

Data General Desktop Generation Series

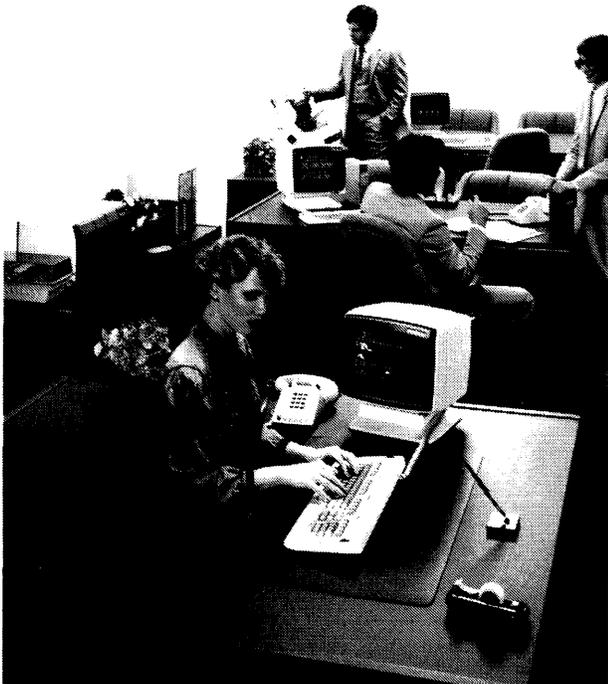
MANAGEMENT SUMMARY

The Data General Desktop Generation is a family of five desktop professional computers designed to provide compatibility with, as well as an upward growth path with DG's 32-bit Eclipse MV/Family product line. The Desktop Generation models include: Models 10, 10/SP, 20, 30, and 45.

The Desktop Generation Series systems incorporate three different microprocessors into their architectures: the microEclipse, the Intel 8086, and the Motorola 68000.

Models 10 and 10/SP are both dual-processor systems that include the microEclipse and the Intel 8086 processing units. The combination of the processors permits the Model 10 and Model 10/SP to support the CP/M-86 and MS-DOS operating systems, as well as Data General's operating systems. Models 20 and 30 operate under the microEclipse processor. Model 45 employs a dual-processor architecture also by supporting the microEclipse and the Motorola 68000 processors.

The 16-bit microEclipse implements the same character instruction set used in older 16-bit Data General systems. This allows for compatibility throughout the Data General ➤



Data General Corporation's Desktop Generation systems offer individual computing, integrated office automation and data processing, and networking capabilities. The Desktop systems are capable of running a wide range of existing DG applications while operating as standalone systems or as nodes in larger networks.

The Data General Desktop Generation is a family of five desktop supermicrocomputers that is compatible with DG's Eclipse MV/Family. All Desktop Generation models are based on the microEclipse processor chip; an integrated Intel 8086 processor is available on two of the models and the Motorola 68000 CPU is available on one model, allowing users to run such operating systems as CP/M-86, MS-DOS, and Unix.

MODELS: 10, 10SP, 20, 30, and 45.
MEMORY: 128KB to 4MB.
DISK CAPACITY: 15MB to 142MB.
WORKSTATIONS: Up to 8.
PRICE: \$3,310 to \$19,970 for basic systems.

CHARACTERISTICS

MANUFACTURER: Data General Corporation, 4400 Computer Drive, Westboro, MA 01580. Telephone (617) 366-8911.

CANADIAN ADDRESS: Data General Corporation, 180 Duncan Mills Road, Suite 606, Don Mills, Ontario, Canada M3B 3K3. Telephone (416) 445-8026.

DATA FORMATS

BASIC UNIT: 16-bit word.

INTERNAL CODE: ASCII.

MAIN STORAGE

Memory boards for the Desktop Generation systems consist of dynamic random-access memory (RAM) chips and include parity checking, providing data reliability by protecting memory data without assistance from the central processor.

In addition to parity checking, the memory allocation and protection (MAP) unit is designed to allot and secure the programming address space for each user. The MAP is designed to allow multiple users and programs to coexist.

Memory capacity for the Desktop Generation systems ranges from 128KB to 4MB. Please refer to Chart A for specific memory capacities.

A 16KB cache memory is provided on the Model 45.

PROCESSING COMPONENTS

Each Desktop system includes a CPU card module which accommodates the system processing unit and memory cards. The Desktop Generation Series incorporates three different microprocessors into its architecture: the microEclipse, the Intel 8086, and the Motorola 68000.

Models 10 and 10/SP include the microEclipse and the Intel 8086 processing units. (The combination of the processors ➤

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CHART A. SYSTEM COMPARISON

MODEL	10	10SP	20	30	45
SYSTEM CHARACTERISTICS					
Date of introduction	July 1983	July 1983	July 1983	July 1983	April 1985
Date of first delivery	October 1983	October 1983	October 1983	October 1983	—
Microprocessor type	microEclipse, Intel 8086	microEclipse, Intel 8086	microEclipse	microEclipse	Motorola 68000, microEclipse
Microprocessor cycle time	—	—	—	—	—
Operating system	RDOS, CP/M86, MS-DOS	AOS, RDOS, CP/M-86, MS-DOS	AOS, RDOS, MP/AOS-SU	AOS, RDOS, MP/AOS-SU	Desktop/Unix
Upgradable from	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Upgradable to	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of serial/parallel I/O ports	—	—	—	—	5 serial std., 9 serial max.
Number of expansion slots	3	3	2	2	3
MEMORY					
Minimum capacity (bytes)	256KB	256KB	256KB	256KB	512KB
Maximum capacity (bytes)	1.75MB	1.75MB	2MB	1.5MB	4MB
DISK STORAGE					
Minimum capacity (bytes)	15MB	15MB	15MB	15MB	15MB
Maximum capacity (bytes)	142MB	142MB	142MB	142MB	142MB
NUMBER OF WORKSTATIONS					
	8	4/8	16	16	8
COMMUNICATIONS PROTOCOLS					
	Async, Bisync, RS-232	Async, Bisync, RS-232	Async, Bisync, RS-232	Async, Bisync, RS-232-C	Async, Bisync, RS-232-C, IEEE 802 Ethernet interface

Note: A dash in the column indicates that the information was unavailable from the vendor.

▷ product line (the 32-bit MV/Eclipse Family also supports the 16-bit instruction set). The Intel 8086 is a 16-bit processor that is designed with HMOS chip technology. The Motorola 68000, which permits the multiuser capabilities of the Model 45, is a 16-/32-bit chip capable of handling 16-bit words while processing data 32 bits at a time.

The Desktop Generation Models 10 and 10/SP function as either single- or multiuser systems, allowing users to access both DG software products and programs developed for CP/M-86 and MS-DOS. Both systems support from 256KB to 1.75MB of main memory, up to two 368KB diskettes, and a maximum of 142MB of disk storage. Model 10 supports up to 8 users; Model 10/SP supports up to 4 workstations while operating under the RDOS operating system and a maximum of 8 while operating under AOS. The only difference between Models 10 and 10/SP is that in addition to the operating systems supported by Model 10, Model 10/SP also supports the Advanced Operating System (AOS).

