

HP Z VR Backpack

Frequently asked questions



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General

What is the HP Z VR Backpack?

The HP Z VR Backpack is a versatile professional VR Ready wearable PC solution from HP. It includes the VR PC unit, a wearable ergonomic harness, a battery system located on the harness, and a docking station for desktop use.

What modes does the HP Z VR Backpack work in?

The HP Z VR Backpack can be used in two ways:

- As a wearable backpack to facilitate truly immersive VR experiences without being limited by a cable to a deskside PC.
- As a powerful desktop workstation simply by removing the PC from the harness and docking it into the included desktop docking station solution.

What does untethered mean?

In VR applications, untethered refers to VR solutions that do not use a physical cable for the VR headset to the deskside or desktop computer system. The HP Z VR Backpack is an example of an untethered system.

How does the HP Z VR Backpack fit into the HP Z Workstation family line-up?

The HP Z Workstation portfolio contains a strong VR Ready line-up including select configurations on both desktop workstations, including the HP Z240, Z440, Z640, and Z840, and the HP ZBook 17 G4 Mobile Workstation. It also now includes the HP Z VR Backpack wearable PC form factor. This line-up can address the entire VR workflow from 3D model design and engineering, to VR content creation on popular game engine platforms, to deployment of VR assets in the enterprise or in retail environments for user consumption.

Where does the HP Z VR Backpack fit into the overall HP VR family?

HP has a rich personal systems portfolio spanning gaming platforms to world leading commercial platforms and workstation platforms. The HP Z VR Backpack is a professional solution geared for enterprise and business environments. It serves the commercial and workstation markets.

- The OMEN X by HP product is a wearable PC in a backpack solution, very similar to the HP Z VR Backpack, but oriented to VR gamers and desktop gamers.
- The HP Z VR Backpack has the GTM channels and support and warranty channels that are geared to serve HP's commercial and workstation customers.

What are the key differences between the HP Z VR Backpack and the OMEN X by HP (backpack)?

The HP Z VR Backpack has been designed to integrate well in enterprise and business IT environments. While basic design elements have been leveraged with the OMEN X by HP product, there are important differences including the following which are found only on the HP Z VR Backpack solution:

- 7th Gen Intel® Core™ i7¹, chipset, and Intel® 8260 Wi-Fi all with vPro™ for system manageability and administration.
- New top of line NVIDIA® Quadro® P5200 with 16 GB of video memory. OMEN X by HP has an NVIDIA® GeForce™ GPU with 8 GB of video memory.
- Hardware based TPM 2.0 to support the latest security features and architecture in Windows 10 Pro and other security solutions.
- Commercial grade system BIOS with PXE Boot, Wake On LAN, asset tagging, and other enterprise features.
- Compatibility with HP's IT Administrator software management tools.
- Compatibility with HP's Client Security Suite of tools.
- HP Remote Graphics Software (RGS)² compatible and available at no charge on all HP Workstations.
- HP Performance Advisor system profiler and performance monitor found on all HP Workstation products.

When would I choose an HP Z VR Backpack?

The prime focus for the HP Z VR Backpack is to enable development, application, and deployment of business VR assets to create experiences that require freedom of motion with no tethered cabling restrictions. This allows safe interaction with the experience and opens the door to effective collaboration, design verification, training, and product retail experiences.

In addition, this solution has the versatility to support more traditional desktop workstation use via its industry unique docking station. This solution can be used in many places within an organization including, but not limited to, product design reviews, development, training, and retail product display environments such as showrooms.

What type of user is the HP Z VR Backpack designed for?

The HP Z VR Backpack is designed for VR asset creators and businesses designing and implementing VR for entertainment, client product and architecture reviews, single user and small team training, and customers in showroom or product retail environments.

What are the components of an HP Z VR Backpack solution?

The following components are included in the HP Z VR Backpack:

– Harness

Ergonomic, comfortable but tough polyester design. It includes padded shoulder and waist straps for comfort. A PC mounting plate is included that provides generous air space between the user's back and the PC to eliminate any heat transfer from the PC to the user.

For convenient management of the VR HMD, a HMD retainer clip is provided on the shoulder strap to allow parking of the HMD so that the harness can be put on or taken off without having the HMD dangling from its cables.

– Battery Pack

High performance dual 73 Whr batteries.

