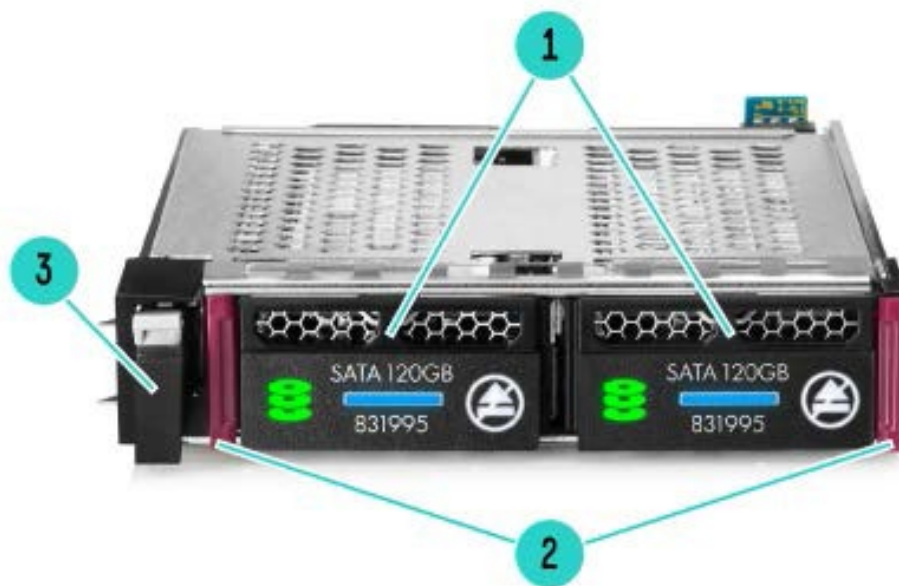## Overview

HPE Solid State Disk Drives
(SSD, AICs, M.2s and M.2 EKits)

HPE Solid State Drives (SSDs), Add-In-Cards, M.2s and M.2 Enablement Kits (EKits) are based upon industry leading NAND Flash technology, which delivers exceptional performance and endurance to support a growing broad spectrum of demanding applications with varying workload performance requirements.

These storage devices offer better I/O latency & more power efficient solutions when compared with traditional rotating (HDD) media, while also fitting seamlessly into existing HPE server & storage infrastructures, and are available in a number of form factors including: Small Form Factor (SFF), Large Form Factor (LFF), M.2, and PCIe/NVME Add-In-Cards (AIC).

Overview

Item   Description

1.   uFF SATA Drive Modules (hot pluggable)
2.   uFF Drive Ejection Latches
3.   Adapter Ejection Release Latch

HPE M.2 Enablement Kits

M.2 Enablement Kit with Small Form Factor Flash Adapter with Dual uFF SSDs

The HPE M.2 Enablement Kit is a Small Form Factor (SFF) Flash Adapter that packages two 6G SATA M.2 Micro Form Factor (uFF) Sleds in a Dual Domain SFF Smart Drive bay which enables customers to install twice as many drives in an HPE server module when compared to standard SFF Smart Drive bays.

The HPE M.2 Enablement Kit with Small Form Factor Flash Adapter with Dual uFF SSDs increases flexibility, availability and serviceability for storage resources inside the server. The M.2 Enablement Kit with Small Form Factor Flash Adapter with Dual uFF SSDs option increases the composability of the server by enabling configurations that support a broader range of applications and workloads by providing up to 2 drives (2 x HPE SFF Dual uFF SSD options) within 1 drive bay, for example for higher drive performance, or when an on-line spare drive is needed. When higher application availability is required, customers can separate RAID1 mirror boot drives from the application. DATA availability is increased by being able to configure a RAID5 set, which also means more usable capacity.