Model 20 can also function as either a standalone unit or as a node in a distributed data processing network. Model 20 supports up to 2MB of main memory on either 256KB or 512KB memory boards, one or two 368KB diskettes, up to 142MB of disk storage, and a maximum of 16 workstations.

Model 30 is identical to the Model 20, with the exception that it can support a maximum of 1.5MB of main memory.

The Model 45 microEclipse processor handles all I/O requests, leaving the Motorola 68000 free to provide dedicated support to the Desktop/UX system. Model 45 supports up to 4MB of main memory, a 16KB cache memory, up to two 5/4-inch 368KB diskettes, 142MB of disk storage, and up to 8 users.

▶ permits the Model 10 and Model 10/SP to support the CP/M-86 and MS-DOS operating systems, as well as Data General's operating systems.) Models 20 and 30 operate under the microEclipse processor. Model 45 employs the microEclipse and the Motorola 68000 processors.

The 16-bit *microEclipse* implements the same 16-bit Eclipse character instruction set used in older 16-bit Data General systems, in particular, the older Eclipse S/20. The microEclipse CPU provides a 500-nanosecond cycle time. It executes floating-point instruction sets (optional on Model 10), and supports the I/O, data channel, and burst multiplexor facilities of the micro I/O bus.

The *Intel 8086* is a 16-bit processor designed with HMOS chip technology. The Intel 8086 chip is equipped with 40 pins and uses standard Intel RAM and ROM memory. Each cycle consists of one phase. The number of instructions included is 134, with a direct addressing capability of up to one million instruction words. The interrupt system is vectored with 256 different interrupts. In addition, the Intel 8086 provides 8- and 16-bit signed/unsigned arithmetic (including multiply and divide) operation, multiprocessor/dual-processor extensions, on-chip memory segmentation, and multibus compatibility. Hardware BCD arithmetic is standard.

The *Motorola 68000*, which permits the multiuser capabilities of the Model 45, is a 16-/32-bit chip capable of handling 16-bit words while processing data 32 bits at a time. The Motorola 68000 processor operates at up to 12.5MHz and provides 8 arithmetic registers, 16 indexed registers, and 16 general registers. There are 16MB of instruction words that are directly addressable; direct memory access is optional.

The Eclipse floating-point instruction set for processing scientific instructions is standard on Models 10/SP, 20, 30, and 45, and is optionally available on the Model 10.

In addition, a hardware floating-point accelerator card is available. This card is necessary when implementing the 16-bit Eclipse Commercial Instruction Set used to run Cobol and RPG II programming languages. Both the floating-point card and the Commercial Instruction Set are standard features of Models 30 and 45.

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CHART B. DISK/DISKETTE DEVICES

MODEL	—	6271	6301	6336
Type	Diskette drive	Winchester disk	Winchester disk	Winchester disk
Size (inches)	5.25	5.25	5.25	5.25
Number of surfaces	2	—	—	—
Formatted capacity per drive (bytes)	368KB	15MB	38.6MB	71MB
Interface/controller	Integral	Integral	Integral	Integral
Average access time	—	—	—	—
Data transfer rate	250KB/sec.	5M bits/sec.	—	—
Sectors/tracks per surface	8, 9, 10	17	—	—
Bytes per sector/track	512	512	512	512
Comments	Diskette module can contain a maximum of two diskettes			

Note: A dash in the column indicates that the information was unavailable from the vendor.

▷ The Desktop Generation systems, with the exception of the Model 45, which supports Desktop/UX (a Data General version of Unix), support several 16-bit operating systems, including the Real-time Disk Operating System (RDOS), Advanced Operating System (AOS), and Microprocessor/Advanced Operating System (MP/AOS-SU). In addition, Models 10 and 10/SP support Microsoft's MS-DOS and Digital Research's CP/M-86.

Models 10 and 10/SP, while operating under MS-DOS or CP/M-86, can also run the hundreds of "off-the-shelf" applications software packages available for the industry-standard microcomputer operating systems.

Programming languages supported by the Desktop Generation systems include Basic, Cobol, Fortran, Pascal, PL/1, DG/1, C, and RPG II.

Communications on the Desktop Generation systems are supported by standard line interfaces, including EIA RS-232-C, 20 ma current loop, and EIA RS-422.

Other communications options available for the Desktop Generation systems include: USAM-1, a single-line universal synchronous/asynchronous multiplexor; USAM-4, a 4-line universal synchronous/asynchronous multiplexor; the IEEE 802 Local Area Network interface board; an Intelligent Synchronous microController (ISmC/2) designed for bit and byte synchronous communications; and the IEEE-488 Bus Interface, a hardware/software interface system which allows bidirectional asynchronous communications among a variety of systems and peripherals.

Data General offers networking aids for the Desktop Generation computers that support local and global interprocessor communications between the Desktop and other Data General and IBM computers.

The Xodiac Network Management System provides network management for systems operating under AOS. Other communications software supported by the Desktop Generation systems includes Remote Job Entry Control Program (RJE80), IBM HASP-II, DG/SNA, RCX70, and the X.25 protocol. Also supported is the XAP file transfer program; the General Asynchronous Terminal Emulator ▷

▶ INPUT/OUTPUT CONTROL

Sensor Input/Output (I/O) boards allow the Desktop Generation systems to interface directly with a variety of data acquisition and control equipment. Using either a single interface or a combination of interfaces, a system can be configured for a particular application. Sensor I/O boards are available for:

- Interfacing directly with data acquisition and control instruments. The digital I/O board is the one that permits this interface.
- Converting analog input signals to digital signals. The analog-to-digital board is a realtime interface that allows users to connect analog input signals to systems in applications such as process control, laboratory experimentation, medical instrumentation, test equipment, and machine control.
- Converting digital signals to analog signals. The digital-to-analog board allows the system to control external analog devices using two analog output channels in applications such as process control, laboratory experimentation, test equipment, and machine control. Scope control is standard on the digital-to-analog interface board.

CONFIGURATION RULES

GENERAL: Each basic Desktop Generation supermicrocomputer unit includes a CPU module containing the system boards and slots for additional memory and I/O boards; a diskette module containing one diskette drive and a slot for an additional diskette drive; and a power supply module containing the power supply, a slot for an additional power supply, and a fan.

The CPU's slots contain the system processing unit and memory boards. The memory for the Desktop Generation computers is contained either on the CPU board and on a separate board, or completely on separate boards. Two or more slots in the CPU board module are reserved for the CPU and memory; the remaining slots are available for optional plug-in boards, including the graphics controller board, the floating-point accelerator board, and I/O boards. Additional slots are available in an expansion board module.

