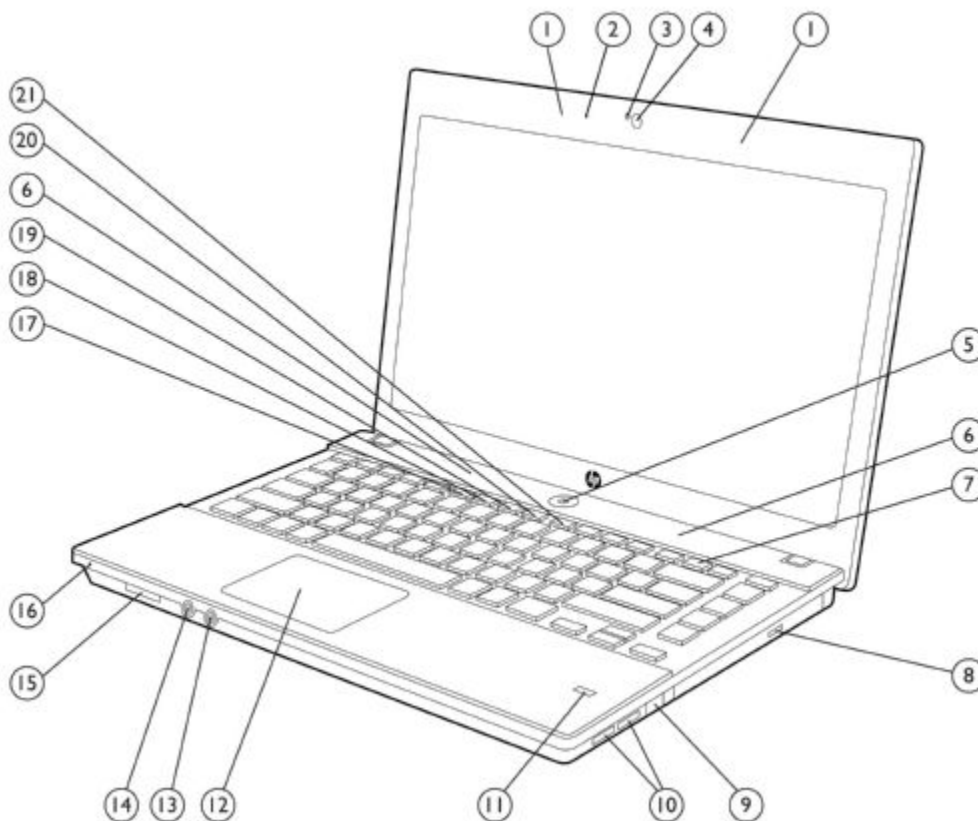
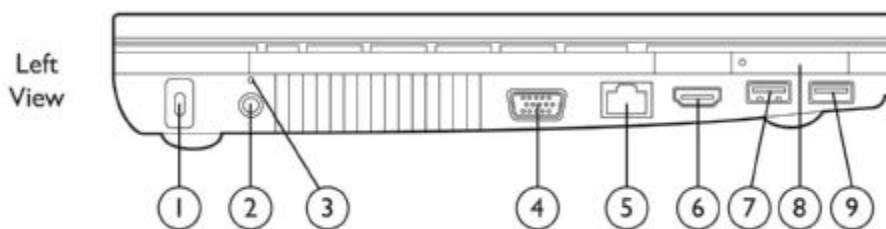


## Overview

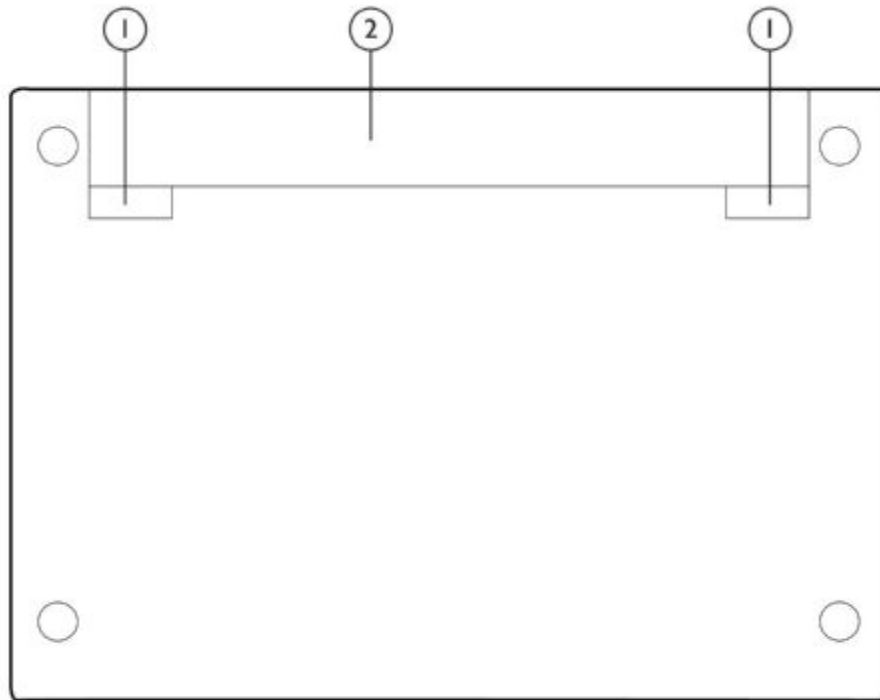


- |  |   |
|--|---|
| 1. WLAN antennas                           | 12. ClickPad with left and right ClickPad buttons |
| 2. Integrated microphone                   | 13. Stereo microphone in                          |
| 3. Webcam LED (works with optional webcam) | 14. Stereo headphone/line out                     |
| 4. Optional 2 MP webcam                    | 15. Media Card Reader                             |
| 5. Power button with LED indicator         | 16. Hard drive activity LED indicator             |
| 6. Stereo speakers                         | 17. HP QuickLook 3 button with LED indicator      |
| 7. Wireless switch with LED indicator      | 18. HP QuickWeb button with LED indicator         |
| 8. Optical drive (select models)           | 19. Volume mute button                            |
| 9. Optional RJ-11/modem port               | 20. Volume down button                            |
| 10. (2) USB 2.0 ports                      | 21. Volume up button                              |
| 11. Optional HP Fingerprint Sensor         |   |



