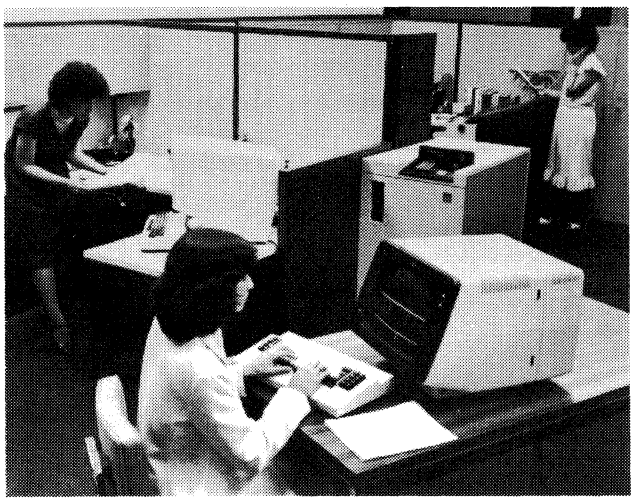
IBM 8100 Information System



Since its introduction in November 1978, the IBM 8100 System has added several major new capabilities. Most recently, the 8100 has been provided with text and word processing capabilities, which allow the system to interface with IBM 3730 family displays and printers, to access text processing facilities at the host, and to distribute messages and documents among multiple word processing systems. An integrated DP/WP configuration, including (counterclockwise from the right) an 8775 display terminal, an 8100 System processor, and a 3732 text display station, is shown above.

A family of processors that support distributed processing in a host controlled arrangement or as a loosely connected partner to a host computer system.

An 8100 system can include up to 1024K bytes of main memory, up to 640 megabytes of fixed-disk storage, and numerous local and/or remote display and printer terminals. Up to four magnetic tape drives can also be included. Configuration is not completely modular; 30 different processor models provide a variety of alternates. Two operating systems provide 3790-style support (DPCX) or stand-alone transaction-based processing support with COBOL and FORTRAN compilers (DPPX).

A small 8100 system with 384K bytes of memory, 58 megabytes of disk storage, 2 printers, 6 display terminals, and 1 communications link costs $2,547 per month on a two-year lease, including maintenance.

A larger 8100 system with 1024K bytes of memory, 123 megabytes of disk storage, 1 tape drive, 5 printers, and 18 local and remote display terminals costs $5,849 per month on a two-year lease, including maintenance.

MANAGEMENT SUMMARY

The 8100 Information System was announced on October 3, 1978. Since that time, IBM has continued to add new hardware and software to the system. New processor submodels, new color displays and printers, a new remote loop control unit, and enhanced software have all been announced.

The 8100 system is broad in scope. Two operating systems are available. One, the Distributed Processing Programming Executive (DPPX), provides substantial stand-alone processing capabilities for an 8100 system, including COBOL and FORTRAN compilers and support for a wide range of terminals. The other, the Distributed Processing Control Executive (DPCX), makes the 8100 operate like an IBM 3790 Communications System—but an equivalent 8100 processor is only about half the price of a 3791.

The 8100 processor architecture is impressive. Each processor is a minicomputer with a 16-bit memory bandwidth, 48 sets of eight 32-bit registers, and 32-bit logical addressing (4-megabyte range). Thirty processor models are now available within two model numbers: 8130 and 8140. The 8130 operates with a cycle time of 1500 nanoseconds, and the 8140 has a cycle time of 800 nanoseconds. Arithmetic and logical operations can be performed on 8-, 16-, and 32-bit operands. Memory capacity ranges from 256K to 1024K bytes for both processors.

CHARACTERISTICS

VENDOR: IBM Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: October 3, 1978.

DATE OF FIRST DELIVERY: August 1979.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

There are a total of 30 8100 processor models, which can be conveniently grouped into nine series: 8130 A2X; 8140 A3X, A4X, A5X, A6X, and A7X; and 8140 B5X, B6X, and B7X. The four submodels in each of the AXX groups show a similar pattern with regard to disk capacity:

AX1: 29 megabytes of fixed-disk storage.
AX2: 23 megabytes of fixed-disk storage plus 131K bytes of fixed-head storage.
AX3: 64 megabytes of fixed-disk storage.
AX4: 58 megabytes of fixed-disk storage plus 131K bytes of fixed-head storage.

IBM 8100 Information System

Table 1. IBM 8100 INFORMATION SYSTEM CHARACTERISTICS

	8130 A21-A24	8140 A31-A34	8140 A41-A44	8140 A51-A54
Main memory, bytes	256K to 1024K	256K, 384K	320K	512K
Memory cycle time, nsec.	1500	800	800	800
8101 Storage and I/O units	2	4	4	4
Disk drives — total (3)	3	5	5	5
Disk capacity, bytes max.	320M	580M	580M	580M
Diskette drives, max.	2	2	2	2
Tape drives, max.	4	4	4	4
Directly attached displays, max.	24	24	24	24
Ports:				
Basic processor	2 to 6	3	2 (1)	0
System max.	14	19	18	16
Communications:				
SDLC	Yes	Yes	Yes (2)	Yes
BSC	Limited	Limited	Limited (2)	Limited
S/S (asynchronous)	Limited	Limited	Limited (2)	Limited
Floating point hardware	No	No	Yes	No
Expanded Function Panel	No	Yes	Yes (1)	No

(1) Mutually exclusive.
(2) Not with Expanded Function Panel.
(3) Includes disk drive in processor and in each 8101 unit.
(4) Available only as model upgrades.

Each processor contains fixed-disk storage, a diskette drive, a limited number of ports for connecting terminals, and provisions for expanding the disk storage and port capacities through one or more 8101 Storage and I/O Units. The parameters of each model are thoroughly described in the Characteristics section of this report.

The capabilities of the various processor models can be most easily understood by regarding them as nine groups of two or four models each: 8130 A2X, 8140 A3X, 8140 A4X, 8140 A5X, 8140 A6X, 8140 A7X, 8140 B5X, 8140 B6X, and 8140 B7X. Within each of these groups (except the 8140 B models), two models provide 29 and 64 megabytes of fixed-disk storage. The other two models within each group trade 6 megabytes of fixed-disk storage for 131K bytes of fixed-head storage. The 8140 B models provide 58 or 123 megabytes of fixed-disk storage; all offer 131K bytes of fixed-head storage.

The Distributed Processing Program Executive (DPPX) used with the 8100 provides a Data Base and Transaction Management System with data structures similar to those of CICS/VS. A 3270 Data-Stream Compatibility feature permits existing 3270 terminals to be connected to the host through an 8100 system. The Host Command Facility, running in the host System/370, permits host-site personnel the same kind of access to the 8100 that an operator would have at the 8100 console. Programs can be written in COBOL, FORTRAN, or assembly language. An English-language COBOL pre-compiler is also available. The Distributed Presentation Services facility permits interactive screen formatting. Also provided is an RJE capability. DPPX supports SDLC, BSC, and asynchronous protocols; supported terminals include the 3270 (SDLC or BSC), as well as the newer 8775 display terminal and the 3289

The two models in each of the BXX groups provide 58 and 123 megabytes of fixed disk storage; all BXX models also include 131K bytes of fixed-head storage.

Other differences among the processor models are shown in Table 1.

All memory is contained in the processor. Peripheral attachments are permitted to the basic processor and are expanded through one or more 8101 Storage & I/O Units; the 8101 can also contain additional fixed-disk storage.

Attachment of peripherals to the processor is accomplished either by direct attachment or by attachment through ports. All processor models support direct attachment of one or more 8101s and up to four magnetic tape devices. An 8140-BXX model can also support direct attachment of up to 24 3277 keyboard/display units, 3284/6/7/8 printers, 3732 text display stations, and 3736 printers in any combination. However, some configurational restrictions exist. For example, if the tape drives are configured with the processor (the first drive is attached directly to the processor; up to three additional drives may be daisy-chained through the first), the maximum number of 8101s is reduced by one. Moreover, on the 8140-BXX, configuration of directly attached devices affects the number of processor ports that can be added and requires that the tape drives be added to the system through an attached 8101.

One 8101 in an 8130 or 8140-BXX system, or two 8101s in an 8140-AXX system, can also be configured to accommodate direct attachment of peripheral devices. Peripherals can include the magnetic tape drives and/or directly attached displays and printers, as well as a second system diskette drive. The selection of displays and printers is the same as for direct attachment to the 8140-BXX, and up to 24 devices can be configured.

The principal facilities for attaching peripheral devices, however, are ports. Each port can service a communications line, a local or remote loop, or a directly connected device. The types of connections provided and the number of ports available with the basic processor and system maximums are given in the accompanying tables. One (but only one) 8101 attached to an 8130 may be configured with

IBM 8100 Information System

Table 1 (continued). IBM 8100 INFORMATION SYSTEM CHARACTERISTICS

	8140 A61-A64 (4)	8140 A71-A74 (4)	8140 B51-B52	8140 B61-B62	8140 B71-B72
Main memory, bytes	768K	1024K	512K	768K	1024K
Memory cycle time, nsec.	800	800	800	800	800
8101 Storage and I/O units	4	4	4	4	4
Disk drives — total (3)	5	5	6	6	6
Disk capacity, bytes max.	580M	580M	640M	640M	640M
Diskette drives, max.	2	2	2	2	2
Tape drives, max.	4	4	4	4	4
Directly attached displays, max.	24	24	24	24	24
Ports:					
Basic processor	0	0	Up to 11	Up to 11	Up to 11
System max.	16	16	19	19	19
Communications:					
SDLC	Yes	Yes	Yes	Yes	Yes
BSC	Limited	Limited	Limited	Limited	Limited
S/S (asynchronous)	Limited	Limited	Limited	Limited	Limited
Floating point hardware	No	No	Optional	Optional	Optional
Expanded Function Panel	No	No	Yes	Yes	Yes

(1) Mutually exclusive.
(2) Not with Expanded Function Panel.
(3) Includes disk drive in processor and in each 8101 unit.
(4) Available only as model upgrades.

and 3287 printers. Also supported are the 3630 plant communications devices, card I/O (via the 3289 Model 3 printer), and up to four 8809 magnetic tape drives.

The Distributed Processing Control Executive (DPCX) supports a more limited array of device types. All program development is performed on the host computer. In effect, DPCX provides for emulation and expansion of IBM 3790 systems; existing 3790 programs will run under DPCX. The DPCX software supports up to 31 concurrent application programs without size constraints via virtual memory management. RJE and message switching are also supported.

The 8100 is supported at the host System/370 site under OS/VS1, OS/VS2 MVS, and DOS/VS.

A central feature of the 8100 system is the extensive use of display and printer terminals. While the 3790 was IBM's pioneering effort in "transaction processing," it has never been widely accepted; the chief complaints about the 3790 were cost and difficulty of programming. Under DPCX, the 8100 looks like a bigger, faster, less costly 3790, with essentially the same programming. Under DPPX, however, the 8100 looks more like one of IBM's small System/370 computers, except that it is transaction-oriented rather than batch-oriented.

The 8100 features flexible connection of terminals. Each port can support a communications link (SDLC, BSC, or asynchronous), a loop, or directly connected devices with an RS-232-C interface (up to 40 feet) or a V.35 interface (up to 1000 feet). One (or in some configurations, two) of the loops can be a high-speed loop that operates at up to 38.4K bps. If SDLC terminals are configured, only 10 of them can be active simultaneously. Under the DPCX, supported devices are limited to SDLC 3276 display and printer clusters or 3289 printers. Under DPCX, **ports; one or two 8101s attached to an 8140 may be configured with ports. In general, each 8101 can accommodate up to eight ports.**

Specific devices supported through direct attachment and through ports via communications lines, loops, and direct connections are shown in Table 2.

TRANSMISSION SPECIFICATIONS

Each communications adapter in a 8100 system controls one loop, one data link (i.e., through a common carrier communication line), or one "direct connection" to an I/O unit that is a limited distance from the 8100 system. Synchronous data link control (SDLC), binary synchronous communications (BSC), or start-stop (S/S) communications protocols are supported.

The *SDLC communications adapter* can connect to analog networks, digital networks, or direct connections. Analog network speeds range from 600 to 9600 bps, digital network speeds range from 2400 to 9600 bps, and direct connection speeds range from 600 to 9600 bps. The maximum distance for direct connection through an RS-232 interface is 40 feet. The maximum distance for direct connection through a V.35 interface is 1000 feet. The 8100 system can use the SDLC communications adapter to communicate with an IBM System/370 or 4300 host through a 3704/3705 or Integrated Communications Adapter with line speeds up to 56,000 bits per second, or with another 8100 system, as well as with various SDLC-compatible peripheral devices. Host connections operating at greater than 9600 bps preclude a second high-speed (38.4 bps) loop in 8140/8101 configurations.

The *BSC communications adapter* can connect to analog networks, digital networks, or direct connections. Analog network speeds range from 600 to 9600 bps, digital network speeds range from 2400 to 9600 bps, and direct connection speeds range from 600 to 9600 bps.

The *S/S communications adapter* can connect to analog networks or direct connections. Analog network speeds and direct connection speeds range from 110 to 300 bps for the 8130 and from 110 to 1200 bps for the 8140. S/S direct connections are through an RS-232 interface; the maximum

IBM 8100 Information System

additional devices are supported, including card I/O (via the new 3289-3 printer), 364X Plant Communications devices (co-announced with the 8100), and the 8775 display unit. Limited support is provided for 2780/3780 BSC devices and 2741 and Teletype 33/35 units. Data communications port capacity varies somewhat from one processor model group to another:

Model Group	Port Capacity
8130 A2X	14
8140 A3X	19
8140 A4X	18
8140 A5X	16
8140 A6X	16
8140 A7X	16
8140 B5X	19
8140 B6X	19
8140 B7X	19

Aggregate BSC/SS data rates for the two processor models also differ: the 8130 can support a total throughput of 9600 bps for BSC-type terminals, or 330 cps for Start/Stop terminals; the 8140 can support up to 19,200 bps of aggregate data traffic for BSC terminals, or 660 bps for Start/Stop terminals.

In addition to the ports, up to 24 3277 display and 3284/6/7 printer units can be connected to an 8100 system through one or two 8101 Storage and I/O Units. There are no published system limits on the number of devices controllable by one 8100 system, but it must be impressive. Careful analysis will be required to see if the more ambitious complements will satisfy terminal response time criteria.

Given the configurational possibilities, the announced software support, and IBM's own comments, there seem to be three distinct applications areas for the 8100:

- Host-controlled distributed system.
- Stand-alone transaction-oriented system with local and/or remote terminals.
- Autonomous transaction system with "loose" connection to one or more host systems.

For some time IBM has embraced the concept of distributed processing. With the continued enhancement of SNA/ACF software and the 3270 family of display terminals, it was clear that IBM needed a programmable controller to permit increased network flexibility. The 8100 is that controller. But IBM was not the first to introduce such a unit. Minicomputer and distributed terminal vendors have been announcing—and delivering—such units for several years. Since the 8100 (under DPPX) is only loosely connected to the host computer, it faces stiff competition.

USER REACTION

In Datapro's 1981 survey of computer systems users, responses were received from 17 8100 system users, who

distance is 40 feet. The 8100 can use the S/S communications adapter to communicate with the IBM 2741 Communication Terminal, IBM 3101 Display Terminal, and devices such as the Teletype 33/35.

An *8100 loop* consists of cabling and accessories that allow multiple I/O units to be connected to a common cabling system that can include both indoor and outdoor cables. The accessories include various types of connection boxes for connecting I/O units to the loop.

The loop can be directly attached or data-link-attached to an 8100 system (8130 or 8140 processor, or an 8101 Storage and I/O unit). A directly attached loop operates at 9600 or 38.4K bps, and a data-link-attached loop operates at 1200 to 9600 bps. The loop speed selected is dependent on the capabilities of the attached devices and system requirements. Only one directly attached loop, or loop with a second lobe, per system can operate at 38.4K bps in 8130/8101 configurations; two high-speed loops are supported for 8140/8101 configurations. (A lobe is defined as a portion of a loop that has a driver at one end of the lobe and a receiver at the other end of the lobe, neither of which is an I/O unit.) I/O units that are attachable to a directly attached loop are also attachable to a data-link-attached loop. All devices attached to a given loop must operate at the same loop speed. To facilitate single-terminal loop operation, IBM makes available a Single Loop Device Attachment Cable Assembly.

In addition to the capability for attaching a wide variety of I/O units, the loop design allows for error recovery and problem determination. The wrap capability in the loop station connector (LSC) and loop wiring connector (LWC) allows an alternate signal path to bypass a wiring failure on the loop; the bypass capability in the LWC allows a failing I/O unit or radial cable to be removed from the loop signal path, while allowing the remainder of the loop to operate normally. The LSC automatically bypasses the station and keeps the loop operational whenever an I/O unit is powered off or unplugged.

The loop configuration permits, without recabling or reprogramming, the relocation of devices on the loop to any other locations on the same loop where there are LSC's and power available. In conjunction with the bypass capability of the LSC, relocation and reconnection to the loop can be accomplished while the loop is operational. (Data may be lost during loop reconnection.)

A directly attached loop requires that the controlling unit have an SDLC Communication Adapter feature (1602) and a Loop Adapter feature (4830). In addition, a directly attached loop can have a second lobe if the Second Lobe feature (4835) is installed for that loop. The use of multiple lobes is recommended for increased I/O device availability for cabling alterations or failures, simpler installation planning and control, and greater loop cabling distance. In the event of a malfunction on one lobe or for planning alterations, the affected lobe can be bypassed, keeping all other lobes operational.

A data-link-attached loop requires an SDLC communications adapter with appropriate modems from the 8100 system to the site of the data-link-attached loop. At the remote site, a 3843 Loop Control Unit provides the interface between the data link and the data link-attached loop. The 3843 contains an RS-232 interface for an external modem and operates at 2400, 4800, or 9600 bps. The Second Lobe feature is not available on a data-link-attached loop.