– Battery Charger

Battery charging cradle that can charge two 73 Whr batteries simultaneously.

– HTC Vive Combo Cable (optional, sold separately)

Custom length cable designed for HTC Vive VR HMD use with the HP Z VR Backpack.

– Dock

Transform the HP Z VR PC Backpack to a VR PC desktop with the use of the HP Z VR Dock.

– AC Adapter(s)

A 330W Smart AC adapter for the Dock and PC.

A 180W Smart AC adapter for the charging cradle.

– VR PC

Powerful compact form factor PC that includes all the needed IO ports to connect most popular VR HMD's on the market.

What type of VR headsets can I use with the HP Z VR Backpack?

The HP Z VR Backpack Workstation is compatible with all leading VR HMDs available on the market. Special consideration is made for the HTC Vive headset by providing in the HP Z VR Backpack accessories a short 1m 3-in-1 HTC Vive Combo Cable. The short HTC Vive Combo Cable allows users to swap out the standard 5m Vive cable for a more efficient cable management solution with the HP Z VR Backpack.

While the HP Z VR Backpack is optimized for the HTC Vive, it is still possible to use other HMDs, such as the Oculus Rift, with the workstation. The Oculus Rift requires camera sensors to remain stationary in the environment as it's attached by USB cables to the workstation. This requirement lends the Oculus Rift only to the docked use case.

The HP Z VR Backpack will also support the HP Windows Mixed Reality Headset and the HP Windows Mixed Reality Headset – Professional Edition. When using these Windows Mixed Reality headsets with the HP Z VR Backpack, it is important to use a wireless display adapter to a display monitor, or, if a display monitor is not required, connect a display EDID emulator (via the mini-DP port on the PC). Failure to do this will result in a 'black screen' display in the headset. The wireless display adapter and/or the display EDID emulator must be purchased separately from a 3rd party source.

Why do I get a “black screen” when I use the HP Windows Mixed Reality Headset (any version) with HP Z VR Backpack?

When using Windows Mixed Reality headsets (from any manufacturer) with the HP Z VR Backpack, it is important to use a wireless display adapter to a display monitor, or, if a display monitor is not required, connect a display EDID emulator (via the mini-DP port on the PC). Failure to do this will result in a 'black screen' display in the headset. The wireless display adapter and/or the display EDID emulator must be purchased separately from a 3rd party source.

Brand and industrial design

What are the key industrial design elements of the HP Z VR Backpack?

The design is modern and aggressive, indicating no compromise in performance, and fully equipped to handle challenging VR experiences:

- Textured black finish allows the solution to integrate in practically any environment.
- Battery holster design incorporates design features to support easy hot swapping of the two 73 Whr external batteries.
- Light indicator features offer not just aesthetic design statement, but also provides practical feedback for battery charge levels.

What are the key industrial design elements of the HP Z VR Backpack Harness?

- Ergonomic design provides comfort even with extended VR Backpack use
- Fits many body shapes and sizes
- Strategically placed foam cushioning for comfort
- Provision for a HMD securing clip on the harness to manage placement of the VR HMD connected to the Backpack PC
- Quick adjust waist and chest straps
- VR PC mounting plate securely keeps the VR PC on the harness and features a quick release latch for easy PC removal

What are the key industrial design elements of the HP Z VR Backpack Dock?

The HP Z VR Backpack Dock complements the exciting aggressive styling of the HP Z VR Backpack PC.

Features 5 additional USB 3.0 ports, a USB 3.1 Type-C port, an additional HDMI 2.0 and DisplayPort™ 1.3 ports, a RJ45 LAN port, a Kensington lock slot, and a DC-IN and DC-Out ports. The Dock also provides a PC charge indicator LED and a PC Eject button.

What is the logic behind the HP Z VR Backpack industrial design?

The industrial design provides a beautifully balanced solution of practical function with exciting styling. The goal was to make the system functional and robust, but yet a joy to use and own.

Key HP Z VR Backpack specifications

What processors are supported on the HP Z VR Backpack?

The HP Z VR Backpack supports the Intel® Core™ i7 7820HQ CPU with 4 cores, 8 MB of cache, and vPro™¹.

What are the benefits of multi-core processors³?

