Sperry 1100/90 System

MANAGEMENT SUMMARY

Sperry Corporation's 1100/90 system design implements extensive architectural enhancements for the 1100 Series. Improvements in the functionality of the 1100/90 system are obtained by changing or adding to the the current 1100 architecture definition.

The 1100/90 can be configured with up to four central processors in a tightly-coupled or loosely-coupled arrangement. System components are functionally independent, and each component can have multiple access paths to and from other components. The 1100/90 can handle a number of jobs simultaneously, including jobs that involve a mixture of real-time, interactive, and batch processing. The 1100/90 will also support high-speed scientific processors and data base processors.

According to Sperry, the 1100/90 is aimed at the following key market areas: manufacturing, government, airlines, communications, aerospace, petrochemical, and scientific institutions.

PROCESSORS

The basic 1100/91 Processor Complex consists of a central processor with 16K words (64K bytes) of buffer storage, a Main Storage Unit (MSU) with 2 million words (8 million bytes) of main memory, an Input/Output Processor (IOP) with four block multiplexer channels and eight word chan-nels, a System Support Processor (SSP), a master operator ▷

Sperry Corporation will deliver their top of the 1100 Series product line and their most powerful computer system to date, the 1100/90, in the spring of 1984. It features a number of enhancements, including a virtual machine facility, that are not available on previous 1100 Series models. The 1100/90 can be used for batch, interactive, and real-time processing.

MODELS: 1100/91, 1100/92, 1100/93, and 1100/94.
CONFIGURATION: From 1 to 4 CPUs, 2 to 16 million words of main memory, 1 to 4 I/O processors, and 12 to 176 I/O channels.
COMPETITION: Amdahl 5870 and 5880, IBM 308X Series, and NAS AS/9060 and AS/9080.
PRICING: A basic system can be purchased for $2,865,660.

CHARACTERISTICS

MANUFACTURER: Sperry Corporation, P.O. Box 500, Blue Bell, Pennsylvania 19424. Telephone (215) 542–4011. ▶

The most recent addition to the 1100 Series of large-scale sytems is the 1100/90 System. With double the main memory capacity of the 1100/60 and 1100/80, the 1100/90 provides a new virtual machine capability, and features a number of extensions to the 1100 Series architecture.

Sperry 1100/90 System

▷ console with system panel, and a processor cooling unit. When configured with two, three, or four CPUs, the system becomes an 1100/92, 1100/93, or 1100/94, respectively. The 1100/90 also supports a maximum of four IOPs, four operator consoles, and two SSPs. Optional equipment includes up to four Subsystem Access Units that control the partitioning of peripheral subsystems and up to four Subsystem Power Controllers that automatically control the power to peripheral controllers connected to the IOPs.

All 1100/90 systems can have up to four MSUs, each of which can house up to four million words (16 million bytes) of memory for a total system capacity of 16 million words (64 million bytes).

The 1100/90 processors feature a number of enhancements over the previously introduced 1100/60 and 1100/80 processors. High density packaging and subnanosecond ECL circuits provide greater logic density and higher switching speeds. The package density of the 1100/90 is 10 times greater than that of the 1100/80. The gate switching speed is 0.37 nanosecond per gate.

The 1100/90 processor also features extended addressing, 24-bit indexing, a virtual machine capability not previously offered on 1100 Series processors, an 8K-word instruction buffer and an 8K-word operand buffer, an instruction pipelining feature that allows three instructions to be executed concurrently, and an arithmetic unit divided into a binary arithmetic section, a high-speed multiply section, and a decimal arithmetic section. The Extended Instruction Set, introduced as an option on the 1100/60, is a standard feature on the 1100/90.

Input/output operations are off-loaded from the central processor to the independent Input/Output Processor (IOP). The CPU sends a request to the IOP through a new Universal Processor Interface that consists of a send request/acknowledge pair and a receive request/acknowledge pair. The IOP accepts the request, executes the appropriate channel program, handles path selection and error control, and prepares a completion message for CPU notification and handling. Data is transferred from the IOP to main storage via a two-word-wide interface.

PERIPHERALS AND COMMUNICATIONS

Mass storage devices available for the 1100/90 system include the 8430, 8433, and 8434 removable-media disk drives and the 8450, 8470, and 8480 fixed-disk drives. The 8430, 8433, and 8434 disk drives provide capacities of 17, 34, and 67 million words (77, 154, and 243 million bytes), respectively. The 8450 provides 54 million words (243 million bytes) of storage, while the 8470 provides 89.6 million words (403 million bytes). The 8480, introduced in conjunction with the 1100/90 processor, has a storage capacity of 358 million words (1.6 billion bytes).

Sperry offers a variety of magnetic tape drives in both 7- and 9-track models, with data transfer rates ranging from 34,160 to 1,250,000 bytes per second. Also available are six line printer models with speeds ranging from 760 to 2000 ▷

▶ In Canada: Sperry, Inc., 55 City Centre Dr., Mississauga, Ontario.

MODELS: 1100/91, 1100/92, 1100/93, and 1100/94.

DATE ANNOUNCED: July 14, 1982.

DATE OF FIRST DELIVERY: April 1984.

DATA FORMATS

BASIC UNIT: 36-bit word. In main storage, each word location includes four additional parity bits.

FIXED-POINT OPERANDS: One 36-bit single precision word. Addition and subtraction can also be performed upon 2-word (72-bit) double precision operands and upon 18-bit half-words and 12-bit third-words; the leftmost bit holds the sign in each case. Moreover, partial words of 6, 9, 12, or 18 bits can be transferred into and out of the arithmetic and control registers. The 1100/90 can also perform decimal addition and subtraction operations on 9-bit bytes, packed 4 to a word.

FLOATING-POINT OPERANDS: One word, consisting of 27-bit-plus-sign fraction and 8-bit exponent for single precision; or two words, consisting of 60-bit-plus-sign fraction and 11-bit exponent for double precision. The range for single precision is from 10 to the 38th power to 10 to the minus 38th power with 8-digit precision; for double precision, the range is 10 to the 307th power to 10 to the minus 308th power with 18-digit precision. The sign is the most significant bit in single precision (bit 35) and double precision (bit 71). Negative floating point numbers are represented by the ones complement of the entire corresponding positive floating point number. Single precision negative exponents are biased by 128, while double precision negative exponents are biased by 1024.

