

Frequently asked questions

HP recommends Windows Vista® Business



HP xw4600 WORKSTATION

Affordable innovation with the power to do more



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HP xw4400 WORKSTATION

How does the HP xw4400 compare with the HP xw4600?

Operating systems:

Genuine Windows® XP Professional 32-bit
 Genuine Windows® XP Professional x64
 Genuine Windows Vista® Business 32-bit with downgrade to Windows® XP Professional 32-bit¹ custom installed
 Genuine Windows Vista® Business 64-bit with downgrade to Windows® XP Professional x64¹ custom installed
 Enterprise Linux™ WS 4 64-bit
 HP Installer Kit for Linux (includes drivers for both 32-bit & 64-bit OS versions of Red Hat Enterprise Linux 3 and 4)
 Certified on Novell Linux Desktop 9
 Red Flag Linux v5 (available in China only)

Chipset: Intel 975X Express

Processor:

Intel® Pentium® Dual-Core Processor E2160/1.80 GHz, 1 MB, 800 MHz FSB^{2,3,4,5}
 Intel® Core™ 2 Duo Processor E4300/1.80 GHz, 2 MB, 800 MHz FSB^{2,3,4,5}
 Intel Core 2 Duo Processor E6300/1.86 GHz, 2 MB, 1066 MHz FSB^{2,3,4,5}
 Intel Core 2 Duo Processor E6320/1.86 GHz, 4 MB, 1066 MHz FSB^{2,3,4,5}
 Intel Core 2 Duo Processor E6400/2.13 GHz, 2 MB, 1066 MHz FSB^{2,3,4,5}
 Intel Core 2 Duo Processor E6420/2.13 GHz, 4 MB, 1066 MHz FSB^{2,3,4,5}
 Intel Core 2 Duo Processor E6600/2.40 GHz, 4 MB, 1066 MHz FSB^{2,3,4,5}
 Intel Core 2 Duo Processor E6700/2.67 GHz, 4 MB, 1066 MHz FSB^{2,3,4,5}
 Intel Core 2 Extreme Processor, QX6700/Quad-Core 2.66 GHz, 2 x 4 MB, 1066 MHz FSB^{2,3,4,5,6,7}

Front side bus (FSB): 800 to 1066 MHz⁴

Memory: Up to 8 GB DDR2 667 MHz ECC unbuffered (8 GB max.) or non-ECC (2 GB max.)⁸

Expansion slots: 6 bays/6 slots; 1 PCIe x16 graphics slot, 1 PCIe x1 slot, 1 PCIe x16 (x4 electrical) slot and 3 PCI slots

HP xw4600 WORKSTATION

Operating systems:

Genuine Windows Vista® Business 32-bit
 Genuine Windows Vista® Business 64-bit
 Genuine Windows Vista® Business 32-bit with downgrade to Windows® XP Professional 32-bit¹ custom installed
 Genuine Windows Vista® Business 64-bit with downgrade to Windows® XP Professional x64¹ custom installed
 Red Hat Enterprise Linux™ WS 4 64-bit
 HP Installer Kit for Linux (includes drivers for both 32-bit & 64-bit OS versions of Red Hat Enterprise Linux WS4 and WS5)
 Red Flag Linux v5 (available in China only)

Chipset: Intel X38

Processor:

Intel® Pentium® E2180 (Dual-Core 2.00 GHz, 1 MB L2 cache, 800 MHz FSB)^{2,3,4,5}
 Intel Core™ 2 Duo E4500 (Dual-Core 2.20 GHz, 2 MB shared L2 cache, 800 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E6550 (Dual-Core 2.33 GHz, 4 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E6850 (Dual-Core 3.00 GHz, 4 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E7200 (Dual-Core 2.53 GHz, 3 MB shared L2 cache, 1066 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E8300 (Dual-Core 2.83 GHz, 6 MB shared L2 cache, 1066 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E8400 (Dual-Core 3.00 GHz, 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E8500 (Dual-Core 3.16 GHz, 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Duo E8600 (Dual-Core 3.33 GHz, 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Quad Q6600 (Quad-Core 2.40 GHz, 2 x 4 MB shared L2 cache, 1066 MHz FSB)^{2,3,4,5}
 Intel Core 2 Quad Q9300 (Quad-Core 2.50 GHz, 2 x 3 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Quad Q9450 (Quad-Core 2.66 GHz, 2 x 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Quad Q9550 (Quad-Core 2.83 GHz, 2 x 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Quad Q9650 (Quad-Core 3.00 GHz, 2 x 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5}
 Intel Core 2 Extreme Processor QX9650 (Quad-Core 3.00 GHz, 2 x 6 MB shared L2 cache, 1333 MHz FSB)^{2,3,4,5,6,7}

