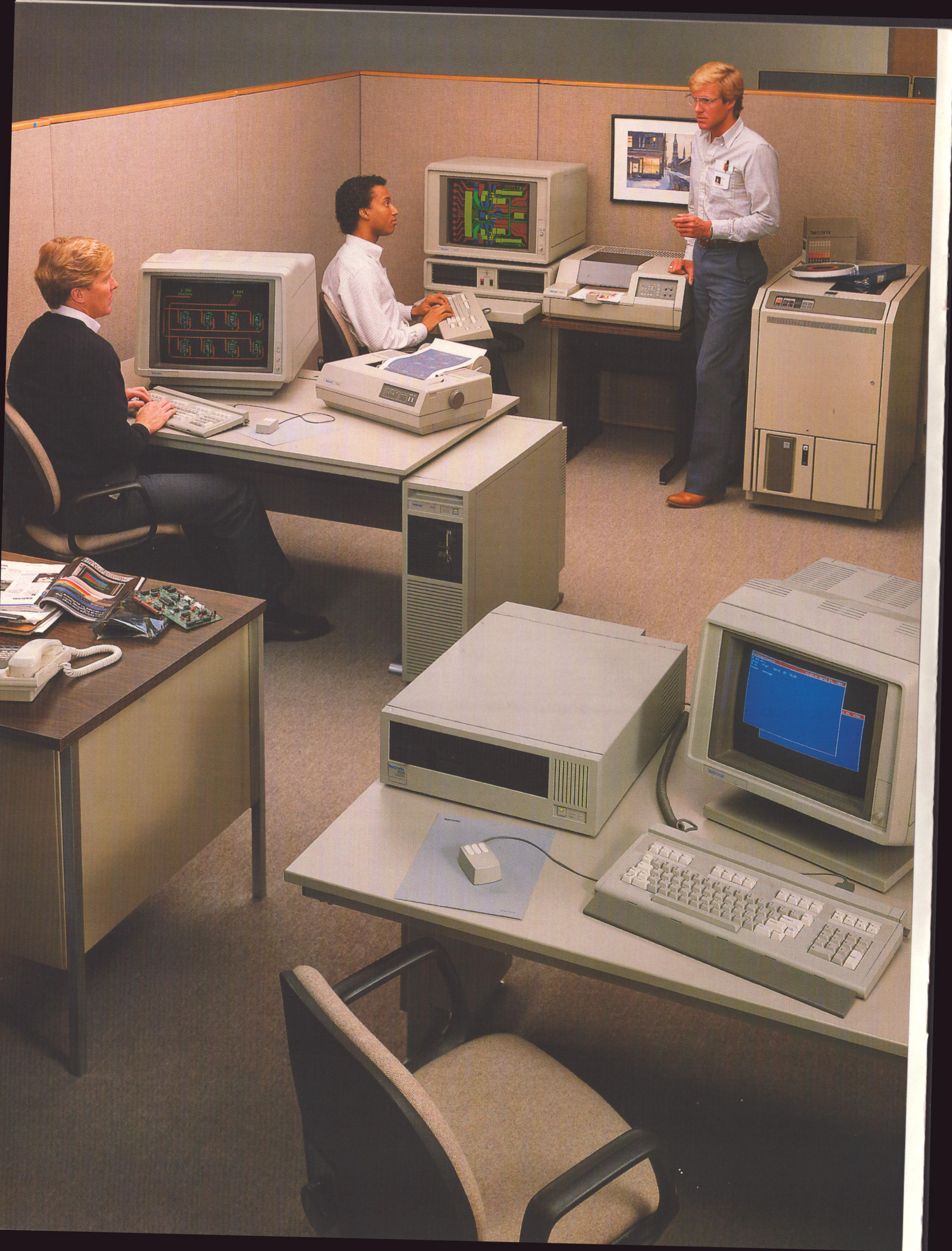


INTELLIGENT GRAPHICS WORKSTATIONS





TEKTRONIX 6000 FAMILY HARDWARE SUMMARY

TEKTRONIX 6000 FAMILY SOFTWARE SUMMARY

Processors	Memory	Storage	Interface Ports	Display Options	Peripheral Options	Operating Systems	Languages	Graphics Libraries	General Purpose Software Options
6110 32016 CPU	256 K Optional/ Additional: 512K or 1MB	360KB diskette Optional: 10 or 20MB Winchester	RS-232-C (2) GPIOB LAN Optional: High-speed GPIOB High-speed serial 24-bit parallel 8-bit parallel Multibus adaptor Addit'l RS-232		4644 Dot Matrix Printer 4695 Color Graphics Copier	RTOS	Optional: Executes object code from FORTRAN 77, C, ISO Pascal and proposed ANSI BASIC		
6120 32016 CPU 32-bit display list processor* 32081 FP processor Optional: PC Co-processor	1MB Optional/ Additional: 1 or 2MB	360KB diskette 10MB Winchester Optional: 20, 40, or 80MB Winchester (subs) External 40MB cart. tape External Winchester disk	RS-232-C (2) GPIOB LAN Optional: High-speed GPIOB High-speed serial 24-bit parallel 8-bit parallel SCSI Multibus adaptor Addit'l RS-232	6000 Family: 15" 640 x 480 monochrome 13" 640 x 480 color 4000 Family: 4010 Series 4100 Series 4110 Series	4644 Dot Matrix Printer 4695 Color Graphics Copier	Proposed ANSI BASIC Based on UNIX ◊ (subset) Optional: Based on UNIX ◊ (full) ‡ PC Co-Proc. Support ††	Proposed ANSI BASIC Optional: C ‡ ISO Pascal ‡ Enhanced FORTRAN 77 ‡	GKS Level Ob (subset) Optional: PLOT 10 IGL ‡ PLOT 10 TCS ‡	Q-ONE ‡ Minitab ‡ 20/20 ‡§
6130 32016 CPU 32-bit display list processor* 32081 FP processor Optional: PC Co-processor	1MB Optional/ Additional: 1 or 2MB	360KB diskette 20MB Winchester Optional: 40 or 80MB Winchester (subs) External 40MB cart. tape External Winchester disk	RS-232-C (2) GPIOB LAN Optional: High-speed GPIOB High-speed serial 24-bit parallel 8-bit parallel SCSI Multibus adaptor Addit'l RS-232	6000 Family: 15" 640 x 480 monochrome 13" 640 x 480 color 4000 Family: 4010 Series 4100 Series 4110 Series	4644 Dot Matrix Printer 4695 Color Graphics Copier Support for: Letter quality printer Line printer	Based on UNIX ◊ Optional: PC Co-Proc. Support †	Optional: Proposed ANSI BASIC C ISO Pascal Enhanced FORTRAN 77	Optional: GKS Level 3c PLOT 10 IGL PLOT 10 TCS PLOT 10 TekniCAD	Casual User Interface ‡ Document Processor ‡ Graphics Editor ‡ Project Manager ‡ UIMS ‡ Database Manager Q-ONE Minitab 20/20 §