The standard display monitor for Models 10 and 10/SP is a monochrome monitor; a color monitor is optionally available. Both display monitors provide alphanumeric and compatible graphics capabilities, and use the same lightweight detachable keyboard. The 12-inch monochrome monitor screen displays green characters on a black phosphor back- ▶

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CHART C. WORKSTATIONS

MODEL	Monochrome Graphics Display	Color Graphics Display	Dasher D210/D211	Dasher D220
DISPLAY PARAMETERS				
Max. chars./screen	1920	1920	1920	1920
Buffer capacity	—	—	—	—
Screen size (lines x chars.)	24 x 80	24 x 80	24 x 80	24 x 80
Tilt/swivel screen	Yes	Yes	Tilt only	Tilt only
Symbol formation	640 x 240 pixels	620 x 240 pixels	10 x 12 pixel	7 x 10 dot matrix
Character phosphor	Green on black	Color monitor	Yellow-green	Red/blue/green
Total colors/no. simult. displayed	Monochrome	16 solid colors from a color palette of 4096	Monochrome	8
KEYBOARD PARAMETERS				
Style	Typewriter	Typewriter	Typewriter	Typewriter
Character/code set	112 keys	112 keys	96 ASCII	106 ASCII
Detachable	Yes	Yes	Yes	Yes
Program function keys	—	—	15	15
TERMINAL INTERFACE	—	—	RS-232-C, 20 ma	RS-232-C, 20 ma
COMMENTS	For Models 10 and 10/SP	For Models 10 and 10/SP	Dasher D211 has an additional 96-character set and auxiliary serial printer port	Available in two packages as a monitor only or in a monitor/keyboard/cables configuration

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➤ (DG/GATE) which provides access for public information networks such as Dow Jones reports, Dun & Bradstreet listings, and the Source; and DG/Blast, a file transfer utility that allows Desktop Generation users to communicate with a variety of microcomputers.

TCP/IP, the standard local area networking protocol for Unix operating system implementations, is a connection-oriented, point-to-point protocol. Available only on the Model 45, TCP/IP is supported under Data General's Desktop/UX operating system. TCP/IP allows users to configure the Model 45 to other Data General and non-Data General systems.

Data General provides the Trendview and Present business graphics packages for its Desktop Generation systems. Also available is the Comprehensive Electronic Office System (CEO) which integrates word processing, data processing, and data communications. In addition, a variety of applications software designed for the electronic office, information management and presentation, data entry and retrieval, and transaction processing is available for the Desktop Generation systems through both Data General and third-party software vendors.

COMPETITIVE POSITION

With its Desktop Generation Series, Data General has positioned itself to compete with other vendors who offer supermicrocomputer lines that are compatible with their larger minicomputer product offerings. Like Data General, most are established minicomputer manufacturers who are determined to keep their installed user base happy by providing microcomputer-like versions of their more powerful systems. That compatibility opens up a new market for the vendors also. Potential customers of these supermicrocomputer systems are provided with an extensive up- ➤

➤ ground, as well as displaying reverse video as black characters on a green background. The 13-inch color monitor screen requires a graphics interface board for control. The color monitor is capable of producing 16 colors simultaneously from a palette of 4,096 possible colors.

Models 20, 30, and 45 support a variety of Dasher workstations, including Models D210, D211, D410, D460, and D470.

The Desktop Generation's diskette module contains one diskette drive, which accepts removable, industry-standard, 5¼-inch, double-density, single- or double-sided diskettes. The diskette drives for the Desktop systems support both Data General diskettes and non-Data General diskettes that comply with MS-DOS and CP/M-86 standards.

Both the standard and optional Model 10 and 10/SP diskette drives are driven by a diskette controller located on the CPU board. The diskette module for Models 20, 30, and 45 contains a diskette controller board that manages both the standard diskette drive and the optional, second diskette drive.

The diskettes can be formatted in either Data General standard or IBM PC format. In Data General standard format, each diskette's capacity is 368.6KB.

Winchester disk drives available for the Desktop Generation include 15MB, 38.6MB, or 71MB capacities. The Desktop Generation systems can accommodate up to two 5¼-inch Winchester disk drives for a total of 142MB of storage.

The Desktop Generation systems support either a cartridge tape subsystem or a streaming tape subsystem for optional backup support.

The Desktop Generation systems support a variety of printers, including graphics, multifunction dot-matrix, data processing dot-matrix, and letter-quality printers.

INPUT/OUTPUT UNITS

See Chart B for disk and diskette devices, Chart C for workstations, and Chart D for printers. ➤

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CHART C. WORKSTATIONS (Continued)

MODEL	Dasher D410	Dasher D460	Dasher D470C
DISPLAY PARAMETERS			
Max. chars./screen	2000	2000	2000
Buffer capacity	—	—	—
Screen size (lines x chars.)	24 x 81, 24 x 135 or 24 x 162	24 x 81, 24 x 135 or 24 x 162	24 x 81
Tilt/swivel screen	Tilt only	Tilt only	Tilt only
Symbol formation	10 x 12 or 12 x 12 pixel char. cell	10 x 12 or 12 x 12 pixel char. cell	8 x 19 & 8.3 x 5.9 dot matrix
Character phosphor	Yellow-green or amber	Yellow-green or amber	Varies
Total colors/no. simult. displayed	Monochrome	Monochrome	16
KEYBOARD PARAMETERS			
Style	Typewriter	Typewriter	Typewriter
Character/code set	96 ASCII	96 ASCII	96 ASCII
Detachable	Yes	Yes	Yes
Program function keys	15	15	15
TERMINAL INTERFACE	RS-232-C, 20 ma, RS-422	RS-232-C, 20 ma, RS-422	RS-232-C, 20 ma, RS-422
COMMENTS		Supported by Trendview and Present graphics software packages	

Note: A dash in the column indicates that the information was unavailable from the vendor.

➤ ward growth path, while protecting their initial hardware and software investments.

Within this niche of the market, Data General will find most of its competition from AT&T's 3B2/300 and IBM's System/36 Models 5362 and 5360.

The Desktop Generation is well positioned against AT&T's 3B2/300. Like the Desktop Generation systems, the 3B2/300, AT&T's low-end system in its 3B computer family, is also designed for use in office, laboratory, and manufacturing plant environments. The 4MB main memory maximum on the Desktop Generation Model 45 is doubled that of the 3B2/300's 2MB maximum. Also, disk storage for the Model 45 is quite larger (142MB compared to 32MB on the 3B2/300). However, AT&T's offering supports 18 workstations—10 more than the number supported on the DG Model 45, but only two more than the 16 supported on Models 20 and 30.

Because of its data processing and office automation capabilities, other competition for the Desktop Generation can be found from IBM's System/36, in particular, the Models 5362 and 5360. The Desktop Generation's maximum memory capacity of 4MB surpasses the 1.75MB maximum supported on the IBM System/36 Model 5360. When comparing disk storage capacities, we find that the DG systems support more than the Model 5362 (142MB compared to 120MB); however, a comparison with the Model 5360 shows that the IBM offering supports almost six times the amount of disk storage (800MB). In addition, both models of the IBM System/36 support more local workstations (22 for the 5362 and 36 for the 5360 compared to 16 on the DG systems).

ADVANTAGES AND RESTRICTIONS

One of the biggest advantages of the Desktop Generation Series is that it provides users with a wide range of process- ➤

➤ **OTHER PERIPHERALS:** Magnetic tape backup is provided by either a cartridge tape or by a streaming tape drive. The ¼-inch cartridge tape module contains a magnetic tape cartridge drive, a controller, and a power supply. Data capacity is up to 15.4MB. The ½-inch streaming magnetic tape subsystem has a recording density of 1600 bits per inch and a streaming tape speed of 30 inches per second.

