



By Richard Thwaites

MOBILITY AND DYNAMIC GRAPHICS: NEW DELL PRECISION WORKSTATIONS SHINE

Dell Precision™ M2400 and M4400 mobile workstations enable engineers, computer-aided design (CAD) designers, video editors, animators, and other creative and business professionals to run high-performance, graphics-intensive applications in a lightweight, durable chassis—and share docking stations and peripherals with the new Dell™ Latitude™ laptop family.

Delivering high-performance workstation functionality in a mobile computing environment is no easy task. In particular, the trade-offs that have historically enabled mobile computing have often required sacrifices in performance and graphics capability. Now, the new Dell Precision M2400 and M4400 mobile workstations offer certified workstation-class performance in a choice of lightweight, durable, highly mobile chassis—enabling engineers, computer-aided design (CAD) designers, video editors, animators, and other creative and business professionals to run high-performance, graphics-intensive applications reliably and securely most anywhere in the world. In addition, Dell Precision M2400 and M4400 workstations share the same docking stations, peripherals, and systems management tools as the new Dell Latitude laptops,¹ which can help simplify deployment and lower the cost of management, especially in enterprise environments with a heterogeneous mix of mobile computing platforms. Energy-efficient Intel® Centrino® 2 multi-core processors with Intel vPro™ technology allow administrators to perform hardware-assisted remote isolation, diagnostics, and repair, as well as remotely shut down and update Dell Precision M2400 and M4400 workstations.

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POWERING WORKSTATION-CLASS PERFORMANCE

Historically, specialized graphics processors and other high-performance processing hardware generated too much heat to fit safely within the confines of a mobile workstation. As a result, users often had to endure long rendering times and unacceptably slow performance when running graphics-intensive, workstation-class applications on mobile computers. And because of the high power usage of most graphics-intensive applications, mobile users running such applications were often constrained by limited battery life.

Recent innovations in chip design, however, have resulted in chipsets with dramatically enhanced power efficiency and heat dissipation capabilities. By taking advantage of these innovations, Dell Precision M2400 and M4400 systems offer a high level of processing power in a lightweight form factor (see the “Mobile workstations ready to go the distance” sidebar in this article). For example, Dell Precision M4400 workstations include next-generation Intel Core™2 Extreme processors and NVIDIA OpenGL graphics engines with dedicated graphics memory to deliver certified workstation-class performance and enhanced graphics rendering.

¹For more information, see “Freedom from Business as Usual: Introducing the New Dell Latitude,” by Daniel Bounds, in *Dell Power Solutions*, August 2008, DELL.COM/Downloads/Global/Power/ps3q08-20080380-Bounds.pdf.

To help improve performance and durability, Dell Precision M2400 and M4400 workstations also take advantage of the latest solid-state disk (SSD) technology. Dell Flash Ultra Performance SSDs are designed to deliver up to 22 percent faster read/write performance over previous-generation laptop hard drives.² In addition, Dell Precision M2400 and M4400 mobile workstations take advantage of innovations in battery technology to help lengthen battery life and enhance mobility—including options for six- and nine-cell batteries plus an optional high-capacity battery slice rated at 84 WH.

Although Dell Precision M2400 and M4400 workstations come equipped with 14.1-inch and 15.4-inch LCD monitors, respectively, they can also connect to external monitors up to 30 inches in size. In particular, Dell Precision M2400 and M4400 workstations utilize next-generation DisplayPort technology, which enables them to connect to external display hardware that is compatible with Digital Visual Interface (DVI), dual-link DVI, video graphics array, and high-definition multimedia interfaces. DisplayPort also supports long-length projector cords, and can provide expandability for connections to CRTs, LCDs, flat-panel televisions, and other media devices.

Of course, mobile workstations are at especially high risk for damage in transit. To help IT organizations protect their investment and maximize user uptime, Dell Precision M2400 and M4400 workstations have been carefully designed to withstand the wear and tear that comes from taking a laptop on the road. For example, the chassis itself shares the same innovative design as the new Dell Latitude family of laptops, and is constructed of a strong magnesium alloy with StrikeZone shock absorbers to help withstand drops and blows. Additionally, the hinges, latches, back covers, and keyboards have been designed specifically for the Dell Precision M2400 and M4400 workstations to facilitate ease of use and minimize damage.

MOBILE WORKSTATIONS READY TO GO THE DISTANCE

Two new Dell Precision mobile workstations complement the new Dell Latitude laptop family, creating a comprehensive range of mobile computing platforms that share peripherals and systems management tools to help simplify deployment and lower cost of ownership.

The Dell Precision M4400 is a mid-size mobile workstation designed to be a true replacement system for workers who need a mobile system but require excellent workstation performance. In particular, it is designed to deliver leading-edge graphics performance for applications such as video editing, mechanical assembly design, animation, digital content creation, and any others that require extensive manipulation of OpenGL models. The Dell Precision M4400 offers independent software vendor (ISV)-certified application performance in a midsize, durable 15.4-inch LCD form factor with a target entry weight of 5.92 pounds (see Figure A).^{*} The Dell Precision M4400 utilizes the NVIDIA Quadro FX 770M graphics engine and 512 MB of dedicated graphics memory, along with upcoming quad-core Intel mobile processors.



