

Dell Precision™ Workstation 650



The Dell Precision Workstation 650 is a highly-scalable dual-processing solution designed for complex computing environments that require outstanding performance, expandability and capacity.

Highly Scalable Performance

The Dell Precision Workstation 650 combines Dell's latest technology advancements with the Intel® Xeon™ dual processor architecture designed to deliver maximum scalability and performance for your most demanding applications. With a 533MHz Front Side Bus, a 512K cache (3.06GHz and 3.20GHz processors with 1MB Level 3 cache available) and the workstation-optimized Intel E7505 chipset, the Xeon architecture provides speeds up to 3.06GHz and aggressive performance. The Precision 650 also incorporates the newest dual channel memory technology offering up to 4GB of PC2100 Double Data Rate SDRAM memory at 266MHz. It is perfectly matched to the 4.2GBs bandwidth of the 533MHz FSB giving you optimum memory capabilities.

The Precision 650 offers a wide range of integrated high performance I/O options to help keep data flowing quickly and smoothly through your organization. The AGP 8X Pro110 option offers exceptional graphics capabilities with 2GB/s of bandwidth between high performance graphics cards, both processors and the high-speed memory. Additionally, two integrated 64-bit 100MHz PCIx buses support a wide range of performance option cards PLUS integrated 64-bit Gigabit Ethernet (8X faster than 10/100 Ethernet), integrated 64-bit U320 SCSI with performance-enhancing RAID 0, and USB 2.0.

With advanced 64-bit Gigabit networking technology, the Dell Precision 650 facilitates all of your collaboration efforts, from creating complex CAD documents to editing and composing a video documentary.

Workstation-Class Graphics and Audio

The Dell Precision 650 offers the latest generation of high performance workstation-class graphics cards, all of which support dual monitor configurations. The new 128MB nVidia QuadroFX 1000 provides exceptional OpenGL 3D performance with outstanding new features. For additional specialized features the 3DLabs 256MB Wildcat 7110 card is also offered. The ATI Fire GL X1 mid-range card delivers an excellent price/performance solution for the demanding 3D user, while the new 128MB nVidia QuadroFX 500 delivers quality 3D performance at an entry level price. Rounding out the Dell Precision 650 graphics offerings, nVidia's 64MB Quadro NVS 280 is available for customers who desire a low cost card that provides great 2D performance with optional dual monitor capability.

ISV Application Certification

Dell partners with leading workstation Independent Software Vendors (ISVs) to certify system and application compatibility so your applications will run powerfully and efficiently on the Dell Precision 650. Through rigorous testing, Dell helps ensure flawless compatibility in demanding workstation environments. We tune Dell Precision hardware for optimized performance with each application. Plus, Dell provides specialized ISV service support to keep your system running smoothly with your applications.

Dell Precision's ISV partners include: ADOBE - Premiere; Alias - Maya; ANSYS - Multiphysics, Designspace; AutoDesk - AutoCAD, Inventor, Discreet - 3ds Max, AVID - Softimage XSI, Softimage 3D; Bentley Systems - Microstation; Dassault Systems - Catia V5, Enovia DMU, SolidWorks; EDS - Unigraphics, Solid Edge; ESRI - Arc/INFO, Arc/View; FLUENT; MSC Software - Nastran, Patran; Newtek - Lightwave; PTC - Pro/Engineer; Wildfire; and Mechanica.

Scaling Your Dell Precision 650 Solution

The Dell Precision 650 is highly scalable, so you can configure a system that matches your unique requirements both today and into tomorrow. With a full range of performance options, such as high performance PCI and PCIx cards that include the latest U320 SCSI RAID controller and multiple, certified graphics choices, the Precision 650 is built with your future needs in mind.

The Dell Precision 650 supports up to four hard drives capable of providing a maximum of 240GB of combined IDE or 584GB of combined SCSI capacity. An 8MB DataBurst cache included on the 120GB IDE hard drive provides exceptional performance in a desktop storage technology, while the high-speed, 15,000 RPM U320 SCSI drives provide maximum performance and capacity for compute-intensive workstation applications. And for external storage requirements, the Dell Precision 650 is capable of supporting up to three external devices. Select from Dell Precision's wide range of 5.25" external devices including the versatile DVD+RW³ drive and CD-RW/DVD-ROM combo drive as well as CD-RW, CD-ROM, DVD-ROM and Zip 250 devices.