COMPONENTS

PROCESSORS: The basic parameters of the 30 8100 processor models are shown in Table 1. Each processor is

IBM 8100 Information System

Table 2. 8130/8140/8101 TERMINAL ATTACHMENT SUPPORT

	Direct Attachment (1)	Port-Attachment			
		Via Local or Remote Loop (2)	Via High-Speed Local Loop (3)	Via Data Communications Link	Via Direct Connection
2741	—	—	—	Yes	Yes
3101-10/12/13/20/22/23 with 3102 printer	—	—	—	Yes	Yes
3262-2/12	—	Yes	Yes	—	—
3274-51C with:	—	Yes	Yes	Yes	Yes
3262-3/13	—	Yes	Yes	Yes	Yes
3278-1/2/3/4/5	—	Yes	Yes	Yes	Yes
3279-2A/2B/3A/3B	—	Yes	Yes	Yes	Yes
3287-1/2/1C/2C	—	Yes	Yes	Yes	Yes
3289-1/2	—	Yes	Yes	Yes	Yes
3276-1/2/3/4/11/12/13/14 with:	—	Models 11, 12, 13 & 14 only	—	Yes	Yes
3262-13	—	Yes	—	Yes	Yes
3278-1/2/3/4		Yes	—	Yes	Yes
3279-2A/3A	—	Yes	—	Yes	Yes
3287-1/2/1C/2C	—	Yes	—	Yes	Yes
3289-1/2	—	Yes	—	Yes	Yes
3277-1/2	Yes	—	—	—	—
3284-1/2	Yes	—	—	—	—
3286-1/2	Yes	—	—	—	—
3287-1/2/11/12	Models 1 & 2 only	Models 11 & 12 only	Models 11 & 12 only	—	—
3288-2	Yes	—	—	—	—
3289-3 with:	—	Yes	—	—	—
2502-A1 card reader (4)	—	Yes	—	—	—
3501 card reader	—	Yes	—	—	—
3521 card punch (4)	—	Yes	—	—	—
3631-1A/1B	—	—	—	Yes	—
3632-1A/1B	—	—	—	Yes	—
3641-1/2	—	Yes	—	—	—
3642-1/2	—	Yes	—	—	—
3643-2/3/4	—	Yes	—	—	—
3644/3645/3646/3647	—	Yes	—	—	—
3650	—	—	—	Yes	—
3680	—	—	—	Yes	—
3732	Yes	—	—	—	—
3736	Yes	—	—	—	—
3767-1/2/3	—	—	—	Yes	Yes
6670	—	—	—	Yes	—
8775-1/2/11/12	—	Models 1 & 2 only	Models 1 & 2 only	Models 11 & 12 only	Yes
TTY 33/35 & equivalent devices	—	—	—	Yes	—
2780/3780-compatible devices	—	—	—	Yes	Yes
Another 8130 or 8140 processor	—	—	—	Yes	Yes

(1) Only 8101 and 8140-BXX support terminals via direct attachment.
(2) Local loops operate at up to 9600 bps; remote loops are attached via a 3843 Loop Control Unit and operate at 2400, 4800, or 9600 bps.
(3) One high-speed (up to 38.4K bps) local loop may be configured per 8130-based system; two may be configured per 8140-based system.
(4) Requires the 3782 Card Attachment Unit.

reported their experience on a total of 29 8100 systems, which had been installed for an average of 7 months. The most frequently mentioned applications running on these 8100s were (in order of frequency of response): manufacturing (10 users), order processing/inventory control (9 users), payroll/personnel (8 users), accounting/billing (7 users), sales distribution (5 users), and purchasing (4 users). Although all but one of these users indicated that they did their own programming, about one-fourth of these users were also utilizing "ready-

structured around 48 sets of high speed general registers. Each set of registers can be used as 8 32-bit registers, 8 16-bit registers, or 16 8-bit registers. Multiple, independent operands can be held in one register. Two sets of registers are assigned to each program. Processor Models A41-A44, and optionally Models B5X-B7X, include 8 sets of 4 64-bit floating point registers for short format (32-bit) or long format (64-bit) floating point arithmetic.

Each processor contains a dynamic address translation facility to isolate logical application program instruction, operand, and I/O addresses from real memory addresses;

IBM 8100 Information System

made" application programs from IBM and outside software contractors.

Only three of these users were utilizing their 8100s as stand-alone systems; the remainder were operating the 8100 as a distributed processing site. Seven were using remote workstations as well as local ones. Future plans for expansion include additions to present hardware (11 users), implementation of additional IBM software (8 users), and expanded distributed processing capabilities (7 users).

These users' ratings are as follows:

	Excellent	Good	Fair	Poor	WA*
Overall satisfaction	2	11	3	1	2.8
Ease of operation	3	10	2	2	2.8
Reliability of mainframe	5	7	3	2	2.9
Reliability of peripherals	4	10	2	1	3.0
Maintenance service:					
Responsiveness	5	8	3	0	3.1
Effectiveness	2	9	5	0	2.8
Technical support	1	9	5	2	2.5
Manufacturer's software:					
Operating system	2	10	3	0	2.9
Compilers and assemblers	3	6	3	2	2.7
Applications programs	0	7	4	2	2.4
Ease of programming	5	5	5	2	2.8
Ease of conversion	4	3	4	3	2.6

*Weighted Average on a scale of 4.0 for Excellent.

When given a check-list of possible system benefits and problems, these users indicated these principal advantages: that the system is easy to expand/reconfigure (9 users); that the productivity aids help in programming (7 users); that programs and data can be carried over from other systems (4 users); and that response time is good (4 users). The most frequently indicated disadvantages were: that the system is too small for their needs (4 users); that installation was late (4 users); and that some of the software or support IBM promised was not provided (4 users). Judging by frequency of benefits versus problems indicated, the advantages of the 8100 system heavily outweigh its disadvantages. When asked whether the system does all that they expected it to do, 10 of these users responded "yes," three responded "no," and four responded "undecided." When asked whether they would recommend the system to another user, twelve responded "yes," two responded "no," and three responded "undecided."□

this also permits virtual addressing of up to 4 million bytes of memory using a full 32-bit address.

Input/output can be in 8-bit bytes of 16-bit halfwords. Programmed I/O (PIO) transfers data between an I/O device and the general registers. Channel I/O (CIO) transfers data directly between memory and a peripheral device.

DISK STORAGE: All models of the 8130 and 8140 processors and two of the three 8101 models contain non-removable high-speed direct access storage. The 8130 and 8140-AXX models utilize single-spindle disk drives. The 8130 and 8140 AX1 models contain 29,327,360 bytes of moving-head storage, and the AX3 models contain 64,520,192 bytes. In the 8130 and 8140 AX2 and AX4 processor models, 131,072 bytes of fixed-head storage are provided at the expense of 6 megabytes of moving-head storage.

The 8101 and 8140-BXX models utilize newer dual-spindle drives. In the 8101-A23, only one of the two spindles is used, providing 64,520,192 bytes of moving-head storage; in the 8101-A25 both spindles are used providing 129,040,384 bytes. The 8140-BX1 and BX2 provide 58,654,720 bytes and 123,174,912 bytes of moving-head storage. The inclusion of 131,072 bytes of fixed-head storage, which is provided for all BXX models, accounts for the reduction of moving-head storage capacity by 6 megabytes.

For all units, the average access time is 27 milliseconds, the average rotational delay is 9.6 milliseconds, and the data transfer rate is 1.031 million bytes per second.

DISKETTE STORAGE: One drive with a capacity of 985,088 bytes is contained in each processor model. One additional drive can be added to one 8101 Storage and I/O Unit in an 8100 system. The data transfer rate is 62K bytes per second. The Basic Data Exchange format is used; either IBM 2D or Type 1 diskettes can be used.

8809 MAGNETIC TAPE DRIVE: Four models are provided that are identical in operating parameters, but differ according to connection. The tape format is 9-track, 1600 bpi, phased-encoded. Direct reel-to-reel tape transport is employed that replaces vacuum columns with electronic control. This means that the unit is sensitive to reel inertia, and the use of large-hub, 1200 foot reels is not recommended. The 8809 operates in a start/stop mode at 12.5 inches per second, which gives a data rate of 20,000 bytes per second. A special streaming mode operates at 100 inches per second for a data rate of 160K bytes per second. The streaming mode is intended for volume dumps and loads to and from disk and completely occupies the 8100 processor. The 8809 1A is the first drive that attaches to an 8101. The 1B is the first drive that attaches to an 8100 processor. The string of four drives is completed by adding a Model 2, a Model 3, and another Model 2, in that order.

OTHER PERIPHERAL DEVICES: Members of many IBM display and printer product lines can be attached to the 8100 Information System. Among the most important products or families represented are:

- **The 8775 Display Terminal. Introduced with the 8100 System in October 1978, the 8775 currently offers two pairs of models. One pair is designed for attachment via the Loop Adapter; the other pair, via data communications lines. Within each pair, one model provides a display capacity of 960, 1920, or 2560 characters and the second model adds the capability for displaying 3440 characters.**

- **The 3270 Information Display System family. The 3274-51C or the 3276 (any model) control unit may be used to attach clusters of 3270 family displays and printers to the 8100 System. In addition, 3277 displays and certain 328X printers can be directly attached to the 8140-BXX processors and the 8101 unit.**

- **The 3262 Band Printer series. Models 2 and 12 are offered for loop attachment to the 8100 and operate at 650 lpm and 325 lpm, respectively.**

- **The 3101 Display Terminal. Six models that offer various interface compatibilities and a choice of character- or block-mode transmission are port-attachable directly or via a data link. Software support for the 3101 and other TTY-compatible devices must be provided by the user.**

- **The 3630 Plant Communication Terminal family. The 3631 and 3622 control units may be used to attach 364X**

IBM 8100 Information System

terminals to the 8100 system, or the 364X devices may be loop-attached as stand-alone devices.

- The 3732 Text Display Station and 3736 Printer. These devices provide the 8100 System with a word processing capability.
- The 6670 Information Distributor. This document printer/distributor may be attached to the 8100 System through a data link adapter.

Specific model numbers and attachment capabilities of these and other devices that can be configured with the 8100 system are listed in Table 2. Detailed reports on many of these product lines, including the 3270 family and the 8775 and 3101 displays, can be found elsewhere in this Datapro service.

SOFTWARE

OPERATING SYSTEMS: There are two primary IBM licensed program products currently available to support the 8100 system hardware. The Distributed Processing Programming Executive (DDPX) is a general multipurpose operating system for commercial, interactive, scientific, and plant floor applications and supports a number of optional licensed programs, including COBOL, FORTRAN, SORT, and a Development Management System. The Distributed Processing Control Executive (DPCX) is a multi-application, display-oriented system designed to be implemented in an environment of strong central control. It provides functions for interactive processing at the distributed site as well as between the host and the distributed site. DPCX provides upward compatibility from an IBM 3790.

Under DPCX, all program development is performed on the host computer. Under DPPX, programs are developed on the 8100 system. DPPX supports all the features and devices that can be attached to an 8100 system. The following are *not* supported by DPCX: card input/output, the 3640 series of industrial terminals, BSC or Start/Stop terminals, 8100-to-8100 communications, or double-lobe loops.

The *Distributed Processing Control Executive (DPCX)* is a programmable, multi-application, display-oriented control system that can control the execution of up to 31 user programs concurrently. Application programs written for the 3790 Communication System will run without change or recompilation under DPCX when the same or compatible devices are used. User data sets can be transferred via diskettes from 3790 disk storage to 8100 disk storage using a DPCX service routine.

DPCX and its host computer software allow users to distribute data and processing functions while retaining control at the host computer. The host-controlled functions include program development, distribution, and updating; systems design integrity; and network management. Applications, however, may run independently of the host, accessing local DPCX data bases and doing all the required processing locally. Conversely, applications may establish Systems Network Architecture (SNA) sessions with host applications, thus distributing processing and data between SPCX and host applications.

DPCX is supported by the ACF/VTAM, ACF/VTAME, ACF/TCAM, and EXTM host SNA access methods. The 8100 system is connected to the host via an SDLC line. System Control Program (SCP) support is provided by DOS/VS, DOS/VE, OS/VS1, OS/VS2 (SVS), and OS/VS2 (MVS). In addition, DPCX is supported by a number of program products such as IMS/VS, CICS/VS, VSPC and TSO, DSX, RES/JES1, JES2, JES3, and POWER/VS. The DPCX application programmer can allow DPCX to manage all SNA protocols in the DPCX application program.

DPCX application programs are coded using the IBM 3790 programming statements. Thus, programs written for the 3790 can be run unchanged on an 8100 system under DPCX although the programs must be modified if they are coded for hardware not supported by DPCX. A DPCX application program can invoke a number of DPCX application services, such as transaction support, queued printing support, system-to-program support, display panel support, and interface-to-system services. Using DPCX statements, the application programmer can write programs to be run in a variety of modes, including batch, interactive, and conversational, with inquiry and data set updating.

In addition to programming the DPCX-controlled 8100 by means of IBM 3790 statements, the user can utilize the Development Management Service (DMS), a program product. DMS is a form-driven, prompt-response, interactive tool for generating display panels, display printer formats, and data definition sections of the application program.

Once a DPCX application program has been coded, it is prepared and tested by the 3790 host support program. Thus, all DPCX application programs are written and tested at the host location under control of the host data processing personnel. Only after the programs have been completed are copies transmitted through the network to the various 8100/DPCX installations.

At the 8100 system, each DPCX application program is executed on a symbolic machine, and each symbolic machine consists of real storage resources (a set of buffers, registers, and condition indicators). Each symbolic machine is protected from access by other programs on the same 8100 system.

DPCX provides support that allows its users access to certain host applications. These functions are listed below:

- 3270 Data Stream Compatibility, which allows local or remote displays and display printers to be supported by existing 3270-based host applications.
- On-line printing to local or remote display printers supported by 3270-based host applications.
- An RJE package that includes on-line workstation support for host-based RJE applications and off-line functions, such as spooled printing and input editing with user exists.

The *Distributed Processing Programming Executive (DPPX)* is made up of the DPPX/Base licensed program and its family of licensed programs. DPPX supports the 8130 and 8140 processors, the 8101 storage and I/O unit (including disks and diskettes), the 8809 tape unit, and a wide variety of attachments for terminals, unit record devices, and system-to-system communication.

The major components of DPPX/Base include: the Supervisor, Command Facility, Data Management, and Interactive Editor. The Supervisor manages processor and error recovery; queues, locks, and timers; storage addresses and contents; and the Initial Program Load (IPL) function. DPPX/Base includes a set of commands used to define system environments, initiate work, and manage the operation of the system. The Command Facility interprets these commands and invokes other programs as needed to execute the commands. Commands can be executed interactively or in a batch mode. The Data Management portion of DPPX provides two access methods: the Relative Sequential Access Metho (RSAM) and the Distributed Access Method (DXAM). RSAM provides direct access to records using a relative record or block number, as well as sequential access to records. DXAM is an indexed sequential access method that maintains separate data sets for the indexes and the corresponding data records. The target data sets are RSAM-compatible. Up to eight indexes

IBM 8100 Information System

can be maintained for each data set. The Interactive Editor is used to enter and edit source programs, text, and data in either line edit or full-screen edit modes. The DPPX/Distributed Presentation Services program product is required for the full-screen capability. DPPX/Base also includes communications support, I/O device support, a linkage editor, an interactive debugging facility, a printer sharing program, and various general utilities.

Under DPPX the 8100 can communicate with other 8100 systems, communicate with System/370 processors (or compatible processors, including the 3031, 3032, 3033 and 4300), or function as a stand-alone system.

The DPPX family of licensed software programs includes:

- DPPX Assembler
- DPPX COBOL Compiler and COBOL Library
- DPPX FORTRAN Compiler and FORTRAN Library
- DPPX Distributed Presentation Services
- DPPX Data Base and Transaction Management System
- DPPX 3270 Data-Stream Compatibility
- DPPX RJE Workstation Facility
- DPPX Sort/Merge
- DPPX Development Management System
- DPPX Parameter Generation Facility for the IBM 3644 Automatic Data Unit
- DPPX/Performance Tool

DPPX/ASSEMBLER: A program product that translates source programs written in DPPX Assembler Language into 8100 machine language and processes macro instructions, both user-written and those that are included with DPPX/Base. The DPPX Assembler is useful primarily to the system programmer who has a need to replace portions of IBM-licensed program code, write original system code, or produce specialized interface programs and subroutines. IBM urges users to use high-level languages rather than Assembler language for application program development.

DPPX/COBOL: A program product that offers a COBOL compiler and a run-time library containing re-entrant routines that support arithmetic, logic, and data conversion, as well as input/output operations. Designed for application development, DPPX/COBOL includes language extensions that allow COBOL applications to utilize DPPX/DTMS (Data Base and Transaction Management System). A call interface is provided to allow interactive applications to use DPPX/DPS (Distributed Presentation Services). The COBOL program can be compiled and linked on one system, and the generated modules can be executed on another system on which the Run-Time Library has been installed.

DPPX/FORTRAN: A high-level, mathematically oriented programming language and compiler primarily suited to engineering and scientific applications. The language is designed according to the specifications of ANS FORTRAN X3.10-1966 and contains most of the basic specifications as well as additional features.

DPPX/DISTRIBUTED PRESENTATION SERVICES (DPS): A program product providing device-independent control for terminals supported by DPPX, eliminating the need for data stream communication and buffer programming. DPPX/DPS consists of two components, Interactive Map Definition (IMD) and Format Management (FM). IMD enables the application programmer to create and update screen and printer panel layouts interactively at program development time. During the definition process, the programmer can see the run-time format being created at the display. Format Management (FM) is the execution-time component of DPS. FM can be used on systems without the IMD feature. In this case, maps must be created by IMD on an 8100 processor licensed for this feature.

