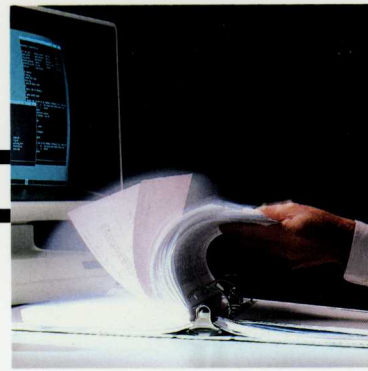
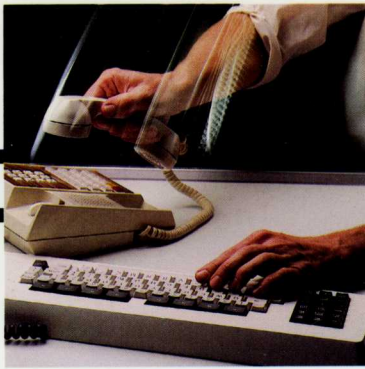


PRESENTING THE NEW STANDARD
IN HIGH PERFORMANCE
WORKSTATIONS



apollo



APOLLO'S DN460 AND DN660 OFFER THE PERFORMANCE OF A HIGH-END SUPERMINI. AT A FRACTION OF THE COST. Until recently, there was only one way for the technical professional to get the raw computing power of a high-end supermini. Pay the high-end price.

Setting another industry standard, Apollo Computer now delivers powerful, high-end 32-bit supermini-class performance at about one-fourth the price of current systems on the market such as the DEC VAX II/780*.

Now users can run large, computation-intensive application programs—such as finite element analysis, VLSI design, image analysis, solids modeling and integrated circuit simulation—in a fraction of the time it used to take. At a fraction of the cost of high-end superminis.

A DEDICATED 32-BIT HIGH-END SUPERMINI AT EVERY USER'S DESK. With the 32-bit supermini power and performance of the DN460 and DN660, Apollo underscores its commitment to the computational needs of technical professionals by making it cost-effective to place a high-end supermini at every user's desk.

Based on a 32-bit proprietary bit-slice processor with a 3-stage pipelined architecture and integrated hardware floating point, the DN460 and DN660 offer virtual memory, high-performance graphics and built-in access to the 12 Mbit per second DOMAIN** local area network. The network allows transparent virtual memory access across the network, a first in the industry, which lets users share peripherals, programs and data for a wide range of applications.

These nodes set new standards for professional workstations by providing the computing power of large-scale systems with the flexibility and fast response of the best interactive systems. What's more, users continue to get quick response no matter how many users are on the network. In fact, increasing the number of users actually increases the performance of the network, since computing power is added, not divided.

MORE EFFICIENT, INNOVATIVE AND COST-EFFECTIVE PRODUCT DEVELOPMENT. A network of powerful DN460s and DN660s—along with existing low-cost DN300 desktop models—distributed throughout a technical organization can slash the costs and delays in bringing a new product to market.

Instead of contending for a share of the resources of a large central computer, each user has a dedicated computer resource. And linked in a network, a development team is capable of tackling large computational problems that could cripple a traditional time sharing system.

Technical professionals have easy, fast access to engineering programs that can save them many hours of development time. Costly delays and misunderstandings are avoided because every member of the development team can have concurrent access to a comprehensive, consistent design database. Design rules can be enforced explicitly, problems are spotted sooner and communication is faster. Instead of serial steps, the development effort becomes a multi-disciplinary parallel process. The result of this teamwork is a better-integrated design, significantly shortened turnaround time and better-engineered products.

