IBM System/7

Facilities include scheduling and processing of variables, analog and digital scan, engineering units conversion, measurement and linearization of transducer signals, and a user interface to the applications program.

Another feature of AML/7 is the group of four functional program modules which can be used independently of the Monitor to supply data access routines for convenient access and modification of data associated with input variables and their processing, arithmetic and data conversion facilities for easy data manipulation, simplified I/O via message formatting and I/O buffer routines, and pulse counting and pulse output.

To implement these functions, the programmer selects the appropriate macros from AML/7, defining them for each specific function by specifying the necessary parameters in a macro instruction. These macros, together with selected MSP/7 macros, are integrated with user-written programs to produce the complete application program.

The programs that constitute AML/7 are written using MSP/7 system macros and ASM/7 Assembler Language instructions. Programs using AML/7 were originally prepared on a System/360 or 370 Host Program Preparation Facility (HPPF-II) operating under OS (VS1 or VS2) or DOS (VS) or on a System/7 Program Preparation FAcility under DSS67. Under the stand-alone version of MSP/7, AML/7 can be used in System/7 configurations.

Disk Support System (DSS/7) is one of the System/7 Program Preparation facilities. The 8-12K-word version provides several extensions to the 4K DSS/7, including device independence, allowing the user to alter device assignments at execution time. In an 8K System/7, the user can execute service programs and user-written programs, which do not require device support beyond the 5022, 129, 7431, or 5028. In the 12K environment, the user can employ the stand-alone System/7 program preparation capability.

DSS/7 (8-12K) utilizes an enhanced command language which permits: loading and execution of the System/7 Program Preparation Facilities, loading and execution of user programs (non-real-time), loading and execution of a complete storage load (real-time), loading and execution of disk-resident service programs, accessing and execution of predefined catalog procedures, association of symbolic file names with physical devices, passing of parameter information, and selection of alternate command language input streams.

MSP/7 Service Programs, which support DSS/7 utilities, include: Device Independent Copy; Disk to Print; Disk Delete; Rename Data Set or Member; Define Data Set or Members; Disk Initialize; Disk Patch; Define Auto Restart; Service Program Monitor; and Load Module Formatting.

The stand-alone program preparation components execute as service programs in the 12K DSS/7 environment.

FORMAT/7 allows the System/7 user to generate loadable System/7 storage loads from ASM/7 output. The output storage load can be directed to disk for transmission via the ACCA connection or to cards for later conversion. For the DOS user with a 1018 paper tape punch, the storage load can go directly to paper tape.

Minimum system requirements for execution on a System/360 or 370 include 14K bytes exclusive of System Control and Basic IOCS under DOS, and 44K bytes exclusive of data mangement and supervisory services under OS. Under the stand-alone MSP/7, FORMAT/7 can be run in a System/7 with a minimum of 12K words of storage and one 5022 Model 1 or 2 disk.

LINK/7, one of the System/7 Program Preparation Facilities, combines separately assembled or compiled object modules into a load module suitable for input to FORMAT/7 and subsequent execution. It also combines previously edited load modules with each other or with object modules. In addition, the Linkage Editor incorporates program segments from a library into load modules, either automatically or upon request, aids in construction of overlay program segments, and aids program modification by replacing program segments.

Minimum host system requirements for execution on a System/370 operating under DOS/VS are 24K bytes plus auxiliary storage for at least 2 intermediate work areas. Under OS/VS, 44K bytes are required in addition to disk space for system input, 1 intermediate data set, printer output, and the output load modules.

PREP/7 prepares source programs written in the syntax of the MSP/7 Host Program Preparation Facility I for input into ASM/7. It accepts source code written for OS/DOS and 1800/1130 Facility I macro assemblers, flags instructions that may need programmer intervention for correct conversion, and punches new source decks.

Minimum host system requirements include 14K bytes exclusive of System Control and Basic IOCS for systems operating under DOS, and 44K bytes exclusive of data management and supervisory services for systems operating under OS.

COMMUNICATIONS SOFTWARE: *Communications Control Applications Program (CCAP/7)* is a store-and-forward message switching program that supports both start/stop and binary synchronous lines. It provides for the switching of administrative messages originating at remote terminal locations and destined for one or more terminal locations in the same network. It performs various checks to ensure against message loss or duplication.