- |   |                         |
|---|-------------------------|
| 1. Kensington Lock slot                       | 6. HDMI port            |
| 2. Power connector                            | 7. Combo eSATA/USB port |
| 3. Battery charging LED indicator             | 8. ExpressCard/34 slot  |
| 4. VGA connector (external monitor/projector) | 9. USB 2.0 port         |
| 5. RJ-45/Ethernet port                        |                         |

## Overview



BottomView

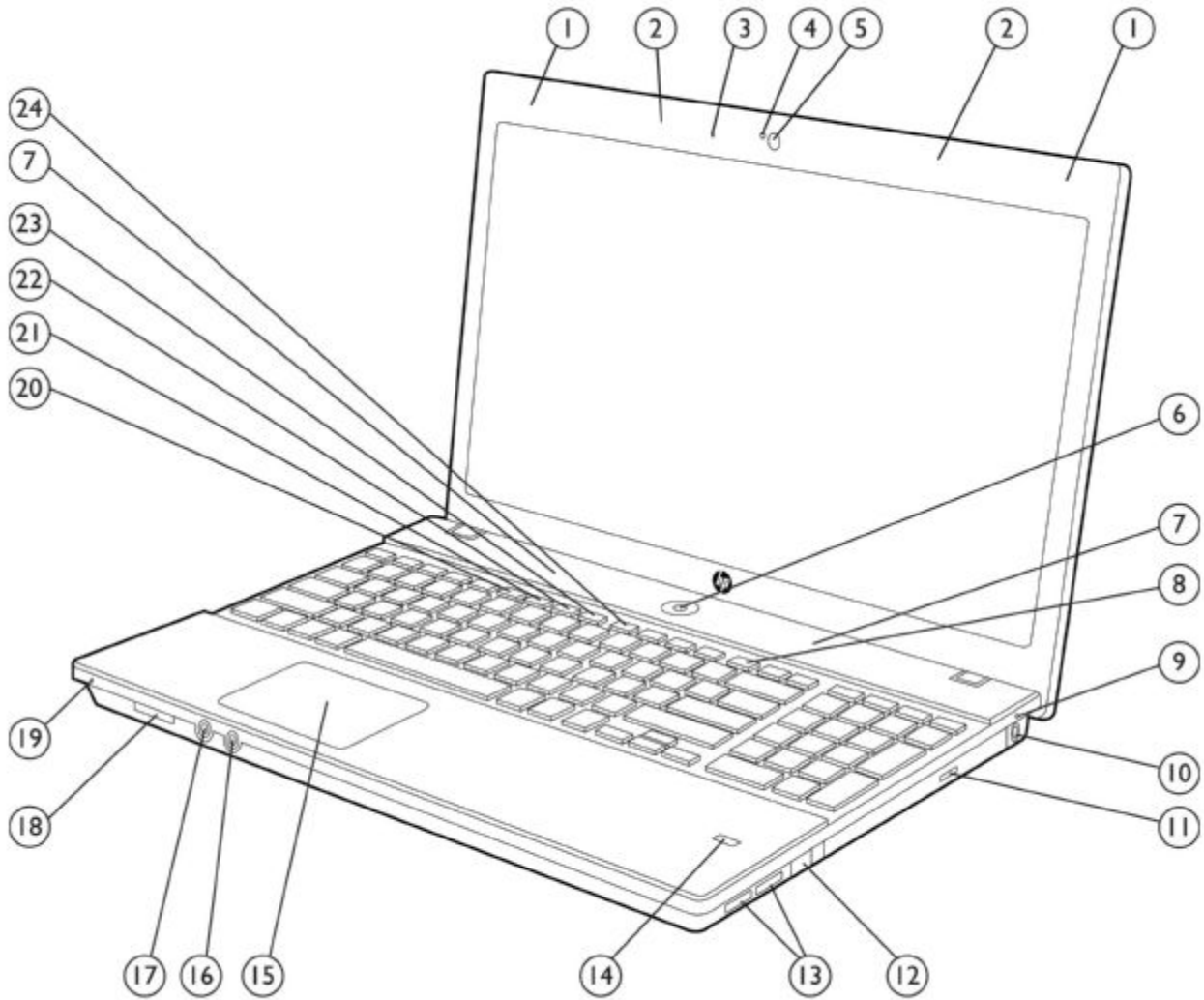
1. Battery release latches

2. Battery bay

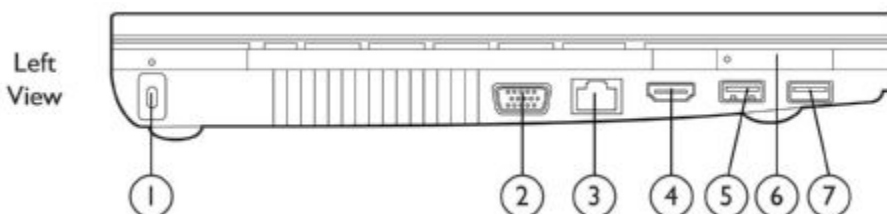
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HP ProBook 4525s Notebook PC