Overview

What's New?
New Solid State Drives & Drive Option Kit(s):

- P26285-**X21**   HPE 960GB SAS 24G Read Intensive SFF SC PM6 SSD
- P26290-**X21**   HPE 800GB SAS 24G Mixed Use SFF SC PM6 SSD
- P26295-**X21**   HPE 400GB SAS 24G Write Intensive SFF SC PM6 SSD
- P26302-**X21**   HPE 1.92TB SAS 24G Read Intensive SFF SC PM6 SSD
- P26306-**X21**   HPE 3.84TB SAS 24G Read Intensive SFF SC PM6 SSD
- P26310-**X21**   HPE 7.68TB SAS 24G Read Intensive SFF SC PM6 SSD
- P26314-**X21**   HPE 15.3TB SAS 24G Read Intensive SFF SC PM6 SSD
- P26354-**X21**   HPE 1.6TB SAS 24G Mixed Use SFF SC PM6 SSD
- P26358-**X21**   HPE 3.2TB SAS 24G Mixed Use SFF SC PM6 SSD
- P26362-**X21**   HPE 6.4TB SAS 24G Mixed Use SFF SC PM6 SSD
- P26372-**X21**   HPE 800GB SAS 24G Write Intensive SFF SC PM6 SSD
- P26376-**X21**   HPE 1.6TB SAS 24G Write Intensive SFF SC PM6 SSD

HPE Solid State Drive Selector Tool
A web-based tool that dramatically reduces the time and complexity of selecting the right SSD for your demanding workloads.
http://ssd.hpe.com
Dramatically reduces the time to select the right SSD for your HPE Server
- Recommends the most appropriate SSDs for specific customer workloads
- Reduces selection time and eliminates complexity; sort by server model, price, & performance
- Ideal for customers, HPE Sales, and HPE channel partners
- Simple, web-based tool; user-friendly interface

Firmware Updates
HPE Digitally Signed Firmware Prevents unauthorized access to your data by providing the security and assurance that drive firmware comes from a trusted source and protects against malicious attacks. Digitally Signed Firmware is indicated by "DS" in the SKU description of older SKUs. All SDDs in the HPE main portfolio of SKU have digitally signed firmware unless otherwise noted, particularly in newer released SKU (even if DS does not appear in the description)Digitally Signed Firmware can be confirmed in the capacity/workload tables by SKU number.

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 protects data-at-rest on all SAS and SATA drives connected directly to the controller. This solution meets stringent compliance regulations such as HIPAA, FIPS, and Sarbanes-Oxley.

Minimally Supported Operating Systems for all SATA and SAS SSDs
- Windows Server 2019
- Microsoft Windows Server 2008 (x86 and x64) SP2 and R2 w/SP1
    - Standard Edition
    - Datacenter
    - Enterprise Edition
    - Web Server
    - Embedded
- Microsoft Windows 2012 Server (x64) R2
- Microsoft Windows 2016 (RTM)
- Red Hat Enterprise Linux 6 (EM64T/AMD64)
- Red Hat Enterprise Linux 7 (EM64T/AMD64)
- SLES 11 (EM64T/AMD64) (includes XEN)
- SLES 12 (EM64T/AMD64) (includes XEN)
- VMware ESXi 5.5
- VMware ESXi 6.0

Overview

Our Solid State product categories include Solid State Drives, or SSDs

We define enterprise-class as products that include full data path error detection and surprise power loss protection. In addition, our SSDs have HPE SmartSSD Wear Gauge support, which provides diagnostic information and reports on the health of any given drive.

HPE Enterprise SSDs are available in three categories based on the customer's application and workload level: Read Intensive (RI), Mixed Use (MU), and Write Intensive (WI). These categories indicate the number of drive writes per day (DWPD) that you can expect from the drive. (DWPD is the maximum number of 4K host writes to the entire drive capacity of the SSD per day over a five-year period).

Workloads such as Read caching, Web Servers, Social Media, and Boot are more Read Performance driven. Workloads such as Business Intelligence, Big Data Analytics, Virtualization tend to be more Write Performance driven.