Rich and Reliable Manageability Features

Dell follows open industry standards for system management and network administration to help ensure your system integrates seamlessly with your network. The Dell OpenManage™ suite of products delivers software and hardware management features designed to help lower total cost of ownership. It also helps keep you productive and current by enabling mass system updates, providing system alerts and allowing after hours software updates and imaging. In addition, you receive the benefits of Dell's award-winning service and support with a dedicated workstation phone queue and three year Next Business Day On-Site⁴ service.

Providing uncompromised performance, exceptional scalability and flexibility and the latest dual-processor technology, the Dell Precision 650 is well suited for the most challenging workstation applications.



Easy as **DELL**™

For more information, visit www.dell.com

Dell Precision Workstation 650

SYSTEM

Processor	Up to two Intel® Xeon™ processors with 533MHz front side bus and 512KB L2 cache (Optional 3.06GHz and 3.20GHz with 1MB L3 Cache)
Operating Systems	Microsoft Windows® XP Professional; Microsoft Windows 2000 Professional; Red Hat Linux Dell recommends Microsoft® Windows® XP Professional
Chipset	Intel E7505 chipset
Memory	256MB non-ECC 266 MHz DDR memory standard; 4 DIMM slots - 4GB ECC or non-ECC maximum: 128MB, 256 MB, 512MB, or 1 GB DIMM, low latency unbuffered memory
Flash BIOS	4MB Flash memory for system BIOS, setup, Plug-and-Play DMI 2.0s (optional) and SMBIOS 2.3.1 support
Graphics Support	nVidia Quadro NVS 280 64MB, AGP 8X, Dual Monitor (VGA or optional DVI or VGA) nVidia QuadroFX 500, AGP 8X, 128MB, Dual Monitor (VGA, DVI) ATI Fire GL X1, AGP 8X, 128MB, Dual Monitor (VGA or DVI) nVidia QuadroFX 1000 AGP 8X, 128MB Dual Monitor (VGA or DVI) 3DLabs Wildcat4 7110 AGP 8X, 256MB Dual Monitor (VGA or DVI)
Hard Drives	<u>Enhanced IDE S.M.A.R.T. II ATA/100:</u> 7,200RPM: 20GB, 40GB, 80GB 7,200RPM with 8MB DataBurst Cache: 120GB <u>Integrated Ultra 320 SCSI including high-performance RAID 0:</u> 10,000RPM: 36GB, 146GB 15,000RPM: 36GB, 73GB Serial ATA/150, 10,000 RPM 36GB drive includes 8MB DataBurst Cache
Hard Drive Controller	Integrated dual channel/connector, bus mastering ATA/100 Integrated single channel 64b PCIx U320 SCSI Controller w/ high-performance RAID-0
Network Controller	Integrated PCIx 64-bit Intel 10/100/1000 Gigabit Ethernet
Audio Controller	Integrated Analog Devices AC'97 Audio Optional Sound Blaster® Audigy II with onboard 1394
Standard Rear I/O Ports	USB 2.0 (4), 1394a, serial (2), parallel, PS/2 keyboard, PS/2 mouse, RJ-45 ethernet, stereo line-in, microphone-in, and speakers/line-out
Standard Front I/O Ports	USB 2.0 (2), 1394a, headphone, and microphone-in, 1.44MB FDD
Optional I/O	PCMCIA Card Reader

CHASSIS

Mini Tower Chassis	(19.87" H x 8.89" W x 19.8" D): Three internal 3.5" x 1" HDD drive bays (fourth HDD supported in 5.25" bay), three external 5.25" drive bays, one external floppy drive bay, one AGP 8X Pro110 slot, three PCIx slots (3.3v, 64b/100MHz), two PCI 2.2 slots (5v, 32b/33MHz), 460 Watt Power Factor Correcting (PFC) power supply
---------------------------------	--

PERIPHERALS

Monitors	Performance Flat Panel Monitors: Dell UltraSharp™ 2000FP 20" (20" viewable) Digital/Analog Flat Panel Display Dell UltraSharp 1900FP 19" (19" viewable) Digital/Analog Flat Panel Display Dell UltraSharp 1800FP 18" (18" viewable) Digital/Analog Flat Panel Display Dell UltraSharp 1703FP 17" (17" viewable) Digital/Analog Flat Panel Display, Height adjustable stand Dell UltraSharp 1702FP 17" (17" viewable) Digital/Analog Flat Panel Display Dell UltraSharp 1504FP 15" (15" viewable) Digital/Analog Flat Panel Display, Height adjustable stand Value Flat Panel Monitors: Dell E171FP 17" (17" viewable) Analog Flat Panel Display Performance Monitors: Dell P1130 21" (19.8" viewable) Flat Display UltraScan™ Monitor Mainstream Monitors: Dell M992 19" (18" viewable) Monitor Dell M782 17" (16" viewable) Monitor Value Monitors: Dell E772 17" (16" viewable) Monitor
-----------------------	--

