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Contents

Compaq Workstations Graphics Product Positioning

Abstract: This paper covers all graphics options offered for Compaq Professional and Deskpro Workstations. It includes product features, positioning and comparisons between products and recommended selection criteria.

This paper also reintroduces Compaq's application software-based approach to classifying workstation graphics and marks the debut of Compaq's Graphics Excellence Program and how this program stands to usher in a new age of powerful graphics solutions for the 21st century.

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Compaq Professional Workstations Graphics Product Positioning
Technical Guide prepared by Workstation Division

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Introduction

Graphics controllers for workstations have changed dramatically over the past few years. Until recently, there was a clear distinction between 2D and 3D graphics, and low-cost graphics was often restricted to lower resolution and 256 colors.

Today, it is difficult to find a pure 2D graphics controller. Virtually all graphics controllers have at least some 3D capabilities and boast specifications that appear similar to traditional 3D controllers. And thanks to improvements in graphics processor technology and lower cost memory, support for higher resolution (1280x1024 or even higher) and 24-bit color is available on controllers at virtually all price points.

Further, increasingly specialized graphics options have emerged, such as multi-display and geometry accelerated 3D solutions, as well as customer driven choices, such as digital output and graphics controllers that allow the use of a single standard graphics driver across all systems installed at a site.

Based on extensive work with application developers, customers, graphics suppliers and internal development, Compaq is offering a broad portfolio of graphics controllers, which are described in detail in this document. And through the Compaq Graphics Excellence Program (GEP), Compaq has teamed with yet more graphics hardware developers to enable an ever-wider set of graphics solutions for the varied, highly fragmented requirements of the diverse workstation market.

Graphics Excellence Program Overview

Compaq's GEP is a critical element of Compaq's ability to continue to drive the broadest portfolio of graphics solutions in the market. It allows Compaq to extend its line and solutions portfolio without massive investment and enables solutions that otherwise would not enjoy broad recognition. Compaq partners with graphics developers to test and certify a wide variety of solutions that allow Compaq workstations to serve the broadest spectrum of user needs. This program also allows Compaq to bring the latest and greatest graphics technologies to market faster without sacrificing compatibility and stability. GEP partners and solutions are classified in three tiers based on the level of support Compaq provides, the way graphics solutions are delivered to market and the volume potential for the solution. A complete selection of information on the Graphics Excellence program is available at:
http://www.compaq.com/products/workstations/graphics/excellence.html
Here is a brief overview of the different classes of solutions offered under the GEP, from the niche oriented Specialty graphics solutions to the more strategic Select and Premier solutions.

Specialty Graphics Solutions

This is the entry-level in the Graphics Excellence Program. Controllers offered as specialty solutions are tested on Compaq platforms, but are not sold by Compaq nor offered as Compaq options. This class of graphics solution is integrated by resellers or elsewhere in the channel and the warranty for the graphics is provided by the graphics hardware vendor or under a service contract. The graphics hardware vendor is also responsible for any application-specific certification customers might require, although Compaq tests key workstation applications for compatibility. Generally, these devices appeal to narrow market segments, and as such are best delivered and integrated by specific, focused channels. The key benefit of this program is that it allows customers to get the graphics controllers that meet specific requirements or preferences while still getting the performance and peace of mind of the Compaq quality workstation platform. But this approach also allows Compaq to get new graphics solutions to market quickly

and efficiently, with less stringent testing requirements (for example bypassing some of Compaq's detailed platform environmental, thermal and mechanical analyses).

Select Graphics Solutions

The next step up in the Graphics Excellence Program, Select Level controllers are more strategic products, and are more thoroughly tested for compatibility with the Compaq workstation platforms. Compaq and its channels offer this class of products as Compaq options or after-market enhancement solutions. These devices are also covered under Compaq option and platform warranties, providing financial and cost of ownership benefits.

While Compaq works closely with the graphics hardware developer on platform integration and testing, the stringent application and ISV-level testing is still the dominion of the graphics manufacturer. Select solutions are not only qualified and profiled in the GEP lab but are also scrutinized by Compaq platform and segment engineering teams for overall quality. And of course, this testing and validation work is done in close cooperation with Compaq graphics partners.

And as with the Specialty providers above, Compaq continues ongoing work with "Select" graphics partners to further integrate the platforms and guide design work on next generation graphics solutions—but with perhaps even more energy given the strategic nature of the relationships between Compaq and Select graphics partners. This too helps pave the way for promotion between Select and Premier tiers.

Premier Graphics Solutions

The Premier level is where Compaq applies the most stringent testing and where it delivers the solutions that appeal to the broadest base of users. Premier level graphics are preinstalled on Compaq Professional Workstation systems and/or offered by Compaq and its channels as after-market options. These are typically the highest performance, highest quality graphics components and feature the full Compaq warranty, providing uncompromising stability and cost of ownership. Premier solutions provide compelling graphics solutions while sustaining time-to-market and turnkey, highly integrated solution advantages that other workstation manufacturers can't match.

The Premier graphics partners are Compaq's closest allies and these integrated solutions and option kits meet the needs of roughly 80 percent of the market. This is also where Compaq invests most heavily in terms of its partner relationships. While these solutions pass through the GEP lab, Compaq also spends weeks or even months working closely with the solution provider to tune and integrate the solutions. Compaq provides these partners with platforms and even on-site engineering assistance to make sure the solution presents a seamless experience for the workstation buyer. Compaq also works very closely with Premier partners to assure roadmap alignment and technology directions remain consistent and to assure that Compaq is well positioned to bring suitable next-generation solutions to market quickly.

Regardless of how they are delivered, all of these graphics controllers are classified by a combination of their technical characteristics and by the markets in which they are used. The major graphics segments are:

- **2D/Multi-Display 2D:** Leadership 2D performance combined with multi-display support to enable large viewing environments. Also targeted to customer requirements for common driver support and customers with digital graphics output.2D controllers are generally prices from $100 to250. Multi-display controllers range from $600 to 800.

- **Entry 3D:** Combines fast 2D with robust 3D capabilities at an affordable price. The standard graphics choice for a broad range of workstation applications and the entry point for controllers with dedicated OpenGL processors. Entry 3D graphics controllers typically cost between $300 and $500.
- **Professional 3D:** Mid-range and enhanced 3D with the advanced 3D (such as hardware-based OpenGL acceleration for fast rotation of solid models and stencil/overlay planes for transparencies and clipping) features required by technical applications. Professional 3D controllers range in price from $750 to 2,500.

The following section provides a brief overview of each of these controllers in a bit more depth.

2D and Multi-Display 2D

These devices meet the needs of general purpose computing users and customers with requirements for the fastest 2D windowing performance available. The multi-display and digital output capabilities provide users with unparalleled output and display flexibility.

