

## Overview

### HPE Hard Disk Drives

HPE Hard Disk Drives (HDDs) are engineered to deliver optimum performance, reliability, compatibility, and data security across HPE server and storage platforms making them the preferred choice for workloads ranging from small businesses to large enterprise.

**Performance:**

- HPE HDDs are tuned and tested with on-going quality monitoring throughout their lifecycle
- HPE optimizes HDD firmware for predictable and consistent HDD performance
- Full portfolio of high-performance Mission Critical and high-capacity Business Critical drive solutions

**Reliability:**

- HPE’s industry-leading rigorous testing and qualification program, backed by 2.4 million test hours<sup>1</sup>
- Pre-failure Alerts with HPE Smart Array Controller, Systems Insight Manager, and HPE Smart firmware
- 3x faster firmware and software updates with HPE Service Pack for ProLiant (HPE SPP)
- Best-in-class supply assurance program reduces downtime due to product delays

**Compatibility:**

- Simplify HDD planning and standardize HDDs across HPE server and storage solutions
- Common HDD carriers mean re-purposing drives in other servers is a snap

**Security:**

- HPE Digitally Signed Firmware helps prevent against malicious attacks
- HPE Smart Array SR Secure Encryption is a FIPS 140-2 Level 1 validated enterprise class controller-based encryption solution for data-at-rest on all SAS/SATA drives
- HPE Smart Carriers report drive activity and health

HPE HDDs are available for three types of workloads: Enterprise high-performance (Mission Critical), Midline high-capacity (Business Critical) and Entry-level storage solutions

**HPE HDD portfolio: Proven performance for every workload**

Class	Enterprise		Midline	Entry*
Workload	High		Medium	Low
Usage	<b>Mission-critical, high I/O:</b> Email, enterprise resource planning (ERP), customer relationship management (CRM)		<b>High capacity, high availability storage:</b> Backup, archive, reference	<b>Low I/O:</b> Boot and backup
Interface	SAS 12Gb		SAS 12Gb SATA 6Gb	SATA 6Gb
RPM	15000	10000	7200	7200
Form factor	SFF & LFF	SFF	SFF & LFF	LFF
Capacities	Up to 900GB	Up to 2.4TB	Up to 14TB	Up to 4TB
Warranty	3 years	3 years	1 year	1 year

\* Supported on select HPE ProLiant servers only.

## Overview

### What's New

- HPE 14TB Midline 7.2K SAS 12G LFF (3.5in) 3yr Wty Helium 512e Digitally Signed Firmware HDD
- HPE 14TB Midline 7.2K SATA 6G LFF (3.5in) 3yr Wty Helium 512e Digitally Signed Firmware HDD

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### Firmware Updates:

- Digitally Signed Firmware – Prevent unauthorized access to your data with the expansion of integrated HPE Digitally Signed Firmware (DS) on new drives; providing the security and assurance that drive firmware comes from a trusted source and protects against malicious attacks.

For advanced data protection and encryption, customers should consider HPE Smart Array Controllers with HPE Smart Array Secure SR Encryption. It is a controller-based data encryption solution for HPE servers that protect data-at-rest on any bulk attached storage. This solution meets stringent compliance regulations such as HIPAA and Sarbanes-Oxley.

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### HDD Selection

To streamline the configuration process for HPE ProLiant servers and to provide the best product availability, HPE recommends HDDs from the list located here: <http://www.hpe.com/products/recommend>

Best product availability is limited to US, Canada, and Latin America at this time.