6205 32016 CPU 32016 I/O Processor 32-bit display list processor, and 24-bit, bit-slice vector processor* 32081 FP processor	1MB Optional/ Additional: 9MB	40MB Winchester Optional: 40 or 80MB Winchester 40MB cart. tape 9-track tape 280 MB SMD disks (1.1 GB max) 360KB diskettes	RS-232/RS422 RS-232-C (3) LAN 8-bit parallel Optional: High-speed GPIOB** High-speed serial** 24-bit parallel** SCSI** Multibus adaptor Addit'l RS-232**	6000 Family: 19" 1024 x 768 monochrome 19" 1024 x 768 color 4000 Family: 4010 Series 4100 Series 4110 Series	4644 Dot Matrix Printer 4695 Color Graphics Copier Support for: Letter quality printer Line printer Large-format plotter	Based on UNIX ◊	Optional: Proposed ANSI BASIC C ISO Pascal Enhanced FORTRAN 77	Optional: GKS Level 3c PLOT 10 IGL PLOT 10 TCS PLOT 10 TekniCAD	Casual User Interface ‡ Document Processor ‡ Graphics Editor ‡ Project Manager ‡ UIMS ‡ Database Manager Q-ONE Minitab 20/20 §
6210 32032 CPU 32016 I/O Processor 32-bit display list processor, and 24-bit, bit-slice vector processor* 32081 FP processor Optional: 32032 CPU	1MB Optional/ Additional: 9MB	40MB Winchester Optional: 40 or 80MB Winchester 40MB cart. tape 9-track tape 280 MB SMD disks (1.1 GB max) 360KB diskettes	RS232/RS422 RS-232-C (3) LAN 8-bit parallel Optional: High-speed GPIOB** High-speed serial** 24-bit parallel** SCSI** Multibus adaptor Addit'l RS-232**	6000 Family: 19" 1024 x 768 monochrome 19" 1024 x 768 color 4000 Family: 4010 Series 4100 Series 4110 Series	4644 Dot Matrix Printer 4695 Color Graphics Copier Support for: Letter quality printer Line printer Large-format plotter	Based on UNIX ◊	Optional: Proposed ANSI BASIC C ISO Pascal Enhanced FORTRAN 77	Optional: GKS Level 3c PLOT 10 IGL PLOT 10 TCS PLOT 10 TekniCAD	Casual User Interface ‡ Document Processor ‡ Graphics Editor ‡ Project Manager ‡ UIMS ‡ Database Manager Q-ONE Minitab 20/20 §
6212 Dual 32032 CPUs 32016 I/O Processor 32-bit display list processor, and 24-bit, bit-slice vector processor* 32081 FP processor Optional: 32032 CPU	4MB Optional/ Additional: 16MB	80MB Winchester Optional: 40 or 80MB Winchester 40MB cart. tape 9-track tape 280MB SMD disks (1.1 GB max) 360KB diskettes	RS232/RS422 RS-232-C (3) LAN 8-bit parallel Optional: High-speed GPIOB** High-speed serial** 24-bit parallel** SCSI** Multibus adaptor Addit'l RS-232**	6000 Family: 19" 1024 x 768 monochrome 19" 1024 x 768 color 4000 Family: 4010 Series 4100 Series 4110 Series	4644 Dot Matrix Printer 4695 Color Graphics Copier Support for: Letter quality printer Line printer Large-format plotter	Based on UNIX ◊	Optional: Proposed ANSI BASIC C ISO Pascal Enhanced FORTRAN 77	Optional: GKS Level 3c PLOT 10 IGL PLOT 10 TCS PLOT 10 TekniCAD	Casual User Interface ‡ Document Processor ‡ Graphics Editor ‡ Project Manager ‡ UIMS ‡ Database Manager Q-ONE Minitab 20/20 §