- The Matrox Millennium G400 controller is the latest in the long line of high performance Matrox 2D graphics controllers. This new generation Millennium G400 features an innovative DualBus graphics pipeline implementation and full 128-bit controller to memory bus to drive the highest 2D performance in the market today. The single display Millennium G400 controller also supports an optional Digital Video Interface (DVI) daughtercard that allows the customer to upgrade from analog output to digital video output on a second display. The single display Millennium G400 is the best choice for customers looking for top 2D performance. The Millennium G400 controller is also available in the "DualHead" configuration, enabling customers to natively drive two displays from a single AGP controller. The Millennium G400 DualHead is an ideal solution for customers looking for native dual display support or to replace PCI and AGP Millennium G200 controllers used together to deliver dual display support.
- The Matrox Millennium G200 is a traditional leader among 2D graphics controllers. It is also software compatible with the older Matrox Millennium II and Matrox Productiva G100 Quad Multi-Monitor Series (MMS) controllers. This means that a single unified driver can be used to support all of these controllers. The unified driver allows use of a standardized software environment across a wide range of systems, which is a requirement of some customers seeking a blend of performance, unique features and software stability.
- The Matrox Productiva G100 Quad MMS controller is a multi-display 2D controller able to drive up to four displays per controller. Compaq Workstations can support up to two of these PCI-based controllers, enabling up to eight displays on a single workstation. This controller is perhaps the best solution for customers seeking 3 to 8 display environments.

Entry 3D

The versatile controllers in this class meet the needs of many applications and users, offer good performance, and are exceptionally cost effective.

- The ELSA Synergy II is ELSA's latest 3D device, based on the well-regarded TNT2 graphics processor from nVidia and a high speed 32MB unified frame buffer for strong 3D performance and advanced features and high-resolution support (up to 1900 x 1200 x TrueColor @ 75Hz). This controller outperforms previous generations of ELSA graphics

based on Permedia 2 technology and is a smart choice for customers seeking powerful 2D performance and highly useful 3D OpenGL support.

Professional 3D

Professional 3D graphics controllers are geared to the most demanding 3D applications, with performance and feature sets that support the most realistic, interactive 3D animations, modeling and visualization tasks. These controllers feature:

- 3Dlabs Oxygen GVX1 - Compaq's leading professional 3D graphics controller, with excellent performance and price/performance. It provides the additional benefit of on board geometry acceleration to boost performance in the most demanding uses with more extensive acceleration of the OpenGL pipeline than most mid-range 3D devices (such as the Compaq PowerStorm 300 controller). The 3Dlabs Oxygen GVX1 is well suited to technical 3D applications, such as mechanical CAD, animation and scientific visualization.
- Compaq PowerStorm 600 - an Enhanced 3D graphics controller based on Intense3D's highly acclaimed Wildcat 4000 graphics technology that incorporates a dedicated geometry processor to speed 3D graphics operations. The PowerStorm 600 meets the needs of applications that require the maximum graphics horsepower to render and manipulate mid- to large-scale assemblies and models with complex visual realism. The performance of PowerStorm 600 graphics on Compaq Professional Workstation platforms rivals or exceeds that of expensive, proprietary UNIX workstations from HP, SGI and Sun.
- Intense3D Wildcat 4110 PRO - the next-generation 3D graphics accelerator from Intense3D based on the Parascale™ architecture. It offers the highest OpenGL performance and exceeds the Intense3D Wildcat 4000 in most primitive acceleration functions by a factor of 2x. This makes the Wildcat 4110 PRO the fastest 3D graphics accelerator on the market today. The Wildcat 4110 PRO provides analog, DVI-I and stereo output and requires an AGPpro slot for operation.

This information helps narrow the field of possible graphics solutions based on customer needs for 2D or 3D performance. Asking a few additional questions also helps clarify matters.

General Graphics Controller Selection Criteria

Customer environment and performance requirements typically drive graphics selection. 2D graphics controllers are typically chosen for maximum 2D performance, native dual display support and/or optional digital graphics output. Key questions include:

- Are customer applications generally 2D and/or Microsoft DirectX-based?
- Has the customer environment standardized on Matrox graphics on a company or department-wide basis?
- Is maximum 2D performance required?
- Is resolution greater than 1280x1024 in true color required?
- Is single-slot dual display or optional digital graphics output useful?

- Does the customer's workstation platform support ATX form factor devices and the AGP2X/4X interface?

If the answer to most of these questions is "yes," then one of the Matrox graphics solutions is probably the best choice. In fact, the specific answers will help pinpoint which Matrox controller best meets customer requirements. This will be discussed in more depth in a following section. If the answer to many of these questions is no then look further for the "right" match to suit customer requirements. Other questions may reveal different customer requirements and dictate different graphics solutions. For example:

- Does the application need high-end 3D capabilities, such as OpenGL functionality and true color double buffered display with Z-buffer at a resolution of 1280x1024 or higher?
- Does the application extensively use texture mapping? Does it use trilinear interpolation of textures?
- Does the application support overlay planes?

If the answer to these questions is "yes," then one of the advanced 3D graphics controllers should be considered.

- If Entry 3D capabilities are required, the ELSA Synergy II is recommended.
- If Professional 3D support is required, the 3Dlabs Oxygen GVX1, the Compaq PowerStorm 600 or Intense3D Wildcat 4110 PRO are suggested.

The following sections of this document provide detailed information on each graphics controller, information on the applications for which they are best suited, and additional selection criteria to help choose the appropriate graphics solution for any type of customer within each broad class of graphics performance. We will begin with a review of the 2D graphics controllers and will identify where each provides a compelling solution.

Matrox Millennium G400

2D Graphics

Overview

The Matrox Millennium G400 AGP graphics controllers are high performance 2D accelerators designed for high-end business computing and technical 2D. These controllers are especially popular in large financial institutions, where high-performance 2D and crisp windowing capabilities are key and where customers are interested on deploying digital graphics displays and multi-display support is critical.

Compaq delivers two versions of the Millennium G400. The single display Millennium G400 controller offers a single analog output, but supports an optional daughtercard that enables a digital output port. The second version Compaq offers is the Millennium G400 DualHead, that provides two analog output ports.

Both Matrox Millennium G400 graphics controllers come with 16MB of frame buffer memory, support high-resolution, true color display, and a variety of 3D modes via Direct3D. While Matrox claims OpenGL support with the Millennium G400 controller, the Matrox Millennium G400 does not provide OpenGL drivers or hardware OpenGL acceleration. The Matrox Millennium G400 graphics controllers provides full AGP 2X and 4X support and a high-speed 300 MHz RAMDAC for ultra-sharp, ultra-responsive displays. Both the single display and DualHead versions of the Matrox Millennium G400 are implemented as single slot (AGP)

solutions. The single display version can be supported in either NLX (low profile) or the larger ATX form factors. The Millennium G400 DualHead is only available as an ATX form factor device.