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## Overview

Models							
Category	Interface	Form Factor	Format	Capacity	HDD Carrier		
					Smart Carrier SKU	Low Profile SKU	Standard Carrier SKU
Enterprise (15K rpm)	SAS 12G	LFF	512n	300GB	P04693-B21 (SCC)	-	
				600GB	P04695-B21 (SCC)	-	
				900GB	-	870761-B21 (LPC)	
		SFF		300GB	870753-B21	-	
				600GB	870757-B21	-	
				900GB	870759-B21	-	
512n			300GB	872475-B21	-		
			600GB	872477-B21	-		
			1.2TB	872479-B21	-		
		512e	1.8TB	872481-B21	-		
2.4TB			881457-B21	-			
Enterprise (10K rpm)							
Midline (7.2K rpm)	SAS 12G	LFF	512n	1TB	846524-B21	846526-B21	
				2TB	872485-B21	833926-B21	
				4TB	872487-B21	833928-B21	
				6TB	846514-B21		
			512e	6TB	861754-B21	861746-B21	
				8TB	819201-B21	834031-B21	858384-B21
				10TB	857644-B21 <sup>He</sup>	857646-B21 <sup>He</sup> / P09149-B21 <sup>He</sup>	P09151-B21 <sup>He</sup>
				12TB	881779-B21	881781-B21 <sup>He</sup>	881783-B21 <sup>He</sup>
				14TB	P09153-B21 <sup>He</sup>	P09155-B21 <sup>He</sup>	
		SFF	1TB	765464-B21	-		
			512n	1TB	832514-B21	-	

## Overview

Category	Interface	Form Factor	Format	Capacity	HDD Carrier		
					Smart Carrier SKU	Low Profile SKU	Standard Carrier SKU
Midline (7.2K rpm)	SAS 12G		512e	2TB	765466-B21	-	
	SATA 6G	LFF	512n	1TB	861691-B21	861686-B21	
				2TB	872489-B21	861681-B21	
				4TB	872491-B21	861683-B21	
			512e	6TB	861750-B21	861742-B21	
				8TB	819203-B21	834028-B21	
				10TB	857648-B21 <sup>He</sup>	857650-B21 <sup>He</sup> / P09161-B21 <sup>He</sup>	
				12TB	881785-B21 <sup>He</sup>	881787-B21 <sup>He</sup>	
				14TB	P09163-B21	P09165-B21	
		SFF	2TB	765455-B21	-		
			512n	1TB	655710-B21	-	

Category	Interface	Form factor	Format	Capacity	HDD Carrier
					No Carrier SKU (Raw/Non-Hot Plug)
Entry (7.2K)	SATA 6G	LFF	512e	1TB	843266-B21*
			512n	1TB	801882-B21
				4TB	801888-B21

**NOTE:** <sup>He</sup> Helium Drive.

**NOTE:** Refer to the appropriate Server QuickSpecs for full compatibility details.

**NOTE:** \*Also known as “Desktop Drive”, this drive has Generic Firmware (Non-HPE)

## Standard Features

### What is HPE Hard disk drive?

Hewlett Packard Enterprise drives are tuned to deliver optimum performance for HPE Servers. They undergo an intense qualification process to eliminate firmware and O/S incompatibilities. HPE drive firmware is designed to maximize both functionality and compatibility with HPE ProLiant Rack and Tower Servers, Apollo family, Blade and Synergy Platforms.

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### Drive Quality and Performance

While selecting the drives in our Enterprise portfolio, only those drives with a performance level suitable for an enterprise environment are selected through the Hewlett Packard Enterprise qualification process and are labeled "best-in-class." HPE Midline drives undergo a similar qualification process to ensure that you get the economical reliability and performance you need for your low workload (less than 40% I/O) environments.

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### Pre-Failure Alert

When used in conjunction with a SMART Array Controller and Systems Insight Manager, the SMART capable firmware in HPE hard drives enables extensive fault prediction capabilities. If potential problems develop in one of the drives, the Smart Array Controller, Systems Insight Manager and/or SMART hard disk drive lets you know in advance so you can have the drive replaced, before it fails, under warranty

**NOTE:** All drives are protected by a Pre-Failure Alert when used with a HPE Smart Array controller and Systems Insight Manager, allowing hard drives to be replaced before failure under warranty. In addition, all drives are covered by a one or three-year limited on-site warranty period for the system in which they are installed. The drive warranty is automatically uplifted when used in a server or MSA for which a HPE Pointnext service contract is purchased. Please see the Support Services section below for additional services.

