HP xw4400 Workstation
Frequently Asked Questions

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How does the HP xw4400 compare with the HP xw4300?

	HP xw4300 Workstation	HP xw4400 Workstation
Operating systems	Preinstalled 32-bit: Genuine Windows XP Professional SP2 (WHQL certified) Preinstalled 64-bit: Genuine Windows XP Professional x64 Edition (WHQL certified) Windows Vista™ Capable* Preinstalled Red Hat Enterprise Linux WS 4 (64-bit only) OR HP Installer Kit for Linux (includes drivers for both 32-bit & 64-bit OS versions of Red Hat Enterprise Linux 3 and 4) * Not all Windows Vista features are available for use on all Windows Vista Capable PCs. All Windows Vista Capable PCs will run the core experiences of Windows Vista, such as innovations in organizing and finding information, security, and reliability. Some features available in premium editions of Windows Vista—like the new Windows Aero™ user interface—require advanced or additional hardware. Check http://www.windowsvista.com/getready for details.	Preinstalled 32-bit: Genuine Windows XP Professional SP2 (WHQL certified) Preinstalled 64-bit: Genuine Windows XP Professional x64 Edition (WHQL certified) Windows Vista™ Capable* Preinstalled Red Hat Enterprise Linux WS 4 (64-bit only) OR HP Installer Kit for Linux (includes drivers for both 32-bit & 64-bit OS versions of Red Hat Enterprise Linux 3 and 4) * Not all Windows Vista features are available for use on all Windows Vista Capable PCs. All Windows Vista Capable PCs will run the core experiences of Windows Vista, such as innovations in organizing and finding information, security, and reliability. Some features available in premium editions of Windows Vista—like the new Windows Aero™ user interface—require advanced or additional hardware. Check http://www.windowsvista.com/getready for details.
Chipset	Intel 955X	Intel 975X
Processor	Intel Pentium 4 processor (single core, 1-2 MB L2 Cache) Intel Pentium D (dual core 2x1 MB L2 cache) Speeds up to 3.8GHz on single core processors Intel64 Technology Intel Pentium 4 processor 521**/ 2.80 GHz, 1 MB, 800 MHz FSB; Intel Pentium 4 Processor 630**/3.00 GHz, 1 MB, 800 MHz FSB; Intel Pentium 4 Processor 640**/ 3.20 GHz, 2 MB, 800 MHz FSB; Intel Pentium 4 Processor 650**/3.40 GHz, 2 MB, 800 MHz FSB; Intel Pentium 4 Processor 660**/3.60 GHz, 2 MB, 800 MHz FSB; Intel Pentium 4 Processor 672**/3.80 GHz, 2 MB, 800 MHz FSB Dual-core Intel Pentium D Processor 940**/3.2 GHz, 2x2 MB, 800 MHz FSB Dual-core Intel Pentium D Processor 950**/3.4 GHz, 2x2 MB, 800 MHz FSB Dual-core Intel Pentium D Processor 960**/3.6 GHz, 2x2 MB, 800 MHz FSB **Intel's numbering is not a measurement of higher performance.	Intel Pentium D processor (dual core, 2MB L2 Cache per core) Intel Core 2 Duo (dual core 2 MB and 4 MB shared L2 cache) Speeds up to 2.66GHz on Intel Core 2 Duo dual core processors Intel 64 Technology Intel Pentium D processor 945*/3.4 GHz, 2x2 MB, 800 MHz FSB; Intel Core 2 Duo Processor E6300*/1.86 GHz, 2 MB, 1066 MHz FSB; Intel Core 2 Duo Processor E6400*/2.13 GHz, 2 MB, 1066 MHz FSB; Intel Core 2 Duo Processor E6600*/2.40 GHz,4 MB, 1066 MHz FSB; Intel Core 2 Duo Processor E6700*/2.66 GHz, 4 MB, 1066 MHz FSB; Intel Core 2 Extreme Processor X6800*/2.93 GHz, 4 MB, 1066 MHz FSB Intel Core 2 Extreme Processor QX6700*/Quad-Core 2.67 GHz, 4 MB, 1066 MHz FSB *Intel's numbering is not a measurement of higher performance.
Front side bus	1066 MHz	1066 MHz

	HP xw4300 Workstation	HP xw4400 Workstation
Memory	Up to 8 GB DDR2 533 MHz DDR2 667 MHz ECC or non-ECC are available	Up to 8 GB DDR2 667 MHz ECC or non-ECC are available
Expansion slots	6 bays/6 slots; 1 PCIe x16 graphics slot, 1 PCIe x1 slot, 1 PCIe x4 (x8 connector) slot and 3 PCI slots	6 bays/6 slots; 1 PCIe x16 graphics slot, 1 PCIe x1 slot, 1 PCIe x4 (x16 connector) slot and 3 PCI slots
Power supply	460W	460W
Audio	Integrated Intel High Definition	Integrated Intel High Definition
SATA drives	SATA 3 Gb/s Native Command Queuing (NCQ) Up to 4* SATA drives, ~2.0 TB max 80 - 500 GB (7200 rpm), 74GB (10k rpm), RAID 0, 1, 5, or 10 capable *2 using two external 5.25" drive bays	SATA 3 Gb/s Native Command Queuing (NCQ) Up to 4* SATA drives, ~2.0 TB max 80 - 500 GB (7200 rpm), 80-160GB (10k rpm), RAID 0, 1, 5, or 10 capable *2 using two external 5.25" drive bays
Hyper-Threading technology	Yes on single core processor	N/A

Who will benefit from the functionality and features of the HP xw4400 Workstation?