DPPX/DATA BASE AND TRANSACTION MANAGEMENT SYSTEM (DTMS): Provides transaction management and routing as well as data base management and control for the 8100/DPPX system. Facilities to assist in developing, operating, and managing on-line applications are provided. The need for extensive user-developed system programs to manage terminals and data in this environment is greatly reduced.

DPPX/3270 DATA STREAM COMPATIBILITY (DSC): A licensed program that allows certain keyboard display and printer units attached to the 8100 to communicate with System/370 host application programs as if the units were directly attached by data link to the host processor. The 8100 can be installed as a distributed processor while most existing 3270 applications at the System/370 host continue to run without change.

DPPX/REMOTE JOB ENTRY-WORKSTATION FACILITY (RJE): Permits the 8100 to function as an SNA or BSC remote job entry workstation for submitting jobs to a host System/370. The host requires an OS/VS or VM/370 operating system with a job entry subsystem installed.

DPPX/SORT/MERGE (SORT): Provides a sort for the 8100 system that is designed to run with the DPPX/Base and provides users with facilities for extracting and sequencing data sets. DPPX/SORT is designed to address the users' need for sorting and merging of single or multiple types of records from one or more data sets. Related tasks, such as selecting certain records from one or more data sets, are also handled.

DEVELOPMENT MANAGEMENT SYSTEM (DMS)/DPPX: A program product that aids in the design and generation of application programs by providing a simple programming interface to the user. Programs generated by DMS/DPPX are executed by the DMS/DPPX Execution Facility, which operates in a batch environment under DPPX or interactively under DTMS.

DPPX/PARAMETER TABLE GENERATION FACILITY (GEN3644): Provides an efficient means for customizing the 3644 Automatic Data Unit (ADU). The 3644 ADU attaches to the 8100 or the 3630 Plant Communication System and creates an automatic interface between the system and a wide variety of actuators, instruments, computers, and production subsystems. DPPX/GEN3644 customizing consists of selecting 3644 functions and specifying the initial values of stored data items. DPPX/GEN3644 translates the customization data into the format necessary for transmission to the 3644. Translation is performed by editing the source data and converting it into a parameter table format for loading into the 3644. The resulting parameter table works with the 3644 functions provided by IBM. DPPX/GEN3644 also produces a listing of the source data entered by the user. Extensive edits are performed both on a record basis and on an overall table basis. Errors noted on the 3644 program listing are corrected by changing the original input and resubmitting the job. The output of DPPX/GEN3644 is a sequential file containing the Parameter Table Load (PTL)

IBM 8100 Information System

Update

All 8100 system components listed in the accompanying price table are maintenance category A, except the 8809 tape drives and the 3289-3 printer, which are category D. These categories determine the schedule of extended maintenance charges. The two schedules differ for extended Monday through Friday maintenance, but are the same for Saturday and Sunday maintenance. Prime shift maintenance is for any consecutive nine hours between 7 AM and 6 PM, system control code. This facility will be available for System/370's running under OS/VS-VTAM, ACF/VTAM, DOS/VS-VTAM, ACF/VTAM, OS/VS-TCAM, and DOS/VS-EXTM.

PRICING

All 8100 system components are available for a month-to-month rental or on a two-year lease arrangement. Both arrangements include prime shift maintenance. Purchased components can have a separate maintenance contract. Monday through Friday. The premium for extended maintenance is expressed in the table below as a percentage of the prime shift maintenance charges, which are listed in the accompanying price table.

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday—					
Category A	10%	14%	18%	22%	26%
Category D	10	12	14	16	18
Saturday	4	5	7	8	9
Sunday	5	7	9	11	12

*For periods outside the basic 7 AM to 6 PM prime shift.

The termination charge for the two-year lease arrangement is the lower of 5 months' charges of 25 percent of the remaining value of the lease. The lease arrangement also guarantees a maximum rate of increases for extended leasing periods. The rate for all 8100 components is five percent per year beginning in the second year.

All 8100 components qualify for unlimited usage. Purchase credits can be accrued up to a maximum of 55 percent. All components, except the 8809 tape drives and 3289-3 printer, are classified as Customer Set-Up, which permits (or requires) users to install the components themselves.

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8130	Processor; include 256K bytes of memory, 1 diskette drive, two ports and:				
A21	29 megabytes of disk storage	$ 846	$ 721	$26,460	$154
A22	23 megabytes of disk storage and 131K bytes of fixed-head storage	870	741	27,240	163
A23	64 megabytes of disk storage	894	761	28,020	163
A24	58 megabytes disk storage and 131K bytes of fixed-head storage	917	781	28,800	173
1520	Feature Expansion Type 1; provides 4 additional ports and other expansions	—	—	—	—
1530	System Expansion; for attachment of 8101 units and direct attachment of tape drive	83	71	2,645	13
1710	Processor Storage Type 1; 128K bytes, 1 max.	98	83	2,475	9
1720	Processor Storage Type 2; 256K bytes, 3 max.	195	166	4,950	18
8140	Processor; includes 1 diskette drive and—				
	A3X Series; includes 256K bytes of memory, 3 ports, and:				
A31	29 megabytes of disk storage	1,351	1,150	36,440	190
A32	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,374	1,170	37,220	200
A33	64 megabytes of disk storage	1,398	1,190	38,000	200
A34	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,421	1,210	38,780	208
1490	Storage Increment; 128K bytes	324	276	6,540	33
4545	Expanded Function Operator Panel	96	82	2,645	33.50
	A4X Series; includes 320K bytes of memory, 2 ports, floating point arithmetic, and:				
A41	29 megabytes of disk storage	1,686	1,435	44,380	233
A42	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,709	1,445	45,160	243
A43	64 megabytes of disk storage	1,733	1,475	45,940	243
A44	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,756	1,495	46,720	251
4545	Expanded Function Operator Panel; eliminates 2 processor ports	96	82	2,645	33.50
	A5X Series; includes 512K bytes of memory, no ports, and:				
A51	29 megabytes of disk storage	2,079	1,770	50,200	256
A52	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,103	1,790	50,980	266
A53	64 megabytes of disk storage	2,126	1,810	51,760	266
A54	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,150	1,830	52,540	274
	A6X Series; includes 768K bytes of memory, 1 diskette drive, no ports, and:				
A61	29 megabytes of disk storage	2,203	1,875	60,750	189
A62	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,226	1,895	61,530	198

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
A63	64 megabytes of disk storage	2,250	1,915	62,310	198
A64	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,273	1,935	63,090	207
	A7X Series; includes 1024K bytes of memory, 1 diskette drive, no ports, and:				
A71	29 megabytes of disk storage	2,420	2,060	67,080	201
A72	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,444	2,080	67,860	209
A73	64 megabytes of disk storage	2,467	2,100	68,640	209
A74	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,491	2,120	69,420	217
	BXX Series; includes 3 ports, 1 diskette drive, 131K bytes of fixed head storage, and:				
B51	512K bytes of memory, plus 58 megabytes of disk storage	2,079	1,770	56,890	228
B52	512K bytes of memory, plus 123 megabytes of disk storage	2,449	2,085	67,780	278
B61	768K bytes of memory, plus 58 megabytes of disk storage	2,297	1,955	63,220	238
B62	768K bytes of memory, plus 123 megabytes of disk storage	2,667	2,270	74,110	290
B71	1024K bytes of memory, plus 58 megabytes of disk storage	2,514	2,140	69,550	250
B72	1024K bytes of memory, plus 123 megabytes of disk storage	2,884	2,455	80,440	300
4545	Extended Function Operator Panel	96	82	2,645	33.50
3750	Floating Point Feature	160	136	4,490	25.50
1701	Communication Attachment; provides 4 additional ports; 2 max.; requires 3901	14	12	440	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	105	89	2,975	18
1506	Display & printer Attachment; for additional 4 devices; 5 max.	14	12	463	3
4901	Magnetic Tape Attachment; for up to 4 drives; requires 3901	85	72	2,425	11.50
3901	Feature Expansion Prerequisite	15	13	540	4
4655	Keylock (all models)	54 SUC	54 SUC	54	—
8101	Storage and Input/Output Unit:				
A10	Device attachment only	235	200	7,150	19.50
A11	29 megabytes disk storage and device attachment	558	475	16,480	64
A13	64 megabytes disk storage and device attachment	605	515	18,040	73.50
A20	Device attachment only	205	175	6,170	14
A23	64 megabytes disk storage and device attachment	605	515	18,040	73.50
A25	128 megabyte disk storage and device attachment	975	830	28,930	127
	Display and Printer Attachment:				
1501	Type I (capability provided on A10 by no-charge specify feature #9941)	32	27	992	4.50
1502	Type II	14	12	441	1.00
1503	Communications Attachment Type I (capability provided on A10 by no-charge specify feature #9943)	32	27	992	4
1504	Communications Attachment Type II	14	12	441	0.50
1505	Display & Printer Adapter (for first 4 devices)	89	76	2,535	17.50
1506	Display & Printer, additional (for additional 4 devices)	14	12	463	3
1507	Diskette Drive and Magnetic Tape Attachment (A10 only)	31	26	987	4.50
1701	Communications Attachments; provides 4 additional ports; 2 max.; requires 3901	14	12	440	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	105	89	2,975	18
3901	Feature Expansion Prerequisite	15	13	540	4
4520	Diskette 2D Drive; 1 megabyte; requires 1507 and A10)	112	95	3,170	31.50
4521	Magnetic Tape Attachment (for up to 4 drives; requires 4520 on A10)	69	59	1,980	10
6555	Security Cover Locks (for all processors and 8101)	37 SUC	37 SUC	37	—
6566	Security Lock, Diskette (for all processors and 8101)	32 SUC	32 SUC	32	—
	Communications and I/O Adapters for 8130/8140/8101				
1601	SDLC Communications With Business Machine Clock	48	41	992	8.50
1602	SDLC Communications Without Business Machine Clock	39	33	926	8
1603	BSC/SS Communications With Business Machine Clock	21	18	738	3
1604	BSC Communications Without Business Machine Clock	13	11	495	2.50
1550	CCITT V.35 Interface	16	14	561	2.

*Include prime-shift maintenance.

IBM 8100 Information System

All 8100 system components listed in the accompanying price table are maintenance category A, except the 8809 tape drives and the 3289-3 printer, which are category D. These categories determine the schedule of extended maintenance charges. The two schedules differ for extended Monday through Friday maintenance, but are the same for Saturday and Sunday maintenance. Prime shift maintenance is for any consecutive nine hours between 7 AM and 6 PM, system control code. This facility will be available for System/370's running under OS/VS-VTAM, ACF/VTAM, DOS/VS-VTAM, ACF/VTAM, OS/VS-TCAM, and DOS/VS-EXTM.

PRICING

All 8100 system components are available for a month-to-month rental or on a two-year lease arrangement. Both arrangements include prime shift maintenance. Purchased components can have a separate maintenance contract. Monday through Friday. The premium for extended maintenance is expressed in the table below as a percentage of the prime shift maintenance charges, which are listed in the accompanying price table.

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday—					
Category A	10%	14%	18%	22%	26%
Category D	10	12	14	16	18
Saturday	4	5	7	8	9
Sunday	5	7	9	11	12

*For periods outside the basic 7 AM to 6 PM prime shift.

The termination charge for the two-year lease arrangement is the lower of 5 months' charges of 25 percent of the remaining value of the lease. The lease arrangement also guarantees a maximum rate of increases for extended leasing periods. The rate for all 8100 components is five percent per year beginning in the second year.

All 8100 components qualify for unlimited usage. Purchase credits can be accrued up to a maximum of 55 percent. All components, except the 8809 tape drives and 3289-3 printer, are classified as Customer Set-Up, which permits (or requires) users to install the components themselves.

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8130	Processor; include 256K bytes of memory, 1 diskette drive, two ports and:				
A21	29 megabytes of disk storage	$754	$ 642	$25,200	$128
A22	23 megabytes of disk storage and 131K bytes of fixed-head storage	778	662	25,950	136
A23	64 megabytes of disk storage	801	682	26,700	136
A24	58 megabytes disk storage and 131K bytes of fixed-head storage	825	702	27,450	144
1520	Feature Expansion Type 1; provides 4 additional ports and other expansions	—	—	—	—
1530	System Expansion; for attachment of 8101 units and direct attachment of tape drive	75	64	2,520	11
1710	Processor Storage Type 1; 128K bytes, 1 max.	87	74	2,360	7.50
1720	Processor Storage Type 2; 256K bytes, 3 max.	175	149	4,725	15
8140	Processor; includes 1 diskette drive and—				
	A3X Series; includes 256K bytes of memory, 3 ports, and:				
A31	29 megabytes of disk storage	1,204	1,025	34,710	181
A32	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,228	1,045	35,460	190
A33	64 megabytes of disk storage	1,251	1,065	36,210	190
A34	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,275	1,085	36,960	198
1490	Storage Increment; 128K bytes	324	276	6,540	31.50
4545	Expanded Function Operator Panel	87	74	2,520	32
	A4X Series; includes 320K bytes of memory, 2 ports, floating point arithmetic, and:				
A41	29 megabytes of disk storage	1,510	1,285	42,270	222
A42	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,533	1,305	43,020	231
A43	64 megabytes of disk storage	1,557	1,325	43,770	231
A44	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,580	1,345	44,520	239
4545	Expanded Function Operator Panel; eliminates 2 processor ports	87	74	2,520	32
	A5X Series; includes 512K bytes of memory, no ports, and:				
A51	29 megabytes of disk storage	1,857	1,580	47,810	244
A52	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,880	1,600	48,560	253
A53	64 megabytes of disk storage	1,904	1,620	49,310	253
A54	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,927	1,640	50,060	261
	A6X Series; includes 768K bytes of memory, 1 diskette drive, no ports, and:				
A61	29 megabytes of disk storage	1,968	1,675	57,860	180
A62	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,992	1,695	58,610	189

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
A63	64 megabytes of disk storage	2,015	1,715	59,360	189
A64	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,039	1,735	60,110	197
	A7X Series; includes 1024K bytes of memory, 1 diskette drive, no ports, and:				
A71	29 megabytes of disk storage	2,174	1,850	63,900	191
A72	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,197	1,870	64,650	199
A73	64 megabytes of disk storage	2,221	1,890	65,400	199
A74	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,244	1,910	66,150	201
	BXX Series; includes 3 ports, 1 diskette drive, 131K bytes of fixed head storage, and:				
B51	512K bytes of memory, plus 58 megabytes of disk storage	1,857	1,580	54,190	217
B52	512K bytes of memory, plus 123 megabytes of disk storage	2,197	1,870	64,580	265
B61	768K bytes of memory, plus 58 megabytes of disk storage	2,056	1,750	60,220	227
B62	768K bytes of memory, plus 123 megabytes of disk storage	2,397	2,040	70,610	276
B71	1024K bytes of memory, plus 58 megabytes of disk storage	2,256	1,920	66,250	238
B72	1024K bytes of memory, plus 123 megabytes of disk storage	2,597	2,210	76,640	286
4545	Extended Function Operator Panel	87	74	2,520	32
3750	Floating Point Feature	143	122	4,280	24.50
1701	Communication Attachment; provides 4 additional ports; 2 max.; requires 3901	13	11	420	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	94	80	2,835	17
1506	Display & printer Attachment; for additional 4 devices; 5 max.	13	11	441	3
4901	Magnetic Tape Attachment; for up to 4 drives; requires 3901	76	65	2,310	11
3901	Feature Expansion Prerequisite	14	12	525	4
4655	Keylock (all models)	52SUC	52SUC	52	—
8101	Storage and Input/Output Unit:				
A10	Device attachment only	213	181	6,820	17.50
A11	29 megabytes disk storage and device attachment	508	432	15,710	58
A13	64 megabytes disk storage and device attachment	560	477	17,230	66.50
A20	Device attachment only	186	158	5,880	13
A23	64 megabytes disk storage and device attachment	560	477	17,230	66.50
A25	128 megabyte disk storage and device attachment	901	767	27,620	115
	Display and Printer Attachment:				
1501	Type I (capability provided on A10 by no-charge specify feature #9941)	28	24	945	4
1502	Type II	13	11	420	0.50
1503	Communications Attachment Type I (capability provided on A10 by no-charge specify feature #9943)	28	24	945	4
1504	Communications Attachment Type II	13	11	420	0.50
1505	Display & Printer Adapter (for first 4 devices)	80	68	2,415	15.50
1506	Display & Printer, additional (for additional 4 devices)	13	11	441	3
1507	Diskette Drive and Magnetic Tape Attachment (A10 only)	27	23	940	4
1701	Communications Attachments; provides 4 additional ports; 2 max.; requires 3901	13	11	420	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	94	80	2,835	17
3901	Feature Expansion Prerequisite	14	12	520	4
4520	Diskette 2D Drive; 1 megabyte; requires 1507 and A10)	100	85	3,020	28.50
4521	Magnetic Tape Attachment (for up to 4 drives; requires 4520 on A10)	62	53	1,890	9
6555	Security Cover Locks (for all processors and 8101)	36SUC	36SUC	36	—
6566	Security Lock, Diskette (for all processors and 8101)	31SUC	31SUC	31	—
	Communications and I/O Adapters for 8130/8140/8101				
1601	SDLC Communications With Business Machine Clock	43	37	945	8
1602	SDLC Communications Without Business Machine Clock	36	31	882	7.50
1603	BSC/SS Communications With Business Machine Clock	20	17	703	3
1604	BSC Communications Without Business Machine Clock	12	10	472	2.50
1550	CCITT V.35 Interface	15	13	535	2

*Include prime-shift maintenance.

IBM 8100 Information System

data as required for transfer to the 3644. The records on the sequential file are 256 bytes long.

DPPX/PERFORMANCE TOOL (PT): A program product consisting of the DPPX/PT Monitor and the DPPX/PT Reporter feature. DPPX/PT monitors and reports the activity of components of the DPPX/Base program product. DTMS transaction statistics are also provided. The DPPX/PT Monitor collects performance data, and the DPPX/PT Reporter generates reports on the basis of data collected by the Monitor.

