

Mainframes: Comparison Columns



In this report:

Vendors -302

Comparison Column
Entry Descriptions -303

Small-Scale
Mainframes..... -305

Medium-Scale
Mainframes..... -308

Large-Scale
Mainframes..... -312

Synopsis

Editor's Note

The mainframes listed in the comparison columns in this report have been divided into three categories: small-scale, medium-scale, and large-scale systems. This arrangement makes it easier to compare systems in the same performance range. For more detailed information on these mainframes, see the individual product reports in this volume. Report 70C-000DJ-101 takes a look at the mainframe vendors and the large system market. Mainframe technology is discussed in Report 70C-000DJ-201.

The Comparison Column Entry Descriptions list the entries in the order in which they appear in the columns. The accompanying text briefly explains the entries. Consult the entry descriptions before reading the comparison columns to become familiar with the information.

All information in the comparison columns was furnished by the vendors whose systems are represented. When a vendor did not provide information for a specific entry, we have filled in the appropriate line with "Vendor did not specify."

To aid the reader in obtaining additional information, we have listed the full names, addresses, and telephone numbers of the 12 vendors whose systems are summarized in the comparison columns.



Vendors

Amdahl Corp.

1250 E. Arques Avenue
Sunnyvale, CA 94086 (408) 746-6000

Bull HN

300 Concord Road
Billerica, MA 01821 (508) 671-6000

Control Data Corp.

8100 34th Avenue S.
Minneapolis, MN 55440 (612) 853-8100

Digital Equipment Corp. (DEC)

146 Main Street
Maynard, MA 01754-2571 (508) 493-5111

Hewlett-Packard Co.

Business Computing Systems

19091 Pruneridge Avenue
Cupertino, CA 95014 (800) 752-0900

Hitachi Data Systems

750 Central Expressway, P.O. Box 54996
Santa Clara, CA 95054-0996 (408) 970-1000

International Business Machines Corp. (IBM)

Old Orchard Road
Armonk, NY 10504

Contact your local IBM representative.

International Computers Ltd. (ICL)

415 E. Airport Freeway, Suite 100
Irving, TX 75062 (214) 258-8525

NCR Corp.

1700 S. Patterson Boulevard
Dayton, OH 45479 (513) 445-4145

Siemens Information Systems, Inc.

5500 Broken Sound Boulevard
Boca Raton, FL 33487 (305) 994-8800

Tandem Computers, Inc.

19191 Valco Parkway, LOC 4-40
Cupertino, CA 95014-2525 (408) 285-6000

Unisys Corp.

P.O. Box 500
Blue Bell, PA 19424 (215) 542-4213

Mainframes Comparison Column Entry Descriptions

Models

This entry lists the models or model groups in a manufacturer's series.

System Characteristics

Number of CPUs. This is the number of central processing units (CPUs) that can be supported at one time by a system. While multiple CPU systems require more complex operating systems, their capabilities are greater than single-CPU systems.

Number of I/O Processors. Because of high input/output (I/O) demands, manufacturers are using dedicated input/output processors to meet peripheral requirements.

Plug Compatible with. Identifies IBM or other systems with which the mainframe is interchangeable without modification. Compatibility may be via hardware and/or software.

Main Storage

Main storage or memory in a computer is usually the fastest and most accessible storage in the system and the one from which most instructions are executed.

Type. The different types of memory and the capacity of the memory chip used in the system.

Cycle Time. The time interval which is needed between the initiation of two successive, independent memory operations is stated in nanoseconds.

Access Time. This entry refers to the time in nanoseconds to read out any randomly selected word in memory.

Minimum Capacity. The basic main memory capacity included in the system.

Maximum Capacity. The total amount of main memory the system can hold.

Increment Size. A designated fixed increment to expand main memory.

Expanded Storage. Additional memory for system use only to reduce paging and swapping loads.

Cache Storage Type. This entry lists the type of cache or buffer memory.

Cycle Time. The time interval required between two successive cache or buffer operations.

Minimum Capacity. Lists the minimum cache or

buffer storage included with the system.

Maximum Capacity. Specifies the total amount of cache or buffer memory the system can hold.

Increment Size. Refers to the designated fixed increment to expand cache memory.

Central Processor Relative Performance, MIPS. Millions of instructions per second (MIPS) is a relative, not absolute, CPU performance measurement. When a MIPS rating is not available, the Relative Performance Measurement (RPM) supplied by the vendor is listed. For transaction processing systems the transactions per second are listed.

Machine Cycle Time. The time interval in which the CPU performs a number of operations. It is the time required to change the information in a set of registers. The internal cycle time may be synchronous or asynchronous (fixed or variable).

Word Length. The number of binary elements or bit strings considered as an entity and handled by the CPU. Generally, the longer the word length, the greater the CPU efficiency.

Input/Output Control Integrated I/O Channels. Normally in an integrated I/O processor that contains and controls channels. The channels can generally be configured

for either byte- or block-multiplexer operation.

Other I/O Channels. The types of channels available are selector and multiplexer channels. Channel units are increasingly becoming small, programmed processors to permit extension of the channel functions. For example, the Unisys A and V systems use micro-programmed data link processors (DLPs).

Maximum I/O Data Rate. The maximum speed at which data can be transferred to or from main storage.

Communications Maximum Number of Lines. The number of data communications lines supported by the system. If more than one model is represented in the column, a range is given.

Synchronous, speed. This implies that all equipment in the system is in step. That is, the data characters and bits are transmitted at a fixed time interval. Transmission speed is stated in bits per second (bps).

Asynchronous, speed. This implies there is no regular time relationship as with synchronous. The time intervals may be of unequal length. It is also stated in bps.

Protocols Supported. This entry indicates which of the common data communications protocols are supported. A protocol is a

set of conventions on the format and contents of messages to be exchanged.

Network Architecture Supported. The standardized data communications network architectures supported by a system are listed.

Peripheral Equipment Most mainframe vendors offer a variety of peripheral equipment. Summarized in the comparison columns are disk drives, tape drives, printers, and additional peripherals, if they are available from the vendor.

Disk Drives. This entry lists the minimum and maximum capacities of the disk drives supported by the system.

Magnetic Tape Drives. The most common encoding methods are Phase Encoded (PE) or Group Coded Recording (GCR). Minimum and maximum tape speeds are listed in inches per second (ips); in some cases the recording density is also listed.

Line Printers. Minimum and maximum speeds of printers available for the system are listed in lines per minute (lpm).

Other Peripheral Devices Supported. Listed here are other types of equipment available which can be attached to the system, including OCR, card equipment, plotters, and terminals.

Software All manufacturers, except the plug-compatible vendors, offer their own operating systems. Most of the vendors also offer database management systems (DBMSs), other systems software, and applications software.

Operating Systems. The systems software that controls the overall operation of a computer. Some vendors offer multiple operating systems for their mainframes.

Programming Languages. The major programming languages are Cobol, Fortran, Basic, and PL/1. Some systems use a proprietary language available from the vendor for the particular system.

Database Management System. The DBMS organizes data elements in some predefined structure and keeps track of the relationships among

the data elements, facilitating information retrieval and report generation.

Pricing and Availability Purchase Price, Basic System. This entry provides a price range for a basic system and is not intended to represent all of the configurations possible. Prices are only intended to give readers an indication of whether the power they are considering falls into the low, medium, or high ranges. In some cases, systems will cross ranges depending on how they are configured. For a detailed breakdown, the reader is referred to the system reports indicated at the bottom of each column.

Competitively, system prices tend to cluster themselves. There may be some apparent discrepancies in systems screened, but this is generally attributed to what a manufacturer includes as part of the basic system price. The reader is cautioned to use a price range only for the initial screening of systems.

Monthly Maintenance, prime shift. This normally includes manufacturer

service for a five-day workweek. An additional charge is normally made for 7-day, 24-hour service.

Monthly Rental, 1-year lease. The manufacturer's charge for a basic system on a monthly basis. If maintenance service is not included, it is indicated.

Purchase Price of Memory Increments. Purchase price for the memory increment that is listed under the *Main Storage* heading.

Date of First Delivery. The date when the first production model was delivered (or is scheduled to be delivered) to a customer.

Comments This final entry is used for optional or standard features that are available, but not covered, in the preceding entries.