A desktop color plotter produces designs on paper or transparent film in a spectrum of colors. The plotter holds two pens and moves the paper or film under one pen at a time to complete plots with resolution of up to 1,000 dots per inch. The desktop color plotter, which weighs 13.5 pounds, is 5 inches high, 17 inches wide, and 13.5 inches deep.

A 12-inch by 12-inch graphics data tablet digitizer can be used to create or locate graphical data on a monitor screen for interactive graphics applications. Overlays, such as menus, charts, and maps, are placed on the surface of the data tablet for digitizing. The tablet provides a maximum of 6096 positions of resolution. Users can select resolution quality of up to 500 lines per inch or up to 20 lines per millimeter, or the tablet can automatically scale output to match any monitor resolution. The data tablet connects to an RS-232-C line interface and is fully supported by the Graphics Kernel Software (GKS) packages.

A three-button mouse can be used for digitizing graphic information by allowing the user to direct the cursor on the screen. A crosshair in its transparent center is designed to allow for easily viewing tablet overlay.

COMMUNICATIONS

GENERAL: Communications on the Desktop Generation systems are supported by standard line interfaces and communications multiplexors.

The following industry-standard line interfaces are supported for communications lines to and from Desktop Generation systems: EIA RS-232-C for modem connections of up to 50 feet; 20 ma current loop for distances of up to 300 feet; and EIA RS-422 for distances of up to 4,900 feet.

Other communications options available for the Desktop Generation systems include: ➤

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CHART D. PRINTERS

MODEL	4518	4434
Type	Letter-quality	Draft, graphics, near-letter-quality
Speed	35 cps	40/80/160 cps
Bidirectional printing	Yes	Yes
Paper size	Up to 14 inches	Up to 10 inches
Character formation	Daisywheel	—
Horizontal character spacing (char./inch)	10 or 12	—
Vertical line spacing (char./inch)	6 or 8	—
Character set	96 ASCII	96 ASCII
Controller/Interface	RS-232	Included
No. of printers per controller/interface	One	One
Printer dimensions, in. (h x w x d)	8.2 x 24 x 15.6	6.2 x 13.7 x 9.6
Graphics capability	No	Yes
Comments		

Note: A dash in the column indicates that the information was unavailable from the vendor.

ing options; users have access to a variety of minicomputer applications software, as well as industry-standard MS-DOS and CP/M-86 microcomputer software.

Another significant advantage of the Desktop Generation computers is their compatibility, both within the product line and with the Eclipse MV/Family computers. Software written under the 16-bit Advanced Operating System (AOS) is compatible with AOS/VS software supported on the larger 32-bit systems, giving users of the smaller systems a direct growth path to the MV/4000 DC (Departmental Cluster). However, the Data General systems are only field-upgradable in the sense that one system can be changed to another at the user's site; an upgrade requires a processor swap. Another point worth mentioning is that both product lines support some of the same peripherals—namely, the Dasher workstations, thereby allowing users to save some of their initial hardware investment.

The Desktop Generation systems support a variety of communications, including Xodiac local area networking software, DG/SNA, RCX70, the XAP file transfer program, X.25 software, and TCP/IP, among other communications software. Hence, the systems are designed to run a wide range of existing DG applications while operating as a standalone system, in addition to serving as a node in larger networks.

Customers are also offered a variety of hardware and software services for supporting their Desktop Generation systems. This allows a user to choose the type of service agreement which best suits the site's needs.

Although the Desktop Generation's upper parameters are somewhat limited at this time, Data General does strive to continually enhance its product line by announcing new systems, peripherals, and software.

USER REACTION

Datapro's 1985 Computer Users Survey yielded no responses for the Data General Desktop Generation systems because the survey focused on mini- and superminicomputer systems. Unfortunately, Datapro was unable to obtain from Data General a list of users we could contact directly for telephone interviews. □

- ▶ • **USAM-1**—a single-line universal synchronous/asynchronous multiplexor.
- **USAM-4**—a 4-line universal synchronous/asynchronous multiplexor. Two lines provide asynchronous/synchronous serial transmissions and the other two lines are dedicated to asynchronous transmissions.
- **The IEEE 802 Local Area Network interface board**, supported by the X.25 protocol and DG's Xodiac communications software.
- **An Intelligent Synchronous microController (ISmC/2)** designed for bit and byte synchronous communications. The ISmC/2 is designed to enhance system throughput by off-loading synchronous communications functions from the central processing unit.
- **IEEE-488 Bus Interface**—a hardware/software interface system which allows bidirectional asynchronous communications among a variety of systems and peripherals. The IEEE-488 bus interface provides an interface between the micro I/O bus and the general-purpose interface bus (GPIB).

SOFTWARE

OPERATING SYSTEM: The Desktop Generation systems, with the exception of the Model 45, which supports Desktop/UX (a Data General version of Unix), support several 16-bit operating systems, including the Real-time Disk Operating System (RDOS), Advanced Operating System (AOS), and Microprocessor/Advanced Operating System (MP/AOS-SU). In addition, Models 10 and 10/SP support the MS-DOS and CP/M-86 microcomputer operating systems; Models 10 and 10/SP are able to run MS-DOS or CP/M-86 concurrently with AOS or RDOS.

RDOS is a memory-resident operating system capable of executing two programs simultaneously for foreground and background processing. RDOS supports realtime process control, program development, and many standard user applications. The primary interface with RDOS is the Command Line Interpreter (CLI) utility, whose command syntax is a communications path to the system. The CLI also provides access to other system utilities, supporting communications, system administration, software development, data backup, graphics creation, and general business applications.

AOS is a general-purpose, disk-based operating system designed to control and monitor user program processing. AOS manages many program control, I/O, and file access functions; system and user resources to optimize the perfor-

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► mance of all system functions; and simultaneous timesharing or multiple batch streams.

AOS also supports a number of utilities which can be accessed by using the AOS CLI utility, the primary system interface. Additional AOS utilities include software development aids, an interactive debugger for program development, a logon system, an accounting facility, a general-purpose help facility, system administration facilities, and data management and backup aids.

The AOS operating system is not supported on the Model 10.

Compatible with AOS, *MP/AOS-SU* is a single-user, memory resident operating system which supports realtime applications. *MP/AOS-SU* features cross-development capabilities with both AOS and the *AOS/VS* (runs on the *Eclipse MV/Family*) operating systems.

MS-DOS, Microsoft Corporation's operating system for the Intel 8086 and 8088 microprocessors is designed for single-user, single-tasking, interactive applications such as program development and debugging, small business computing, and graphics applications. The *MS-DOS* operating system runs on any Model 10 or Model 10/SP. Under *MS-DOS*, the Models 10 and 10/SP execute application software and programming languages written for *MS-DOS*. According to Data General, nondevice dependent applications written for *MS-DOS*, including applications written for the IBM PC (running the *DOS* operating system) run unmodified on Model 10 and 10/SP systems.