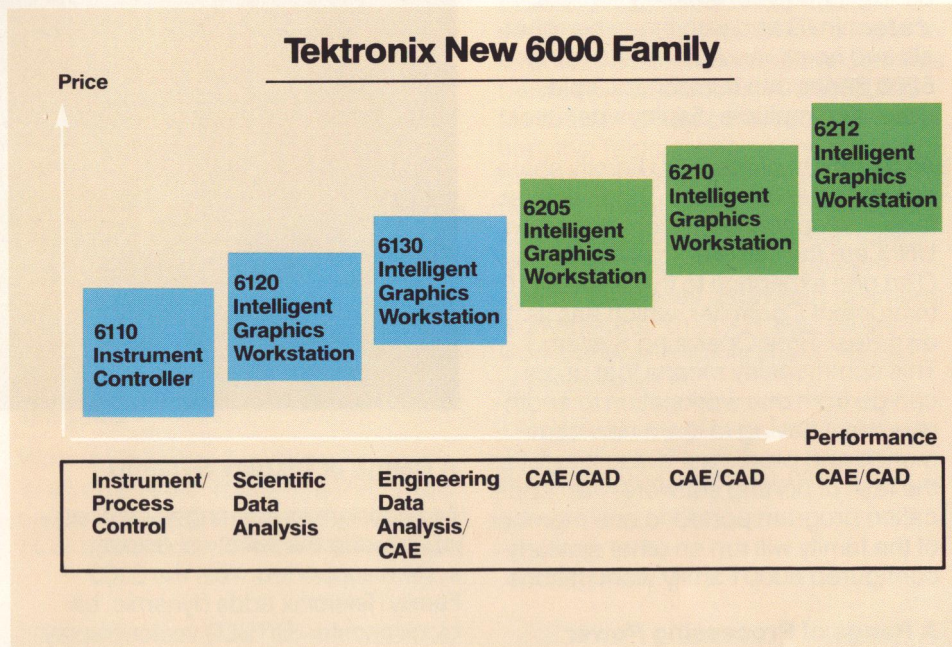
*Display processors come standard in 6000 Family display systems **Mid-1985 availability

†Requires 6000 Family display system ‡Requires additional memory, disk upgrades, and full operating system
◊Enhanced version of System V and Berkeley 4.2 UNIX §Requires a graphics terminal for plotting

INTRODUCING THE TEKTRONIX 6000 FAMILY

Developing a workstation strategy is more than a matter of finding "the right" system—because no single configuration can meet the needs of a diverse group of scientists and engineers. Even within a single company or agency, disciplines as varied as electrical engineering, mechanical engineering, software engineering, documentation, data analysis, automated testing, and materials planning need to work together and share data; yet each group has its own specialized computing requirements. To meet those requirements, you look for a mix of display technologies, processing power and software tools; for systems that deliver the right price and performance on each desk; and for products that you can use with your existing equipment, not in place of it.

In the past, Tektronix has supported the needs of scientists and engineers by providing engineering instrumentation, computing controllers, software, and affordable, high-quality graphics terminals. Now, Tek expands its support by offering the 6000 Family—32-bit, high-performance, multifunction workstations that deliver not just a single type of display or level of computing power, but a range of capabilities to handle the full spectrum of scientific and engineering applications. Also part of the 6000 Family are sophisticated software tools that play a key role in enhancing professionals' productivity. With the 6000 Family, Tek products now span from "dumb" terminals, entirely host dependent, through "smart" terminals with local graphics processing, to "intelligent" graphics workstations powerful enough for standalone applications.



Meeting a Range of Needs

The 6000 Family is made up of two distinct but compatible product groups: the 6100 and 6200 Series. Together, they form a very broad product offering of six different models:

- The 6110 Instrument Controller—a 32-bit execute-only system with a real-time operating system
- The 6120 Intelligent Graphics Workstation—a 32-bit BASIC-language system designed for scientists and researchers
- The 6130 Intelligent Graphics Workstation—a low-cost, high-performance 32-bit system with an operating system based on UNIX.*
- The 6205 Intelligent Graphics Workstation—an economical and expandable 32-bit system that offers high-performance graphics and an operating system based on UNIX. The 6205 can also be configured as a file or peripheral server for workstations on a Local Area Network (LAN).
- The 6210 Intelligent Graphics Workstation—a system that delivers full 32-bit processing power, high-performance graphics, and an operating

system based on UNIX. The 6210 can also be configured as a file or peripheral server for workstations on a Local Area Network (LAN).

- The 6212 Intelligent Graphics Workstation—a powerful CAD workstation based on UNIX, with multiple 32-bit CPUs and high-performance graphics.

Along with delivering a range of price/performance ratios for each application, the 6000 Family has the configurability and expandability to fit into your current environment and grow as your requirements change.

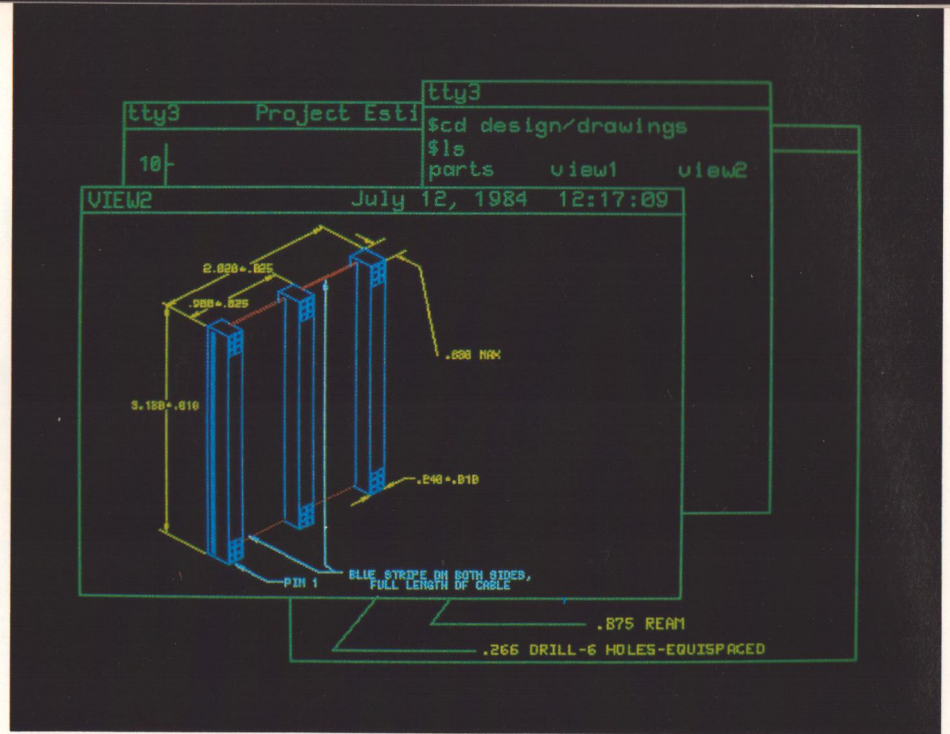
**This is a preliminary
product description.
Specifications may
change without notice.**