Target Applications

The Matrox Millennium G400 controllers are versatile and suited to general purpose computing, especially where superb 2D performance and broad driver compatibility are required. Representative applications include financial trading, electronic CAD, entry mechanical CAD, drafting, web page development and software development. The single display controller is well suited for broad horizontal deployment in such environments, or where the customers require the precision and clarity of the optional digital graphics output. The Millennium G400 DualHead is the excellent choice where users seek dual display output to increase productivity, or where customers seek to run multiple applications on different displays. For example, a financial customer may monitor a real-time newsfeed on one display while executing trades on a second display.

Key Features

- Leadership 2D performance based on the Matrox MGA-G400 graphics chipset and the new Matrox DualBus architecture
- Up to 16MB SGRAM frame buffer memory
- AGP 2X/4X with sideband addressing
- Up to 2048 x 1536 resolution in true color mode
- Native dual analog display support (Matrox Millennium G400 DualHead only)
- Support for Digital Video Interface (DVI) digital output daughtercard (single display controller only)

Multi-Display Support

The Millennium G400 DualHead is the best choice for customers seeking maximum 2D performance and dual display capabilities. Since this controller is based on the AGP interface, this controller cannot be used with multiple controllers to deliver more than dual display support. The Millennium G400 single display device also *can* support dual displays, but only through the use of the DVI daughtercard and only supporting a digital display for the second monitor. This creates a mixed analog/digital output scenario that may not appeal to many customers due to the limitations of the resolutions supported and the divergent display hardware requirements. Therefore, the Millennium G400 DualHead is recommended for customers planning dual display environments with maximum 2D performance.

Positioning within Product Line

The Matrox Millennium G400 controllers are the top-of-the-line 2D devices for the latest Compaq Workstation platforms based on the latest Intel® 820 and 840 chipsets. The Millennium G400 single display controller is available on all such Compaq workstation platforms, while the Millennium G400 DualHead controller is only supported on the Deskpro Workstation AP250, Professional Workstation AP550 and Professional Workstation SP750 platforms. The Millennium G400 controllers provide significantly higher 2D performance than the Millennium G200 or Productiva G100 Quad MMS as well as any other 2D controller on the market today. It

also introduces new features such as the Matrox DualBus, AGP 2X/4X and Vibrant Color Quality^2 (VCQ^2) for enhanced performance and visual effect quality. The Millennium G400 also offers greater flexibility (single or dual display or digital graphics output options) than the older Millenium G200.

Specifications

Complete hardware specifications for Matrox Millennium G400 are available at:

http://www.compaq.com/products/workstations/graphics/multi2d.html

Matrox Millennium G200

2D Graphics

Overview

The Matrox Millennium G200 AGP and PCI graphics controllers are low-cost 2D accelerators based on the MGA-G200 graphics chip from Matrox and are designed for general purpose and mainstream business computing. Thanks to strong performance and Matrox' unified driver technology, these controllers have become popular in large financial institutions. Both the AGP and PCI Matrox Millennium G200 graphics controllers come with up to 16MB of frame buffer memory, support high-resolution display, true color display, and a variety of 3D modes via Direct3D. Like the newer Millennium G400, the Matrox Millennium G200s do not provide OpenGL drivers but do provide high performance in 2D and Direct 3D operations and compatibility with a broad range of Matrox graphics controllers.

The Matrox Millennium G200 graphics controller provides full AGP 2X support (AGP version only), 8 MB of graphics memory (upgradeable to 16MB), and a high-speed 250 MHz RAMDAC. Both the AGP and PCI versions of the Matrox Millennium G200 are implemented as single slot solutions. The AGP version is available in either NLX (low profile) or ATX form factors. The AGP and PCI versions of the Millennium G200 are supported on the Compaq Professional Workstation AP200, AP400, AP500 and SP700 lines, offering the ability to support up to four displays (one AGP and three PCI controllers), maximizing the amount of information that can be displayed.

Target Applications

The Matrox Millennium G200s are versatile boards suited to general purpose computing, especially where superb 2D performance and broad driver compatibility are required. Representative applications include financial trading, electronic CAD, entry mechanical CAD, web page development and software development.

Key Features

- Unified driver offering driver compatibility with other Matrox controllers (Matrox Millennium II and Matrox Productiva G100 Quad MMS)
- Up to 16MB SGRAM on AGP version or 16MB of SDRAM on PCI version
- Up to 1920x1200 resolution in true color (24-bit)

- Powerful 2D performance with Windows 95/98 and Windows NT
- Available as a PCI or AGP device, enabling multi-controller implementation for multi-display support

Multi-Display Support

Multi-display functionality is available by combining the AGP-based Matrox Millennium G200 controller with up to three Matrox Millennium G200 PCI controllers.

Positioning within Product Line

The Millennium G200 controller is the fastest 2D controller available on Compaq Professional Workstation AP200, AP400, AP500 and SP700 platforms. The Matrox Millennium G200 controllers provide higher 2D performance than the Matrox Productiva G100, ATI Rage Pro Turbo and most other 2D controllers in the market today. The Millennium G200 also offers better 2D performance than the ELSA Synergy II, GLoria Synergy+ and GLoria Synergy. But the ELSA Synergy II, GLoria Synergy+ and GLoria Synergy have better OpenGL 3D capabilities than the Millennium G200 controller.

Specifications

Complete hardware specifications for the Matrox Millennium G200 are available at:

http://www.compaq.com/products/workstations/graphics/multi2d.html

Matrox Productiva G100 Quad Multi-Monitor Series (MMS)

Multi-Display 2D Graphics

Overview

The Matrox Productiva G100 Quad Multi-Monitor Series (MMS) graphics controller is a four-port solution that has the ability to support up to four displays in a single PCI slot. The Matrox Productiva G100 Quad MMS is designed to meet the needs of users who require the largest amounts of screen real estate to display massive amounts of information, such as monitoring applications or financial trading. The Productiva G100 Quad MMS is implemented as a single PCI controller, requiring only a single PCI slot. This provides maximum system flexibility, allowing the use of both multiple displays and other specialized peripherals in a single system.

The Matrox Productiva G100 Quad MMS is often used with flat panel displays, such as the Compaq TFT8020. The combination of Matrox Productiva G100 Quad MMS, the Compaq Professional Workstation AP400, and multiple flat panel displays allow display and manipulation of tremendous amounts of information in a restricted space. One example of this would be a financial trading desk.

The Matrox Productiva G100 Quad MMS incorporates four MGA-G100 graphics chips, each with 4MB of memory, on a single board. The Matrox Productiva G100 Quad MMS supports a range of resolution and color depth choices. All ports are set to the same resolution, color depth and refresh rate and display connection is though standard 15-pin VGA style connectors. For

maximum display area, two Matrox Productiva Quad G100 controllers can be used in a single system to support 5 to 8 displays.