Manufacturer and System	Bull HN DPS 7000	Bull HN DPS 7000	Bull HN DPS 7000	Control Data Cyber 900
Models	230, 240, 250, 260, 270	340, 360, 380	7000/A1, 7000/A2, 7000/A3	932-11, 932-31, 932-32
System Characteristics				
Number of CPUs	1, 2 (270)	2 - 4	1 - 2	1 - 2
Number of I/O Processors	4	4 optional	1 - 4	5
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit CMOS	1M-bit CMOS	1M-bit CMOS	1M-bit DRAM
Cycle Time, nanoseconds	300	300	300	96
Access Time, nanoseconds	250	250	250	400
Minimum Capacity, bytes	8M	16M - 32M	16M	8M - 16M
Maximum Capacity, bytes	16M - 32M	16 - 64M	32M - 64M	128M
Increment Size, bytes	8M	16M	8M	8M, 16M, 64M
Expanded Storage	Not applicable	Not applicable	Not applicable	Not applicable
Cache Storage				
Type	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	256K per CPU	256K per CPU	256K per CPU	32K per CPU
Maximum Capacity, bytes	256K per CPU	256K per CPU	256K per CPU	32K per CPU
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	0.65 to 3.8	4, 6, 7.6	8, 11, 19 transactions/sec.	2 to 5.6
Machine Cycle Time, nanoseconds	80	80	80	50
Word Length, bits	32	32	32	64
Input/Output Control				
Integrated I/O Channels	Vendor did not specify	2	Not applicable	3
Other I/O Channels	3 - 8	8 - 24	4 (A1)	3
Maximum I/O Data Rate, bytes/sec.	1.25M, 2.5M	1.25M, 2.5M	1.25M, 2.5M	3M
Communications				
Maximum Number of Lines	Configuration dependent	Configuration dependent	12 - 16	Loosely coupled network
Synchronous, speed	Vendor did not specify	Vendor did not specify	4 (A1)	128K bps
Asynchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	38.4K bps
Protocols Supported	HDLC, X.25	HDLC, X.25	HDLC, X.25, TCP/IP	HDLC, X.25
Network Architectures Supported	DSA	DSA, Ethernet, SNA	DSA, SNA, Ethernet	CDCNet, SNA, DECnet
Peripheral Equipment				
Disk Drives	500MB - 2,000MB	500MB - 2,000MB	100MB - 3.5GB	414MB - 16GB
Magnetic Tape Drives	PE/GCR, 25 - 175 ips	PE/GCR, 25 - 175 ips	PE/GCR, 25 - 175 ips	PE/GCR, 25 - 200 ips
Line Printers	650 - 1,200 lpm	650 - 1,200 lpm	650 - 1,200 lpm	300 - 2,000 lpm
Other Peripheral Devices Supported	Terminals	Terminals	Terminals, communications processors	Workstations, optical storage
Software				
Operating Systems	GCOS 7-AS	GCOS 7-ASL	GCOS 7	NOS/VE
Programming Languages	Basic, Cobol, Fortran, APL, Pascal, GPL, PL/1, RPG II	Basic, Cobol, Fortran, APL, Pascal, GPL, PL/1, RPG II	Basic, Cobol, Fortran, APL, Pascal, GPL, PL/1, RPG II	Basic, Cobol, Fortran, APL, Pascal, C, Lisp, Prolog, Cybil, Ada/VE
Database Management System	I-D-S/II, Oracle	I-D-S/II, Oracle	I-D-S/II, Oracle	IM/DM
Pricing and Availability				
Purchase Price, basic system, \$	98,000 to 197,100	250,000, 360,000, 498,000	84,500, 128,000, 220,000	59,900, 125,900, 213,800
Monthly Maintenance, prime shift, \$	510 to 525	550, 640, 810	Contact vendor	350, 550, 960
Monthly Rental, 1-year lease, \$ (including maintenance)	Not available	Not available	Contact vendor	Not available
Purchase Price of Memory Increments, \$	14,000 (8MB)	14,000 (8MB)	Contact vendor	8,000 (8MB)
Date of First Delivery	6/89	9/89	4/90	16,000 (16MB) 7/88
Comments				
	Ref.: 70C-115JE-301	Ref.: 70C-115JE-301	Ref.: 70C-115JE-301	Ref.: 70C-238MM-401

Manufacturer and System	International Business Machines Corp. ES/9370	International Business Machines Corp. 9370	International Business Machines Corp. ES/9370	International Business Machines Corp. ES/9370
Models	9370 Models 10, 12	9373 Models 25, 30 9375 Models 50, 60,	9377 Models 80, 90	9370 Model 14
System Characteristics				
Number of CPUs	1	1	1	S/370 and PS/2 processors
Number of I/O Processors	Not applicable	Not applicable	Not applicable	Not applicable
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	Vendor did not specify	1M-bit chip	1M-bit	Vendor did not specify
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	4M	4M - 8M	8M	4M (S/370); 2MB (PS/2)
Maximum Capacity, bytes	16M	16M	16M	16M (S/370); 16M (PS/2)
Increment Size, bytes	4M	4M, 8M	8M	4M (S/370); 2M, 4M (PS/2)
Expanded Storage	Not available	Not available	Not available	Not available
Cache Storage				
Type	Not applicable	Vendor did not specify	Vendor did not specify	Not applicable
Cycle Time, nanoseconds	Not applicable	Not specified	Vendor did not specify	Not applicable
Minimum Capacity, bytes	Not applicable	16K, Model 60 only	16K (Model 90)	Not applicable
Maximum Capacity, bytes	Not applicable	16K, Model 60 only	16K (Model 90)	Not applicable
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	Vendor did not specify	1.0 to 3.0	3.9, 4.5-5.2	Vendor did not specify
Machine Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Word Length, bits	32	32	32	32
Input/Output Control				
Integrated I/O Channels	IBM Micro Channel System/370 emulation	2 (9373); 4 (9375)	4 - 6	IBM Micro Channel (S/370)
Other I/O Channels	Not specified	Not applicable	Not applicable	Peripheral adapters
Maximum I/O Data Rate, bytes/sec.	Not specified	1.5M to 3M	1.5M to 3M	1.5M to 3M
Communications				
Maximum Number of Lines	Configuration dependent	Configuration dependent	Configuration dependent	Configuration dependent
Synchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Asynchronous, speed	600 bps to 64K bps	75 bps to 64K bps	75 bps to 64K bps	75 bps to 64K bps
Protocols Supported	BSC, HDLC, SDLC, X.25/HDLC	BSC, HDLC, SDLC, X.25	BSC, HDLC, SDLC, X.25	BSC, HDLC, SDLC, X.25
Network Architectures Supported	SNA, IBM Token-Ring	SNA, IBM Token-Ring	SNA, IBM Token-Ring	SNA, IBM Token-Ring
Peripheral Equipment				
Disk Drives	368MB - 1.2GB	368MB - 3.78GB	368MB - 3.78GB	368MB - 1.2GB
Magnetic Tape Drives	PE/GCR, 12 - 125 ips	40KBS - 1250KBS; 3M (cart.)	40KBS - 1250KBS; 3M (cart.)	PE/GCR, 25 - 125 ips
Line Printers	325 - 2,200 lpm	325 - 4,000 lpm	325 - 4,000 lpm	325 - 2,200 lpm
Other Peripheral Devices Supported	Terminals	Terminals	Terminals	Terminals
Software				
Operating Systems	VSE/SP, VM/IS, VM/SP, DPPX/370	VM/SP, VM/IS, VM/XA, MVS/SP, MVS/XA, DPPX/370	VM/SP, VM/IS, VM/XA, MVS/SP, MVS/XA, DPPX/370	VM/SP, VM/IS, VSE, DPPX/37
Programming Languages	VS Fortran, PL/1, Cobol, RPG II	VS Fortran, PL/1, Cobol, RPG II, APL2, Pascal/VS	VS Fortran, PL/1, Cobol, RPG II, APL2, Pascal/VS	VS Fortran, PL/1, Cobol, RPG II, APL2, Pascal/VS
Database Management System	SQL/DS, DL/1	SQL/DS, DB2, IMS/VS-DB,	SQL/DS, DB2, IMS/VS-DB,	SQL/DS, DL/1
Pricing and Availability				
Purchase Price, basic system, \$	29,900 to 36,900	26,250 to 93,000	142,000 to 190,000	35,900
Monthly Maintenance, prime shift, \$	200 to 250	231 to 350	520 to 550	275
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	3,650 to 9,300	14,200 to 19,000	Contact vendor
Purchase Price of Memory Increments, \$	6,000 (4MB)	10,000 (4MB) 20,000 (8MB)	20,000 (8MB)	6,000 (4MB)
Date of First Delivery	3rd quarter 90	9/88 (60), 3rd quarter 90	9/88, 4th quarter 87	3/90
Comments	Ref.: 70C-504MK-201	Ref.: 70C-504MK-201	Ref.: 70C-504MK-201	Ref.: 70C-504MK-201