DISTRIBUTED PROCESSING DEVELOPMENT SYSTEM (DPDS): A Programming Request for Price Quotation (PRPQ) product that runs on the System/370 under MVS. DPDS enables systems programmers to code programs for an 8100 system running under DPPX and to compile and test them on the System/370 before implementing them on the 8100. The package consists of a Programming Language for Distributed Systems (PL/DS) compiler with macro library, a linkage editor, and an 8100 simulator. DPDS can be used to develop new systems programs, extensions to DPPX/Base, or special I/O support for devices not supported by DPPX.

The programs described in the following paragraphs run on a System/370 host computer and can be used with both the DPCX and the DPPX operating systems.

DISTRIBUTED SYSTEMS EXECUTIVE (DSX): A set of routines and files that give IBM 8100 and 3790 system network users a simple and comprehensive means of data and network management. DSX combines, in one product, the host libraries, holding files, and control files, and the transmission, formatting, and reporting functions needed for library and transmission control in 8100 and 3790 system networks.

HOST COMMAND FACILITY: Designed to enable a System/370 attached terminal to function as if it were directly attached to an 8100/DPPX or DPCX system, the Host Command Facility gives the operator at a central System/370 site the capability to operate and control remote SDLC-connected 8100 systems. Nearly all maintenance, service, and control functions become available at the central System/370 site for problem determination, problem isolation, and remote system control. The System/370 must be running under MVS VTAM/TCAM, VS1 VTAM/TCAM, or DOS/VS VTAM.

PRICING

IBM offers the 8100 Information System for purchase, for monthly rental, or on a two-year lease. Rental and lease arrangements include prime-shift maintenance. Purchased components may have a separate maintenance contract.

All 8100 system components listed in the accompanying price table are in maintenance category A, except the 8809 tape drives and the 3289-3 printer, which are in category D. Prime-shift maintenance is provided for any consecutive nine-hour period between 7 a.m. and 6 p.m., Monday through Friday. The maintenance categories determine the schedule of extended maintenance charges. The two schedules differ for extended Monday-through-Friday maintenance. The premium for extended maintenance is expressed in the table below as a percentage of the prime-shift maintenance charges, which are shown in the accompanying price list:

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday—					
Category A	10%	14%	18%	22%	26%
Category D	10	12	14	16	18
Saturday	4	5	7	8	9
Sunday	5	7	9	11	12

*For periods outside the basic 7 a.m. to 6 p.m. prime shift.

The termination charge for the two-year lease arrangement is the lower of 5 months' charges or 25 percent of the remaining value of the lease. The lease arrangement also guarantees a maximum rate of increases for extended leasing periods; the rate for all 8100 components is five percent per year beginning in the second year.

All 8100 components qualify for unlimited usage. Purchase credits can be accrued up to a maximum of 55 percent. All components except the 8809 tape drives and 3289-3 printer are classified as Customer Set-Up, which permits (or requires) users to install the components themselves.

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8130	Processor; includes 256K bytes of memory, 1 diskette drive, two ports, and:				
A21	29 megabytes of disk storage	$ 977	$ 832	$ 28,890	$161
A22	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,001	852	29,670	170
A23	64 megabytes of disk storage	1,029	875	30,450	170
A24	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,053	895	31,230	180
1530	System Expansion; for attachment of 8101 units and direct attachment of tape drive	96	82	2,885	13.50
1710	Processor Storage Type 1; 128K bytes, 1 max.	111	95	2,695	9.50
1720	Processor Storage Type 1; 256K bytes, 3 max.	222	189	5,395	19
8140	Processor; includes 1 diskette drive and—				
	A3X Series; includes 256K bytes of memory, 3 ports, and:				
A31	29 megabytes of disk storage	1,457	1,240	36,440	190
A32	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,481	1,260	37,220	200
A33	64 megabytes of disk storage	1,509	1,285	38,000	200
A34	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,533	1,305	38,780	208

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
1490	Storage Increment; 128K bytes	$ 349	$ 297	$ 6,540	$ 33
4545	Expanded Function Operator Panel	111	95	2,775	33.50
	A4X Series; includes 320K bytes of memory, 2 ports, floating point arithmetic, and:				
A41	29 megabytes of disk storage	1,815	1,545	44,380	233
A42	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,839	1,565	45,160	243
A43	64 megabytes of disk storage	1,867	1,590	45,940	243
A44	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,891	1,610	46,720	251
4545	Expanded Function Operator Panel; eliminates 2 processor ports	111	95	2,775	33.50
	A5X Series; includes 512K bytes of memory, no ports, and:				
A51	29 megabytes of disk storage	2,244	1,910	50,200	256
A52	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,268	1,930	50,980	266
A53	64 megabytes of disk storage	2,296	1,954	51,760	266
A54	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,320	1,975	52,540	274
	A6X Series; includes 768K bytes of memory, 1 diskette drive, no ports, and:				
A61	29 megabytes of disk storage	2,374	2,020	60,750	189
A62	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,403	2,045	61,530	198
A63	64 megabytes of disk storage	2,426	2,065	62,310	198
A64	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,450	2,085	63,090	207
	A7X Series; includes 1024 bytes of memory, 1 diskette drive, no ports, and:				
A71	29 megabytes of disk storage	2,591	2,205	67,080	201
A72	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,615	2,225	67,860	209
A73	64 megabytes of disk storage	2,643	2,250	68,640	209
A74	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,667	2,270	69,420	217
	BXX Series; includes 3 ports, 1 diskette drive, 131K bytes of fixed-head storage, and:				
B51	512K bytes of memory, plus 58 megabytes of disk storage	2,397	2,040	62,110	228
B52	512K bytes of memory, plus 123 megabytes of disk storage	2,796	2,380	73,000	278
B61	768K bytes of memory, plus 58 megabytes of	2,614	2,225	68,440	238
B62	768K bytes of memory, plus 123 megabytes of disk storage	3,013	2,565	79,330	290
B71	1024K bytes of memory, plus 58 megabytes of disk storage	2,831	2,410	74,770	250
B72	1024K bytes of memory, plus 123 megabytes of disk storage	3,230	2,750	85,660	300
	CXX Series; includes 10 ports, 1 diskette drive, 123 megabytes of disk storage, and:				
C72	1024K bytes of memory	3,666	3,120	100,130	318
C82	1536K bytes of memory	4,101	3,490	112,790	338
C92	2048K bytes of memory	4,535	3,860	125,450	358
4545	Extended Function Operator Panel	111	95	2,775	33.50
3750	Floating Point Feature	170	145	4,710	25.50
1701	Communication Attachment; provides 4 additional ports; 2 max.; requires 3901	15	13	460	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	112	95	3,120	18
1506	Display & Printer Attachment; for additional 4 devices; 5 max.	15	13	486	3
4901	Magnetic Tape Attachment; for up to 4 drives; requires 3901	90	77	2,545	11.50
3901	Feature Expansion Prerequisite	16	14	560	4
4655	Keylock (all models)	57 SUC	57 SUC	57	—
6555	Security Cover Locks (all models)	39 SUC	39 SUC	39	—
6566	Security Lock, Diskette (all models)	34 SUC	34 SUC	34	—
8101	Storage and Input/Output Unit:				
A20	Device attachment only	236	201	6,725	14.50
A23	64 megabytes disk storage and device attachment	666	568	18,635	73.50
A25	128 megabytes disk storage and device attachment	1,065	908	29,525	127
1701	Communications Attachments; provides 4 additional ports; 2 max.; requires 3901	15	13	460	0.50

*Includes prime-shift maintenance.

data as required for transfer to the 3644. The records on the sequential file are 256 bytes long.

DPPX/PERFORMANCE TOOL (PT): A program product consisting of the DPPX/PT Monitor and the DPPX/PT Reporter feature. DPPX/PT monitors and reports the activity of components of the DPPX/Base program product. DTMS transaction statistics are also provided. The DPPX/PT Monitor collects performance data, and the DPPX/PT Reporter generates reports on the basis of data collected by the Monitor.

DISTRIBUTED PROCESSING DEVELOPMENT SYSTEM (DPDS): A Programming Request for Price Quotation (PRPQ) product that runs on the System/370 under MVS. DPDS enables systems programmers to code programs for an 8100 system running under DPPX and to compile and test them on the System/370 before implementing them on the 8100. The package consists of a Programming Language for Distributed Systems (PL/DS) compiler with macro library, a linkage editor, and an 8100 simulator. DPDS can be used to develop new systems programs, extensions to DPPX/Base, or special I/O support for devices not supported by DPPX.

The programs described in the following paragraphs run on a System/370 host computer and can be used with both the DPCX and the DPPX operating systems.

DISTRIBUTED SYSTEMS EXECUTIVE (DSX): A set of routines and files that give IBM 8100 and 3790 system network users a simple and comprehensive means of data and network management. DSX combines, in one product, the host libraries, holding files, and control files, and the transmission, formatting, and reporting functions needed for library and transmission control in 8100 and 3790 system networks.

HOST COMMAND FACILITY: Designed to enable a System/370 attached terminal to function as if it were directly attached to an 8100/DPPX or DPCX system, the Host Command Facility gives the operator at a central System/370 site the capability to operate and control remote SDLC-connected 8100 systems. Nearly all maintenance, service, and control functions become available at the central System/370 site for problem determination, problem isolation, and remote system control. The System/370 must be running under MVS VTAM/TCAM, VS1 VTAM/TCAM, or DOS/VS VTAM.

PRICING

IBM offers the 8100 Information System for purchase, for monthly rental, or on a two-year lease. Rental and lease arrangements include prime-shift maintenance. Purchased components may have a separate maintenance contract.

All 8100 system components listed in the accompanying price table are in maintenance category A, except the 8809 tape drives and the 3289-3 printer, which are in category D. Prime-shift maintenance is provided for any consecutive nine-hour period between 7 a.m. and 6 p.m., Monday through Friday. The maintenance categories determine the schedule of extended maintenance charges. The two schedules differ for extended Monday-through-Friday maintenance. The premium for extended maintenance is expressed in the table below as a percentage of the prime-shift maintenance charges, which are shown in the accompanying price list:

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday—					
Category A	10%	14%	18%	22%	26%
Category D	10	12	14	16	18
Saturday	4	5	7	8	9
Sunday	5	7	9	11	12

*For periods outside the basic 7 a.m. to 6 p.m. prime shift.

The termination charge for the two-year lease arrangement is the lower of 5 months' charges or 25 percent of the remaining value of the lease. The lease arrangement also guarantees a maximum rate of increases for extended leasing periods; the rate for all 8100 components is five percent per year beginning in the second year.

All 8100 components qualify for unlimited usage. Purchase credits can be accrued up to a maximum of 55 percent. All components except the 8809 tape drives and 3289-3 printer are classified as Customer Set-Up, which permits (or requires) users to install the components themselves.

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8130	Processor; includes 256K bytes of memory, 1 diskette drive, two ports, and:				
A21	29 megabytes of disk storage	$ 905	$ 771	$27,780	$154
A22	23 megabytes of disk storage and 131K bytes of fixed-head storage	929	791	28,560	163
A23	64 megabytes of disk storage	953	811	29,340	163
A24	58 megabytes of disk storage and 131K bytes of fixed-head storage	976	831	30,120	173
1530	System Expansion; for attachment of 8101 units and direct attachment of tape drive	89	76	2,775	13
1710	Processor Storage Type 1; 128K bytes, 1 max.	103	88	2,595	9
1720	Processor Storage Type 1; 256K bytes, 3 max.	206	176	5,190	18
8140	Processor; includes 1 diskette drive and—				
	A3X Series; includes 256K bytes of memory, 3 ports, and:				
A31	29 megabytes of disk storage	1,351	1,150	36,400	190
A32	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,374	1,170	37,220	200
A33	64 megabytes of disk storage	1,398	1,190	38,000	200
A34	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,421	1,210	38,780	208

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
1490	Storage Increment; 128K bytes	$ 324	$ 276	$ 6,540	$ 33
4545	Expanded Function Operator Panel	103	88	2,775	33.50
	A4X Series; includes 320K bytes of memory, 2 ports, floating point arithmetic, and:				
A41	29 megabytes of disk storage	1,686	1,435	44,380	233
A42	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,709	1,455	45,160	243
A43	64 megabytes of disk storage	1,733	1,475	45,940	243
A44	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,756	1,495	46,720	251
4545	Expanded Function Operator Panel; eliminates 2 processor ports	103	88	2,775	33.50
	A5X Series; includes 512K bytes of memory, no ports, and:				
A51	29 megabytes of disk storage	2,079	1,770	50,200	256
A52	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,103	1,790	50,980	266
A53	64 megabytes of disk storage	22,126	1,810	51,760	266
A54	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,150	1,830	52,540	274
	A6X Series; includes 768K bytes of memory, 1 diskette drive, no ports, and:				
A61	29 megabytes of disk storage	2,203	1,875	60,750	189
A62	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,226	1,895	61,530	198
A63	64 megabytes of disk storage	2,250	1,915	62,310	198
A64	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,273	1,935	63,090	207
	A7X Series; includes 1024 bytes of memory, 1 diskette drive, no ports, and:				
A71	29 megabytes of disk storage	2,420	2,060	67,080	201
A72	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,444	2,080	67,860	209
A73	64 megabytes of disk storage	2,467	2,100	68,640	209
A74	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,491	2,120	69,420	217
	BXX Series; includes 3 ports, 1 diskette drive, 131K bytes of fixed-head storage, and:				
B51	512K bytes of memory, plus 58 megabytes of disk storage	2,220	1,890	59,730	228
B52	512K bytes of memory, plus 123 megabytes of disk storage	2,590	2,205	70,620	278
B61	768K bytes of memory, plus 58 megabytes of	2,437	2,075	66,060	238
B62	768K bytes of memory, plus 123 megabytes of disk storage	2,807	2,390	76,950	290
B71	1024K bytes of memory, plus 58 megabytes of disk storage	2,654	2,260	72,390	250
B72	1024K bytes of memory, plus 123 megabytes of disk storage	3,024	2,575	83,280	300
	CXX Series; includes 10 ports, 1 diskette drive, 123 megabytes of disk storage, and:				
C72	1024K bytes of memory	3,666	3,120	100,130	318
C82	1536K bytes of memory	4,101	3,490	112,790	338
C92	2048K bytes of memory	4,535	3,860	125,450	358
4545	Extended Function Operator Panel	103	88	2,775	33.50
3750	Floating Point Feature	170	145	4,710	25.50
1701	Communication Attachment; provides 4 additional ports; 2 max.; requires 3901	15	13	460	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	112	95	3,120	18
1506	Display & Printer Attachment; for additional 4 devices; 5 max.	15	13	486	3
4901	Magnetic Tape Attachment; for up to 4 drives; requires 3901	90	77	2,545	11.50
3901	Feature Expansion Prerequisite	16	14	560	4
4655	Keylock (all models)	57 SUC	57 SUC	57	—
6555	Security Cover Locks (all models)	39 SUC	39 SUC	39	—
6566	Security Lock, Diskette (all models)	34 SUC	34 SUC	34	—
8101	Storage and Input/Output Unit:				
A20	Device attachment only	219	187	6,470	14
A23	64 megabytes disk storage and device attachment	621	529	18,380	73.50
A25	128 megabytes disk storage and device attachment	991	844	29,270	127
1701	Communications Attachments; provides 4 additional ports; 2 max.; requires 3901	15	13	460	0.50

*Includes prime-shift maintenance.

IBM 8100 Information System

data as required for transfer to the 3644. The records on the sequential file are 256 bytes long.

DPPX/PERFORMANCE TOOL (PT): A program product consisting of the DPPX/PT Monitor and the DPPX/PT Reporter feature. DPPX/PT monitors and reports the activity of components of the DPPX/Base program product. DTMS transaction statistics are also provided. The DPPX/PT Monitor collects performance data, and the DPPX/PT Reporter generates reports on the basis of data collected by the Monitor.

DISTRIBUTED PROCESSING DEVELOPMENT SYSTEM (DPDS): A Programming Request for Price Quotation (PRPQ) product that runs on the System/370 under MVS. DPDS enables systems programmers to code programs for an 8100 system running under DPPX and to compile and test them on the System/370 before implementing them on the 8100. The package consists of a Programming Language for Distributed Systems (PL/DS) compiler with macro library, a linkage editor, and an 8100 simulator. DPDS can be used to develop new systems programs, extensions to DPPX/Base, or special I/O support for devices not supported by DPPX.

The programs described in the following paragraphs run on a System/370 host computer and can be used with both the DPCX and the DPPX operating systems.

DISTRIBUTED SYSTEMS EXECUTIVE (DSX): A set of routines and files that give IBM 8100 and 3790 system network users a simple and comprehensive means of data and network management. DSX combines, in one product, the host libraries, holding files, and control files, and the transmission, formatting, and reporting functions needed for library and transmission control in 8100 and 3790 system networks.

HOST COMMAND FACILITY: Designed to enable a System/370 attached terminal to function as if it were directly attached to an 8100/DPPX or DPCX system, the Host Command Facility gives the operator at a central System/370 site the capability to operate and control remote SDLC-connected 8100 systems. Nearly all maintenance, service, and control functions become available at the central System/370 site for problem determination, problem isolation, and remote system control. The System/370 must be running under MVS VTAM/TCAM, VS1 VTAM/TCAM, or DOS/VS VTAM.

PRICING

IBM offers the 8100 Information System for purchase, for monthly rental, or on a two-year lease. Rental and lease arrangements include prime-shift maintenance. Purchased components may have a separate maintenance contract.

All 8100 system components listed in the accompanying price table are in maintenance category A, except the 8809 tape drives and the 3289-3 printer, which are in category D. Prime-shift maintenance is provided for any consecutive nine-hour period between 7 a.m. and 6 p.m., Monday through Friday. The maintenance categories determine the schedule of extended maintenance charges. The two schedules differ for extended Monday-through-Friday maintenance. The premium for extended maintenance is expressed in the table below as a percentage of the prime-shift maintenance charges, which are shown in the accompanying price list:

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday—					
Category A	10%	14%	18%	22%	26%
Category D	10	12	14	16	18
Saturday	4	5	7	8	9
Sunday	5	7	9	11	12

*For periods outside the basic 7 a.m. to 6 p.m. prime shift.