## Overview



- |  |   |
|--|---|
| 1. WWAN antennas (select models)           | 13. (2) USB 2.0 ports                             |
| 2. WLAN antennas                           | 14. Optional HP Fingerprint Sensor                |
| 3. Integrated microphone                   | 15. ClickPad with left and right ClickPad buttons |
| 4. Webcam LED (works with optional webcam) | 16. Stereo microphone in                          |
| 5. Optional 2 MP webcam                    | 17. Stereo headphone/line out                     |
| 6. Power button with LED indicator         | 18. Media Card Reader                             |
| 7. Stereo speakers                         | 19. Hard drive activity LED indicator             |
| 8. Wireless switch with LED indicator      | 20. HP QuickLook 3 button with LED indicator      |
| 9. Battery charging LED indicator          | 21. HP QuickWeb button with LED indicator         |
| 10. Power connector                        | 22. Volume mute button                            |
| 11. Optical drive (select models)          | 23. Volume down button                            |
| 12. Optional RJ-11/modem port              | 24. Volume up button                              |

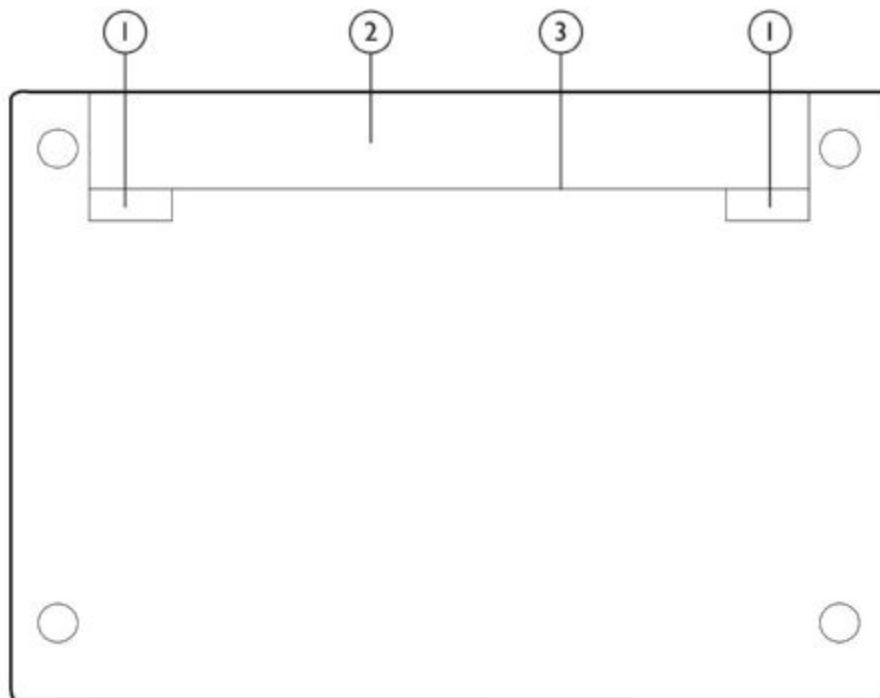


1. Kensington Lock slot

5. Combo eSATA/USB port

## Overview

2. VGA connector (external monitor/projector)
3. RJ-45/Ethernet port
4. HDMI port
6. ExpressCard/34 slot
7. USB 2.0 port



BottomView

1. Battery release latches
2. Battery bay
3. SIM card slot (select units, located inside battery bay)

## At A Glance

- Genuine Windows 7 versions, Genuine Windows Vista versions, Genuine Windows XP Professional available through downgrade rights from Windows 7 Professional, SUSE Linux, Red Flag Linux (PRC only), or FreeDOS
- Thin, lightweight design with brushed aluminum finish for durability and style
- Color choice of caviar or bordeaux
- Full-sized spill-resistant keyboard with full separate numeric keypad on the HP ProBook 4525s
- New AMD VISION Pro architecture
- AMD Phenom™ II Quad-Core or Triple-Core Mobile Processor, AMD Turion™ II Dual-Core Mobile Processor, AMD Athlon™ II Dual-Core Processor for Notebook PCs, or AMD V-Series Single-Core Processor for Notebook PCs
- Integrated ATI Mobility Radeon HD 4250 graphics; or HP ProBook 4525s also offers ATI Mobility Radeon HD 503v discrete graphics with 512 MB dedicated video memory
- Optional HP Fingerprint Sensor for single sign-on
- HP Face Recognition for HP ProtectTools for easy logins using the optional integrated 2 MP webcam
- Choice of 9-cell or 6-cell battery to customize weight and run-time to your needs
- Corel Home Office productivity suite for word processing, spreadsheets, and presentations
- ArcSoft TotalMedia Suite for playing, creating, and editing video and audio files
- New keyboard function keys for play, rewind, and fast-forward of video and audio files
- HP DayStarter (calendar display while Windows starts), HP QuickLook 3 (quick access to e-mail, calendar, contacts and tasks), HP QuickWeb
- HP Power Assistant to conserve power, increase battery run-time, monitor power needs, report workforce power consumption
- HP Connection Manager 3.1

## Overview

- Flexible wireless connectivity options:
  - Integrated HP un2420 EV-DO/HSDPA Mobile Broadband Module\* provides worldwide Gobi mobile Internet technology with GPS
  - Integrated Broadcom 802.11 b/g/n or b/g wireless LAN module
  - Bluetooth® v2.1
- Widescreen LED-backlit HD display with 16:9 aspect ratio, BrightView optional
  - HP ProBook 4425s: 14.0-inch diagonal
  - HP ProBook 4525s: 15.6-inch diagonal
- Enhanced security features including HP ProtectTools with Central Management, optional HP Fingerprint Sensor, HP Face Recognition, Computrace LoJack Pro ready, HP SpareKey, HP Disk Sanitizer, optional HP Privacy Filter
- HDMI port for connecting to high-resolution displays; combo eSATA/USB port

\* Only available in HP ProBook 4525s with integrated graphics.