The 6000 Family is designed to make it easy to add hardware capabilities and peripherals, and to develop and transport applications programs. As a result, you can put together exactly the system you need. In addition, flexible interfacing and a LAN interface mean that the workstations can be used with your existing Tek graphics terminals and with many peripherals and hosts. And both the 6100 and 6200 Series can support multiple users and multiple displays per user.

All members of the 6000 Family share common design goals. The user interface and operating system based on UNIX are the same across the family. (The one exception to this is the 6110 Instrument Controller, which has its own Real-Time Operating System.) This commonality means that users can go from one workstation to another without having to learn new commands and protocols. It also simplifies the task of porting software—an application program ported to one member of the family will run on other similarly-configured 6000 Family workstations.

A Range of Processing Power

The 6000 Family is based on National Semiconductor's Series 32000* microprocessors, which feature "mainframe on a chip" architecture and an instruction set designed for efficient execution of high-level-language programs. The 6100 Series uses National's NS32016, a 32-bit processor with a 16-bit data bus, and 32-bit registers and data paths in the chip. The 6200 Series uses the NS32016 for its entry-level workstation, the 6205; and the NS32032, which features a full 32-bit data bus for even higher performance, in the 6210 and 6212 workstations. To off-load the CPU and maintain peak throughput, the 6100 and 6200 Series workstation displays use dedicated display processors, and the 6200 Series workstations use an additional I/O processor.



A Range of Display Systems

As important as the range of processing power is the variety of display system supported. With the 6000 Family, Tektronix adds dynamic, bit/block transfer (BITBLT) vector display systems to its extensive line of graphics terminals. The 6000 Family integrated window-managed displays offer a powerful, highly interactive graphics environment that features excellent display list processing, fast vector performance, true zoom and pan, smooth text scrolling, multiple fonts, variable cursors, and rapid pattern-area filling.

Multiple windows, pop-up menus, and a three-button "mouse" make system use both more productive and more enjoyable. Commands are entered by using the mouse as a pointing device to select menu options, locations, or actions. (Conventional command line entry is available, as well.) Windows allow the user to view separate processes that are executing concurrently. Each window is analogous to a terminal, in effect, allowing the user to interact with several terminals simultaneously.

In keeping with the philosophy of the 6000 Family, a range of price/performance display systems are available, including color and monochrome systems. Both the 6100 and 6200 Series displays contain their own 32-bit processors; the 6200 Series adds a microprogrammed display-list processor for enhanced performance. All displays provide a

60-Hz, non-interlaced monitor, detached keyboard with integral keypad, and DEC VT-102* emulation. A Modular User Input Bus can be used to expand the number and type of input devices.

The 6120 and 6130 support an optional 15-inch, 640 X 480 monochrome system and a 13-inch, 640 X 480, four-plane color display with 16 simultaneous colors (from a palette of 64). For the 6200 Series, two displays are offered as options: a 19-inch, 1024 X 768 monochrome system, and a 19-inch, 1024 X 768 color system with either four or eight planes, supporting 16 or 256 simultaneous colors from a palette of 16.7 million.

In addition to the window-managed displays, the 6000 Family workstations support Tektronix 4010, 4100 and 4110 Series Computer Display Terminals. The 6100 Series can simultaneously support a 6100 Series window-managed display and multiple 4000 Series terminals. The 6200 Series can simultaneously support multiple 6200 Series displays and multiple 4000 Series terminals. This means you'll be able to choose from DVST, color raster and BITBLT/vector graphics, to obtain the display that matches the resolution and interactivity you require. And you can utilize multiple displays/terminals in a single workstation configuration.

FLEXIBLE INTERFACING

A workstation needs to fit into your existing environment. For maximum flexibility in interfacing, the 6000 Family provides RS-232, high-speed serial† and 24-bit parallel† ports. Also supported are a Centronics-compatible* hardcopy interface, Multibus,* IEEE 488 General Purpose Interface Bus† (GPIB), and high-speed buses. The 6000 Family also supports the Small Computer System Interface† (SCSI), an auxiliary mass storage interface, and IBM PC* compatible flexible disk format.