Target Applications

The Matrox Productiva G100 Quad MMS supports financial traders, financial analysts and engineers who require maximum screen real estate in a 2D environment.

Key Features

- 4 graphics ports able to support 4 monitors with each monitor displaying separate information
- 4MB memory per port, 16MB total per controller
- Up to 1600x1200 resolution per port in HiColor (16-bit); up to 1280x1024 resolution per port in true color (24-bit)
- Good 2D performance
- Can use two Matrox Productiva G100 Quad MMS graphics controllers to support up to 8 displays

Multi-Display Support

The Matrox Productiva G100 Quad MMS graphics controller is designed to support 1 to 4 displays per controller, and a maximum of 2 controllers per system supporting up to 8 displays per system.

Positioning within Product Line

The Matrox Productiva G100 Quad MMS is the multi-port display solution of choice for Compaq Professional Workstations and is a somewhat specialized solution. While other graphics controllers enable multiple displays, the Productiva G100 Quad MMS supports up to 4 monitors with a single controller, and up to 8 monitors total. If PCI slots are limited or more than two monitors are required, the Matrox Productiva G100 Quad MMS should be chosen.

Specifications

Complete hardware specifications for the Matrox Productiva G100 Quad MMS are available at:

http://www.compaq.com/products/workstations/graphics/multi2d.html

2D and Multi-Display Selection Criteria

Many factors help determine which graphics controller is the best choice. Often, as we have noted, the application drives the graphics choice, based on the performance of the controller and features it supports. The following chart contrasts the features and performance of the various 2D and multi-display controllers.

Controller	Matrox Millennium G200	Matrox Millennium G400 (single display)	Matrox Millennium G400 DualHead	Matrox Productiva G100 Quad MMS
Max Resolution @ TrueColor	1920 x 1200	2048 x 1536	2048 x 1536	1600 x 1200
Multiple Display Support	Multiple controllers	Two with DVI daughtercard	Two	Up to 4 per controller
Form Factors	NLX and ATX	NLX and ATX	ATX	Full length PCI
Bus Interface	AGP or PCI	AGP 2X/4X	AGP 2X/4X	PCI
RAMDAC Speed	250MHz	300MHz	300MHz	230MHz
Data Path	128-bit	128-bit External / 256-bit internal	128-bit External / 256-bit internal	64-bit

While applications, specifications and features often drive customer selection for graphics, other times it is the platform support that helps drives the selection. The following charts help contrast the operating system and platform support for Compaq Professional Workstation graphics controllers.

Supported Platforms and Operating Systems for 2D and Multi-Display Graphics Controllers:

System	**OS Support**
Matrox Millennium G400 (single display)	Windows NT 4.0, 3.51, Windows 95, 98
Matrox Millennium G400 DualHead	Windows NT 4.0, 3.51, Windows 95, 98
Matrox Millennium G200	Windows NT 4.0, 3.51, Windows 95, 98
Matrox Productiva G100 Quad MMS	Windows NT 4.0, 3.51, Windows 95, 98

Controller	**AP200**	**AP400**	**AP500**	**SP700**	**AP240**	**AP250**	**AP550**	**SP750**
Matrox Millennium G200	Yes	Yes	Yes	Yes	No	No	No	No
Matrox Millennium G400 (single display)	No	Yes	No	No	Yes*	Yes	Yes	Yes
Matrox Millennium G400 DualHead	No	No	No	No	No	Yes	Yes	Yes
Matrox Productiva G100 Quad MMS	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

*Platforms with the Intel® 820 chipset only

With this data in hand we can make some broad assumptions that will guide most customers to the "right" choice for graphics.

- If maximum 2D performance on the latest platforms is desired, then the Matrox Millennium G400 is the best choice. It provides top 2D performance and is supported on the latest Compaq Deskpro Workstation AP240 and AP250 and Professional Workstation AP550 and SP750 systems.
- If the customer needs the fastest platforms and single display or digital display support are key customer requirements, then the Millennium G400 is the optimal solution.
- If the customer needs the fastest platforms and dual display support are key customer requirements, then the Millennium G400 DualHead should be the appropriate solution.
- If strong 2D performance is required, but customers prefer the "stability and consistency" of the older, established 440BX or Highly Parallel System Architecture platforms, then the Matrox Millennium G200 is the best solution.
- If more than two displays are critical customer requirements, then the Matrox Productiva G100 Quad MMS is the right choice, providing support for four displays per controller and as many as eight displays per system.

With this positioning clear, we now turn our attention to the customers that need more than robust 2D performance, particularly solutions that deliver OpenGL 3D graphics support.

ELSA Synergy II

Entry 3D Graphics

Overview

The ELSA Synergy II (AGP) Graphics Controller offered by Compaq is an excellent 2D and robust entry 3D solution that provides leadership performance at an affordable price. The ELSA Synergy II delivers leadership performance by combining the powerful RIVA TNT 2 processor from nVidia with ELSA's optimized driver and application suite. Key features include high-resolution support in true color mode, optimized 2D and 3D OpenGL drivers, and a unified frame buffer with 32MB of SDRAM. This unified frame buffer has the ability to support up to 24-bits double buffered with a 24-bit Z-buffer and 8 stencil planes and a portion of this unified frame buffer can be allocated as texture memory. The frame buffer is capable of supporting resolutions as high as 1920 x 1200 in 24-bit double-buffered mode with hardware texturing capabilities allowing the display of very realistic images. These features are significant improvements from the Synergy+, which offered less on-board memory, lower resolutions and more limited feature support.

The ELSA Synergy II offers a rich OpenGL implementation including hardware triangle setup, texture blending support, and full scene anti-aliasing, as well as an OpenGL software implementation that has been optimized for and tested with numerous workstation applications. In addition, the ELSA Synergy II supports AGP 2X and 4X and a 300-MHz RAMDAC for optimal performance and functionality.

Combining the powerful RIVA TNT 2 processor with ELSA's enhanced software package provides an excellent solution for CAD applications, such as Autodesk AutoCAD and PTC Pro/ENGINEER, as well as DCC applications, such as Discreet MAX, Discreet Edit, and NewTek Lightwave 3D. ELSA's *POWERdraft* software is a 2D-display list driver for AutoCAD

that offers unparalleled performance and an easy-to-use navigation interface that increases productivity. *ELSAview3D* is a real-time editing and viewing tool for 3D CAD models that assists in increasing productivity by allowing users to view and edit 3D models without the burden of having to run the full application. ELSA *MAXtreme* is a driver that is specialized to increase performance for Discreet MAX users. In addition, the Synergy II OpenGL driver is optimized to take advantage of Intel's latest SIMD instruction set (delivered in Pentium III and Pentium III Xeon processors only) for increased performance on platforms featuring these processors.