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### Smart Carriers

HPE Hard Drives with smart carriers are designed to provide an interface to communicate critical status and management information. System status LED icons and a spinning activity ring reflecting the data-writing process notify users of the current system status. A blue LED located behind the handle can be activated remotely to guide users to a specific drive tray, while a do-not-remove icon positioned on the tray's eject button lights up to warn users when the removal of the drive would cause data loss.

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### Helium Drives

Although hard drives are sealed, they have air inside. Air can create turbulence-induced risk vibrations which can limit the storage density of HDDs. Newer helium-filled drives virtually eliminate turbulence because helium is 1/7th as dense as air. This lower density allows the read/write mechanism to spin more easily and precisely, with less drag. Less internal turbulence means the drive platters can be closer together, allowing more platters and increasing the capacity potential in the same space. Less turbulence also means helium drives tend to use less power, and run cooler and quieter.

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### Support Matrix

Please see the following URL for the latest list of supported servers and enclosures:

**<https://www.hpe.com/us/en/servers/server-options.html>**

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### Warranty

Enterprise hard drives have a 3 year limited warranty regardless of the warranty period for the system in which they are installed. Midline hard drives have a 1 year limited warranty regardless of the warranty period for the system in which they are installed.

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## Service and Support

### Service and Support

#### HPE Technology Services for Industry Standard Servers

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability powered by a rich portfolio of consulting and support services designed to add value to our core products and solutions connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

#### Protect your business beyond warranty with HPE Support Services

HPE support services offer complete care and support expertise with committed response choices that are designed to meet your IT and business needs.

**NOTE:** HPE Hard drives are covered under the HPE Pointnext /Service Contract applied to the HPE ProLiant Server. No separate HPE Pointnext s need to be purchased.

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#### Connect your devices to HPE

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%1 reduction in down time, near 100%2 diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization.

All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.

1. IDC Whitepaper
  2. HPE CSC Reports 2014-2015
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#### HPE Support Center

Personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more

**<https://support.hpe.com/hpesc/public/home>**

HPE Support Center Mobile App allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a Hewlett Packard Enterprise warranty, HPE Support Services or HPE contractual support agreement.

**NOTE:** HPE Support Center Mobile App above is subject to local availability.

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#### Parts and materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

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## Service and Support

### Service Coverage

For ProLiant servers and storage systems, the service on the main product covers HPE-branded hardware options not designated by Hewlett Packard Enterprise as requiring separate coverage, that are qualified for the server, purchased at the same time or afterward and internal to the enclosure. These items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been reached.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction. It does not apply to Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by Hewlett Packard Enterprise as consumable parts and/or that have reached maximum supported lifetime and/or the maximum usage limits as set forth in the manufacturer's operating manual, the product QuickSpecs, or the technical data sheet are not eligible for the defective media retention service feature option.

**Subject to:** Maximum supported lifetime: This is a period in years set to equal the warranty for the specific drive. After this period no further service coverage will be available for the drive. Maximum usage limit: This is the maximum amount of data that can be written to the drive. Drives that have reached this limit will not be eligible for services coverage.

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### For more information

To learn more on services for HPE Server Options, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit:

<https://www.hpe.com/us/en/product-catalog/servers/proliant-servers.html> or

<https://www.hpe.com/us/en/integrated-systems/bladesystem.html>

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### Supporting Helpful Links

<http://www.hpe.com/info/rackandpower>

<http://www.hpe.com/info/poweradvisor>

<http://www.hpe.com/info/infrastructurearchitect>

<https://www.hpe.com/us/en/storage/entry-level.html>

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## Technical Specifications

Enterprise (15K rpm)									
Form Factor		SFF (2.5")		Carrier	Smart Carrier (SC)				
Rotational Speed		15000 rpm		Dimensions					
Interface		SAS		Height	0.62 in (15.6 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	2.98 in (75.7 mm)				
Bytes/Sector		512		Depth	4.67 in (118.7 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
870753-B21	HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	225	220	220	220	2.6	3.6	4.4	3.9
870757-B21	HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	225	220	220	220	4.7	6.1	6.3	6.3
870759-B21	HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	260	220	220	220	4.7	6.1	6.3	6.3