Manufacturer and System	International Computers Ltd. (ICL) Series 39	Siemens Information Systems, Inc. System 7.500 Series	Unisys Corp. A 1, A 4, and A 6	Unisys Corp. 2200/200 Series
Models	Level 15XP, 25XP, 35XP, Level 45/1	H60-B, H60-D, H60-F, H60-S	A 1-F/FX, A 4-FS, A 6-FS/-HS/-KS/-NS	2200/201, 2200/202, 2200/203, 2200/204
System Characteristics				
Number of CPUs	1	1 - 2	1, 2 (A 6-HS/-KS), 4 (-NS)	1 - 4
Number of I/O Processors	1 - 3 I/O controllers/node	1 - 4	1, 2	1 - 4
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit DRAM	1M-bit DRAM, CMOS	1M-bit DRAM	256K-bit CMOS
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	431
Access Time, nanoseconds	Vendor did not specify	120	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	8M - 16M	16M	12M - 24M	8M
Maximum Capacity, bytes	32M - 64M	128M - 256M	48M - 192M	48M
Increment Size, bytes	8M	16M, 32M	12M, 24M	2M
Expanded Storage	Vendor did not specify	Vendor did not specify	Not available	Not available
Cache Storage				
Type	Not applicable	16K-bit SRAM	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	Not applicable	45	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	Not applicable	256K per CPU	48K per CPU (A 6)	32K per CPU
Maximum Capacity, bytes	Not applicable	256K per CPU	48K per CPU (A 6)	32K per CPU
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	1.4 to 3.5	Vendor did not specify	25 to 280 RPM	60 to 210 RPM
Machine Cycle Time, nanoseconds	Vendor did not specify	45	Vendor did not specify	Vendor did not specify
Word Length, bits	32	64	48	36
Input/Output Control				
Integrated I/O Channels	1 - 4 nodes*	16 - 32	Up to 4 DC/DLPs*	7 - 14
Other I/O Channels	Vendor did not specify	Up to 128	Up to 48 DLPs*	Up to 10
Maximum I/O Data Rate, bytes/sec.	3M	40M	3.4M, 4.5M, 5.4M, 9M	29.6M
Communications				
Maximum Number of Lines	Configuration dependent	Configuration dependent	Up to 64	Up to 18 (integrated)
Synchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	19.2K bps
Asynchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Protocols Supported	Vendor did not specify	Vendor did not specify	TCP/IP, X.25	X.21, X.25,
Network Architectures Supported	MACROLAN, OSLAN	Transdata, VTX,	BNA, SNA	DCA, SNA
Peripheral Equipment				
Disk Drives	763MB—5.08GB	350MB—3.7GB	280MB—13.4GB	170MB—13.4GB
Magnetic Tape Drives	PE/GCR, 37.5—125 ips	PE/GCR, 37.5—125 ips	PE/GCR 25—125 ips	PE/GCR, 25—200 ips
Line Printers	225—1,200 lpm	445—1,200 lpm	650—1,800 lpm	640—2,000 lpm
Other Peripheral Devices Supported	Terminals, workstations, personal computers, laser printers	Terminals, laser printers, reader/sorter, card equipment	Terminals, communications processors, workstations, laser printers	Terminals, laser printer, communications processors
Software				
Operating Systems	VME Version SV290	BS2000	MCP/AS	OS 1100
Programming Languages	Algol 68, APL, Basic, Cobol, C, Fortran, Pascal, RPG II	Algol 68, APL, Basic, SPL, Cobol, Fortran, Pascal, RPG II, PL/1	Cobol, Fortran, PL/1, Pascal, Basic, RPG, Algol	Cobol, Fortran, Pascal, RPG II
Database Management System	Ingres, IDMSX	SESAM, UDS	DMS II	UDS 1100, DMS 1100
Pricing and Availability				
Purchase Price, basic system, \$	Contact vendor	Contact vendor	65,000 to 400,000	110,480 to 281,778
Monthly Maintenance, prime shift, \$	Contact vendor	Contact vendor	268 to 1,000	698.50 to 1,501.50
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	Contact vendor	Not available	5,754 to 15,078
Purchase Price of Memory Increments, \$	Contact vendor	Contact vendor	33,000 (12MB)	10,626 (2MB)
Date of First Delivery	9/86, 6/87	5/89	10/87, 9/88, 4/90	12/86, 10/87
Comments	*ICL uses nodes instead of I/O channels, nodes connect to MACROLAN and OSLAN Ref.: 70C-505MI-101		*Data Link Processor; A 6-KS and A 6-NS models can be partitioned Ref.: 70C-944YT-051	
			Ref.: 70C-944YT-051	Ref.: 70C-944YT-751

Manufacturer and System	Bull HN DPS 7000 Series	Bull HN DPS 8000 Series	Control Data Corp. Cyber 900	Control Data Corp. Cyber 900
Models	DPS 7000/520/530/540, DPS 7000/720/740/760/780	DPS 8000/41/42/81/82 DPS 8000/83/84	960-11S, 960-31S, 960-32S	962-11, 962-31, 962-32
System Characteristics				
Number of CPUs	1 - 6	1 - 4	1 - 2	1 - 2
Number of I/O Processors	1, 2	1 - 4	20	10
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit CMOS	1M-bit DRAM MOS	1M-bit DRAM	1M-bit DRAM
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	308	308
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	268.8	268.8
Minimum Capacity, bytes	32M - 128M	16M - 32M	64M	32M - 64M
Maximum Capacity, bytes	256M - 512M	128M - 256M	256M	256M
Increment Size, bytes	32M	16M	64M	32M, 64M
Expanded Storage	Not available	Not available	Unified Extended Memory	Unified Extended Memory
Cache Storage				
Type	Vendor did not specify	Vendor did not specify	Bipolar	Bipolar
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	44.8	44.8
Minimum Capacity, bytes	256K per CPU	256K per CPU	32K per CPU	32K per CPU
Maximum Capacity, bytes	256K per CPU	256K per CPU	32K per CPU	32K per CPU
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	Up to 260 transactions/sec.	0.64 to 3.21 rpm	10.53, 17.55, 35.1	10.53, 17.55, 35.1
Machine Cycle Time, nanoseconds	80	85	11.2	11.2
Word Length, bits	32	36	64	64
Input/Output Control				
Integrated I/O Channels	10 - 20	Up to 16	24	8
Other I/O Channels	20 - 80	128 (logical)	Up to 28	Up to 36
Maximum I/O Data Rate, bytes/sec.	3M	3M	3M	3M
Communications				
Maximum Number of Lines	Up to 2,040	Configuration dependent	Loosely coupled network	Loosely coupled network
Synchronous, speed	Vendor did not specify	64K—19.2K bps	128K bps	128K bps
Asynchronous, speed	Vendor did not specify	Vendor did not specify	38.4K bps	38.4K bps
Protocols Supported	HDLC, X.21, X.25, TCP/IP	HDLC, X.21, X.25	HDLC, X.25	HDLC, X.25
Network Architectures Supported	DSA, SNA, Ethernet	DSA, SNA	CDCNet, SNA, DECnet	CDCNet, SNA, DECnet
Peripheral Equipment				
Disk Drives	526MB - 7.56GB	526MB - 7.56GB	414MB - 16GB	414MB - 16GB
Magnetic Tape Drives	PE/GCR, 75 - 200 ips	PE/GCR, 75 - 200 ips	PE/GCR, 25 - 200 ips	PE/GCR, 25 - 200 ips
Line Printers	900 - 1,375 lpm	900 - 1,375 lpm	200 - 2,000 lpm	200 - 2,000 lpm
Other Peripheral Devices Supported	Terminals, communications processors	Terminals, communications processors	Workstations, optical storage	Workstations, optical storage
Software				
Operating Systems	GCOS 7	GCOS 8	NOS, NOS/VE (dual state)	NOS/VE
Programming Languages	Cobol, Fortran, Basic, C, Pascal, APL, PL/1, GMAP, GPSS, Simgscript, Lisp	Cobol, Fortran, Basic, C, PL/1, RPG II, Pascal, GMAP, GPSS, Simgscript, C, DM-IV, Interel	Fortran, Cobol, APL, Pascal, Basic, C, Lisp, Prolog, Cybil, Ada/VE	Fortran, Cobol, APL, Pascal, Basic, C, Lisp, Prolog, Cybil, Ada/VE
Database Management System	I-D-S/II, DM-IV		IM/DM, IM/VE	IM/DM, IM/VE
Pricing and Availability				
Purchase Price, basic system, \$	594,000 to 6,204,000	450,000 to 2,370,000	705,000 to 1,671,000	533,500 to 1,570,250
Monthly Maintenance, prime shift, \$	Contact vendor	650 to 2,700	1,925, 2,888, 4,725	1,601 to 4,526
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	30,000 to 158,700	Not available	Not available
Purchase Price of Memory Increments, \$	Contact vendor	120,000 (16MB)	224,000 (64MB)	224,000 (64MB)
Date of First Delivery	9/90	12/87, 6/88	3rd quarter 88	3rd quarter 88
Comments				
	Ref.: 70C-115JE-301	Ref.: 70C-115JE-401	Ref.: 70C-238MM-401	Ref.: 70C-238MM-401