## Standard Features (availability may vary by country)

Processors	<p>AMD Phenom II Quad-Core Mobile Processor P920 (1.6 GHz, 2MB L2 cache)</p> <p>AMD Phenom II Triple-Core Mobile Processor P820 (1.8 GHz, 1.5 MB L2 cache)</p> <p>AMD Turion II Dual-Core Mobile Processor P520 (2.3 GHz, 2MB L2 cache)</p> <p>AMD Athlon II Dual-Core Processor P320 (2.1 GHz, 1MB L2 cache)</p> <p>AMD V Series Processor V120 (2.2 GHz, 512 KB L2 cache)</p> <p><b>NOTE:</b> Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.</p> <p>* Intel's numbering is not a measurement of higher performance.</p>
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Operating System	Preinstalled	<p>Genuine Windows 7 Professional Edition 32*</p> <p>Genuine Windows XP Professional available through downgrade rights from Windows 7 Professional*†</p> <p>Genuine Windows 7 Home Premium Edition 32*</p> <p>Genuine Windows 7 Home Basic Edition 32*</p> <p>Genuine Windows 7 Starter 32*</p> <p>Genuine Windows Vista Business 32**</p> <p>Genuine Windows Vista Home Basic 32**</p> <p>SUSE Linux Enterprise Desktop 11</p> <p>Red Flag Linux (PRC only)</p> <p>FreeDOS</p>
	Supported	Genuine Windows 7 Professional 64*
	Certified	SUSE Linux Enterprise Desktop 11

\* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See: <http://www.microsoft.com/windows/windows-7/> for details.

\*\* Certain Windows Vista product features require advanced or additional hardware. See: <http://www.microsoft.com/windowsvista/getready/hardwarereqs.aspx> and <http://www.microsoft.com/windowsvista/getready/capable.aspx> 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 XP Professional is preinstalled on this system and includes end user rights and media for Windows 7 Professional. You may only use one version at a time. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

Chipset	Integrated graphics:	AMD RS880M chipset
	Discrete graphics (available in HP ProBook 4525s only):	AMD RS880MD chipset

## Standard Features (availability may vary by country)

### Graphics

#### Integrated graphics:

ATI Mobility Radeon HD 4250 graphics controller with shared video memory

#### Discrete graphics (available in HP ProBook 4525s only):

ATI Mobility Radeon HD 530v graphics controller with 512 MB dedicated video memory

Microsoft DirectX 10.1 (discrete), 10 (integrated) capable

### Display

#### Internal

##### HP ProBook 4425s:

14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)

14.0-inch diagonal LED-backlit HD BrightView (1366 x 768 resolution)

##### HP ProBook 4525s:

15.6-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)

15.6-inch diagonal LED-backlit HD BrightView (1366 x 768 resolution)

#### External

Optional HP Privacy Filter

Up to 32-bit per pixel color depth

VGA port supports resolutions up to 1600 x 1200 at 75 Hz, and lower resolutions at up to 100 Hz.

HDMI port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included).

**NOTE:** Resolutions are dependent upon monitor capability, and resolution and color depth settings.

### Memory

#### Standard

DDR3 PC3-10600 SDRAM (1333 MHz)\*

Two SODIMM slots supporting dual-channel memory

1024 MB and 2048 MB SODIMMs

Standard memory up to 4096 MB

#### Maximum

Upgradeable to 8192 MB with optional 4096 MB SODIMMs in slots 1 and 2

#### Dual-channel

Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

\* Memory speed is processor dependent.

**NOTE:** Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires a Windows 64-bit operating system or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

## Standard Features (availability may vary by country)

Communications	<p>Realtek Ethernet (10/100/1000 NIC)*</p> <p>Optional 56K V.92 modem**</p> <p>* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.</p> <p>** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.</p>
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Wireless Devices	<p>Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Mobile Broadband (WWAN) requires a Windows operating system and is available in select countries as a factory configurable feature for the HP ProBook 4525s only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.</p> <p>HP un2420 EV-DO/HSPA Mobile Broadband Module (only available in HP ProBook 4525s with integrated graphics)</p> <p>Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications.</p> <p><b>NOTE: Separately purchased mobile network operator service is required.</b></p> <p>Two 850/900/1575/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.</p> <p>All 802.11 integrated wireless LAN options</p> <p>Wi-Fi certified*</p> <p>Wired Equivalent Privacy (WEP) support up to 128-bit keys</p> <p>Wi-Fi Protected Access (WPA) and WPA2 support</p> <p>802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP</p> <p>Advanced Encryption Standard (AES) support</p> <p>Dual antennas integrated in the display enclosure</p> <p>Broadcom 4313GN 802.11 b/g/n WiFi Adapter</p> <p>Integrated support for 802.11 b, g, and n</p> <p>Cisco Compatible Extensions support</p> <p>Up to 300 mbps data rate</p> <p>Broadcom 4312G 802.11 b/g WiFi Adapter</p> <p>Integrated support for 802.11 b and g</p> <p>Cisco Compatible Extensions support</p> <p>Up to 54 mbps data rate</p> <p>HP Integrated Module with Bluetooth WirelessWorks Technology</p> <p>Bluetooth Specification v2.1 compliant with a wide range of Bluetooth devices</p>
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Keyboard	<p>The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, full separate numeric keypad, and 12 function keys. US and International key layouts are available. Other features include hotkeys for instant access to power conservation and brightness, and 19.05 x 19.05 mm key pitch (center-to-center spacing).</p>
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## Standard Features (availability may vary by country)