## Technical Specifications

Enterprise (15K rpm)									
Form Factor		LFF (3.5")		Carrier	Smart Carrier Converter (SCC)				
Rotational Speed		15000 rpm		Dimensions					
Interface		SAS		Height	1.06 in (26.8 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	4.16 in (105.8 mm)				
Bytes/Sector		512		Depth	6.69 in (170.0 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
P04695-B21	HPE 600GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware HDD	260	220	220	220	5.6	7.2	7.7	6.2
P04693-B21	HPE 300GB SAS 12G Enterprise 15K LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware HDD	260	220	220	220	4.3	6.9	7.0	6.4

Enterprise (15K rpm)									
Form Factor		LFF (3.5")		Carrier	Low Profile Converter (LPC)				
Rotational Speed		15000 rpm		Dimensions					
Interface		SAS		Height	1.028 in (26.1 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	4.15 in (105.5 mm)				
Bytes/Sector		512		Depth	6.16 in (156.58 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
870761-B21	HPE 900GB SAS 12G Enterprise 15K LFF (3.5in) LPC 3yr Wty Digitally Signed Firmware HDD	295	235	235	235	4.7	6.1	6.3	6.4

## Technical Specifications

Enterprise (10K rpm)									
Form Factor		SFF (2.5")		Carrier	Smart Carrier (SC)				
Rotational Speed		10000 rpm		Dimensions					
Interface		SAS		Height	0.62 in (15.6 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	2.98 in (75.7 mm)				
Bytes/Sector		512		Depth	4.67 in (118.7 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
872475-B21	HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	195	180	180	180	3.8	6.9	6.1	5.3
872477-B21	HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	195	165	165	165	4.7	6.9	6.3	6.3
872479-B21	HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	195	165	165	165	4.0	7.1	6.4	5.5
872481-B21	HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	230	165	170	185	2.6	3.6	4.4	3.9
881457-B21	HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	255	160	180	190	4.8	6.0	7.8	6.6

## Technical Specifications

Midline (7.2K rpm)									
Form Factor		LFF (3.5")		Carrier	Smart Carrier (SC)				
Rotational Speed		7200 rpm		Dimensions					
Interface		SAS		Height	1.06 in (26.8 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	4.16 in (105.8 mm)				
Bytes/Sector		512		Depth	6.69 in (170.0 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
846524-B21	HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	200	110	110	110	2.6	3.6	4.4	3.9
872485-B21	HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	190	100	100	100	8.8	12.1	10.8	10.5
872487-B21	HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	190	100	100	100	8.8	12.1	10.8	10.5
861754-B21	HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	200	100	105	110	8.8	12.1	10.8	10.5
819201-B21	HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	230	105	115	115	4.7	6.1	6.3	6.3
857644-B21	HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	110	115	3.8	5.8	5.9	5.0
881779-B21	HPE 12TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	115	125	5.5	6.1	7.0	6.8
P09153-B21	HPE 14TB SAS 12G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	250	105	115	120	5.3	8.5	7.4	6.9

## Technical Specifications

Midline (7.2K rpm)									
Form Factor		LFF (3.5")		Carrier	Low Profile (LP)				
Rotational Speed		7200 rpm		Dimensions					
Interface		SAS		Height	1.028 in (26.1 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	4.15 in (105.5 mm)				
Bytes/Sector		512		Depth	6.16 in (156.58 mm)				
Operating Temperature	50° to 95° F (10° to 35°C)								
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
846526-B21	HPE 1TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	200	110	110	110	2.6	3.6	4.4	3.9
833926-B21	HPE 2TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	200	110	110	110	2.6	3.6	4.4	3.9
833928-B21	HPE 4TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	200	110	110	110	4.7	6.1	6.3	6.3
861746-B21	HPE 6TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	215	110	115	120	4.7	6.1	6.3	6.4
834031-B21	HPE 8TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD	230	105	115	115	4.7	6.1	6.3	6.3
857646-B21	HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	110	115	2.6	3.6	4.4	3.9
P09149-B21	HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	240	110	120	125	5.0	5.8	7.3	5.7
881781-B21	HPE 12TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	115	125	5.5	6.1	7.0	6.8
P09155-B21	HPE 14TB SAS 12G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	250	105	115	120	5.3	8.5	7.4	6.9