Front side bus (FSB): 800 to 1333 MHz⁴

Memory: Up to 8 GB DDR2 800 MHz ECC, or up to 4 GB DDR2 667 MHz ECC; 4 DIMM slots⁸

Expansion slots: 7 full length slots: 2 PCI Express (PCIe) x 16 graphics, 1 PCIe x 8 (x4 electrical) slot, 1 PCIe x 1 slot, 3 PCI slots

Certain Windows Vista product features require advanced or additional hardware. See <http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx> and <http://www.microsoft.com/windowsvista/getready/capable.mspx> for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit <http://www.windowsvista.com/upgradeadvisor>. All HP Personal Workstations are capable of running Genuine Windows Vista Business. Windows Vista Business disk also included for future upgrade if desired.

¹ Available for end user customers that are a business (including governmental or educational institutions) who are expected to annually order at least 25 Customer Systems with the same Custom Image.

² Intel's numbering is not a measurement of higher performance.

³ Quad-Core and Dual-Core are new technologies designed to improve performance of multitithreaded software products and hardware-aware multitasking operating systems and may require appropriate operating system software for full benefits; check with software provider to determine suitability; Not all customers or software applications will necessarily benefit from use of these technologies.

⁴ Actual bus clock rate is less. Listed bus speed represents the effective data transfer rate.

⁵ GHz refers to internal clock speed of the processor. Other factors besides clock speed may impact system and application performance.

⁶ 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. See www.intel.com/info/em64t for more information.

⁷ This workstation does not support the Intel Core 2 Extreme processor over-clocking feature.

⁸ 1 GB = 1 billion bytes. Actual formatted capacity is less. Up to 8 GB of hard drive (or system disk) is reserved for the system recovery software (XP and XP Pro). Up to 12 GB of system disk is reserved for system recovery software. (Vista).

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:

- Multi-display, high-performance 3D OpenGL graphics and professional 2D graphics—for extreme 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 (Genuine Windows Vista® Business (32- or 64-bit), Genuine Windows Vista downgrade to Genuine Windows XP Professional (32- or 64-bit), Red Hat Enterprise Linux® WS 4 64-bit, or HP Installer Kit for 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 control cards. Intel HD Audio is architected to help prevent 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 xw4600 Workstation?

Yes. The HP xw4600 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 xw4400; therefore you will have to create a new golden image. Manageability software is available to help with this image building process.

Intel® Core™ microarchitecture

What is Intel® Core™ microarchitecture?

The Intel Core microarchitecture is a foundation for Intel architecture-based desktop, mobile and mainstream server multi-core processors. This state-of-the-art, multi-core optimized microarchitecture delivers new and innovative features that set new standards for energy-efficient performance. The processors offered on the HP xw4600 represent the second generation of Core architecture products, and offer significantly enhanced performance for a given price point.

What are the benefits of Quad-Core processors?

The Intel Quad-Core processor provides double the processing resources in the same footprint compared to similar Dual-Core offerings. Quad-Core processors are ideal for usage models requiring multi-tasking (running many applications or simulations at once); working on spreadsheets while listening to music with virus checkers and system backups running (power office); or using applications that can split a task across processors (multi-threaded), like animation/rendering in Digital Content Creation.

Does the Quad-Core processor offer any performance improvement over Dual-Core processors?

Yes, the new Quad-Core processors from Intel offer significant performance improvement over previous generation Dual-Core processors on many applications and in many work environments.

What's important to know about the 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 Intel Pentium® 4/D processors. Finally, the new architecture consumes significantly less power than previous generations—Pentium 4 or Pentium D, which may result in lower energy bills and cooler workspaces.

Dual-Core. Dual-socket. Quad-Core. Multi-Core. What do these terms mean?

Dual-Core: Each CPU has exactly two cores
Dual-socket: Two physical CPU sockets are available on the motherboard
Quad-Core: Each CPU has exactly four 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 xw4600? Is it the same memory used on the HP xw4400?