Pointing device	ClickPad with gestures support: Two-finger scroll, zoom, pinch and pivot rotate, and three finger flick <b>NOTE:</b> <a href="#">Gestures not available for Linux and FreeDOS.</a>
<hr/>	
Expansion card slots	ExpressCard/34 slot Supports ExpressCard/34 (34 mm x 75 mm x 5 mm) card sizes Media Card Reader Supports SD (Secure Digital), MMC (MultiMedia Card), Memory Stick, Memory Stick Pro, Memory Stick Duo*, xD-Picture card  * <a href="#">Memory Stick Duo Adapters are required and sold separately. Inserting a Memory Stick Duo Card directly into your notebook could damage the memory card and/or notebook.</a>
<hr/>	
Storage	Internal Storage Device 250/320/500 GB 7200 rpm SMART SATA II Hard Drive <b>NOTE:</b> <a href="#">Up to 15 GB is reserved for the system recovery software.</a>  HP 3D DriveGuard (Windows models only) The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.  Fixed optical drives Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive* DVD+/-RW SuperMulti DL LightScribe Drive DVD-ROM Drive  * <a href="#">Support for the Blu-ray DVD drive on configurations with integrated graphics requires Windows 7 or Windows Vista; configurations with discrete graphics support it with any offered Windows operating system.</a>
<hr/>	
Interfaces	VGA One HDMI One Stereo microphone in One Stereo headphone/line out One Power connector One RJ-11/modem (optional) One RJ-45/Ethernet One Combo eSATA/USB 2.0 One USB 2.0 Three LED status indicators Eight
<hr/>	

## Standard Features (availability may vary by country)

### Audio/Visual

High Definition Audio support  
Integrated stereo speakers  
Integrated digital microphone  
Stereo headphone/line out  
Stereo microphone in

### Optional 2 MP webcam

- Supports videoconferencing and still image capture
- Improved quality for video streaming and still image capture (1600x1200 resolution)
- Up to 30 frames/sec
- Fixed focus lens
- 16-bit true color (camera sensor up to UXGA resolution)

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### Software

Preinstalled software with Windows operating system

HP Recovery Manager (available with Windows 7 or Vista only)  
HP Support Assistant (available with Windows 7 or Vista only)  
HP ProtectTools Security Manager  
HP Face Recognition  
HP QuickLaunch Buttons Software  
HP QuickLook 3  
HP QuickWeb  
HP Power Assistant  
HP Connection Manager 3.1  
HP Wireless Assistant  
HP Day Starter  
Corel Home Office productivity suite 60-day trial  
Roxio Creator Business (select models)  
ArcSoft Total Media Suite  
Microsoft Office Professional 2007 60-day Convertible Trial  
McAfee Total Protection\*  
HP Webcam Software (select models)  
Skype  
WinZip 12 trial

Additional software available from the web

\* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.

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HP Recovery Manager Models shipped with Windows 7 or Windows Vista include HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 15 GB of the hard drive is reserved for the system recovery software.

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## Standard Features (availability may vary by country)

Security	Standard Features	<ul style="list-style-type: none"> <li>HP ProtectTools Security Manager</li> <li>Face Recognition for HP ProtectTools</li> <li>One Step Login</li> <li>Enhanced Pre-Boot Security</li> <li>HP SpareKey</li> <li>HP Disk Sanitizer</li> <li>Setup Password</li> <li>Kensington Lock Slot</li> <li>Support for Computrace* LoJack Pro for HP ProtectTools</li> </ul>
	Optional Features	<ul style="list-style-type: none"> <li>HP Fingerprint Sensor</li> <li>HP Privacy Filter</li> </ul>

\* The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years.

For more information on HP security solutions refer to: <http://www.hp.com/go/security>.

HP ProtectTools Security Management HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. The following modules are available on the hard drive (also downloadable from the web) and can be configured in Software Setup:

- Credential Manager for HP ProtectTools
- Device Access Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- File Sanitizer for HP ProtectTools
- Privacy Manager for HP ProtectTools (Chat & Sign)
- Embedded Security for HP ProtectTools
- Computrace LoJack Pro for HP ProtectTools

HP ProtectTools is now centrally manageable with the capability to manage notebooks from a single point. Security is management ready out of the box, in partnership with Digital Persona. New features address requirements that customers expect from a centrally managed security solution such as user provisioning, credential reset, and credential revocation.

HP ProtectTools provides two separate management solutions, targeted at the enterprise and the SMB:

- Digital Persona Pro AD: Designed for the enterprise customer. Integrates with Active Directory and gives IT Managers the ability to provision users, create login policies based on passwords, biometrics or smartcards. Management features also include remote credential recovery in case the user forgets the password, loses the smartcard or cannot use the fingerprint reader for any reason. In addition, advanced auditing capabilities are also built in. Digital Persona Pro AD is available now.
- Digital Persona Pro Workgroup: Designed for the small business customer. Provides features similar to the Active Directory version, but for workgroups. Workgroup activation is built into HP ProtectTools, and activation of up to 5 seats is completely free.

## Standard Features (availability may vary by country)

**Power Supply** Models with integrated graphics: External 65-watt Smart AC adapter  
Models with discrete graphics: External 90-watt Smart AC adapter  
6-foot (1.8-meter) power cord included; total length including external AC adapter is 12 feet (3.66 meter)  
HP Fast Charge\*

\* HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. HP Fast Charge does not apply to the HP 9-cell battery.

<b>Battery</b>	Primary battery	HP 9-cell (93 WHr) Li-Ion battery HP 6-cell (47 WHr) Li-Ion battery
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<b>Battery Life</b>	Configurations with integrated graphics		Configurations with discrete graphics
	HP ProBook 4425s		
	9-cell battery	TBD	TBD
	6-cell battery	TBD	TBD
HP ProBook 4525s			
	9-cell battery	TBD	TBD
	6-cell battery	TBD	TBD

NOTE: Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark [www.bapco.com/products/mobilemark2007](http://www.bapco.com/products/mobilemark2007) for additional details.

**System Standby Time** Up to TBD week

**Power Conservation** Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)  
ATI PowerPlay technology  
Hibernation  
Standby  
ACPI compliance

**Service and Support** HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country; 1-year limited warranty on primary battery. Warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. <http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>.