Digital Research's CP/M-86 (Control Program for Microcomputers) is a general-purpose operating system for 16-bit microprocessors, specifically the Intel 8086 and 8088 microprocessors. The *CP/M-86* operating system is also designed for single-user, single-tasking, interactive applications. *Digital Research's* languages and programming tools are designed for programmers writing commercial software packages. *CP/M-86* runs on Models 10 and 10/SP, allowing the systems to execute applications software and programming languages written for *CP/M-86*.

Desktop/UX, supported only on the Model 45, is Data General's version of the *Unix System V* operating system. *Desktop/UX* features an improved file system, which provides for a selectable logical block size of either 512 bytes or 1024 bytes. According to Data General, the 1024-byte block size can improve throughput by as much as 10 or 15 percent.

Like *Unix System V*, *Desktop/UX* is written in the high-level C programming language. The *Desktop/UX* operating system and C language libraries also contain utilities which allow for manipulation of data from one program or system format to another. This provides for application portability, allowing users to network different products, share software, and transfer files across different systems.

Desktop/UX supports the Bourne shell from the standard AT&T release and the C shell from the Berkeley Software Distribution (BSD). A user has the option of switching from one shell to the other when logging on to a *Desktop/UX*-based system.

According to Data General, *Desktop/UX* provides a high degree of compatibility and software portability among other *Unix System V* products, as well as Data General's *DG/UX* *Unix* operating system used on the 32-bit *Eclipse MV/Family*.

DATA BASE MANAGEMENT: The Desktop Generation systems support *Infos II*, a file management system, as well as *Present* (described in the Applications section). *Infos II* is designed for file organization and management. Running

under AOS, *Infos II* organizes complex data structures and retrieves patterns of this data from its working files. In addition to conventional sequential and random access methods, *Infos II* supports indexed sequential access.

LANGUAGES: The Desktop Generation systems support the following programming languages: Basic, Cobol, Fortran, Pascal, PL/1, DG/1, C, and RPG II.

COMMUNICATIONS: Data General offers networking aids for the Desktop Generation computers that support local and global interprocessor communications between the Desktop and other Data General and IBM computers.

The *Xodiac Network Management System* provides network management for systems operating under AOS. It enables users to transparently access remote terminals as virtual consoles; access remote systems devices and AOS files; transfer files between AOS systems; and communicate with and control processes on remote systems.

Xodiac software transmits either directly through communications links or intercomputer links, or indirectly through public packet switched networks on the X.25 packet switching protocol. Components of the *Xodiac* system include AOS X.25, the connection protocol; AOS RMA, the resource management agent; AOS VTA, the virtual terminal agent; AOS NETGEN, the network generation program; AOS FTA, the file transfer agent; AOS RIA, the remote *Infos* agent, and AOS RDA, the remote data base agent.

Data General describes *Xodiac* as consisting of four layers: physical link, link control, connection, and functional. *Xodiac* users can interact through either the functional or connection layers. The functional layer allows an authorized operator to manipulate system-controller resources on another system. The connection layer allows for less structured communications between two processes. For more information on *Xodiac*, please refer to Report M11-304-301, *Data General Eclipse MV/Family*.

Data General's *Remote Job Entry Control Program (RJE80)* supports IBM 2780/3780 emulation, can send or receive files, provides communications with any DG system, and supports point-to-point or multidrop communications. This program uses synchronous lines only and requires a *USAM-4*, plus an additional 128KB of memory for systems that support *RDOS*.

The *IBM HASP-II Workstation Emulator* works in conjunction with a host and provides communications with other *HASP*-equipped DG systems. Efficiency of data transmission is reportedly achieved by interleaving and data compression. Multileaving capability can include up to seven input and seven output datastreams. The emulator supports both disk and tape storage.

The *X.25 Software Package* allows host computers to interface to packet switching networks, supporting point-to-point communications between the Desktop Generation computers and other Data General computers.

DG/SNA acts as an interface to IBM's System Network Architecture. It allows a Desktop Generation computer to appear as an *SNA* physical unit type 2 and provides a user with an interface for both Data General supplied terminal emulators and user programs. *DG/SNA* operates concurrently with other Data General communications products.

RCX70, the IBM 3271 Remote Cluster Executive, allows a 16- or 32-bit *Eclipse* computer to act like an IBM 3271 cluster controller and to communicate with an IBM host computer. ►

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► The *XAP* file transfer program is a software package that transfers files between a Desktop Generation system and either a Data General host minicomputer or another Desktop system. *XAP* creates a distributed data processing environment for transferring files to and from the Eclipse MV/Family.

The *General Asynchronous Terminal Emulator (DG/GATE)* provides access for public information networks such as Dow Jones reports, Dun & Bradstreet listings, and the Source for travel information, reservations, and business information programs. A Desktop Generation system appears as an IBM terminal on the network.

DG/Blast is a file transfer utility that allows Desktop Generation users to communicate with a variety of microcomputers. *DG/Blast* is designed to automatically convert files into the appropriate format.

TCP/IP, the standard local area networking protocol for Unix operating system implementations, is a connection-oriented, point-to-point protocol. Available only on the Model 45, *TCP/IP* is supported under Data General's Desktop/UX operating system. *TCP/IP* allows users to configure the Model 45 to other Data General and non-Data General systems. It includes two operational protocols, Transmission Control Protocol (TCP) and (Internet Protocol) IP, and two application protocols, File Transfer Protocol (FTP) and the Telenet Protocol, for data and resource access across local area networks.

UTILITIES: A number of standard system utilities are available for program development, including:

- BusiGEN, a Business Basic program
- Proxi, a Cobol program generator
- TCS, a file tracking system
- CSSORT, a general-purpose sort/merge utility
- MAC and MASM, macroassemblers
- SED, a screen-oriented text editor
- Sort/Merge, a general-purpose utility
- SPEED, a line-oriented text editor
- TCS, a file tracking system
- GPIB, a general-purpose interface bus for controlling the IEEE-488 bus interface
- BusiPEN, a graphics program designed for both AOS and RDOS Business Basic which permits users to create pie, line, or bar charts; output to a file, a printer, or a Dasher graphics display terminal; and implement an online help facility
- Dataprep, a tool for data entry and retrieval for operation on an AOS-based Model 30
- TPMS, a transaction processing management system for an AOS-based Model 30
- SAM (sensor access manager), a set of device handlers and subroutines that manage process I/O in laboratory and industrial applications
- Cross-development utilities that allow users to develop software applications on Desktop Generation systems for use on Data General's entire product line

APPLICATIONS: Data General provides the Trendview and Present business graphics packages, as well as the Comprehensive Electronic Office (CEO) office automation software.

Trendview is designed for use with the AOS operating system and allows users to create pie, bar, line, and more complex graphs. It also permits automatic smooth curve fitting and linear-regression trend line plotting.

Present is closely associated with Trendview graphics displays. Its information presentation facility integrates an intelligent data selection capability. Users can build reports by collecting and manipulating data. Working in conjunc-

tion with Trendview, Present also includes graphic displays (that is, pie charts, bar graphs, and line plots). Present can also extract data from INFOS II and AOS files. Present runs as a standalone processor or as an integrated element of Data General's CEO systems.

The *Comprehensive Electronic Office System (CEO)* integrates word processing, data processing, and data communications. CEO software operates on all DG 16- and 32-bit Eclipse computers, Advanced Operating Systems, and Dasher alphanumeric/graphics workstations. CEO also provides local or remote network capabilities.