The ELSA Synergy II is supported on a wide variety of Intel based Compaq Deskpro and Professional Workstation systems.

Target Applications

The Synergy II is a versatile controller suited to general purpose computing and to cost-sensitive technical computing. The ELSA Synergy II is targeted at entry CAD applications; cost-conscious, CAD application users; GIS professionals; and 2D and 3D DCC application users. Representative applications include AutoCAD, Bentley MicroStation, SolidWorks, Discreet MAX, and a wide variety of software development tools.

Key Features

- 32MB SDRAM memory
- Up to 1920x1200 resolution at 24 bits double-buffered (true color)
- Full 24-bit Z-buffer and 8 stencil planes
- Support for AGP 2X and 4X
- OpenGL 1.1 support
- Software tools and utilities that enhance functionality
  - *POWERdraft*
  - *ELSAview3D*
  - *MAXtreme*
- Hardware accelerated texture mapping with point sampled and trilinear interpolated textures. Graphics memory is shared between frame buffer and texture storage.
- Robust 3D performance and excellent 2D performance

Multi-Display Support

Multi-display support is not available with the ELSA Synergy II. Multi-display support is currently available with our offering of high performance 2D Matrox controllers or with the more robust 3Dlabs Oxygen GVX1 3D graphics controllers.

Positioning within Product Line

The Synergy II is the entry-level 3D graphics choice. It should be the default choice for customers with limited 3D needs or customers with primarily 2D requirements that expect future 3D needs. Due to stronger performance and superior price/performance, it is a very desirable replacement for customers that were previously purchasing the ELSA Synergy or Synergy+

controller. The ELSA Synergy II should be used unless application requirements indicate the need for a more feature-rich, higher performance 3D controller.

Supported Platforms and Operating Systems for ELSA Synergy II:

System	Platform Support	OS Support
AP200^	Yes	Windows NT 4.0, Windows 95, 98
AP400^	Yes	Windows NT 4.0, Windows 95, 98
AP500^	Yes	Windows NT 4.0, Windows 95, 98
SP700^	Yes	Windows NT 4.0, Windows 95, 98
AP240	Yes*	Windows NT 4.0, Windows 95, 98
AP250	Yes	Windows NT 4.0, Windows 95, 98
AP550	Yes	Windows NT 4.0, Windows 95, 98
SP750	Yes	Windows NT 4.0, Windows 95, 98

*Intel® 820 chipset –based platforms only.

^Pentium III and Pentium III Xeon processor systems only.

Specifications

Complete hardware specifications for ELSA Synergy II are available at:

http://www.compaq.com/products/workstations/graphics/entry3d.html

3Dlabs Oxygen VX1

Entry 3D Graphics Solution

Overview

The 3Dlabs Oxygen VX1 graphics controller was the first graduate of the Compaq Graphics Excellence Program (GEP) and is an excellent 2D and entry 3D solution based on the 3Dlabs R3 rendering processor. This controller provides powerful performance at an affordable price. Key features include high-resolution support in true color mode, optimized 2D and 3D OpenGL drivers, 3Dlabs Virtual Texture management technology and a unified frame buffer with 32MB of SDRAM. This unified frame buffer supports up to 24-bits double buffered with a 24-bit Z-buffer and 8 stencil planes. The 3Dlabs Oxygen VX1 can be integrated on a wide variety of Intel based Compaq Deskpro and Professional workstation systems, but *is not offered as a pre-installed controller or as a Compaq-supported aftermarket option*. This is an important differentiator, as it means that Compaq does not sell or provide warranty support for this graphics controller.

Target Applications

The 3Dlabs Oxygen VX1 is a versatile controller suited to general purpose computing and to cost-sensitive technical computing. The Oxygen VX1 is targeted at entry CAD applications; cost-conscious CAD application users; GIS professionals; and 2D and 3D DCC application users. Representative applications include AutoCAD, Bentley MicroStation, SolidWorks, Discreet MAX, and a wide variety of software development tools.

Key Features

- 32MB SDRAM memory
- Up to 1920 x1200 resolution at 24 bits double-buffered (true color)
- Full 24-bit Z-buffer and 8 stencil planes
- Support for AGP 2X and 4X
- OpenGL 1.1 support
- PowerThreads SSE and PowerThreads multithreaded drivers for SIMD and multiprocessing performance improvement
- Colorific and SoftEngine utility and display list driver software for DCC and CAD application enhancement

Specifications.

Complete hardware specifications for the 3Dlabs Oxygen VX1 are available at:

http://www.3dlabs.com/products/index.html

The 3Dlabs Oxygen VX1 controller has been certified for compatibility on select Compaq Professional Workstation platforms via the Compaq Graphics Excellence Program. Compatibility information is located at:

http://www.compaq.com/products/workstations/graphics/specialty.html

Multi-Display Support

The 3Dlabs Oxygen VX1 does not support multi-display configurations.

Positioning within Product Line

The 3Dlabs Oxygen VX1 is not positioned within the Compaq workstation product line because it is not available as an option from Compaq nor is the controller built into any Compaq workstation configurations. But, the 3Dlabs Oxygen VX1 controller has been certified for compatibility on several Compaq Professional Workstation platforms, providing customers with a choice for entry 3D graphics. While most customers will prefer the ELSA Synergy II product sold and supported by Compaq, Compaq expects a small number of customers that have chosen to standardize on other 3Dlabs technologies may prefer the Oxygen VX1 solution. Through the GEP testing process, Compaq can provide a compelling platform and piece of mind for these customers.

Selection Criteria for Entry 3D graphics

The ELSA Synergy II has been selected as a premier graphics solution since it is a very flexible, general-purpose graphics controller that should be considered as the default choice in most workstation selections. The main question to ask is whether the applications used require greater capabilities than the Synergy II provides or if the customer has other requirements or preferences that may make another solution more appropriate. Key questions include:

- Does the application require 3D support?
- Is cost a factor in selecting a 3D solution?
- Is a 32MB unified frame buffer sufficient for the application?
- Does the application benefit from value-add software such as MAXtreme, ELSAview or POWERdraft?
- Does the customer want a solution that is tightly integrated and well supported by the workstation manufacturer?

If the answer to these questions is "yes," then the ELSA Synergy II merits serious consideration. The table above provides an overview of the Compaq Professional Workstation systems that support the ELSA Synergy II controller.

If the customer has standardized on a different architecture (such as 3Dlabs) and has need for tools such as PowerThreads and is willing to sacrifice some level of testing and integration with the workstation platform, the Oxygen VX1 could be a suitable alternative for channel integration.

If cost is a less pressing concern or more robust Professional 3D support or higher performance is required, then the 3Dlabs Oxygen GVX1, PowerStorm 600 or Intense 3D Wildcat 4110 PRO is recommended.