The termination charge for the two-year lease arrangement is the lower of 5 months' charges or 25 percent of the remaining value of the lease. The lease arrangement also guarantees a maximum rate of increases for extended leasing periods; the rate for all 8100 components is five percent per year beginning in the second year.

All 8100 components qualify for unlimited usage. Purchase credits can be accrued up to a maximum of 55 percent. All components except the 8809 tape drives and 3289-3 printer are classified as Customer Set-Up, which permits (or requires) users to install the components themselves.

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8130	Processor; includes 256K bytes of memory, 1 diskette drive, two ports, and:				
A21	29 megabytes of disk storage	$ 846	$ 721	$26,460	$154
A22	23 megabytes of disk storage and 131K bytes of fixed-head storage	870	741	27,240	163
A23	64 megabytes of disk storage	894	761	28,020	163
A24	58 megabytes of disk storage and 131K bytes of fixed-head storage	917	781	28,800	173
1530	System Expansion; for attachment of 8101 units and direct attachment of tape drive	83	71	2,645	13
1710	Processor Storage Type 1; 128K bytes, 1 max.	98	83	2,475	9
1720	Processor Storage Type 1; 256K bytes, 3 max.	195	166	4,950	18
8140	Processor; includes 1 diskette drive and—				
	A3X Series; includes 256K bytes of memory, 3 ports, and:				
A31	29 megabytes of disk storage	1,351	1,150	36,400	190
A32	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,374	1,170	37,220	200
A33	64 megabytes of disk storage	1,398	1,190	38,000	200
A34	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,421	1,210	38,780	208

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
1490	Storage Increment; 128K bytes	$ 324	$ 276	$ 6,540	$ 33
4545	Expanded Function Operator Panel	96	82	2,645	33.50
	A4X Series; includes 320K bytes of memory, 2 ports, floating point arithmetic, and:				
A41	29 megabytes of disk storage	1,686	1,435	44,380	233
A42	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,709	1,455	45,160	243
A43	64 megabytes of disk storage	1,733	1,475	45,940	243
A44	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,756	1,495	46,720	251
4545	Expanded Function Operator Panel; eliminates 2 processor ports	96	82	2,675	33.50
	A5X Series; includes 512K bytes of memory, no ports, and:				
A51	29 megabytes of disk storage	2,079	1,770	50,200	256
A52	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,103	1,790	50,980	266
A53	64 megabytes of disk storage	2,126	1,810	51,760	266
A54	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,150	1,830	52,540	274
	A6X Series; includes 768K bytes of memory, 1 diskette drive, no ports, and:				
A61	29 meabytes of disk storage	2,203	1,875	60,750	189
A62	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,226	1,895	61,530	198
A63	64 megabytes of disk storage	2,250	1,915	62,310	198
A64	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,273	1,935	63,090	207
	A7X Series; includes 1024K bytes of memory, 1 diskette drive, no ports, and:				
A71	29 megabytes of disk storage	2,420	2,060	67,080	201
A72	23 megabytes of disk storage plus 131K bytes of fixed-head storage	2,444	2,080	67,860	209
A73	64 megabytes of disk storage	2,467	2,100	68,640	209
A74	58 megabytes of disk storage plus 131K bytes of fixed-head storage	2,491	2,120	69,420	217
	BXX Series; includes 3 ports, 1 diskette drive, 131K bytes of fixed-head storage, and:				
B51	512K bytes of memory, plus 58 megabytes of disk storage	2,079	1,770	56,890	228
B52	512K bytes of memory, plus 123 megabytes of disk storage	2,449	2,085	67,780	278
B61	768K bytes of memory, plus 58 megabytes of disk storage	2,297	1,955	63,220	238
B62	768K bytes of memory, plus 123 megabytes of disk storage	2,667	2,270	74,110	290
B71	1024K bytes of memory, plus 58 megabytes of disk storage	2,514	2,140	69,550	250
B72	1024K bytes of memory, plus 123 megabytes of disk storage	2,884	2,455	80,440	300
4545	Extended Function Operator Panel	96	82	2,645	33.50
3750	Floating Point Feature	160	136	4,490	25.50
1701	Communication Attachment; provides 4 additional ports; 2 max.; requires 3901	14	12	440	0.50
3220	Display & Printer Attachment; for first 4 devices; requires 3901	105	89	2,975	18
1506	Display & Printer Attachment; for additional 4 devices; 5 max.	14	12	463	3
4901	Magnetic Tape Attachment; for up to 4 drives; requires 3901	85	72	2,425	11.50
3901	Feature Expansion Prerequisite	15	13	540	4
4655	Keylock (all models)	54 SUC	54 SUC	54	—
6555	Security Cover Locks (all models)	37 SUC	37 SUC	37	—
6566	Security Lock, Diskette (all models)	32 SUC	32 SUC	32	—
8101	Storage and Input/Output Unit:				
A20	Device attachment only	205	175	6,170	14
A23	64 megabytes disk storage and device attachment	605	515	18,040	73.50
A25	128 megabytes disk storage and device attachment	975	830	28,930	127
1701	Communications Attachments; provides 4 additional ports; 2 max.; requires 3901	14	12	440	0.50

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
	Communications and I/O Adapters for 8130/8140/8101 (Continued)				
3701	EIA RS-232C Interface	13	11	441	4
4830	Loop Adapter	22	19	666	4
4835	Loop Adapter, Second Lobe	22	19	666	4
5200	Multi-Speed Clock (for direct connection)	14	12	463	1.50
5500	Integrated Modem, Non-Switched	21	18	736	5.50
5501	Integrated Modem, Switched	29	25	926	7
5660	Digital Data Service (DDS) Adapter	28	24	926	2
	Peripherals				
8809	Magnetic Tape Unit:				
-1A	First Drive for 8101	408	347	11,500	58
-1B	First Drive for 8130 or 8140	498	424	14,080	76
-2	Second or Fourth Drive	363	309	10,210	52
-3	Third Drive	408	347	11,500	58
4920	Multi-Drive Feature for 8809-1B	13	11	396	1.50
8775	Display Terminal:				
-1	960, 1920, or 2560 character display; loop-attached	88	75	2,975	22
-2	960, 1920, 2560, or 3440 character display; loop-attached	98	83	3,350	22
-11	960, 1920, or 2560 character display; attached via SNA/SDLC data link	94	80	3,080	27.50
-12	960, 1920, 2560, or 3440 character display; attached via SNA/SDLC data link	106	90	3,455	27.50
4850	Loop Adapter	8	7	330	2
3624	Enhanced Function (requires 3622 and 3905)	—	—	—	—
3622	Feature Storage	21	18	756	3.50
3905	Feature Adapter	12	10	425	2
1488	Business Machine Clock	6	5	236	1.50
1550	CCITT V.35 Interface	16	14	535	2
3701	External Modem Interface	13	11	420	4
5500	IBM 1200 bps integrated modem; requires 1488	21	18	701	6
5650	DDS Adapter; point-to-point	28	24	882	2.50
5651	DDS Adapter; multipoint tributary	28	24	882	2
	Keyboards:				
4621	75 Key Typewriter	14	12	519	2.50
4622	75 Key Data Entry	14	12	519	4
4623	75 Key Data Entry, keypunch layout	14	12	519	4
4626	87 Key Typewriter/APL	19	16	708	3.50
4627	87 Key Typewriter	19	16	708	3
4640	87 Key Typewriter Overlay	19	16	708	3.50
5781	Programmed Symbols PS-2	6	5	236	1.50
5782	Programmed Symbols PS-4	11	9	378	2.50
5110	Multiple Partitions and Scroll	—	—	—	—
1009	Setup Keylock	63 SUC	63 SUC	63	—
1090	Audible Alarm	2	2	94	—
4690	Keyboard Numeric Lock	—	—	—	—
4944	Monocase Switch	—	—	—	—
4999	Magnetic Reader Control	12	10	425	2.50
	PN# 4123500 Magnetic Slot Reader	—	—	275	—
6340	Security Keylock	36 SUC	36 SUC	36	—
6350	Selector Light Pen	16	14	614	1
4850	3276 Display/Control: Loop Adapter	27	23	945	3.50
	Printers				
3287	Model 11; 80 cps	242	206	6,165	54
	Model 12; 120 cps	287	244	6,560	65.50
4110	Friction Feed Paper Handling	6	5	168	0.50
8700	Variable Width Forms Tractor	6	5	168	0.50
3289	Model 3; 160 to 400 lpm	698	594	14,600	205
1090	Audible Alarm	6	5	192	—
4650	Keylock	37 SUC	37 SUC	37	—
8010	Card Control Feature	34	29	963	1.50
8050	3501 Card Reader Attachment	14	12	485	0.50
8149	3782/2502 Card Reader Attachment	21	18	705	4
8150	3782/3521 Card Punch Attachment	21	18	705	3.50

*Include prime-shift maintenance.

IBM 8100 Information System

SOFTWARE		Monthly Charge: Basic License Fee	Monthly Charge: Distributed Systems License Option
5761-DS1	Distributed Processing Control Executive (DPCX)	$236	—
	Distributed Processing Programming Executive (DPPX)—		
5760-010	Base (DPPX/BASE)	181	136
5760-AS1	Assembler (DPPX/ASSM)	48	36
	COBOL:		
5760-CB1	Compiler	97	73
5760-LB1	Run-Time Library	18	13
	FORTRAN:		
5760-FO1	Compiler	73	54
5760-LM1	Library	36	28
5760-XR1	Distributed Presentation Services (DPPX/DPS):		
	Format Management (FM)	30	22
	Interactive Map Definition (IMD)	78	28
5760-TD1	Distributed Data Base and Transaction Management System (DPPX/DTMS)	108	81
5760-RC1	3270 Data Stream Compatibility (DPPX/DSC)	18	13
5760-XC1	Remote Job Entry-Workstation Facility (DPPX/RJE)	24	18
5760-SM1	Sort/Merge (DPPX/SORT)	24	18
5760-XC2	Development Management System (DMS/DPPX)	102	77
5760-ED1	Parameter Table Generation Facility for the IBM 3644 Automatic Data Unit (DPPX/GEN3644)	18	13
5760-XR5	Performance Tool (DPPX/PT):		
	Monitor	42	—
	Reporter Feature	48	—
	Host Software:		
5748-XXG	Distributed Systems Executive (DSX)	192	—
5735-XR1	Host Command Facility	73	54
	Subsystem Information Retrieval Facility:		
5747-BQ1	DOS/VS	—	—
5744-BZ3	OS/VS	—	— ■

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
	Communications and I/O Adapters for 8130/8140/8101 (Continued)				
3701	EIA RS-232C Interface	12	10	420	4
4830	Loop Adapter	21	18	635	4
4835	Loop Adapter, Second Lobe	21	18	635	4
5200	Multi-Speed Clock (for direct connection)	13	11	441	1.50
5500	Integrated Modem, Non-Switched	20	17	701	5
5501	Integrated Modem, Switched	26	22	882	6.50
5660	Digital Data Service (DDS) Adapter	25	21	882	2
	Peripherals				
8809	Magnetic Tape Unit:				
-1A	First Drive for 8101	364	310	10,960	50
-1B	First Drive for 8130 or 8140	445	379	13,410	66
-2	Second or Fourth Drive	324	276	9,730	45
-3	Third Drive	364	310	10,960	50
4920	Multi-Drive Feature for 8809-1B	12	10	378	1
8775	Display Terminal:				
-1	960, 1920, or 2560 character display; loop-attached	79	67	2,975	19.50
-2	960, 1920, 2560, or 3440 character display; loop-attached	88	75	3,350	19.50
-11	960, 1920, or 2560 character display; attached via SNA/SDLC data link	85	72	3,080	24
-12	960, 1920, 2560, or 3440 character display; attached via SNA/SDLC data link	95	81	3,455	24
4850	Loop Adapter	8	7	330	1.50
3624	Enhanced Function (requires 3622 and 3905)	—	—	—	—
3622	Feature Storage	20	17	756	3
3905	Feature Adapter	11	9	425	1.50
1488	Business Machine Clock	6	5	236	1
1550	CCITT V.35 Interface	15	13	535	2
3701	External Modem Interface	12	10	420	4
5500	IBM 1200 bps integrated modem; requires 1488	20	17	701	5
5650	DDS Adapter; point-to-point	25	21	882	2
5651	DDS Adapter; multipoint tributary	25	21	882	2
	Keyboards:				
4621	75 Key Typewriter	13	11	519	2.50
4622	75 Key Data Entry	13	11	519	3.50
4623	75 Key Data Entry, keypunch layout	13	11	519	3.50
4626	87 Key Typewriter/APL	19	16	708	3
4627	87 Key Typewriter	19	16	708	3
4640	87 Key Typewriter Overlay	19	16	708	3.50
5781	Programmed Symbols PS-2	6	5	236	1
5782	Programmed Symbols PS-4	9	8	378	2
5110	Multiple Partitions and Scroll	—	—	—	—
1009	Setup Keylock	63SUC	63SUC	63	—
1090	Audible Alarm	2	2	94	—
4690	Keyboard Numeric Lock	—	—	—	—
4944	Monocase Switch	—	—	—	—
4999	Magnetic Reader Control	11	9	425	2
	PN# 4123500 Magnetic Slot Reader	—	—	275	—
6340	Security Keylock	36SUC	36SUC	36	—
6350	Selector Light Pen	15	13	614	0.50
4850	3276 Display/Control: Loop Adapter	27	23	945	3.50
	Printers				
3287	Model 11; 80 cps	217	185	6,165	54
	Model 12; 120 cps	257	219	6,560	65.50
4110	Friction Feed Paper Handling	6	5	168	0.50
8700	Variable Width Forms Tractor	6	5	168	0.50
3289	Model 3; 160 to 400 lpm	623	530	13,910	187
1090	Audible Alarm	6	5	183	—
4650	Keylock	36SUC	36SUC	36	—
8010	Card Control Feature	31	26	918	1.50
8050	3501 Card Reader Attachment	13	11	462	0.50
8149	3782/2502 Card Reader Attachment	20	17	672	4
8150	3782/3521 Card Punch Attachment	20	17	672	3.50

*Include prime-shift maintenance.

IBM 8100 Information System

SOFTWARE		Monthly License Fee
5761-DS1	Distributed Processing Control Executive (DPCX)	$236
	Distributed Processing Programming Executive (DPPX)—	
5760-010	Base (DPPX/BASE)	165
5760-AS1	Assembler (DPPX/ASSM)	44
	COBOL:	
5760-CB1	Compiler	88
5760-LB1	Run-Time Library	16
	FORTRAN:	
5760-FO1	Compiler	66
5760-LM1	Library	33
5760-XR1	Distributed Presentation Services (DPPX/DPS):	
	Format Management (FM)	71
	Interactive Map Definition (IMD)	27
5760-TD1	Distributed Data Base and Transaction Management System (DPPX/DTMS)	99
5760-RC1	3270 Data Stream Compatibility (DPPX/DSC)	16
5760-XC1	Remote Job Entry-Workstation Facility (DPPX/RJE)	22
5760-SM1	Sort/Merge (DPPX/SORT)	22
5760-XC2	Development Management System (DMS/DPPX)	93
5760-ED1	Parameter Table Generation Facility for the IBM 3644 Automatic Data Unit (DPPX/GEN3644)	16
5760-XR5	Performance Tool (DPPX/PT):	
	Monitor	38
	Reporter Feature	44
	Host Software:	
5748-XXG	Distributed Systems Executive (DSX)	192
5735-XR1	Host Command Facility	66
	Subsystem Information Retrieval Facility:	
5747-BQ1	DOS/VS	—
5744-BZ3	OS/VS	—

IBM 8100 Information System

New Product Announcement

Since its introduction, IBM's Data Processing Division has continuously introduced new enhancements and features for its 8100 Information System. The most important announcements included:

June 1979

- Two new 8775 Display Terminal models, designed for remote SNA/SDLC communications with the 8100 system processor at speeds up to 9600 bps.

- Data communications features for the new 8775 terminals, including a 1200 bps integrated modem, a business machine clock, a CCITT V.35 interface, an external modem interface, and point-to-point or multipoint DDS adapters.

- A Multiple Partitions and Scrolling option that permits the screen to be divided into eight rectangular partitions, which can be scrolled independently by the operator.

October 1979

- New Data Presentation capabilities for all 8775 Display Terminal models, implemented via two new programmed symbol (PS) features. The PS features provide for the storage and access of up to six sets of 190 user-defined symbols. A new 87-key EBCDIC Typewriter Overlay Keyboard for use with the PS features was also introduced.

- Support via DPPX and DPCX enhancements for the new display and print functions of the 3270 Family displays and printers, including highlighting, extended color, and programmed symbols. Provision for attachment of new members of the 3270 family, including the 3274-51C Control Unit, 3279 Color Display Station, and 3287 Color Printers, was also announced.

- Provision for attachment of IBM's new ASCII terminal, Model 3101, and two new medium speed line printers, Models 3262-2 and -12. Rated speeds using a 48 character set are 650 lpm for the 3262-2 and 325 lpm for the 3262-12.

- A new Loop Control Unit, Model 3843, that provides loop control functions and interfacing to an external synchronous 2400, 4800, or 9600 modem for terminal loops attached to the 8100 System via a remote communications link. (The 3842 Loop Control Unit, which contains a 2400 bps integrated modem, continues to be available.)

- Two new program products, DMS/DPCX and DCMS/DPPX. DMS/DPCX is an application program generator designed to simplify program development and increase programmer productivity. The DCMS/DPPX is a distributed data entry/query package that provides for key entry, verification, query, record selection, sorting, reporting, and utilities.