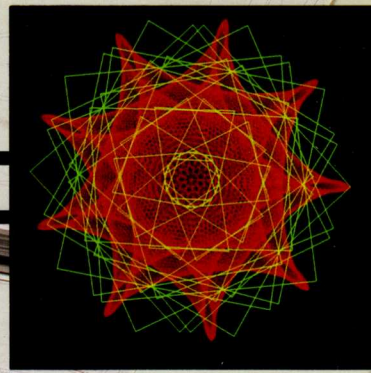
THE DN460 AND DN660 OFFER MORE POWER FOR TECHNICAL PROFESSIONALS THAN ANY OTHER DESKTOP SYSTEM IN THE INDUSTRY. With these powerful nodes, users have workstations that not only rival high-end superminis, but outperform them.

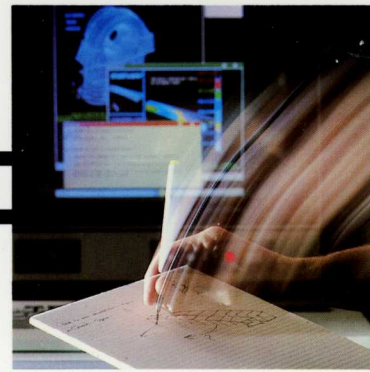
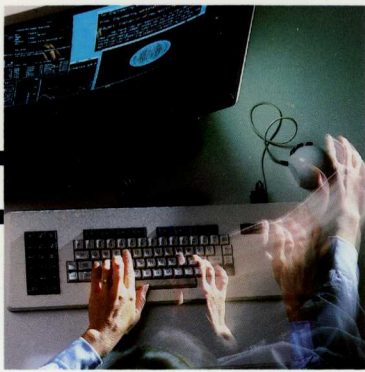
The DN460 and DN660 feature dedicated, 32-bit, bit-slice processors with separate data and instruction caches and integral hardware floating point. The three-stage pipelined architecture lets the system work on three separate instructions at once, resulting in the exceptionally high performance and fast response needed for applications like solids modeling and finite element analysis.

The DN460 and DN660 offer up to 4 megabytes of error correcting main memory with 32-bit main memory transfers. The nodes support up to 24 concurrent processes with 256 Mbytes of virtual address space per process. So you can concurrently run large programs and not run out of space.

*DEC and VAX are trademarks of Digital Equipment Corporation.

**Distributed Operating Multi-access Interactive Network





The DN460 offers all this functionality with a 19", high-resolution, bit-mapped 1024 x 800 monochrome display while the DN660 offers a full color, 19", 1024 x 1024 display. The DN660 features a palette with over 16 million colors, as well as four different display modes. These modes allow you to select the refresh rate, display memory configuration and number of color planes.

Both the DN460 and DN660 are capable of fast bit block transfers. And the DN660 has its own 16-bit display processor that performs fast vector generations, and high-speed area fills for virtually instantaneous graphics operations.

Apollo's DN460 and DN660 support a wide range of peripherals and performance options. These include 68 to 300 megabyte disks, 9 track, 1600 BPI mag tape and a multi-mode printer capable of plotting. Three RS-232 ports are standard.

THE DN460 AND DN660 ADD TO THE POWER OF DOMAIN PROCESSING. Apollo is a company founded to develop and market a system of interactive high-performance workstations dedicated to increasing the productivity of technical professionals. The result is DOMAIN Processing, a highly successful alternative to traditional timesharing.

With DOMAIN Processing, a high-performance computational node is placed at the desk of each user and linked through the high-speed distributed local area network. Each additional node brings power to the network, so potentially hundreds of user nodes can be linked in a single, powerful computing environment.

In short, DOMAIN Processing provides the tools and the power needed for technical professionals to run large programs, to share such resources as data, peripherals and software, and to solve problems quicker.

Three elements provide this capability: virtual memory distributed rather than localized in a central processor; high-resolution, bit-mapped graphics; and Apollo's proprietary operating system including support for AUX, Apollo's adaptation of

the UNIX* System III Software with Berkeley extensions. Both fully support virtual memory, demand paging operations across the network.

Like all existing Apollo DOMAIN nodes, the DN460 and DN660 are supported by a full range of powerful software such as:

ANSI FORTRAN 77, PASCAL, and C programming languages that permit applications programs to be transported easily to the DOMAIN system.