Manufacturer and System	Hewlett-Packard HP 9000 Series 800 Systems	Hitachi Data Systems AS/EX Series	International Business Machines Corp. ES/4381 Series	International Business Machines Corp. ES/4381 Series
Models	850S, 855S	AS/EX 10, 20, 25, 30, 35, 40	4381 Model Groups 11, 21, 22, 23, 24	4381 Model Groups 90E, 91E, 92E
System Characteristics				
Number of CPUs	1	1, 2 (35 & 40)	1, 2	1, 2
Number of I/O Processors	2	1, 2	Not applicable	Not applicable
Plug Compatible with	Not applicable	IBM 4381 Series	Not applicable	Not applicable
Main Storage				
Type	256K/1M-bit DRAM	1M-bit NMOS	256K-bit MOSFET, 1M-bit	1M-bit
Cycle Time, nanoseconds	Vendor did not specify	120	Vendor did not specify	80
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	48M	32M	4M - 16M	16M
Maximum Capacity, bytes	256M	256M	16M - 64M	32M - 64M
Increment Size, bytes	16M	32M	4M, 8M, 16M	16M
Expanded Storage	Not available	64MB - 192MB	Not available	0 - 32M
Cache Storage				
Type	Vendor did not specify	4K-bit, bipolar SRAM	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	Vendor did not specify	50 - 60	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	128K, 256K	32K, 64K (30 & 40) per CPU	4K - 128K	64K - 128K
Maximum Capacity, bytes	128K, 256K	32K, 64K (30 & 40) per CPU	4K - 128K	64K - 128K
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	14, 22	4.7 to 21.7	1.0, 1.5, 2.2, 3.5, 6.1	3.5, 6.1
Machine Cycle Time, nanoseconds	73	16.5	52 - 68	12 - 56
Word Length, bits	64	32	32	32
Input/Output Control				
Integrated I/O Channels	8	Up to 4 (optical)	5 - 10	6 - 12
Other I/O Channels	4 opt.	8 - 32 (block multiplexer)	6 - 12, optional	12 - 24, optional
Maximum I/O Data Rate, bytes/sec.	20M	3M, 4.5M, 6M	3M	3M
Communications				
Maximum Number of Lines	Configuration dependent	IBM-compatible communi- cations controllers	Configuration dependent	Configuration dependent
Synchronous, speed	Vendor did not specify	Not applicable	Vendor did not specify	Vendor did not specify
Asynchronous, speed	Vendor did not specify	Not applicable	Vendor did not specify	Vendor did not specify
Protocols Supported	X.25, TCP/IP	Not applicable	BSC, SDLC, X.25, X.21,	BSC, SDLC, X.25, X.21,
Network Architectures Supported	Ethernet, SNA/3270/3770, DECnet	SNA	SNA, IBM Token-Ring	SNA, IBM Token-Ring
Peripheral Equipment				
Disk Drives	40MB - 571MB	2.5GB - 7.5GB	729.8MB - 22.7GB	729.8MB - 22.7GB
Magnetic Tape Drives	PE/GCR 125, DC600 HC 60 ips	79 ips, OEM	60KBS - 3000KBS	60KBS - 3000KBS
Line Printers	300 - 1,200 lpm	OEM or plug-compatible	125 - 4,000 lpm	125 - 4,000 lpm
Other Peripheral Devices Supported	Terminals, plotters, workstations	Terminals, communications processors, OEM or IBM compatible	Card equipment, terminals, laser printers, MICR and OCR, communications	Card equipment, terminals, laser printers, MICR and OCR, communications
Software				
Operating Systems	HP-UX	MVS/370, MVS/XA, MVS/ESA, VM/XA, VM, DOS/VSE, AIX	DOS/VSE, OS/VS1, MVS/SP, MVS/ESA, MVS/XA, VM/XA	DOS/VSE, OS/VS1, MVS/SP, MVS/ESA, MVS/XA, VM/XA
Programming Languages	Cobol, Fortran 77, C, Pascal	Pascal/VS, Cobol, PL/1, Fortran, Basic, APL/VS, Assembler	Ada, Algol, APL2, Basic, C, Cobol, DSL/VS, Fortran, Intellect, Lisp/VM, Pascal,	C, Cobol, DSL/VS, Basic, C, Cobol, DSL/VS, Fortran, Intellect, Lisp/VM, Pascal
Database Management System	Allbase	IMS, or IBM compatible	DB2, DL/1, IMS/VS, SQL/DS	DB2, DL/1, IMS/VS, SQL/DS
Pricing and Availability				
Purchase Price, basic system, \$	176,000, 241,000	489,200 to 2,243,350	175,000 to 1,130,000	395,000 to 1,160,000
Monthly Maintenance, prime shift, \$	548, 649	733 to 3,510	450 to 882	620 to 907
Monthly Rental, 1-year lease, \$ (including maintenance)	Not available	Not available	20,650 to 140,150	50,320 to 153,950
Purchase Price of Memory Increments, \$	23,900 (16M)	197,000 (32MB)	Model dependent	Model dependent
Date of First Delivery	3rd quarter 90	9/88, 1st quarter 89	1st quarter 88 (MG11), 5/86	9/89, 11/88
Comments				
		Ref.: 70C-453MZ-301	Ref.: 70C-504MK-301	Ref.: 70C-504MK-301

Manufacturer and System	International Computers Ltd. (ICL) Series 39	NCR Corp. 9800 VRX/E System	Siemens Information Systems, Inc. System 7.500 Series	Unisys Corp. V Series
Models	25DXP, 25XP/2, 35DPX, 35XP/2, 35XP/3, 45/2, 55-80/1	9811, 12, 21, 32, 42, 44, 63, 66, 84, 88	H90-B, H90-D, H90-F, H90-I, H90-T	V 310-2, 340, 380, 410, 430, 510, 530, 560
System Characteristics				
Number of CPUs	1 - 3	1 - 8 (AP*)	1 - 4	1, 2 (560)
Number of I/O Processors	1 - 3 I/O controllers/node	1 - 8 (DSP**)	1*	1, 2
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit DRAM	64K-bit MOS	1M-bit DRAM, CMOS	256K-bit DRAM, CMOS
Cycle Time, nanoseconds	Vendor did not specify	100	Vendor did not specify	Not specified
Access Time, nanoseconds	Vendor did not specify	330	24	Not specified
Minimum Capacity, bytes	24M - 48M	4M per AP, 4M per DSP	32M - 128M	10M - 40M
Maximum Capacity, bytes	48M - 192M	16M per AP, 16M per DSP	256M - 512M	20M - 160M
Increment Size, bytes	8M	4M	32M, 64M	10M - 20M
Expanded Storage	Vendor did not specify	Not available	Vendor did not specify	Not available
Cache Storage				
Type	Not applicable	Vendor did not specify	16K-bit SRAM	Not specified
Cycle Time, nanoseconds	Not applicable	Vendor did not specify	45	Not specified
Minimum Capacity, bytes	Not applicable	1M or 3M (DSP)	128K per CPU	40K (530/560)
Maximum Capacity, bytes	Not applicable	1M or 3M (DSP)	128K per CPU	40K (530/560)
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	3.4 to 17.5	1 to 8	Vendor did not specify	Vendor did not specify
Machine Cycle Time, nanoseconds	Vendor did not specify	100 (AP)	24	110, 48 (V 510-560)
Word Length, bits	32	32	64	48
Input/Output Control				
Integrated I/O Channels	1 - 4 nodes*	Up to 128	11	1 - 4
Other I/O Channels	Vendor did not specify	Not available	44 - 88	32 to 64 DLPs*
Maximum I/O Data Rate, bytes/sec.	3M	3M	65M - 130M	8M, 16M
Communications				
Maximum Number of Lines	Configuration dependent	54	Configuration dependent	Configuration dependent
Synchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	19.2 bps
Asynchronous, speed	Vendor did not specify	18	Vendor did not specify	Vendor did not specify
Protocols Supported	Vendor did not specify	DLC, BMC, TTY, X.25	Vendor did not specify	BDLC
Network Architectures Supported	MACROLAN, OSLAN	NCR/CNA, SNA	Transdata, VTX,	BNA
Peripheral Equipment				
Disk Drives	763MB - 5.08GB	133.7MB - 1.09GB	350MB - 3.7GB	252MB - 1.7GB
Magnetic Tape Drives	PE/GCR, 37.5 - 125 ips	PE/GCR, 21 - 200 ips	PE/GCR, 37.5 - 125 ips	PE/GCR, 75 - 200 ips
Line Printers	225 - 1,200 lpm	360 - 2,000 lpm	445 - 1,200 lpm	650 - 2,000 lpm
Other Peripheral Devices Supported	Terminals, workstations, personal computers, laser printers	Terminals, MICR sorters, multiplexers, laser printers, communications	Terminals, laser printers, reader/sorter, card equipment	Card equipment, reader/sorters, terminals
Software				
Operating Systems	VME Version SV290	VRX/E	BS2000	MCP/VS
Programming Languages	Algol 68, APL, Basic, Cobol, C, Fortran, Pascal, RPG II	VRX/E Cobol, NEATVS, C, IVS Basic	Algol 68, APL, Basic, SPL, Cobol, Fortran, Pascal, RPG II, PL/1	Cobol, RPG II, Fortran, Basic, Pascal, Algol
Database Management System	Ingres, IDMSX	DBSR, DBSN	SESAM, UDS	DMS-II
Pricing and Availability				
Purchase Price, basic system, \$	Contact vendor	45,935 to 224,274	Contact vendor	126,000 to 2,890,000
Monthly Maintenance, prime shift, \$	Contact vendor	3,241 to 20,182	Contact vendor	800 to 4,400,000
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	Not available	Contact vendor	9,882 to 104,412
Purchase Price of Memory Increments, \$	Contact vendor	8,425 (4MB)	Contact vendor	89,250 (10MB)
Date of First Delivery	4/85, 7/88, 1/89, 9/89	1st quarter 1987	5/89	9/85 to 5/90
Comments	*ICL uses nodes instead of I/O channels, nodes connect to MACROLAN and OSLAN Ref.: 70C-505MI-101	*Applications Processor, ** Data Storage Processor Ref.: 70C-653MM-301	*The Dynamic Channel Subsystem (DCS) handles I/O processor functions	*Data Link Processors Ref.: 70C-944YT-151