November 1979

- Increased main memory capacity up to 1024K bytes for 8130 processors, by permitting the 8130 to support up to three 256K-byte Processor Storage Type 2 features, instead of the previous maximum of one.

- Three new 8101 Storage and I/O units. The new models are dual-spindled disk units that provide increased disk storage of up to 128MB and replace the existing 8101 models.

- Fourteen new processor models that provide larger main memories and increased disk storage capacity. The four new A6X models feature main memory capacities of 768K bytes; the four A7X models, 1024K bytes. The six BXX models introduce new 58MB or 123MB dual-spindled non-removable disk drives in various combinations with 512K, 768K, or 1024K bytes main memories.

- Improved communications with host facilities, including point-to-point connections at speeds up to 56K bps.■

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
3220	Display & Printer Attachment; for first 4 devices; requires 3901	$ 112	$ 95	$ 3,120	$ 18
3901	Feature Expansion Prerequisite	16	14	560	4
1506	Display & Printer; additional (for additional 4 devices)	15	13	486	3
1507	Diskette Drive and Magnetic Tape Attachment (A20 only)	33	28	1,035	4.50
4520	Diskette 2D Drive; 1 megabyte; requires 1507 on A20	119	101	3,325	31.50
4521	Magnetic Tape Attachment; for up to 4 Model 8809 drives; requires 1507 on A20	74	63	2,075	10
8809	Magnetic Tape Unit:				
-1A	First Drive for 8101	470	400	11,960	76.50
-1B	First Drive for 8130 or 8140	573	488	14,640	101
-2	Second or Fourth Drive	418	356	10,610	69
-3	Third Drive	470	400	11,960	76.50
4920	Multi-Drive Feature for 8809-1B	15	13	411	2.50
	Communications and I/O Adapters for 8130/8140/8101				
1601	SDLC Communications With Business Machine Clock	56	48	1,040	8.50
1602	SDLC Communications Without Business Machine Clock	41	35	972	8
1603	BSC/SS Communications With Business Machine Clock	25	21	774	3
1604	BSC Communications Without Business Machine Clock	15	13	519	2.50
1550	CCITT V.35 Interface	18	15	561	2
3701	EIA RS-232-C Interface	14	12	441	4
4830	Loop Adapter	24	20	699	4
4835	Loop Adapter, Second Lobe	24	20	699	4
5200	Multi-Speed Clock (for direct connection at speeds greater than 2400 bps)	15	13	486	1.50
5500	Integrated Modem, Non-Switched	25	21	736	5.50
5501	Integrated Modem, Switched	34	29	972	7
5655	X.21 Adapter for nonswitched networks	28	24	800	2.50
5656	X.21 Adapter for switched networks	34	29	982	2.50
5660	Digital Data Service (DDS) Adapter	33	28	972	2
	Communications Port Features for 8140 CXX Series:				
1610	Two directly attached loops plus two SDLC/RS-232-C interfaces	240	204	6,168	48
1611	Three loops plus one SDLC/RS-232-C interface	250	212	6,426	48
1612	Three loops plus one SDLC/X.21 switched interface	268	227	6,930	46
1613	Three loops plus one SDLC/X.21 non-switched interface	262	222	6,755	46
1614	Three loops plus one SDLC/V.35 interface	254	215	6,546	46
1620	One low speed loop plus three SDLC/RS-232-C interfaces	245	209	6,370	48.50
1621	Four SDLC/RS-232-C interfaces	235	201	6,112	48.50
1630	Two SDLC/EIA interfaces; requires 1620 or 1621	125	107	3,286	24.50

		Basic Monthly License Fee	Distributed Systems License Option
SOFTWARE			
5761-DS1	Distributed Processing Control Executive (DPCX)	$269	$201
	Distributed Processing Programming Executive (DPPX)—		
5760-010	Base (DPPX/BASE)	239	179
5760-AS1	Assembler (DPPX/ASSM)	63	47
	COBOL:		
5760-CB1	Compiler	121	90
5760-LB1	Run-Time Library	21	15
	FORTRAN:		
5760-FO1	Compiler	97	72
5760-LM1	Library	47	35
5760-XR1	Distributed Presentation Services (DPPX/DPS):		
	Format Management (FM)	40	30
	Interactive Map Definition (IMD)	103	77
5760-TD1	Distributed Data Base and Transaction Management System (DPPX/DTMS)	124	93
5760-RC1	3270 Data Stream Compatibility (DPPX/DSC)	21	15
5760-XC1	Remote Job Entry-Workstation Facility (DPPX/RJE)	32	24
5760-SM1	Sort/Merge (DPPX/SORT)	28	21
5760-XC2	Development Management System (DMS/DPPX)	117	87
5760-ED1	Parameter Table Generation Facility for the IBM 3644 Automatic Data Unit (DPPX/GEN3644)	24	18
5760-XR5	Performance Tool (DPPX/PT):		
	Monitor	48	—
	Reporter Feature	55	—
	Host Software:		
5748-XXG	Distributed Systems Executive (DSX)	220	—
5735-XR1	Host Command Facility	97	72
	Subsystem Information Retrieval Facility:		
5747-BQ1	DOS/VS	—	—
5744-BZ3	OS/VS	—	—

*Includes prime-shift maintenance.■

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
3220	Display & Printer Attachment; for first 4 devices; requires 3901	$ 112	$ 95	$ 3,120	$ 18
3901	Feature Expansion Prerequisite	16	14	560	4
1506	Display & Printer; additional (for additional 4 devices)	15	13	486	3
1507	Diskette Drive and Magnetic Tape Attachment (A20 only)	33	28	1,035	4.50
4520	Diskette 2D Drive; 1 megabyte; requires 1507 on A20	119	101	3,325	31.50
4521	Magnetic Tape Attachment; for up to 4 Model 8809 drives; requires 1507 on A20	74	63	2,075	10
8809	Magnetic Tape Unit:				
-1A	First Drive for 8101	436	371	11,500	66.50
-1B	First Drive for 8130 or 8140	532	453	14,080	87.50
-2	Second or Fourth Drive	388	330	10,210	60
-3	Third Drive	436	371	11,500	66.50
4920	Multi-Drive Feature for 8809-1B	14	12	396	2
	Communications and I/O Adapters for 8130/8140/8101				
1601	SDLC Communications With Business Machine Clock	52	44	1,040	8.50
1602	SDLC Communications Without Business Machine Clock	41	35	972	8
1603	BSC/SS Communications With Business Machine Clock	22	19	774	3
1604	BSC Communications Without Business Machine Clock	14	12	519	2.50
1550	CCITT V.35 Interface	18	15	561	2
3701	EIA RS-232-C Interface	14	12	441	4
4830	Loop Adapter	24	20	699	4
4835	Loop Adapter, Second Lobe	24	20	699	4
5200	Multi-Speed Clock (for direct connection at speeds greater than 2400 bps)	15	13	486	1.50
5500	Integrated Modem, Non-Switched	22	19	736	5.50
5501	Integrated Modem, Switched	32	27	972	7
5655	X.21 Adapter for nonswitched networks	26	22	770	2
5656	X.21 Adapter for switched networks	32	27	945	2
5660	Digital Data Service (DDS) Adapter	31	26	972	2
	Communications Port Features for 8140 CXX Series:				
1610	Two directly attached loops plus two SDLC/RS-232-C interfaces	240	204	6,168	48
1611	Three loops plus one SDLC/RS-232-C interface	250	212	6,426	48
1612	Three loops plus one SDLC/X.21 switched interface	268	227	6,930	46
1613	Three loops plus one SDLC/X.21 non-switched interface	262	222	6,755	46
1614	Three loops plus one SDLC/V.35 interface	254	215	6,546	46
1620	One low speed loop plus three SDLC/RS-232-C interfaces	245	209	6,370	48.50
1621	Four SDLC/RS-232-C interfaces	235	201	6,112	48.50
1630	Two SDLC/EIA interfaces; requires 1620 or 1621	125	107	3,286	24.50

		Basic Monthly License Fee	Distributed Systems License Option
SOFTWARE			
5761-DS1	Distributed Processing Control Executive (DPCX)	$234	$175
	Distributed Processing Programming Executive (DPPX)—		
5760-010	Base (DPPX/BASE)	208	156
5760-AS1	Assembler (DPPX/ASSM)	55	41
	COBOL:		
5760-CB1	Compiler	106	79
5760-LB1	Run-Time Library	21	15
	FORTRAN:		
5760-FO1	Compiler	84	63
5760-LM1	Library	41	30
5760-XR1	Distributed Presentation Services (DPPX/DPS):		
	Format Management (FM)	35	26
	Interactive Map Definition (IMD)	90	67
5760-TD1	Distributed Data Base and Transaction Management System (DPPX/DTMS)	108	81
5760-RC1	3270 Data Stream Compatibility (DPPX/DSC)	18	13
5760-XC1	Remote Job Entry-Workstation Facility (DPPX/RJE)	28	21
5760-SM1	Sort/Merge (DPPX/SORT)	24	18
5760-XC2	Development Management System (DMS/DPPX)	102	77
5760-ED1	Parameter Table Generation Facility for the IBM 3644 Automatic Data Unit (DPPX/GEN3644)	21	15
5760-XR5	Performance Tool (DPPX/PT):		
	Monitor	42	—
	Reporter Feature	48	—
	Host Software:		
5748-XXG	Distributed Systems Executive (DSX)	192	—
5735-XR1	Host Command Facility	84	63
	Subsystem Information Retrieval Facility:		
5747-BQ1	DOS/VS	—	—
5744-BZ3	OS/VS	—	—

*Includes prime-shift maintenance.■

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
3220	Display & Printer Attachment; for first 4 devices; requires 3901	$ 105	$ 89	$ 2,975	$ 18
3901	Feature Expansion Prerequisite	15	13	540	4
1506	Display & Printer; additional (for additional 4 devices)	14	12	463	3
1507	Diskette Drive and Magnetic Tape Attachment (A20 only)	31	26	987	4.50
4520	Diskette 2D Drive; 1 megabyte; requires 1507 on A20	112	95	3,170	31.50
4521	Magnetic Tape Attachment; for up to 4 Model 8809 drives; requires 1507 on A20	69	59	1,980	10
8809	Magnetic Tape Unit:				
-1A	First Drive for 8101	408	347	11,500	58
-1B	First Drive for 8130 or 8140	498	424	14,080	76
-2	Second or Fourth Drive	363	309	10,210	52
-3	Third Drive	408	347	11,500	58
4920	Multi-Drive Feature for 8809-1B	13	11	396	1.50
	Communications and I/O Adapters for 8130/8140/8101				
1601	SDLC Communications With Business Machine CLock	48	41	992	8.50
1602	SDLC Communications Without Business Machine Clock	39	33	926	8
1603	BSC/SS Communications With Business Machine Clock	21	18	738	3
1604	BSC Communications Without Business Machine Clock	13	11	495	2.50
1550	CCITT V.35 Interface	16	14	561	2
3701	EIA RS-232-C Interface	13	11	441	4
4830	Loop Adapter	22	19	666	4
4835	Loop Adapter, Second Lobe	22	19	666	4
5200	Multi-Speed Clock (for direct connection at speeds greater than 2400 bps)	14	12	463	1.50
5500	Integrated Modem, Non-Switched	21	18	736	5.50
5501	Integrated Modem, Switched	29	25	926	7
5660	Digital Data Service (DDS) Adapter	28	24	926	2

		Basic Monthly License Fee	Distributed Systems License Option
SOFTWARE			
5761-DS1	Distributed Processing Control Executive (DPCX)	$204	$153
	Distributed Processing Programming Executive (DPPX)—		
5760-010	Base (DPPX/BASE)	181	136
5760-AS1	Assembler (DPPX/ASSM)	48	36
	COBOL:		
5760-CB1	Compiler	97	73
5760-LB1	Run-Time Library	18	13
	FORTRAN:		
5760-FO1	Compiler	73	54
5760-LM1	Library	36	28
5760-XR1	Distributed Presentation Services (DPPX/DPS):		
	Format Management (FM)	30	22
	Interactive Map Definition (IMD)	78	58
5760-TD1	Distributed Data Base and Transaction Management System (DPPX/DTMS)	108	81
5760-RC1	3270 Data Stream Compatibility (DPPX/DSC)	18	13
5760-XC1	Remote Job Entry-Workstation Facility (DPPX/RJE)	24	18
5760-SM1	Sort/Merge (DPPX/SORT)	24	18
5760-XC2	Development Management System (DMS/DPPX)	102	77
5760-ED1	Parameter Table Generation Facility for the IBM 3644 Automatic Data Unit (DPPX/GEN3644)	18	13
5760-XR5	Performance Tool (DPPX/PT):		
	Monitor	42	—
	Reporter Feature	48	—
	Host Software:		
5748-XXG	Distributed Systems Executive (DSX)	192	—
5735-XR1	Host Command Facility	73	54
	Subsystem Information Retrieval Facility:		
5747-BQ1	DOS/VS	—	—
5744-BZ3	OS/VS	—	—

*Include prime-shift maintenance.■

IBM 8100 Information System

New Product Announcement

On July 14, 1981, IBM announced the 8140 Model C, a new processor designed to increase the capabilities of the 8100 Information System. The Model C processor provides 1.6 times the message throughput capability of the 8140 Model B processor.

Three model configurations are provided in the CXX Series: C72, C82, and C92. Base processor storage is 1024K bytes for the C72, 1574K bytes for the C82, and 2048K bytes for the C92, compared to the maximum of 1024K bytes for the Model B72. Each new model contains two disk drives and a non-removable disk capacity of 123 MB.

Communications and loop attachments for the Model C are available in line sets that occupy predefined ports, a feature that simplifies ordering and installation of the system. The number of ports available is dependent upon the speed of the line, communications facilities, the operating system installed, and the application work load.

The direct port attachment capabilities of the 8140 Model C are:

- up to ten communications ports, or
- up to eight communications ports plus a display and printer attachment, or
- up to eight communications ports plus a magnetic tape attachment.

Up to four of these may be configured as high-speed communications ports (up to 38,400 bps); however, only two may be active simultaneously.

The 8140 Model C allows for the attachment of up to four 8101 storage and I/O units, only one of which may be configured with communications and display/printer features. When configured with the 8101, the total number of ports available per system is increased to a maximum of 18.

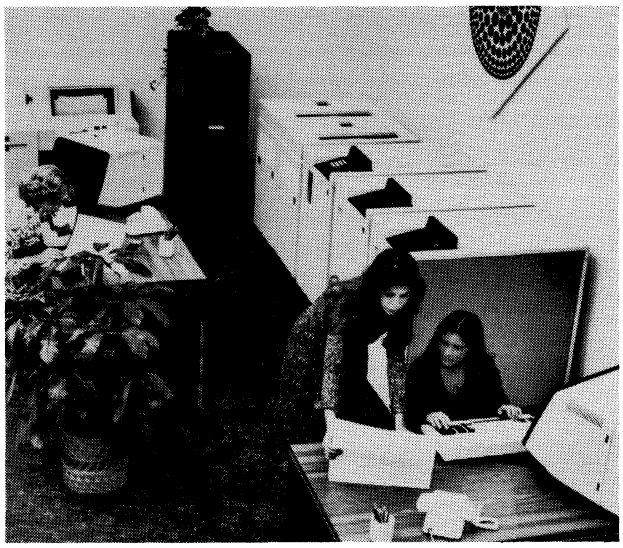
An X.21 interface feature (now available for all 8100 system processors) provides switched and leased communications at up to 48K bps. BSC and Start/Stop line control, integrated modems, and the DDS adapter are not available for direct attachment to the 8140 Model C (but may be configured via an 8101).

The new processors are supported under the DPPX/BASE operating system with Functional Enhancement Package 5 or 6 (FEP 5 or 6). IBM has expressed its intent to extend DPCX support to the Model C as well. FEP6, announced with the new processors, includes additional performance, usability, serviceability, and availability improvements for the 8140, plus X-21 switched upstream support.

Other 8140 Model C features include: an operator display control panel; one Diskette 2D drive for program loading; a Floating Point option; and an Error Correction Code (ECC) providing single-bit error correction and double-bit error detection.

The 8140 Model C processors provide upward compatibility with the 8130 and other 8140s, and field upgradability from the 8140 Model B. The 8140 Model C is designed for customer set-up; first customer shipments are scheduled for June 1982. FEP6 will be commercially available in September 1982.□

IBM 8100 Information System



The new components (in design model form) of the IBM 8100 Information System are shown above. The five cabinets on the right contain, starting from the back of the room, two 8809 tape drives, processor (in the middle), and two storage input/output units. The new 8875 display terminal is in the foreground.

A family of processors that support distributed processing in a host controlled arrangement or as a loosely connected partner to a host computer system.

An 8100 system can include up to 512K bytes of main memory, up to 320 megabytes of fixed-disk storage, and numerous local and/or remote display and printer terminals. Up to four magnetic tape drives can also be included. Configuration is not completely modular; 16 different processor models provide a variety of alternates. Two operating systems provide 3790-style support (DPCX) or stand-alone transaction-based processing support with COBOL and FORTRAN compilers (DPPX).

A small 8100 system with 384K bytes of memory, 58 megabytes of disk storage, 3 printers, 6 display terminals, and 1 communications link costs $2,537 per month on a two-year lease, including maintenance.

A larger 8100 system with 512K bytes of memory, 58 megabytes of disk storage, 1 tape drive, 5 printers, and 18 local and remote display terminals costs $5,168 per month on a two-year lease, including maintenance.

MANAGEMENT SUMMARY

The October 3, 1978 announcement of the IBM 8100 Information System may have preceded its delivery by 10 months, but it preceded industry comment by only a few hours. That's how long it took for most people to begin the analysis of how this major IBM product will affect their data processing installations (in the case of users) or their product lines (in the case of computer and distributed terminal vendors).

The initial reaction of industry observes pinpointed price and scope as the most "surprising" aspects of the announcement. Technical innovation centered around the use of 64K-bit chips operating at one of two speeds: 1500 nanoseconds or 800 nanoseconds. The price per bit for the faster memory is about 55 percent below the System/370 level; the price of the slower memory is an amazing 84 percent below the System/370 level.