INSTRUCTIONS: One word, consisting of 6-bit Function Code, 4-bit Partial-Word or Immediate-Operand Designator, 4-bit Control Register Designator, 4-bit Index Register Designator, 1-bit Index Modification Designator, 1-bit Indirect Address Designator, and 16-bit Address Field. In Extended Instruction Set mode, the Address Field is 12 bits long, and a 5-bit Base Register Select Field and an 18-bit Index Register Format Selector Field are also included.

INTERNAL CODE: Sperry communications terminals and other I/O units can employ a 6-bit Fieldata code, EBCDIC, compressed code or standard ASCII code. The 1100 processors are not code-sensitive and can manipulate data in 6-bit, 9-bit, 12-bit, or 18-bit codes.

MAIN STORAGE

STORAGE TYPE: N-channel metal oxide semiconductor (MOS) using 64K-bit chips.

CAPACITY: From 2,097,152 words (8 million bytes) to 16,777,216 words (64 million bytes). Memory is divided into four independent 524,288-word or 1,048,596-word banks that can simultaneously service four different requests.

CYCLE TIME: 360-nanosecond double-word read/write cycle, 600-nanosecond partial-word and block (eight-word) read cycle, and 660-nanosecond block write cycle. Memory refresh takes 360 nanoseconds. Two- or four-way interleav- ▶

Sperry 1100/90 System

The *Log Analyzer* (LA) is designed to assist the user in monitoring the resource utilization of an 1100 Series system. The *Performance Analysis Routines* (PAR) package is a reporting system for data collected by the Software Instrumentation Package embedded in the operating system. The *On-Line System Activity Monitor* (OSAM) provides an on-line, real-time display of system activity. OSAM can be used in conjunction with LA and PAR.

APPLICATION PROGRAMS: The 1100 series application packages currently available from Sperry include:

APT (Automatically Programmed Tools)
ASET (Author System for Education and Training)
FMPS (Functional Mathematical Programming System)
GIFTS (Graphics-Oriented Interactive Finite-Element Time Sharing System)
ICES (Integrated Civil Engineering System)
OPTIMA 1100 (Project Management System)
SUFICS 1100 (Sperry Univac Financial Integrated Control System)
UNIDAS 1100 (Information Storage and Retrieval)
UNIFACS 1100 (Univac Financial Systems)
UNIS 1100 (Univac Industrial Systems); includes Bill of Materials Processor, Inventory Control, and Planning and Scheduling

PRICING

The 1100/90 is available for purchase or a one-year or five-year lease. All software except the operating system is unbundled. On-site service for operating system support can be obtained for a flat monthly fee. Support for unbundled software is separately priced. Sperry also offers a 7-year lease to state and local governments and to educational institutions. Educational institutions are eligible for an additional 10 percent discount. The discount does not apply to maintenance service charges.

CONTRACT TERMS: The standard Sperry use and service agreements allow unlimited use of the equipment (exclusive of the time required for remedial and preventive maintenance). There are no extra-use charges. The basic maintenance charge covers maintenance of the equipment for nine consecutive hours a day between the hours of 7 a.m. and 6 p.m., Monday through Friday. Extended periods of maintenance are available at premium rates. The premiums for additional coverage are a percentage of the base maintenance rate and are as follows:

Hours of Coverage

	4	8	9	10	12	16	18	20	24
Monday through Friday	—	—	100	105	110	115	120	125	130
Saturday	5	8	9	—	11	15	—	14	15
Sunday and Holidays	7	10	12	—	14	16	—	18	20

Maintenance service performed outside the contracted maintenance period is subject to the following rates:

	Monday through Friday	Saturday, Sunday and Holidays
Min. charge per call	$174	$198
Each addl. hour	87	99

Users who elect not to contract for maintenance with Sperry pay the same rates on a per call basis.

TRACE: Sperry has initiated a remote hardware maintenance concept through its facility in Roseville, Minnesota. The Total Remote Assistance Center (TRACE) is available to 1100/90 system customers via a dedicated WATS number 24 hours per day and seven days per week. Via TRACE, a user's system may be monitored and controlled using on-site and remote library testing programs. TRACE also provides support for a wide range of Sperry terminals connected to dial up lines. Various data files in Roseville contain information on approved hardware changes, references to solutions for problems encounted with diagnostic test software in field use, and operating system enhancements and problems. Other files contain a history of how the system should operate properly, and can be utilized for comparison purposes during diagnostic testing.

EQUIPMENT: The following systems illustrate two 1100/90 configurations. All necessary control units and features are included in the indicated prices, but software is not included. Quoted lease prices do not include maintenance charges.

1100/91 SYSTEM: Includes Processor Complex (CPU, cooling unit, MSU with 2 million words of main memory, IOP with 4 block multiplexer channels and 8 word channels, SSP, motor alternator, and master operator console), plus one 8470 Disk Subsystem with controller and 4 disk drives (1.6 gigabytes), a Uniservo 24 Magnetic Tape Subsystem with a controller and 6 tape units (1600/800 bpi), and one 1200-lpm 0776 Line Printer and control. Purchase price is $3,266,440 and the monthly charge on a five-year lease is $95,989.

1100/94 MULTIPROCESSOR SYSTEM: Includes Processor Complex (as above) plus 3 additional CPUs, 3 additional MSUs, and 8 one-megaword memory increments for a total of 16 million words, 3 additional IOPs, 7 additional block multiplexer channel modules, 4 additional word channel modules, one additional SSP, 3 operator consoles, an 8480 Disk Subsystem with 2 controllers and 4 disk drive units (6.4 gigabytes), a Uniservo 36 Magnetic Tape Subsystem with controller and 16 tape units (6250/1600 bpi), and two 2000-lpm 0770 Line Printers and controls. Purchase price is $12,916,147 and the monthly charge on a five-year lease is $313,094.