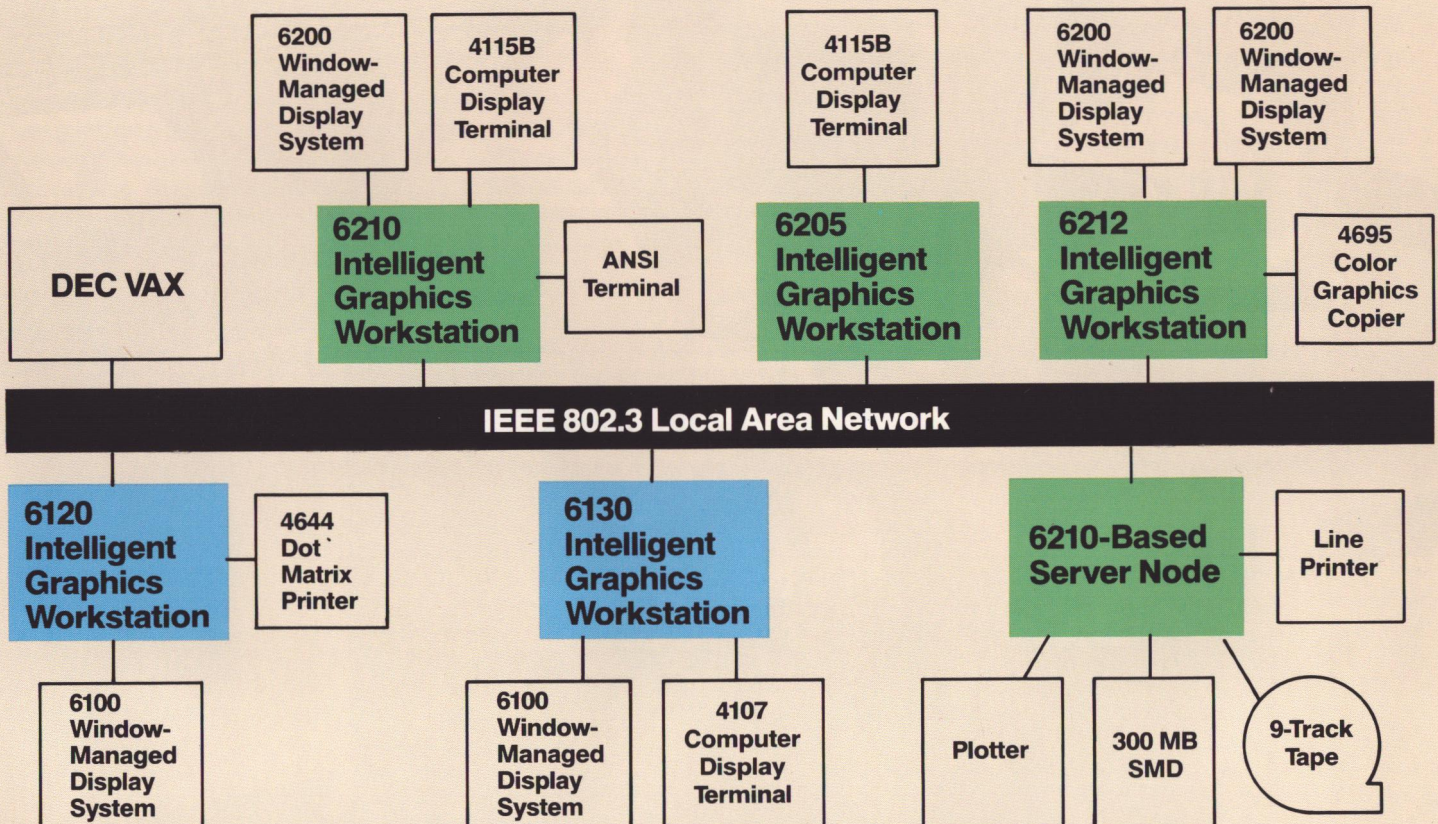
Terminal emulation is available as well, enabling the workstation to function as a terminal to a host computer. The 6000 Family display system can also emulate the DEC VT-102 terminal, Tektronix 4014 with 4105 color commands. So, for example, host-based software that interacts with a Tektronix 4014 Computer Display Terminal can easily be ported to the 6100 and 6200 Series workstations and interact with the 6000 Family display system. Terminal emulation combines with the display's windowing capability, so that you can open a terminal emulation window to a host while simultaneously executing application programs through other windows.

Workstations can be interconnected to a Local Area Network (LAN) based on the IEEE 802.3 standard, using the TCP/IP protocol. The LAN can also be

used for communications with VAX* computers running compatible versions of UNIX or VMS.* Supporting software handles communication services such as the ability to log in to a remote workstation and transfer files between workstations. A distributed file system is also provided. In addition, the Tektronix operating system, based on UNIX, includes an electronic mail utility that provides user-to-user communications. An optional, fully relational database management system facilitates data sharing among workstations. The LAN also allows workstations to easily share the use of peripherals.

†The 6200 Series will support the high-speed serial, 24-bit parallel, GPIB, and an external SCSI interface beginning mid-1985.

Local Area Network



THE SOFTWARE STORY

The 6000 Family workstations provide an integrated, state-of-the-art, user interface and a variety of general-purpose software tools that enhance professional productivity. In addition, the porting of software to the workstations is simplified by the extensive use of software standards and by specialized tools that support the tasks of developing applications programs.

Personal Productivity

Studies have found that scientists and engineers may spend up to three-fourths of their time in tasks not directly related to their specific discipline—tasks such as documentation, presentation preparation and planning. The 6000 Family workstations provide optional high-performance, easy-to-use software tools to aid in the performance of these duties.

The Casual User Interface (CUI) provides a graphically rich environment that takes advantage of the windowing, mouse, and pop-up menus that are part of the 6000 Family integrated window-managed displays. Separate programs can execute in separate windows, and the user can view several files at the same time. Instead of having to remember specific UNIX command names and syntax, the user enters commands by moving the mouse to position the cursor at a

menu item and then pressing a mouse button.

The Casual User Interface is a complete operating environment. The user can move within the CUI to use the conventional operating system interface. Application programs developed or acquired may also be added to the CUI.

The CUI supports the tasks of system and network administration, making it easy to add network nodes or peripherals without detailed knowledge of the operating system.