The following sections outline these products and key selection and positioning criteria that can help guide the selection of the right graphics solution based on customer requirements.

3Dlabs Oxygen GVX1

Professional 3D Graphics

Overview

The 3Dlabs Oxygen GVX1 Graphics controller is a high-performance 3D graphics solution for users who require Professional 3D graphics features and the best balance of price and performance. The 3Dlabs Oxygen GVX1 is based on the 3Dlabs GLINT R3 graphics rendering controller and GLINT Gamma G1 geometry processor. The GLINT R3 implements a complete Professional 3D quality graphics pipeline and display management sub-system on a single device, enabling the Oxygen GVX1 to provide performance and functionality that will surpass most of today's highest performance adapters at a much lower cost. GLINT Gamma G1 is the industry's first single chip designed to break the 3D lighting and geometry bottleneck on Intel based workstations by implementing the complete OpenGL 3D lighting and geometry pipeline in hardware. The combination of the GLINT R3 and GLINT Gamma G1 on the Oxygen GVX1 makes this graphics controller an ideal choice for 3D-application performance for CAD, CAM, DCC, GIS, solids modeling, and visual data analysis applications. The 3Dlabs Oxygen GVX1

includes 3Dlabs' new-generation PowerThreads SSE OpenGL drivers. The PowerThreads SSE drivers with Dynamic Load Balancing provide optimized support for OpenGL1.1, Intel® SIMD extensions and are optimized for multiprocessor systems under Windows NT 4.0.

The 3Dlabs Oxygen GVX1 AGP and PCI controllers each include 32 MB of memory. It features a unified memory architecture that allows optimum use of local memory for the frame buffer and texture memory. In addition to the 32MB of local memory, the Oxygen GVX1 supports a unique 3Dlabs technology known as Virtual Texture Mapping. This technology features on-demand loading of textures into local memory on a page-by-page basis, with 4-KB page granularity. The loading of new texture pages is managed by the GLINT R3, with no memory management support required of the software drivers nor is workload added on the host processor.

The bilinear fill rate of 230M texels/second and trilinear fill rate of 115M texels/second and the ability to display 3.3 million fully transformed and lit polygons per second are key performance features of this Professional 3D graphics solution.

The 3Dlabs Oxygen GVX1 is a high-quality graphics controller for professionals requiring the, best balance of price and performance along with full OpenGL 1.1 support. Users of Professional 3D graphics applications, such as Discreet MAX, Lightwave and Softimage, as well as CAD and CAE applications like PRO/E, UG, Solidworks, and AutoCAD, benefit from the capabilities of this graphics controller. The Oxygen GVX1 is bundled with Soft Engine 4 AutoCAD display list drivers from Vibrant Graphics, Inc. to improve 2D CAD performance. For DCC customers, the Oxygen GVX1 also has excellent Gamma correction support via Sonnetech, Ltd.'s "Colorific" technology. Utilizing this process allows users to have their display color corrected to accurately reflect their output medium, whether it is print or film.

The 3Dlabs Oxygen GVX1 Graphics Controller is available in AGP ATX or PCI form factors. Both a VGA connector and Digital Flat Panel (Panel Link) connector are standard on Oxygen GVX1. The Oxygen GVX1 is supported on selected Compaq Professional and Deskpro AP250 Workstations running Windows NT 4.0 and as a Compaq-supported after-market option kit.

Target Applications

The 3Dlabs Oxygen GVX1 is best suited to high-end technical applications in MCAD, GIS, DCC, Scientific Visualization and Visual Simulation market segments. Representative examples of these segments include: Pro/ENGINEER, Unigraphics, CATIA, Matra Datavision, ESRI ArcView, Discreet, Lightwave3D, AVS, Alias Maya, and Paradigm Vega.

Key Features

- High performance 3D graphics
- Excellent 2D performance
- 1920 x 1200 resolution, 24-bit true color, double buffered with up to 32-bit Z-buffer
- 8 bit overlay/alpha planes
- Support for stencil planes
- Hardware accelerated texture mapping with point sampled and trilinear interpolated textures. Graphics memory is shared between frame buffer and texture storage.
- Full OpenGL 1.1 support
- Stereo graphics output

- Dual-display support (one AGP-based Oxygen GVX1 combined with one PCI-based Oxygen GVX1)

Multi-Display Support:

The Oxygen GVX1 product is capable of providing dual-display support by combining one AGP-based Oxygen GVX1 card with one PCI-based Oxygen GVX1 controller. The combination of a PCI and AGP controllers allow for high performance dual display 3D applications in a single workstation.

Positioning within Product Line

The 3Dlabs Oxygen GVX1 replaces the PowerStorm 300 for Pentium III and Pentium III Xeon based Professional Workstations. It offers better 3D functionality and significantly higher 3D performance than the ELSA Synergy II or PowerStorm 300 controllers. The PowerStorm 600 and Intense3D Wildcat 4110 PRO generally offer better performance for large model and complex screen rendering, but at significantly higher prices.

Specifications

Complete hardware specifications for the 3Dlabs Oxygen GVX1 are available at:

http://www.compaq.com/products/workstations/graphics/pro3d.html

Supported Platforms and Operating Systems for the 3Dlabs Oxygen GVX1:

System	Platform Support	OS Support
AP200*	Yes	Windows NT 4.0
AP400	None	None
AP500*	Yes	Windows NT 4.0
SP700*	Yes	Windows NT 4.0
AP240	None	None
AP250	Yes	Windows NT 4.0
AP550	Yes	Windows NT 4.0
SP750	Yes	Windows NT 4.0

* Pentium III and Pentium III Xeon processor-based systems only

Diamond Fire GL1

Professional 3D Graphics

Overview

The Diamond Fire GL1 Graphics controller is a high-performance 3D graphics solution for users who require Professional 3D graphics features and a compelling balance of price and

performance. In many regards, the Diamond Fire GL1 is quite comparable to the 3Dlabs Oxygen GVX1. This is especially so in terms of price, and somewhat true when performance is a consideration. Frequently, the Oxygen GVX1 offers better performance than the Diamond Fire GL1, but there are some instances where the Diamond Fire GL1 will offer superior performance than the 3Dlabs Oxygen GVX1. For example, the Diamond Fire GL1 has shown impressive performance in Dassault Systemes' CATIA CAD application. For this reason, Compaq has worked with Diamond to compatibility-test the Diamond Fire GL1 on Compaq Professional Workstation platforms and promote this graphics controller as a "Specialty" solution under the Graphics Excellence Program.

The Diamond Fire GL1 is based on an IBM-developed 256-bit graphics rasterizer chip and is capable of processing up to 4M polygons/Sec and generating a fill rate of 200M Gouraud-shaded, Z-buffered pixels/Sec. The Diamond Fire GL1 was one of the first graphics controllers to feature drivers that were tuned to take advantage of the performance-enhancements available in the Intel® SIMD instruction set and also features multi-threaded drivers for superior multiprocessing support under Windows NT 4.0.