Market Segment	Benefits
MCAD	The HP xw4400 Workstation offers Mechanical CAD engineers, architectural engineers, and architects a high performance, reliable, fully-supported workstation solution at prices starting below $1,000. Featuring the very latest NVIDIA and ATI PCIe x16 graphics technology, the xw4400 is available with a range of Professional 2D and 3D OpenGL graphics options and is capable of supporting 4 displays - effectively tripling the screen real estate available for designing in 3D. With room to grow, the HP xw4400 offers optional ECC memory improving system stability particularly in larger memory configurations. HP's performance enhancing engineering, delivers PTF (Performance Tuning Framework) preloaded at no additional cost on Microsoft Windows-based systems and 64-bit capability to access large files and assemblies now and in the future. Certification for CAD applications underscores the HP xw4400's dependability.
DCC	The HP xw4400 is a highly expandable entry workstation ideally suited for the economically minded content creator or educator. With HP's performance enhancing engineering, the HP xw4400 Workstation is designed to facilitate print and electronic design, 2D animation, web authoring, and corporate content creation. Its dual core capabilities deliver the faster computational rendering times formerly found only from Intel® Xeon® systems. Enhanced by the 1066 GHz front-side bus, 667 MHz DDR memory, and PCIe architecture which utilizes the very latest in NVIDIA and ATI graphics technology, the HP xw4400 is ISV certified assuring the best possible software and hardware compatibility and reliability. Performance Tuning Framework, available preinstalled at no cost on Microsoft Windows-based systems, assists workstation users and system administrators in configuring systems for optimal performance and solution stability. The HP xw4400 provides a tremendous productivity boost to school systems and universities alike who teach digital media classes and who rely heavily on single-socket-based workstations for video editing, entry animation, graphic arts and interactive design (web and gaming).
Power office	The HP xw4400 Workstation delivers outstanding performance and state of the art workstation technology for a PC-like price. Ideally suited for office professionals who need more – more power, more expandability, more graphics performance – more for their money. Offering single or dual-core processor options, a range of 2D and 3D PCIe x16 graphics cards, and the security of ECC (error checking) memory, the HP xw4400 enables you to get your job done quickly, efficiently and securely. By supporting 32-bit applications at full performance, the HP xw4400 with Intel EM64T provides incredible investment protection value as you gradually transition to 64-bit computing. Intelligently engineered, the HP xw4400 features an expandable and easily serviceable, tool-less access chassis. Its ease of use is increased with Performance Tuning Framework, a no cost HP tool preloaded on Windows-based systems that provides guidance for workstation setup - custom configuring your workstation to better match your requirements and to help increase overall productivity.

Do I need a business desktop or an entry workstation? What is the difference?

The value of a workstation when compared to a business desktop PC is characterized by several things:

- High-performance 3D OpenGL graphics and professional 2D multi-display graphics - for the ultimate visualization and design interaction experience
- Professional ISV certifications on technical applications - for guaranteed compatibility and reliability, optimized performance, and supportability
- High-performance I/O devices and components (including SAS hard disk drives, controllers, RAID, etc) - for superior application performance
- Choice of operating system (Microsoft Windows XP or Red Hat Linux) - for flexibility of working environments and IT infrastructure
- ECC memory – for error correction and improved data integrity
- High power - for rich configurations
- 2 GB DIMM support – for greater expandability

What are the benefits of Intel High Definition Audio?

Intel High Definition (HD) Audio delivers significant improvements over previous generation integrated audio and sound card. Intel HD Audio is architected to help prevent the occasional glitches or pops that other audio solutions can have by providing dedicated system bandwidth for critical audio functions.

Intel HD Audio features multi-streaming capabilities that give users the ability to send two or more different audio streams to different places at the same time, from the same workstation. This addresses the need to play back two different audio tracks, such as a CD and a DVD simultaneously.

For more information, go to: www.intel.com/design/chipsets/hdaudio.htm

Will I have to change my golden image on the HP xw4400 Workstation?

Yes. The HP xw4400 is a completely new platform based on new technology from Intel. Most of the system drivers will be different than those used on the HP xw4300; therefore you will have to create new golden images. Manageability software will be available to help with this image building process.

Intel® Core™ Microarchitecture

What is Intel® Core™ microarchitecture?