Running within the CUI are optional sophisticated productivity tools that together with the CUI make up THE ENVIRONMENT. The user's interaction techniques are the same for all software within THE ENVIRONMENT, so the learning time spent on any one of



the tools applies to the others as well. The following tools are available:

- **The Document Processor**—a sophisticated and easy-to-use word processing system designed to handle the complex documentation needs of engineers and scientists. The Document Processor is a modeless, "what you see is what you get" editor that simplifies the job of creating documents ranging from brief memos to specifications that include a table of contents, index, section headers, and super- and subscripts.
- **The Graphics Editor**—an interactive, visually-oriented tool for creating conceptual sketches, technical illustrations and presentation graphics, which can then be incorporated into a document created with the Document Processor. The Graphics Editor can also be used to post-edit pictures created in another environment.
- **The Project Manager**—a set of interactive, graphically-oriented tools for controlling technical project resources, costs and schedules. It uses familiar concepts of project management and a simple method of data entry, allowing a manager to quickly perform activities such as producing Gantt and PERT charts, calculating a project's critical path, and producing a variable calendar.

A powerful, easy-to-use relational database management system can be used within the CUI as well as from the conventional UNIX-based environment. This system allows the user to keep information in independent files, instead of locking data into specific programs. These are displayed as simple, easy-to-read tables called "relations." A collection of relations make up a "database." Because the databases are maintained independent of any particular application, different programs can access the same data. This data independence also means you will be able to get answers to questions your programs aren't programmed to ask by using simple, English phrases (through the Query Language). It also allows databases to be reorganized as changing requirements dictate.

The database management system has the following features:

- **SQL Query Language**—SQL, the IBM* standard for Non-Procedural (i.e., not requiring programming) Que-

ry Languages, allows the user to ask questions of the database. The "queries" are stated in simple English phrases, in both interactive and batch modes.

- **Report Writer**—The Report Writer allows users to quickly define reports to be produced from data in the databases. These definitions can be edited to reflect changing requirements.
- **Program Interface**—All the facilities of the database management system are available to any programming language: C, FORTRAN, Pascal, even proposed ANSI BASIC.
- **Full Help Facilities**—All data management programs have full interactive HELP facilities through the CUI.

The database management system provides a tool for handling the extensive information management needs of today's professionals. It can also be a network resource, allowing users from varied disciplines and locations within a corporation to share data.

Other 6000 Family productivity tools can be used with ANSI terminals, as well as with the 6000 Family integrated window-managed displays:

- **Q-ONE***—a word processing system with an easy-to-use interface and powerful formatting capabilities.
- **Minitab***—a general-purpose statistics package with built-in table-formatting and FORTRAN-formatted input and output.
- **20/20***—a spreadsheet program that combines graphics and data management capabilities to produce an integrated modeling environment. A spreadsheet can be up to 1000 X 1000 cells.

In addition, the Teknical Tools package includes Q-One, Minitab, and 20/20, as well as additional electronic mail and calculator utilities.

Application Program Development

To lower the cost of developing and transporting application programs, the 6000 Family uses an open architecture approach and supports a number of software standards. In addition, a User Interface Management System (UIMS) allows application programs to use Tektronix provided, sophisticated and consistent user-interface constructs.

Standardization begins with the fact that the workstation's operating system is based on UNIX, which is be-

coming a standard among 16-bit and now 32-bit systems. The Tektronix implementation includes an enhanced version of System V and Berkeley 4.2, with demand paged virtual memory for the efficient execution of very large programs. For languages, the 6000 Family has high-performance compilers for FORTRAN 77, C, and ISO Pascal. Also supported is the proposed ANSI BASIC, which integrates graphics, program segmentation, file processing and structured programming concepts. A language translation utility is available to assist conversion of Tektronix 4050 Series Desktop Computers BASIC programs to the 6000 Family workstations.

The 6100 and 6200 window-managed displays are designed to support the Graphical Kernel System (GKS), a standard that brings the advantages of device-independent graphics to workstation applications while maintaining high performance. Also supported are Tektronix PLOT 10 Computer-Aided Drafting (TekniCAD), TCS and IGL.

A large pool of existing UNIX applications programs can run on the workstations. To further expand the possibilities for accessing existing software solutions, the 6120 and 6130 Intelligent Graphics Workstation can add an optional PC Co-Processor that provides compatibility with the MS-DOS* operating system.

The User Interface Management System allows application programmers to build programs with a sophisticated and consistent user interface. The programs can also use the interface provided by the Casual User Interface. The UIMS provides interactive user-interface language constructs that standardize the user interface across applications while reducing the amount of code to be written by the application developer. Using the UIMS, an applications programmer can interactively specify such user interface issues as the size, location and color of menus and messages.

THE 6100 SERIES

The 6100 Series consists of three products, all with low cost and high performance. They are designed for applications such as process/instrument control, data analysis, and design applications. The 6100 Series is upward compatible with the 6200 Series; applications developed on the 6120 and 6130 will run on the 6200 Series at an increased speed.

The 6100 Series system cabinet is a compact, desk-top unit measuring approximately 6 X 17 X 24" and containing six, half-wide or three, full-wide slots for expansion. The cabinet may be attached to an optional floor stand and placed under or at the side of the work surface.



6110 Configuration

6110 Instrument Controller

The 6110 is a complete satellite unit for a process control system or instrumentation control. It features a Real-Time Operating System and can execute object programs generated in BASIC, C, Pascal, or FORTRAN. Object programs can be downloaded from the other 6000 Family workstations via RS-232, flexible disk, or LAN.

The full-function GPIB port includes talker, listener and controller functions. Other standard 6110 features are 256KB of memory, dual RS-232 ports (up to 9600 baud), and a 360KB flexible disk. Optionally available is a high-speed GPIB port with single-character EOM detection and cache memory transfers.

