Apollo Domain Systems

Product Enhancement

Apollo Computer, Inc. has inundated its product line by introducing three workstations a compute server, a personal server, and a Winchester disk device. Apollo unveiled the Domain Series 3000 Personal Workstation, and the DN570 and DN580 workstations. The company also announced the DPS9000 parallel processor and compute server and the DSP3000 personal server. Finally, Apollo has added a 154MB Winchester disk drive.

Apollo is beefing up its product line in response to technical workstation competition created both by IBM's entry into the marketplace and by fierce competition from Sun Microsystems and Digital Equipment Corporation.

DN580, DN570, and Series 3000 Workstations

The DN580 is a 3-D-color graphics workstation designed specifically for graphics-intensive applications. The DN580 supports a 16MHz, 32-bit CPU with a MC68881 co-processor. The DN580 can be configured with 2MB or 3MB of main memory, which is expandable to 8MB, 12MB, or 16MB of ECC memory. The screen is 19-inch, 60 Hz noninterlaced, 1280 by 1024 pixels, with a bit-mapped display. The system supports 24 concurrent processes with up to 64MB of address space per process.

The DN580 boasts up to 100,000 2-D integer transformed and clipped vectors per second with the basic display processor; the high-performance display processor is capable of over 18 million operations per second. The DN580 uses Apollo's recently introduced realtime graphics processor, 3DGA, which speeds up the display of graphic objects generated with 3D GMR, Apollo's proprietary graphics system. The 3DGA executes graphics instructions directly from graphics metafiles resident in the system's virtual memory.

The DN570 is positioned at the low end of Apollo's color graphics workstations. The DN570 has the same 32-bit CPU as the DN580 and includes an integrated display processor capable of performing up to 40,000 2-D integer transformed and clipped vectors per second. The screen is 15 inches with tilt-and-swivel capabilities ▷

Left (bottom to top)
DN570 with a 15-inch color monitor; high-end DN580; top of the line DSP9000 compute server;

Right (bottom to top)
Domain Series 3000 with a 15-inch color monitor; Domain Series 3000 with a 19-inch monochrome monitor; DN570 with a 19-inch color monitor.

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and includes a 60 Hz noninterlaced, 1024 by 800 pixel bit-mapped display. The DN570 addresses 2MB or 3MB of main memory, expandable to 8MB, 12MB, or 16MB of ECC memory. Both workstations offer 256 colors out of a palette of 16 million.

The DN570 is targeted for compute-intensive applications, such as IC design, PCB routing, circuit simulation, and cell compiling. Standard equipment on both workstations includes dedicated video memory with eight color planes, a detachable programmable keyboard and optional mouse, two RS-232-C ports, an integrated 12M-bit-per-second local area network interface, and licenses for Aegis and Domain/IX (twin port of Berkeley 4.2 and Unix System V operating systems) software.

The company's Domain Series 3000 Personal Workstation is available in color and monochrome; it combines a 32-bit Motorola MC68020 processor and an MC68881 floating-point co-processor. The Series 3000 workstations are compatible with the Domain system of workstations, compute servers, and software applications. Series 3000 color personal workstation features include a 15-inch, 60 Hz color monitor with 1024 by 800 pixel resolution and four-bit planes for display of 16 colors from a palette of 4,096 colors. The Series 3000 supports 2MB or 4MB of memory, an optional 72MB Winchester disk, 1.2MB, 5¼-inch floppy disk drive, and a 60MB, ¼-inch cartridge tape drive. The operating system supports either Domain/IX or Aegis.

DSP9000 and DSP3000

The DSP9000 is a parallel processor and compute server. Apollo states that the machine is rated up to 94MFLOPS and 35 MIPS of power. Domain network users can assign compute-intense applications to the DSP9000, freeing the workstation's processor. A prepackaged DSP9011, the entry-level DSP9000, is configured with one computational element, 8MB of memory expandable to 16MB, 2GB of virtual memory per process, a 268MB disk, and a cartridge tape drive. All configurations include hardware and software for interfacing with the Domain network. The DSP9000 server cabinet is 30 inches wide, making it suitable for office environments.

The DSP3000 is a peripheral server based upon the Series 3000 system. Users across Domain networks will be able to share PC-compatible peripheral devices integrated with the server's IBM PC/AT-compatible bus.

Storage

Apollo has enhanced the integrated disk storage capacity of its workstations with the addition of a 5¼-inch, 190MB (154MB formatted) Winchester disk. The storage is also available in a dual Winchester disk (308MB formatted) configuration. The disk subsystem is additionally offered in a configuration with a ¼-inch, 60MB streaming tape cartridge for backup.