Manufacturer and System	Unisys Corp. 2200/400 Series
Models	2200/401, 402, 403, 404, 405, 406
System Characteristics	
Number of CPUs	1 - 6
Number of I/O Processors	1 - 10
Plug Compatible with	Not applicable
Main Storage	
Type	1M-bit DRAM, CMOS
Cycle Time, nanoseconds	Vendor did not specify
Access Time, nanoseconds	Vendor did not specify
Minimum Capacity, bytes	16M
Maximum Capacity, bytes	64M
Increment Size, bytes	16M
Expanded Storage	Not available
Cache Storage	
Type	Vendor did not specify
Cycle Time, nanoseconds	Vendor did not specify
Minimum Capacity, bytes	64K per IP*
Maximum Capacity, bytes	64K per IP*
Increment, bytes	Not applicable
Central Processor	
Relative Performance, MIPS	Vendor did not specify
Machine Cycle Time, nanoseconds	80
Word Length, bits	36
Input/Output Control	
Integrated I/O Channels	4 - 40
Other I/O Channels	Up to 64
Maximum I/O Data Rate, bytes/sec.	33M
Communications	
Maximum Number of Lines	48 - 976
Synchronous, speed	19.2 bps
Asynchronous, speed	19.2 bps
Protocols Supported	UDLC
Network Architectures Supported	DCA, SNA, Ethernet, PDN, DDN
Peripheral Equipment	
Disk Drives	616MB - 5.1GB
Magnetic Tape Drives	PE/GCR, 75 - 200 ips
Line Printers	650 - 2,000 lpm
Other Peripheral Devices Supported	Terminals, optical disks, communications processors
Software	
Operating Systems	OS 1100, SX 1100 (guest)
Programming Languages	Cobol, RPG II, Fortran, Basic, Pascal, PL/1, APL, RPG II
Database Management System	DMS 1100, UDS 1100
Pricing and Availability	
Purchase Price, basic system, \$	240,113 to 373,626
Monthly Maintenance, prime shift, \$	631 to 640.50
Monthly Rental, 1-year lease, \$ (including maintenance)	16,006 to 24,909
Purchase Price of Memory Increments, \$	42,040 (16MB)
Date of First Delivery	9/88, 2nd & 3rd quarter 89
Comments	*Instruction Processor
	Ref.: 70C-944YT-801

Manufacturer and System	Amdahl Corp. 7300 Series	Amdahl Corp. 5990 Series	Amdahl Corp. 5990 Series	Amdahl Corp. 5890 Series
Models	7300-150, -250	Models 1100 and 1400	5990-250, -350, -500, -700, -790	5890-200E, -300E, -390E, -400E, -600E
System Characteristics				
Number of CPUs	1 - 2	2 - 4	1 - 2	2 - 4
Number of I/O Processors	1 - 2	2 - 4	1 - 2	2 - 4
Plug Compatible with	Not applicable	IBM 3090	IBM 3090	IBM 3090
Main Storage				
Type	1M-bit, DRAM	256K/1M-bit SRAM	256K/1M-bit, SRAM	256K-bit, NMOS
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	10	280
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	32M - 64M	128M	32M - 128M	64M - 128M
Maximum Capacity, bytes	256M	1G	256M - 1G	256M - 512M
Increment Size, bytes	32M, 64M	64M, 128M	32M, 64M, 128M	32M, 64M, 128M
Expanded Storage	Not available	Up to 1GB	Up to 1G	Up to 512MB
Cache Storage				
Type	Bipolar RAM	Bipolar RAM	Bipolar RAM	Bipolar RAM
Cycle Time, nanoseconds	10	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	32K per CPU	128K per CPU	128K per CPU	96K per CPU
Maximum Capacity, bytes	32K per CPU	128K per CPU	128K per CPU	96K per CPU
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	18, 22	120 (1400)	23 to 60	34 to 75
Machine Cycle Time, nanoseconds	19	10	10	15
Word Length, bits	32	32	32	32
Input/Output Control				
Integrated I/O Channels	16 - 32	64 - 128	16 - 128	32 - 128
Other I/O Channels	12	32	16 - 32	32
Maximum I/O Data Rate, bytes/sec.	3M, 4.5M	3M, 4.5M	3M, 4.5M	3M, 4.5M
Communications				
Maximum Number of Lines	Configuration dependent	Optional 64 - 256	Configuration dependent	Configuration dependent
Synchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Asynchronous, speed	60K bps	Vendor did not specify	64K bps	64K bps
Protocols Supported	ASCII Full Duplex, TCP/IP, BSC (3270, RJE)	SDLC, BSC, X.25	SDLC, BSC, X.21	SDLC, BSC, X.21
Network Architectures Supported	Ethernet, HYPERchannel	SNA	SNA	SNA
Peripheral Equipment				
Disk Drives	630MB - 7.56GB	630MB - 7.56GB	630MB - 7.56GB	630MB - 7.56GB
Magnetic Tape Drives	All UTS-compatible devices	All plug-compatible devices	All plug-compatible devices	All plug-compatible devices
Line Printers	OEM or UTS-compatible	OEM or plug-compatible	OEM or plug-compatible	OEM or plug-compatible
Other Peripheral Devices Supported	Communications processors, UNIX workstations	Communications processors	Communications processors	Communications processors
Software				
Operating Systems	UTS	MVS/370, MVS/XA, VM/XA SP, HPO, UTS, MVS/ESA, VM/SP	MVS, MVS/SP1, MVS/SP2, VM/SP HPO, VM/SP, ACP	MVS, MVS/SP1, MVS/SP2, VM/SP HPO, VM/SP, ACP
Programming Languages	UNIX	Cobol, Fortran, PL/1, Basic, APL, RPG, all MVS/VM supported	Cobol, Fortran, PL/1, Basic, APL, RPG, all MVS/VM supported	Cobol, Fortran, PL/1, Basic, APL, RPG, all MVS/VM supported
Database Management System	Third party	IMS, DB/DC	IMS, DB/DC,	IMS, DB/DC,
Pricing and Availability				
Purchase Price, basic system, \$	730,000, 1,245,000	9,870,000, 11,865,000	2,900,000 to 7,500,000	3,596,250 to 7,875,000
Monthly Maintenance, prime shift, \$	Contact vendor	18,025, 23,690	5,870 to 13,390	13,699 to 22,815
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Purchase Price of Memory Increments, \$	Contact vendor	245,000 (32MB)	245,000 (32MB)	270,000 (32MB)
Date of First Delivery	11/89	5/89, 4th quarter 88	10/89, 4/89, 6/88, 11/90	3/87, 6/87, 11/87, 11/88
Comments				
		Ref.: 70C-035MM-101	Ref.: 70C-035MM-101	Ref.: 70C-035MM-101