Options (availability may vary by country)

Memory	HP 1 GB (DDR3 1333 MHz) SODIMM	AT911AA
	HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA
	HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA
Storage	HP 250 GB USB Pocket Media Hard Drive	FE477AA
	HP External USB CD/DVD R/RW Drive	FS943AA
Communication	HP WLAN 802/11 a/b/g/n Mini-card Kit (HP ProBook 4525s only)	KM591AA#xxx
Expansion	HP Basic Adjustable Stand	AL549AA
	HP USB 2.0 Docking Station	FQ834AA
	HP Essential USB 2.0 Port Replicator	AQ731AA
	HP Dual Hinge Notebook Stand	AW661AA
	HP Display & Notebook Stand	AW662AA
	HP Adjustable Display Stand	AW663AA
	HP Adjustable Dual Display Stand	AW664AA
Power	65W Smart AC Adapter	ED494AA
	90W Smart AC/Auto/Air Combo Adapter	AJ652AA
	HP 65W Slim Adapter	AX727AA
	HP Smart 65W Travel AC Adapter	AU155AA
	90W Smart AC Adapter	ED495AA
	HP 6-Cell Li-Ion Primary Battery	KU531AA
Carrying Cases	HP Deluxe Nylon Backpack	RR317AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Roller Case	GD405AA
	HP Basic Backpack	AM863AA
	HP Basic Messenger	AP355AA
	HP Basic Carrying Case	AJ078AA
	HP Professional Series Carrying Case	AT886AA
	HP Professional Series Backpack	AT887AA
	HP Professional Series Messenger	AT888AA
	HP Professional Series Designer Tote	AT889AA
	HP Professional Series Slip Case	AT890AA
	HP Elite Series Designer Tote	AT891AA
HP Elite Series Quick Case	AT892AA	

## Options (availability may vary by country)

Security	HP/Kensington MicroSaver Security Lock	PC766A
	HP Notebook Cable Lock	AY475AA
	HP Privacy Filter For 15.6 in	AU103AA

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Input/Output Devices	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Keyboard & Mouse Bundle	RC465AA
	HP USB Optical Travel Mouse	RH304AA
	HP Wireless Mouse	AR085AA
	HP BT Headset	AR084AA
	HP Mobile Audio Speakers	FS944AA
	HP Mobile Productivity Bundle	AQ729AA
	HP Notebook Companion Projector	AX325AA
	HP Special Edition Optical Mouse	AU094AA
	HP Premium Autofocus Webcam	KQ245AA
	Premium Digital Headset	KJ270AA
	HP Promo USB Graphics Adapter	NL571AT

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Miscellaneous	HP Notebook Projection Companion	AX325AA
	HP 2 Megapixel Auto Focus Webcam	KQ245AA
	HP Digital Premium Stereo Headset	KJ270AA

## Memory

DDR3 PC3-10600 SDRAM (1333 MHz)\*

Two SODIMM slots supporting dual-channel memory

SODIMM sizes supported: 1024 MB, 2048 MB and 4096 MB

- Standard Memory
- 1024 MB (1024 MB x 1)
  - 2048 MB (2048 MB x 1)
  - 2048 MB (1024 MB x 2)
  - 3072 MB (2048 MB + 1024 MB)
  - 4096 MB (2048 MB x 2)

Optional Memory Upgrades Support for up to 8192 MB of memory with the installation of optional DDR3 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
2048 MB	1024 MB	1024 MB
2048 MB	2048 MB	empty
3072 MB	2048 MB	1024 MB
4096 MB	2048 MB	2048 MB
4096 MB	4096 MB	empty
8192 MB	4096 MB	4096 MB

\* Memory speed is processor dependent.

NOTE: This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Availability of 4 GB or more of memory requires a Windows 64-bit operating system or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

Memory Upgrades	HP 1 GB (DDR3 1333 MHz) SODIMM	AT911AA
	HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA
	HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA

## Storage

### Removable Media Drive Support

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	Quantity Supported	Drive Bay
Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive*	One	Fixed optical drive bay
DVD+/-RW SuperMulti DL LightScribe Drive	One	Fixed optical drive bay
DVD-ROM Drive	One	Fixed optical drive bay

\* Support for the Blu-ray DVD drive on configurations with integrated graphics requires Windows7 or Windows Vista; configurations with discrete graphics support it with any offered Windows operating system.

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### Internal Storage Device

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	Quantity Supported	Drive Bay
Hard Drives		
500 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay



## Technical Specifications

System Unit	Dimensions (HxWxD)	<p>HP ProBook 4425s: 1.07 in (at front) x 13.23 in x 9.15 in 27.0 mm (at front) x 336.0 mm x 232.4 mm</p> <p>HP ProBook 4525s: 1.09 in (at front) x 14.6 in x 9.83 in 27.7 mm (at front) x 371.8 mm x 249.6 mm</p>
	Weight	<p>HP ProBook 4425s: Starting at 4.71 lb (2.14 kg) without optical drive or 5.0 lb (2.27 kg) with optical drive</p> <p>HP ProBook 4525s: Starting at 5.26 lb (2.39 kg) without optical drive or 5.55 lb (2.52 kg) with optical drive</p>

**NOTE:** Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, no optical drive. Weight varies by configuration and components.

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
	Average Operating Power	with integrated graphics: 18.16 W with discrete graphics: 20.34 W
	Max Operating Power	< 90 W or < 65W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Select models*
	EPEAT	Registered TBD in United States**
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC	Yes

## Technical Specifications

BSMI	Yes
CE Marking Compliance	Yes
BNCI or BELUS	Yes
CIT	Yes
GOST	Yes
Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes
UKRSERTCOMPUTER	Yes

\* Configurations of the HP ProBook 4425s and HP Probook 4525s that are ENERGY STAR qualified are identified as HP ProBook 4425s ENERGY STAR and HP Probook 4525s ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\* EPEAT registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country. EPEAT status listed above applies to U.S.

NOTE: For accessibility information on HP products, please visit: <http://www.hp.com/accessibility>.