SIGGRAPH Core Graphics, a set of graphics routines that helps users create graphics applications quickly and promote program portability.

DOMAIN Professional Support Services (DPSS), a set of integrated tools with icon-oriented document preparation, mail, file and calendar planning.

Communications support including ETHERNET® and TCP/IP, the X.25 protocol, IBM 3270 terminal emulation, HASP, asynchronous ASCII, and the DOMAIN system's 12 Mbit per second local area network.

DOMAIN Software Engineering Environment (DSEE), Apollo's software package for computer-aided software engineering.

DOMAIN Distributed Database Management System (D3M), that operates across the DOMAIN network environment.

And, in addition, there are hundreds of independently developed application programs available from the most renowned professional software sources worldwide like architectural engineering and construction, electronic engineering, mechanical design, structural, civil and chemical engineering.

The DN460 and DN660—Apollo's high-performance workstations specifically designed for the professional.

DN460 AND DN660 TECHNICAL SUMMARY

- CPU
- 32-bit proprietary bit-slice processor
- Integral floating point unit
- 3-stage pipelined architecture
- 4 kb instruction cache
- 16 kb write through data cache
- 256 Mb virtual address space

MEMORY

- 32-bit data paths
- 1 Mb ECC memory expandable to 4 Mb

OTHER

- Integral 12 Mbit/sec network interface
- Three RS-232C ports (up to 19.2 Kb)
- Keyboard with user definable keys
- Touchpad or Mouse cursor locating devices
- Complete documentation

DN460 MONOCHROME DISPLAY

- 19" monitor, 1024 x 800 bit-mapped graphics
- 60 Hz non-interlaced refresh rate
- 32 Mbit/sec block transfer hardware
- 128 kb display memory

DN660 COLOR DISPLAY

- 19", high-resolution (1024 x 1024) bit-map raster display
- Bit-slice 16-bit dedicated display processor
- Selection of colors from a palette of over 16 million colors
- Up to 2 Mb of dedicated dual ported display memory
- Software selectable color display modes
- 4 or 8 color planes in interactive mode
- 24 color planes in imaging mode for true color
- Hardware raster op's between any and all planes
- Draws vectors at a rate greater than one million pixels per second
- Zoom (1-16x) by pixel replication
- Area fills at a rate up to 320 million bits per second
- Bit block transfer (bit-bit) within display memory at a rate up to 320 million bits per second

- Raster ops at up to 160 million bits per second
 - RS-343 RGB output with composite sync on green
- ### HARDWARE OPTIONS
- 68, 158 Mb or 300 Mb discs
 - 1.2 Mb diskette
 - MULTIBUS* cardcage
 - Multi-mode printer
 - 1/2", 1600 bpi, magnetic tape drive
 - Communications option: HASP, 3270, ETHERNET

THE DOMAIN NETWORK

- Baseband network in a ring topology
- Dual address packet with single token arbitration
- 1000m between two nodes
- Standard RG6/U coaxial cable
- Continuously synchronizing ring topology
- Transparent access to data, programs and peripherals
- Gateway access to remote and foreign facilities/protocols

OTHER FEATURES

- Proprietary Apollo object oriented operating system
- True multiple window management with cut and paste
- FORTRAN, PASCAL, C support
- Berkeley UNIX and UNIX System III
- High level debugger
- D3M distributed database management
- SIGGRAPH 1979 GSPC level 3C
- Icon-oriented DOMAIN Professional Support Services (DPSS)
- Interactive font editor
- Communications support
- Diagnostics
- DOMAIN Software Engineering Environment (DSEE) Package
- Third party applications software

*MULTIBUS is a trademark of Intel Corporation.

FOR MORE INFORMATION—To learn more about the DN460 and DN660, contact your local Apollo Sales Representative at one of the area offices listed below. Or use the attached post-paid reply card.

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