For more detailed information on the Comprehensive Electronic Office System, please refer to the *Data General Eclipse MV/Family* report found in Volume 1 of this service and *Datapro Reports on Office Systems*.

In addition, a variety of applications software designed for the electronic office, information management and presentation, data entry and retrieval, and transaction processing is available for the Desktop Generation systems through both Data General and through third-party software vendors. According to Data General, thousands of third-party software programs are available for personal productivity, as well as for commercial and technical applications.

OPERATING ENVIRONMENT

In their most basic configurations, the Desktop Generation systems consist of a system console and three modules which measure 4.5 inches wide, 9 inches high, and 12 inches deep. (The three modules include the power supply module, the CPU logic module, and the diskette module.) Each hardware module is enclosed in its own plastic case.

Recommended operating temperatures for the Desktop Generation systems range between 10 and 38 degrees Celsius, and suggested operating humidities between 20 percent and 80 percent. Required voltage is 120 VAC (+ 10 percent, - 15 percent) and the line current is 1.06 A maximum @ 100 VAC, 50 Hz.

SUPPORT SERVICES

DOCUMENTATION: A variety of Data General publications are available for use with the Desktop Generation systems; some of the publications are free and others are available at a charge.

TRAINING/EDUCATION: Data General provides over 50 courses, which offer lectures and lab training on Desktop Generation equipment at 6 Data General U.S. Education Centers. In addition, a variety of self-study courses is available.

MAINTENANCE: The *standard warranty* for Desktop Generation systems is 90 days; replacement parts come with a 30-day warranty. In addition, a renewable 12-month *extended warranty*, for which there is a flat fee for each 12-month warranty is available. Also available is a *modular mail option*. The modular mail option is similar to an extended warranty, but with the following exceptions: 1) a user pays only for the service that is required and does not pay an annual flat fee; 2) Data General reportedly sends the replacement parts within 72 hours.

Users can choose either a customer self-maintenance program which is backed up by free telephone assistance, or a maintenance program provided by a field engineer.

With the *on-call service* option, a DG field service engineer attends to maintenance needs at the site. For a fixed amount, payable monthly, customers receive service covering all parts, labor, and materials. Periodic checkups and preven-

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► **tive maintenance are also included. If a solution cannot be found by using a toll-free service hotline, a service engineer will visit the site within four hours.**

The on-call 24-hour service option provides the same coverage as on-call service, except that a service representative will arrive at the site within 24 hours instead of 4.

Other service options available include the on-call multidevice service option, in which the user delays a service call until three or more workstations require attention; the per-call service option, in which the service representative arrives within eight working hours and the user pays only for labor and materials used; and a fixed-rate service option which provides the same coverage as per-call service, as well as providing use of the toll-free hot-line.

In addition to the maintenance options available for the Desktop Generation, a number of software support services are available, including on-line information service, an electronic newsletter; software subscription service, a comprehensive mail service which includes updates of software and documentation; full service, providing customers with telephone assistance from software systems engineers; and full service plus, providing the options of full service plus the services of a systems engineer at the site, if needed.

PRICING

POLICY: The Desktop Generation systems are available through Data General's direct sales force, as well as through selected retailers.

EQUIPMENT PRICES

		Purchase Price (\$)	4-hour Service Contract/Mo. (\$)	24-hour Service Contract/Mo. (\$)
MODEL 10 and MODEL 10/SP SYSTEMS				
91289	Model 10/SP with CPU module with 256KB memory, single 368KB diskette module, 38.6MB Winchester module with controller, color graphics controller card, 13-inch color graphics monitor and keyboard, power supply module with dual power supplies	12,255	126	101
91290	Model 10 with CPU module with 128KB memory, single 368KB diskette module, 12-inch monochrome graphics monitor and keyboard, power supply module with one supply	3,310	43	33
91291	Same as 91290 but with dual 368KB diskettes and 256KB memory	4,210	56	41
91292	Same as 91291 but with color graphics controller card and 13-inch color graphics monitor instead of 12-inch monochrome monitor	6,360	80	62
91293	Model 10 with CPU module with 256KB memory, single 368KB diskette module, 15MB Winchester module with controller, 12-inch monochrome graphics monitor and keyboard, power supply module with dual power supplies	6,705	79	59
91394	Same as 91293 but with color graphics controller card and 13-inch color graphics monitor instead of 12-inch monochrome monitor	8,855	103	80
91295	Model 10/SP with CPU module with 256KB memory, dual 368KB diskette module, 12-inch monochrome graphics monitor and keyboard, power supply module with one power supply	4,610	56	41
91296	Same as 91295 but with color graphics controller card and 13-inch color graphics monitor instead of 12-inch monochrome monitor	6,760	80	62
91297	Model 10/SP with CPU module with 256KB memory, single 368KB diskette module, 15MB Winchester module with controller, 12-inch monochrome graphics monitor and keyboard, power supply module with dual power supplies	7,105	79	59
91298	Same as 91297 but with color graphics controller card and 13-inch color graphics monitor instead of 12-inch monochrome monitor	9,255	103	80
91300	Model 10 with CPU module with 256KB memory, single 368KB diskette module, 38.6MB Winchester disk module with controller, 12-inch monochrome monitor and keyboard, power supply module with dual supplies	9,705	106	82
91301	Model 10/SP with CPU module with 256KB memory, single 368KB diskette module, 38.6MB Winchester disk module with controller, 12-inch monochrome monitor and keyboard, power supply module with dual supplies	10,105	106	82
91321	Model 10 with CPU module with 256KB memory, single 368KB diskette module, 71MB Winchester disk module with controller, 12-inch monochrome monitor and keyboard, power supply module with dual supplies	11,705	113	87
91350	Model 10 with CPU module with 256KB memory, single 368KB diskette module, 71MB Winchester disk module with controller, 13-color monitor with controller and keyboard, power supply module with dual supplies	13,855	133	106
91322	Model 10/SP with CPU module with 256KB memory, single 368KB diskette module, 71MB Winchester disk module with controller, 12-inch monochrome monitor and keyboard, power supply module with dual supplies	12,105	113	87
91323	Model 10/SP with CPU module with 256KB memory, single 368KB diskette module, 71MB Winchester disk module with controller, 13-inch color monitor and keyboard, power supply with dual supplies	14,255	137	108
MODEL 20 SYSTEMS				
91339	CPU module, single 368KB diskette module with controller, four-line Universal Synchronous/Asynchronous Multiplexor (USAM-4), power supply module with dual power supplies	7,725	74	55