CCAP/7 includes the following functions: time and date stamping, terminal polling and addressing, sequence checking, two levels of priority, system statistics, disable and enable terminals/lines, retrieve old messages, checkpoint and restart, and message broadcasting.

CCAP/7 is written in System/7 Assembler Language with extended mnemonics. Modifications to the system or assembly of CCAP/7 programs requires the Host Program Preparation Facility.

Minimum system configuration required includes 10K words; one disk for intermediate message storage, IPL, and program residence; and one operator station.

In addition to CCAP/7, communications between System/7 minicomputers and System/360 and 370 computers through existing S/7 communication adapters are now supported by the enhanced MSP/7. In remote terminal applications, the new software supports binary synchronous communications through both modems or Integrated Communications Adapters.

APPLICATIONS PROGRAMS: Program products for the System/7 include Automatic Telephone Call Monitoring (8K-word S/7), Energy Management System (44K S/7), Process Control Program (14K S/7), Transaction Generator System for data collection procedures (16K S/7), and Manufacturing Monitoring System (12K S/7). In addition, there are a large number of field-developed and installed-user programs available for the System/7.

PRICING

POLICY: IBM provides the System/7 on a purchase or monthly lease basis. The standard IBM Monthly Availability Charge (MAC) rental contract includes equipment maintenance and entitles the customer to 24-hour, 7-day-a-week maintenance service.

IBM also offers purchase options for the S/7 equipment. With this plan, users can accumulate up to 36 months of purchase option credits toward the purchase of the equipment. The total amount accrued cannot exceed 50 percent of the purchase price of the equipment at the date of purchase. At present, 60 percent of the S/7 rental fees are applicable to purchase options.

SUPPORT: For purchased systems, maintenance is provided on the processor for one year at no additional charge, and on most interfaces for 90 days at no additional charge. Thereafter, on-call maintenance is separately priced.

IBM System/7

For leased systems, on-call maintenance is included in the monthly charge.

Field Engineering rates for puchased System/7 equipment are $35.75 per hour for normal working hours and $46.50 per hour for non-standard working hours. Systems Engineering hourly rates are $37.75 for Basic, General, and Complex skill classifications.

EQUIPMENT: The following typical systems include all necessary controllers and adapters.

TYPICAL POWER MANAGEMENT SYSTEM: Consists of a 5010 Model A8 processor, 5026 Model A2 enclosure, 5028 operator station, 5012 I/O module, 3284 digital input control, 3289 digital input group for 16 input points, 5710 process interrupt, 3296 digital output control, and 3422 medium power output. Purchase price is $20,676 and monthly rental is $1,010.

TYPICAL SECURITY SYSTEM: Consists of a 5010 Model A8 processor, 5026 Model C3 enclosure, 5028 operator station, 5022-1 fixed/removable 2.46-megabyte disk drive, 5012 I/O module, 3284 digital input control, 3289 digital input group for 16 input points, 5710 process interrupt, 3296 digital output control, and 3422 medium power output. Purchase price is $33,816, and monthly rental is $1,620.