Sperry 1100/90 System

EQUIPMENT PRICES

| | | | Monthly Charges* | |
	Purchase	Monthly Maint.	1-Year Lease	5-Year Lease

PROCESSOR COMPLEX

3054-99	1100/91 Processor Complex; includes Instruction Processor (CPU) with cooling unit and power system, Main Storage Unit (MSU) with two million words of memory, I/O Processor with one 4-channel block multiplexer channel module and one 8-channel word channel module, a System Support Processor (SSP), a motor alternator, and a master operator console with CRT display, printer, system clock, and system panel	$2,865,660	$5,551	$115,625	$86,740
3054-87	Instruction Processor Expansion; maximum of three per 1100/90 system; 3rd IP in system requires addition of a motor alternator and an IPCU	1,829,293	3,168	44,611	33,467
F3378-00	Instruction Processor Performance Monitor; if used, one is required for each CPU in the system	5,000	11	202	151
3067-00	I/O Processor; provides cabinet, channel controller, and interfaces to main storage; includes one block MUX channel module and space for three additional block MUX or word channel modules in any combination; maximum of three per system	228,000	486	9,199	6,901
1954-01	Instruction Processor Cooling Unit; provides cooling for up to two IPs; required when three or more IPs are included in the configuration	68,000	145	2,744	2,058
K3675-00	Word Channel Module; eight word channels	60,000	128	2,421	1,816
K3676-00	Block Multiplexer Channel; four channels	60,000	128	2,421	1,816
O986-00	Inter-Processor Channel Coupler; interconnects an 1100 series system and a VS/9 system via block multiplexor or selector channels	20,000	55	440	375
F3953-00	FIPS I/O Compatibility; provides one block multiplexer channel with compliance to Federal Information Processing standard 60-1 for each channel for which compliance is necessary	3,000	6	121	91
1964-00	IOP/Expansion Cabinet; provides housing for two block multiplexers or word channel modules in any combination; one channel must be ordered	30,000	64	1,210	908
F3938-00	IOP Performance Monitor; if used one is required for each IOP in the system	5,000	11	202	151
7052-99	Main Storage Unit; provides cabinet interfaces, and 2M words of main storage in four banks; expands to 4M words by the addition of two F3125-00 storage expansions; maximum 16M words per system	270,000	575	10,894	8,173
K3125-00	MSU Storage Expansion; 1M words; maximum of two per MSU	80,000	170	3,228	2,422
4019-99	Operator Console; includes CRT display, keyboard, clock calendar, and printer; provides 37-inch high cabinets with work surface and storage; may be expanded by the addition of a console CRT expansion and up to four auxiliary consoles	75,000	160	3,026	2,270
3660-99	Console CRT Expansion; adds secondary display to operator console or 4019-96	2,500	5	101	76
3660-97	Auxiliary Console; attaches to operator console; maximum of three	6,500	14	262	197
O798-65	Auxiliary Console Printer; 200 cps	8,000	17	323	242
F3697-00	Transition/Storage Cabinet; 28 inches high; attaches to master console, or 4019-97/96, or F3699-01	—	—	—	—
F3697-01	Transition/Storage Cabinet; 37 inches high; attaches to master console, 4019-99/98, or F3699-03 and/or printer	2,556	—	103	77
F3699-00	Work Surface; 28-inch table, 36 inches wide	1,218	—	49	37
F3699-01	Work Surface; 28-inch table, 60 inches wide; attaches to console and/or F3697-00	1,518	—	61	46
F3699-02	Work Surface; 37-inch table, 36 inches wide	1,218	—	49	37
F3699-03	Work Surface; 37-inch table, 60 inches wide	1,518	—	61	46
1980-99	Remote Power Control; includes one subsystem power control (SPC), two IOP interfaces and an SSP interface	26,457	56	1,068	801
K3728-00	SPC Expansion; provides four control unit interfaces; may be expanded to 64 interfaces via F3729-00	16,000	34	646	484
K3729-00	SPC Interface Expansion; expands the number of control unit interfaces by 6; requires 1980-99 or K3728-00; maximum of 10 per SCP	1,600	3	64	48
K3947-00	SPC, SSP Interface; maximum of one F3947-00 per SPC	900	2	36	27
O985-00	Subsystem Access Unit (SAU); provides capability to control subsystem partitioning via commands from one or two SSP's	80,000	170	3,228	2,422
F3832-00	Subsystem Access Unit SPI Interface; provides an additional 32 SPI interface; maximum of three F3832-00 per SAU	11,850	25	478	359
F3833-00	SAU Byte Channel Transfer Switch Interfaces; provides interfaces to two BCTS units; maximum of two per SAU	10,000	21	403	303
F3834-00	SAU/SSP Interface; provides two additional interfaces to SSPs; maximum of one per SAU	10,000	21	403	303
8513-00	Motor Alternator; provides power to central complex; one required for configuration with three or more IPs; may also be used to provide redundant power	58,000	124	2,340	1,756
3058-92	System Support Processor; for multiprocessor application to provide for system partitioning and redundancy	90,000	192	3,631	2,724

MASS STORAGE

8407-00	8407 Diskette Subsystem; includes control unit and auto-load diskette drive; stores up to 20 one-megabyte diskettes	22,000	164	540	433
8407-02	8407 Diskette Drive; requires 8407-00	6,000	44	181	139
F3470-00	Translate Table; performs character translation; 512 bytes	3,640	19	109	82

*Lease charges do not include maintenance.