Multi-core processors allows the benefit of applications that are designed to utilize multi-cores to execute faster. A second benefit is that multiple applications can run on the CPU at the same time without competing for CPU resources.

What is Intel® Turbo Boost 2.0 technology?

Intel® Turbo Boost 2.0 is a fully supported Intel® CPU overclocking implementation that boosts the CPU from a given base operating frequency up to a predefined maximum frequency. The amount of boost achieved is dependent on the type of application or applications that are running on the CPU.

How much faster will the processor run with Intel® Turbo Boost 2.0 technology?

The HP Z VR Backpack uses the high performance Intel® Core™ i7 7820HQ processor¹ that uses a base frequency of 2.9 GHz and can Turbo Boost up to 3.9 GHz³.

What graphics are supported on the HP Z VR Backpack and why are they unique?

The NVIDIA® Quadro® P5200 with 16 GB of GDDR5 video memory is the only graphics provided on the HP Z VR Backpack. This NVIDIA® GPU is the top of the line mobile GPU available from NVIDIA® at the time of the release of the HP Z VR Backpack. With 2560 CUDA cores and hardware accelerated OpenGL capabilities, it can power through the toughest VR workloads and supports all the needed ISV application certifications important in the engineering and design deployments.

What memory is supported on the HP Z VR Backpack?

16 GB (2 x 8 GB SODIMM) or 32 GB (2 x 16 GB SODIMM) DDR4.

What are the benefits of dual-channel memory?

Dual-channel memory doubles the amount of data that can be written or read to/from system memory. This makes data transfer operations between system memory and the CPU go faster.

What storage is supported on the HP Z VR Backpack and why is it unique?

PCIe NVMe based solid state device (SSD) technology is the only storage solution type offered for the HP Z VR Backpack. The SSD M.2 form factor storage sizes available are 256 GB, 512 GB, and 1 TB⁴.

What are some other features that make the HP Z VR Backpack a great choice?

Other features include:

- Dual hot swap 74 Whr external batteries
- HP Z VR Dock support for dual 4K monitors
- RJ45 LAN port available for wired LAN support via the HP Z VR Dock
- HP Z VR harness with integrated HMD secure parking clip
- Battery charge level indicator LEDs on the external batteries
- Battery charge level indicator LED bar on the HP Z VR Backpack PC
- Intel® vPro™ support
- 12 V HMD power port on the HP Z VR Backpack PC
- Bluetooth support via the Intel® Wi-Fi module

What components are user upgradable?

There are no user upgradeable components in the HP Z VR Backpack PC. However, external batteries are user replaceable.

What is TPM 2.0?

Trusted Platform Module (TPM) is an international standard for a secure cryptoprocessor which is a dedicated microcontroller designed to secure hardware by integrating cryptographic keys into devices. TPM's technical specification was written by a computer industry consortium called Trusted Computing Group (TCG). Version 2.0 is the latest approved standard. Many modern operating systems now require TPM implementation to provide a secure operating environment.

Docked mode

What are the key features of the HP Z VR Backpack Dock?

The Dock provides additional 5 USB 3.0 ports, a DisplayPort™, an HDMI port, a USB Type-C™ 3.1 port, a RJ45 LAN port, a Kensington slot, a charge indicator LED, and an eject button. The HP Z VR Backpack Dock enables great flexibility for the Backpack PC to be used as a desktop workstation or as a backpack wearable PC.

Will the HP Z VR Backpack Dock be able to power the HP Z VR Backpack in workstation mode?

Yes, the HP Z VR Backpack Dock is more than capable of powering the HP Z VR Backpack.

Is the HP ZBook Dock with Thunderbolt 3 compatible with the HP Z VR Backpack?

No. The HP ZBook Dock with Thunderbolt 3 is not compatible with the HP Z VR Backpack.

What display support is offered in docked mode?

All HP Z Displays offered by HP are supported by the HP Z VR Dock and PC system.

How many displays can be supported?

You can attach two displays to the HP Z VR Dock. One display can connect to the DisplayPort™ 1.3 port and the other display can connect to the HDMI 2.0 port. Both displays can be 4K displays.

Harness mode

What are the key features in harness mode for the HP Z VR Backpack?

The first and foremost feature of the HP Z VR Backpack in harness mode is the experience of being able to be completely free to move in your VR world. In fact, the entire solution weighs only 4.6 kg.