Yes and no. The HP xw4600 uses DDR2 800 unbuffered ECC memory technology for ECC memory configurations up to 8 GB, as well as DDR2 667 unbuffered ECC memory up to 4 GB. The HP xw4400 used DDR2 667 exclusively for all 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 like PC2-6400E? How does this relate to memory bandwidth?

Clock rate is directly proportional to memory bandwidth. The bandwidth of 800 MHz DDR2 memory is calculated as 800 MHz x 8 bytes per channel = 6,400 MB/s or 6.4 GB/s. For simplicity, the value is thus referred to as PC2-6400 DDR memory. The "2" after PC just identifies this memory as DDR2 memory. The "E" identifies it as ECC. 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 xw4600 the dual-channel memory architecture results in unprecedented memory bandwidths on a personal workstation. With PC2-6400E DDR (800 MHz) memory, the system's theoretical memory bandwidth is an impressive 12.8 GB/s.

Does the large DDR2 800 memory bandwidth (12.8 GB/s) really help system performance if the processor bandwidth is lower than 12.8 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 xw4600 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 xw4600.

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 xw4600 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 1x512 MB in the system). It is highly recommended that memory be added in pairs, as the performance benefit is substantial. HP does offer two 1 x 512 MB configurations (both DDR2 667 and 800 MHz speeds) for cost-sensitive customers.

When installing memory in the HP xw4600, pairs must be matched in size and speed (i.e., 2x512 MB/800 MHz, not 1x512 MB/667, 1x1 GB/800) and multiple pairs must be matched in speed. The HP xw4600 has 4 DIMM slots (2 dual channels) and supports up to 8 GB of physical memory.

Note: Configurations consisting of three memory modules are not supported by HP.

Does the HP xw4600 offer ECC and non-ECC memory? What speeds are offered?

No. The HP xw4600 offers ECC only. The following table outlines what memory is available.

DIMM size/speed	512 MB	1 GB	2 GB
DDR2 667 MHz, ECC	Available	Available	Not available
DDR2 800 MHz, ECC	Available	Available	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 cutthroat competitive environment, workflow efficiency and utilization rates are also crucial. All HP Workstations, including the HP xw4600, offer ECC memory that provides an extra level of data integrity, reliability and greater system uptime.

Drives

Is the floppy drive really optional on the HP xw4600?

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 xw4600.

Does HP offer any other removable storage options?

Yes. HP offers an optional 16-in-1 Media Card reader that can be factory-installed on the xw4600. This device will enable users to quickly and easily transfer data between their workstation and their flash media (Compact Flash, Smart Media, etc). This device will occupy the bottom optical bay in the xw4600.

Is the optical drive optional on the HP xw4600?

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 xw4600.

What optical drives are available with the HP xw4600? What software is bundled with these drives?

The following table outlines what optical drives are currently available and what software is bundled with each drive.

	2007 optical apps set	DVD-ROM (SATA)	DVD/CD-RW combo (SATA)	DVD+/-RW Double Layer SuperMulti* (SATA)
2007 optical apps set	<ul style="list-style-type: none"> Support on Windows XP 32-bit, Vista Business 32-bit, Vista Business 64-bit CTO, apps are preinstalled 			
Create data & music CDs/DVDs	<ul style="list-style-type: none"> Roxio Easy Media Creator 9 		●	●
Create video CDs/DVDs	<ul style="list-style-type: none"> Roxio Easy Media Creator 9 		●	●
Play DVDs and video files	<ul style="list-style-type: none"> WinDVD Player 5 	●	●	●
Back up files or entire system	<ul style="list-style-type: none"> HP Backup and Recovery (SoftThinks) 			●

*Actual speeds may vary. Does not permit copying of commercially available DVD movies or other copyright protected materials. Intended for creation and storage of your original material and other lawful uses. Doublelayer discs can store more data than single-layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players. LightScribe creates a monochrome image. LightScribe media required and sold separately. Note that DVD-ROM cannot read or write to 2.6 GB Single-Sided/5.2 GB Double-Sided—Version 1.0 media.

Does the HP xw4600 offer and support SATA 3.0 Gb/s hard drives?