Manufacturer and System	Amdahl Corp. 5890 Series	Bull HN DPS 9000 Series	Bull HN DPS 90 Series	Control Data Corp. Cyber 900
Models	5890-180E, -190E,	DPS 9000/91/92T/93/94	DPS 90/91/92/93/94	992-31, 992-32, 994-31, 994-32
System Characteristics				
Number of CPUs	1	1 - 4	1 - 4	1, 2
Number of I/O Processors	1	1 - 4	1 - 4	10
Plug Compatible with	IBM 3090	Not applicable	Not applicable	Not applicable
Main Storage				
Type	256K-bit, NMOS	1M-bit CMOS	256K-bit MOS	256K-bit SRAM
Cycle Time, nanoseconds	280	Vendor did not specify	Vendor did not specify	96
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	225	113
Minimum Capacity, bytes	32M	128M - 256M	32M - 64M	64M
Maximum Capacity, bytes	256M	512M - 1.02G	128M - 256M	256M
Increment Size, bytes	32M, 64M	128M	32M	64M
Expanded Storage	Up to 64MB	Not available	Not available	Unified Extended Memory
Cache Storage				
Type	Bipolar RAM	Vendor did not specify	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	Vendor did not specify	3	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	96K	128K per CPU	128K	32K (data), 64-word instr.
Maximum Capacity, bytes	96K	1.2M per CPU	128K	32K (data), 64-word instr.
Increment, bytes	Not applicable	128K	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	18, 22	273 - 1,01 transactions/sec.	84 to 270 transactions/sec.	32.54, 65.08, 37.76, 75.52
Machine Cycle Time, nanoseconds	15	Vendor did not specify	Not specified	16
Word Length, bits	32	36	36	64
Input/Output Control				
Integrated I/O Channels	16 - 48	Up to 64 per IOP	16 - 64	8
Other I/O Channels	12	Up to 256 (logical)	32 - 64	Up to 36
Maximum I/O Data Rate, bytes/sec.	3M, 4.5M	96M	3M	3M, 12M
Communications				
Maximum Number of Lines	Configuration dependent	Configuration dependent	Configuration dependent	Loosely coupled network
Synchronous, speed	Vendor did not specify	64K bps	64K bps	128 bps
Asynchronous, speed	64K bps	19.2K bps	19.2K bps	38.4K bps
Protocols Supported	SDLC, BSC, X.21	HDL, X.21, X.24	BSC, HDLC, X.21	HDL, X.25
Network Architectures Supported	SNA	DSA, SNA	DSA	CDCNet, SNA, DECnet
Peripheral Equipment				
Disk Drives	630MB - 7.56GB	626MB - 7.56GB	626M - 7.56 GB	414MB - 16GB
Magnetic Tape Drives	All plug-compatible devices	PE/GCR, 75 - 200 ips	PE/GCR, 75 - 200 ips	PE/GCR 25 - 200 ips
Line Printers	OEM or plug-compatible	900 - 1,375 lpm	900 - 1,375 lpm	200 - 2,000 lpm
Other Peripheral Devices Supported	Communications processors	Terminals, communications processors	Terminals, communications processors	Workstations, optical storage
Software				
Operating Systems	MVS, MVS/SP1, MVS/SP2, VM/SP HPO, VM/SP, ACP	GCOS 8	GCOS 8	NOS/VE (992-31/32), NOS, NOS/VE (994-31/32)
Programming Languages	Cobol, Fortran, PL/1, Basic, APL, RPG, all MVS/VM supported	Cobol, Fortran, Basic, C, Pascal, APL, PL/1, GMAP, GPSS, Simscript, Lisp, Ada I-D-S/II, Interel	Cobol, Fortran, Basic, C, Pascal, APL, PL/1, GMAP, GPSS, Simscript, Lisp, Ada I-D-S/II, DM-IV	Fortran, Cobol, APL, Pascal, Basic, C, Lisp, Prolog, Cybil, Ada/VE IM/VE, IM/DM
Database Management System	IMS, DB/DC,			
Pricing and Availability				
Purchase Price, basic system, \$	2,100,000, 2,467,500	5,856,400 to 22,967,400	3,550,000 to 7,600,000	1,900,000 to 3,300,000
Monthly Maintenance, prime shift, \$	8,240, 8,601	9,761 to 38,279	5,625 to 10,575	4,500 to 7,225
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	406,795 to 1,595,354	246,875 to 521,875	Not available
Purchase Price of Memory Increments, \$	270,000 (32MB)	640,000 (128MB)	360,000 (32MB)	480,000 (64MB)
Date of First Delivery	9/87, 6/87	6/89	6/85	9/88
Comments				Each model has scalar and vector processing
	Ref.: 70C-035MM-101	Ref.: 70C-115JE-501	Ref.: 70C-115JE-451	Ref.: 70C-238MM-401

Manufacturer and System	Control Data Corp. Cyber 2000	Digital Equipment VAX 9000 Series	Digital Equipment VAX 9000 Series	Hewlett-Packard HP 9000 Series 800 Systems
Models	2000S, 2000V	9000-210/410/420	9000-430/440	870S/100, 870S/200
System Characteristics				
Number of CPUs	1, 2 optional	1 (210/410), 2 (420)	3 (430), 4 (440)	1, 2
Number of I/O Processors	10	Vendor did not specify	Vendor did not specify	2
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit DRAM, 256K BIMOS	1M-bit DRAM	1M-bit DRAM	256K/1M-bit DRAM
Cycle Time, nanoseconds	80, 15	Vendor did not specify	Vendor did not specify	Vendor did not specify
Access Time, nanoseconds	342, 36	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	128M	256M	512M	96M - 128M
Maximum Capacity, bytes	256M, 512M	512M	512M	768M
Increment Size, bytes	64M	Vendor did not specify	Vendor did not specify	64M
Expanded Storage	Vendor did not specify	Not available	Not available	Not available
Cache Storage				
Type	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	5	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	128K (data), 1.5K (instr.)	128K per CPU	128K per CPU	1024K
Maximum Capacity, bytes	128K (data), 1.5K (instr.)	128K per CPU	128K per CPU	1024K
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	50 scalar, 82 vector	30 (210)	Vendor did not specify	50, 90
Machine Cycle Time, nanoseconds	Less than 10	Vendor did not specify	Vendor did not specify	73
Word Length, bits	64	32	32	64
Input/Output Control				
Integrated I/O Channels	8 - 16	1 - 2 XMI channels	4 XMI channel	8
Other I/O Channels	Up to 36	12 to 24 slots	48 slots	4 opt.
Maximum I/O Data Rate, bytes/sec.	3M, 15M, 25M (IPI)	80M per XMI channel	80M per XMI channel	20M
Communications				
Maximum Number of Lines	Loosely coupled network	Configuration dependent	Configuration dependent	Configuration dependent
Synchronous, speed	128 bps	Vendor did not specify	Vendor did not specify	Vendor did not specify
Asynchronous, speed	38.4K bps	Vendor did not specify	Vendor did not specify	Vendor did not specify
Protocols Supported	HDLC, X.25	DNA	DNA	X.25, TCP/IP
Network Architectures Supported	CDCNet, SNA, DECnet	DECNet, SNA, Internet	DECNet, SNA, Internet	Ethernet, SNA/3270/3770, DECnet
Peripheral Equipment				
Disk Drives	414MB - 16GB	622MB - 9.5GB	622MB - 9.5GB	40M - 571M
Magnetic Tape Drives	PE/GCR, 25 - 200 ips	PE/GCR, 25 - 125 ips	PE/GCR, 25 - 125 ips	PE/GCR 125, DC600 HC 60 ips
Line Printers	200 - 2,000 lpm	800 - 2,000 lpm	800 - 2,000 lpm	300 - 1,200 lpm
Other Peripheral Devices Supported	Workstations, optical storage, 5830 Disk Array Subsystem	Workstations, disk arrays, laser printers, optical storage	Workstations, disk arrays, laser printers, optical storage	Terminals, plotters, workstations
Software				
Operating Systems	NOS/VE	VMS, ULTRIX	VMS, ULTRIX	HP-UX
Programming Languages	Fortran, Cobol, APL, Pascal, Basic, C, Lisp, Prolog, Cybil, Ada/VE	APL, Basic, Cobol, Fortran, Coral, Bliss, Dibol, PL/1, RPG II, Pascal, C, Lisp	APL, Basic, Cobol, Fortran, Coral, Bliss, Dibol, PL/1, RPG II, Pascal, C, Lisp	Cobol, Fortran 77, C, Pascal
Database Management System	IM/VE, IM/DM	VAX DBMS, VAX Rdb/VMS	VAX DBMS, VAX Rdb/VMS	Allbase
Pricing and Availability				
Purchase Price, basic system, \$	2,300,000, 2,700,000	1,245,000 to 2,220,000	3,390,000, 3,920,000	419,000, 689,000
Monthly Maintenance, prime shift, \$	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	Contact vendor	Contact vendor	Not available
Purchase Price of Memory Increments, \$	Contact vendor	Contact vendor	Contact vendor	95,600 (16M)
Date of First Delivery	4th quarter 90	2nd and 3rd quarter 90	3rd quarter 90	3rd quarter 90
Comments		Vector hardware is an option	Vector hardware is an option	
		Ref.: 70C-325MM-101	Ref.: 70C-325MM-101	