HP 90W Smart AC Adapter	Dimensions	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)		
	Weight	0.82 lb (370 g)		
	Input	Input	100 to 240 VAC	
		Input Efficiency	87% min at 115 VAC	
		Input frequency range	47 to 63 Hz	
	Output	Input AC current	1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version	
			2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version	
		Output power	90W	
		DC output	19.0V	
		Hold-up time	5 msec at 115 VAC input	
	Connector	Output current limit	<11A, Over voltage protection- 29V max automatic shutdown	
		Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)	
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)	
		Altitude	0 to 10,000 ft (0 to 3,048 m)	
Humidity		20% to 80%		
Storage Humidity		10% to 90%		
EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.			

## Technical Specifications

HP 65W Smart AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)		
	Weight	0.62 lb (280 g)		
	Input	100 to 240 VAC		
		Input Efficiency	87% min at 115 VAC	
		Input frequency range	47 to 63 Hz	
	Output	Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC	
		Output power	65W	
		DC output	18.5V	
		Hold-up time	5 msec at 115 VAC input	
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown	
	Connector	3 pin/grounded, mates with interchangeable cords		
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)	
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)	
		Altitude	0 to 10,000 ft (0 to 3,048 m)	
		Humidity	20% to 80%	
EMI and Safety Certifications	Storage Humidity	10% to 90%		
	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.			

9-Cell (93 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.9 x 8.3 in (2.0 x 7.3 x 21.0 cm)		
	Weight	1.07 lb (0.488 kg)		
	Cells/Type	9-cell Lithium-Ion		
	Energy	Watt-hour Capacity	93 WHr	
		Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 140° F (-10° to 60° C)	
	Battery Re-Charge Time	Non-operating	-4° to 140° F (-20° to 60° C)	
		System in OFF mode or Standby	3 to 4 hours	
		System ON	4 to 6 hours (depending on system power consumption)	

## Technical Specifications

6-Cell (47 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)	
	Weight	0.659 lb (0.299 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	47 WHr
		Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF Mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF

## Displays

15.6-inch LED HD (1366 x 768) anti-glare	Dimensions (W x H)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	400:1 (min)	
	Refresh Rate	60 Hz	
	Brightness	210 nit (typical)	
	Pixel Resolution	Pitch	0.252 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	101 ppi	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

## Technical Specifications

15.6-inch LED HD (1366 x 768) BrightView	Dimensions (W x H)	13.54 x 7.59 in (34.4 x 19.4 cm)		
	Diagonal Size	15.6 in (39.6cm)		
	Surface Treatment	BrightView (glossy)		
	Contrast Ratio	500:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Pitch	0.252 mm	
		Format	1366 x 768	
		Configuration	RGB Stripe	
	Backlight	LED		
PPI	101 ppi			
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)			

14.0-inch LED HD (1366 x 768) anti-glare	Active Area (W x H)	12.74 x 7.56 in (32.4 x 19.2 cm)		
	Diagonal Size	14.0 in (35.6cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	400:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Pitch	0.227 mm	
		Format	1366 x 768	
		Configuration	RGB Stripe	
	Backlight	LED		
PPI	112 ppi			
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)			

## Technical Specifications

14.0-inch LED HD (1366 x 768) BrightView	Active Area (W x H)	12.16 x 6.85 in (30.9 x 17.4 cm)
	Diagonal Size	14.0 in (35.6cm)
	Surface Treatment	BrightView (glossy)
	Contrast Ratio	500:1 (typical)
	Refresh Rate	60 Hz
	Brightness	200 nit (typical)
	Pixel Resolution	Pitch 0.227 mm
		Format 1366 x 768
		Configuration RGB Stripe
	Backlight	LED
	PPI	112 ppi
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)

## Internal Storage

500 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	Capacity	500 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 150 MB/s (Drive Capability)
	Seek Time	Single Track 1.5ms
	(typical reads, including settling)	Average 11ms
		Maximum 22ms
	Rotational Speed	7200 rpm
	Logical Blocks	976,773,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

## Technical Specifications

320 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	Capacity	250 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 150 MB/s (Drive Capability)
	Seek Time	Single Track 1.5ms
	(typical reads, including settling)	Average 11ms
		Maximum 22ms
	Rotational Speed	7200 rpm
	Logical Blocks	625,142,448
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

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250 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	Capacity	250 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 150 MB/s (Drive Capability)
	Seek Time	Single Track 1.5ms
	(typical reads, including settling)	Average 11ms
		Maximum 22ms
	Rotational Speed	7200 rpm
	Logical Blocks	488,397,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

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## Technical Specifications

750 GB 5400 rpm SATA Hard Drive	Drive Weight	0.27 lb (125 g)	
	Capacity	750 GB	
	Height	0.50 in (12.7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum) 150 MB/s (Drive Capability)	
	Seek Time	Single Track	2 ms
	(typical reads, including settling)	Average	12ms
		Maximum	22 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

## Optical Drives

DVD-ROM Drive	Access Times	Random	< 140 ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X-DVD	Up to 3,600 KB/s Up to 10,800 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	8.5GB	
	Transport	Tray Loading	



## Technical Specifications

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	< 150ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD 24X CD-R 16X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 4X - DVD+R Dual Layer 4X - DVD-R Dual Layer 5X DVD-RAM	Up to 3,600 KB/s Up to 10,800 KB/s Up to 3,600 KB/s Up to 2,400 KB/s Up to 10,800 KB/s Up to 10,800 KB/s Up to 10,800 KB/s Up to 8100KB/s Up to 5,400 KB/s Up to 5,400 KB/s Up to 6,750 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	<190 ms CD-ROM (typical) < 190ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD-ROM 16X CD-R 10X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 4X - DVD+R Dual Layer 4X - DVD-R Dual Layer 5X DVD-RAM 4X BD-ROM	Up to 3600KB/s Up to 10800 KB/s Up to 1,200KB/s Up to 1500 KB/s Up to 10800 KB/s Up to 10,800KB/s Up to 10800 KB/s Up to 8,100 KB/s Up to 5400 KB/s Up to 6750 KB/s Up to 18,000KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	



