

Overview

HP ProBook 440 G5 Notebook PC



Front

- | | |
|-----------------------|---|
| 1. Microphones (2) | 7. SD Card reader |
| 2. Webcam | 8. Headphone/microphone combo jack |
| 3. Webcam light | 9. USB 3.1 Gen 1 (power port) |
| 4. Fingerprint reader | 10. Power button |
| 5. Clickpad | 11. Security lock slot (Lock sold separately) |
| 6. Hard drive LED | |



Overview



Rear

1. Power connector
2. Ethernet port (RJ-R45)
3. External VGA monitor port
4. HDMI port (Cable not included.)
5. USB 3.1 Gen 1
6. USB Type-C™ port

Overview

At a Glance

1. Preinstalled with Windows 10 versions or FreeDOS 2.0
2. Choice of Intel® Core™ processors
3. Full size HP Premium Keyboard, spill-resistant keyboard with a thin layer of mylar film to prevent minor spills
4. Function keys provide control of features including: standby mode, display brightness, external display, microphone mute, volume down, volume up, and backlight toggle for backlit keyboard (Select models only.)
5. Large Clickpad with gestures support
6. Enhanced security features with preinstalled software and hardware options
7. Optional HD webcam with dual-microphone array for video conferencing ¹
8. HDMI port for connecting to high-resolution displays
9. Choice of displays
 - 35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch; 220 cd/m²; 45% sRGB (1920 x 1080),
 - 35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch; 220 cd/m²; 45% sRGB (1366 x 768)
 - 35.56 cm (14") diagonal HD SVA LED-backlit touch; 220 cd/m²; 45% sRGB (1366 x 768)
10. Flexible wireless connectivity options
11. Battery life up to 16 hours and 15 minutes ((i3, HD with SSD)
12. HP 3-cell, 48 WHr Li-ion battery
13. Passed MIL-STD testing ²
 1. Sold separately or as an optional feature.
 2. MIL-STD-810G testing is not intended to demonstrate fitness of U.S. Department of Defense (DoD) contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.

NOTE: See important legal disclosures for all listed specs in their respective features sections.



Technical Specifications

PRODUCT NAMES

HP ProBook 440 G5 Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 10 Pro 64 ¹
Windows 10 Pro 64 (National Academic License) ^{1,2}
Windows 10 Home 64 ¹
Windows 10 Home Single Language 64 ¹
Windows 10 Home 64 (National Academic License) ^{1,2}
FreeDOS 2.0

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>.

2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information.

PROCESSORS

Pentium 4415U Intel HD graphics (2.3GHz, 2MB L3 Cache 15W)

Intel® Core™ i7-8550U Intel® UHD graphics 620 (1.8 GHz, up to 4.0 GHz with Intel® Turbo Boost Technology 2.0, 8 MB cache, 4 cores) ^{3,4,5}

Intel® Core™ i7-7500U with Intel® HD Graphics 620 (2.7 GHz, up to 3.5 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores) ^{3,4,5}

Intel® Core™ i5-8350U Intel® UHD Graphics 620 (1.7 GHz, up to 3.6 GHz with Intel® Turbo Boost Technology 2.0, 6 MB cache, 4 cores)

Intel® Core™ i5-8250U Intel® UHD Graphics 620 (1.6 GHz, up to 3.4 GHz with Intel® Turbo Boost Technology 2.0, 6 MB cache, 4 cores) ^{3,4,5}

Intel® Core™ i3-8130U Intel® UHD Graphics 620 (2.2 GHz, up to 3.4 GHz with Intel® Turbo Boost Technology 2.0, 4 MB cache, 2 cores)

Intel® Core™ i5-7200U with Intel® HD Graphics 620 (2.5 GHz, up to 3.1 GHz with Intel® Turbo Boost Technology 2.0, 3 MB cache, 2 cores)

Intel® Core™ i3-7100U with Intel® HD Graphics 620 (2.4 GHz, 3 MB cache, 2 cores) ^{3,4,5}

Intel® Core™ i3-7130U with Intel® HD Graphics 620 (2.7 GHz, 3 MB cache, 2 cores) (Available in LA Only)