Figure A. The Dell Precision M4400: Powerful and feature-rich graphics

The Dell Precision M2400 is a lightweight mobile workstation designed for workers who need certified workstation-class performance but require excellent mobility as well. In particular, it is designed for highly mobile users such as executives, creative designers, and other mobile professionals who need

to view, manipulate, and edit design documents, OpenGL models, and other graphical documents while on the go. The Dell Precision M2400 delivers ISV-certified application performance in a lightweight, durable 14.1-inch LCD form factor with a target entry weight of 4.77 pounds (see Figure B).^{*} The Dell Precision M2400 utilizes the NVIDIA Quadro FX 770M graphics engine and 256 MB of dedicated graphics memory, along with next-generation Intel Core 2 Duo processors.



Figure B. The Dell Precision M2400: Enhanced mobility for workstation performance

* Weights vary depending on configuration and manufacturing variability.

ENSURING CONNECTIVITY AND SECURITY

To stay productive, mobile workers must have consistent access to the Internet and enterprise networks. Dell Precision M2400 and M4400 mobile workstations combine

advanced antenna design and connectivity hardware with specialized connectivity and security software designed to deliver exceptional network access and security.

In particular, Dell Precision M2400 and M4400 workstations support the IEEE

²Based on SysMark 2007 benchmark tests performed by Dell Labs in January 2008. Actual performance will vary based on configuration, usage, and manufacturing variability.

802.11n Wi-Fi® protocol with 3 x 3 antenna design to help maximize speed and throughput. Users can also utilize Bluetooth® 2.1 technology to connect to peripherals and devices such as smartphones, PDAs, mice, and keyboards. Included ultra-wideband (UWB) technology provides extensive range for use with wireless docking stations, printers, and scanners. A mobile broadband card, included in Dell Precision M2400 and M4400 workstations, supports Global Positioning System (GPS) and WiMAX technology to enable lightning-fast Internet access when the WiMAX network infrastructure is completed.

Additionally, to help simplify the task of managing connectivity across a wide range of user communities and network types, Dell ControlPoint software utilizes information in preselected profiles to streamline and automate connectivity to a variety of networks. Dell Wi-Fi Catcher™ features allow users to easily find out if a connection is available even when the system is off. Wi-Fi Catcher also has a switch that allows users to turn off antennae when not in use to help save battery life.

To help ensure the safety and security of sensitive data, Dell Precision M2400 and M4400 mobile workstations support a variety of security protocols for wireless communication, including Wi-Fi Protected Access (WPA), which is designed to prevent other mobile users from capturing sensitive business communications. Wave Systems EMBASSY Trust Suite software helps reinforce virtual private network authentication and communication to help improve remote computing security. Additional security features include contactless smart card readers, fingerprint readers, and Trusted Platform Modules designed to enhance security for credentials repositories.³

SHARING COMMON DOCKING STATIONS AND PERIPHERALS

In addition to delivering outstanding performance and durability, Dell Precision

M2400 and M4400 mobile workstations share peripherals with the new Dell Latitude laptops, including next-generation docking stations and display options. Sharing a common pool of peripherals not only offers productivity benefits, but also helps IT departments simplify device management and lower the overall cost of supporting a mobile fleet.

Key shared peripherals include next-generation docking stations such as the Advanced E-Port, which supports dual monitors for advanced display functionality, and the E-Port, which features an extremely small footprint. Dell Precision M2400 and M4400 workstations also share the same laptop and monitor stands, cameras, and microphones.

STREAMLINING DEPLOYMENT AND MANAGEMENT

Of course, transitioning to a new hardware platform can be a challenge. To help ease the process, Dell offers a range of products and services designed to simplify provisioning, deployment, overall management, and support. To begin with, Dell Custom Factory Integration services build Dell Precision M2400 and M4400 mobile workstations and other Dell systems to order, including custom hardware and software configurations and factory installation of organization-specific software images.

To help IT organizations simplify management of hardware images, Dell offers ImageDirect, an image management tool that enables administrators to create, update, manage, and deploy hardware images. ImageDirect supports a wide range of legacy, current, and future platforms—including Dell OptiPlex™, Dell Latitude, and Dell Precision systems. In addition, to streamline client migration and deployment, the Dell Client Migration Solution provides end-to-end deployment services ranging from readiness assessments to automated imaging and

deployment to user data migration, helping minimize disruption to productivity and local technician visits.

Moreover, to help organizations simplify the challenge of supporting mobile workers around the world, Dell ProSupport Mobility Services offers a comprehensive suite of professional asset and data protection solutions geared to securely and flexibly enhance mobile worker productivity, safeguard organizational data, and protect valuable mobile assets.⁴

ENABLING HIGH-PERFORMANCE GRAPHICS PROCESSING—ANYWHERE

With the enhanced graphics acceleration and processing power now available in Dell Precision M2400 and M4400 workstations, mobile professionals can finally get certified workstation-class performance in a reliable, durable mobile form factor. And because Dell Precision M2400 and M4400 workstations share the same peripherals as Dell Latitude laptops, they can help IT departments simplify deployment and lower the overall cost of managing an enterprise-wide mobile fleet.⁵

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³For more information on security technologies, intuitive remote management tools, streamlined backup solutions, and product transition planning for the mobile workforce, see "Mobility Redefined," by Jeanne Feldkamp, Daniel Bounds, Terry Myers, and Tom Kolnowski, in *Dell Power Solutions*, August 2008, DELL.COM/Downloads/Global/Power/ps3q08-20080388-CoverStory.pdf.

⁴For more information, see "Connect and Protect Workers on the Go with Dell ProSupport Mobility Services," in *Dell Power Solutions*, August 2008, DELL.COM/Downloads/Global/Power/ps3q08-20080374-Dell-ProSupport.pdf.

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