## Technical Specifications

Midline (7.2K rpm)									
Form Factor		LFF (3.5")		Carrier	Standard Carrier (ST)				
Rotational Speed		7200 rpm		Dimensions					
Interface		SAS		Height	1.04 in (26.4 mm)				
Transfer Rate Synchronous (Max)		12Gb/sec		Width	4.36 in (110.7 mm)				
Bytes/Sector		512		Depth	7.43 in (188.7 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
P09151-B21	HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) ST 1yr Wty Helium 512e Digitally Signed Firmware HDD	240	110	120	125	5.0	5.8	7.3	5.7
881783-B21	HPE 12TB SAS 12G Midline 7.2K LFF (3.5in) ST 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	115	125	5.5	6.1	7.0	6.8

## Technical Specifications

Midline (7.2K rpm)									
Form Factor		LFF (3.5")		Carrier	Smart Carrier (SC)				
Rotational Speed		7200 rpm		Dimensions					
Interface		SATA		Height	1.06 in (26.8 mm)				
Transfer Rate Synchronous (Max)		6Gb/sec		Width	4.16 in (105.8 mm)				
Bytes/Sector		512		Depth	6.69 in (170.0 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
861691-B21	HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty HDD	185	90	90	90	8.8	12.1	10.8	10.5
872489-B21	HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	185	90	90	90	8.8	12.1	10.8	10.5
872491-B21	HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Digitally Signed Firmware HDD	190	100	100	100	8.8	12.1	10.8	10.5
861750-B21	HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e HDD	215	105	105	110	8.8	12.1	10.8	10.5
819203-B21	HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	230	105	110	115	8.8	12.1	10.8	10.5
857648-B21	HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	110	115	3.8	5.8	5.9	5.0
881785-B21	HPE 12TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	110	120	5.5	6.1	7.0	6.8
P09163-B21	HPE 14TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e Digitally Signed Firmware HDD	250	105	115	120	4.9	8.5	6.9	6.6

## Technical Specifications

Midline (7.2K rpm)									
Form Factor		LFF (3.5")		Carrier		Low Profile (LP)			
Rotational Speed		7200 rpm		Dimensions					
Interface		SATA		Height		1.028 in (26.1 mm)			
Transfer Rate Synchronous (Max)		6Gb/sec		Width		4.15 in (105.5 mm)			
Bytes/Sector		512		Depth		6.16 in (156.58 mm)			
Operating Temperature	50° to 95° F (10° to 35°C)								
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
861686-B21	HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	195	90	90	90	2.6	3.6	4.4	3.9
861681-B21	HPE 2TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	195	90	90	90	2.6	3.6	4.4	3.9
861683-B21	HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Digitally Signed Firmware HDD	200	110	110	110	4.7	6.1	6.3	6.3
861742-B21	HPE 6TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e HDD	215	110	115	115	4.7	6.1	6.3	6.3
834028-B21	HPE 8TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty 512e Digitally Signed Firmware HDD	230	105	110	115	4.7	6.1	6.3	6.3
857650-B21	HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	110	115	3.8	5.8	5.9	5.0
P09161-B21	HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	240	110	120	125	4.7	5.9	7.6	7.9
881787-B21	HPE 12TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	235	105	115	125	5.5	6.1	7.0	6.8
P09165-B21	HPE 14TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD	250	105	115	120	4.9	8.5	6.9	6.6

Technical Specifications

Midline (7.2K rpm)										
Form Factor		SFF (2.5")	Carrier		Smart Carrier (SC)					
Rotational Speed		7200 rpm	Dimensions							
Interface		SAS	Height		0.62 in (15.6 mm)					
Transfer Rate Synchronous (Max)		12Gb/sec	Width		2.98 in (75.7 mm)					
Bytes/Sector		512	Depth		4.67 in (118.7 mm)					
Operating Temperature	50° to 95° F (10° to 35°C)									
SKU	SKU Description		OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
832514-B21	HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD		130	105	105	105	2.6	3.6	4.4	3.9
765466-B21	HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD		130	105	105	105	2.6	3.6	4.4	3.9