Our Read Intensive SSDs are typically focused on Read Performance with an Endurance less than or equal to 1 full drive write per day. Our Write Intensive SSDs are focused on Write Performance with an Endurance of >=10 full drive writes per day (DWPD). As an example, if we have an 800GB Write Intensive SSD with an endurance of 10 Drive Writes per Day, it means that customers can write to the entire 800GB capacity of that SSD 10 times per day, and the drive will last for 5 years. Positioned in-between RI and WI, we have products with Balanced Read and Write Performance that we call Mixed Use (MU), with an Endurance of typically ~3 DWPD.

HPE SATA SSDs deliver enterprise features at an affordable price in HPE servers. Entry-level pricing is fueling the rapid adoption of SSDs for read-intensive workloads, with the cost per IOPS comparing favorably to HDDs.

For best access to SATA SSDs, HPE has enhanced its extensive SSD portfolio with a multi-vendor offering that allows for shorter lead times to immediately available supply and extended SKU lifecycles on preferably priced HPE certified SATA SSDs, ensuring the SSDs included in the multi-vendor options deliver the minimum performance published or better.
HPE's multi-vendor SSD offering helps customers simplify their purchasing decisions by providing immediate availability, preferable pricing and SKU longevity on HPE certified SSDs.

HPE multi-vendor portfolio utilizes specific vendor SSDs which are HPE qualified and released as single sourced SATA SSD SKUs and are bundled into a multi-sourced SKU per capacity. Identified by Multi Vendor (MV) in the SKU description, these multi-vendor SKUs provide the shortest lead time of SATA SSDs, preferable pricing to single sourced SKUs and are assured to meet or exceed the minimum performance specifications and power requirements published in this HPE QuickSpecs document per capacity SKU number.For customers looking to step up from SATA SSDs, HPE single-port Value SAS SSDs offer a significant performance boost over SATA SSDs with roughly twice the IOPS, and are typically lower in cost than traditional SAS SSD drives.

HPE full-performance SAS SSDs allow greater I/O bandwidth for superior performance over Value SAS SSDs, providing high write performance and endurance. They are best suited for mission-critical enterprise environments with workloads high in read and writes.

For customers looking for even more performance, High Performance Low Latency NVMe SSDs are a category of drives that offers a combination of high throughput, low latency, and ultra-high endurance. The first HPE SSDs using 3D XPoint technology*, these SSDs are optimized to break through data access bottlenecks by providing a new data storage tier. High Performance Low Latency NVMe SSDs accelerate applications for fast caching and fast storage to increase scale per server and reduce transaction costs for latency sensitive workloads.

Using the above information along with our **HPE SSD Selector Tool** at **http://ssd.hpe.com** you can quickly determine what SSD solution might best meet your needs. You can also compare specific capacity, performance attributes, and server compatibility.

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		

Standard Features

What is SSD?
An enduring data storage device utilizing NAND (negative-AND) semiconductor technology to store and access data which is volatile without the aid of an auxiliary power source.

SSD Quality
Today's businesses are seeing larger, more complex applications, coupled with an increasing amount of mission-critical and transaction processing data demand. In this environment, storage has become a critical component, significantly defining requirements for both systems reliability and performance. This is why HPE drives undergo a rigorous qualification process to ensure functionality and eliminate firmware and O/S incompatibilities.

Integration
Many issues customers have with third party drives are "simple" integration issues. When buying from another supplier, there is no guarantee that a drive has been correctly set for proper operation with ProLiant servers and storage systems. These incompatibilities can create problems in configuration, can rob your system of performance, or at their worst, can cause you to lose data. HPE drives are specifically designed and tested for flawless operation in your HPE equipment. The integration of solid state drives in HPE systems means that associated components are right for your ProLiant server.

Support Matrix
Please see the following URL for the latest list of supported servers and enclosures:
https://www.hpe.com/us/en/servers.html
Notes: Non-hot plug devices are 15mm Z-height, which restricts them to those servers that can accept a 15mm device.

Product Category
HPE Enterprise SSDs are available in three categories based on workload level: Read Intensive (RI), Mixed Use (MU), and Write Intensive (WI). The categories indicate the number of drive writes per day
(DWPD1) that you can expect from the drive. (DWPD is the maximum number of 4K host writes to the entire drive capacity of the SSD per day over a five-year period.