## Technical Specifications

Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE
Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe
Max Media Capacity (read)	50.0 GB
Max Media Capacity (write)	8.5GB
Transport	Tray Loading

## Security

HP Fingerprint Sensor (optional)	Mobile Voltage Operati 3.0V-3.6V Single Supply
	Operating Temperature 32° – 158°F (0° – 70°C)
	Current Consumption @ 3.3V Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture Up to 240 image frames /sec
	ESD Resistance IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix 192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

## Audio

Hardware	Implementation	IDT 92HD75B High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

## Technical Specifications

Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit

Integrated Stereo Speakers	Power Rating	1.5 Watts
	Impedance	4 Ohms

## Communications

Integrated Realtek RTL8151DH-GR 10/100/1000 NIC	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Large send offload and Giant send offload Receiving Side Scaling
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	Interface	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ
	NIC Device Driver Name	Realtek PCIe Gb Ethernet Family Controller

## Technical Specifications

V.92 56K Data/Fax Modem	Form Factor	MDC 1.5 Daughtercard
	Power Management Support	APM Revision 1.2, ACPI
	Approvals/Certifications	UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries
	Data Mode Capabilities	V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) Optional symbol rates: 2800, 3429 Asymmetric Symbol rates Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J
	Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
	Command Set	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

## Technical Specifications

HP un2420 EV-DO/HSPA Mobile Broadband Module	Technology/Operating Bands	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 900MHz (UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot operation, coding schemes CS1 – CS4 and MSC1 – MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) – 7.2 Mbps (Download ), 2.0 Mbps (Upload) CDMA (EVDO Release A) – 3.1 Mbps (Download), 1.8 Mbps (Upload)
	GPS	Standalone GPS enabled
	GPS Bands	L1 – 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+/-1) CDMA: 24dBm (+/-1)
	Maximum Power Consumption	2500mA (peak); 1000mA (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 10%
	Temperature, Operating (from TIA/EIA/IS-98-D)	22° to 140° F (–30° to 60° C) (full RF performance) –22° to 167° F (–30° to 75° C) (reduced RF performance)
	Temperature, Non- operating, 96 hours (from MIL-STD 202 Method 108)	–40° to 185° F (–40° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager
	LED Activity	LED Off – Radio Off; Solid LED On – Radio On

Broadcom 4313GN 802.11b/a/n	Wireless LAN Standards	IEEE 802.11b IEEE 802.11a
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## Technical Specifications

WiFi Adapter	IEEE 802.11n	
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Win7, Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )	
Frequency Band	2.4 GHz	
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 7.2, 13, 14.4, 19.5, 21.7, 26, 28.9, 39, 43.3, 52, 57.8, 58.5, 65, 72.2Mbps	
Frequency Support	20 MHz: 2.4 GHz bands	
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM	
Security <sup>1</sup>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture	Ad-hoc (Peer to Peer)	
Models	Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power (for CCK) <sup>2</sup>	17 dBm , nominal	
Output Power (for OFDM)	5 dBm , nominal power varies by data rate <sup>2</sup>	
Power Consumption	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 425 mW avg Transmit/Receive 20 MHz channel: 5.5 W (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity <sup>3</sup>	72.2 Mbps: -71 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, usually mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)

## Technical Specifications

Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	
	<ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).</li> <li>4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista and Win7.</li> </ol>	

Broadcom 4312G 802.11b/g WiFi Adapter	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )
	Frequency Band	2.4 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	Security <sup>1</sup>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture	Ad-hoc (Peer to Peer)
	Models	Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK) <sup>2</sup>	17 dBm , nominal
	Output Power (for OFDM) <sup>2</sup>	5 dBm , nominal power varies by data rate <sup>2</sup>
	Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity <sup>3</sup>	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm	

## Technical Specifications

Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	
	<ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).</li> <li>4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.</li> </ol>	

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HP Integrated Module with Bluetooth 2.1+EDR Wireless Technology	Bluetooth Specification 2.1+EDR Compliant
	Dimensions 1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)
	Frequency Band 2402 to 2480 MHz
	Number of Available Channels 79 (1 MHz) available channels
	Data Rates and Throughput 3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	Transmit Power -6 dBm to 4 dBm (Bluetooth Class II)
	Receiver Sensitivity Better than -80 dBm at 0.1 % raw bit error rate
	Power Consumption Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
	Antenna Internally integrated within module
	Range Up 33 ft (10 m)
	Electrical Interface USB 2.0 compliant Microsoft Windows Plug and Play compliant
	Bluetooth Software Supported Broadcom Bluetooth for Windows Microsoft Windows Bluetooth Software
	Link Topology Point to Point, Multipoint Pico Nets up to 7 slaves
	Security Full support of Bluetooth Security Provisions



## Technical Specifications

Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Temperature	Operating -4° to 158° F (-20° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% Non-operating 5% to 95%
Altitude	Operating 15,000 ft (4,572 m) Non-operating 40,000 ft (12,192 m)
Bluetooth Profiles Supported	Serial Port Profile (SPP) <sup>1</sup> Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) <sup>1,2</sup> Generic Object Exchange Profile (GOEP) <sup>1,2</sup> Object Push Profile (OPP) <sup>1,2</sup> File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP) <sup>1,2</sup> Personal Area Networking Profile (PAN) <sup>1,2</sup> Human Interface Device Profile (HID) <sup>1,2,3</sup> FAX Profile (FAX) Basic Imaging Profile (BIP) <sup>2</sup> Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

1. indicates the profile is supported by Microsoft Windows XP SP2

2. indicates the profile is part of Windows Vista

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