

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

- Hewlett Packard Enterprise’s industry-leading rigorous testing and qualification program, backed by 2.4 million test hours
- 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	Mission-critical, high I/O: Email, enterprise resource planning (ERP), customer relationship management (CRM)		Business Critical, High capacity, high availability storage: Backup, archive, reference	Low I/O: 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 16TB	Up to 4TB
Warranty	3 years	3 years	1 year	1 year
Notes: * Supported on select HPE ProLiant servers only.				

Overview

What's New

- P23449-X21 HPE 16TB SATA 6G Business Critical 7.2K LFF (3.5in) LP 512e ISE HDD
- P23608-X21 HPE 16TB SAS 12G Business Critical 7.2K LFF (3.5in) LP 512e ISE HDD
- P23857-X21 HPE 16TB SATA 6G Business Critical 7.2K LFF (3.5in) SC 512e ISE HDD
- P23863-X21 HPE 16TB SAS 12G Business Critical 7.2K LFF (3.5in) SC 512e ISE HDD
- P24750-K21 HPE 16TB SATA 6G Business Critical 7.2K LFF (3.5in) ST 512e ISE HDD
- P24751-K21 HPE 16TB SAS 12G Business Critical 7.2K LFF (3.5in) ST 512e ISE HDD
- P09153-K21 HPE 14TB SAS 12G Business Critical 7.2K LFF (3.5in) SC 1yr Wty Helium 512e HDD
- P09163-K21 HPE 14TB SATA 6G Business Critical 7.2K LFF (3.5in) SC 1yr Wty Helium 512e HDD

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.

HDD Selection

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

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



Overview

XXXXXX-**X21** is SKU designation formed by a common six digit part number and a -**X21** suffix that identifies a SKU that is available across multiple server family lines. Refer to the table below to find the SKU suffix that applies to the specific server product line this option can be ordered with.

-B21	-H21	-K21
COMPUTE	SPECIALIZED COMPUTE	STORAGE
HPE Cloudline CL2100/CL2200/CL2800/CL3100/CL4100/CL5200/CL5800 Servers HPE Composable Cloud for ProLiant DL HPE Converged System 700/750 HPE ProLiant BL460c/BL660c Servers HPE ProLiant DL20/DL160/DL180 Servers HPE ProLiant DL325/DL360/DL380/DL385/DL560/DL580 Servers HPE ProLiant DX360/DX380 Servers HPE ProLiant DX170r/DX190r/DX200/DX560/DX4200 Servers HPE ProLiant MicroServer HPE ProLiant for Microsoft Azure Stack HPE ProLiant ML30/ML110/ML350 Servers HPE Synergy 480/660 Systems HPE Synergy D3940 Storage Module	HPE Apollo 35/40/70 Systems HPE Apollo 2000/6000 Servers HPE XL170r/XL190r/XL270d (Apollo 6500) Gen10 Server for BlueData Software HPE Converged System 300/500 HPE Edgeline Systems and Servers HPE Integrity BL860c i6/BL870c i6/BL890c i6 Server Blades HPE Integrity MC990 X Server HPE Integrity rx2800 i6 Server HPE Integrity Superdome HPE SGI 8600 System HPE Solutions for SAP HANA (TDI) HPE Apollo Systems for BlueData Software	HPE Apollo 4200 Gen9/Gen10 Servers HPE Apollo 4200 Gen10 LFF Server for BlueData Software HPE Apollo 4510 Gen10 System HPE D3000/D6020/D8000 Disk Enclosures HPE D2220sb/D2500sb Storage Blade HPE Scalable Object Storage with Scality RING HPE SimpliVity 2600 HPE SimpliVity 325/380 Gen10 HPE Storage File Controllers HPE StoreEasy 1460/1560/1650/1660/1860

Disclaimer: This may not be a complete listing of applicable servers



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	-			
			SFF	300GB	870753-X21			
				600GB	870757-X21			
				900GB	870759-X21			
		Enterprise (10K rpm)	SAS 12G	512n	300GB			872475-X21
					600GB			872477-X21
					1.2TB			872479-X21
SFF	512e			1.8TB	872481-X21			
				2.4TB	881457-X21			