Intel® Core™ i3-7020U with Intel® HD Graphics 620 (2.3 GHz, 3 MB L3 cache 15W)

Intel® Core™ i3-6006U with Intel® HD Graphics 520 (2 GHz, 3 MB cache, 2 cores) ^{3,4}

Intel® Celeron® 3865U with Intel® HD Graphics (1.8 GHz, 2 MB cache, 2 cores) ^{3,4,5}



Technical Specifications

Intel® Pentium® 4415U with Intel® HD Graphics (2.3 GHz, 2 MB cache, 2 cores)

Processors Family

Intel® Pentium Dual-Core™ processor (Pentium 4415U model)
8th Generation Intel® Core™ i7 processor (i7-8550U model) ⁵
8th Generation Intel® Core™ i5 processor (i5-8350U model)
8th Generation Intel® Core™ i5 processor (i5-8250U model) ⁵
8th Generation Intel® Core™ i3 processor (i3-8130U model)
7th Generation Intel® Core™ i5 processor (i5-7200U model)
7th Generation Intel® Core™ i3 processor (i3-7100U, i3-7020U model) ⁵
7th Generation Intel® Core™ i3 processor (i3-6006U model)
7th Generation Intel® Core™ i7 processor (i7-7500U model)
Intel® Celeron® processor (3865U is Windows 10 only) ⁵
Intel® Pentium® processor (4415U model)

3. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
5. **NOTE:** In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

CHIPSET

Integrated with processor

GRAPHICS

Integrated

Intel® UHD graphics 620 ⁶
Intel® HD graphics 620 ⁶
Intel® HD graphics 520 ⁶
Intel® HD graphics ⁶

Note: View processor section for details.

Discrete

NVIDIA® GeForce® 930MX (2 GB DDR3 dedicated, switchable) ⁷

Supports

Support HD decode, DX12, HDMI 1.4b

6. HD content required to view HD images.
7. NVIDIA® technology requires an Intel® processor, plus an NVIDIA® GeForce® discrete graphics configuration and is available on Windows 10 Professional OS. With NVIDIA® Optimus™ technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).



Technical Specifications

DISPLAYS

Internal

eDP FHD Flat

35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch, 220 cd/m², 45% sRGB (1920 x 1080) ^{6,8}

eDP HD Flat

35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch, 220 cd/m², 45% sRGB (1366 x 768) ^{6,8}

35.56 cm (14") diagonal HD SVA LED-backlit touch, 220 cd/m², 45% sRGB (1366 x 768) ^{6,8}

Display Size

14"

35.56 cm (14")

6. HD content required to view HD images.

8. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Docking station model	Total number of supported displays (incl. the notebook display)	Max. resolutions supported	Dock Connect3ors	Technical limitations
HP UltraSlim Docking Station	3	Dual 2.5K @ 60Hz	2xDP, 1xVGA	Dual 2.5k only with both displays into DP
HP Thunderbolt Dock 120W G2	3	Dual 4k @60Hz	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	Dual 4k only with one display in to DP and + TB port or USB-C alt mode + TB port
HP USB-C Dock G4	3	Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440)	1xHDMI, 2xDP	
HP USB-C Universal Dock	3	Dual 4K @ 60Hz Single 5K @ 60Hz	2xDP	
HP USB-C Travel Dock	2	Single 2K @ 60Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time
HP USB-C Mini Dock	2	Single 4K @ 30Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time

STORAGE AND DRIVES

Hard Drives

500 GB SATA (7200 rpm) ⁹

500 GB (8 GB cache) SATA SSHD (5400 rpm) ⁹

1 TB SATA (5400 rpm) ⁹

Primary M.2 Storage

128 GB M.2 SATA TLC SSD⁹



Technical Specifications

256 GB M.2 PCIe NVMe Value SSD⁹
512 GB M.2 PCIe NVMe TLC SSD⁹
16 GB Intel® Optane™ Memory

Note: PCIe SSD not available for Celeron

9. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

MEMORY

16 GB DDR4-2400 SDRAM (1 x 16 GB) (Brazil Only)¹⁰
16 GB DDR4-2400 SDRAM (2 x 8 GB)¹⁰
12 GB DDR4-2400 SDRAM (4 and 8 GB)¹⁰
8 GB DDR4-2400 SDRAM (1 x 8 GB)¹⁰
8 GB DDR4-2400 SDRAM (2 x 4 GB)¹⁰
4 GB DDR4-2400 SDRAM (1 x 4 GB)¹⁰