EQUIPMENT PRICES

		Purchase Price	Monthly Maintenance	Monthly Rental
PROCESSORS AND MAIN STORAGE				
General: Models A and E have asynchronous or binary synchronous communications adapters as options and are stand-alone systems. Model B has an interface for connection to IBM 1130 systems.				
5010	Central Processing Unit:			
	Model A2: 2K words	$ 5,310	$ 54.50	$ 216
	Model A4: 4K words	7,595	68.00	341
	Model A6: 6K words	9,865	81.00	464
	Model A8: 8K words	12,190	94.00	590
	Model A10: 10K words (requires 7401)	14,460	107.00	713
	Model A12: 12K words (requires 7401)	16,780	120.00	836
	Model A14: 14K words (requires 7401)	19,050	133.00	960
	Model A16: 16K words (requires 7401)	21,370	147.00	1,080
	Model B2: 2K words	7,780	64.50	334
	Model B4: 4K words	10,050	77.50	458
	Model B6: 6K words	12,380	90.00	581
	Model B8: 8K words	14,640	103.00	707
	Model B10: 10K words (requires 7401)	16,970	116.00	830
	Model B12: 12K words (requires 7401)	19,230	130.00	955
	Model B14: 14K words (requires 7401)	21,560	143.00	1,075
	Model B16: 16K words (requires 7401)	23,820	156.00	1,195
	Model E16: 16K words	22,580	269.00	1,095
	Model E20: 20K words	25,710	306.00	1,260
	Model E24: 24K words	28,770	340.00	1,410
	Model E28: 28K words	31,830	377.00	1,565
	Model E32: 32K words	34,890	412.00	1,730
	Model E36: 36K words	37,950	449.00	1,895
	Model E40: 40K words	41,070	485.00	2,040
	Model E44: 44K words	44,130	520.00	2,205
	Model E48: 48K words	47,190	557.00	2,370
	Model E52: 52K words	50,250	592.00	2,530
	Model E56: 56K words	53,310	629.00	2,690
	Model E60: 60K words	56,430	665.00	2,845
	Model E64: 64K words	59,490	701.00	3,000
PROCESSOR OPTIONS				
5731	Power fail detect	1,305	0.50	56
5028	Operator station	1,940	62.50	163
2798	Guidance Display Unit: 56-character keyboard, 16-position display, 48-instruction operator guidance panel, for interactive transactions	4,400	18.50	96
2662	Basic cycle steal for S/7 CPU's (requires min. Model A4, B4, or E16 CPU)	1,170	3.00	49
2664	Disk cycle steal for 5022 disk drives (requires 2662)	612	1.00	16
4703	Internal clock for Model A or E CPU's (requires 2074)	522	2.50	21
MASS STORAGE				
3340	Module Disk Drive ("Winchester"):			
	Model A2: two disk drives plus controller	36,000	80.00	1,100
	Model B1: one disk drive	19,800	43.00	615
	Model B2: two disk drives	25,200	69.00	776
3348	Module for 3340 disk drive:			
	Model 35: 34.9M-byte module	1,600	–	59
	Model 70: 69.9M-byte module	2,200	–	82
	Model 70F: 69.9M-byte module, 502K bytes of which are accessed by fixed heads	4,400	–	165
5022	Cartridge Disk Drive for System/7 (requires 2664 and 2662):			
	Model 1: one fixed and one removable disk, 2.46M words, 269 msec average access time	9,640	98.50	458