Manufacturer and System	Hitachi Data Systems AS/EX Series	International Business Machines Corp. ES/3090 Series	International Business Machines Corp. ES/3090 Series	International Business Machines Corp. ES/3090 Series
Models	AS/EX 50, 60, 65, 70, 80, 90, 95, 100	110J, 120J, 150J	150JH, 170J, 170JH, 180J	250J, 250JH, 280J, 200J, 300J
System Characteristics				
Number of CPUs	1 - 4	1	1	2 to 3
Number of I/O Processors	1 - 4	Not applicable	Not applicable	Not applicable
Plug Compatible with	IBM 3090	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit NMOS	1M/4-bit NMOS	1M/4M-bit NMOS	1M/4M-bit NMOS
Cycle Time, nanoseconds	120	Vendor did not specify	Vendor did not specify	Vendor did not specify
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	64M - 256M	32M	32M	64M
Maximum Capacity, bytes	1G - 2G	64M	128M	128M-256M
Increment Size, bytes	64M - 256M	32M	32M - 64M	32M, 64M, 128M
Expanded Storage	960MB - 1.92GB	0MMB - 256MB	Up to 64MB	512MB - 2GB
Cache Storage				
Type	4K-bit, bipolar SRAM	4KB, 8KB, 16KB, bipolar	4KB, 8KB, 16KB, bipolar	4KB, 8KB, 16KB, bipolar
Cycle Time, nanoseconds	50 - 60	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	128K - 256K per CPU	64K per CPU	64K - 256K per CPU	64K - 256K per CPU
Maximum Capacity, bytes	128K - 256K per CPU	64K per CPU	64K - 256K per CPU	64K - 256K per CPU
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	22.3 to 70	1.0, 1.3, 1.7	1.9, 2.2, 2.4, 3.4	3.3, 3.7, 6.4, 6.6, 9.4
Machine Cycle Time, nanoseconds	16.5	18.5	18.5; 14.5, 180J	14.5
Word Length, bits	32	32	32	32
Input/Output Control				
Integrated I/O Channels	Up to 48 (optical)	16 - 32	16 - 32	32 - 64
Other I/O Channels	16 - 128 (block multiplexer)	Vendor did not specify	Vendor did not specify	Vendor did not specify
Maximum I/O Data Rate, bytes/sec.	3M, 4.5M, 6M	3M, 4.5M	3M, 4.5M	3M, 4.5M
Communications				
Maximum Number of Lines	IBM-compatible communications controllers	Configuration dependent	Configuration dependent	Configuration dependent
Synchronous, speed	Not applicable	Vendor did not specify	Not specified	Vendor did not specify
Asynchronous, speed	Not applicable	Up to 256 bps	Up to 256 bps	Up to 256 bps
Protocols Supported	Not applicable	SDLC, BSC, X.21, X.25	SDLC, BSC, X.21, X.25	SDLC, BSC, X.21, X.25
Network Architectures Supported	SNA	SNA, IBM Token-Ring	SNA, IBM Token-Ring	SNA, IBM Token-Ring
Peripheral Equipment				
Disk Drives	Can support all IBM 3090 devices	729.8MB - 22.7GB	729.8MB - 22.7GB	729.8MB - 22.7GB
Magnetic Tape Drives		60KBS - 4500KBS	60KBS - 4500KBS	60KBS - 4500KBS
Line Printers	OEM or IBM compatible	125 - 4,000 lpm	125 - 4,000 lpm	125 - 4,000 lpm
Other Peripheral Devices Supported	Terminals, communications processors, OEM or IBM compatible	Card equipment, terminals, page printers, MICR, OCR, communications controllers	Card equipment, terminals, page printers, MICR, OCR, communications controllers	Card equipment, terminals, page printers, MICR, OCR, communications controllers
Software				
Operating Systems	MVS/370, MVS/XA, MVS/ESA, VM/XA, VM, DOS/VSE, AIX	MVS/ESA, MVS/SP, MVS/XA, VM/HPO, VM/XA	MVS/ESA, MVS/SP, MVS/XA, VM/HPO, VM/XA	MVS/ESA, MVS/SP, MVS/XA, VM/HPO, VM/XA
Programming Languages	Pascal/VS, Cobol VSII, Fortran, Basic, APL/VS, PL/1	Cobol, Fortran, PL/1, Basic, RPG II, Pascal/VS, Lisp, APL2	Cobol, Fortran, PL/1, Basic, RPG II, Pascal/VS, Lisp, APL2	Cobol, Fortran, PL/1, Basic, RPG II, Pascal/VS, Lisp, APL2
Database Management System	IMS or IBM compatible	IMS/VS-DB, DB2	IMS/VS-DB, DB2	IMS/VS-DB, DB2
Pricing and Availability				
Purchase Price, basic system, \$	2,304,300 to 9,550,000	563,600 to 1,312,500	1,475,400 to 2,572,500	2,828,700 to 6,554,200
Monthly Maintenance, prime shift, \$	5,275 to 20,219	1,730 to 2,595	2,595 to 3,565	6,085 to 10,530
Monthly Rental, 1-year lease, \$ (including maintenance)	Not available	Not available	Contact vendor	Contact vendor
Purchase Price of Memory Increments, \$	394,000 (64MB) 788,000 (128MB)	270,000 (32MB)	270,000 (32MB)	270,000 (32MB)
Date of First Delivery	4th quarter 85	10/89	10/89	10/89
Comments				
	Ref.: 70C-453MZ-301	Ref.: 70C-504MK-701	Ref.: 70C-504MK-701	Ref.: 70C-504MK-701

Manufacturer and System	International Business Machines Corp. ES/3090 Series	International Business Machines Corp. ES/3090 Series	International Business Machines Corp. ES/3090 Series	International Computers Ltd. (ICL) Series 39
Models	380J, 400J, 500J, 600J	100S, 120S, 150S, 170S, 180S	200S, 250S, 280S, 300S, 380S, 400S, 500S, 600S	Level 35XP/4, 55/2.65/2, 80/2, 80/3, 80/4
System Characteristics				
Number of CPUs	3, 4, 5, 6	1	2 - 6	2 - 4
Number of I/O Processors	Not applicable	Not applicable	Not applicable	1 - 3 I/O controllers/node
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M/4M-bit NMOS	1M-bit NMOS	1M-bit NMOS	1M-bit DRAM
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	128M	32M	64M - 128M	64M - 128M
Maximum Capacity, bytes	512M	64M - 128M	128M - 512M	128M - 512M
Increment Size, bytes	64M, 128M	32M, 64M	64M, 128M, 256M	16M, 24M
Expanded Storage	2G - 4G	64MB - 256MB	64MB - 2GB	Vendor did not specify
Cache Storage				
Type	4KB, 8KB, 16KB, bipolar	Vendor did not specify	Vendor did not specify	Not applicable
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	Not applicable
Minimum Capacity, bytes	256K per CPU	64K - 128K per CPU	128K per CPU	Not applicable
Maximum Capacity, bytes	256K per CPU	64K - 128K per CPU	128K per CPU	Not applicable
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	9.1, 12.0, 14.6, 17.1	15 to 18.5	38.2 to 102	9 to 65
Machine Cycle Time, nanoseconds	14.5	15 - 18.5	15 - 17.75	Vendor did not specify
Word Length, bits	32	32	32	32
Input/Output Control				
Integrated I/O Channels	32 - 128	16 - 32	32 - 128	1 - 4 nodes*
Other I/O Channels	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Maximum I/O Data Rate, bytes/sec.	3M, 4.5M	3M, 4.5M	3M, 4.5M	3M
Communications				
Maximum Number of Lines	Configuration dependent	Configuration dependent	Configuration dependent	Configuration dependent
Synchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Asynchronous, speed	Up to 256 bps	Up to 256 bps	Up to 256 bps	Vendor did not specify
Protocols Supported	SDLC, BSC, X.21, X.25	SDLC, BSC, X.21, X.25	SDLC, BSC, X.21, X.25	Vendor did not specify
Network Architectures Supported	SNA, IBM Token-Ring	SNA, IBM Token-Ring	SNA, IBM Token-Ring	MACROLAN, OSLAN
Peripheral Equipment				
Disk Drives	729.8MB - 22.7GB	729.8MB - 22.7GB	729.8MB - 22.7GB	763MB - 5.08GB
Magnetic Tape Drives	60KBS - 4500KBS	60KBS - 4500KBS	60KBS - 4500KBS	PE/GCR, 37.5 - 125 ips
Line Printers	125 - 4,000 lpm	125 - 4,000 lpm	125 - 4,000 lpm	225 - 1,200 lpm
Other Peripheral Devices Supported	Card equipment, terminals, page printers, MICR, OCR, communications controllers	Card equipment, terminals, page printers, MICR, OCR, communications controllers	Card equipment, terminals, page printers, MICR, OCR, communications controllers	Terminals, workstations, personal computers, laser printers
Software				
Operating Systems	MVS/ESA, MVS/SP, MVS/XA, VM/HPO, VM/XA	MVS/ESA, MVS/SP, MVS/XA, VM/HPO, VM/XA	MVS/ESA, MVS/SP, MVS/XA, VM/HPO, VM/XA	VME Version SV290
Programming Languages	Cobol, Fortran, PL/1, Basic, RPG II, Pascal/VS, Lisp, APL2	Cobol, Fortran, PL/1, Basic, RPG II, Pascal/VS, Lisp, APL2	Cobol, Fortran, PL/1, Basic, RPG II, Pascal/VS, Lisp, APL2	Algol 68, APL, Basic, Cobol, C, Fortran, Pascal, RPG II
Database Management System	IMS/VS-DB, DB2	IMS/VS-DB, DB2	IMS/VS-DB, DB2	Ingres, IDMSX
Pricing and Availability				
Purchase Price, basic system, \$	7,469,000 to 12,314,700	525,000 to 2,572,500	2,828,700 to 12,314,700	Contact vendor
Monthly Maintenance, prime shift, \$	11,730 to 21,100	1,680 to 3,465	5,910 to 20,490	Contact vendor
Monthly Rental, 1-year lease, \$ (including maintenance)	Vendor did not specify	Contact vendor	Contact vendor	Contact vendor
Purchase Price of Memory Increments, \$	490,000 (64MB)	270,000 (32MB)	270,000 (32MB)	Contact vendor
Date of First Delivery	10/89	9/88 to 4/89	4th quarter 88 to 11/89	4/85, 9/87, 1/89, 9/89
Comments				*ICL uses nodes instead of I/O channels, nodes connect to MACROLAN and OSLAN
	Ref.: 70C-504MK-701	Ref.: 70C-504MK-701	Ref.: 70C-504MK-701	Ref.: 70C-505MI-101