Maximum

32 GB DDR4-2400 SDRAM¹⁰

Memory Slots

2 SODIMM

Both slots are customer accessible / upgradeable

DDR4 PC4 SODIMMS, system runs at 2133 (Intel 8th Gen CPU runs at 2400)

Supports Dual Channel Memory

10. 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.

NETWORKING/COMMUNICATIONS

Wireless LAN (WLAN)

Realtek 802.11ac (1x1) WiFi and Bluetooth® 4.2 Combo¹¹

Realtek 802.11ac (2x2) WiFi and Bluetooth® 4.2 Combo¹¹

Intel® Dual Band Wireless-AC 3168 802.11 a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo (non-vPro™)¹¹

Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo (non-vPro™)¹¹

Broadband Wireless (WWAN)

HP lt4132 LTE/HSPA+ 4G Mobile Broadband¹²

HP lt4210 LTE/HSPA+ 4G Mobile Broadband¹²

Ethernet

Realtek RTL8111HSH Gigabit Ethernet

11. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.



Technical Specifications

12. WWAN module requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

AUDIO/MULTIMEDIA

Audio

2 Integrated stereo speakers
Integrated dual array microphone

Webcam

HD webcam ^{6,13}
HD IR webcam ^{6,13}

- 6. HD content required to view HD images.
- 13. Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Premium Keyboard
Full-sized island-style, spill resistant

Pointing Device

Clickpad with multi-touch gesture support image sensor, taps enabled as default

Gestures

Enabled by default Win 10

2 Finger Scrolling
2 Finger Zoom (Pinch)
OSD (enable/disable)
3 finger tap = Cortana
3 finger flick = App switch
4 finger tap = Action Center

Disabled by default Win 10

3 Finger Flick
2 Finger Rotate
Momentum Motion
1 Finger Vertical Scroll

Function Keys

ESC: system information
F1 - Display Switching
F2 - Blank
F3 - Brightness Down
F4 - Brightness Up
F5 - Speaker Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Backlight Toggle (for backlit keyboard) or Blank



Technical Specifications

F10 - NumLock
F11 - Wifi Toggle
F12 - Sleep

Hidden Functions

Fn+R = Break
Fn+S = Sys Rq
Fn+C = Scroll Lock

SOFTWARE AND SECURITY

BIOS

HP BIOSphere Gen4 ¹⁴
HP DriveLock & Automatic DriveLock
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase¹⁵
Absolute Persistence Module¹⁶
Pre-boot Authentication

Software

HP Native Miracast Support ¹⁷
HP LAN-Wireless Protection
HP Wireless Wakeup
HP Connection Optimizer
HP 3D DriveGuard 6
HP ePrint + JetAdvantage ¹⁸
HP Hotkey Support
HP Recovery Manager
HP Jumpstart
HP Support Assistant ¹⁹
HP Noise Cancellation Software
Buy Office
Bing Search

Manageability Features

HP Driver Packs ²⁰
HP System Software Manager
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Management Integration Kit for Microsoft System Center Configuration Manager ²¹
LANDESK Management ²²



Technical Specifications

Client Security Software

HP Client Security Suite Gen3 ²³ including:

HP Security Manager (including Credential Manager and Password Manager)

HP DriveLock

HP Fingerprint Sensor

HP Password Manager ²⁴

Microsoft Defender ²⁵

TPM 2.0

14. HP BIOSphere Gen4 requires Intel® 7th or 8th Generation processors.
15. Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher.
16. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
17. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>
18. HP ePrint Drive requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter). Print times and connection speeds may vary.
19. HP Support Assistant requires Windows and Internet access.
20. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
21. HP Management Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.
22. LANDESK Management subscription required.
23. HP Client Security Suite Gen3 requires Windows and Intel® or AMD 7th or 8th Generation processors.
24. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
25. Microsoft Defender Opt in and internet connection required for updates.