Target Applications

The Diamond Fire GL1 is best suited to high-end technical applications in MCAD, Scientific Visualization and Visual Simulation market segments. Representative examples of these segments include: Pro/ENGINEER, Unigraphics, CATIA, Matra Datavision, and Paradigm Vega.

Key Features

- Excellent wireframe and line-drawing performance
- 1920 x 1200 resolution, 24-bit true color, double buffered with up to 32-bit Z-buffer
- 8-bit alpha plane support.
- Full OpenGL 1.2 support
- Overlay and stencil buffer support

Specifications

Complete hardware specifications for the Diamond Fire GL1 are available at:

http://www.diamondmm.com/firegl/firegl1.html

The Diamond FireGL1 controller has been certified for compatibility on select Compaq Professional Workstation platforms.

Multi-Display Support:

Diamond offers PCI and AGP 2X versions of this controller and the drivers support up to four displays per workstation. This is not a configuration that has been tested and certified for compatibility by Compaq.

Positioning within Product Line

Technically, the Diamond Fire GL1 does not fit within the Compaq workstation product line, since it is not a Compaq supported option, nor is the controller built into any Compaq workstation configurations. But, the Diamond Fire GL1 controller has been certified for compatibility on

several Compaq Professional Workstation platforms via the Compaq Graphics Excellence Program. Compatibility information is located at:

http://www.compaq.com/products/workstations/graphics/specialty.html

While most customers will prefer the 3Dlabs Oxygen GVX1 product sold and supported by Compaq, Compaq expects a small number of customers to request the Diamond Fire GL1. Through the GEP testing process, Compaq can provide a compelling platform and piece of mind for these customers.

Selection Criteria for mid-range Professional 3D Graphics controllers

Is the 3Dlabs Oxygen GVX1 the best choice for the application? The primary selection criteria are whether or not the applications used take advantage of the capabilities of the 3Dlabs Oxygen GVX1 and customer price-sensitivity. Key questions include:

- Is geometry acceleration needed to meet the graphics performance requirements of the application?
- Does the application use significant amounts of texture mapping?
- Does the application support overlay planes?
- Is the customer more oriented to performance, but still working within cost constraints?
- Is hardware accelerated OpenGL required?
- Is stereo support required?

If the answer to these questions is "yes," then the 3Dlabs Oxygen GVX1 merits serious consideration over the ELSA Synergy II and older PowerStorm 300 controllers.

There may be perhaps a limited number of cases where the customer is demanding faster 2D and stronger line drawing performance or better multi-display support than is available with the Oxygen GVX1. Maybe the customer wants graphics performance headroom to accommodate future processor generations, then perhaps another choice is warranted. In such cases, the Diamond Fire GL1 may also fit the customer needs. But since this is not a controller that is sold and supported by Compaq, the customer must be willing to compromise on the level of testing, integration and support they need.

For even higher performance, large model and complex screen rendering, or where raw performance outweighs cost concerns, the Compaq PowerStorm 600 or Intense3D Wildcat 4110 PRO graphics controllers are recommended. These controllers are considered below.

PowerStorm 600

Enhanced Professional 3D Graphics

Overview

The PowerStorm 600 is an ultra high-performance 3D graphics accelerator based on the award-winning Intense3D Wildcat 4000 controller technology. It provides full acceleration for the most

demanding OpenGL operations, including shading, texturing, stencil, transparency and overlay planes, plus acceleration of geometric and lighting calculations.

The PowerStorm 600 is implemented on two boards. The geometry accelerator is implemented on a full size AGP board. The rendering operations are implemented on a full size PCI board. The two controllers are physically connected through a Vertex Data Bus, which is implemented as a ribbon cable.

The PowerStorm 600 is packaged with select Compaq Professional Workstation SP700 and AP500 platforms and is qualified for the latest Compaq Professional Workstation AP550 and SP750 systems. The PowerStorm 600 is not available for other workstations, or as an upgrade to existing SP700 or AP500 workstations due to thermal and mechanical limitations imposed by the dual-board set and cabling.

The PowerStorm 600 includes 16 MB of SDRAM frame buffer memory. The PowerStorm 600 supports 1280x1024 resolution with a true color, double buffered display, a 24 or 32-bit Z buffer, 4 or 8-bit double buffered overlay planes, 6 or 8-bit stencil planes and up to 8-bit Alpha planes.

The PowerStorm 600 also comes with 64 MB of SDRAM texture memory. The controller supports all OpenGL texture modes, including point sampled, bilinear interpolation, and trilinear interpolation. Perspective correction of textures is done on a per-pixel basis. Texture maps are stored as 32-bit texels, providing full 24-bit color plus 8 plane alpha per texel.

The PowerStorm 600 delivers high performance. The rendering portion of the PowerStorm 600 is capable of displaying 3.4M triangles per second, 3M anti-aliased 3D vectors per second, and 7.3M 3D vectors per second. Texture fill is 68 Mpixels per second for point sampled, bilinear and trilinear interpolated textures, using 32-bit texels.

The PowerStorm 600 supports full OpenGL quad buffered stereo for the highest 3D visual quality when using head mounted displays and shutter glasses.

Target Applications

The PowerStorm 600 is best suited to high-end technical applications in MCAD, DCC, Scientific Visualization and Visual Simulation. Representative examples include: Pro/ENGINEER, Unigraphics, CATIA, Matra Datavision, ERDAS, Maya, Discreet, Lightwave3D, AVS and Paradigm Vega.

Key Features

- Workstation-class 3D rendering, including shading, texturing and Z-buffering
- Hardware acceleration of 3D geometry calculations, including lighting and geometric transformations
- 1280x1024 resolution, 24-bit true color, double buffered with 24 bit Z-buffer
- 4-bit double buffered overlay planes at 1280x1024; 8-bit double buffered overlay planes at 1152x864
- Full OpenGL 1.1 support
- Hardware accelerated texture mapping with 64 MB of dedicated texture memory and support for tri-linear interpolation of textures
- 3D performance: 3.4M triangles per second, 68 MPixel per second textured fill rate (trilinear interpolated 32 bit texels)

- Stereo graphics support

Multi-Display Support

The PowerStorm 600 does not support multi-display output.

Positioning within Product Line

The PowerStorm 600 offers higher performance than the PowerStorm 300 with a similar graphics feature set. It offers better 3D functionality and performance than the ELSA Synergy II, the PowerStorm 300 and 3Dlabs Oxygen GVX1. It is the top-performing 3D graphics controller for the AP500 and SP700 platforms.

