

# IBM System/38

## MANAGEMENT SUMMARY

The IBM System/38 is a general-purpose data processing system designed to provide ease of use, application development, reliability, and nondisruptive growth. System/38 features advanced architecture and an integrated data base that support a full range of interactive workstation applications as well as traditional batch applications. The current models within the System/38 line of processors include Models 3, 4, 5, 7, and the recently introduced top-of-the-line Model 8.

Model 8 provides up to 8 megabytes of main storage capacity, two times the capacity previously offered. The Model 8 also extends the System/38 in additional auxiliary storage and local workstation attachment capability. The second 3370 Disk Storage Attachment feature available for Model 8 increases the maximum direct access storage available on the System/38 from 2672.2 megabytes to 4957.4 megabytes.

In addition to the introduction of the Model 8, which provides expanded main storage and disk storage capacities and enhanced local workstation attachment capabilities, IBM has made other significant enhancements to the System/38. IBM also introduced a new workstation controller which increases the number of 5250 terminals attachable to the Model 8 by 60 percent (128 local workstations) and the number attachable to the other models by 45 percent (from 80 to 116). A System/38 with the Digital Data Service Adapter feature can now support remote data transmission at speeds up to 56K bps over the AT & T nonswitched Data-Phone Digital Service Network.

Software announcements include Release 5.0 of the System/38 Control Program Facility (CPF) and enhancements which provide additional language support, performance ➤

IBM has again expanded its powerful System/38 with the introduction of the Model 8. In addition, a new disk storage feature allows the new system to attach four additional 3370 drives. IBM has also announced a new workstation controller which increases the number of 5250 terminals attachable to all System/38 models.

**MODELS:** Model 3, 4, 5, 7, and 8.  
**MEMORY:** 768K bytes to 8 megabytes.  
**DISK CAPACITY:** 64.5 megabytes to 4.5 gigabytes.  
**WORKSTATIONS:** Up to 128 locally on Model 8; up to 116 locally on all models.  
**PRICE:** \$61,100 to \$252,990.

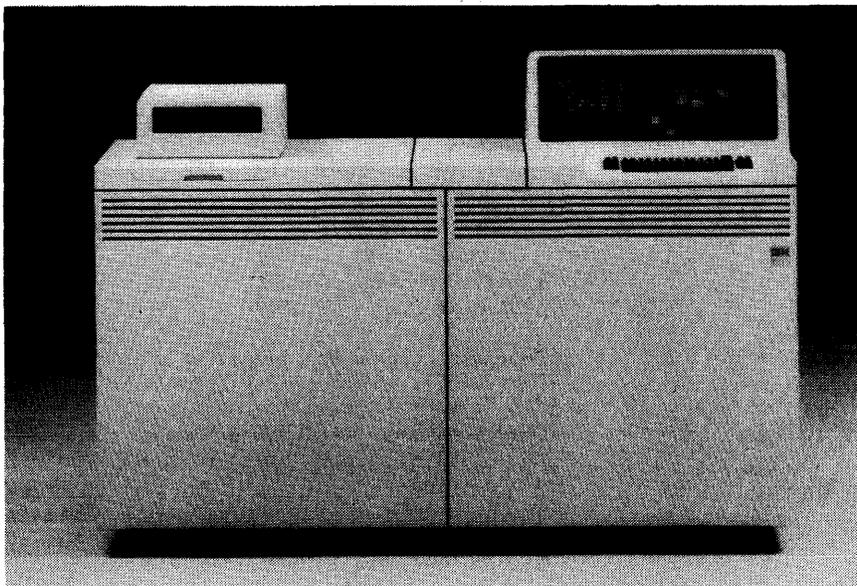
## CHARACTERISTICS

**MANUFACTURER:** International Business Machines Corporation, Information Systems Group, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 686-2363.

**MODEL:** System/38; 122 submodels based on the Model 300, Model 400, Model 500, Model 700, and Model 800 processing units (18 each Model 500 and 700; 20 Model 300s; 30 Model 800s; 36 Model 400s).