## Technical Specifications

Midline (7.2K rpm)									
Form Factor		SFF (2.5")		Carrier	Smart Carrier (SC)				
Rotational Speed		7200 rpm		Dimensions					
Interface		SATA		Height	0.62 in (15.6 mm)				
Transfer Rate Synchronous (Max)		6Gb/sec		Width	2.98 in (75.7 mm)				
Bytes/Sector		512		Depth	4.67 in (118.7 mm)				
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
655710-B21	HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	130	105	105	105	2.6	3.6	4.4	3.9
765455-B21	HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	130	105	105	105	2.6	3.6	4.4	3.9

## Technical Specifications

Entry									
Form Factor		LFF (3.5")		Carrier		Non Hot Plug Carrier (RW)			
Rotational Speed		7200 rpm		Dimensions					
Interface		SATA		Height		1.028 in (26.1 mm)			
Transfer Rate Synchronous (Max)		6Gb/sec		Width		4.00 in (101.6 mm)			
Bytes/Sector		512		Depth		5.75 in (146.0 mm)			
Operating Temperature		50° to 95° F (10° to 35°C)							
SKU	SKU Description	OD Media Rate, Max Sequential Throughput (MiB/s)	128Kib Random Rd (IOPs)	128Kib Random 70% RD/ 30% WT (IOPs)	128Kib Random 50% RD/ 50% WT (IOPs)	Power Idle Time (Watts)	Power Random R/W (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)
843266-B21	HPE 1TB SATA 6G Entry 7.2K LFF (3.5in) RW 1yr Wty HDD	N/A	N/A	N/A	N/A	2.6	3.6	4.4	3.9
801882-B21	HPE 1TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	160	95	95	95	8.8	12.1	10.8	10.5
801888-B21	HPE 4TB SATA 6G Midline 7.2K LFF (3.5in) RW 1yr Wty HDD	160	90	90	90	8.8	12.1	10.8	10.5

Technical Specifications

Carrier Decoder

HPE Hard Disk Drives (HDDs) utilize a wide variety of carriers, which houses the HDD and also enables a specific chassis fit to support a broad range of HPE server and storage products. The table below summarizes the various form factors, plug types, and carrier attributes.

Carriers				
Form Factor	HP/NHP	Smart/Non-Smart	Carrier Name (Abbreviation)	SFF/LFF
SFF Carrier	Hot Plug	Smart	Smart Carrier <b>(SC)</b>	SFF
		Non-Smart	Standard <b>(ST)</b>	SFF
LFF Carrier	Hot Plug	Smart	Smart Carrier <b>(SC)</b>	LFF
			Smart Carrier Converter <b>(SCC)</b>	LFF
		Non-Smart	Low Profile <b>(LP)</b>	LFF
			Low Profile Converter <b>(LPC)</b>	LFF
			Standard <b>(ST)</b>	LFF
No Carrier	Non-Hot Plug	Non-Smart	Raw LFF HDD <b>(RW)</b>	LFF

