

## IBM 4300 Series Product Enhancement

IBM recently announced many changes to the 4300 family of processors. Heading the list of changes is the introduction of the 4361 Processor Model Group 3, a new entry-level 4361 system field upgradeable to the 4361 Model Groups 4 and 5. Other announcements include enhancements to all 4361 processors, enhancements to the SSX/VSE Version 1.4 operating system, reduced purchase prices for the 4321 and 4331 processors in anticipation of their withdrawal from marketing at the close of 1984, and finally, price decreases on selected models of the 4361, and price increases on selected model conversions of the 4331 to the 4361 processor. The price changes are listed in the Equipment Price list that follows this enhancement.

The new 4361 Processor Model Group 3 is available in two submodels: the K3 with 2MB of processor storage (\$56,000), and the L3 with 4MB of storage (\$71,500). Both models are field upgradeable to the 4361 Model Groups 4 and 5. Model Group 3 includes as standard features: 8KB of high-speed buffered storage; Extended Control Program Support (ECPS), which offers VSE mode and VM/370 mode; display/printer adapter capability for direct attachment of up to 16 devices; dual drive diskette reader/recorder; serial OEM interface (SOEMI) for attachment of OEM subsystems and I/O devices; remote support facility; and a high accuracy arithmetic facility that consists of 20 additional instructions used by IBM software to provide verified maximum accuracy for floating point results. New features for Model Group 3 are a factory-installable Floating-point Multiply Accelerator using high-speed multiplier logic, microcode-assisted support of the Elementary Math Library PRPQ, the Auto Start feature, and the Work Station Adapter (the last two features are described in the next section—*New Features for all 4361 Model Groups*).

The Floating-point Multiply Accelerator, priced at \$8,500, executes frequently used floating-point multiply instructions in VLSI gate array hardware rather than in microcode, reportedly improving execution speed for these instructions by a factor of three to eight. When the accelerator is installed, the following mathematical functions supported in the Elementary Math Library (EML) are assisted by microcode to improve performance: square root, logarithm (ln, log), exponentiation, sine, cosine, arctangent, and power.

IBM claims that the Model Group 3 is particularly suited for engineering/scientific applications, commercial applications, and interactive problem solving. Commercial performance is said to be equivalent to that of the 4331 Model Group 2, and engineering/scientific performance is said to be 1.4 times (short precision) and 2.2 times (long precision) that of the 4331 Model Group 2. This increase in performance and the addition of the Floating-point unit, are seen by analysts as a means for IBM to better compete against DEC and other supermini vendors. The lower priced Model Group 3, in conjunction with two new high-end System/38 models introduced, represents a direct attack on the other supermini vendors. The lower entry-level price makes the 4361 very competitive with DEC's VAX-11 systems, Data General's MV/Eclipse line, and Prime's 50 Series of superminis.

### **New 4361 Features for all Model Groups**

New features for all model groups of the 4361 processor include an optional Work Station Adapter for direct attachment of up to 32 devices, a serial OEM Interface, an optional Auto Start Feature, and a programmable power-off function.

The Work Station Adapter (WSA) allows for direct attachment of terminal devices and intelligent workstations to the 4361. The following intelligent workstation attachments are supported: IBM 6580 Displaywriter System, IBM 3270 Personal Computer (control unit only), all models of the Personal Computer, and Personal Computer XT/370. The WSA is an optional feature for all 4361 processors and is priced at \$7,500.

The Serial OEM Interface (SOEMI), a standard feature on all 4361 processors, extends the capability of the Display/printer adapter (DPA) or WSA to support a variety of industry devices from independent manufacturers. A protocol based on structured fields is implemented in microcode and can be used by standard System/370 I/O instructions. Attachability of instrumentation, measurement and control, and other equipment can be provided via OEM adapters that provide appropriate conversion and control functions to industry-standard bus interfaces, such as IEEE 488, IEEE 696, and IEEE 796.

The DPA supports up to two SOEMI adapters with an aggregate data rate of up to 17KB per second inbound or 30KB per second outbound. The WSA supports up to four SOEMI adapters with an aggregate data rate of up to 22KB per second inbound and up to 45KB per second outbound.

The optional Auto Start Feature, priced at \$1,200, allows the processor to be automatically powered on by a telephone call via the Remote Operator Control Facility (ROCF), or at a predetermined time and day of the week. In addition, each day of the week may be associated with different power-on times. The Auto Start feature powers on the processor and proceeds with initial microprogram load, sets the time-of-day clock from a battery operated clock, and then initial program loads (IPLs) the system. This sequence is also followed after an AC power outage and return, with an option to suppress IPL to prevent uncontrolled restarts. The Auto Start feature will be available for new 4361 processors in April 1985.

The programmable power-off function is available via the System/370 diagnose instruction. It enables a user to power off the processor under program control. VM/SP 1.4 and SSX/VSE 1.4 support the function in the shutdown routine, which controls the termination of all system tasks and then powers off the processor. In VSE/SP 2.1.0, a user interface is provided to assist the user in programming the power-off function.

**Version 1.4 of SSX/VSE**

Small System Executive/VSE Version 1, Release 4 provides support for the new 4361 Model Group 3 processor, scheduled program controlled shutdown, the Work Station Adapter, and full RAS support for the 4361. The release is a pregenerated, preconfigured VSE operating system for the 4321, 4331, 4341, and 4361 systems. Generally, the same pregenerated VSE components contained in SSX/VSE 1.3 continue to be used in this version. Four components, EREP, CICS/DOS/VS, DOS/VS Sort/Merge, and DITTO for VSE and VM, have been changed in the new release.