POWER

Power Supply



Technical Specifications

45 W HP Smart AC adapter ²⁶
45 W HP Smart AC adapter 2-prong (Japan only) ²⁶
65 W HP Smart AC adapter ²⁶
65 W EM Smart AC adapter ²⁶

Primary Battery

HP 3-cell, Long Life 48 WHr Li-ion ²⁷

Power Cord

2-wire plug - 1m (2-prong Japan only) ²⁶
3-wire plug - 1m ²⁶
3-wire plug - 1.8m ²⁶

Battery life

Up to 16 hours and 15minutes (i3, HD with SSD) ²⁸
Up to 15 hours (i5 quad core, HD with SSD) ²⁸

26. Availability may vary by country.

27. Battery is internal and not replaceable by customer. Serviceable by warranty.

28. Windows 10 MM14 battery life will vary depending on various factors including 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 www.bapco.com for additional details.

WEIGHTS & DIMENSIONS

Weight

Starting at 3.6 lb ²⁹
Starting at 1.63 kg ²⁹

Dimensions (w x d x h)

Non-touch

13.23 x 9.37 x 0.79 in
33.6 x 23.8 x 2 cm

Touch

13.23 x 9.37 x 0.85 in
33.6 x 23.8 x 2.15 cm

29. Weight will vary by configuration.

PORTS/SLOTS

1 USB 3.1 Type-C™
2 USB 3.1 Gen 1 (1 powered port)
1 HDMI 1.4b ³⁰
1 VGA
1 RJ-45
1 AC power
1 headphone/microphone combo jack

Expansion Slots

1 multi-format digital media reader



Technical Specifications

Supports SD, SDHC, SDXC.

30. HDMI cable sold separately.

ENVIRONMENTAL & INDUSTRY

Environmental Data	Eco-Label Certifications & declarations	<p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • US Federal Energy Management Program (FEMP) • EPEAT[®] Gold registered in the United States. See http://www.epeat.net for registration status in your country. Search keyword <i>generator</i> on HP's 3rd party option store for solar energy accessory at http://www.hp.com/go/options. 		
	System Configuration	<p>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".</p>		
	Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)		8.04 W	8.08 W	7.98 W
Normal Operation (Long idle)		3.5 W	3.64 W	3.54 W
Sleep		0.73 W	0.76 W	0.72 W
Off		0.4 W	0.44 W	0.4 W
		<p>Note: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>		
	Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)		27 BTU/hr	28 BTU/hr	27 BTU/hr
Normal Operation (Long idle)		12 BTU/hr	12 BTU/hr	12 BTU/hr
Sleep		2 BTU/hr	3 BTU/hr	2 BTU/hr
Off		1 BTU/hr	1 BTU/hr	1 BTU/hr
		<p>*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>		
Declared Noise Emissions		Sound Power (L _{WAd} , bels)		Sound Pressure (L _{pAm} , decibels)



Technical Specifications

	(in accordance with ISO 7779 and ISO 9296)			
	Typically Configured – Idle	2.5	15	
	Fixed Disk – Random writes	2.5	14	
	Longevity and Upgrading	<p>This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:</p> <ul style="list-style-type: none"> • 3 USB ports • 1 PC card slot (type I/II) • 1 ExpressCard/54 slot • 1 IEEE 1394 Port • 2 SODIMM memory slots • Optional expansion base docking station • 1 multi-bay II storage port • Interchangeable HDD?? <p>Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.</p>		
	Batteries	<p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery description: CR2032 (coin cell) Battery type: Lithium Battery description: 3-cell high capacity Lithium-Ion battery Battery type:</p>		
	Additional Information	<ul style="list-style-type: none"> • This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • This product is in compliance with the IEEE 1680 (EPEAT) standard at the <Gold> level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 0.0% post-consumer recycled plastic (by wt.) • This product is 93.4% recycle-able when properly disposed of at end of life. 		
	Packaging Materials	External:	PAPER/Paperboard	320 g
		Internal:	PLASTIC/Polyethylene Expanded - EPE	48 g
			PLASTIC/Polyethylene low density - LDPE	8 g
			The plastic packaging material contains at least 0.0% recycled content.	
		The corrugated paper packaging materials contains at least 80% recycled content.		