Overview

Category	Interface	Form Factor	Format	Capacity	HDD Carrier			
					Smart Carrier SKU	Low Profile SKU	Standard Carrier SKU	
Midline (7.2K rpm)	SAS 12G	LFF	512n	2TB	872485-X21	833926-X21		
				4TB	872487-X21	833928-X21		
		LFF	512e	6TB	861754-X21	861746-X21		
				8TB	819201-X21	834031-X21	858384-B21	
				10TB	857644-X21 ^{He}	P09149-X21 ^{He}	P09151-B21 ^{He}	
				12TB	881779-X21 ^{He}	881781-X21 ^{He}	881783-B21 ^{He}	
				14TB	P09153-X21 ^{He}	P09155-X21 ^{He}		
				16TB	P23863-X21 ^{He}	P23608-X21 ^{He}	P24751-K21 ^{He}	
		SFF	512n	1TB	832514-X21			
			512e	2TB	765466-X21			
		SATA 6G	LFF	512n	1TB	861691-X21	861686-X21	
					2TB	872489-X21	861681-X21	
					4TB	872491-X21	861683-X21	
				512e	6TB	861750-X21	861742-X21	
	8TB				819203-X21	834028-X21		
	12TB				881785-X21 ^{He}	881787-X21 ^{He}		
	14TB				P09163-X21 ^{He}	P09165-X21 ^{He}		
	16TB			P23857-X21 ^{He}	P23449-X21 ^{He}	P24750-K21 ^{He}		
	SFF			2TB	765455-X21			
			512n	1TB	655710-X21			
Entry (7.2K)	SATA 6G	LFF	512e	1TB	843266-B21 [*]			
			512n	1TB	801882-B21			
				4TB	801888-B21			

Notes:

- ^{He} Helium Drive.
- Refer to the appropriate Server QuickSpecs for full compatibility details.
- ^{*}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.

Drive Quality and Performance

While selecting the drives in our HPE 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."

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

Notes: 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.

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.

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.

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>

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.



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.

Notes: 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.

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.

Notes:

- ¹IDC Whitepaper
 - ²HPE 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.

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

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.



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.

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>

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>



Technical Specifications

HDD 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-X21	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-X21	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-X21	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

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



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-X21	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-X21	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-X21	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-X21	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-X21	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)	
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- X21	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	
P23863-X21	HPE 16TB SAS 12G Business Critical 7.2K LFF (3.5in) SC 512e ISE HDD	250	110	120	125	5.23	6.69	8.01	6.40	



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)
833926-X21	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-X21	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-X21	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-X21	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
P09149-X21	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-X21	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-X21	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
P23608-X21	HPE 16TB SAS 12G Business Critical 7.2K LFF (3.5in) LP 512e ISE HDD	250	110	120	125	5.23	6.69	8.01	6.40



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
P24751-K21	HPE 16TB SAS 12G Business Critical 7.2K LFF (3.5in) ST 512e ISE HDD	250	110	120	125	5.23	6.69	8.01	6.40



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



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-X21	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-X21	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-X21	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-X21	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-X21	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
P09161-X21	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-X21	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-X21	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
P23449-X21	HPE 16TB SATA 6G Business Critical 7.2K LFF (3.5in) LP 512e ISE HDD	265	110	120	125	4.73	6.18	7.65	6.92



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)
P09163-X21	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
P23857-X21	HPE 16TB SATA 6G Business Critical 7.2K LFF (3.5in) SC 512e ISE HDD	265	110	120	125	4.73	6.18	7.65	6.92

Midline (7.2K rpm)									
Form Factor		LFF (3.5")		Carrier		Standard Carrier (ST)			
Rotational Speed		7200 rpm		Dimensions					
Interface		SATA		Height		1.04 in (26.4 mm)			
Transfer Rate Synchronous (Max)		12Gb/sec		Width		4.36 in (110.7 mm)			
Bytes/Sector		512e		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)
P24750-K21	HPE 16TB SATA 6G Business Critical 7.2K LFF (3.5in) ST 512e ISE HDD	265	110	120	125	4.73	6.18	7.65	6.92



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-X21	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-X21	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

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-X21	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-X21	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	