IBM System/7

EQUIPMENT PRICES

	MASS STORAGE (Continued)	Purchase Price	Monthly Maintenance	Monthly Rental
5022	Model 2: same as Model 1 except with 126 msec average access time	$10,530	$ 108.00	$ 536
	Model 3: one fixed disk, 1.23M words, 269 msec average access time	8,620	94.00	352
	Model 4: same as Model 3 except with 126 msec average access time	9,445	103.00	429
5440	Disk Cartridge for 5022 disk drives	521	—	16
4650	Integral Power Supply for each 5022 disk drive after the first	908	1.00	39
	I/O CONTROL MODULES			
5012	Multifunction I/O Module; for digital I/O, analog I/O, and control for 2790 Data Communications Systems	1,170	9.00	45
5013	Digital I/O Module; same as 5012 for digital I/O features only	1,170	9.00	45
5014	Analog Input Module; provides analog input facilities for various combinations of either relay-contact or solid-state multiplexers:			
	Model B1: provides amplification, A/D conversion, and addressing of 128 relay analog input points; can be combined with two model E2's to provide 384 input points	3,905	32.00	176
	Model C1: provides amplification, A/D conversion, and addressing of 128 solid-state input points	5,725	47.00	258
	Model D1: Same as Model B1 except expandable to 384 relay input points through two Model E1's	3,905	31.00	176
	Model E1: Expansion module for Model D1; provides 128 relay input points per module (max. of two)	1,020	0.50	44
	Model E2: Expansion module for Model B1; provides 128 additional relay input points per module (max. of two)	1,020	0.50	44
8195	2790 Control attachment for use in 5012 or 5013; max. one per 5012 or 5013 and four per system	2,610	9.00	117
1221	Basic Analog attachment for analog interfaces; max. one per 5012	780	1.50	34
1245	Analog Output Control for 1221; controls up to two 1246 Analog Output Points; max. one per 1221	780	10.00	34
1246	Analog Output Point for 1245; provides 0 to 10.24V output; max. two per 1245	1,305	6.00	45
1232	Analog Input Control Model B for 1221; provides control and A/D conversion for amplifier and 8 groups of relay multiplexers; max. one per 1221; cannot be used with 1213	3,185	32.00	117
1210	Amplifier B for 1232 or 5014; unity gain; high-level input, full-scale range ±5.12V; cannot be used with 1215	327	0.50	10
1215	Multirange Amplifier B for 1232 or 5014; fixed preset gain or autoranging; full-scale ranges of ±10mV, ±20mV, ±40mV, ±80mV, ±160mV, ±640mV, or ±5.12V preset or by program control; resolution with preset gain is 14 bits plus sign; resolution with autoranging is 12 bits plus sign; max. one per 1232; cannot be used with 1210	1,045	2.00	45
5246	MR4 Multiplexer for 4 relay multiplexer points; for use with 1210 or 1215; max. 8 per 1210 or 1215	287	2.00	11
1213	Analog Input Controller Mod C for 1221; same as 1232 for solid state multiplexers; max. one per 1221; cannot be used with 1232	4,425	37.00	190
1211	Amplifier C for 1213 or 5014; same as 1210 for solid-state multiplexers; cannot be used with 1216	1,305	5.50	58
1216	Multirange Amplifier C for 1213 or 5014: same as 1215 for solid-state multiplexers	2,085	2.00	93
5248	MS4 Multiplexer for 4 solid-state multiplexer points; for use with 1211 or 1216; max. 8 per 1211 or 1216	261	1.00	10
7830	Temperature Reference for 1221 or 5014; requires 1215, 1216, or 1217; max. one per 1221 or 5014	261	1.00	10
3284	Digital Input Control for 5012 or 5013; provides control for up to four 3289 or 3292 digital inputs; max. two per 5012 or 5013	352	2.00	13
3289	Digital Input Group for 3284; provides 16 input points, max. four per 3284; can be mixed with 3292	391	4.00	16
3292	Non-Isolated Digital Input Group for 3284; same specifications as 3289	196	1.00	8
5710	Process Interrupt for 3289; converts 3289 to a process interrupt group; max. two per 5012 or 5013; cannot be used with 3292	261	1.00	10
3296	Digital Output Control for 5012 or 5013; provides control for up to four groups of 3420, 3421, 3422, or 3424 digital outputs in any combination; max. one per 5012 or 5013	522	1.50	22
3420	Relay Output for 3296; 16 single-pole contacts	1,045	5.00	45
3421	Low Power Output for 3296; 16 output points, 6VDC @ 4mA	522	2.50	22
3422	Medium Power Output for 3296; 16 output points, 48VDC @ 450mA	780	5.50	34
3424	Non-Isolated Medium Power Output for 3296; 16 output points, 52.8 VDC @ 450mA	391	1.50	16
1212	Amplifier D for 5014; unity gain, high-level input, full-scale range ±5.12V; for use with 5247; cannot be used with 1217	327	0.50	10
1217	Multirange Amplifier D for 5014; specifications as 1215; for use with 5247 or 5245; cannot be used with 1212	1,045	2.00	45