In addition, performance is in no way compromised while being on battery power. The two 74 Whr external batteries are hot swappable, enabling the user to continue with the VR experience without needing to shut down the application or power off the PC.

What size adjustments are available for the HP Z VR Backpack Harness?

The harness design includes quick adjust chest and waist straps and comfortably accommodates nearly all adult body shapes and sizes.

What ergonomics have been built into the HP Z VR Backpack Harness?

The harness design includes quick adjust chest and waist straps and comfortably accommodates nearly all adult body shapes and sizes. The harness includes a VR HMD securing latch allowing the user to park the HMD on the harness shoulder strap. This allows greater ease of putting on the harness and taking off the harness without having to manage where the HMD is. Additionally, the harness incorporates two battery holsters on the waist strap to help distribute the total backpack solution weight for an even more comfortable experience.

How does the HP Z VR Backpack attach to the HP Z VR Backpack Harness?

The HP Z VR Backpack Harness comes with the PC mounting plate where the HP Z VR Backpack PC can be attached; the mounting plate has built-in PC guide rails and a secure latch to keep the PC in place.

PC removal is easy by depressing the PC latch on the mounting plate and then sliding the PC off the guide rails.

Why can't I plug the standard (5 meter) HTC Vive HMD cable power connector into the 12 V port of the HP Z VR Backpack?

This is not possible and not supported because the standard HTC Vive HMD cable (5 meter cable) requires the use of the HTC Vive Link box to provide the necessary HDMI and USB signal conditioning required to travel the standard cable 5 meter length. For this reason the HP Z VR PC power jack is different than the HTC cable jack to prevent poor signal quality that would be experienced in the HTC Vive HMD without the HTC Link box.

If a user wants to use the standard 5 meter HTC HMD cable, they may do so by adding the HTC Link box and HTC Link box AC adapter to the HP Z VR desktop workstation configuration just like any other typical workstation configuration for the HTC Vive.

Battery support

How are the HP Z VR Backpack Batteries charged?

The HP Z VR Backpack solution includes a dual battery charger and 180 W AC adapter. The HP Z VR Backpack PC internal battery is charged by one of two options:

- Place the PC into the HP Z VR Dock which is powered by the provided 330W AC adapter
- Plug the 330W AC adapter directly into the HP Z VR Backpack PC

How long does the charge last?

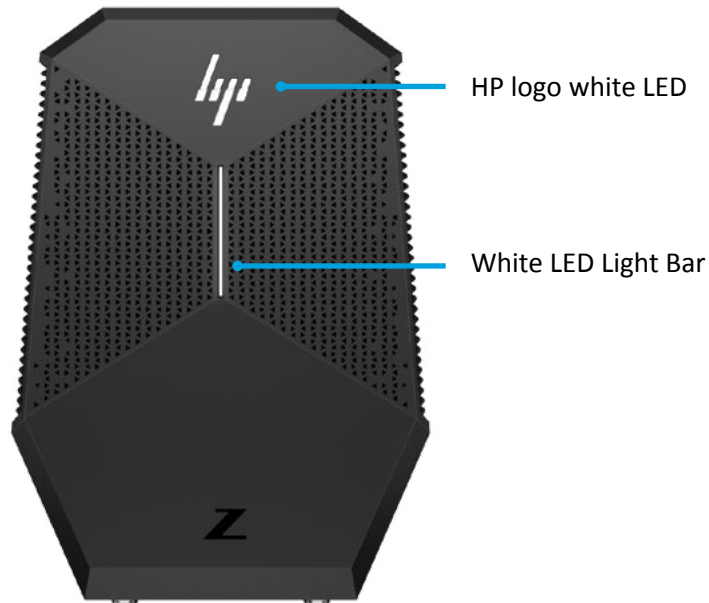
Running under heavy load, the dual 73 Whr external batteries provide approximately 1 hour of run time⁷ before requiring a hot swap exchange.

What is special about the HP Z VR Backpack Batteries?

The HP Z VR Backpack Batteries are hot swappable enabling the user to continue with the VR experience without needing to shut down the application or power off the PC. High current discharge technology allows the HP Z VR Backpack PC to operate at full performance without any CPU or GPU throttling. Extra batteries are also offered as an After Market Option (AMO).