## DATA FORMATS

**BASIC UNIT:** 8-bit byte. Each byte can represent 1 alphanumeric character, 2 BCD digits, or 8 binary bits. Two consecutive bytes form a "halfword" of 16 bits, while 4 consecutive bytes form a 32-bit "word." ➤



*The System/38 Model 5XX is a packaged system consisting of the 5381 System Unit and its integral units. These units include the central processor, up to 2048K of main memory, a system console with keyboard and display screen, a diskette magazine drive, up to 387.1 megabytes of fixed disk storage, and a workstation controller. A printer (not shown in the photo) is optional.*

## IBM System/38

➤ which provide additional language support, performance enhancements, and other functional enhancements; System/38 Basic; enhancements to System/38 OFFICE/38 software; an Advanced Printer Function Utility which provides advanced function capabilities for users of the 5224 and 5225 printers; System/38 IBM 5250 Emulation Program which provides for attachment of the IBM PC; and additional application software programs.

Price changes for the System/38 include an increase of approximately eight percent for all system monthly lease and monthly rental charges. In addition, IBM announced a one-time charge option for certain IBM System/38 licensed programs.

The System/38 is available in packaged models that offer from 768K to 8192K bytes of main memory, 64.5 to 387 million bytes of nonremovable disk storage, a diskette magazine drive, and a system console with keyboard and display. A multi-function 96-column card reader/punch, up to two 1200 lpm printers, and up to four 3370 Disk Drives (Model 4XX, 5XX, and 7XX only—up to 2285.5 megabytes). A second 3370 Model A11 Disk Storage Attachment feature allows up to four additional 3370s to be attached to the Model 8 for a total of 4.5 gigabytes of disk storage. The system supports direct attachment of up to 128 local workstations (displays and printers) on the Model 8 and up to 116 on all other models plus a number of remotely attached workstations through up to eight communications lines.

The heart of the System/38 is the System Unit, consisting of a processing unit, main storage, disk storage, system console keyboard/display, diskette magazine drive, optional I/O attachment, integrated workstation controller, and an optional communications controller. The System/38 is available in five models and 122 submodels.

The Model 3 is available with 768K, 1024K, 1280K, or 1536K bytes of memory using the same 64K-bit chips introduced in the 8100 system from IBM's National Accounts Division. The Model 3 has a cycle time of 1100 nanoseconds for a 4-byte fetch, and includes 4K of 32-bit word control storage.

The Model 4 processor is available in configurations with the same memory capacities as the Model 3 plus additional submodels with 1792K and 2048K bytes of memory. The Model 4 uses the same 64K-bit chips as the Model 3 and has the same cycle time, but offers about 35 percent greater internal performance than the Model 3.

The Model 5 processor is available with 1024K, 1536K, and 2048K bytes of main memory and offers about 75 percent greater internal performance than the Model 3.

Both the Model 4 and Model 5 include 8K 32-bit words of control storage rated at 200 nanoseconds. Control storage for the System/38 uses the same 18K-bit chips that are packaged in the CRT introduced with the 8100 by DPD. In addition to the new memory chips, the System/38 features a new logic chip with up to 704 circuits. ➤

➤ **INSTRUCTIONS:** IBM has not released details on the format of individual System/38 machine instructions, the number of instructions in the instruction set, or the classification of individual instructions. According to IBM, the System/38 employs an advanced instruction set which embodies many basic supervisory, resource, and data base management functions (including data base operations that retrieve, update, and logically order data records).

IBM has indicated however, that a major design goal of the System/38 was to provide an instruction interface to the user that was as independent as possible of hardware and device characteristics. To implement this concept, the System/38 makes heavy use of microcode so that the user need not be concerned with hardware addressing, auxiliary storage allocation and addressing, internal data structures and relationships and channel and I/O interface details. Furthermore, the user instruction interface is object-oriented rather than byte-oriented. An object is defined by IBM as a construct that contains a specific type of information and can only be employed in a specific manner. Examples of System/38 objects are as follows:

- **Access Group**—An object that describes the physical grouping of other objects so that more efficient movement of objects between main memory and auxiliary storage may take place.
- **Context**—An object that provides information to allow addressability of other objects. This information includes object type, subtype, and name.
- **Controller Description**—An object that provides the necessary information to prepresent an I/O controller. The controller may be for a cluster of I/O devices or a station that attaches groups of communication devices over the same data communication link.
- **Cursor**—An object that provides a means to address a data space.
- **Data Space**—An object used to store data base records where all records have the same format.
- **Data Space Index**—An object that provides an index for a data space. The index yields a logical ordering of the records in the data space.
- **Index**—An object used to automatically order data and store it.
- **Logical Unit Description**—An object that makes a representation for a physical I/O device.
- **Network Description**—An object utilized to represent a network port of the system.
- **Process Control Space**—An object which contains the elements for process execution.
- **Program**—An object which uniquely selects and places in order machine interface (processor) instructions.
- **Queue**—An object which provides communication between processes and/or between a device and a process.
- **Space**—An object where pointers and scalars are stored.
- **User Profile**—An object that provides identification for a valid user of the processor. ➤

## IBM System/38 Product Enhancement

IBM announced several significant changes in its System/38 product line on March 24, 1982, designed to offer the user greater performance, flexibility, and compatibility with the firm's System/34.

The new System/38 Model 7 now has the distinction of being the top-end system in the product line, with about twice the internal performance of the Model 5. The Model 7 provides two, three, or four megabytes of main memory, increased mass storage capacity, expanded I/O device capabilities, and can be field upgraded from the System/38 Models 3, 4, and 5.

Performance increases are achieved via a faster CPU cycle time of 400 nanoseconds, compared to 600 nanoseconds on the Model 5; a 50-percent increase in control storage over the Model 5, from 8K to 12K words; and the control storage cycle time of 133 nanoseconds, a one-third improvement over the Model 5.

The Model 7 can have a maximum of 2.67 billion bytes of on-line DASD storage, eight communications lines, two high-speed line printers, and 80 local display terminals (Model 5250). Disk storage is configured from up to six drives with 64.5 megabytes each, and up to four 3370 DASD units, each with 571.3 megabytes.

IBM said there are no hardware or software prerequisites for the System/38 Model 7. All software and peripherals available for the System/38 will execute on the new models without any changes.

Initial customer shipments of the Model 7 will begin January 1983, and upgrades for existing systems to the Model 7 will begin June 1982.

Software and communications support for the System/38 were improved. The current version of the System/38 Control Program Facility (CPF) Release 4.0 was provided with enhanced binary synchronous communication (BSC) support. This no-charge update supports IBM's 3776 and 3777 batch terminals connected to the System/38 via BSC switched or non-switched lines at speeds up to 9600 bit per second. This change also supports the 3780 BSC protocol. A Local High-Speed Attachment feature permits local connection of Series/1 processors to the System/38 via one or two high-speed communications lines for program-to-program data transfers at up to 56K bits per second.

IBM also announced Release 4.1 of CPF and updates to the Cobol and RPG III compilers in the System/38. Release 4.1 features a Journal facility, Save/Restore improvements, a four-fold increase in the maximum program size (from 8K to 32K bytes), new and improved Work Management displays, enhancements in utilities and communications tools, and improved conversion facilities from the System/34 to the System/38. Both compilers feature improved System/34 compatibility and ease of use. The System/34-to-System/38 Conversion Aid program product was also beefed up.

The new release of CPF, updates to the Cobol and RPG III compilers, and the System/34-to-System/38 Conversion Aid will be available September 1982. The Local High-Speed Attachment feature will be available June 1982.

IBM cut the purchase prices of the System/38 Model 5 by 10 to almost 20 percent, and removed from marketing the System/38 Models 3, 4, and 5 with 512K bytes of memory; the 768K, 1280K, and 1792K memory sizes on the Model 5; and the 64.5-megabyte disk storage models of the Model 3. Volume discounts will be offered with the new System/38 Model 7, the same as the other System/38 models.