Maximum Usage Limitations
NAND Flash devices use semiconductor technology that has a finite number of data that can be written to the device, defined as the Maximum Usage Limit, commonly called "Write Endurance". Write Endurance - is measured while running 100% random 4KiB writes across the entire SSD.

Drive Writes Per Day (DWPD) - Workload environment is based on 100% random 4KiB writes for five (5) years, which is the maximum amount of data that can be written to the device before reaching the device's write endurance limit.

HPE Solid State Drives (SSDs) are equipped with tools that can report the amount of lifetime remaining. Introducing HPE SMARTSSD Wear Gauge™. To take advantage of SMARTSSD Wear Gauge™, Smart Array Firmware version 5.0 or greater is required and HPE Array Configuration Utility (ACU) or HPE Diagnostic Utility (ADU) must be running.

Simple Network Management Protocol (SNMP) Storage Agents for both Microsoft® Windows® and Linux provide status and condition updates through traps, OS event logs and the HPE System **Management Homepage:**
https://www.hpe.com/us/en/product-catalog/detail/pip.hp-system-management-homepage-software.344313.html

The HPE SMARTSSD Wear Gauge™ requires a Smart Array or Smart HBA controller listed below.
Standard Features
- HPE Smart Array PX1X Controller Series or newer
- HPE Smart HBA PX4X Controller Series
- HPE Dynamic Smart Array BX2Xi Controller Series or newer
- HPE Dynamic Smart Array B320i Controller

Notes: HPE Direct Connect to the HPE Smart Array B110i SATA RAID Controller is not currently supported by the above noted tool.

Standard Features

Data Retention
Data Retention is the period of time for retaining the data in the NAND once the maximum rated endurance level has occurred. These SSD's are rated for 3 months if no power is applied once the SSD has reached maximum rated write endurance.

Warranty
SSD & AIC Standard 3/0/0 warranty; Customer Self Repair (CSR) subject to maximum usage limitations. 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 warranty coverage.
Notes: In cases where an M.2 SSD is used in conjunction with a Server Cartridge the Warranty includes 3-Year Parts, 3-Year Labor, 3-Year (3/3/3) Onsite support for that option only.

HPE SATA Very Read Optimized Solid State Drives Endurance
"Very Read Optimized" is an HPE term used to differentiate new QLC NAND based SSDs that will have variable endurance levels or DWPD (Drive Writes Per Day) depending on how a customer writes data to them. Using QLC NAND requires that the workload write percentage and block size be understood as the endurance can be very different than other SSDs in the market.

HPE VRO SSDs are designed for targeted workloads that drive a typical mix of >80% random reads and <20% sequential large block writes. Today it is standard for all SSDs to use a 100% 4K random write workload to generate the specified endurance (DWPD) that is listed in the technical specifications. However, as VRO SSDs are not targeted at that 100% 4K random write workload, it's important to consider the actual targeted workload.

The VRO targeted workloads would typically have all write operations that are sequential and in 128K blocks which would allow all VRO capacities to support 0.8 DWPD endurance. However, if the VRO SSD is used differently than targeted, the DWPD will vary based upon how the drive is written to. If used incorrectly, such as the industry standard 4K random write workload the DWPD endurance drops to: 0.2 on the 1.92TB; 0.09 on the 3.84TB and 0.05 on the 7.68TB VRO SSDs.