Specifications

Complete hardware specifications for the PowerStorm 600 controller are available at:

http://www.compaq.com/products/workstations/graphics/pro3d.html

Selection Criteria

The primary selection criterion is price sensitivity and whether or not the applications used take advantage of the capabilities of and require the power of the PowerStorm 600. Key questions include:

- Is application performance limited by OpenGL geometry processing?
- Are the OpenGL functions used by the application accelerated by the PowerStorm 600 geometry accelerator?
- Is performance more important than price?
- Is the application using larger textures?
- Is the customer working with large data sets or models?

The performance question is generally answered through application level benchmarking. If the answer to these questions is "yes," then the PowerStorm 600 merits serious consideration. But due to the unique physical and electrical requirements of this powerful, two-board controller set, the platform support can be a critical issue to help determine whether the PowerStorm 600 is the “right” solution for customer needs. The table below provides an overview of the Compaq Professional Workstation platforms that support the PowerStorm 600 controller.

Supported Platforms and Operating Systems for PowerStorm 600:

System	Platform Support	OS Support
AP200	None	None
AP400	None	None
AP500*	Yes	Windows NT 4.0
SP700*	Yes	Windows NT 4.0
AP240	None	None
AP250	None	None
AP550	Yes	Windows NT 4.0
SP750	Yes	Windows NT 4.0

* Pentium III and Pentium III Xeon platforms only

For customers with still-higher performance requirements and those purchasing the latest AP550 and SP750 workstation platforms, Compaq is proud to offer the new Intense3D Wildcat 4110 PRO solution.

Intense3D Wildcat 4110 PRO

Enhanced Professional 3D Graphics

Overview

The Wildcat 4110 PRO is the latest breakthrough in high-end 3D graphics controller technology from the Intense3D graphics division of Intergraph Corp. The Wildcat 4110 PRO is the highest-performance accelerated 3D graphics device available for Intel-based workstations, delivering graphics performance that surpasses nearly all leading UNIX-based graphics solutions from SGI and HP. It provides full acceleration for the most demanding OpenGL operations, including shading, texturing, stencil, transparency and overlay planes, plus acceleration of geometric and lighting calculations. It is the top choice for customers working with the mid- to large- data sets and requiring the highest levels of graphics interactivity and realism.

The Wildcat 4110 PRO is qualified for the latest Compaq Professional Workstation AP550 and SP750 systems only, due to mechanical, power and thermal requirements specified by the AGP Pro-50 standard. The Intense3D Wildcat 4110 PRO is not available for other workstations or as an upgrade to existing SP700 or AP500 workstations.

The Wildcat 4110 PRO includes 64 MB of SDRAM frame buffer memory. It supports up to 2048x1152 resolution with a true color, double buffered display, a 24 or 32-bit Z buffer, 4 or 8-bit double buffered overlay planes, 8-bit stencil planes and up to 8-bit double buffered Alpha planes.

The Intense3D Wildcat 4110 PRO also comes with 64 MB of SDRAM texture memory. The controller supports all OpenGL texture modes, including point sampled, bilinear interpolation, and trilinear interpolation. Perspective correction of textures is done on a per-pixel basis. Texture maps are stored as 32-bit texels, providing full 24-bit color plus 8 plane alpha per texel

The Intense3D Wildcat 4110 PRO delivers the highest 3D performance available for Windows NT. The rendering portion of the Wildcat 4110 PRO is capable of displaying 6M triangles per second, and texture fill is 143 Mpixels per second for point sampled, bilinear and trilinear interpolated textures, using 32-bit texels.

The Intense3D Wildcat 4110 PRO supports full OpenGL quad buffered stereo for the highest 3D visual quality and realism when using head mounted displays and shutter glasses.

Target Applications

The Intense3D Wildcat 4110 PRO is best suited to high-end technical applications in MCAD, DCC, Scientific Visualization and Visual Simulation. Representative examples include: Pro/ENGINEER, Unigraphics, CATIA, Matra Datavision, ERDAS, Maya, Discreet, Lightwave3D, AVS and Paradigm Vega.

Key Features

- Workstation-class 3D rendering, including shaded rotations, texturing, transparency and Z-buffering
- Hardware acceleration of 3D geometry calculations, including lighting and geometric transformations
- Up to 2048x1152 resolution (70 Hz) 24 bit true color, double buffered
- Up to 8-bit double buffered overlay planes at 1920x1080 (75Hz)Full OpenGL 1.2support
- 64MB Frame buffer and 64 MB of dedicated texture memory with support for tri-linear interpolation of textures
- 3D performance: 6M triangles per second, 143MPixel per second textured fill rate (trilinear interpolated 32 bit texels)
- Stereo graphics support via VESA standard 3-pin stereo port

Multi-Display Support

The Intense3D Wildcat 4110 PRO is a single output display solution.

Positioning within Product Line

The Intense 3D Wildcat 4110 PRO is the highest performance 3D graphics accelerator available on Windows NT-based workstations. It is also the only product based on Intense3D's innovative ParaScale™ architecture, enabling greater scalability in graphics performance than previous generation 3D graphics controllers. The Intense3D Wildcat 4110 PRO is only supported on Compaq's fastest Compaq Professional Workstation AP550 and SP750 systems and is only available as an after-market option. Therefore, this product must be integrated on the Compaq Professional Workstation platform in the channel or on customer premises. It is recommended that customer purchase one of the Compaq graphics-less SKUs to make this integration effort most efficient.

Specifications

Complete hardware specifications for the Intense3D Wildcat 4110 PRO are available at:

http://www.compaq.com/products/workstations/graphics/pro3d.html

Selection Criteria

The primary selection criterion for this class of controller is raw graphics and system performance and whether or not the applications used take advantage of the unique capabilities of and require the power and scalability of the Intense3D Wildcat 4110 PRO. Key questions include:

- Is application performance limited by OpenGL geometry processing?
- Are the OpenGL functions used by the application accelerated by the Intense3D Wildcat 4110 PRO geometry accelerator?
- Is absolute top 3D performance required?
- Is the application using larger textures?
- Is the customer working with large or complex data sets or models?
- Does the workstation platform offer an AGP Pro50 slot?

The performance question is generally answered through application level benchmarking. If the answer to these questions is "yes," then the Intense3D Wildcat 4110 PRO is perhaps the best solution for the customer requirements. But customers will also need to make sure this controller is supported on their workstation platform. The following table provides a summary of all the Compaq Professional Workstation and Compaq Deskpro Workstation platforms that support the Intense3D Wildcat 4110 PRO graphics accelerator.

Supported Platforms and Operating Systems for Intense3D Wildcat 4110 PRO:

System	Platform Support	OS Support
AP200	None	None
AP400	None	None
AP500	None	None
SP700	None	None
AP240	None	None
AP250	None	None
AP550	Yes	Windows NT 4.0
SP750	Yes	Windows NT 4.0