The Intel Core microarchitecture is a new foundation for Intel architecture-based desktop, mobile and mainstream server multi-core processors. This state-of-the-art, multi-core optimized microarchitecture will deliver new and innovative features that will set new standards for energy-efficient performance.

What are the benefits of dual-core processors?

The Intel dual-core processor provides double the processing resources in the same footprint. Dual-core processors are ideal for usage models requiring multitasking (creating animation/rendering - DCC); working on spreadsheets while listening to music (power office); or those using applications that can split a task across processors (multithreaded).

Will the dual-core processor offer any performance improvement over single-core processors?

Yes, the new dual core processors from Intel will offer significant performance improvement over previous generation single (and dual) core processors on most applications.

What's important to know about the new dual core processor architecture?

The new converged core architecture provided by the Intel Core 2 Duo processors enables more work to be done per clock cycle, resulting in significant performance gains despite the lower clock speeds compared to previous generation processors. Additionally, the new architecture leads to significant performance gains even on single-threaded applications compared to legacy Pentium 4/D processors. Finally, the new architecture consumes significantly less power than previous generation of processors, resulting in lower energy bills and cooler workspaces.

Dual-Core. Dual-Socket. Multi-Core. What do these terms mean?

Dual-socket: Two physical CPU sockets.
Dual-core: Each CPU has exactly two cores.
Multi-core: CPU has two or more cores.
Dual-processor: Old terminology for a system with two processors in two sockets.

Memory

What memory is used on the HP xw4400? Is it the same memory used on the HP xw4300?

Yes and no. The HP xw4400 uses DDR2-667 unbuffered ECC memory technology for all ECC memory configurations, whereas the xw4300 used DDR2-533 for configurations above 4 GB. Also, DDR2-667 (vs. DDR2-533 on xw4300) non-ECC is available on the HP xw4400 for some smaller memory capacity configurations. HP offers you choices so that you can find the memory speed and configuration that meets your price and performance needs.

Why do I sometimes see memory in terms of PC2-5300? How does this relate to memory bandwidth?

Clock rate is directly proportional to memory bandwidth. The bandwidth of 667 MHz DDR2 memory is calculated as 667 MHz * 8 bytes per channel = 5,336 MB/s or 5.3 GB/s. For simplicity, the value is rounded and thus referred to as PC2-5300 DDR memory. The "2" after PC just identifies this memory as DDR2 memory. This nomenclature is sometimes more accepted in the industry.

The memory bandwidth of the system is improved upon by implementing dual-channel memory architecture. Above, notice the factor "8 bytes per channel". By implementing two channels you can essentially double your bandwidth. Instead of a single DIMM working alone, a pair of DIMMs essentially works together to split up the data exchange to and from the rest of the system. On the HP xw4400 the dual-channel memory architecture results in unprecedented memory bandwidths on a personal workstation. With PC2-5300 DDR (667MHz) memory, the system's theoretical memory bandwidth is an astounding 10.7 GB/s.

Does the large DDR2-667 memory bandwidth (10.7 GB/s) really help system performance if the processor bandwidth is lower than 10.7 GB/s?

Yes. Not all data is transferred between the processor and the system memory. For some tasks, system I/O and graphics pass data to the system memory. With the bandwidth headroom these tasks are carried out without interrupting the data flow between the memory and the processor. In benchmarks, we've seen performance improvements as much as 5% resulting from the faster memory. In addition, this performance gain scales with the processor. So, as the processors get faster, the bandwidth benefit will become more important.

How does this memory bandwidth impact the HP xw4400 system performance?

Many technical applications require huge amounts of memory bandwidth, especially those that use 3D graphics or that have a large percentage of floating point calculations. These applications will benefit from the massive memory bandwidth provided by the HP xw4400.

Memory latency is another very important factor. At the highest level, latency is a measure of how long it takes the memory subsystem to respond to a cache miss in the processor. The lower (shorter) the memory latency, the better the application performance, especially for applications that "thrash the cache."

Does the memory for the HP xw4400 have to be ordered in pairs? What is the maximum memory configuration?

To utilize the dual-channel memory architecture advantages, memory must be installed in pairs. However, a single DIMM will work in the system (i.e. you could put 1x256 MB in the system). It is highly recommended that memory be added in pairs, as the performance benefit is substantial. The 1x256 non-ECC is the only single-DIMM configuration offered.

When installing memory in the HP xw4400, pairs must be matched in size and speed (i.e. 2x256 MB/667 MHz, not 1x256 MB/533, 1x512 MB/667) and multiple pairs must be matched in speed. The HP xw4400 has 4 DIMM slots (2 dual-channels) and supports up to 8 GB of physical memory.

Does the HP xw4400 offer ECC and non-ECC memory? If so, what speeds are/will be offered?

Yes. The HP xw4400 offers both ECC and non-ECC memory. The following table outlines what memory is available.

DIMM size / speed	256 MB	512 MB	1 GB	2 GB
DDR2 667 MHz , ECC	Available	Available	Available	Available
DDR2 667 MHz , non-ECC	Available	Available	Not available	Not available

What is ECC memory? Why is ECC memory important?