Technical Specifications

	<p>Material Usage</p>	<p>This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf):</p> <ul style="list-style-type: none"> • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
	<p>Packaging Usage</p>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	<p>End-of-life Management and Recycling</p>	<p>Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard</p>



Technical Specifications

		<p>web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
	<p>HP, Inc. Corporate Environmental Information</p>	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</p> <p>Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</p> <p>ISO 14001 certificates: http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842</p> <p>http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</p>

SERVICE AND SUPPORT

3 year and 1 year limited warranties and 90-day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited 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/cpc> ³¹

31. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage	19V
Average Operating Power	Win 10
Integrated graphics	5.71W
Discrete Graphics	6.78W
Max Operating Power	Discrete < 65W UMA < 45W



Technical Specifications

Temperature

Operating 32° to 95° F (0° to 35° C)

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 40 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)

Planned Industry Standard Certifications

UL Yes

CSA Yes

FCC Compliance Yes

ENERGY STAR 7.0® Selected models³⁴

EPEAT Registered Gold in United States³²

ICES Yes

Australia / Yes

NZ A-Tick Compliance Yes

CCC Yes

Japan VCCI Compliance Yes

KC Yes

BSMI Yes

CE Marking Compliance Yes

BNCI or BELUS Yes

CIT Yes

GOST Yes

Saudi Arabian Compliance (ICCP) Yes

SABS Yes

UKRSERTCOMPUTER Yes



Technical Specifications

32. EPEAT® registered where applicable. EPEAT registration varies by country. See <http://www.epeat.net> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at www.hp.com/go/options.

34. Configurations of the HP ProBook 440 G4 is ENERGY STAR® qualified are identified as HP ProBook 440 G4 ENERGY STAR on HP websites and on <http://www.energystar.gov>.

DISPLAYS

Note: All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

14" diagonal FHD UWVA anti-glare flat LED backlit non-touch; 220 cd/m²; 45% sRGB (1920 x 1080)	Outline Dimensions (W x H)	320.9x205.6 (max)
	Active Area	309.31 x 173.99
	Weight	290 max.
	Diagonal Size	14 (inch)
	Thickness	3.0mm max
	Interface	eDP 1.2
	LCD Mode	IPS
	PPI	
	Surface Treatment	Anti-Glare (AG)
	Touch Enabled	None
	Contrast Ratio	600:1 (typ) - AG
	Refresh Rate	60Hz
	Brightness	220 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB
Backlight	LED	
Color Gamut Coverage	45%	
Color Depth	6 bits + Hi FRC	
Viewing Angle	UWVA 85/85/85/85	

14" diagonal HD SVA anti-glare LED-backlit non-touch; 220 cd/m²; 45% sRGB (1366 x 768)	Outline Dimensions (W x H)	320.9 x 205.6 (mm) max
	Active Area	309.40 x 173.95 (mm)
	Weight	290 g max
	Diagonal Size	14 (inch)
	Thickness	3.0 (mm) max
	Interface	eDP 1.2
	LCD Mode	TN
	PPI	
	Surface Treatment	Anti-Glare (AG)



Technical Specifications

Touch Enabled	None
Contrast Ratio	300:1 (typical)
Refresh Rate	60 Hz
Brightness	220 nits
Pixel Resolution	1366 x 768 (HD)
Format	RGB
Backlight	LED
Color Gamut Coverage	45%
Color Depth	6 bits + Hi FRC
Viewing Angle	SVA 40/40/15/30

14" diagonal HD SVA LED-backlit touch; 220 cd/m²; 45% sRGB (1366 x 768)

Outline Dimensions (W x H x D)	320.9 x 205.6 (mm) max
Active Area	309.40 x 173.95 (mm)
Weight	290 g max
Diagonal Size	14 (inch)
Thickness	3.0 (mm) max
Interface	eDP 1.2
LCD Mode	TN
PPI	
Surface Treatment	
Touch Enabled	Yes
Contrast Ratio	300:1 (typical)
Refresh Rate	60 Hz
Brightness	220 nits
Pixel Resolution	1366 x 768 (HD)
Format	RGB
Backlight	LED
Color Gamut Coverage	45%
Color Depth	6 bits + Hi FRC
Viewing Angle	SVA 40/40/15/30