Table 1. Endurance by workload						
Capacity	**Drive Writes Per Day (DWPD)**			**Total Bytes Written (TBW)**		
	1.92TB	**3.84TB**	**7.68TB**	**1.92TB**	**3.84TB**	**7.68TB**
100% 128K sequential writes	0.8	0.8	0.8	2800 TB	5600 TB	11210 TB
90% 128K sequential writes* 10% 4K random writes	0.72	0.62	0.56	2505 TB	4370 TB	7880 TB
80% 128K sequential writes* 20% 4K random writes	0.66	0.56	0.39	2295 TB	3900 TB	5510 TB
70% 128K sequential writes* 30% 4K random writes	0.56	0.41	0.27	1970 TB	2870 TB	3800 TB
50% 128K sequential writes* 50% 4K random writes	0.44	0.25	0.16	1530 TB	1760 TB	2175 TB
100% 16K random writes	0.2	0.2	0.2	700 TB	1366 TB	2733 TB
100% 8K random writes	0.2	0.18	0.1	700 TB	1260 TB	1400 TB
100% 4K random writes	0.2	0.09	0.05	700 TB	630 TB	700 TB
Notes: *Based on 100% 4K random writes; Larger block sizes and sequential writes provide greater endurance, as listed in the table in the Endurance section						

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 Solid State Drives are supported as a part of the HPE Server Infrastructure. No separate Support Services are needed 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 24x7monitoring, 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:
–   1.-IDC Whitepaper
–   2-.HPE CSC Reports 2014-2015

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 **HPE Support Center**

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

Warranty / 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 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.

Additional Notes Regarding Usage and Wear
- DWPD (Drive-Writes-Per Day) ->Full drive writes per day for 5 years. Based on 100% Random Writes (KiB).
- HPE Enterprise SSDs deliver: Full data path error detection, surprise power loss protection and Smart SSD Wear Gauge support.

For more information
To learn more on services for HPE ESSN 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**
- **https://www.hpe.com/us/en/storage/entry-level.html**

Also

Take control of your data - A guide to understanding storage technologies.
- **http://www.hpe.com/h20195/V2/getpdf.aspx/4AA4-7667ENW.pdf?ver=1.0**

Technical Specifications

SATA Capacity, Workload and Carrier Specifications

value	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
SATA Interface– (Capacity, Workload, Carrier...)											
P05976-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC S4610 SSD	480	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05980-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC S4610 SSD	960	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05986-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC S4610 SSD	1,920	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05994-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC S4610 SSD	3,840	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P09712-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SM883 SSD	480	MU	SATA	SFF	Hot Plug	SC	Yes	MLC	Single	Gen9,10
P09716-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SM883 SSD	960	MU	SATA	SFF	Hot Plug	SC	Yes	MLC	Single	Gen9,10
P09718-**X21**	HPE 960GB SATA 6G Mixed Use LFF SCC SM883 SSD	960	MU	SATA	LFF	Hot Plug	SCC	Yes	MLC	Single	Gen9,10
P09722-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SM883 SSD	1,920	MU	SATA	SFF	Hot Plug	SC	Yes	MLC	Single	Gen9,10
P09724-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC SM883 SSD	1,920	MU	SATA	LFF	Hot Plug	SCC	Yes	MLC	Single	Gen9,10
P13658-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SE5031 SSD	480	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P13660-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SE5031 SSD	960	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P13662-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SE5031 SSD	1,920	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P13664-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF RW SE5031 SSD	3,840	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P19947-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC 5300M SSD	480	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19949-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC 5300M SSD	960	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19951-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC 5300M SSD	1,920	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19953-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC 5300M SSD	3,840	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19978-**X21**	HPE 480GB SATA 6G Mixed Use LFF SCC 5300M SSD	480	MU	SATA	LFF	Hot Plug	SCC	Yes	TLC	Single	Gen10, 10.5
P19980-**X21**	HPE 960GB SATA 6G Mixed Use LFF LPC 5300M SSD	960	MU	SATA	LFF	Hot Plug	LPC	Yes	TLC	Single	Gen10, 10.5
P19982-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC 5300M SSD	1,920	MU	SATA	LFF	Hot Plug	SCC	Yes	TLC	Single	Gen10, 10.5
P21517-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC SM883 SSD	1,920	MU	SATA	SFF	Hot Plug	SC	Yes	MLC	Single	Gen 10

Technical Specifications

SATA Interface– (Capacity, Workload, Carrier...)

HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
875498-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	480	RI	SATA	M.2	Non Hot Plug	N/A	Yes	TLC	Single	Gen9,10
P04556-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC PM883 SSD	240	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04560-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC PM883 SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04564-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC PM883 SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04566-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC PM883 SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04570-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC PM883 SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05924-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC S4510 SSD	240	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05928-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC S4510 SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05932-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC S4510 SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05938-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC S4510 SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05946-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC S4510 SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06194-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC SE4011 SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06196-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC SE4011 SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06198-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC SE4011 SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06200-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC SE4011 SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P09685-**X21**	HPE 240GB SATA 6G Read Intensive SFF RW PM883 SSD	240	RI	SATA	SFF	Non-Hot Plug	RW	Yes	TLC	Single	Gen9,10
P09687-**X21**	HPE 480GB SATA 6G Read Intensive LFF SCC PM883 SSD	480	RI	SATA	LFF	Hot Plug	SCC	Yes	TLC	Single	Gen9,10
P09691-**X21**	HPE 960GB SATA 6G Read Intensive LFF LPC PM883 SSD	960	RI	SATA	LFF	Hot Plug	LPC	Yes	TLC	Single	Gen9,10
P09697-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF RW PM883 SSD	3,840	RI	SATA	SFF	Non-Hot Plug	RW	Yes	TLC	Single	Gen9,10

Technical Specifications

SATA Interface– (Capacity, Workload, Carrier...)												
HPE Option Kit SKU	**Long Description**	**Capacity**	**Workload Type**	**Interface Type**	**Form Factor**	**Plug Type**	**Carrier Type**	**Digitally Signed Firmware (DS)**	**Flash Type**	**Port**	**Server Gen Supported (Select Platforms)**
P04560-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC PM883 SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04564-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC PM883 SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04566-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC PM883 SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P04570-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC PM883 SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05924-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC S4510 SSD	240	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05928-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC S4510 SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05932-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC S4510 SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05938-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC S4510 SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P05946-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC S4510 SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06194-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC SE4011 SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06196-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC SE4011 SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06198-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC SE4011 SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P06200-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC SE4011 SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P09685-**X21**	HPE 240GB SATA 6G Read Intensive SFF RW PM883 SSD	240	RI	SATA	SFF	Non-Hot Plug	RW	Yes	TLC	Single	Gen9,10
P09687-**X21**	HPE 480GB SATA 6G Read Intensive LFF SCC PM883 SSD	480	RI	SATA	LFF	Hot Plug	SCC	Yes	TLC	Single	Gen9,10
P09691-**X21**	HPE 960GB SATA 6G Read Intensive LFF LPC PM883 SSD	960	RI	SATA	LFF	Hot Plug	LPC	Yes	TLC	Single	Gen9,10
P09697-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF RW PM883 SSD	3,840	RI	SATA	SFF	Non-Hot Plug	RW	Yes	TLC	Single	Gen9,10
P19935-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC 5300P SSD	240	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19937-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC 5300P SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19939-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC 5300P SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19941-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC 5300P SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5

Technical Specifications

SATA Interface– (Capacity, Workload, Carrier...)

HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P19943-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC 5300P SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19945-**X21**	HPE 7.68TB SATA 6G Read Intensive SFF SC 5300P SSD	7,680	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P19974-**X21**	HPE 480GB SATA 6G Read Intensive LFF LPC 5300P SSD	480	RI	SATA	LFF	Hot Plug	LPC	Yes	TLC	Single	Gen10, 10.5
P23487-**X21**	HPE 1.92TB SATA 6G Very Read Optimized SFF SC 5210 SSD	1,920	VRO	SATA	SFF	Hot Plug	SC	Yes	QLC	Single	Gen10, 10.5
P23489-**X21**	HPE 3.84TB SATA 6G Very Read Optimized SFF SC 5210 SSD	3,840	VRO	SATA	SFF	Hot Plug	SC	Yes	QLC	Single	Gen10, 10.5
P23491-**X21**	HPE 3.84TB SATA 6G Very Read Optimized SFF LPC 5210 SSD	3,840	VRO	SATA	LFF	Hot Plug	LPC	Yes	QLC	Single	Gen10, 10.5
P23493-**X21**	HPE 7.68TB SATA 6G Very Read Optimized SFF SC 5210 SSD	7,680	VRO	SATA	SFF	Hot Plug	SC	Yes	QLC	Single	Gen10, 10.5
P23495-**X21**	HPE 7.68TB SATA 6G Very Read Optimized SFF LPC 5210 SSD	7,680	VRO	SATA	LFF	Hot Plug	LPC	Yes	QLC	Single	Gen10, 10.5
P24190-**X21**	HPE 960GB SATA 6G Very Read Optimized SFF SC 5210 SSD	960	VRO	SATA	SFF	Hot Plug	SC	Yes	QLC	Single	Gen10, 10.5