## Technical Specifications

Server Family	Server Model	Generation	SFF Carriers				LFF Carriers			
			Smart Carrier (SC1)/(SCC)	Smart Carrier NVMe (SCN)	Standard Carrier (ST)	Raw Carrier(RW)/(AKA NPH)	Smart Carrier (SC1)/(SCC)	Low Profile (LP)/(LPC)	Standard Carrier (ST)	Raw Carrier(RW)/(AKA NPH)
HPE Apollo	<b>HPE Apollo Gen10 Series</b>									
	HPE Apollo pc40	Gen10								
	HPE Apollo sx40 Server	Gen10								
	HPE Apollo 70 System	Gen10								
	<b>HPE Apollo 2000 Series</b>									
	HPE Apollo XL170r Gen9 Server	Gen9								
	HPE Apollo XL170r Gen10 Server	Gen10								
	HPE Apollo XL190r Gen9 Server	Gen9								
	HPE Apollo XL190r Gen10 Server	Gen10								
	<b>HPE Apollo 4000 Series</b>									
	HPE Apollo 4200 Gen9 Server	Gen9								
	HPE Apollo 4200 Gen10 Server	Gen10								
	HPE Apollo 4500 System	Gen9								
	HPE Apollo 4510 Gen10	Gen10								
	<b>HPE Apollo 6000 Series</b>									
	HPE ProLiant XL230k Gen10 Server	Gen10								
HPE Blades	<b>HPE Blades</b>									
	HPE ProLiant BL460c Gen9 Server Blade	Gen9								
	HPE ProLiant BL460c Gen10 Server Blade	Gen10								
	HPE ProLiant BL660c Gen9 Server Blade	Gen9								
	HPE ProLiant WS460c Gen9 Graphics Server Blade	Gen9								

Key	
	Compatible
	Not Compatible

## Technical Specifications

Server Family	Server Model	Generation	SFF Carriers					LFF Carriers			
			Smart Carrier (SCI)/(SCC)	Smart Carrier NVMe (SCN)	Standard Carrier (ST)	Raw Carrier(RW)/(AKA NPH)		Smart Carrier (SCI)/(SCC)	Low Profile (LP)/(LPC)	Standard Carrier (ST)	Raw Carrier(RW)/(AKA NPH)
HPE ProLiant	<b>HPE ProLiant DL</b>										
	HPE ProLiant DL20 Gen9 Server	Gen9									
	HPE ProLiant DL20 Gen10 Server	Gen10									
	HPE ProLiant DL120 Gen9 Server	Gen9									
	HPE ProLiant DL120 Gen10 Server	Gen10									
	HPE ProLiant DL160 Gen9 Server	Gen9									
	HPE ProLiant DL160 Gen10 Server	Gen10									
	HPE ProLiant DL180 Gen9 Server	Gen9									
	HPE ProLiant DL180 Gen10 Server	Gen10									
	HPE ProLiant DL325 Gen10 Server	Gen10									
	HPE ProLiant DL360 Gen9 Server	Gen9									
	HPE ProLiant DL360 Gen10 Server	Gen10									
	HPE ProLiant DL380 Gen9 Server	Gen9									
	HPE ProLiant DL380 Gen10 Server	Gen10									
	HPE ProLiant DL385 Gen10 Server	Gen10									
	HPE ProLiant DL 560 Gen9 Server	Gen9									
	HPE ProLiant DL 560 Gen10 Server	Gen10									
	HPE ProLiant DL 580 Gen9 Server	Gen9									
	HPE ProLiant DL 580 Gen10 Server	Gen10									
	<b>HPE ProLiant ML</b>										
	HPE ProLiant MicroServer Gen10	Gen10									
	HPE ProLiant ML30 Gen10 Server	Gen10									
	HPE ProLiant ML110 Gen10 Server	Gen10									
	HPE ProLiant ML350 Gen10 Server	Gen10									
HPE Synergy	<b>HPE Synergy</b>										
	HPE Synergy 480 Gen10 Compute Module	Gen10									
	HPE Synergy 660 Gen10 Compute Module	Gen10									
	HPE Synergy 680 Gen9 Compute Module	Gen9									
	HPE Synergy D3940 Storage Module	N/A									

Key	
	Compatible
	Not Compatible

## Technical Specifications

### HDD SKU Description Decoder

#### Long Name

HPE 10TB SAS 12G Midline 7.2K LFF (3.5in) SC 3yr Wty He 512e Digitally Signed Firmware HDD