NA—Not Applicable

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		Purchase Price (\$)	4-hour Service Contract/ Mo. (\$)	24-hour Service Contract/ Mo. (\$)
91341	CPU module, single 368KB diskette module with controller, 38.6MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	10,725	97	76
91342	CPU module, single 368KB diskette module with controller, 71MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	12,725	104	81
MODEL 30 SYSTEMS				
91336	CPU module, single 368KB diskette module with controller, 15MB Winchester module with controller, four-line Universal Synchronous/Asynchronous Multiplexor (USAM-4), power supply module with dual power supplies	10,040	93	69
91337	CPU module, single 368KB diskette module with controller, 38.6MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	13,040	116	90
91338	CPU module, single 368KB diskette module with controller, 71MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	15,040	123	95
MODEL 45 SYSTEMS				
91314	CPU module with 512KB memory, single 368KB diskette module with controller, 15MB Winchester disk module with controller, four-line Universal Synchronous /Asynchronous Multiplexor (USAM-4), power supply module with dual supplies	11,845	126	100
91315	CPU module with 512KB memory, single 368KB diskette module with controller, 38MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	14,824	149	121
91316	CPU module with 1MB memory, single 368KB diskette module with controller, 38MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	15,970	154	125
91317	CPU module with 2MB memory, single 368KB diskette module with controller, 38MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	17,970	159	129
91318	CPU module with 512KB memory, single 368KB diskette module with controller, 71MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	16,845	156	126
91319	CPU module with 1MB memory, single 368KB diskette module with controller, 71MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	17,970	161	130
91320	CPU module with 2MB memory, single 368KB diskette module with controller, 71MB Winchester disk module with controller, USAM-4, power supply module with dual supplies	19,970	166	134
MEMORY EXPANSION				
8713-N	256KB add-on memory board with parity for Models 10 and 10/SP	795	14	21
8713-R	512KB add-on memory board with parity for Models 10 and 10/SP	1,125	18	15
8736-NT	256KB add-on memory for Models 20 and 30	795	20	16
8736-RT	512KB add-on memory for Models 20 and 30	1,125	30	24
8923-A	1MB add-on for Models 20 and 30 (may be combined with 8736-NT or 8736-RT add-on memory with total system memory not to exceed 2MB)	2,250	35	28
8923-B	2MB add-on memory for Models 20 and 30 (maximum of one 2MB memory board per system)	4,250	40	32
8838-A	1MB add-on memory for Model 45	2,250	35	28
8838-B	2MB add-on memory for Model 45	4,250	40	32
MASS STORAGE				
6271	15MB Winchester Disk Module for DG10, 10/SP, and 20; includes controller PCB and internal cables	2,745	25	19
6271-B	Add-on freestanding 15MB disk/power supply module for all models; includes internal and external cables and housing	2,595	28	22
6301	38.6MB Winchester Disk Module for DG10, 10/SP, and 20; includes controller PCB and internal cables	4,995	48	40
6301-B	Add-on freestanding 38.6MB disk/power supply module for all models; includes internal and external cables and disk housing	5,995	50	41
6336	71MB Winchester Disk Module for DG10, 10/SP, and 20; includes controller PCB and internal cables	7,745	55	45
6336-B	Add-on freestanding 71MB disk/power supply module for all models; includes internal and external cables and disk housing	7,995	60	49
MAGNETIC TAPE EQUIPMENT				
6270-B	Cartridge tape module for DG 10, 20, or 30; includes tape unit, controller, power supply, and a power cable	2,695	48	40
6123	Streaming magnetic tape subsystem for all models; 1600 bpi, industry compatible, 30 ips; 8.5-inch reels hold either 1,200 or 1,600 feet of 1.5 mil or 1 mil ½-inch tape	6,600	57/mo.	—

NA—Not Applicable

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		<u>Purchase Price (\$)</u>	<u>4-hour Service Contract/Mo. (\$)</u>	<u>24-hour Service Contract/Mo. (\$)</u>
PRINTERS				
4434	Multifunction matrix printer; 160 cps draft print speed, 80 cps graphics print speed, 40 cps near-letter-quality print speed, 80 columns; includes RS-232-C interface and I/O cable	960	36	30
4531	Multifunction matrix printer; 160 cps draft print speed, 80 cps graphics print speed, 40 cps near-letter-quality print speed, 132 columns; includes RS-232-C and RS-422 interfaces and I/O cable	1,660	38	30
4435	Dual pen color plotter providing color plotting of up to 10 colors; two-color simultaneous plotting capability; 8½ by 11 inches; includes cable	1,365	23	19
4518	DG/Letter quality printer; 35 cps	2,800	39	33
6215	Dasher General Purpose System (G.P.S.) printer with serial interface; 180 cps, logic-seeking, bidirectional, 7-by-9 dot matrix, tabletop printer, four graphics densities, 7- and 8-bit code compatible, multiple programmable functions; includes cable	2,995	48	42

		<u>Purchase Price (\$)</u>	<u>Monthly Maint. (\$)</u>
WORKSTATIONS			
6166	Dasher D410; 12-inch monitor; standard EIA RS-232-C or RS-422 communications interface; includes keyboard	1,850	17
6166A	Same as 6166 except with amber screen	1,925	17
6167	Dasher D460; 12-inch monitor; compatible with D410; includes keyboard	2,050	19
6167A	Same as 6167 except with amber screen	2,125	19
6168	Dasher D210; 12-inch monitor; RS-232-C interface; includes keyboard	1,210	13
6168A	Same as 6168 except with amber screen	1,285	13
6169	Dasher D211; 12-inch monitor; RS-232-C, RS-422, and 20 ma interfaces; includes keyboard	1,260	15
6169A	Same as 6169 except with amber screen	1,335	15
6242	Dasher D210 without keyboard	895	12
6242A	Same as 6242 except with amber screen	970	12
6243	Dasher D211 without keyboard	945	13
6243A	Same as 6243 except with amber screen	1,020	13
6246	Data processing keyboard for D210, D211, D220, D410, and D460; low profile with ergonomic design	250	3
6255	Dasher 410; 12-inch color monitor; includes keyboard and cable	1,535	15
6255A	Same as 6255 except with amber screen	1,610	15
6256	Dasher D460; 12-inch monitor	1,735	17
6256A	Same as 6256 except with amber screen	1,810	17
6283	Dasher D220; 12-inch, 8-color RGB monitor; RS-232-C, RS-422, or 20 ma interfaces	1,895	26
6284	Dasher D220; 12-inch, 8-color RGB monitor; includes keyboard and cable	2,210	28
6291	Dasher D470C; 12-inch color monitor	2,745	28
6308	Dasher D470C; 12-inch color monitor, cable, and keyboard	3,060	30
2212	Data General/One with 256KB memory, one 3.5-inch diskette drive, gray-toned LCD screen, integral keyboard, AC adapter and power cord, MS-DOS, system tutorial, user documentation, and blank diskette	2,995	—
2212	Data General/One with 256KB memory, two 3.5-inch diskette drives, gray-toned LCD screen, integral keyboard, AC adapter and power cord, MS-DOS, system tutorial, user documentation, and blank diskette	3,495	—
2202	Data General/One with 256KB memory, one 3.5-inch diskette drive, gray-toned LCD screen, integral keyboard, AC adapter and power cord, MS-DOS, system tutorial, user documentation, internal 300-baud modem, and blank diskette	3,295	—
2207	Data General/One with 512KB memory, two 3.5-inch diskette drives, gray-toned LCD screen, integral keyboard, AC adapter and power cord, MS-DOS, system tutorial, user documentation, internal 300-baud modem, and blank diskette	4,995	—