Other options include:

- additional 512KB or 1MB of memory
- 10MB or 20MB Winchester disk
- additional dual RS-232 ports
- 24-bit parallel port
- external Multibus* interface

- high-speed serial port with up to 250K Baud in synchronous mode with an external clock
- dual, 8-bit parallel (Centronics-compatible) port

6120 Intelligent Graphics Workstation

The 6120 is an excellent system for researchers, mathematicians, and scientists such as astronomers, physicists, biologists, chemists, geologists, zoologists, and oceanographers. The 6120's 32-bit processing power goes hand-in-hand with the ease-of-use and extended capabilities of the proposed ANSI BASIC. The result is perfect for applications such as data acquisition and analysis, scientific and statistical research, data presentation and forecasting.

The proposed ANSI-standard BASIC is built for today's more capable machines and includes sophisticated graphics capabilities. The 6120's implementation is an interactive compiler that delivers both the responsiveness of an interpreter and the efficiency of a compiler.

For increased power and capability, a subset of the 6000 Family operating



6120 Configuration

system, based on UNIX, is included with the BASIC system. It can be accessed directly by the user, to provide a multiuser, multiprocessing environment. With additional disk capacity and memory, compilers for C, FORTRAN, and ISO Pascal can be added. A full version of the operating system is also available.

An optional PC Co-Processor provides the user with access to a large group of existing software solutions written for the MS-DOS operating system.

Optional 6120 integrated window-managed displays include a 15", 640 x 480 monochrome display system and a 13", 640 x 480 color display system with four planes. Both systems include keyboard and mouse input. Additional terminals can be added for multi-user support.

The 6120 comes standard with:

- 1MB of memory
- Floating Point Processor (NS32081)
- 360KB, 5¼" flexible disk drive
- 10MB, 5¼" Winchester disk
- dual RS-232 ports
- LAN interface

For data capture, a full function GPIB port is standard, with an optional high speed GPIB port. Other options include:

- 1MB and 2MB expansion memory
- 20/40/80MB replacement hard disks substituted for standard 10MB Winchester disk
- expansion cabinet with streaming tape and optional Winchester disk
- dual, high-speed (RS-232 or RS-422) ports

- 24-bit parallel port
- dual, 8-bit parallel (Centronics-compatible) hardcopy port
- SCSI port
- an external Multibus interface

6130 Intelligent Graphics Workstation

The 6130 is a powerful graphics workstation designed for applications such as data analysis, software development, schematics entry, and computer-aided engineering.

Like the 6200 Series, the 6130's operating system is an enhanced version of System V and Berkeley 4.2 UNIX. For programming support, the 6130 has optional high-performance compilers for C, Fortran, ISO Pascal, and the proposed ANSI BASIC, as well as GKS level 3c support.

An optional PC Co-Processor provides the user with access to a large group of existing software solutions written for the MS-DOS operating system.

Optional 6130 integrated window-managed displays include a 15", 640 x 480 monochrome display system and a 13", 640 x 480 color display system with four planes. Both systems include keyboard and mouse input. Additional terminals can be added for multi-user support.

Standard 6130 features include:

- 1MB of system RAM
- Floating Point Processor (NS32081)
- 360KB, 5¼" flexible disk drive
- 20MB, 5¼" Winchester disk
- dual RS-232 interfaces
- GPIB IEEE-488
- LAN interface

Additional memory (both 1MB and 2MB), replacement Winchester disks (40MB and 80MB), and external streaming tape allow for system expansion.

The following optional ports are available:

- high-speed GPIB
- dual, high-speed (RS-232 or RS-422)
- 24-bit parallel
- SCSI
- dual, 8-bit parallel (Centronics-compatible) for hardcopy devices
- an external Multibus interface



6130 Configuration

THE 6200 SERIES

The 6200 Series workstations' high-resolution, window-managed display system, range of processing power, and integrated LAN interface work together to produce flexible and powerful systems suitable for the most demanding tasks. Hardware virtual memory and floating point support are standard, as is a dedicated I/O processor.

Along with the flexible interfacing and support for standards that it shares with the 6100 Series, the 6200 Series derives additional power and configurability from its basic internal architecture. The 6200 Series is built around a global bus and uses a state-of-the-art architecture to provide very high performance, long life, and the ability to adapt to a variety of cost-performance requirements. And because the underlying operation of the system does not depend on the specific components, the workstations can expand, add additional CPUs and special-purpose processors, and even change processor technologies—all at a low incremental cost and without loss of investment.

The 6200 Series features an optional integrated display with high-resolution graphics (1024 x 768) and a window-managed environment. For enhanced graphics performance, the display subsystem includes its own 32-bit central processor and a 24-bit micro-

coded display list processor. Both color and monochrome systems are available, each with integrated keyboard and mouse input. The color display system is available with either four or eight planes, allowing a choice of 16 or 256 simultaneous colors from a palette of 16.7 million.

The 6200 Series workstations can support multiple users, each with a 6200 Series integrated display, Tektronix graphics terminal, or any ANSI terminal. Multiple displays per user are also supported. The 6000 Family's multiprocessing architecture ensures that the performance degradation sometimes associated with multiple users is minimized.

As with the 6100 Series, all 6200 Series workstations are maximized for software portability, with high-performance compilers for C, FORTRAN 77, ISO Pascal, and the proposed ANSI BASIC, as well as an enhanced operating system based on UNIX. Level 3c GKS is optionally available.

The 6200 Series workstation cabinet is a desk-side unit that is approximately 26" high, 8.75" wide, and 33.5" deep.

6205 Intelligent Graphics Workstation

The 6205 affords an economical entry into the high-performance 6200 Series product line. Designed to meet the processing and graphics requirements of computer-aided design and computer-aided engineering applications, the 6205 also provides interfacing for the more powerful peripherals that are desirable to support such tasks. To deliver the processing power needed for multiple users and for CAE/CAD tasks, the 6205's NS32016 central processor, which includes floating point and virtual memory, is aided by an I/O Processor (NS32016) that handles I/O interactions.