Yes. The HP xw4600 has an integrated 6-channel SATA 3.0 Gb/s controller for Serial ATA hard drives and optical drives. We offer the following SATA 3.0 Gb/s hard drives: 80 GB, 160 GB, 250 GB, 500 GB, and 1 TB (7200 rpm), as well as 80 and 160 GB (10k rpm). As noted above, we offer SATA versions of DVD-ROM (SATA), DVD/CD-RW Combo (SATA), and Supermulti DVD +/-RW Double Layer SuperMulti (SATA) optical drives. We also offer a full selection of SAS hard drives.

Does the HP xw4600 support Serial ATA (SATA) RAID?

Yes. The chipset used on the HP xw4600 has an integrated 6-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 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 SATA 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 dependent 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 xw4600?

We offer a wide selection of SAS disk drives and controllers. The faster spindle speeds (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 functionality. We offer the following SAS drives: 73 GB/15K, 146 GB/15K, 300 GB/15K rpm.

Chassis Design

Is the chassis for the HP xw4600 the same chassis used on the HP xw4400? Is it still convertible?

Yes. The HP xw4600 uses the same highly engineered chassis as the HP xw4400. The HP xw4600 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 xw4600 is rackable and shelving kits are available.

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What ports does the HP xw4600 have on the front bezel?

The front bezel on the HP xw4600 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 xw4600 Workstation?

Genuine Windows Vista® Business 32-bit

Genuine Windows Vista® Business 64-bit

Genuine Windows Vista® Business 32-bit with downgrade to Windows® XP Professional 32-bit¹ custom installed

Genuine Windows Vista® Business 64-bit with downgrade to Windows® XP Professional x64¹ custom installed

Red Hat Enterprise Linux™ WS 4 64-bit

HP Installer Kit for Linux (includes drivers for both 32-bit & 64-bit OS versions of Red Hat Enterprise Linux WS4 and WS5)

Red Flag Linux v5 (available in China only)

Certain Windows Vista product features require advanced or additional hardware. See <http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx> and <http://www.microsoft.com/windowsvista/getready/capable.mspx> for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit <http://www.windowsvista.com/upgradeadvisor>. Windows Vista Business disk also included for future upgrade if desired.

¹ Available for end user customers that are a business (including governmental or educational institutions) who are expected to annually order at least 25 Customer Systems with the same Custom Image.

Is dual OS preload an option? Dual OS preload is not offered due to restrictions of licensing agreements.

Is Microsoft Windows 2000 supported on the new HP xw4600 Workstations?

Microsoft Windows 2000 is not supported on the new HP xw4600. 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.

Will existing 32-bit software run, without being re-compiled, on a 64-bit operating system?

This is highly dependent on the specific application. Many 32-bit applications will run on 64-bit operating systems without difficulty, but some have issues. HP recommends you check with your application provider for details.

Linux

Does the HP xw4600 Workstation support Linux?

Yes. Red Hat Enterprise WS 4 (available preinstalled) and the HP Installer Kit for Linux are available. HP also offers Red Flag Linux 5 preinstalled for customers in China.

What is the HP Installer Kit for Linux (HPIKL)?

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

- HP Driver CD for Red Hat Enterprise Linux WS 4 and 5

This is a “post install” CD used at the end of a Red Hat Enterprise Linux installation that 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 RHEL WS 4 and RHEL WS 5.

- 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 Red Hat Enterprise WS 4. Red Hat requires that you purchase Red Hat Enterprise WS 4.

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 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 CDs 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 CDs 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 CDs as ISO images on a hard disk drive partition. You can choose to create install CDs from the ISO images if you prefer. 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 relationships with multiple third-party vendors 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.
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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 the opportunity to participate in the "Linux Indemnity Program"*
- HP Workstations offer online technical white papers, drivers and customer advisories enabling customers to support themselves more easily.

* This is not an offer of indemnity. Eligibility for qualifying customers only. The indemnity program requires customers to sign an indemnity agreement that outlines the covered claims, rights and responsibilities of HP and customers. For more details please visit www.hp.com/linux. HP reserves the right to modify or cancel the indemnity program at any time.

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 update 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. It will also 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 ISVs 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?

The HP Workstation team is 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 infrastructure.

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 WS4 (RHEL 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 make files that explicitly declare paths such as /lib, /usr/lib and /usr/X11R6/lib might need to be changed to append "64."