Sperry 1100/90 System

EQUIPMENT PRICES

		Purchase	Monthly Maint.	Monthly Charges*	
				1-Year Lease	5-Year Lease
5039-91	8433/8430 Control for up to eight 8430 or 8433 disk drives; minimum two disk drives per subsystem	27,000	408	1,577	769
F2047-00	Drive Expansion Feature for the 5039-91; provide for up to 16 8433/8430 drives to be attached to the 5039-91	5,760	56	211	137
8430-99	8430 Disk Drive; removable disk media; minimum of two drives per system	9,360	177	547	266
F1230-00	Disk Pack for the 8430-99; 17 million words	1,440	—	53	35
8433-00	8433 Disk Drive; removable disk media; minimum of two drives per system	13,680	258	798	389
F1223-00	Disk Pack for the 8433-00; 34 million words	1,820	—	66	43
F2342-00	Disk Drive Upgrade; converts 8430-99 to 8433-00	4,320	82	251	123
F2021-00	8433/8430 Dual Access Feature; provides dual access and simultaneous read/ read, read/write, write/read, or write/write on any two 8433-00 or 8430-99	1,630	5	59	39
5046-99	8430/8433/8434 Control; controls up to 16 8430, 8433 or 8434 disk drives; maximum 866M words of storage; requires minimum of two disk drives	38,250	555	2,525	1,231
5046-97	8430/8433/8434 Dual Control; for dual access subsystem operation; requires two channels	66,168	969	4,571	2,228
8434-99	8434 Disk Storage; provides two single-spindle disk drives with non-removable pack; 54.18M words per drive	66,600	314	2,439	1,583
F2561-00	32-Device Capability; allows up to 32 8430, 8433, or 8434 disk drives to be inter-mixed on one 5046-99 control; two required for 5046-97 dual control	7,680	56	211	137
F2021-99	8434 Dual Access; provides simultaneous read/write, read/read, write/read, and write/write on any two 8434 disk drives; requires 5046-97 dual control	2,688	19	64	48
F2555-00	Shared Peripheral Interface; provides an additional I/O interface for the 5046-99/97 controls	6,600	40	158	117
5046-95	8430/8433/8450 Control; provides control for up to 16 8450 disk drives and power for up to four sets of four drives of any type (i.e., 8430/8433 or 8450); requires minimum of two disk drives of the same type	51,000	555	2,462	1,231
5046-93	8430/8433/8450 Dual Control; two control units; each with the same characteristics and restrictions as the 5046-95 control; requires two F2838-00 8450 capability expansions or two F2720-00 8430/8433 capability expansions	88,224	969	4,334	2,228
F2838-00	8450 Capability Expansion; allows 5046-95 control to handle up to 32 8450 disk drives; requires F2837-00 power control expansion (excludes use of F2720-00 8430/8433 capability)	6,000	62	171	114
F2720-00	8430/8433 Capability Expansion; allows 5046-95 control to handle up to 16 8430 or 8433 disk drives (excludes use of F2838-00 8450 capability)	2,400	13	68	48
F2837-00	Power Control Expansion; required when total number of disk drives exceeds 16; two required for 5046-93 dual control	7,680	56	222	144
F2555-00	Shared Peripheral Interface; multiprocessor; allows 5046-95 to connect to two separate 1100 Series processors; two required for 5046-93 control	6,600	40	158	117
8450-99	8450 Disk Storage; provides two disk drives using non-interchangeable data module; 54M words of storage per drive	49,950	346	2,439	1,583
F2718-99	8450 Dual Access Feature; provides dual access and simultaneous read/write, read/read, write/read, and write/write on any two 8450 disk drives; requires two 5046 controls	2,304	19	64	48
5056-83	8470/8480 Disk Control	43,750	258	1,255	930
F2994-00	Four Channel Capability for 5056-83	6,472	37	188	138
F3192-00	8430/8433 Attachment; allows up to eight 8430/8433 drives on 5056 control unit; up to three are allowed	9,840	58	305	226
F3192-01	8450 Attachment; allows up to eight 8450 drives on 5056 control unit; uo to three are allowed	9,840	58	305	226
F3192-02	8470/8480 Attachment; allows up to eight additional 8470 or two 8480 drives on single control unit; up to three are allowed	3,200	21	105	78
F2837-00	Power Control Expansion; required on control unit when over 16 drives are configured	6,575	56	222	144
F3193-00	32-Drive Addressing	1,280	4	38	27
8470-99	8470 Disk Drive; 90M words of storage	27,360	119	809	599
F2718-00	8470 Dual Access Feature; provides dual access and simultaneous read/write, read/read, write/read, and write/write	1,920	17	57	42
8480-99	8480 Disk Storage Unit; contains four spindles with a total capacity of 360M; includes dual access feature	83,700	497	2,113	1,761
F2718-02	8480 Dual Access Feature; provides dual access and simultaneous read/write, read/read, write/read, and write/write	7,200	22	181	154
5057-95	Entry-Level Cache/Disk Control; manages up to four 7053 Cache Storage units and up to eight 8450/8470 or two 8480 disk units; 16 drives maximum	52,960	355	1,770	1,324

*Lease charges do not include maintenance.

Sperry 1100/90 System

> # EQUIPMENT PRICES

		Purchase	Monthly Maint.	Monthly Charges*	
				1-Year Lease	5-Year Lease
5057-97	Dual Medium Performance Cache/Disk Controls; dual access features required in disk units and 7053 units	105,920	710	3,540	2,648
5057-93	Dual High Performance Cache/Disk Controls; dual access features required in disk units and 7053 units	168,400	710	5,590	4,210
F3948-98	High Performance Upgrade; upgrades 5057-97 to 5057-93	62,480	—	2,050	1,562
F3567-00	8450 Capability Expansion; permits 16 8450 drives on cache/disk control; precludes 8470 drives	9,345	55	290	215
F3568-00	8470/8480 Capability Expansion; permits 16 8470 drives or four 8480 drives on cache/disk control; precludes 8450 drives; two required for dual processors	9,345	55	290	215
F2994-00	Four-Channel Capability; expands channel interface capability to four channels; two required for dual processors	6,472	37	188	138
7053-97	First Cache Storage Unit; provides 917,504 words of RAM; requires Segment Descriptor Table to operate in cache/disk mode	72,000	469	2,130	1,600
7053-96	Cache Storage Expansion Unit; 917,504 words or RAM; up to three per 5057 Control	72,000	469	2,130	1,600
F3117-02	Segment Descriptor Table; 64K words of RAM for cache memory index for 7053	8,200	30	275	250
K3351-00	7053 Memory Expansion; provides additional 917,504 words of RAM	36,000	185	1,065	800
F3118-00	Dual Access for 7053-97	4,416	15	138	123
F3118-01	Dual Access for 7053-96	4,416	16	138	123
5057-87	Semiconductor Auxiliary Storage (SAS); manages up to four 7053 units to be used only in solid-state disk mode	41,715	353	1,239	927
F4025-01	SAS Cache/Disk Upgrade; converts SAS unit to a 5057-95 cache/disk processor	11,245	—	531	397
F2837-00	Power Control Expansion; required when total number of disk drives exceeds 16; two required for 5046-93 dual control	6575	56	222	144
5040-91	8430/8433/8450 FIPS Control; connects via 1100 FIPS block multiplexer channel; controls up to 16 8450 disk drives with F2719-02 installed; eight 8450 and eight 8430/8433 drives with F2719-03 installed, or 16 8430/8433 drives with F2836-02 installed	76,500	555	2,700	1,800
5040-89	Dual Disk Control; same as 5040-91, but with two controls	132,336	969	5,015	3,260
F2719-02	8450 Capability/Conversion; provides 5040-91 or -89 with capability to control 16 8450 drives	132,336	969	5,015	3,260
F2719-03	8430/8433/8450 Capability/Conversion; provides 5040-91 or -89 with the capability to control up to eight 8430/8433 drives and eight 8450 drives	0	0	0	0
F2836-02	8430/8433 Capability/Conversion; provides 5040-91 or -89 with the capability to control up to 16 8430/8433 drives	0	0	0	0
8450-95	8450 Disk Storage; includes two drive units, each with 54M words of storage; conforms to FIPS 63, Class B	49,950	346	2,439	1,583
8450-93	8450 Disk Storage; same as 8450-95 but also includes 194K words of fixed-head storage	63,550	382	2,521	1,677
F2717-98	Fixed-Head Conversion; converts 8450-95 to 8450-93	13,600	34	264	211
F2717-03	8470 Conversion Package; converts 8470-99 to 8470-97	6,800	24	150	111