Analysis

Apollo's announcements are significant as the engineering workstation market heats up. Just prior to Apollo's adding to its workstation series, IBM came out with its first scientific workstation, the IBM PC/RT, a RISC-based, Unix technical workstation geared both for scientific and compute-intensive general-purpose uses. In addition to new competition from an established vendor, Apollo is also feeling the heat from Sun Microsystems and its line of technical workstations.

Besides Apollo, IBM, Hewlett-Packard, and Sun vying for technical workstation dollars, Digital Equipment Corporation is also very much in the running for a piece of the market share. Digital's new workstation grabber is the VAXStation II/GPX. At this juncture, Apollo still holds onto the technical workstation installed base lead; however, its position, along with the other vendors' market share, may fluctuate as the impact of the competitive products is felt. □

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EQUIPMENT PRICES

		Purchase Price ($)
WORKSTATIONS		
3000 Color	MC68020 processor and MC6881 floating-point co-processor, IBM PC/AT-compatible peripherals bus, 2MB memory, 1 RS232-C port, keyboard and mouse, 15-inch, 60 Hz, 1024 x 80 bit-mapped color display; 4-bit planes support display of 16 colors from palette of 4,096.	$14,900
3000 Color	Includes all features of regular 3000 color personal workstation in addition to a disk controller, and an 5¼-inch 86MB (72MB formatted) Winchester disk with a 1.2MB floppy disk.	19,400
3000 Color	Includes all features of a regular color personal workstation in addition to a 5¼-inch, 86MB (72MB formatted) Winchester disk with a 60MB, ¼-inch cartridge tape.	21,400
3000 Monochrome	Includes features of personal workstation plus 2MB of main memory, and a 19-inch, 64 Hz, 1280 x 1024, bit-mapped monochrome display.	9,900
Series 3000	Includes features of personal workstation plus disk controller, 5¼-inch 86MB (72MB formatted) Winchester disk with an 1.2MB floppy disk.	14,400
Series 3000	Includes features of personal workstation except with a 5¼-inch, 86MB (72MB formatted) Winchester disk with a 60MB ¼-inch cartridge tape.	16,400
DN570	DN570 includes 16MHz MC68020 processor and MC68881 floating-point co- processor, 2MB memory, video memory, 2 RS232-C ports, keyboard, and a 15-inch, 1024 x 800, 60 Hz noninterlaced, bit-mapped color display.	29,900
DN570	Includes features of regular DN570 but with a 19-inch monitor.	32,900
DN580	DN580 includes DN570 features plus 2MB memory, display processor, and a 19-inch, 60 Hz, noninterlaced, 1280 x 1024, bit-mapped color display.	43,900
HARDWARE EXPANSION OPTIONS		
DN580	3D graphics accelerator option for DN580.	9,900
FPX	FPX floating-point accelerator option for DN570, DN580.	5,900
ADD-ON MEMORY		
—	2MB add-on memory	2,000
MASS STORAGE		
MSD-190M	154MB 5¼-inch Winchester disk subsystem	9,900
MSD-190M-TC	154MB 5¼-inch Winchester disk with integrated 60MB ¼-inch tape cartridge unit.	12,900
MSD-190M-190M	Dual 154MB 5¼-inch Winchester disk drives.	16,900
MSD-86M	69MB 5¼-inch Winchester disk subsystem.	5,900
MSD-86M-TC	69MB 5¼-inch Winchester disk with integrated 60MB ¼-inch tape cartridge unit.	8,900
SERVER PROCESSORS		
DSP3000	3000 server processor includes MC68020 processor and MC68881 floating-point co-processor, 2MB, 72MB 5¼-inch Winchester disk, 60MB ¼-inch cartridge tape drive and controller, 2 RS232-C ports, IBM PC/AT-compatible bus, Domain ring interface, and Domain/IX and Aegis software licenses.	15,500
DSP9011	Entry-level configuration includes one computational element, I/O subsystem, 2GB virtual memory per process; operating systems including C compiler and Emacs editor, hardware and software for interfacing with Domain network, Fortran 77 compiler for single CPU, 8MB memory, 268MB disk and controller, cartridge tape drive, 2 Multibus chassis, and expansion cabinet.	195,750
DSP9081	Includes all of the features of the DSP9011 plus 8MB, 379MB disk, 800/1600/6250 tri-density tape drive, controller, and cabinet.	325,250 ■