![NeXT logo] **NeXT**CUBE

The NeXTcube is a versatile, easy-to-use workstation that can be utilized as a desktop monochrome system, true color 32-bit-per-pixel color/video workstation or file server system, all featuring NeXT's object-oriented operating and development environment.

Whether used with the NeXTdimension™ board as a standalone workstation incorporating 32-bit-per-pixel color/video, or as server on a network, the NeXTcube™ computer offers a tremendous amount of flexibility and performance in a single, one-foot-square magnesium cube. The system is built around the Motorola 25-megahertz 68040 CPU with integrated memory management and floating-point units, and includes the Motorola 56001 Digital Signal Processor for superior sound handling.

The NeXTcube may be equipped with 16 to 64 megabytes of main memory, and offers a variety of storage options—ranging from a 2.88-megabyte floppy disk drive to hard drives with capacities from 400 megabytes to 2.8 gigabytes. In addition, there are three available NeXTbus™ slots, so additional functionality can be added to the NeXTcube via NeXTbus expansion cards from third-party vendors or from NeXT, making the NeXTcube an extremely versatile workstation.

FEATURES AND BENEFITS

Motorola 68040	Combined central processing (CPU), floating-point (FPU) and paged memory management (PMMU) units with 8 kilobytes of on-chip cache memory.	A highly integrated microprocessor design providing excellent computer performance, high data transfer rate, and exceptional reliability.
Three NeXTbus expansion slots		Provides flexibility for expansion as your requirements change and new technology becomes available.
Motorola 56001 DSP		Provides fast processing of large matrix calculations—used for generating CD-quality sound, music, speech, and tone detection.
MegaPixel 17-inch Monochrome Display	1120 x 832 resolution with 92 dpi	Delivers sharp, crisp display of text and graphics with enough screen space to run multiple applications simultaneously.
Eight built-in ports	SCSI	Support of up to seven SCSI peripherals.
	Two RS-423 serial ports	Allows NeXTcube computers to be tailored to meet your needs with popular serial-based peripherals such as fax and data modems without using expansion slots.
	DSP I/O port	Supports direct I/O access to the DSP.
	Display port	Provides connection to built-in video.
	Laser printer port	Allows direct connection to NeXT's 400 dpi Laser Printer.
	Two Ethernet (twisted and thin) ports	Provides easy connection to virtually any Ethernet network without having to purchase additional cards or adaptors.
Built-in sound I/O		Allows voice input to applications with sound-handling capabilities and provides dual channel CD-quality output.
NeXT 2.88 MB floppy disk drive		2.88 MB of storage space using extended density (ED) disks, as well as 720 KB and 1.44 MB disks.
		Allows for convenient transfer of data files between Macintosh,® OS/2,® and MS-DOS.®
16 MB on-board RAM	16 SIMM memory sockets expandable to 64 MB	Supports 16, 32, and 64 MB SIMMs in four-SIMM increments.
Optional parity support		Parity memory checking is available when optional parity RAM is installed.
NeXTstep™		UNIX® based operating environment optimized for multitasking and networking.
		Offers superior graphical user interface and development environment, with the only object-oriented system software available on the market today.

PRODUCT DETAILS

68040 Processor

The 68040 is a fast and highly integrated microprocessor with a clock speed of 25 MHz. The 68040 contains 1.2 million transistors, more than any other microprocessor in its class. This incredible number of transistors is required because the 68040 is actually four chips in one—a central processing unit, a floating point unit, a paged memory management unit, and 8 kilobytes of cache memory.

The system clock speed is identical to the CPU bus speed, providing an average execution time per instruction of 1.3 clock cycles.

There are two 4-kilobyte memory caches, one for data, the other for instructions, along with burst mode read and write-back caching for improved data transfers.

56001 DSP

Built into the NeXTcube's design is the 56001 DSP, a 25 MHz digital signal processor. With 24 K of static RAM cache, upgradable to 96 K, the DSP is dedicated to the task of handling digital signals—such as sound—at exceptional speeds.

The DSP is capable of generating compact-disc-quality sound: 44.1 kHz sampling rate with 16-bit resolution and full stereo.

Other uses for the DSP range from receiving still and video images to a variety of other data transmission and acquisition activities.

Network Support

Built-in networking, both thin and twisted-pair Ethernet ports are designed into all NeXT™ computers.

Network software and administrative tools are preloaded on all hard drives to simplify connecting to virtually any network, with no additional cards to purchase, install, or configure.