MAGNETIC TAPE UNITS

		Purchase	Monthly Maint.	1-Year Lease	5-Year Lease
5058-00	Uniservo 22 Subsystem; includes two Uniservo 22 tape drives and control for up to eight Uniservo 22 or Uniservo 24 drives	71,040	411	2,235	1,659
5058-02	Uniservo 22 Magnetic Tape Drives; includes two dual-density PE/NRZI drives; 1600/800 bpi, 9-track, 75 ips	47,040	267	1,386	1,029
5058-06	Uniservo 24 Subsystem; includes two Uniservo 24 tape drives and control for up to eight Uniservo 24 or Uniservo 22 drives	78,720	455	2,466	1,827
5058-08	Uniservo 24 Magnetic Tape Drives; includes two dual-density PE/NRZI drives; 1600/800 bpi, 9-track, 125 ips	54,720	311	1,617	1,197
F0825-00	Dual Channel Feature; provides non-simultaneous operation on two channels of one processor or one channel on each of two processors	4,272	34	110	89
F2627-00	Translation Feature; translation is ASCII/EBCDIC, fieldata/EBCDIC, or fieldata/ASCII	1,728	15	52	36
F2627-01	Second Translation Feature	1,728	15	52	36
F3820-00	Dual Access Feature	2,016	16	56	44
5055-99	Uniservo 26/28 Control; controls up to eight Uniservo 26 and 28 tape units; also controls Uniservo 22 and 24 tape units with F2451-00 installed	22,700	140	635	470
F2451-00	Adds 9-track NRZI to 5055-99	3,170	16	82	63
F3738-00	Dual Channel Feature for the 5055-99; provides non-simultaneous access to the control from two block multiplexer channels	1,000	4	34	25
F3739-00	Translation Feature; ASCII to/from EBCDIC	3,600	18	94	72
0884-00	Uniservo 26 Magnetic Tape Unit; dual-density GCR/PE, 6250/1600 bpi, 9-track, 75 ips	22,000	180	595	440
0884-02	Uniservo 28 Magnetic Tape Unit; dual-density GCR/PE, 6250/1600 bpi, 9-track, 125 ips	24,750	190	675	500

*Lease charges do not include maintenance.

Sperry 1100/90 System

> # EQUIPMENT PRICES

		Purchase	Monthly Maint.	Monthly Charges*	
				1-Year Lease	5-Year Lease
F3737-00	Dual Access Feature	900	5	27	20
5042-00	Uniservo 30 Control for up to eight 9-track, dual-density (GCR/PE) Uniservo 30, 32, 34, or 36 drives	36,214	399	1,290	953
F2131-00	Adds 9-track NRZI to 5042-00; prerequisite for Uniservo 30 drives and all 7-track NRZI features	3,171	26	88	66
F2585-00	Translation Feature for 9-track drives on 5042 control; translation is in both directions involving ASCII/EBCDIC, fieldata/EBCDIC, and fieldata/ASCII	1,785	15	49	38
F2585-01	Second 9-track Translator; F2585-00 required	1,785	15	49	38
F2584-99	Adds 7-track NRZI to 5042-00; includes ASCII to BCD translator and data conversion	1,617	13	44	34
F2584-98	Translator is ASCII to fieldata	1,617	13	44	34
F2584-97	Translator is fieldata to BCD	1,617	13	44	34
F2135-00	Dual Channel Feature for the 5042-00; provides non-simultaneous access to the control from two block multiplexer channels; not software supported	4,185	44	138	104
F2137-00	Drive Expansion Feature for the 5042-00; provides for up to 16 Uniservo 30, 32, 34, or 36 drives to be attached to the 5042-00	668	5	23	16
0872-00	Uniservo 30 Magnetic Tape Drives; 9-track, dual density, PE/NRZI, 1600/800 bpi, 200 ips	27,300	251	903	631
0872-02	Uniservo 30 Magnetic Tape Drive; 7-track, NRZI, 800/556/200 bpi, 200 ips	27,300	251	903	631
F2123-00	Conversion Feature; converts 0872-02 to 0872-00	3,287	—	91	68
0873-00	Uniservo 32 Magnetic Tape Drive; 9-track, dual-density, GCR/PE, 6250/1600 bpi, 75 ips	24,800	227	839	573
0873-02	Uniservo 34 Magnetic Tape Drive; 9-track, dual-density, GCR/PE, 6250/1600 bpi, 125 ips	28,300	261	962	654
F2125-00	Conversion Feature; converts 0873-00 to 0873-02	3,675	34	129	85
0874-00	Uniservo 36 Magnetic Tape Drive; 9-track, dual-density, GCR/PE, 6250/1600 bpi, 200 ips	29,500	279	1,031	700

PRINTERS

		Purchase	Monthly Maint.	1-Year Lease	5-Year Lease
0770-00	Line Printer and Control; 800 lpm with 48 character set	56,304	372	1,300	1,041
0770-02	1400 lpm	64,896	487	1,498	1,196
0770-04	2000 lpm	86,686	742	3,187	2,074
F1533-00	160 Print Positions for 0770 Series Printers	4,416	26	102	82
F1534-00	Expanded Character Set Control; required for other than 48-character print cartridges	2,880	5	66	53
F2230-00	Printer Upgrade; 0770-00 to 0770-02	8,592	116	198	155
F2230-01	Printer Upgrade; 0770-00 to 0770-04	30,382	249	1,159	559
F2230-02	Printer Upgrade; 0770-02 to 0770-04	21,790	133	961	404
F2822-00	Dynamic Advance Control; reduces slew rate by 50 percent to optimize stacking of light forms	300	—	8	7

Print Cartridges for 0770 Series Printers:

		Purchase	Monthly Maint.	1-Year Lease	5-Year Lease
F1536-00	48-character Alphanumeric Business/Commercial	462	—	24	19
F1536-01	48-character Alphanumeric Scientific	462	—	24	19
F1536-03	48-character Alphanumeric for United Kingdom	462	—	24	19
F1536-06	48-character ANSI standard OCR-A	462	—	24	19
F1537-00	94-character ASCII Graphic (ANSI X3.4-1968)	462	—	24	19
F1537-03	68-character ISO Universal OCR-B	462	—	24	19
F1537-04	68-character OCR H-14 Universal	462	—	24	19
F1537-05	58-character Cobol/Fortran/Business	462	—	24	19
F1537-06	177-character International	462	—	24	19
F1537-09	24-character Numeric	462	—	24	19
F1537-11	68-character Universal OCR-A	462	—	24	19
F1537-12	68-character Universal ECMA-11 OCR-B	462	—	24	19
F1537-13	68-character Universal Univac 77L OCR-B	462	—	24	19
F1537-14	63-character Modified Fortran	462	—	24	19
F1537-15	63-character Modified ASCII	462	—	24	19
F1537-19	384-character American Library Association	462	—	24	19
F1537-21	128-character OCR-A	462	—	24	19
F1537-23	94-character Optimized ASCII	462	—	24	19
F1537-24	68-character Optimized IOS Universal OCR-B (Cartridges are also available for languages other than English)	462	—	24	19
0776-00	Line Printer and Control; 760 lpm with 48-character set	36,570	284	1,006	803
0776-02	900 lpm	41,340	340	1,134	907
0776-04	1200 lpm	48,000	388	1,431	1,145
F2217-00	Printer Upgrade; 0776-00 to 0776-02	4,770	56	128	104
F2245-00	Expanded Character Set Control; required for character sets with more than 64 characters	1,910	5	50	40

*Lease charges do not include maintenance.

Sperry 1100/90 System

EQUIPMENT PRICES

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		Purchase	Monthly Maint.	Monthly Charges*	
				1-Year Lease	5-Year Lease
Print Cartridges for 0776 Series Printers:					
F2216-00	48-character Alphanumeric Business/Commercial	1,270	—	34	26
F2216-01	48-character Alphanumeric Scientific	1,270	—	34	26
F2216-07	24-character Numeraic	1,270	—	34	26
F2216-08	63-character Modified Fortran	1,270	—	34	26
F2216-09	63-character Modified ASCII	1,270	—	34	26
F2216-10	48-character OCR-A	1,270	—	34	26
F2215-00	94-character ASCII	1,270	—	34	26
F2215-03	68-character ISO Universal OCR-B	1,270	—	34	26
F2215-04	68-character OCR H-14 Universal	1,270	—	34	26
F2215-05	58-character Cobol/Fortran/Business	1,270	—	34	26
F2215-11	68-character Universal OCR-A	1,270	—	34	26
F2215-12	68-character Universal ECMA-11 OCR-B	1,270	—	34	26
F2215-13	68-character Universal Univac 77L OCR-B	1,270	—	34	26
F2215-20	94-character Optimized ASCII	1,270	—	34	26
F2215-21	68-character Optimized ISO Universal OCR-B	1,270	—	34	26
F2215-23	128-character OCR-A	1,270	—	34	26
0777-97	On-Line Laser Printer, Model I; up to 21,000 lpm; includes controller, disk drive, PE tape drive, CRT console, forms splicing station, and diskette with 15 character sets	270,000	950	—	8,283
0777-87	On-Line Laser Printer, Model II; same as 0777-97 but includes two diskettes with 15 character sets each	284,500	872	8,732	6,615
F3380-00/-01	Additional Character Sets; for 0777-97	30	—	—	—
F2874-00	Character Font Expansion; up to 255 characters; for 0777-97	3,640	17	109	82
F3815-00	Character Font Expansion; up to 255 characters; for 0777-87	3,640	17	109	82
F3816-00	Character Font Expansion; up to 1024 characters; for 0777-87	14,560	78	500	344
F3816-02	Character Font Expansion; up to 3200 characters; for 0777-87	43,680	235	1,500	1,033
F3816-99	Character Font Upgrade; expands an 0777 printer with 1024-character font storage to 3200-character font storage	29,120	157	1,000	689
F3816-98	Character Font Expansion; same as F3816-00, but for field installation only on 0777-97	14,560	78	500	344
F3816-97	Character Font Expansion; same as F3816-02, but for field installation only on 0777-97	43,680	235	1,500	1,033
F3935-XX	Alternate Developer Station; for 0777-97	14,500	24	810	613
F2876-00	Forms Overlay Capability	11,700	34	352	261
F3426-00	Overlay Transparencies	35	—	—	—
1963-00	Burster/Trimmer/Stacker	40,196	181	1,278	900
F3595-00	Forms Counter for 1963-00	1,580	5	40	34
F3598-00	Center Slitter for 1963-00; provides lengthwise separation of forms	900	11	21	18
F3601-00	One-Wide Roll Imprinter; for special printing on forms before bursting; requires 1963-00	1,060	27	25	21
F3601-01	Two-Wide Roll Imprinters; same as F3601-00, but provides two-wide printing	1,520	270	45	38

PUNCHED CARD EQUIPMENT

		Purchase	Monthly Maint.	1-Year Lease	5-Year Lease
0604-99	Card Punch and Control; 250 cpm	31,968	251	664	536
0716-89	Card Reader and Control; 1000 cpm; comes with code translator; EBCDIC, ASCII, compressed code, or fieldata code	15,545	179	445	322
F1487-00	51-Column Card Read Feature	1,968	17	45	32
F1487-01	66-Column Card Read Feature	1,968	17	45	32
F1488-00	Validity Check	816	—	18	14
F1498-00	Stacker Feature; permits the alternate filling of stackers one and two when in the stop-on-error mode	528	—	12	8
F1486-00	Translate Mode conversion; from EBCDIC to ASCII	105	—	—	—
F1486-01	Compressed Code to ASCII	105	—	—	—
F1486-02	ASCII to EBCDIC	105	—	—	—
F1486-03	Compressed Code to EBCDIC	105	—	—	—
F1486-04	ASCII to Compressed Code	105	—	—	—
F1486-05	EBCDIC to Compressed Code	105	—	—	—
F1486-06	To Fieldata Code	100	—	—	—
F1530-00	Adds a second translator to translate mode under program control	1,104	5	25	18