		<u>Purchase Price (\$)</u>	<u>4-hour Service Contract/Mo. (\$)</u>	<u>24-hour Service Contract/Mo. (\$)</u>
COLOR MONITOR ELEMENTS				
6262	13-inch color graphics monitor (640 x 240 pixel) and interface cable to color graphics control board for Models 10 and 10/SP; includes power cable to power module	1,750	29	24
6265	Color graphics controller board and interface cable to CPU for Models 10 and 10/SP	1,000	6	5

NA—Not Applicable

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		Purchase Price (\$)	4-hour Service Contract/ Mo. (\$)	24-hour Service Contract/ Mo. (\$)
GRAPHICS POINTING DEVICES				
4437-AAR	Graphics data tablet for all models except DG45	2,050	23	19
4437-ABR	Tablet with puck for Desktop family; includes 10-foot extension cable; not for the DG45	2,000	23	19
4436-AR	Optical mouse equipped with 3 buttons and a 9-by-11 inch grid pad for all models except the DG45; includes 10-foot extension cable	405	6	5
1258	D460 adapter cable which enables users to attach the DG 4436 mouse and 4437 data table to the printer port of the D460 terminal	65	NA	NA
COMMUNICATIONS/TERMINAL CONTROLLERS				
4463-ZT	Four-line Universal Synchronous/Asynchronous Multiplexor (USAM-4) with Desktop chassis cable; two lines async/sync selectable and two lines async only; includes hardware CRC logic and full modem control; programmable line characteristics and speed from 50 to 19.2K baud; EIA RS-232-C, 20 ma current loop, and RS-422 electrical interface compatibility	1,050	5	4
4463-WT	One-line USAM-1 with Desktop chassis cable; includes one line async/sync selectable without hardware CRC logic; full modem control; programmable line characteristics and speed from 50 to 19.2K baud; EIA RS-232-C, 20 ma current loop, and RS-422 electrical interface compatibility	300	4	3
4207-S	Asynchronous Interface Board for DG20 or DG30 only; single line interface for asynchronous terminals	285	7	6
4530-TA	ISMC/2 2-channel intelligent synchronous controller for DG 10/SP, DG20, or DG30; includes two RS-232-C interfaces	1,650	12	10
4530-TB	ISMC/2 2-channel intelligent synchronous controller for DG 10/SP, DG20, or DG/30 with one RS-232-C and one 449/423 interface	1,650	12	10
4530-TC	ISMC/2 2-channel intelligent synchronous controller for DG 10/SP, DG20, or DG30 with two 449/423 interfaces	1,650	12	10
4529-TA	802.3 LAN microcontroller for all models; Ethernet/IEEE 802.3 network controller for 10/SP, 20, and 30	1,650	12	10
4540	Transceiver connecting a DG processor equipped with an Ethernet/IEEE 802 controller to an Ethernet cable network	450	6	6
4555	802.3 LAN package system including microcontroller 4529-TA, Transceiver 4540, drop cable 1326, and AOS/VS Xodiac RTU; for all models	2,800	18/mo.	NA
I/O EXPANSION, POWER SUPPLIES, MISCELLANEOUS				
8697	Logic expansion module (LEM); provides 5 slots for I/O cards only	400	NA	NA
8695	Expansion power supply to add a second power supply to a system containing a single power supply	250	5	4
6269	Add-on diskette drive to expand a single diskette module into a dual diskette module	500	8	6
8862	Realtime clock option to provide system realtime clock synchronized to AC line frequency	50	1	1
8683	Internal cable to provide access to micro I/O bus for use with user-built devices	50	NA	NA
1634	Adapter cable, DG 10, 10/SP CPU printer port	75	NA	NA

NA—Not Applicable

SOFTWARE PRICES

	Purchase Price (\$)
—	RDOS
—	AOS
—	MP/AOS-SU
30228	AOS/WS GKS Graphical Kernel System
30507	AOS/WS General Language Development Package
30508	AOS/WS Cobol
30511	AOS/WS Text Control System (reproduction of software and documentation)
30512	AOS/WS CEO Independent Word Processing
30513	AOS/WS CEO Integrated Word Processing
30518	AOS/WS CEO Spelling
30520	AOS/WS Present
30521	AOS/WS Trendview
30522	AOS/WS Present and Trendview
30523	AOS/WS X.25
30524	AOS/WS Xodiac (Pregen)
30525	AOS/WS Xodiac (Sysgen)

NC—No charge.

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		Purchase Price (\$)
30526	AOS/WS Remote Infos II Agent for Xodiac	250
30527	AOS/WS Remote Database Agent for Xodiac	250
30528	AOS/WS RJE80	700
30529	AOS/WS HASP II	400
30535	AOS/WS SP/Pascal	700
30536/7/8	CP/M-86	100
30539/40/41	MS-DOS	100
30542/3	DG Interactive Cobol (RDOS or AOS/WS)	750
30544/5	DG Business Basic (RDOS or AOS/WS)	750
30546/7	DG Business Basic Data Dictionary	400
30548/9	DG/RDOS Business Basic Report Writer	750
30556/7	DG/Blast	200
30558/9	DG/XAP Asynchronous File Transfer	300
30560/1	DG/Gate Asynchronous Terminal Emulator	200
30562/3	DG Wordperfect	695
30564/5	DG CompuCalc	250
30567	DG/RDOS Development Kit	250
30569	DG/RDOS Extended Basic	200
30570	DG/RDOS Fortran IV Hardware Floating Point	350
30571	DG/RDOS Fortran IV Software Floating Point	350
30572	DG/RDOS Fortran IV	500
30573	DG/RDOS RJE 80	650
30574	DG/RDOS CS Sort	150
30575	DG/RDOS Sensor Access Method	250
30591	AOS/WS Fortran 77	700
30592/3	AOS/WS Fortran IV/V	500
30594	AOS/WS Extended Basic	500
30637	Multiplan	250
30638	Microsoft Word for MS-DOS	375
30639	GW Basic for MS-DOS	300
30640	CB-86 (CBasic Compiler) for CP/M-86	500
30641	Personal Basic for CP/M-86	175
30642	Micro Focus CIS Cobol for CP/M-86	800
30645	Digital Research's C for CP/M-86	600
30646	Pascal MT + 86 for CP/M-86	475
30647	Fortran 77 for CP/M-86	325
30648	CBasic for CP/M-86	300
30727	DG/RDOS IBS (IEEE-488)	250
30728	AOS/WS IBS (IEEE-488)	250
30748	AOS/WS RCS70	1,050
30749	AOS/WS DG/SDLC	400
30750	AOS/WS DG/SNA	1,050
30751	AOS/WS SNA/3270	500
30752	AOS/WS SNA/RJE	500
30753	AOS/WS SNA/3278/APL	500
30795	CEO Document Exchange II For AOS/WS	500
30886	AOS/WS X.25 and Xodiac for LAN Package	NC
30890	AOS/WS SMBasic	900
30899	AOS/WS CEO Decision Base	500
30965	Fortran 77 for MS-DOS	325
31037	Desktop/UX for 1 to 8 users	1,800
31038	Desktop/UX TCP/IP	750

NC—No charge. ■