DMA Architecture

NeXT computers were designed to handle the most complex tasks efficiently. Rather than emulating a traditional PC or workstation architecture, NeXT systems use a direct memory access (DMA) architecture similar to that of mainframe computers for off-loading I/O functions from the CPU to the peripheral controller (PC) chip to maximize system throughput.

NeXTbus Expansion Slots

NeXTbus provides a multiplexed 32-bit address and data bus on a single Euro-DIN 96-pin connector.

NeXTbus architecture runs at 25 MHz and can support data transfer rates of up to 100 MB per second in burst mode.

NeXTbus is self-configuring: cards can be plugged into any slot and the system will automatically identify and configure each card.

RAM Configurations

NeXTcubes are currently available in 16, 32, or 64 MB RAM configurations.

RAM upgrades can be added incrementally in four-SIMM increments up to 64 MB of RAM.

Parity memory is also an option, and can be ordered on a select number of configurations.

SCSI

SCSI is an expandable high-performance interface for connecting NeXTcubes to hard disks and other peripherals, such as the NeXT Color Printer, NeXT CD-ROM Drive, scanners, and other devices. Up to seven SCSI peripherals (including internal hard disks) can be connected.

SCSI data transfer rates are up to 4.8 MBytes per second (SCSI-I implementation).

A SCSI-II–type connector was used on NeXTcubes to provide high data reliability in CPU-to-peripheral connection.

Sound I/O

NeXT computers have been designed to accept and process sound.

Using the built-in microphone in the MegaPixel Display™ or an external microphone, voice messages can be easily added to electronic mail or used to annotate applications.

NeXTstep

Based on the industry's first object-oriented system software, NeXTstep offers an elegant graphical user interface and one of the most productive development environments available today.

UNIX

NeXT's operating system is based on the Mach UNIX kernel developed at Carnegie Mellon University, which features shared memory, fast interprocess communication, multitasking, and network support.

NeXT's UNIX is compatible with UNIX 4.3 BSD (Berkeley Software Distribution).

Display PostScript

NeXT offers a unified imaging model, Display PostScript, for imaging on both the screen and printer.

Bundled Software

Each NeXTcube ships with an unprecedented amount of end-user and development software including:

End-User Applications
- Workspace Manager™
- NeXTmail™
- Digital Webster™ (Webster's Ninth New Collegiate Dictionary® and Collegiate® Thesaurus)
- Digital Librarian™
- Edit
- *Mathematica*®—for higher education customers only
- DataViz/Bridge™
- FaxReader
- Preferences
- Preview for PostScript®
- PrintManager

System Administration Applications
- VT100™
- BuildDisk
- BuildDOS
- InstallTablet
- MailManager
- NetInfoManager
- NetManager
- PrinterTester
- UserManager

NeXTstep Release 2.2 Extended also includes:

End-User Applications
- Oxford® Dictionary of Quotations
- William Shakespeare: The Complete Works (for Digital Librarian)
- T$_E$X™ Document Processing System (Radical Eye Software)

Developer Tools
- Interface Builder™
- NeXT Compiler for the Objective C Language
- C++ Language Compiler
- Objective C Class Definitions
- 56001 DSP Tools
- GNU Emacs
- GNU Debugger
- Bug-56™ Debugger (Ariel)
- Malloc Debugger
- AppInspector™
- PostScript Tools
- Application Kit™
- Music Kit™
- Sound Kit™
- On-line technical documentation

TECHNICAL SPECIFICATIONS

PROCESSORS
Motorola 68040 25 MHz CPU
- Integrated Central Processing Unit
- Integrated Memory Management Unit
- Integrated Floating-Point Unit
- Integrated 8-kilobyte instruction/data caches

Performance 25 MHz
- 18.6 Dhrystone MIPS
- 2.2 MFLOPS DP LINPACK
- 10.9 SPEC marks

Peripheral Controller
- Controls 7 DMA channels
- 40 MB/sec bandwidth

Motorola 56001 25 MHz Digital Signal Processor

MEMOR Y
DRAM
- Main Memory
- 16 MB to 64 MB of main memory
- Optional main memory parity checking
- Expandable using DRAM SIMM modules

DSP Static Memory
- 24 kilobytes DSP static RAM
- Expandable up to 96 kilobytes using an SRAM SIMM module

INTERNAL MASS STORAGE

3.5-inch Floppy Disk Drive
- 2.88 MB formatted capacity using extended density (ED) disks
- 3.5-inch third-height form factor
- Read/Write compatible with 720 KB and 1.44 MB disks in UNIX, MS–DOS and Macintosh formats (Not included with 2.8 GB hard drive option)