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Sperry 1100/90 System

EQUIPMENT PRICES

		Purchase	Monthly Maint.	Monthly Charges*	
				1-Year Lease	5-Year Lease

DISTRIBUTED COMMUNICATIONS PROCESSORS

		Purchase	Monthly Maint.	1-Year Lease	5-Year Lease
8597-98	Distributed Communications Processor/20 (DCP/20) Model I; preconfigured system including processor with 384K bytes of memory, integrated flexible disk sub-system, free-standing 8406 flexible disk and F3145 expansion, active line indicator, 1100 Series ISI host interface, and 8-bit parallel interface; accommodates up to 13 line modules; requires UTS 20 or UTS 400 console on a communications line module	46,980	249	1,242	991
8597-99	DCP/20; includes processor with 256K bytes of memory, operator panel, and maintenance panel; provides mounting for 16 line modules, requires integrated flexible disk and controller plus free-standing flexible or cartridge disk; also requires a UTS 20 console or a UTS 400 attached to a communications line module	29,040	145	756	605
8597-01	DCP/20 Free-standing Expansion Cabinet; contains processor capable of performing I/O functions only; provides mounting for eight line modules; requires F1936-00 in basic cabinet; maximum of two per DCP/20 system	24,000	119	625	500
F3539-00	128K-byte Memory Increment; maximum of two per DCP/20	4,500	24	131	105
F3539-99	256K-byte Memory Increment; maximum of one per DCP/20	8,650	48	225	180
F2894-00	Line Module Expansion; provides for an additional eight line modules in 8597-01	12,000	60	460	250
F2895-00	Active Line Indicator; provides a visual display of line activity on up to 16 half-/full-duplex communications lines	890	4	25	20
F1949-00	8-bit Parallel Interface for 8406-04	1,045	4	30	25
8596-95	Distributed Communications Processor/40 (DCP/40) Model I; preconfigured system including processor with 512K bytes of memory, integrated flexible disk sub-system, free-standing cartridge disk and control, 1100 Series interface, 16-bit parallel interface, and active line indicators; accommodates up to 11 communications line modules; requires UTS 20 or UTS 400 console on a communications line module	117,439	664	3,033	2,383
8596-87	DCP/40 Model II; includes same components as Model I except accommodates up to 27 communications line modules; includes second IOP	133,319	749	3,448	2,713
8596-96	DCP/40; includes processor with 512K bytes of memory, I/O controller module, IOP, and control storage; requires integrated flexible disk plus free-standing cartridge disk and communications line module; also requires a UTS 20 console or a UTS 400 attached to a communications line module	84,245	452	2,195	1,755
K1930-01	512K-byte Memory Increment; three may be added to 8596-96; additional memory uses 1945-00	15,600	126	410	325
1945-00	DCP/40 Free-standing Expansion Cabinet; contains power supply and power controller; accommodates up to four IOPs or three storage banks of up to 512K bytes each; maximum of three per system, only one of which may contain storage	27,060	146	705	565
F2942-00	Storage Controller; supplied with 128K bytes of memory; mounts in 1945-00; up to two F1929-99 and nine 128K-byte memory modules may be added	26,880	145	700	560
F1929-99	Storage Controller Expansion; includes 128K bytes of memory; provides control for 512K bytes of memory; required for storage banks three and four; mounts in F2942-00	13,950	77	365	290
F1933-00	IOP Controller Module; mounts in 1945-00; includes IOP and space for three additional IOPs and storage port expander	14,680	78	380	305
F2941-99	Second IOP Expansion; provides second IOP for 8596 or 1945-00; includes power for two more IOP expansions	14,920	81	390	310
F1932-99	Third IOP; mounts in 1945-00 or 8596; includes storage port expander	14,185	75	370	295
F1932-98	Fourth IOP; mounts in 1945-00 or 8596	10,635	57	280	220
F1928-00	Operator Station; work surface for local console and free-standing flexible disk unit	1,200	—	30	25
F1825-05	Active Line Indicator; provides a visual display of line activity on up to 16 communications line modules on an IOP; mounts on top of cabinet containing IOP Features for the DCP/20, and DCP/40:	960	4	25	20
F1939-00	Integrated Flexible Disk Subsystem for DCP/20 and DCP/40; includes 256K-byte flexible disk and controller; mounts in 8496-96 or 8597-99; one required	1,920	12	50	40
F1936-00	DCP/20-DCP/40 Storage Port Expander, provides a multiplexed interface to a single local storage access port for up to four requestors; required on DCP/20 when using Expansion cabinet	3,550	19	95	75
F1946-02	1100 Series ISI Interface; provides a full-duplex ISI interface to a word channel; maximum of two per DCP/20 cabinet or four per DCP/40 cabinet	4,000	23	105	85
F1947-00	Series 90 Byte Interface; provides interface to Series 90 byte or block multiplexer channel; maximum of one per DCP/20 cabinet or two per DCP/40 cabinet	4,000	23	105	85
F1948-01	16-bit Peripheral Interface; provides interface to a peripheral subsystem; allows operation in 8- or 16-bit mode	3,000	16	80	65