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	HPE/NHP	Smart/Non-Smart	Carrier Name (Abbreviation)	SFF/LFF
SFF Carrier	Hot Plug	Smart	Smart Carrier (SC)	SFF
		Non-Smart	Standard (ST)	SFF
LFF Carrier	Hot Plug	Smart	Smart Carrier (SC)	LFF
			Smart Carrier Converter (SCC)	LFF
		Non-Smart	Low Profile (LP)	LFF
			Low Profile Converter (LPC)	LFF
			Standard (ST)	LFF
No Carrier	Non-Hot Plug	Non-Smart	Raw LFF HDD (RW)	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 Gen10 Series										
	HPE Apollo pc40	Gen10				Yes				Yes
	HPE Apollo sx40 Server	Gen10				Yes				Yes
	HPE Apollo 70 System	Gen10					Yes			
HPE Apollo 2000 Series										
HPE Apollo	HPE Apollo XL170r Gen9 Server	Gen9	Yes	Yes				Yes		
	HPE Apollo XL170r Gen10 Server	Gen10	Yes	Yes				Yes		
	HPE Apollo XL190r Gen9 Server	Gen9	Yes	Yes				Yes		
	HPE Apollo XL190r Gen10 Server	Gen10	Yes	Yes				Yes		
HPE Apollo 4000 Series										
	HPE Apollo 4200 Gen9 Server	Gen9	Yes					Yes		
	HPE Apollo 4200 Gen10 Server	Gen10	Yes	Yes				Yes		
	HPE Apollo 4500 System	Gen9	Yes					Yes		
	HPE Apollo 4510 Gen10	Gen10	Yes	Yes				Yes		
HPE Apollo 6000 Series										
	HPE ProLiant XL230k Gen10 Server	Gen10	Yes	Yes						
HPE Blades										
HPE Blades	HPE ProLiant BL460c Gen9 Server Blade	Gen9	Yes	Yes						
	HPE ProLiant BL460c Gen10 Server Blade	Gen10	Yes	Yes						
	HPE ProLiant BL660c Gen9 Server Blade	Gen9	Yes	Yes						
	HPE ProLiant WS460c Gen9 Graphics Server Blade	Gen9	Yes							



Technical Specifications

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



Technical Specifications

HDD SKU Description Decoder

Long Name

HPE 10TB SAS 12G Business Critical 7.2K LFF (3.5in) SC 512e HDD

Brand	Storage Capacity	Interface Type/ Interface Speed	Workload	Form Factor Type / Form Factor Size	Carriers	Wty.	Special Features	Drive Type
HPE	300-900GB 1-16TB	SATA/SAS 6G/12G	Mission Critical 15/10K Business Critical 7.2K Entry 7.2K/5.9K	SFF (2.5IN) LFF (3.5IN)	SC Smart Carrier SCC Smart Carrier Converter LP Low Profile LPC Low Profile Converter ST Standard STC Standard Converter RW Raw Drive	3Yr <u>Wty</u> 1Yr <u>Wty</u>	512e 512n (No descriptor) Special – Special SKUs	HDD

Note:
Enterprise -> Mission Critical
Midline -> Business Critical

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
20-Jul-2020	Version 19	Changed	Overview and Technical Specifications Sections were updated
01-Jun-2020	Version 18	Changed	SKUs were Added in Overview Section
03-Feb-2020	Version 17	Changed	Overview Section was updated
09-Dec-2020	Version 16	Changed	Added new HPE 16TB Midline 7.2K LFF (3.5in) Helium 512e Digitally Signed Firmware HDD models.
02-Dec-2019	Version 15	Changed	Technical Specifications and Overview Sections were updated
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	Changed	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 Seek time specs to IOPs From Recommended to Extended: 861590-B21, 861594-B21, 861596-B21 From Extended to Recommended: 801882-B21, 881787- X21
05-Mar-2018	Version 8	Changed	Overview, Service and Support, and Technical Specifications were revised.
05-Feb-2018	Version 7	Changed	Added new HPE 12TB Midline 7.2K SAS LFF (3.5in) Helium 512e Digitally Signed Firmware HDD models: 881779-B21, 881781- X21 , 881783-B21 Change format to breakout recommended and extended portfolios. Obsolete SKUs
04-Dec-2017	Version 6	Changed	Added new HPE 12TB Midline 7.2K LFF (3.5in) Helium 512e Digitally Signed Firmware HDD models. Overview, Service and Support, and Technical Specifications were revised. Obsolete SKUs were removed from the QuickSpecs.
23-Oct-2017	Version 5	Changed	Part number 881458-B21 was changed to 881457- X21 . Care Pack references changed to HPE Pointnext operational services.
25-Sep-2017	Version 4	Changed	Added 881458-B21 HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD 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	Changed	Added new HDD offering. Overview and Technical Specifications were revised.
13-Feb-2017	Version 1	New	New QuickSpecs



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

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