Manufacturer and System	Siemens Information Systems, Inc. System 7.500 Series	Tandem Computers, Inc. NonStop Cyclone Systems	Unisys Corp. A 12	Unisys Corp. A 17
Models	H120-F, H120-I, H120-P, H120-R, H120-S	904E, 904, 908, 916	A 12B, A 12 E, A 12, A 12T	A 17 Models F, H, J, L, N
System Characteristics				
Number of CPUs	1 - 4	4 - 16	1	1 - 4
Number of I/O Processors	1 - 2	2 - 4 I/O controllers	1	1, 2
Plug Compatible with	Not applicable	Not applicable	Not applicable	Not applicable
Main Storage				
Type	1M-bit DRAM, CMOS	1M-bit SRAM, CMOS	256K-bit DRAM	256K-bit DRAM
Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	Vendor did not specify	61.5
Access Time, nanoseconds	55	Vendor did not specify	61.5	Vendor did not specify
Minimum Capacity, bytes	64M - 128M	64M - 128M	24M	48M - 96M
Maximum Capacity, bytes	128M - 512M	128M - 512M	72M - 144M	288M
Increment Size, bytes	32M, 64M	32M, 64M	24M	24M
Expanded Storage	1.02 - 2.4	1.02GB - 2.4GB	ASD up to 144MB	ASD up to 288MB
Cache Storage				
Type	16K-bit SRAM	Not applicable	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	3.2	Not applicable	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	64K per CPU	Not applicable	24K	48M
Maximum Capacity, bytes	64K per CPU	Not applicable	24K	48M
Increment, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Central Processor				
Relative Performance, MIPS	Vendor did not specify	30.4 transactions/sec.	3.8 to 12.6	20 to 72
Machine Cycle Time, nanoseconds	Vendor did not specify	Vendor did not specify	62.5	65
Word Length, bits	64	32	48	48
Input/Output Control				
Integrated I/O Channels	4	2 - 4 per processor	Up to 16 DLPs*	16 DLPs*
Other I/O Channels	8	Not applicable	Up to 64 DLPs*	Up to 64 DLPs*
Maximum I/O Data Rate, bytes/sec.	400M	5M	8M	8M
Communications				
Maximum Number of Lines	Configuration dependent	Up to 80	Up to 128	512
Synchronous, speed	Vendor did not specify	Vendor did not specify	Vendor did not specify	Vendor did not specify
Asynchronous, speed	Vendor did not specify	Vendor did not specify	Up to 19.2K bps	Up to 19.2 bps
Protocols Supported	Vendor did not specify	X.25	Poll select, BDLC	TTY, X.25, X.21, SDLC
Network Architectures Supported	Transdata, VTX,	SNA, OSI, Ethernet, TCP/IP	BNA, SNA, Ethernet	BNA, SNA, Ethernet
Peripheral Equipment				
Disk Drives	350MB - 3.7GB	337MB - 9.0GB	252MB - 7.5GB	130MB - 7.5GB
Magnetic Tape Drives	PE/GCR, 37.5 - 125 ips	PE/GCR, 45 - 200 ips	PE/GCR, 75-200 ips	PE/GCR, 75 - 200 ips
Line Printers	445 - 1,200 lpm	300 - 1,200 lpm	650 - 2,000 lpm	650 - 2,000 lpm
Other Peripheral Devices Supported	Terminals, laser printers, reader/sorter, card equipment	Terminals	Card equipment, terminals, communications processors, laser printers	Card equipment, terminals, communications processors, laser printers
Software				
Operating Systems	BS2000	Guardian	MCP/AS	MCP/AS
Programming Languages	Algol 68, APL, Basic, SPL, Cobol, Fortran, Pascal, RPG II, PL/1	Cobol, C, Fortran, Pascal	Cobol, RPG II, Fortran, Basic, Pascal, Algol, APL, PL/1	Cobol, Fortran, PL/1, APL, RPG II, Basic, Pascal, Algol
Database Management System	SESAM, UDS	Enscribe, SQL	DMS-II, InfoExec	DMS-II, InfoExec
Pricing and Availability				
Purchase Price, basic system, \$	Contact vendor	1,995,000 to 9,995,000	495,000 to 2,114,700	3,319,000 to 9,492,300
Monthly Maintenance, prime shift, \$	Contact vendor	Contact vendor	1,700 to 3,255	4,235 to 16,763
Monthly Rental, 1-year lease, \$ (including maintenance)	Contact vendor	Contact vendor	29,118 to 124,700	195,289 to 558,371
Purchase Price of Memory Increments, \$	Contact vendor	Contact vendor	211,200 (24MB)	211,200 (24MB)
Date of First Delivery	1988	4th quarter 1990	9/86, 11/87, 5/88	2nd quarter 88
Comments			*Data Link Processors Ref.: 70C-944YT-401	*Data Link Processors; Models J, L, and N are partitionable systems Ref.: 70C-944YT-551

Manufacturer and System	Unisys Corp. 2200/600 Series	Unisys Corp. 2200/600 Series
Models	2200/611, 612, 621, 622, 623, 632	2200/633, 634, 643, 644, 644-MP
System Characteristics		
Number of CPUs	1 - 3	3 - 4
Number of I/O Processors	1 - 4	1 - 4
Plug Compatible with	Not applicable	Not applicable
Main Storage		
Type	1M-bit DRAM, CMOS	1M-bit DRAM, CMOS
Cycle Time, nanoseconds	240	240
Access Time, nanoseconds	Vendor did not specify	Vendor did not specify
Minimum Capacity, bytes	32M	64M
Maximum Capacity, bytes	64M	64M
Increment Size, bytes	32M	Not applicable
Expanded Storage	Not available	Not available
Cache Storage		
Type	Vendor did not specify	Vendor did not specify
Cycle Time, nanoseconds	15	15
Minimum Capacity, bytes	256K per IP*	256K per IP*
Maximum Capacity, bytes	256K per IP*	256K per IP*
Increment, bytes	Not applicable	Not applicable
Central Processor		
Relative Performance, MIPS	Vendor did not specify	Vendor did not specify
Machine Cycle Time, nanoseconds	15	15
Word Length, bits	36	36
Input/Output Control		
Integrated I/O Channels	4 - 48	12 - 96
Other I/O Channels	Up to 80	Up to 160
Maximum I/O Data Rate, bytes/sec.	33M	33M
Communications		
Maximum Number of Lines	48 - 976	48 - 976
Synchronous, speed	19.2 bps	19.2 bps
Asynchronous, speed	19.2 bps	19.2 bps
Protocols Supported	UDLC	UDLC
Network Architectures Supported	DCA, SNA, Ethernet, PDN, DDN	DCA, SNA, Ethernet, PDN, DDN
Peripheral Equipment		
Disk Drives	616MB - 5.1GB	616MB - 5.1GB
Magnetic Tape Drives	PE/GCR, 75 - 200 ips	PE/GCR, 75 - 200 ips
Line Printers	650 - 2,000 lpm	650 - 2,000 lpm
Other Peripheral Devices Supported	Terminals, optical disks, communications processors	Terminals, optical disks, communications processors
Software		
Operating Systems	OS 1100	OS 1100
Programming Languages	Cobol, RPG II, Fortran, Basic, Pascal, PL/1, APL, RPG II	Cobol, RPG II, Fortran, Basic, Pascal, PL/1, APL, RPG II
Database Management System	DMS 1100, UDS 1100	DMS 1100, UDS 1100
Pricing and Availability		
Purchase Price, basic system, \$	4,573,332 to 5,761,800	6,031,800 to 8,667,000
Monthly Maintenance, prime shift, \$	7,707 to 8,481	8,967 to 12,500
Monthly Rental, 1-year lease, \$ (including maintenance)	304,888 to 384,120	402,120 to 577,800
Purchase Price of Memory Increments, \$	192,000 (32MB)	Not applicable
Date of First Delivery	3/89, 6/89	6/89
Comments	*Instruction Processor Ref.: 70C-944YT-851	*Instruction Processor Ref.: 70C-944YT-851