How do the HP Z VR Backpack LED indicators work to report the charge levels of the external and internal batteries?
 The HP Z VR Backpack uses the white LED HP logo and LED light bar located on the PC unit top to report the status of the internal and external battery charge levels. These LEDs are shown below. The reporting behavior of battery charge level status is dependent on the HP Z VR Backpack PC system BIOS revision level. It is highly recommended that the PC unit uses system BIOS revision level F.11 or later. The F.11 or later BIOS can be obtained from HP Support Services on HP.com

For maximum performance while in battery operation mode, the external batteries must be charged. If they fall below a certain threshold as described below depending on the system BIOS revision level on the PC unit, the VR experience will quickly become suboptimal and compromised if the external batteries are not swapped with charged battery replacements.



LED Reporting Behavior for System BIOS Revisions before BIOS Rev F.11

For systems using the BIOS revisions older than BIOS Rev F.11, the low battery algorithm is as follows:

1. When the AVERAGE battery charge level of the internal AND external batteries is above 12%, both the HP logo and Light Bar will be solid ON. This behavior can be over ridden by user control to display custom behavior.
2. When the AVERAGE battery charge level of the internal AND external batteries falls to 12% or below, both the HP logo and Light Bar will flash ON and OFF. This flashing behavior cannot be over ridden. This flashing behavior will continue until the external batteries are replaced, or until the PC unit runs out of all battery power.

It is highly recommended that systems with older system BIOS revisions be upgraded to Rev F.11 or later.

LED Reporting Behavior for System BIOS Revisions F.11 or Later

For systems using the BIOS revisions F.11 or later, the low battery algorithm is as follows:

Internal Battery Charge Level	External Batteries Charge Level	HP Logo LED Behavior	Light Bar LED Behavior
> 12%	Both > 12%	Solid ON	Solid ON
	Only one > 12%	Solid ON	Slow Flashing
	Both <= 12%	Solid ON	Fast Flashing
<= 12%	Both > 12%	Slow Flashing	Solid ON
	Only one > 12%	Slow Flashing	Slow Flashing
	Both <= 12%	Fast Flashing	Fast Flashing

It may be useful to recognize that the HP Logo LED primarily reports the status of the PC internal battery while the Light Bar LED reports the status of the external batteries. For added notification emphasis, when all batteries are below 12%, both the HP Logo and Light Bar will be set to fast flashing mode.

OS Level Battery Charge Reporting

If the HP Z VR Backpack PC is configured to wirelessly connect to a display monitor, keyboard and mouse it is possible for the operator to use the Windows 10 Pro battery status application usually located in the Notifications area of the Windows 10 Task Bar. Simply click on the battery icon and 3 batteries with their status information should be displayed. If a battery is missing from the report, check all external battery connections to the PC to make sure they are secure.

Thunderbolt™ 3

Why did HP decide to include Thunderbolt™ 3 port on the HP Z VR Backpack?

Thunderbolt™ 3 USB-C port is provided to prepare for the potential of future new VR HMDs coming to market supporting this connectivity technology. In addition, the port can be used for connecting high performance peripheral devices.

What is the difference between Thunderbolt™ 3 and USB-Type C™?

Thunderbolt™ 3 is a protocol modality supported via the physical USB-Type C™ connector. The USB Type-C™ connector specification is governed by the USB 3.1 industry standard.

Operating systems

What operating systems are available on the HP Z VR Backpack?

At this time, the only operating system supported on the HP Z VR Backpack is Microsoft Windows 10 Pro (64-bit)⁵.

Is dual OS preload an option?

No.

Will the HP Z VR Backpack support Linux®?

There is no plan to support any variant of Linux® at this time.

Software

What manageability features are available on the HP Z VR Backpack?

The HP Z VR Backpack incorporates Intel® CPU, chipset, and Wi-Fi solution that enable the vPro™ management suite from Intel®.

The HP Z VR Backpack uses a commercial grade system BIOS that facilitates IT system management and includes the following:

- Power On password
- Setup password
- USB port Enable/Disable
- Crises recovery via Boot Block
- WMI support
- Replicated setup
- SMBIOS 2.8
- Boot control
- Secure remote ROM flash service
- Ownership tag/Asset tag
- PXE Boot 2.1
- TPM 2.0 support
- Wake On LAN

Also available for the HP Z VR Backpack on HP.com are the IT Administrative Tools suite for OS image and driver deployment and management.