STORAGE AND DRIVES

HARD DRIVES

500 GB 7200 rpm SATA Hard Drive	Drive Weight	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Rotation Speed	5400 rpm
	Cache Buffer	Up to 16MB
	NAND Type/Size	0.28 in (7 mm)
	Height	2.75 in (69.85 mm)



Technical Specifications

Width	ATA-8, SATA 3.0
Interface	600 MB/s
Transfer Rate	0.01 lb (6 g) ~ 0.02 lb (10 g)
Seek Time	
Single Track	1.5 ~ 2 ms
Average	11 ~ 13 ms
Maximum	18 ~ 22 ms
Logical Blocks	976,773,168
Operating Temperature	976,773,168
Security Features	32° to 158°F (0° to 70°C) [ambient temp]
Other Features	ATA Security, NCQ

500 GB* 5400 rpm SMART SATA Hybrid HDD/SSHD

Drive Weight	0.20 lbs (92 g) ~ 0.21 lbs (95 g)
Rotation Speed	5400 rpm
Cache Buffer	64 MB
NAND Type/Size	TLC/8GB
Height	0.28 in (7 mm)
Width	2.75 in (69.85 mm)
Interface	ATA-8, SATA 3.0
Interface Transfer Rate	600 MB/s
Seek Time	
Single Track	2 ~ 1.5 ms;
Average	11 ~ 13 ms
Maximum	18 ~ 22 ms
Logical Blocks	976,773,168
Operating Temperature	976,773,168
Security Features	32° to 158°F (0° to 70°C) [ambient temp]
Other Features	ATA Security, NCQ

500 GB* 5400 rpm SMART SATA Hybrid HDD/SSHD

Drive Weight	0.20 lbs (92 g) ~ 0.21 lbs (95 g)
Rotation Speed	5400 rpm
Cache Buffer	64 MB
NAND Type/Size	TLC/8GB
Height	0.28 in (7 mm)
Width	2.75 in (69.85 mm)
Interface	ATA-8, SATA 3.0
Interface Transfer Rate	600 MB/s
Seek Time	
Single Track	2 ~ 1.5 ms;
Average	11 ~ 13 ms
Maximum	18 ~ 22 ms



Technical Specifications

Logical Blocks	976,773,168
Operating Temperature	976,773,168
Security Features	32° to 158°F (0° to 70°C) [ambient temp]
Other Features	ATA Security, NCQ

1TB* 5400 rpm 7mm SATA Hard Drive

Drive Weight	0.21 lbs (94 g)
Rotation Speed	5400 rpm
Cache Buffer	Up to 32 MB
NAND Type/Size	N/A
Height	0.28 in (7.2 mm)
Width	2.75 in (69.85 mm)
Interface	ATA-8, SATA 3.0
Interface Transfer Rate	600 MB/s
Seek Time	
Single Track	Single Track 2 ms
Average	Average 12 ~ 13 ms
Maximum	Maximum 18 ~ 22 ms
Logical Blocks	1,953,525,168
Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]
Security Features	ATA Security
Other Features	S.M.A.R.T., NCQ, Ultra DMA

SOLID STATE DRIVES

128GB 2280 M2 SATA-3 TLC Solid State Drive

Form Factor	M.2 2280
Capacity	128 GB
NAND Type	TLC
Height	0.09 in (2.3 mm)
Width	0.87 in (22 mm)
Weight	0.02 lb (10 g)
Interface	ATA-8, SATA 3.0
Maximum Sequential Read	Up To 520 MB/s
Maximum Sequential Write	Up To 450 MB/s
Logical Blocks	250,069,680
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	DIPM; TRIM; DEVSLP