Scope is fully as interesting as price. Two operating systems were announced. One, DPCX, makes the 8100 look like a 3790 Communications System. (An equivalent 8100 processor costs about half what a 3791 does.) The other operating system, DPPX, provides substantial stand-alone capability for an 8100 system, including COBOL and FORTRAN compilers and support for a wider range of terminals.

A total of 16 processor models were announced within two processor model numbers: 8130 and 8140. The 8130 uses the slower memory units, and the 8140, the faster. Each processor contains fixed-disk storage, a diskette

CHARACTERISTICS

VENDOR: IBM Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: October 3, 1978.

DATE OF FIRST DELIVERY: August 1979; processors with 512K bytes — February 1980; 8809 1B tape drive — October 1979; software — August 1979 through March 1980.

NUMBER DELIVERED TO DATE: —

SERVICED BY: IBM.

CONFIGURATION

There are a total of 16 8100 processor models, which can be conveniently grouped into four series: 8130 A2X; 8140 A3X; 8140 A4X; and 8140 A5X. The four models in each group show a similar pattern with regard to disk capacity:

AX1: 29 megabytes of fixed-disk storage.
AX2: 23 megabytes of fixed-disk storage plus 131K bytes of fixed-head storage.
AX3: 64 megabytes of fixed-disk storage.
AX4: 58 megabytes of fixed-disk storage plus 131K bytes of fixed-head storage.

Other differences among the 16 processor models are shown in the accompanying table.

IBM 8100 Information System

IBM 8100 INFORMATION SYSTEM CHARACTERISTICS

	8130 A21-A24	8140 A31-A34	8140 A41-A44	8140 A51-A54
Main memory, bytes	256K, 384K, 512K	256K, 512K	320K	512K
Memory cycle time, nsec.	1500	800	800	800
8101 Storage and I/O units	2	4	4	4
Disk drives	3	5	5	5
Disk capacity, bytes max.	192M	320M	320M	320M
Diskette drives, max.	2	2	2	2
Tape drives, max.	4	4	4	4
Directly attached displays, max.	24	24	24	24
Ports:				
Basic processor	2 or 6	3	2*	0
System max.	14	19	18	16
Communications:				
SDLC	Yes	Yes	Yes**	Yes
BSC	Limited	Limited	Limited	Limited
S/S (asynchronous)	Limited	Limited	Limited	Limited
Floating point hardware	No	No	Yes	No
Expanded Function Panel	No	Opt.	Opt.*	No

*Mutually exclusive.
**Not with Expanded Function Panel.

drive, a limited number of ports for connecting terminals, and provisions for expanding disk storage and ports through one or more 8101 Storage and I/O Units. The parameters of each model are thoroughly described in the Characteristics section of this report. Let us concentrate on the differences among the processor models in these paragraphs. Perspective of the capabilities of the various models can be most easily achieved by regarding them as four groups of four models each: 8130 A2X, 8140 A3X, 8140 A4X, and 8140 A5X. Within each of these groups, two models provide 29 and 64 megabytes of fixed-disk storage. The other two models within a group trade 6 megabytes of fixed-disk storage for 131K bytes of fixed-head storage.

The principal differences among the four processor groups identified above are:

- 8130 A2X — 256K, 384K, or 512K bytes of slower memory; 192 megabytes of disk storage maximum; 14 ports maximum.
- 8140 A3X — 256K or 384K bytes of faster memory; 320 megabytes of disk storage maximum; 19 ports maximum; Expanded Operator Function Panel optional.
- 8140 A4X — 320K bytes of faster memory; 320 megabytes of disk storage maximum; 18 ports maximum; Expanded Operator Function Panel optional; floating-point hardware standard.
- 8140 A5X — 512K bytes of faster memory; 320 megabytes of disk storage maximum; 16 ports maximum.

Nowhere among these combinations are there clearcut "upgrade" possibilities to go from one group to another.

All memory is contained in the processor. Peripheral attachments are permitted to the basic processor and are expanded through one or more 8101 Storage & I/O Units; the 8101 can also contain additional fixed-disk storage.

The principal facilities for attaching peripheral devices are ports. Each port can service a communications line, a local or remote loop, or a directly connected device. The types of connections provided and the number of ports available with the basic processor and system maximums are given in the accompanying tables. In general, each 8101 can accommodate up to eight ports, but system limits prevent full expansion when the maximum number of 8101's is connected.

In addition to the capabilities for attaching devices to the ports, one to four magnetic tape drives can be attached to the basic processor or to an 8101 (but not both); if the tape drives are connected to the processor, the maximum number of 8101's is reduced by one.

One 8101 in an 8130 system or two 8101's in an 8140 system can also be configured to accommodate directly attached 3277 keyboard display units and 3284/6/7/8 printers. The system maximum of 24 devices can be configured with either one or two 8101's.

Specific devices supported through ports via communications lines, loops, or directly depend on the operating system used.

Under the Distributed Processing Control Executive (DPCX), the following devices are supported:

- **Communications lines and directly attached — SDLC only.**
- **Loops — 3276-12/13/14 Control Unit Display Station (1920-character) with attached 3278-2/3/4, 3287-1/2, and/or 3289-1/2 displays and printers along with 3289-3 printer. Only local loops are supported.**

Under the Distributed Processing Programming Executive (DPPX), the following devices are supported:

- **Communications lines and directly attached — SDLC, BSC, and S/S devices.**

IBM 8100 Information System

To go from the A2X slower memory to the A3X faster memory you gain speed, more disk capacity, and more ports, but you give up memory capacity. To jump all the way from the A2X group to the A5X group to obtain the equivalent memory size and gain the increased memory speed and disk storage capacity gains you only a modest increase in ports. To go from the A3X group to the A4X group, you gain floating-point hardware, but give up port and memory capacity. It is likely, then, that growth of an 8100 system will be within one group as long as the original requirements expand only in volume and not type.

Central to an 8100 system is the extensive use of display and printer terminals. While the 3790 was IBM's pioneering effort in "transaction processing," it has never been widely accepted; the chief complaints about the 3790 were cost and difficulty of programming. Under DPCX, the 8100 only looks like a bigger, faster, lower-cost 3790. It is cheaper, but programming is the same as on the 3790. However, under DPPX, the 8100 looks more like one of IBM's small 370's, but oriented towards transactions rather than batching.

The latter point also brings to mind possible competition between IBM's DPD (Data Processing Division) and its GDS (General Systems Division). Indeed, this has been discussed in the trade press, even to the point of speculating on a General-Motors-like organization for IBM. This speculation was not quieted with GSD's October 24 announcement of the impressive System/38 (see Datalink, November 1978). While it is beyond the scope of this report to investigate company organizations, it is interesting to note that a suitably configured 8100 could perform effectively in a small business environment, but it lacks two traditional features usually accompanying small business systems: RPG and applications support.

The 8100 features flexible connection of terminals. Each port can support a communications link (SDLC, BSC, or asynchronous), a loop, or directly connected devices with an RS-232C interface (up to 40 feet) or a V.35 interface (up to 1000 feet). Under DPCX, supported devices are limited to SDLC 3276 display and printer clusters or 3289 printers. Under DPPX, additional devices are supported, including card I/O (via the new 3289-3 printer), 364X Plant Communications devices (co-announced with the 8100), and the new 8775 display unit. Limited support is provided for 2780/3780 BSC devices and 2741 and Teletype 33/35 units. In addition to the ports, up to 24 3277 display and 3284/6/7 printer units can be connected to an 8100 system through one or two 8101 Storage and I/O Units. There are no published system limits on the number of devices controllable by one 8100 system, but it must be impressive. Careful analysis will be required to see if the more ambitious complements will satisfy terminal response time criteria.

Given the configurational possibilities, the announced software support, and IBM's own comments, there seem to be three distinct applications areas for the 8100:

- **Loops — Same as under DPCX plus 8875 Display Terminals, 364X Plant Communications devices, and card I/O attached via a 3289-3. Loops can be local or remote.**

The remote loop under DPPX is supported via an SDLC communications port at the 8100 and a 3842 Loop Control Unit at the remote side. Plant 364X devices connect to the 3842. The line operates at 2400 bps with 1200 bps backup; Multiple 3842 devices can be connected to one line in a multipoint operation.

Within an 8140-based system SDLC communications features cannot be included on Models A41-A44 if the Expanded Function Operator is included or on Models A51-A54 under any circumstances.

Configuration of an 8101 depends on whether both directly attached 3277/328X devices and communications/loop ports are included and on the 8101 model. For the 8101 Model A10 (no disk storage), up to 24 directly attached devices are permitted, but no communications/loop ports, through the no-charge Feature #9941. The no-charge Feature #9943 provides four ports; directly attached devices can be accommodated in groups of four via Feature #1502 plus Feature #1505 (for the first four devices) and up to five #1506 features (four devices each). Feature #1504 provides an additional four ports. For the 8101 Model A11 or A12, up to 24 directly attached devices can be accommodated through feature #1501, but no communications/loop ports are permitted. To accommodate both directly attached devices and communications/loop ports, Feature #1503 provides the first four ports and Feature #1504 the second four; Feature #1502 coupled with Feature #1505 (first four devices) and Feature #1506 (additional four devices) are required for directly attached devices.

TRANSMISSION SPECIFICATIONS

The accompanying table details the available communications adapters. Specific SDLC devices supported include 3276 display and printer clusters. Under DPPX ony, BSC devices conforming to 2780/3780 protocol and S/S (start stop or asynchronous) devices conforming to Teletype 33/35 protocol (via user-written routine) are supported. Devices connected directly to the communications ports can be up to 40 feet away with an EIA RS-232C interface or up to 1000 feet away with a CCITT V.35 interface. Connection to an IBM System/370 host computer is supported under both DPCX and DPPX via an SDLC link to a 370X front end. Under DPPX only, a BSC connection with 3270 or Model 25 RJE Multileaving protocol can be established with a System/370 via a 370X front end or Integrated Communications Adapter (ICA). DPPX also supports SDLC communications between two 8100's.

COMPONENTS

PROCESSORS: The basic parameters of the 16 8100 processor models are shown in the accompanying table. Each processor is structured around 48 sets of high speed general registers. Each set of registers can be used as 8 32-bit registers, 8 16-bit registers, or 16 8-bit registers. Multiple, independent operands can be held in one register. Two sets of registers are assigned to each program. Processor Models A41-A44 include 8 sets of 4 64-bit floating point registers for short format (32-bit) or long format (64-bit) floating point arithmetic.

Each processor contains a dynamic address translation facility to isolate logical application program instruction, operand, and I/O addresses from real memory addresses; this also permits virtual addressing of up to 4 million bytes of memory using a full 32-bit address.

Input/output can be in 8-bit bytes of 16-bit halfwords. Programmed I/O (PIO) transfers data between an I/O device

IBM 8100 Information System

IBM 8100 PORT CAPABILITIES

Protocol	Speed, bps	Type of Connection	Interface	Communications Feature #	Interface Feature #	Comments
SDLC	Up to 9600	External modem	V.35	1601 1602	1550 1550/5200	Up to 10 SDLC features can be active simultaneously within an 8100 system
			RS-232C	1601 1602	3701 3701 or 3701/5200	
	56K	External modem	V.35	1601	1550	Not avail. on 8130
	600/1200	Internal modem	Non-switched Switched	1601 1601	5500 5501	
	2400/4800/9600	DDS	—	1602	5660	Point-to-point or multipoint
	56K	DDS	—	1602	5660	1 per 8100 system; not avail. on 8130; point-to-point only
	Up to 9600	Loop	—	1602	4830/4835	
	38.4K	Loop	—	1602	4830	1 per 8100 system
	Up to 9600	Direct	V.35	1601 1602	1550 1550/5200	
			RS-232C	1601 1602	3701 3701 or 3701/5200	
BSC	Up to 9600	External modem	RS-232C	1603 1604	3701 3701 or 3701/5200	System aggregate BSC data rate limit is 9600 bps (8130) or 19,200 bps (8140)
	600/1200	Internal modem	Non-switched	1603		
	2400/4800/9600	DDS	—	1604	5660	Point-to-point or multipoint
	Up to 9600	Direct	—	1603 1604	3701 3701 or 3701/5200	
S/S	Up to 330 or 660 cps	External modem	RS-232C	1603	3701	System aggregate S/S data rate limit is 330 cps (8130) or 660 cps (8140)
	Up to 330 or 660 cps	Direct	RS-232C	1603	3701	

- Host-controlled distributed system.
- Stand-alone transaction-oriented system with local and/or remote terminals.
- Autonomous transaction system with "loose" connection to one or more host systems.

For some time IBM has embraced the concept of distributed processing. The continued enhancement of the 3790 and the SNA/ACF software (now two years old), coupled with the enhanced 3270 family (now 18 months old), pointed to IBM's need for a programmable controller to permit increased network flexibility. The 8100 is that unit. But, IBM was not the first to introduce such a unit. Minicomputer and distributed terminal vendors have spent the past few years announcing — and delivering — such units. Since the 1800 (under DPPX) can be loosely connected to the host, it faces stiff competition. Now that IBM can be counted on to add credibility to — and provide user education for — distributed processing, minicomputer and distributed terminal vendors can fine-tune their product lines and marketing approaches to provide users with a wide variety of choices. □

and the general registers. Channel I/O (CIO) transfers data directly between memory and a peripheral device.

DISK STORAGE: Two basic units are used to provide the disk storage in all models of the 8130/8140 processors and two models of the 8101 Storage and I/O Unit. All are fixed-disk units with moving heads. The capacity of one unit is 29,327,360 bytes, and of the other, 64,520,192 bytes. In the AX2 and AX4 processor models, 131K bytes of fixed-head storage are provided at the expense of 6 megabytes of moving-head capacity. Average head positioning time is 27 milliseconds. Average rotational delay is 9.6 milliseconds. The data transfer rate is 1.031 million bytes per second.

DISKETTE STORAGE: One drive with a capacity of 985,088 bytes is contained in each processor model. One additional drive can be added to one 8101 Storage and I/O Unit in an 8100 system. The data transfer rate is 62K bytes per second. The Basic Data Exchange format is used; either IBM 2D or Type 1 diskettes can be used.

8809 MAGNETIC TAPE DRIVE: Four models are provided that are identical in operating parameters, but differ according to connection. The tape format is 9-track, 1600 bpi, phased-encoded. Direct reel-to-reel tape transport is employed that replaces vacuum columns with electronic control. This means that the unit is sensitive to reel inertia. and the use of large-hub, 1200-foot reels is not recommended. The 8809 operates in a start/stop mode at 12.5 inches per second, which gives a data rate of 20,000 bytes per second. A special streaming mode operates at 100 inches per second for a data rate of 200,000 bytes per second. The streaming mode is intended for volume dumps and loads to and from disk and completely occupies the 8100 processor. The 8809 1A is the first drive that attaches to an 8101. The 1B is the first drive that attaches to an 8100 processor. The string of four drives is completed by adding a Model 2, a Model 3, and another Model 2, in that order.

8775 DISPLAY: Loop attached display/keyboard unit that provides extensive data entry capabilities. The 8775 is available in two models. Model 1 provides a display capacity

IBM 8100 Information System

of 960, 1920, or 2560 characters. Model 2 adds the capability for displaying 3440 characters. Except for the 3440 capacity, a 9x16 matrix is used. At the higher capacity a 9x12 matrix is used. Normal display functions are provided by the basic units. With the Enhanced Function feature, which also requires the Feature Storage and Feature Adapter options, additional capabilities are provided, including APL character display, data highlighting, partitioned display, and data validation. Highlighting is on a per character basis and can be blink, reverse video, or underlined. Up to eight partitions can be established; the operator can interact with each independently. Validation features include must enter, must fill, and trigger, each on a field basis. A trigger field is transferred immediately when entered. The expanded display set includes 94 EBCDIC characters, 81 APL characters, 37 3270 text characters, and 10 new graphic characters.

3289-3 PRINTER: Belt printer that operates at 230 to 400 lpm with a 48, 64, or 94 character set. The Model 3 differs from the Model 2 in that it can be attached directly to an 8100 loop, does not have the 125 character set (text) option, and can control attached card devices. Through attachment features, the following devices can be connected to a 3289-3 printer:

- 3501 Card Reader or 2502 Card Reader, and/or
- 3521 Card Punch.

The 2502 requires a 3782-2 Card Attachment Unit. The 3521 requires a 3782-1 Card Attachment Unit. The 3521 can be equipped to function as a card reader/punch (if a 2502 or 3501 are not attached) and to print on cards. Printing, card reading, and card punching can be done simultaneously.

Up to 6-part forms, up to 15 inches wide can be handled. The printer provides 132 print columns, 10-character/inch horizontal spacing, and 6- or 8-line/inch vertical spacing. A pair of 256-byte alternating buffers is provided.

SOFTWARE

OPERATING SYSTEMS: There are two primary IBM licensed program products currently available to support the 8100 system hardware. The Distributed Processing Programming Executive (DDPX) is a general multipurpose operating system for commercial, interactive, scientific, and plant floor applications and supports a number of optional licensed programs, including COBOL, FORTRAN, SORT, and a Development Management System. The Distributed Processing Control Executive (DPCX) is a multi-application, display-oriented system designed to be implemented in an environment of strong central control. It provides functions for interactive processing at the distributed site as well as between the host and the distributed site. DPCX provides upward compatibility from an IBM 3790.

Distributed Processing Control Executive (DPCX)

The Distributed Processing Control Executive is a multi-application, display-oriented control system that can execute up to 31 user programs concurrently. Application programs written for the 3790 Communications System will run without change or recompilation under DPCX when the same or compatible devices are used. User data sets can be transferred via diskettes from 3790 disk storage to 8100 disk storage using a DPCX service routine.