PCI Express (PCIe) Graphics and I/O

What graphics cards are available on the new HP xw4600 Workstation?

Professional 2D	NVIDIA Quadro NVS 290 (256 MB, up to two cards) and NVIDIA Quadro NVS 440 (256 MB, can be used in dual configuration with NVS 290)
Entry 3D	NVIDIA Quadro FX 370 (256 MB, up to two cards) and NVIDIA Quadro FX 570 (256 MB, up to two cards)
Mid-range 3D	ATI FireGL V5600 (512 MB) and NVIDIA Quadro FX 1700 (512 MB, up to two cards)
High-end 3D	ATI FireGL V7700 (512 MB), NVIDIA Quadro FX 3700 (512 MB), and NVIDIA Quadro FX 4600 (768 MB)

Will the HP xw4600 support PCI Express Gen2?

Yes. Both PCI Express x16 slots in the HP xw4600 function at Gen2 bandwidth (double the bandwidth of Gen1). The other I/O slots in HP xw4600 function at PCI Express Gen1.

What is meant by PCI Express Gen2?

PCI Express Gen2 is the latest generation of PCI Express architecture. PCI Express Gen2 provides an incredible 5.0 giga transfers per second, double the bandwidth of the previous PCI Express Gen1. This additional bandwidth will enable unprecedented performance levels for next-generation graphics cards.

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

Graphics performance is dependent upon many factors, including the amount of video memory. Higher performing cards also include bigger and faster GPUs, 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 70 MB 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 some cases, has engineering personnel located full-time onsite at these software vendors' locations 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. The following table outlines the applications that are planned for the HP xw4600.

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	Public Sector	Other
Adobe Premier/After Effects Avid Xpress, Pinnacle Liquid Autodesk 3D Studio Max Combustion Toxik Smoke Maya Bluefish444 HD Lust Canopus NX DigiDesign Pro Tools Leitch dps Reality Quattrus Matrox Digisuite InfoneiTV RT.X100	Autodesk Map 3D Civil 3D Building Systems Land Desktop Inventor Revit AutoCAD AliasStudio Electrical Mechanical/Desktop Bentley MicroStation CATIA Catio V5 CoCreate OSDM Dassault DS Solidworks ICEM Surf MSC Nastran/Patran PTC ProE ProM UGS UGS NX UGS I-Deas UGS TeVis UGS Solid Edge	Ardence Secure Others ESRI ArcGIS Lecia ERDAS Imagine Professional Sensor MEDx RemoteView	AustinGeo (Linux Only) Dynamic Graphics Earthdecision GoCad Landmark Flagship GeoProbe GeoGraphix Roxar Schlumberger Petrel SMT

Security

What security features are available on the HP xw4600?

- 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
- Serial, parallel, USB enable/disable—enables or disables ports and hides 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 an unauthorized person from changing the system configuration
- Kensington Cable Lock (optional)
- Internal USB port—prevents theft of ISV application keys

Manageability

What manageability features are available on Microsoft Windows-based 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
- Ability to monitor system health to fix problems before they occur
- Ability to install drivers and BIOS updates without visiting each workstation
- Ability to remotely configure BIOS and security settings
- Ability to automate processes to quickly resolve hardware problems
- Ability to gain local recovery

For more information on HP Client Management Solutions, go to: http://h20331.www2.hp.com/hpsub/cache/284018-0-0-225-121.html?jumpis-ex_R2845_vanityim/goclientmanagr/ka011106

What is the HP Performance Tuning Framework?*

Your intelligent interface to the underlying power of HP Workstations, the HP Performance Tuning Framework (PFT) is an exclusive HP software innovation—including free with every HP Personal Workstation with a Microsoft® operating system. PTF gives you the ability to discover, optimize and manage your unique combination of hardware, graphics drivers, applications, operating system and other system resources—to help you maximize the performance and reliability of your workstation environment.

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 systems

Options and Modules

What options are available for the new HP xw4600 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 xw4600 Workstations is 3-3-3 (3-years parts, 3-years labor and 3-years next business day onsite).

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 if 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 if you need extended coverage.

Why should I use HP support instead of Red Hat support?

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 from phone-in assistance through proactive and mission-critical services. In addition, global education, installation and integration services, and multi-vendor network services are available to meet Linux and multi-platform support.

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To learn more, visit www.hp.com/go/workstations

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