"ECC" stands for Error Correcting Code or Error Checking and Correction. ECC memory modules have an extra chip that performs a comparison of the data that is read in and written out. This chip has the capability of detecting single and multiple bit errors and correcting single bit errors on the fly. If this extra chip detects a single bit error, it will correct the discrepancy and the system will continue to function without any interruption. If a multiple-bit error (which is extremely uncommon) is detected, the memory module will issue a non-maskable interrupt (NMI) which will shutdown the system, avoiding any data corruption in the system. Single- and multiple-bit data errors can go undetected without ECC memory.

Data integrity is always important, but when you are designing an airplane or automobile part, under a tight deadline on your TV commercial production, analyzing population densities for domestic policy reform, or managing your clients' financial portfolios of millions of dollars, data integrity is absolutely vital. And in today's cut-throat competitive environment, work flow efficiency and utilization rates are also crucial. All HP workstations, including the HP xw4400, offer ECC memory which provides an extra level of data integrity, reliability, and greater system uptime.

Drives

Is the floppy drive really optional on the HP xw4400?

Yes. For ultimate price flexibility and/or security concerns, we now offer systems with or without the floppy drive. With the advancement of technologies like USB Disk Keys, bootable CD-ROMs/CD-RWs, external storage, etc. the

necessity of a floppy drive has really declined over the past few years and many customers simply don't need them anymore. We offer the flexibility should you decide it is not needed on your HP xw4400.

Is the optical drive really optional on the HP xw4400?

Yes. Once again, for the ultimate in price flexibility and because of security concerns, we now offer systems with or without an optical drive. Microsoft has lifted a requirement that forced the integration of an optical device on previous systems, so this is now possible for the first time on the HP xw4400.

What optical drives are available with the HP xw4400? What software is bundled with these drives?

The following table outlines what optical drives will be available at launch and what software will be bundled with each drive.

2006 optical apps set		CD-ROM	DVD-ROM	Combo	DVD+/-RW
	• 32/64-bit support • For CTO, apps are pre-installed				
Create data & music CDs/DVDs	• Roxio DigitalMedia Plus v8			•	•
Create video CDs/DVDs	• Roxio MyDVD Component (a module of new Roxio DigitalMedia Plus)				•
Play DVDs and video files	• Roxio Cineplayer Component (a standalone module of Roxio DigitalMedia Plus)		•	•	•
Backup files or entire system	• SoftThinks			•	•

*Software will be provided on a CD that is bundled with the drive. LightScribe Disc Labeling is bundled with the HP DVD+/-RW (requires LightScribe media for labeling).

Does the HP xw4400 offer and support SATA 3.0 Gb/s hard drives?

Yes. The HP xw4400 has an integrated 4-channel SATA 3.0 Gb/s controller for Serial ATA hard drives. We offer the following SATA 3.0 Gb/s hard drives: 80 GB, 160 GB, 250 GB, 500, and 750 GB (7200 rpm), as well as 80 and 160 GB (10k rpm). We also offer a full selection of SAS hard drives.

Does the HP xw4400 support Serial ATA (SATA) RAID?

Yes. The chipset used on the HP xw4400 has integrated 4-channel SATA controller with Native Command Queuing (NCQ) and RAID support for RAID 0, (striped), RAID 1 (mirrored), RAID 5 (parity), and RAID 10 (striped and mirrored). You can choose to have a high performance RAID 0 array of hard drives where data is striped across multiple hard drives (this RAID method greatly improves data access times and system performance). You can choose to have a highly reliable RAID 1 array of hard drives, where data is duplicated to multiple hard drives at once (this RAID method essentially creates a backup copy of all your data in real time). You can choose to implement a RAID 5 array, which protects against data loss and provides faster throughput. Data is distributed across at least two hard disks, with error correction information stored on an additional disk. Finally, you can choose to implement a RAID 10 array, which offers the advantages of RAID 0 and RAID 1 by utilizing four hard disks.

What is the value of Native Command Queuing or NCQ?

NCQ is a performance enhancement for hard drives. NCQ reorganizes read/write commands in such a way that they can be executed in a more efficient manner than typical synchronous execution. NCQ performance improvement is highly dependant on the type of application and load, but can be as high as 20%.

What Serial Attached SCSI drives and controllers are offered on the HP xw4400?

We offer a wide selection of SAS disk drives and controllers. The faster spindle speeds (10K or 15K rpm) and the high bandwidth controllers (3.0 Gb/s) result in very fast access to your data. We offer two different PCI SAS controllers: an entry 4-channel SAS controller with basic hard drive connectivity/control and RAID functionality, and a full-featured 8-channel SAS controller* with an external connector and comprehensive RAID capability. We offer the following SAS drives: 73 GB/15K, 146 GB/10K, 146 GB/15K, 300 GB/10K, 300 GB*/15K rpm.
*expected availability Q4, 2006

Chassis Design

Is the chassis for the HP xw4400 the same chassis used on the HP xw4300? Is it still convertible?