IBM System/7

EQUIPMENT PRICES

		Purchase Price	Monthly Maintenance	Monthly Rental
I/O CONTROL MODULES (Continued)				
1230	Analog Input Adapter B for use with 5247; max. four per 5014 model B1; requires 1210 or 1215	$ 391	$1.00	$13
1231	Analog Input Adapter C for use with 5249, max. four per 5014 model C1; requires 1211 or 1216	391	1.00	13
1233	Analog Input Adapter D/E for use with 5247 or 5245; max. four per 5014 models D1, E1, or E2; requires 1212 or 1217 or 5014 model D1	391	1.00	13
1250	Analog Input Expander B for 5014 model B1; permits additon of up to two 5014 model E2's to a 5014 model B1; max. one per 5014 model B1; requires 1210 or 1215	651	5.50	29
5245	MD16 Multiplexer for 5014 models D1 and E1; provides relay inputs for 16 analog inputs; input voltage range -640mV to +5.12V; requires 1233; max. two per 1233	758	11.50	33
5247	MR16 Multiplexer for 5014 models B1, D1, E1, or E2; provides relay inputs for 16 analog inputs; input voltage range ±5.12V; requires 1233; max. two per 1233	1,145	8.50	50
5249	MS16 Multiplexer for 5014 model C1; same specifications as 5247; requires 1231; max. two per 1231	1,045	2.50	45
PERIPHERAL UNITS WITH CONTROL				
5024	I/O Attachment Enclosure for CPU Model E (max. one per system):			
	Model 1: for line printing (40-155 lpm)	18,040	89.00	525
	Model 2: for card reading (up to 300 cpm)	10,340	16.50	301
	Model 3: for card reading and printing	22,500	95.00	698
4115	Attachment feature for 5204 (for Model E CPU's)	1,125	4.50	31
COMMUNICATIONS CONTROL				
2074	Bisynchronous Communications Control for Models A and E; requires Model A4 or E16 minimum; cannot be used with 1610 asynchronous communications control; one 2074 per system	4,685	59.00	194
4800	Line Interface for 2074; EIA interface; cannot be used with 4805, 5500, or 5501	651	2.50	27
4805	Line Interface for 2074; high-speed; cannot be used with 4800, 5500, or 5501	1,305	0.50	54
5500	Modem for leased lines; cannot be used with 4800, 4805, or 5501; requires 2074 and 4703 internal clock	456	2.50	16
5501	Modem for switched lines; cannot be used with 4800, 4805, or 5500; requires 2074 and 4703 internal clock	608	3.00	21
1610	Asynchronous Communications Control for Models A and E; cannot be used with 2074 bisynchronous communications control; one 1610 per system	1,955	14.00	81
2165	Common Carrier Adapter for 1610; cannot be used with 475X line adapters; one per 1610	261	2.50	10
4751	Line Adapter for 1610; for 1A leased lines, cannot be used with 2165, 4750, or 4752; one per 1610	651	15.00	27
4752	Line Adapter for 1610; for 1B leased lines; cannot be used with 2165, 4751, or 4750; one per 1610	651	15.00	27
4750	Line Adapter for 1610; for 2B limited-distance lines; cannot be used with 2165, 4751, or 4752; one per 1610	651	14.25	27
ENCLOSURES				
5026	Enclosures:			
	Model A2: 2-position cabinet, for processor module and 1 I/O module	3,010	32.00	117
	Model C3: 3-position cabinet, for processor module and 2 I/O modules	6,510	37.50	269
	Model C6: 6-position cabinet, for processor module and 5 I/O modules	9,190	61.50	400
	Model D3: 3-position extension cabinet, for use with Model C3 or C6	6,510	49.00	269
	Model D6: 6-position extension cabinet, for use with Model C3 or C6	9,190	73.00	400
3715	Enclosure Attachment for 5026 Models C3 and C6 (max. one per system); connects other enclosures together for expansions	908	5.00	39
4621	Internal Air Isolation 3 for 5026 Models C3 and D3; provides air cooling and isolation	1,465	14.00	51
4622	Internal Air Isolation 6 for 5026 Models C6 and D6; provides air cooling and isolation	1,955	29.50	70
7401	Storage Power Addition for use on CPU Models A and B with memories above 8K words	417	1.00	17

SOFTWARE PRICES

		Monthly Charge
5707-LM-1	Application Module Library AML/7 (single use charge)	$727
5734-F04	FORTRAN IV Host Compiler and Library (OS version; 5736-F01 is DOS version)	143
5707-RC1	Communications Control Application (CCAP/7), Version 1	242
5707-RC2	Communications Control Application, Version 2	412
5707-F01	FORTRAN IV Stand-Alone Compiler and Library	94
5734-XC3	Applications Generator (OS version; 5736-XC3 is DOS version)	173
5707-XC1	Stand-Alone Applications Program Generator	168