256GB 2280 M2 SATA-3 Value Solid State Drive

Form Factor	M.2 2280
Capacity	256 GB
NAND Type	TLC



Technical Specifications

Height	0.09 in (2.3 mm)
Width	0.87 in (22 mm)
Weight	0.02 lb (10 g)
Interface	PCIe NVMe Gen3
Maximum Sequential Read	Up To 1700 MB/s
Maximum Sequential Write	Up To 600 MB/s
Logical Blocks	500,118,192
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	"TRIM; L1.2

512GB 2280 M2 PCIe NVMe TLC Solid State Drive	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3
	Maximum Sequential Read	Up To 2600 MB/s
	Maximum Sequential Write	Up To 1400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

NETWORKING/COMMUNICATIONS

WWAN

HP It4132 LTE/HSPA+ 4G Mobile Broadband Module¹	Technology/Operating bands	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3) MHz, 850 (Band 5), 2600 (Band 7), 900 (Band 8) MHz, 800 (Band 20), 700 (Band 28) MHz. HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz
	Wireless protocol standards	3GPP Release 10 LTE Specification CAT.4, 20MHz BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
	Maximum data rates	LTE: 150 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)
	Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm



Technical Specifications

	E-GPRS 1900/1800: 26 dBm E-GPRS 900/850: 27 dBm GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,600 mA (peak); 500 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

1. Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

HP lt4210 LTEHSPA+ 4G Mobile Broadband Module¹	Technology/Operating bands	FDD LTE: LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12), 700 (Band 13) 700 (Band 17), 850 (Band 18), 850 (Band 19), 800 (Band 20), 1450 (Band 21), 850 (Band 26) 700 (Band 28) MHz, 700 (Band 29), 2300 (Band 30), 2100 (Band 66) MHz TDD LTE: 2600 (Band 38), 1900 (Band 39), 2300 (Band 40), 2500 (Band 41) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 900 (Band 8) MHz
	Wireless protocol standards	3GPP Release 11 LTE Specification CAT.9, MAX 60MHz aggregation BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS bands	GPS 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 ± 2.046 MHz
	Maximum data rates	LTE: 450 Mbps (DL 3CA), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
	Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm
	Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
	Form Factor	M.2, 3042-S3 Key B
	Weight	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

1. Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.



Technical Specifications

POWER

HP 45W Smart AC Adapter	Dimensions (H x W x D)	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)	
	Weight	0.386 lb (175g) max	
	Input		90 to 265 VAC
		Input Efficiency	87.74% at 115Vac and 88.4% at 230Vac
	Output	Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC
		Output power	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8.0A
		Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5,000 m)
Humidity		20% to 95%	
Storage Humidity		10% to 95%	
EMI and Safety Certifications	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 200,000 hours at 25°C ambient condition.</p>		

HP 65W AC Adapter	Dimensions	4.25 x 1.85 x 1.47 in (10.8 x 4.7 x 3.74 cm)	
	Weight	1.81 lb (250g) max	
	Input		100 to 240 VAC
		Input Efficiency	88% min at 115 VAC and 89% min at 230 VAC
	Output	Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
		Output power	65W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
		Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)



Technical Specifications

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.

HP 3-cell, Long Life 48 WHr Li-ion

Dimensions (H x W x L)

7.0. x180.48x88.95 mm
(0.273 x 7.09 x 3.49 inch)

Weight

0.22 kg (0.48lb)

Cells/Type

3cell Lithium-Ion

Energy

Voltage 11.4V/ 10.95V

Amp-hour capacity 4.212Ah /4.385Ah

Watt-hour capacity 48Wh

Temperature

Operating (Charging) 32° to 113° F (0° to 45° C)

Operating (Discharging) 14° to 122° F (-10° to 60° C)

Non-operating -4° to 122° F (-20° to 60° C)

Battery Re-Charge Time

System in OFF or Standby Mode <3 hours

Fuel Gauge LED

No

Warranty

3-years¹

Optional Travel Battery Available

No

1. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform.