Yes. The HP xw4400 uses the same highly engineered chassis as the HP xw4300. The HP xw4400 is housed in an intelligently designed chassis with tool-less access for ease of servicing, upgrading and maintenance. It is still convertible from a desktop orientation to a minitower orientation. The HP xw4400 is rackable and shelving kits are available.

What ports does the HP xw4400 have on the front bezel?

The front bezel on the HP xw4400 has the following ports available: (1) IEEE 1394a port*, (2) USB 2.0 ports, (1) microphone port, and (1) headphone port.

*The IEEE 1394a port is only active when the optional IEEE 1394 PCI card is installed in the system.

Operating Systems

What Operating Systems are available on the new HP xw4400 Workstation?

Preinstalled 32-bit Genuine Windows® XP Professional (WHQL certified)
Preinstalled 64-bit Genuine Windows XP Professional x64 Edition (WHQL certified)
Preinstalled 64-bit Red Hat Enterprise Linux® WS 4
HP Installer Kit for Linux supporting 32-bit or 64-bit Red Hat Enterprise Linux WS 3 or WS 4

The HP xw4400 is also Microsoft Vista™ capable.*

* Not all Windows Vista features are available for use on all Windows Vista Capable PCs. All Windows Vista Capable PCs will run the core experiences of Windows Vista, such as innovations in organizing and finding information, security, and reliability. Some features available in premium editions of Windows Vista—like the new Windows Aero™ user interface—require advanced or additional hardware. Check http://www.windowsvista.com/getready for details.

Is dual OS preload an option?

Dual OS preload will not be offered due to restrictions of licensing agreements.

Is Microsoft Windows 2000 supported on the new HP xw4400 Workstations?

Microsoft Windows 2000 is not supported on the new HP xw4400. Microsoft discontinued OEM sales of Windows 2000 on March 31, 2004. Tier 1 OEMs, such as HP, can no longer ship systems with this OS.

Is Windows NT supported on the new HP xw4400?

Microsoft discontinued OEM sales of Windows NT on June 30, 2002. Windows NT does not support many of the new technologies offered in the HP xw4400.

What is 64-bit extension technology (Intel 64)?

64-bit extension technology (Intel 64) is an enhancement Intel continues to provide to their IA-32 architecture line of processors. The enhancement allows the processor to run 64-bit code and access larger amounts of memory.

Is 64-bit extension technology the same technology used in the Itanium® processor?

No. 64-bit extension technology is an extension to Intel's processors based on the IA-32 architecture. The Itanium® processor family is based on the EPIC architecture. These are two separate families of processors based on two completely different architectures. The Itanium processor family is specifically designed for the most demanding server mission critical applications.

Will existing 32-bit software run, without being re-compiled, on an IA-32 processor with 64-bit extension technology?

If you are running a 32-bit O/S, yes. An IA-32 processor with 64-bit extension technology is 100% compatible with existing 32-bit applications when running with an existing 32-bit O/S. If you are running a 64-bit O/S the Intel processor supports "compatibility" mode, where all 32-bit applications will continue to run under a 64-bit O/S without being modified or recompiled.

Is the HP xw4400 Windows Vista capable?

Yes it is. The HP xw4400 may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows Vista functionality.

Linux

Will the HP xw4400 Workstation support Linux?

Yes. Red Hat WS 3, Red Hat Enterprise WS 4 (available preinstalled) and the HP Installer Kit for Linux will be available.

What is the HP Installer Kit for Linux?

The HP Installer Kit for Linux is a set of HP provided CD's to be used in conjunction with a Red Hat Enterprise Linux installation to complete your Linux workstation installation. The CD's in the HPIKL are:

- HP Driver CD for Red Hat Enterprise Linux WS 3 and 4.
  This is a "post install" CD used at the end of a Red Hat Enterprise Linux installation which contains HP content for your Linux workstation. Content provided includes:
    - NVIDIA and ATI accelerated graphics drivers that have passed HP quality standards and are compatible with the hardware platform and RHEL releases.
    - HP Documentation links

- Additional hardware drivers provided by HP that are not part of the standard Red Hat Enterprise Linux releases.

All content provided on this CD is compatible with both RHEL WS 3 and RHEL WS 4.

- Red Hat Driver Disk – for a specific Red Hat Enterprise Linux Update
  This is the"RED" CD and is not included in ALL versions of the HPIKL. It will be included with the HPIKL when a hardware driver is required for the workstation platform that has not yet become a part of a standard Red Hat Enterprise Linux release. The next subsequent Update from Red Hat removes the need for this CD.

For information on how to use the HP Driver CD or the Red Hat Driver Disk, refer to the HP Linux Workstation User manual at http://www.hp.com/support/linux_user_manual (See chapters 1-3).

Does the HP Installer Kit for Linux actually contain the Red Hat Box Sets?

No, you must obtain the Red Hat Box Set of your choice. The HP Installer Kit for Linux is a CD set to be used in conjunction with a RHEL install and supports both Red Hat Enterprise WS 3 or 4.