400 MB Hard Disk Drive (optional)
- 3.5-inch half-height form factor
- 406 MB formatted capacity
- 13 ms average seek time
- 4 MB/sec maximum transfer rate (synchronous)
- Software Release 2.2 Extended preinstalled on disk

1.4 GB Hard Disk Drive (optional)
- 5.25-inch form factor
- 1.35 GB formatted capacity
- 15 ms average seek time
- 5.0 MB/sec maximum transfer rate (synchronous)
- Software Release 2.2 preinstalled on disk

2.8 GB Hard Disk Drive (optional)
- 2 each, 5.25-inch half-height form factor
- 2.7 GB formatted capacity
- 15 ms average seek time
- 5.0 MB/sec maximum transfer rate (synchronous)
- Software Release 2.2 preinstalled on disk

DISPLAY
MegaPixel Display

- 17-inch monochrome flat square display
- 1120 x 832 resolution at 2 bits/pixel
- 68 Hz refresh rate, noninterlaced
- 92 dots per inch
- Integrated microphone and speaker
- CD-quality stereo sound via line outs and headphone jack
- Glare-reduction screen
- Built-in tilt mechanism

INPUT DEVICES
Keyboard
- 84 keys, including: cursor keys, numeric pad, monitor brightness, sound volume, and power on/off

Mouse
- Two-button opto-mechanical mouse

COMMUNICA TION AND INTERFACES
- Thin Ethernet, IEEE 802.3a compatible at 10 Mbit/sec
- Twisted-pair Ethernet, 10BaseT-compatible at 10 Mbit/sec
- Two RS-423 serial ports
- SCSI-2 connector with transfer rate of 4.8 MB/sec (burst rate)
- Laser printer port (for NeXT 400 dpi Laser Printer)
- Digital Signal Processor port
- MegaPixel Display port

OTHER NeXTST ATION SPECIFICATIONS

Size
- 1-foot (305 mm) die-cast magnesium cube
- Space for two full-height, 5.25-inch mass storage devices—or three half-height devices

Weight
- 20 lbs. to 37 lbs. (13 kg to 17 kg)

Power
- Powers up to four slots with 20W each
- 100V to 240V, 47 Hz to 63 Hz self-adapting
- 300W, 5A maximum (including MegaPixel Display)

OPERATING ENVIRONMENT
- Ambient temperature: 32˚F to 104˚F (0˚C to 40˚C)
- Relative humidity: 10% to 90%
- Altitude: 0 to 15,000 ft. (0 to 4,572 m)

REGULATIONS
- UL1950, CSA 220, and IEC950 (EN60950) product safety requirements
- FCC Class A, VCCI Class 1, CISPR-22 Class A (EN55022) EMI requirements

All performance numbers shown were attained using Release 3.0 compilers, GNU C 1.36, Absoft FORTRAN 77 3.1, Greenhills Fortran-68000 1.8.5, Kuck and Associates Preprocessor.

ORDERING INFORMA TION

NeXTCUBE 16/400 COMPUTER SYSTEM
Order No. N1000A-2304
NeXTcube professional workstation with 16 MB of RAM (four each 4 MB SIMMs), built-in 2.88 MB floppy disk drive, and 400 MB hard disk drive; includes 3 meter MegaPixel Display cable.

MegaPixel Display
Order No. N4000A
17-inch monochrome MegaPixel Display (monitor power provided by the CPU)

NeXT Starting Point™ Kit
Order No. N8504-4806
Keyboard
Mouse
CPU power cord
Keyboard tilt feet
Complete set-up, learning, and reference documentation
Limited one-year warranty statement

NeXTCUBE 32/1400 COMPUTER SYSTEM
Order No. N1000A-2316
NeXTcube professional workstation with 32 MB of RAM (four each 8 MB SIMMs), built-in 2.88 MB floppy disk drive, and 1.4 GB hard disk drive; includes 3 meter MegaPixel Display cable.

MegaPixel Display
Order No. N4000A
17-inch monochrome MegaPixel Display (monitor power provided by the CPU)

NeXT Starting Point Kit
Order No. N8504-4806
Keyboard
Mouse
CPU power cord
Keyboard tilt feet
Complete set-up, learning, and reference documentation
Limited one-year warranty statement

Additional NeXT computer configurations and products are listed in the NeXT List Price catalog.

For additional information, call 1-800-TR Y-NEXT
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