Country of Origin

China



Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part Number
Cases	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack	H1D24AA
	HP Essential Messenger Case	H1D25AA
Dockings	HP USB-C Dock G4	3FF69AA
	HP USB-C Mini Dock	1PM64AA
	HP 3005pr USB3 Port Replicator	Y4H06AA
	HP Thunderbolt Dock 120W G2	2UK37AA
	HP USB-C Travel Dock	TOK29AA
	HP USB Travel Dock	TOK30AA
	HP Elite USB-C Dock G3	2DW60AA
	HP USB-C Mini Dock	1PM64AA
HP USB-C Universal Dock	1MK33AA	
Input/Output	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP HDMI to DVI Adapter	F5A28AA
	HP USB-C to DP	N9K78AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP Stereo 3.5mm Headset	T1A66AA
HP Stereo USB Headset	T1A67AA	
Memory	HP 4GB 2400MHz DDR4 Memory	Z4Y84AA
	HP 8GB 2400MHz DDR4 Memory	Z4Y85AA
	HP 16GB 2400MHz DDR4 Memory	Z4Y86AA
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP 45W USB-C Power Adapter	1HE07AA
	HP 65W USB-C Power Adapter	1HE08AA
	HP Power Bank	N9F71AA
	HP USB-C Notebook Power Bank	1TZ86AA
	HP Notebook Power Bank	N9F71AA
Storage	HP External USB Optical Drive	F2B56AA
	HP 500GB 7200rpm HDD	F3B97AA
	HP External Portable USB3.0 HDD	K6A93AA



Options and Accessories (sold separately and availability may vary by country)

	HP 256GB Value 2280 M.2 SATA3 SSD	1DE47AA
	HP 512GB TLC PCI-e 3x4 NVMe M.2 SSD	1FU88AA
Security	HP Essential Combination Lock	TOY16AA
	HP Combination Lock	TOY15AA
	HP Keyed Cable lock	TOY14AA
	HP Keyed Cable Lock 10mm	T1A62AA
UCC	HP Conferencing Keyboard	K8P74AA
	HP USB Collaboration Keyboard	Z9N38AA
	HP Wireless Collaboration Keyboard	Z9N39AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
	HP UC Speaker Phone	K7V16AA
	HP UC Wired Headset	K7V17AA
Displays	HP EliteDisplay S140u USB Portable Monitor	G8R65AA
	HP ProDisplay P240VA 23.8-inch Monitor	N3H14AA
	HP ProDisplay P232 23-inch Monitor	K7X31AA
	HP ProDisplay P223 21.5-inch Monitor	X7R61AA
	HP EliteDisplay E230t 23-inch Touch Monitor	W2Z50AA
	HP EliteDisplay E240c 23.8-inch Collaboration Monitor	M1P00A8



Summary of Changes

Date of change:	Version History:		Description of change:
August 22, 2017	From V1 to V2	Update	Change battery life TBD
September 7, 2017	From v2 to v3	Update	Change battery life to current
October 6, 2017	From v3 to v4	Update	TPM 2.0 added to Client Security Software section
December 20, 2017	From v4 to v5	Update	HP Elite USB-C Dock removed from options
December 21, 2017	From v5 to v6	Update	Backlit keyboard available as an option
February 13, 2018	From v6 to v7	Update	Anti-glare (AG) removed from touch panel in Displays section
February 22, 2018	From v7 to v8	Update	HP Elite USB-C Docking Station (X7W54AA) removed from options section
April 5, 2018	From V8 to V9	Update	Processors added to Processors and processors family Dockings updated in options section
April 18, 2018	From V9 to V10	Update	At a glance section part 13
May 4, 2018	From V10 to V11	Update	Environmental
May 24, 2018	From V11 to V12	Update	Processor section updated
May 29, 2018	From V12 to V13	Update	Warranty
June 4, 2018	From V13 to V14	Update	Processors section
July 6, 2018	From V14 to V15	Update	Energy star, Hard drives
August 15, 2018	From V15 to V16	Update	Software Velocity and change the first image
September 5, 2018	From V16 to V17	Update	Processors and Docking section
October 2, 2018	From V17 to V18	Update	Certification
January 7, 2019	From V18 to V19	Updated	Storage and Drives Section
January 30, 2019	From V19 to V20	Removed	Processors
January 31, 2019	From V20 to V21	Added	Processors Section
March 21, 2019	From V21 to V22	Added	Processors
April 2, 2019	From V22 to V23	Added	Memory

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