Red Hat requires that you purchase Red Hat Enterprise WS 3 or 4. It is available from HP as After Market Option (AMO) kits.

HP is only offering a preload of RHEL WS 4 (64 bit). What if I want to run the 32 bit OS instead?

Included with the preloaded RHEL WS 4 workstation is a Red Hat Network registration card. Use this card to register your workstation with the Red Hat Network. This enables you to download all versions of Red Hat Enterprise Linux WS 3 or 4 for your workstation, and get any future updates from Red Hat as well. You can choose the 32 bit OS instead of the 64 bit OS if desired.

Note: See the detailed hardware support matrix at http://www.hp.com/support/linux_user_manual for clarification of what minimum Red Hat release/update is required for Red Hat Enterprise Linux to functional correctly on your workstation platform.

Will I get recovery CD's with my preloaded Linux workstation?

The expected OS delivery model for Red Hat Enterprise Linux is electronic. This is because of the Red Hat Network that Red Hat uses to continually provide updates for their customers for their operating system releases.

As a result HP has found that creating a set of OS installation CD's has limited value. Many workstation owners quickly want to register to the Red Hat Network and obtain newer OS versions or build their own custom golden image. So instead HP is including the OS install CD's as ISO images on a hard disk drive partition. You can choose to create install CD's from the ISO images if you prefers. Or you can get them from the Red Hat Network as well.

What value does HP bring to Linux on personal workstations?

- HP has a dedicated Linux R&D team with 25+ years of experience in OS and driver development
- HP provides an engineered solution of Red Hat Linux
- HP provides a single point of support (for warranty and extended software support services)
- HP has close relationship with multiple third-parties to enable the complete Linux workstation solution
- HP engineering provides extensive pre-sales technical support
- HP publishes detailed documents, drivers, and white papers on the support website regarding Linux on HP workstations.

Why would I choose Linux on HP workstations?

- HP Workstations deliver ROI-based solutions on industry standard platforms.
- HP partners with customers and key technology providers to deliver an HP engineered Linux workstation you can deploy quickly and with confidence.
- HP Workstations offer worry-free deployment through
- HP worldwide service and support
- HP accountability and indemnification
- HP Workstations offers on-line technical white papers, drivers, and customer advisories enabling customers to support themselves more easily.

Why is HP supporting Linux on workstations?

Some of HP's technical workstation markets and customers rely on the UNIX operating environment, both in their infrastructure and the applications that they use. Linux on personal workstations is a very viable and attractive UNIX alternative. In addition, many OEMs are turning to Linux as a cost effective open source operating system for many different applications. This is especially true in the DCC, EDA, oil and gas, OEM, and some MCAD markets.

Offering HP workstations with Linux is part of HP's overall multi-OS strategy which provides HP-UX, Linux and Windows solutions to customers.

Where can I find (in detail) what workstation hardware is supported by Red Hat Linux?

At www.hp.com/support/linux_hardware_matrix is a detailed hardware support matrix that is kept up to date every month with the latest support information for hardware platforms and their components. This matrix will indicate the minimum RHEL update version required for the workstation platform to operate correctly. As well it will indicate what add-in components are supported by RHEL.

Where can I find technical information to guide my installation, configuring, or customizing of my Linux workstation solution?

At www.hp.com/support/linux_user_manual under "setup, install, and configure" you will find multiple white papers on Linux configuration tips such as enabling large memory configurations, hyper threading, multi-headed graphics configurations, and release notes for each Red Hat Enterprise Linux Update.

Why is HP enabling the Red Hat distribution?

HP has a strategic corporate relationship with Red Hat resulting in Red Hat solutions across all of HP product lines. As well, Red Hat has a market presence that results in customer demand for this distribution. The ISV's of importance to the Linux workstation market are certified on Red Hat Enterprise Linux as well.

Will Linux distributions other than Red Hat work on HP workstations?

Most likely they will work. However HP warranty support is only available for the Red Hat distribution. In addition HP has reviewed the performance, functionality, and reliability of the Red Hat distribution on the hardware platform and made any required adjustments.

At www.hp.com/support/linux_hardware_matrix you can find a detailed hardware support matrix that is kept up to date every month with the latest support information for hardware platforms and their components.

What is HP's Linux strategy in the future?

HP workstations are continually evaluating market trends along with customer requirements to determine solutions that best meet customer needs. HP's corporate strategy is strategic relationships with both Red Hat and Novell/SUSE and many of HP's products offer both Red Hat and SuSE distributions.

What does the future hold for HP and Linux?

HP simplifies the integration of open source and Linux! Our solutions are built with best-of-breed software from our industry leading partners, complemented by HP value-add in areas like management and high availability clustering, implemented on market-leading standards-based platforms, and supported by HP Services worldwide.

Known for its performance, scalability, reliability and low cost, Linux is proving to be the answer for workstation environments that were in the past traditionally a proprietary UNIX infrastructure. Such markets as Digital Content Creation (DCC), oil and gas, EDA, MCAD, and software development areas are adopting and using Linux in their infrastructures.