STORAGE DEVICES

Optional Removable Storage	CD-ROM; CD-RW; DVD-ROM; CD-RW/DVD-ROM Combo drive; DVD+RW ² ; 250MB Zip Drive
Keyboard (105 Keys)	Dell PS/2 Entry Quiet Key; Dell USB Hot Key Programmable Keyboard; Dell Smart Card Reader Keyboard
Mouse	Dell PS/2 2 button mouse; Microsoft® IntelliMouse® PS/2 2-button scroll mouse; Logitech USB Optical 2 button scroll mouse
Speakers	Optional Internal Dell business audio speaker harman/kardon® HK206 external speakers Altec Lansing 215 speakers harman/kardon HK395 external speakers Dell AS500 Sound Bar, for 1703FP flat panel display

SOFTWARE

Modem	56K ³ PCI v.92 internal controller-less Data/Fax modem
Office Application Suites	Microsoft Office XP SB; Microsoft Office XP Pro; Microsoft Office XP
Standard Management Tools	Dell OpenManage™ IT Assistant, LegacySelect (control of I/O ports), OpenManage Client Instrumentation
Standard Manageability Features	Desktop Management Interface (DMI) 2.0S, CIM, WBEM, Wired for Management (WfM) 2.0, PXE, BIS, SNMP, SM BIOS 2.3.1, Advanced Control, Power Interface 1.0b (ACPI), DDC2b and Diagnostic LEDs: Four yellow and/or green LEDs on front of system
Key Support Features	S3/S4 sleep state support, Remote System Alerts, Remote BIOS flash, Remote BIOS configuration, Remote Wake-up capable, DMI information export to SMS, DIMM Pre-Failure Alert, Asset Tag, Property Ownership Tag, Chassis Intrusion Alert, DMI Configuration Change Alert, Enhanced S.M.A.R.T. II HDD Alerts
Standard	TC099, Blue Angel, Energy Star BSMI, C-TICK, CE, FCC, IRAM, NEMKO, NFPA 99, SABS, SASO, TUV, UL, VCCI
Base	3 Year limited warranty ⁶ and Next Business Day on-site ⁶ service (US Only)
Optional	3 Year Same day 4-hour Response Service, 5 days x 10 hours ⁴ a day 3 Year Same day 4-hour Response Service; 7 days x 24 hours ⁴ a day



ENVIRONMENTAL & REGULATORY

SERVICE & SUPPORT

Dell's Terms and Conditions of Sales and Service apply and are available upon request. Dell cannot be held responsible for errors in typography or photography.

- This term indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
- Desktop and Notebook systems use a 32 bit PCI interface, which limits Gigabit performance to about 500 Megabits per second. Servers and high end workstation systems (such as the Dell Precision 450) with 64 bit PCI interfaces can achieve speeds exceeding 800 megabits per second.
- Discs burned with this drive may not be compatible with some existing drives and players; using DVD+R media provides maximum compatibility.
- Service may be provided by third-party. Technician will be dispatched if necessary following phone-based troubleshooting. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell. U.S. only.
- Download speeds are limited to 53Kbps. Upload speeds are less (about 30Kbps). Speeds can vary by line condition and modem manufacturer. Analog phone line and service required.
- For a complete copy of our warranties and limited warranties, please write Dell U.S.A. L.P., Attention: Warranties, One Dell Way, Round Rock, TX 78682.

For more information, visit http://www.dell.com/us/en/gen/misc/policy_010_policy.htm. Dell, the Dell logo, Precision and Dell OpenManage are trademarks of Dell Inc.. Intel, the Intel logo, Intel Inside, logo and Xeon are registered trademarks or trademarks of Intel Corporation or its subsidiaries in the United States or other countries. Microsoft, Windows, the Windows logo and IntelliMouse are registered trademarks or trademarks of Microsoft Corporation. Dell disclaims proprietary interest in the trademarks and names of others. ©2003 Dell Inc.. All rights reserved.