**IBM System/38**  
**Product Enhancement**

**EQUIPMENT PRICES**

▷ **BASIC SYSTEMS**

|      |  | <u>Purchase Price</u> | <u>Monthly Maint.</u> | <u>Monthly Lease Charge (3-year lease)*</u> | <u>Monthly Rental*</u> |
|------|--|-----------------------|-----------------------|---|------------------------|
| 5381 | System Unit; includes processor unit, main memory, fixed storage, system console keyboard display, diskette magazine drive, and one workstation controller |                       |                       |   |                        |
|      | System Unit with Model 700 CPU and 2048K bytes of main memory:   |                       |                       |   |                        |
| 0781 | 64.5 megabytes of fixed disk storage   | \$161,000             | \$ 660                | \$6,100                                     | \$7,015                |
| 0782 | 129.0 megabytes of fixed disk storage  | 169,570               | 708                   | 6,384                                       | 7,341                  |
| 0783 | 193.5 megabytes of fixed disk storage  | 183,410               | 763                   | 6,813                                       | 7,833                  |
| 0784 | 258.0 megabytes of fixed disk storage  | 191,980               | 811                   | 7,097                                       | 8,159                  |
| 0785 | 322.6 megabytes of fixed disk storage  | 205,420               | 875                   | 7,509                                       | 8,632                  |
| 0786 | 387.1 megabytes of fixed disk storage  | 213,990               | 923                   | 7,793                                       | 8,958                  |
|      | System Unit with Model 700 CPU and 3072K bytes of main memory:   |                       |                       |   |                        |
| 07C1 | 64.5 megabytes of fixed storage  | 178,500               | 770                   | 6,800                                       | 7,820                  |
| 07C2 | 129.0 megabytes of fixed disk storage  | 187,070               | 818                   | 7,084                                       | 8,146                  |
| 07C3 | 193.5 megabytes of fixed disk storage  | 200,910               | 873                   | 7,513                                       | 8,638                  |
| 07C4 | 258.0 megabytes of fixed disk storage  | 209,480               | 921                   | 7,797                                       | 8,964                  |
| 07C5 | 322.6 megabytes of fixed disk storage  | 222,920               | 985                   | 8,209                                       | 9,437                  |
| 07C6 | 387.1 megabytes of fixed disk storage  | 231,490               | 1,033                 | 8,493                                       | 9,763                  |
|      | System Unit with Model 700 CPU and 4096K bytes of main memory:   |                       |                       |   |                        |
| 07G1 | 64.5 megabytes of fixed disk storage   | 196,000               | 880                   | 7,500                                       | 8,625                  |
| 07G2 | 129.0 megabytes of fixed disk storage  | 204,570               | 928                   | 7,784                                       | 8,951                  |
| 07G3 | 193.5 megabytes of fixed disk storage  | 218,410               | 983                   | 8,213                                       | 9,443                  |
| 07G4 | 258.0 megabytes of fixed disk storage  | 226,980               | 1,031                 | 8,497                                       | 9,769                  |
| 07G5 | 322.6 megabytes of fixed disk storage  | 240,420               | 1,095                 | 8,909                                       | 10,242                 |
| 07G6 | 387.1 megabytes of fixed disk storage  | 248,990               | 1,143                 | 9,193                                       | 10,568                 |

**COMMUNICATIONS**

|      |   |     |      |    |    |
|------|---|-----|------|----|----|
| 5680 | System/38 to Series/1 High-Speed Connection via Local High-Speed Attachment | 873 | 5.50 | 28 | 32 |
|------|---|-----|------|----|----|

**SOFTWARE**

|          |                                       | <u>One Time Charge</u> | <u>Monthly License Fee</u> | <u>Monthly DSLO Fee</u> |
|----------|---------------------------------------|------------------------|----------------------------|-------------------------|
| 5714-SS1 | System/38 Control Program Facility    | \$20,000               | \$581                      | \$435                   |
| 5714-RG1 | RPG III                               | 2,800                  | 79                         | 59                      |
| 5714-CB1 | Cobol                                 | 7,200                  | 202                        | 151                     |
| 5714-CV5 | System/34 to System/38 Conversion Aid | 1,495                  | —                          | —                       |

\*Monthly lease and rental prices include equipment maintenance. ■