Why doesn't HP offer a dual boot with Windows and Linux?

HP cannot offer dual boots due to licensing agreements.

What version of Red Hat Linux supports 64-bit?

Red Hat Enterprise Linux WS3 and WS4 (RHEL WS3 and WS4) has both a 32-bit version and a 64-bit version. HP will preinstall the 64-bit version of RHEL WS4 and will also support the 32 and 64-bit versions with a Driver CD in the HP Installer Kit for Linux.

Are there other 64-bit distributions of Linux that will work on the HP Workstations?

It is very likely that other Linux distributions will work. However Red Hat Enterprise Linux is the distribution HP is choosing to do a full engineering evaluation and support for our customers.

Can I run 32-bit apps on a 64-bit Linux OS? How does this work?

Yes, you can run 32-bit apps on 64-bit Linux OS as the runtime support (mainly shared libraries) for the application exists on the system. The Linux convention for having 32-bit libraries and 64-bit libraries on the same OS is to have companion library directories. The 32-bit libraries are in the conventional locations…. /lib, /usr/lib, /usr/X11R6/lib, etc whereas 64-bit libraries just append 64 to the directory name such as /lib64, /usr/lib64, and /usr/X11R6/lib64. This also includes 32-bit versions of the graphics libraries which HP has included from the graphics vendors.

What do I do if my 32-bit apps do not run due to missing shared libraries?

You will need to get the library from Red Hat's 32-bit RHEL 3 distribution and put it on your system in the appropriate directory and report the missing library to Red Hat through their Red Hat Network subscription. This will help Red Hat to get the right set of 32-bit libraries needed for most apps in future releases.

Once I have installed the 64-bit version of Linux, what do I have to do to build 64-bit apps?

Simple. Just rebuild from scratch and the compiler will build 64-bit by default. This is true for most apps. However, some apps must be made 64-bit clean which means that the developers must review the code to get rid of any assumptions about 32-bitness, such pointer arithmetic issues. Some makefiles that explicitly declare paths such as /lib, /usr/lib and /usr/X11R6/lib might need to be changed to append "64."

PCI Express Graphics and I/O

What graphics cards are available on the new HP xw4400 Workstation?

Professional 2D	NVIDIA Quadro NVS285 (128 MB - Dual) NVIDIA Quadro NVS440 (256 MB)* * Can be used in dual configuration with NVS285.
Entry 3D	NVIDIA Quadro FX560 (128 MB) ATI FireGL V3300 (128 MB)
Mid-range 3D	NVIDIA Quadro FX1500 (256 MB – Dual) ATI FireGL V7200 (256 MB)
High-end 3D	NVIDIA Quadro FX3500 (256 MB) NVIDIA Quadro FX4500 (512 MB) with optional Quadro G-Sync card

What is meant by PCI Express?

PCI Express is the latest generation of PCI architecture. PCI Express is a radically new implementation of the PCI computer bus that uses existing PCI programming concepts and communications standards, but is based on a much faster serial communications system.

What's the advantage of PCI Express for graphics? What are the differences?

PCI Express is the next generation interface not only for graphics cards, but also for I/O cards. PCI Express is a scalable interface, and depending on the chipset the system can have multiple PCI Express connections with various bandwidths. For graphics cards, the defined standard is "by sixteen" (or x16). This implementation of PCI Express provides twice the unidirectional bandwidth and four times the peak bandwidth as AGP 8X. The PCI Express specification also allows for 75W from the motherboard to the graphics cards. This is three times as much power as the standard AGP 8X specification.

Should I buy a graphics card with 256 MB or 512 MB of memory?

Graphics performance is dependant upon many factors, including the amount of video memory. Higher performing cards also include bigger and faster GPU's, more memory bandwidth, and tend to have more features like dual-link connectors and support for stereo. The higher performance graphics cards will also have more memory (and a higher price). A dual display configuration at 1920x1200 pixels will allocate about 70MB for the frame buffer. The remaining graphics memory will be used to store textures, display lists (graphics data sent by your applications), and other data specific to graphics. If your application would benefit from more storage space for these items, then you should purchase a graphics card with more memory.

ISV Certifications

HP has very strong relationships with independent software vendors (ISVs). The software vendors recognize that HP is a critical ally in the industry, not only as a hardware OEM, but in marketing and support relationships. HP, in many cases, has engineering personnel located full-time on site at these software vendors' location providing technical support, application performance tuning, and graphics driver optimization.

ISV certification is a critical aspect of the workstation value proposition. Workstation users are running very complicated, high-end, technical applications and reliability and stability are an absolute requirement. The entry workstation is targeted at specific technical applications, many of which were listed above. The following table outlines the applications that are planned for the HP xw4400.

Some of the applications listed in the table do not certify hardware, but they are listed as "targeted" applications. For those applications listed above that do offer hardware certification, the new entry workstation will be certified.

