to 2.5 times the performance of its previous largest counterpart, the 7.882-2. Main memory capacity ranges from 32 to 128 megabytes and this mainframe features reconfigurability into two monoprocessor systems. The 7.890 can be upgraded to the equivalent of a 7.892.

Technologically, the new models feature 64K-bit MOS chips for the main memory units, ECL logic modules with up to 1300 gates per chip, a 3-stage memory structure with 31-bit addressing, and extremely low buffer-storage access times for both the global buffer storage with 16K memory units (16 nanoseconds) and the 4K local buffer and microcode modules (5.5 nanoseconds). The logic and memory chips feature cooling towers for horizontally directed air cooling.

The new models provide for both upward migration from smaller System 7.800 models as well as extensive IBM compatibility. In fact, several operating systems can run simultaneously on the Models 7.890 and 7.892: MVS, the corresponding system extensions /SE, and the system products VM/SP Release 2, and MVS/SP Versions 1 and 2, as well as Siemens' BS 3000. All IBM and plug-compatible peripherals for the comparable system range can likewise be attached to the new models. For ease of migration, Siemens offers the Advanced Virtual Machine, comparable to IBM's Supertool VM/370, which allows simultaneous operation of the BS 3000, MVS, VS/1, VM/370, and DOS/VS operating systems.

In addition to Siemens' program products that run under BS 3000 (reviewed in the main Datapro report on System 7.800), Models 7.890 and 7.892 provide users with access to the entire IBM library (described in Datapro's reports on the 303X, 3081, and 4300 series). In particular, it is worth noting that Siemens' new jumbos offer the capability of job and task management via JES, JES/MAS, JES/E, RJE, and NJE. Support of VSAM and VTAM is provided as is support of other currently marketed I13M access methods. The comprehensive AIM system facilitates the use of all the latest DB/DC techniques.

Siemens' FNA for remote processing provides efficient access to SNA and open communications networks. System integrity and security are guaranteed by products such as RACF and DSCF. System availability is enhanced by Test and Diagnosis programs such as P/ADIA, RMS, OLTE/TOLTE and in Western Europe, remote service and diagnosis is available through Siemens MART (Maintenance Assistance by Remote Teleprocessing) system. All MART-Center operations are monitored by the customer's service processor (H/SVP) and hard copy records are available.

As recent as the announcement is, Siemens had taken orders for 18 machines outside West Germany and for 45 in their home territory as of February 1, 1982.

A basic 7.890 configuration with 16 megabytes of main memory and 16 channels bears a purchase price of approximately DM 8.1 million.

A 7.890 includes one CPU with a Main Storage Control Unit (MCU) and 64K of local buffer storage, 256K of global buffer storage, a microprogrammed instruction preprocessor with a 6-stage pipeline, a high-speed branch control ("pipeline skipping") feature, automatic instruction retry hardware, memory protection, a universal instruction set, four timers, and dynamic address translation aids.

A basic 7.892 equipped with 32 megabytes of main memory and 32 channels includes two CPUs, each equipped as described above for the 7.890.

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**TABLE 1. CHARACTERISTICS OF THE SIEMENS 7.890
AND 7.892 PROCESSORS COMPARED TO THE SIEMENS 7.882-2
AND THE IBM 3081 K**