Brand	Storage Capacity	Interface Type/ Interface Speed	Workload	Form Factor Type / Form Factor Size	Carriers	Wty	Special Features	Drive Type
HPE	300-900GB 1-12TB	SATA/SAS 6G/12G	Enterprise 15/10K Midline 7.2K Entry 7.2K/5.9K	SFF (2.5IN) LFF (3.5IN)	SC Smart Carrier SCC Smart Carrier Converter ST Standard STC Standard Converter LP Low Profile LPC Low Profile Converter QR Quick Release RW Raw Drive	3yr <u>Wty</u> 1yr <u>Wty</u>	Digitally Signed Firmware 512e - No descriptor (512n) Helium - No descriptor (Air) SMR - Shingle Magnetic Recording; No descriptor (PMR) SED - Self Encrypting Drive Special - Special SKUs  <i>In priority order, where 1st is closest to drive type</i>	HDD

#### Short Name

HPE 10TB SAS 7.2K LFF SC He 512e DS HDD

Brand	Storage Capacity	Interface Type	Workload	Form Factor Type	Carriers	Special Features	Drive Type
HPE	300-900GB 1-12TB	SATA/SAS	15K 10K 7.2K	SFF LFF	SC Smart Carrier SCC Smart Carrier Converter ST Standard STC Standard Converter LP Low Profile LPC Low Profile Converter QR Quick Release RW Raw Drive	DS Digitally Signed Firmware 512e 512 emulation; No descriptor (512n) He Helium; No descriptor (Air) SMR Shingle Magnetic Recording; No descriptor (PMR) SED Self-encrypting drive SPL Special SKU  <i>In priority order, where 1st is closest to drive type</i>	HDD

### Environment friendly Products and Approach End-of life Management and Recycling

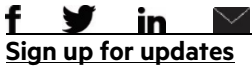
Hewlett Packard Enterprise offers end-of-life **U**, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE Directive (2012/19/EU) 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 Enterprise web site**. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

## Summary of Changes

Date	Version History	Action	Description of Change
03-Jun-2019	Version 14	Changed	Technical Specifications and Overview Sections were updated
04-Feb-2019	Version 13	Changed	Technical Specifications and Overview Sections were updated
15-Oct-2018	Version 12	Changed	Technical Specifications was revised.
01-Oct-2018	Version 11	Changed	Overview, Standard Features, Service and Support, and Technical Specifications were revised.
04-Sep-2018	Version 10	Changed	Technical Specifications Section was updated
04-Jun-2018	Version 9	Added	P04695-B21 HPE 600GB Enterprise 15K SAS 12G LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware HDD P04693-B21 HPE 300GB Enterprise 15K SAS 12G LFF (3.5in) SCC 3yr Wty Digitally Signed Firmware HDD Power specs for all drives
		Changed	Seek time specs to IOPs From Recommended to Extended: 861590-B21, 861594-B21, 861596-B21 From Extended to Recommended: 801882-B21, 881787-B21
05-Mar-2018	Version 8	Changed	Overview, Service and Support, and Technical Specifications were revised.
05-Feb-2018	Version 7	Added	Added new HPE 12TB Midline 7.2K SAS LFF (3.5in) Helium 512e Digitally Signed Firmware HDD models: 881779-B21, 881781-B21, 881783-B21
		Changed	Change format to breakout recommended and extended portfolios.
		Removed	Obsolete SKUs
04-Dec-2017	Version 6	Added	Added new HPE 12TB Midline 7.2K LFF (3.5in) Helium 512e Digitally Signed Firmware HDD models.
		Changed	Overview, Service and Support, and Technical Specifications were revised.
		Removed	Obsolete SKUs were removed from the QuickSpecs.
23-Oct-2017	Version 5	Changed	Part number 881458-B21 was changed to 881457-B21. Care Pack references changed to HPE Pointnext operational services.
25-Sep-2017	Version 4	Added	Added 881458-B21 HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD
		Changed	Overview, Standard Features, Service and Support, and Technical Specifications were revised.
12-Jun-2017	Version 3	Changed	Overview and Technical Specifications were revised.
27-Mar-2017	Version 2	Added	Added new HDD offering.
		Changed	Overview and Technical Specifications were revised.
13-Feb-2017	Version 1	Added	Combined SAS and SATA into one single QuickSpecs. Overview, Models, Compatibility, Standard Features, Service and Support, and Technical Specifications sections were updated. New part number descriptions have been added.

## Summary of Changes



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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.

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