DCC	MCAD	CAE	Oil and Gas

Adobe
Premier/After Effects
Photoshop
	Autodesk
	  Map 3D
	  MapGuide
	  Civil 3D
	  Building Systems
	Vault
	Inventor
	Revit
	  AutoCAD
		Ansys	**Accelrys**
			  Cerius

Avid Express Pinnacle Steinberg/Liquid XSI	**Bentley** MicroStation	**MSC Nastran/Patran**	**Ardence** Secure

Autodesk
3D Studio Max/MAYA
  Studio Tools
	CATIA
	Catio V5
			Earthdecision
			  GoCad

Canopus
NX
	CoCreate
	  OSDM
			ESRI
			  ArcGIS

Eyeon Digital Fusion	**Dassault** DS Solidworks		**Gaussian**

Matrox
  DigiSuite Family
	ICEM
	  Surf
			Intergraph
			  GeoMedia

	PTC
	  ProE
	  ProM
			Landmark
			  GeoGraphix

	UGS
	  NX
	  I-Deas
	  TcVis
	  NX Nastran
	  Solid Edge
			Lion Biosciences
			  Scout

			Paragon ELT5500
			RTT Realtime Tech DeltaGen/View

			Sensor
			  MEDxz
			  RemoteView

			SMT
			Tripos SYBY
			TransformSoftware
			VRCO VGEO

Security

What security features are available on the HP xw4400?

- Padlock support – standard; padlock loop in rear of chassis
- HP Solenoid Hood Lock/Sensor Kit - optional electro-mechanical lock that is activated through the manageability software on the workstation. Instead of a physical key, the chassis is locked through a password by the local user or the remote system administrator
- Universal chassis clamp lock support - locks side cover and locks cables to chassis; secures chassis from theft and allows multiple units to be chained together when used with optional cable)
- Rear port control cover - optional; locks rear I/O cables to prevent cable theft)
- Serial, Parallel, USB Enable/Disable - enables or disables ports and hide them from the operating system
- Removable Media Write/Boot Control - prevents the computer from being booted from removable media on supported devices; can disable writes to media
- Power-On Password - prevents an unauthorized person from booting up the computer
- Setup Password – prevents and unauthorized person from changing the system configuration
- Kensington Cable Lock (optional)
- Internal USB port – prevents theft of ISV applications

Manageability

What manageability features are available on HP Personal Workstations *?

HP Client Management Solutions help you simplify management of your workstations and reduce total ownership costs. These integrated solutions are a result of extensive work between HP and our partner, Altiris, a leading provider of manageability solutions. HP Client Manager Software is a free of charge download available with all HP Personal Workstations. It allows you to centrally track, monitor and manage the hardware aspects of HP client systems on your network. Other benefits include:

- Ability to get valuable hardware information such as CPU, memory, video and security settings
- Monitor system health to fix problems before they occur
- Install drivers and BIOS updates without visiting each workstation
- Remotely configure BIOS and security settings
- Automate processes to quickly resolve hardware problems
- Local recovery

*Available on Microsoft Windows-based systems.

What is the HP Performance Tuning Framework*?

The HP Performance Tuning Framework is a preloaded utility which enables the most favorable configuration of HP Personal Workstations delivering stability and best performance. The Framework will guide your system setup, allowing a "custom" configuration that best matches the workstation to user requirements. This customization facilitates availability of the latest graphics cards and drivers and removes some memory restraints. The Framework's extensible design permits new configuration functionality and application support be easily integrated over time. To facilitate the delivery of such new features, the Framework automatically updates itself when newer versions become available. The Performance Tuning Framework, available only from HP, can help save both time and money and increase overall productivity. For more information on the HP Performance Tuning Framework, go to: http://h20331.www2.hp.com/hpsub/cache/285683-0-0-225-121.html

*Available on Microsoft Windows-based system.

Options and Modules

What options are available for the new HP xw4400 Workstation?

For a complete list of all options for HP Workstations, go to: www.hp.com/accessories/workstations

Warranty and Support

What is the warranty and support for HP Workstations with Windows?

The standard warranty for the HP Personal Workstations is 3-3-3 (3-years parts, 3-years labor and 3-years next business day on-site).

What is the warranty and support for HP Workstations with Linux?

The warranty for HP Workstations with Linux is the standard 3-3-3 with ninety days of OS configuration and installation assistance.

Will HP stand behind Linux when I have problems?

HP is the first place for support. Hardware and software warranties for the workstations with Linux will be the same as that of the Windows workstations. Extended hardware warranties and software support options are also available for purchase for if you need extended coverage.

Why should you use HP support instead of Red Hat?

HP Linux support services are available on a global basis. HP offers predictable multi-platform expertise providing you with a single vendor who can effectively support Linux and Windows environments. HP has leveraged its proven support processes and extensive UNIX expertise to open source environments. HP offers a full portfolio of Linux services, ranging form phone-in assistance through proactive and mission critical services. In addition, a global education, installation and integration services and multi-vendor network services are available to meet Linux and multi-platform support