SSX/VSE 1.4 supports the connection of IBM 3270-PCs attached to: the DPA of a 4321, 4331, or 4361 processor; the WSA of a 4361 processor; or an IBM 3274 terminal control unit. The intelligent work station support provides utilities, commands, and selection menus which allow communication with the above devices. The actual data transfer is performed by a CICS transaction (IBM PC Communication Program), which resides in the SSX/VSE host system. Optionally, the 3270-PC Communication Program also translates data from ASCII to EBCDIC and vice versa.

The shutdown program, already available in SSX/VSE 1.3, can now be scheduled to shut down the system at a specified time of day. Optionally, on 4361 processors with the appropriate hardware feature, the shutdown program will power off the processor after terminating all partitions running under control of VSE/POWER. The shutdown program occupies a partition (F4) from the time the shutdown procedure is invoked or the shutdown job is submitted, until actual shutdown.

**EQUIPMENT PRICES**

		<b>Purchase Price (\$)</b>
<b>New Processor Models</b>		
4361 K3	Processor with 2MB of main memory, control storage expansion, display/printer expansion, diskette drive, power interface, and adapter power prerequisite	56,000
4361 L3	Processor with 4MB of main memory, control storage expansion, display/printer expansion, diskette drive, power interface, and adapter power prerequisite	71,500
<b>Other Processor Models</b>		
4321 J11	Processor with 1,048,576 bytes of main memory, one DASD Adapter, one 8809 Magnetic Tape Unit Adapter, one Display/Printer Adapter, one Communications Adapter, one Communications Adapter Base	43,000
4331 J11	Processor with 1,048,576 bytes of main memory, 4K-byte buffer, one byte and one block multiplexer channel, one DASD Adapter, one 8809 Magnetic Tape Unit Adapter, one Display/Printer Adapter, one Communications Adapter Base	57,420
4331 K11	Same as 4331 J11, but with 2,097,152 bytes of main memory	64,920
4331 L11	Same as 4331 J11, but with 4,194,304 bytes of main memory	79,920
4331 J2	Processor with 1,048,576 bytes of main memory and 8K-byte buffer	41,705
4331 K2	Same as 4331 J2, but with 2,097,152 bytes of main memory	49,205
4331 KJ2	Same as 4331 J2, but with 3,145,738 bytes of main memory	56,705
4331 L2	Same as 4331 J2, but with 4,194,304 bytes of main memory	64,205

## Other Processor Models (Continued)

		Purchase Price (\$)
4361 K4	Processor with 2,097,152 bytes of main memory and 8K-byte buffer	135,000
4361 L4	Same as 4361 K4, but with 4,194,304 bytes of main memory	150,000
4361 LK4	Same as 4361 K4, but with 6,291,456 bytes of main memory	170,000
4361 M4	Same as 4361 K4, but with 8,388,608 bytes of main memory	185,000
4361 ML4	Same as 4361 K4, but with 12,852,912 bytes of main memory	215,000
4361 K5	Processor with 2,097,152 bytes of main memory and 16K-byte buffer	180,000
4361 L5	Same as K5, but with 4,194,304 bytes of main memory	195,000
4361 LK5	Same as K5, but with 6,291,456 bytes of main memory	210,000
4361 M5	Same as K5, but with 8,388,608 bytes of main memory	225,000
4361 ML5	Same as K5, but with 12,582,912 bytes of main memory	255,000

## System Upgrades\*

4331 I1 to 4361 K5	103,750
4331 I1 to 4361 L5	118,750
4331 I1 to 4361 LK5	133,750
4331 I1 to 4361 M5	143,750
4331 I1 to 4361 ML5	178,750
4331 J1 to 4361 K5	100,000
4331 J1 to 4361 L5	115,000
4331 J1 to 4361 LK5	130,000
4331 J1 to 4361 M5	145,000
4331 J1 to 4361 ML5	175,000
4331 J11 to 4361 K5	100,000
4331 J11 to 4361 L5	115,000
4331 J11 to 4361 LK5	130,000
4331 J11 to 4361 M5	145,000
4331 J11 to 4361 ML5	175,000
4331 K11 to 4361 K5	92,500
4331 K11 to 4361 L5	107,500
4331 K11 to 4361 LK5	122,500
4331 K11 to 4361 M5	137,500
4331 K11 to 4361 ML5	162,500
4331 L11 to 4361 L5	92,500
4331 L11 to 4361 LK5	107,500
4331 L11 to 4361 M5	122,500
4331 L11 to 4361 ML5	152,500
4331 J2 to 4361 K5	120,825
4331 J2 to 4361 L5	135,825
4331 J2 to 4361 LK5	150,825
4331 J2 to 4361 M5	165,825
4331 J2 to 4361 ML5	195,825
4331 K2 to 4361 K5	113,325
4331 K2 to 4361 L5	128,325
4331 K2 to 4361 LK5	143,325
4331 K2 to 4361 M5	158,325
4331 K2 to 4361 ML5	188,325
4331 KJ2 to 4361 L5	120,825
4331 KJ2 to 4361 LK5	135,825
4331 KJ2 to 4361 M5	150,825
4331 KJ2 to 4361 ML5	180,825
4331 L2 to 4361 L5	113,325
4331 L2 to 4361 LK5	128,325
4331 L2 to 4361 M5	143,325
4331 L2 to 4361 ML5	170,325 ■

\*Standard features of the 4361 which are optional on the 4331 must already be installed.