SYSTEM CHARACTERISTICS	IBM 3081 K	7.882-2	7.890	7.892
Date of introduction	October 1981	January 1981	November 1981	November 1981
Date of first installation	2nd quarter 1982	June 1981	2nd quarter 1982	2nd quarter 1982
Number of CPU's per system	2	2	1 or 2	2
Principal operating systems	MVS/SP; VM/SP	BS 3000; OS; VS, Rel. 1; MVS; VM/370	AVM; BS 3000; and 2; VM/370; VM/SP, Rel. 2	MVS/SP, Rels. 1; DOS/VS, Rel. 34
Production status	new	new	new	new
MAIN STORAGE				
Type	MOS	nMOS-ECL	nMOS-ECL	nMOS-ECL
Minimum capacity, bytes	16,777,216	8,388,308	16,777,216	33,388,432
Maximum capacity, bytes	33,388,432	67,108,864	67,108,864	134,217,728
Increment size, bytes	8,388,608	4,194,304; 8,388,608; or 16,777,216	8,388,608; or 16,777,216	16,777,216
Error correcting memory	yes 1-bit error correction and most multibit error detection	yes 1-bit error correction and multibit detection	yes Automatic 1-bit correction and all multibit error recognition (memory) and correction of all errors of one 4-bit group and recognition of all errors of two 4-bit groups (global buffer memory)	yes
BUFFER STORAGE				
Cycle time, nanoseconds	26	26	5.5 or 16 when 1024-bit and 4096-bit chip memories are used, respectively	
Local buffer capacity, bytes	65,536 (each)	65,536 (each)	65,536 (each)	65,536 (each)
Global buffer capacity, bytes	none	262,144 (each)	262,144 (each)	262,144 (each)
Translation lookaside buffer	65,536 bytes	256 pages	512 entries	512 entries
RELOADABLE CONTROL STORAGE				
Capacity	none	8192 96-bit words	768 180-bit instruction pre- processing words and 2048 95-bit instruction-execution words	
PROCESSING UNIT				
Millions of instructions per second (mips)	approx. 14	10.2	15	25-27
Performance relative to the Siemens 7.880-2	not available	1	2.5	3.8-4.5
Instruction prefetching	—	Standard	Standard	Standard
Clock comparator and CPU timer	Standard	Standard	Standard	Standard
Dynamic address translation	Standard (128 DLAT pairs)	Standard	Standard	Standard (512 TLB entries)
Floating point	Standard	Standard	Standard	Standard
Extended-precision floating point	Standard	Standard	Standard	Standard
Instruction retry hardware	Standard	Standard	Standard	Standard
Virtual machine assist	Standard	Standard	Standard	Standard
System/370 Extended facility	Standard	Standard	Standard	Standard
3033 Extension	Standard	Optional	Optional	Optional
Multiprocessor systems				
Tightly coupled	yes	yes	yes	yes
Loosely coupled	yes	yes	yes	yes
Attached processor system	none	none	none	none
Integrated storage control	none	none	none	none
I/O CONTROL				
Integrated channels, standard	2 groups of 8	8	2 groups of 16	2 groups of 16
Data transfer rates, bytes/second				
Byte multiplexer channels	40,000-75,000	110,000	110,000	110,000
Byte multiplexer, burst mode	—	1.5 million	1.5 million	1.5 million
Block multiplexer channels	1.5 or 3.0 million	2.0 million	2.0 million	2.0 million
Block multiplexer channel, selector operation in data stream mode	—	3.0 million	3.0 million	3.0 million
Maximum I/O data rate, bytes	72 million	36 million	24 million	24 million

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TABLE 2. SIEMENS MAINFRAMES COMPARED TO IBM

Relative Power	IBM	Siemens
135		7.892 (25-27 mips)
130		
110		
100		
95		
90		
85		
80		7.890 (15 mips)
75	3081 K	
70		
65		
60		
55	3081	7.881-2
50	3033 MP	07 7.882 (10.2 mips)
45		
40	3033 AP	
35		7.880-2 (6.2 mips)
30	3033 U	
25		7.872-2 (4.8 mips) 7.875-2 (4.3 mips)
20		
15	3033 N 3032	7.070 (2.9 mips)
10	3033 S 3031 AP	7.865 (1.9 mips)
5	4341-2 3031	

A Model 7.890 has a single I/O processor (the 7.892 has two), each with 16 channels that can be configured as up to 4-byte multiplexer and/or up to 16 block multiplexer channels with data transfer rates as follows: byte multiplexer channel, 110K bytes/second; byte multiplexer channel in burst mode, 1.5 megabytes/second; block multiplexer channel, 2.0 megabytes/second; block multiplexer channel as selector channel in the data stream mode, 3.0 megabytes/second. □