What standard software is included (preloaded) with the HP Z VR Backpack?

- Windows 10 Pro (64-bit) OS
- All device software drivers; the user may need to get the latest version of drivers from the HP.com support site

What is HP RGS² and what value does it bring to the new HP Z VR Backpack?

HP Remote Graphics Software (RGS)² is a 3D remote desktop utility that allows network efficient, secure, fluid high fidelity updates and display of 3D display content to a remote computer. It can be used on any HP Z Workstation product and can be downloaded at no charge from www.hp.com/go/rgs

HP RGS² can be a useful utility for the HP Z VR Backpack when the system is used as a desktop workstation via the included docking solution.

What is HP Performance Advisor and what value does it bring to the new HP Z VR Backpack?

Designed for non-techies, this ultra-savvy software wizard is the simplest and most effective way to make sure your computer is always operating at its optimum potential. HP Performance Advisor comes pre-installed with every HP Workstation.

What is HP Velocity and what value does it bring to the HP Z VR Backpack?

HP Velocity is a software solution that improves the user experience for cloud, mobile, and network-based applications by addressing common network bottlenecks, such as packet loss, network latency and Wi-Fi congestion. HP Velocity provides the greatest performance improvement for remote and branch offices, teleworkers, Wi-Fi, and 3G/4G. HP Velocity works by first sensing the network conditions and network technologies used on the network edge, and then intelligently applying optimizers to improve traffic quality by reducing packet loss, reducing latency, and generally improving the networking user experience. HP Velocity is also adaptive—when network conditions change, so do the optimizations that are applied to ensure the best QoS possible for your situation.

What ISV certifications will be in place for the HP Z VR Backpack?

The ISV certifications for the HP Z VR Backpack include, but are not limited to, the following applications:

- Autodesk AutoCAD
- Autodesk AutoCAD Architecture
- Autodesk AutoCAD Civil 3D
- Autodesk Inventor
- Autodesk Inventor LT
- PTC Creo
- Dassault Systemes CATIA V5, V6, 3DEXPERIENCE
- DS SOLIDWORKS
- Siemens PLMS NX
- Autodesk VRED
- Adobe Premiere Pro
- Adobe After Effects
- Avid Media Composer
- Autodesk 3DS MAX
- Autodesk Maya
- Autodesk Flame
- Autodesk Revit
- Autodesk Revit Architecture

Check www.hp.com/go/isv for the latest status of ISV certifications for the HP Z VR Backpack.

Testing, warranty, & support

What is HP's Total Test Process?

The HP Z VR Backpack is designed to stand up to extreme durability with 120,000 hours of testing in HP's Total Test Process.

What is MIL-STD⁶ testing?

MIL-STD⁶ testing is not a requirement for the HP Z VR Backpack, however, the product is tested to that standard in specific areas.

The HP Z VR Backpack is designed to pass 8 of the 14 test areas defined in the test standard.

Is the HP Z VR Backpack TAA compliant?

TAA compliance will be in place in November 2017. This will allow the HP Z VR Backpack to be sold into US Federal accounts.

Will the HP Z VR Backpack be covered under HP Elite Support like other HP Workstations?

HP Elite Support is not offered on the HP Z VR Backpack.

What is the warranty and support for the HP Z VR Backpack?

The HP Z VR Backpack comes with a global warranty 1/1/1 with a 3 year service life.

Are HP Care Pack services available?

Yes – information can be found at: <http://cpc.ext.hp.com/portal/site/cpc/selectPublic>

Resources, contacts, or additional links for the HP Z VR Backpack

- HP Z VR Backpack: www.hp.com/go/zvrbackpack
- HP Z VR Ready Products: www.hp.com/go/vrsolutions

Learn more about the HP Z family of products at hp.com/go/workstations

1. 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>
2. HP RGS requires a Windows, Linux®, or Mac® OS X 10.10 or newer operating system and network access.
3. Multi-core 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, branding and/or naming is not a measurement of higher performance.
4. For hard drives, GB = 1 billion bytes, TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB of system disk is reserved for system recovery software.
5. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. See microsoft.com
6. MIL STD 810G testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care.
7. VR 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.

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