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Sperry 1100/90 System

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EQUIPMENT PRICES

		Purchase	Monthly Maint.	Monthly Charges*	
				1-Year Lease	5-Year Lease
F1941-00	Full-Duplex Interface to Asynchronous Data Sets; conforms to EIS RS-232-C and CCITT V.24 and V.28; data set rates up to 2400 bps	960	3	25	20
F1942-00	Full-Duplex Interface to Synchronous Data Sets; conforms to EIA RS-232-C and CCITT V.24 and V.28; data set rates up to 9600 bps	960	3	25	20
F3163-00	Full-Duplex Interface to Synchronous or Asynchronous Modems; conforms to EIA RS-232-C and CCITT V.24 and V.28; operates with Bell DDS up to 9600 bps or at data set rates up to 19,200 bps	1,275	8	35	30
F3163-01	Full-Duplex Interface to Public Data Networks; conforms to CCITT X.21 and X.25; operates at rates up to 19,200 bps	2,500	14	63	50
F3163-04	Full-Duplex Interface to Synchronous Modems; conforms to RS-449; up to 9600 bps	1,920	11	50	40
F3164-00	Full-Duplex Interface to Bell 303 Modem; up to 64K bps	7,200	38	188	150
F3164-01	Full-Duplex Interface to Carrier Facilities; conforms to CCITT V.35; operates with UDLC protocol data formats (64K bps), V.35 facilities (48K bps), and Bell DDS and DSDS facilities (56K bps)	3,745	21	100	80
F3165-00	Multi-Line Asynchronous Line Module; provides full-duplex interfaces to up to four data sets; conforms to RS-232-C and CCITT V.24 and V.28; up to 2400 bps	2,880	14	75	60
F3835-00	Remote Partitioning Capability; maximum of one on DCP/20 or four on DCP/40	960	5	25	20
F1945-00	Auto Dialing Line Module; interfaces to Bell 801 Automatic Calling Units or those conforming to CCITT V.24 and V.25	1,005	4	25	20
		1,005	4	25	20
8590-00	Remote Control Module (RCM); provides the capability to control power on/off and other functions of up to four DCP/20 or DCP/40 processors; requires F1937-00, F3163-00 or F3163-04 and/or one or two F3556-00, and F3557-00	13,526	61	355	280
F1937-00	Remote Control Adapter; provides interface between RCM and DCP/20 or DCP/40	1,824	11	48	38
2523-00	Line Switch Module (LSM); provides the capability to switch communication lines and/or peripherals from a local or remote source; requires one switch feature; up to six switch features supported	28,750	112	748	597
1962-00	LSM Auxiliary Cabinet; provides mounting for up to 10 switch features	6,872	39	197	143
F3557-00	RCM/LSM Microcode	350	1	9	7
F3556-00	RCM/LSM Local Control Interface; provides one loadable line module for the RCM and LSM and one for the DCP	3,600	16	95	75
F3105-00	Modem Expander; enables a second RCM or LSM to share a single RS-232-C modem	1,440	4	38	30
F3109-00	RS-232-C Switch; provides the capability to switch eight RS-232-C communications lines from one communications controller to another	4,930	22	132	102
F3110-00	CCITT V.35 Switch; up to eight lines	9,325	43	245	195
F3112-00	RS-449 Switch; up to four lines	6,000	27	156	125
F3113-00	16-bit Parallel Interface Switch; up to four interfaces (for DCP/20 and DCP/40)	7,200	33	188	150
F3559-00	Bell 303 Switch; up to four lines	16,800	82	440	350
8406-04	Free-Standing Flexible Disk Drive for DCP/20; requires 8-bit parallel interface	3,600	22	103	79
F3145-00	Diskette Expansion; provides second 8406-04 drive	2,160	11	61	47
8408-02	Cartridge Disk Control; controls up to two F2380 drives	5,564	32	139	104
F2380-04	Fixed/Removable Cartridge Disk Drive; five megabytes fixed, five megabytes removable	17,750	124	439	314
F2187-00	Second I/O Interface for dual F2380 configuration	1,568	9	39	29
0871-01	Uniservo 10 Magnetic Tape Unit; PE/NRZI, 1600/800 bps, 25 ips	13,962	93	318	239
F2721-00	Uniservo 10 Controller; controls up to two drives	10,320	56	284	215
F2879-00	AC Power Switch; provides remote control of second Uniservo 10	1,200	5	32	25
3560-93	UTS 20 DCP Console; includes 12-inch CRT, keyboard, and communications interface	3,225	33	128	97
0797-99	Printer; 80 cps; connects to DCP/20 or DCP/40	1,500	29	84	63
0798-99	Printer; 200 cps; bidirectional; connects to UTS 20	6,650	70	188	156

*Lease charges do not include maintenance.

SOFTWARE PRICES

System Processors

		Monthly Lease Charge
6163-98	Terminal Security System	$ 189
6167-98	Sentry Security Control Processor	635
6158-98	Quota Input Processor (QUIP)	189
6162-98	Checkpoint/Restart	126
6133-98	Data Processor	63

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Sperry 1100/90 System

SOFTWARE PRICES

		Monthly Lease Charge
Utility Processors		
6271-98	CULL Processor	25
F3859-98	Interactive CULL (IACULL)	25
6203-98	Fault Location of Interpretive Testing (FLIT)	116
6135-98	Sort/Merge	126
6246-98	Log Analyzer	120
6161-98	Performance Analysis Routines	252
6274-98	On-Line System Activity Monitor (OSAM)	250
Communications Processing		
6169-89	Communications Management System (CMS) 1100 DCP/20	500
6169-90	CMS 1100 DCP/40	600
6159-98	Processor Common Communications System (PCCS)	126
6136-95	DCP/20 Operating System	100
6136-01	DCP/40 Operating System	165
6136-00	DCP/40 DCP Emulate Operating System	114
6144-00	DCP/40 MCC Emulate Operating System	95
6276-00	BSC 3270 Terminal Handler	150
Data Base/Transaction Processing		
6292-98	Universal Data System (UDS) 1100 Control	250
6700-98	UDS Data Management System (DMS) 1100	1,200
6296-98	UDS Processor Common Input/Output System (PCIOS)	100
6293-98	UDS Relational Data Management System (RDMS) 1100	1,500
6299-98	UDS Data Dictionary System	750
6177-98	Define File Processor	63
6175-96	Integrated Recovery Utility (IRU)	383
6175-95	IRU Version II	400
6175-94	IRU Version III	600
6291-98	File Administration System (FAS)	300
6155-98	Data Management System (DMS) 1100	956
6176-98	Data Dictionary	383
6152-98	Processor Common Input/Output System (PCIOS)	63
6283-00	Transaction Interface Package (TIP)	1,500
6244-98	Information Management System (IMS) 1100	195
6237-98	Display Processing System (DPS) 1100	289
End User Products		
6146-97	Mapper 1100	978
6290-98	Advanced Information Service (Advise) 1100	300
6157-96	Query Language Processor (QLP) 1100	383
6156-98	Remote Processing System	252
Interactive Processing		
6170-98	Conversational Time-Sharing System (CTS) 1100	275
6147-98	High-Volume Time-Sharing (HVTS)	635
6262-98	Interactive Processing Facility (IPF) Command Language	275
6260-98	IPF Control	200
6263-98	IPF Procedures	350
6245-98	Edit 1100	290
6264-98	User Assistance	75
6261-98	Distributed Data Processing (DDP) 1100	100
Language Processors		
6165-98	General Syntax Analyzer	110
6172-98	APL 1100	509
6171-98	UBasic	126
6178-98	UBasic Syntax Analyzer	63
6153-98	ASCII Cobol	252
6149-98	Cobol Syntax Analyzer (BCOB)	126
6154-98	ASCII Fortran	383
6150-98	Fortran Syntax Analyzer (BFTN)	126
6151-98	PL/1	252
6164-98	RPG 1100	126
6251-97	RPG II Group	130
6160-98	MACRO	126
6294-00	Meta-Assembler (MASM)	1,000
6239-98	Programmers Advanced Debugging System (PADS) 1100	210
6251-98	Requirements and Development Processor (RDP)	1,000

Sperry 1100/90 System

➤ ## SOFTWARE PRICES

Miscellaneous Products

F3791-98	Univac Printer Interface Software (UPRINTS); provides interface to 0777 Printer	200
F3793-98	Cache Disk Interface Software (CADIS)	400
F3790-00	Compatible Channel Interface Software (COMPCIS)	400
6704-99	1100/91 Programming Aids/Extended Support Services (ESS)	925
6704-98	1100/92 Programming Aids/ESS	1,300
6704-97	1100/93 Programming Aids/ESS	1,500
6704-96	1100/94 Programming Aids/ESS	1,620■