The 6205 comes standard with a 40MB, 5¼" Winchester disk. For increased storage capacity, the 40MB disk can be replaced by an 80MB disk, and any one of the following can be added.

- a 40MB cartridge tape
- a 360 KB flexible disk drive
- an additional 40MB or 80MB Winchester disk

One megabyte of Error Correcting Code (ECC) RAM is standard for the 6205. The 6205 can support up to 10MB of memory if terminals are used, up to 6MB of memory if the 6200 Series monochrome display option is used, and up to 2MB of memory if the 6200 Series color display option is used. Display systems are optional.

Flexible hardware interfacing is provided by the following standard ports:

- a LAN port
- an 8-bit, Centronics-compatible hard-copy port
- four high-speed RS-232-C ports (19.2K baud), one of which can be configured as a high-speed RS-422 serial port.

The 6205 can be configured to act as a special-purpose node such as a file and peripheral server to the other workstations on a Local Area Network. It can be used, for example, as a network node through which other workstations can share peripherals, rather than having the peripherals attached to an individual user's workstation.

6205 Configuration



6210 Configuration



Similarly, such a node could act as a server for file administration or file access from any workstation. When configured as a server node, the 6205 can support two Multibus-interface peripherals, such as a 9-track tape drive or an SMD disk. At least one workstation on a Local Area Network must include a cartridge tape drive.

To keep pace as your computing needs grow, the 6205, which contains slots for five circuit boards, can be expanded into a 6210 Intelligent Graphics Workstation, with faster 32032-based processing, seven board slots on the system's global bus, and additional peripheral interfacing capacity.

6210 Intelligent Graphics Workstation

The 6210 combines 32-bit processing and the high-resolution graphics of the 6200 Series display in a system that is ideal for multiple users and for demanding engineering applications such as ECB design, VLSI design, and mechanical design and analysis. The central applications processor for the 6200 Series is the NS32032, which has a 32-bit data bus for full 32-bit processing. Floating point and virtual memory hardware are standard. To further increase system performance, an NS32016-based I/O Processor offloads the central processor and handles all input and output interactions. In addition, the optional 6200 Series display systems include their own 32-bit processor. Additional CPUs, each with their own memory,

can be added under Tek's unique multiprocessor UNIX kernel.

The 6210 comes standard with a 40MB, 5¼" Winchester disk and 1MB of Error Correcting Code (ECC) RAM. The 40MB disk can be replaced by an 80MB disk, and an additional 9MB of memory can be added. For greater configuration flexibility, four peripheral bays are standard on the 6210. Available peripherals include:

- a 360KB, 5¼" flexible disk drive
- a 40MB cartridge tape
- an additional 40MB or 80MB Winchester disk

In addition, plug-in controllers are available for high-performance SMD disks, 9-track tape drives, and Versatec plotters. Each disk controller can support up to four drives of 280MB each, for 1.1 GB of external disk storage. A special mass storage cabinet is available to house any combination of two disk drives and one 9-track tape.

For increased configuration flexibility, the 6210 has seven circuit board slots; an optional double-wide configuration allows the workstation to support an increased number of board slots. Like the 6205, the 6210 can be configured to act as a file and peripheral server for other workstations on a Local Area Network.

Hardware interfacing for the 6210 includes as standard:

- four high-speed RS-232-C ports (one configurable as RS-422)
- a Local Area Network port
- an 8-bit, Centronics-compatible hard-copy port

Additional 6210 interfacing capabilities will be available in mid-1985, including high-speed GPIB, a 24-bit parallel port, SCSI port, additional high-speed serial ports, and an external Multibus interface.

6212 Intelligent Graphics Workstation

The 6212 is the most powerful member of the 6000 Family, although it too can be expanded to include additional CPUs for even higher performance.



6212 Configuration

With seven circuit board slots, it can easily support multiple users and multiple displays.

In addition to the capabilities of the 6210, the 6212 features dual applications processors: two 32-bit CPUs are standard, and additional CPUs can be added. Multiple CPUs allow separate tasks—such as editing a schematic and simulating a circuit—to proceed simultaneously on separate CPUs and be monitored via separate windows on the integrated display system.

The 6212's high performance makes it especially suited to tasks that are both highly interactive (such as editing engineering drawings) and highly compute-intensive (such as circuit simulation or finite element analysis). The 6212 provides the local computing power necessary to concurrently perform both interactive and CPU-intensive tasks without relying on a separate host computer.

For memory support of these compute-intensive tasks, the 6212 comes with a standard 2MB of memory per CPU, and up to 10MB per CPU is available. Disk capacity is greater than on the 6210, as well; 80MB is standard, and another 80MB can be added. All of the 6205 and 6210 options and peripherals are also available, including the 6200 Series integrated window-managed displays.

Peripheral Support

In addition to previously listed mass storage peripherals, the 6000 Family workstations support a variety of printer and graphics output devices through RS-232, Centronics-compatible and Multibus ports. For workstation output these include the Tektronix 4644 Dot Matrix Printer (which is capable of high-density dot-addressable graphics) and the Tektronix 4695 Color Graphics Copier. Device driver support for high-speed line printers (300-600 lpm) and letter-quality printers are also provided. The 6200 Series also has optional drivers and interfacing to support large format output devices such as E-size electrostatic printer/plotters.

A Computing Strategy

In selecting workstations, you look for systems that support a range of computing and display requirements, allow you to utilize your existing investment in computing hardware and software, and can continue to grow as your requirements change. The 6000 Family workstations meet those needs, and as value-added they have Tek's graphics experience, service and support organization behind them. The 6000 Family gives you not just a workstation but the core of a computing strategy.

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
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