DPCX and its host allow users to distribute data and processing functions and integrity while retaining control at the host computer. Applications, however, may run independently of the host, accessing local DPCX data bases and doing all processing locally.

DPCX is supported by the ACF/VTAM, ACF/TCAM, and EXTM host SNA access methods. DPCX/8100 is connected to the host via an SDLC link. System Control Program (SCP) support is via DOS/VS, OS/VS1, OS/VS2 (SVS), and OS/VS2 (MVS). In addition, DPCX is supported by a number of program products such as IMS/VS, CICS/VS, VSPC and TSO, DSX, RES/JES1, JES2, JES3, and POWER/VS. The DPCX application programmer can allow DPCX to manage all SNA protocols in the DPCX application program.

DPCX application programs are coded using the 3790 programming statements. Thus, programs written for the 3790 can be run unchanged on the DPCX system, although they must be modified if they are coded for hardware not supported by DPCX. A DPCX application program can invoke a number of DPCX application services, such as support for transactions, queued printing, system-to-program support, display panel support, and interface to system services. Using DPCX statements, the application programmer can write programs to be run in a variety of modes, including batch, interactive, and conversational with inquiry and data set update.

In addition to programming the DPCX/8100 using 3790 statements, the Development Management Service (DMS), a program product, can be used. DMS is a form-driven, prompt/response, interactive component for generating display panels, display printer formats, and data definition sections for an application program.

Once a DPCX application program has been coded, it is tested and prepared by the 3790 host support program. Thus, all DPCX application programs are written and tested at the host location under control of the host data processing personnel. After programs are completed, copies are transferred through the network to the various 8100/DPCX installations.

At the 8100 system, each DPCX application program executes on a symbolic machine, and that symbolic machine consists of real storage resources (a set of buffers, registers, and condition indicators). Each symbolic machine is protected from access by other programs at the same 8100 system.

DPCX provides support that allows its users access to certain host applications, including:

- 3270 Data Stream Compatibility, which allows local or remote displays and display printers to be supported by existing 3270-based host applications.
- On-line printing to local or remote display printers supported by 3270-based host applications.
- An RJE package that includes on-line work station support for host-based RJE applications and off-line functions, such as spooled printing and input editing with user exits.

Distributed Processing Programming Executive (DPPX)

DPPX is made up of the DPPX Base licensed program and its family of licensed programs. DPPX supports the 8100 processors and the 8101 storage and I/O unit (including disks and diskettes), the 8909 tape unit, and a wide variety of attachments for terminals, unit record devices, and system-to-system communication.

The DPPX family of licensed software programs includes:

- DPPX COBOL Compiler and COBOL Library
- DPPX Data Base and Transaction Management System
- DPPX Distributed Presentation Services

IBM 8100 Information System

- DPPX Development Management System
- DPPX FORTRAN Compiler and FORTRAN Library
- DPPX Assembler
- DPPX Sort/Merge
- DPPX Parameter Generation Facility for the IBM 3644 Automatic Data Unit
- DPPX 3270 Data-Stream Compatibility
- DPPX RJE Workstation Facility

DPPX is designed for distributed processing configurations. Under DPPX the 8100 can communicate with other 8011's, with System/370 processors (or compatible processors, including the 3031, 3032, and 3033), or function as a stand-alone system.

DPPX/ASSEMBLER: A program product that translates source programs written in DPPX Assembler language into 8100 machine language; it processes macro instructions written by a user and those that are included with DPPX/BASE. The DPPX Assembler is useful primarily to the system programmer who has a need to replace portions of IBM licensed program code, write original system code, or produce specialized interface programs and subroutines. IBM urges users to use high level languages for application program development.

DPPX/COBOL: A program product that includes a COBOL compiler and a run-time library containing re-entrant routines that support arithmetic, logic, and data conversion, as well as input/output operations. Designed for application development, DPPX/COBOL includes language extensions that allow COBOL applications to utilize DPPX/DTMS (Data Base and Transaction Management System). A call interface is provided to allow interactive applications to use DPPX/DPS-Distributed Presentation Services. The COBOL program can be compiled and linked on one system, and the generated modules may be executed on another system on which the Run-Time Library has been installed.

DPPX/FORTRAN: Designed according to the specifications of ANS FORTRAN X3.10-1966 and contains most of the basic specifications as well as additional features. A compiler and library are included.

DPPX/DISTRIBUTED PRESENTATION SERVICES (DPS): A program product providing device independent control for terminals supported by DPPX, eliminating the need for data stream communication and buffer programming. DPPX/DPX consists of two components: Interactive Map Definition (IMD) and Format Management (FM). IMD enables the application programmer to create and update screen and printer panel layouts interactively at program developing, operating, and managing on-line applications are grammer can see the run time format being created at the display. Format Management is the execution time component of DPS. FM can be used on systems without the IMD feature. In this case, maps must be created by IMD on an 8100 processor licensed for this feature.

DPPX/DATA BASE AND TRANSACTION MANAGEMENT SYSTEM (DTMS): Provides transaction management and routing as well as data base management and control for the 8100/DPPX system. Facilities to assist in developing, operating, and managing on-line applications are provided. The need for extensive user-developed system programs to manage terminals and data in this environment is greatly reduced.

DPPX/3270 DATA STREAM CAPABILITY (DSC): A licensed program that allows certain keyboard display and printer units attached to the 8100 to communicate with System/370 host application programs as though the units were directly attached by data link to the host processor. The 8100 can be installed as a distributed processor while most existing 3270 applications at the System/370 host continue to run without change.

DPPX/REMOTE JOB ENTRY-WORKSTATION FACILITY (RJE): Permits the 8100 to function as an SNA or BSC remote job entry work station for submitting jobs to a host System/370. The host requires an OS/VS or VM/370 operating system with a job entry subsystem installed.

DPPX/SORT/MERGE (SORT): Provides a sort for the 8100 system that is designed to run with the DPPX/Base and provides users with facilities for extracting and sequencing data sets. DPPX/SORT is designed to address the users' need for sorting and merging of single or multiple type records from one or more data sets. Related tasks, such as selecting certain records from one or more data sets, are also provided.

DEVELOPMENT MANAGEMENT SYSTEM (DMS)/DPPX: A program product that aids in the design and generation of application programs by providing a simple programming interface to the user. Programs generated by DMS/DPPX are in DPPX/COBOL source code.

DPPX/PARAMETER TABLE GENERATION FACILITY (GEN3644): Provides an efficient means for customizing the 3644 Automatic Data Unit (ADU). The 3644 ADU attaches to the 8100 or the 3630 Plant Communication System and creates an automatic interface between the system and a wide variety of actuators, instruments, computers, and production subsystems. DPPX/GEN3644 customizing consists of selecting 3644 functions and specifying the initial values of stored data items. DPPX/GEN3644 translates the customization data into the necessary parameter table format for transmission to the 3644. DPPX/GEN3644 also produces a listing of the source data entered by the user. Extensive edits are performed both on a record basis and on an overall table basis.

DISTRIBUTED SYSTEMS EXECUTIVE (DSX): A set of routines and files that give 8100 and 3790 system network users a simple and comprehensive means of data and network management. DSX combines, in one product, the host libraries, holding files, and control files, and the transmission, formatting, and reporting functions needed for library and transmission control in 8100 and 3790 system networks.

HOST COMMAND FACILITY: Designed to enable a System/370 attached terminal to function as if it were directly attached to an 8100/DPPX or DPCX system. The Host Command Facility gives an operator at a central System/370 site the capability to operate and control remote SDLC-connected 8100 systems. Nearly all maintenance, service, and control functions become available at the central System/370 site for problem determination, problem isolation, and remote system control. The System/370 must be running under MVS VTAM/TCAM, VS1 VTAM/TCAM, or DOS/VS VTAM.

DPPX/PERFORMANCE TOOL (PT): A program product consisting of the Monitor and Reporter feature. DPPX/PT monitors and reports the activity of components of the DPPX/BASE program product.

SUBSYSTEM INFORMATION RETRIEVAL FACILITY: Provides the host location with the ability to retrieve incident and status information, execute problem determination tools, and modify, with appropriate control, distributed

IBM 8100 Information System

All 8100 system components listed in the accompanying price table are maintenance category A, except the 8809 tape drives and the 3289-3 printer, which are category D. These categories determine the schedule of extended maintenance charges. The two schedules differ for extended Monday through Friday maintenance, but are the same for Saturday and Sunday maintenance. Prime shift maintenance is for any consecutive nine hours between 7 AM and 6 PM, system control code. This facility will be available for System/370's running under OS/VS-VTAM, ACF/VTAM, DOS/VS-VTAM, ACF/VTAM, OS/VS-TCAM, and DOS/VS-EXTM.

PRICING

All 8100 system components are available for a month-to-month rental or on a two-year lease arrangement. Both arrangements include prime shift maintenance. Purchased components can have a separate maintenance contract. Monday through Friday. The premium for extended maintenance is expressed in the table below as a percentage of the prime shift maintenance charges, which are listed in the accompanying price table.

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday—					
Category A	10%	14%	18%	22%	26%
Category D	10	12	14	16	18
Saturday	4	5	7	8	9
Sunday	5	7	9	11	12

*For periods outside the basic 7 AM to 6 PM prime shift.

The termination charge for the two-year lease arrangement is the lower of 5 months' charges of 25 percent of the remaining value of the lease. The lease arrangement also guarantees a maximum rate of increases for extended leasing periods. The rate for all 8100 components is five percent per year beginning in the second year.

All 8100 components qualify for unlimited usage. Purchase credits can be accrued up to a maximum of 55 percent. All components, except the 8809 tape drives and 3289-3 printer, are classified as Customer Set-Up, which permits (or requires) users to install the components themselves.

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8130	Processor; include 256K bytes of memory, 1 diskette drive, two ports and:				
A21	29 megabytes of disk storage	$ 705	$ 600	$ 24,000	$ 122
A22	23 megabytes of disk storage and 131K bytes of fixed-head storage	729	620	24,720	130
A23	64 megabytes of disk storage	752	640	25,440	130
A24	58 megabytes of disk storage and 131K bytes of fixed-head storage	776	660	26,160	138
1520	Feature Expansion Type 1; provides 4 additional ports and other expansions	14	12	405	0.50
1530	System Expansion; for attachment of 8101 units and direct attachment of tape drive	71 82	60 70	2,400 2,250	10.50 7.50
1710	Processor Storage Type 1; 128K bytes, 1 max.	165	140	4,500	14.50
1720	Processor Storage Type 2; 256K bytes, 1 max.				
8140	Processor; includes 1 diskette drive and—				
	A3X Series; includes 256K bytes of memory, 3 ports, and:	1,128	960	33,060	173
A31	29 megabytes of disk storage				
A32	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,152 1,175	980 1,000	33,780 34,500	181 181
A33	64 megabytes of disk storage				
A34	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,199 306	1,020 260	35,220 6,240	189 30
1490	Storage Increment; 128K bytes	82	70	2,400	30.50
4545	Expanded Function Operator Panel				
	A4X Series; includes 320K bytes of memory, 2 ports, floating point arithmetic, and:	1,416	1,205	40,260	212
A41	29 megabytes of disk storage				
A42	23 megabytes of disk storage and 131K bytes of fixed-head storage	1,439 1,463	1,225 1,245	40,980 41,700	220 220
A43	64 megabytes of disk storage				
A44	58 megabytes of disk storage and 131K bytes of fixed-head storage	1,486	1,265	42,420	228
4545	Expanded Function Operator Panel; eliminates 2 processor ports	82	70	2,400	30.50
	A5X Series; includes 512K bytes of memory, no ports, and:	1,739	1,480	45,540	233
A51	29 megabytes of disk storage				
A52	23 megabytes of disk storage plus 131K bytes of fixed-head storage	1,763 1,786	1,500 1,520	46,260 46,980	241 241
A53	64 megabytes of disk storage				
A54	58 megabytes of disk storage plus 131K bytes of fixed-head storage	1,810	1,540	47,700	249
4655	Keylock (all processor models)	50 SUC	50 SUC	50	—

*Includes prime-shift maintenance.

IBM 8100 Information System

		Monthly Charges*			
		Rental	Lease	Purchase	Monthly Maint.
8101	Storage and Input/Output Unit:				
A10	Device attachment only	201	171	6,500	17
A11	29 megabytes disk storage and device attachment	477	406	14,970	55.50
A12	64 megabytes disk storage and device attachment	524	446	16,410	63.50
	Display and Printer Attachment:				
1501	Type I (capability provided on A10 by no-charge specify feature #9941)	27	23	900	4
1502	Type II	13	11	400	0.50
1503	Communications Attachment Type I (capability provided on A10 by no-charge specify feature #9943)	27	23	900	4
1504	Communications Attachment Type II	13	11	400	0.50
1505	Display & Printer Adapter (for first 4 devices)	5	64	2,300	15
1506	Display & Printer, Additional (for additional 4 devices)	13	11	420	4
1507	Diskette Drive and Magnetic Tape Attachment (A10 only)	27	23	900	2
4520	Diskette 2D Drive; 1 megabyte; requires 1507 and A10)	94	80	2,880	27.50
4521	Magnetic Tape Attachment (for up to 4 drives; requires 4520 on A10)	59	50	1,800	9
6555	Security Cover Locks (for all processors and 8101)	35SUC	35SUC	35	—
6566	Security Lock, Diskette (for all processors and 8101)	30SUC	30SUC	30	—
	Communications and I/O Adapters for 8130/8140/8101				
1601	SDLC Communications With Business Machine Clock	41	35	900	8
1602	SDLC Communications Without Business Machine Clock	35	30	840	7.50
1603	BSC/SS Communications With Business Machine Clock	19	16	670	3
1604	BSC Communications Without Business Machine Clock	12	10	450	2.50
1550	CCITT V.35 Interface	15	13	510	2
3701	EIA RS-232C Interface	12	10	400	4
4830	Loop Adapter	20	17	605	4
4835	Loop Adapter, Second Lobe	20	17	605	4
52C0	Multi-Speed Clock (for direct connection)	13	11	420	1.50
5500	Integrated Modem, Non-Switched	19	16	668	5
5501	Integrated Modem, Switched	25	21	840	6.50
5660	Digital Data Service (DDS) Adapter	24	20	840	2
	Peripherals				
8809	Magnetic Tape Unit:				
-1A	First Drive for 8101	341	290	10,440	48
-1B	First Drive for 8130 or 8140	417	355	12,780	63
-2	Second or Fourth Drive	303	258	9,270	43
-3	Third Drive	341	290	10,440	48
4920	Multi-Drive Feature for 8890-1B	12	10	360	1
8775	Display Terminal:				
-1	960, 1920, or 2560 character display	74	63	2,835	19
-2	960, 1920, 2560, or 3440 character display	83	71	3,195	19
4850	Loop Adapter	8	7	315	1.50
3624	Enhanced Function (requires 3622 and 3905)	—	—	—	—
3622	Feature Storage	19	16	720	3
3905	Feature Adapter	11	9	405	1.50
	Keyboards:				
4621	75 Key Typewriter	13	11	495	2.50
4622	75 Key Data Entry	13	11	495	3.50
4623	75 Key Data Entry, keypunch layout	13	11	495	3.50
4626	87 Key Typewriter/APL	18	15	675	3
4627	87 Key Typewriter	18	15	675	3
1009	Setup Keylock	60SUC	60SUC	60	—
1090	Audible Alarm	2	2	90	—
4690	Keyboard Numeric Lock	—	—	—	—
4944	Monocase Switch	—	—	—	—
4999	Magnetic Reader Control	11	9	405	2
	PN# 4123500 Magnetic Slot Reader	—	—	275	—
6340	Security Keylock	35SUC	35SUC	35	—
6350	Selector Light Pen	15	13	585	0.50
4850	3276 Display/Control:Loop Adapter	25	21	945	3.50
	Printers				
3287	Model 11; 80 cps	196	167	5,875	51.50
	Model 12; 120 cps	233	198	6,250	62.50
4110	Friction Feed Paper Handling	6	5	160	0.50
8700	Variable Width Forms Tractor	6	5	160	0.50
3289	Model 3; 160 to 400 lpm	556	473	13,250	179
1090	Audible Alarm	6	5	175	—
4650	Keylock	35SUC	35SUC	35	—
8010	Card Control Feature	29	25	875	1.50
8050	3501 Card Reader Attachment	13	11	440	0.50
8149	3782/2502 Card Reader Attachment	19	16	640	4
8150	3782/3521 Card Punch Attachment	19	16	640	3.00

*Include prime-shift maintenance.

IBM 8100 Information System

SOFTWARE

		Monthly License Fee
5761-DS1	Distributed Processing Control Executive (DPCX)	$215
	Distributed Processing Programming Executive (DPPX)—	
5760-010	Base (DPPX/BASE)	150
5760-AS1	Assembler (DPPX/ASSM)	40
	COBOL:	
5760-CB1	Compiler	80
5760-LB1	Run-Time Library	15
	FORTRAN:	
5760-FO1	Compiler	60
5760-LM1	Library	30
5760-XR1	Distributed Presentation Services (DPPX/DPS):	
	Format Management (FM)	65
	Interactive Map Definition (IMD)	25
5760-TD1	Distributed Data Base and Transaction Management System (DPPX/DTMS)	90
5760-RC1	3270 Data Stream Compatibility (DPPX/DSC)	15
5760XC1	Remote Job Entry-Workstation Facility (DPPX/RJE)	20
5760-SM1	Sort/Merge (DPPX/SORT)	20
5760-XC2	Development Management System (DMS/DPPX)	85
5760-ED1	Parameter Table Generation Facility for the IBM 3644 Automatic Data Unit (DPPX/GEN3644)	15
5760-XR5	Performance Tool (DPPX/PT):	
	Monitor	35
	Reporter Feature	40
	Host Software:	
5748-XXG	Distributed Systems Executive (DSX)	175
5735-XR1	Host Command Facility	85
	Subsystem Information Retrieval Facility:	
5747-BQ1	DOS/VS	—
5744-BZ3	OS/VS	— ■