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

SATA Speeds and Feeds Specifications

SATA Interface – (Speeds & Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P05976-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC S4610 SSD	3,000	3.50	530 / 480	110 / 52	68,000 / 40,000	76,000@Q32 / 42,000@Q32
P05980-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC S4610 SSD	6,000	3.40	530 / 480	110 / 50	68,000 / 41,000	76,000@Q32 / 43,000@Q32
P05986-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC S4610 SSD	10,000	3.10	525 / 480	110 / 52	69,000 / 38,000	76,000@Q32 / 41,000@Q32
P05994-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC S4610 SSD	22,000	3.10	525 / 480	110 / 55	69,000 / 36,000	76,000@Q32 / 38,000@Q32

Technical Specifications

SATA Interface – (Speeds & Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P09712-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SM883 SSD	3,000	3.50	535 / 495	91 / 36	70,000 / 29,000	80,000@Q32 / 29,000@Q4
P09716-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SM883 SSD	6,000	3.50	535 / 495	91 / 36	70,000 / 31,000	80,000@Q32 / 31,000@Q4
P09718-**X21**	HPE 960GB SATA 6G Mixed Use LFF SCC SM883 SSD	6,000	3.50	535 / 495	91 / 36	70,000 / 31,000	80,000@Q32 / 31,000@Q4
P09722-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SM883 SSD	12,100	3.50	535 / 495	91 / 36	70,000 / 31,000	80,000@Q32 / 31,000@Q4
P09724-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC SM883 SSD	12,100	3.50	535 / 495	91 / 36	70,000 / 31,000	80,000@Q32 / 31,000@Q4
P13658-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SE5031 SSD	6,480	7.40	510 / 430	120 / 38	62,000 / 50,000	72,000@Q32 / 50,000@Q4
P13660-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SE5031 SSD	7,000	4.00	530 / 500	120 / 38	61,000 / 53,000	72,000@Q32 / 53,000@Q4
P13662-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SE5031 SSD	10,600	3.05	530 / 500	125 / 38	59,000 / 53,000	71,000@Q32 / 53,000@Q4
P13664-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF RW SE5031 SSD	29,000	4.20	530 / 500	125 / 38	59,000 / 53,000	70,000@Q32 / 53,000@Q4
P19947-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC 5300M SSD	4,380	5.00	520 / 450	125 / 37	67,000 / 52,000	76,000@Q64 / 53,000@Q4
P19949-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC 5300M SSD	8,760	5.00	520 / 490	125 / 37	67,000 / 52,000	76,000@Q256 / 52,000@Q4
P19951-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC 5300M SSD	17,520	5.00	520 / 490	125 / 37	67,000 / 52,000	75,000@Q256 / 52,000@Q4
P19953-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC 5300M SSD	24,531	3.50	510 / 490	125 / 39	67,000 / 34,000	77,000@Q32 / 35,000@Q4
P19978-**X21**	HPE 480GB SATA 6G Mixed Use LFF SCC 5300M SSD	4,380	5.00	520 / 450	125 / 37	67,000 / 52,000	76,000@Q64 / 53,000@Q4
P19980-**X21**	HPE 960GB SATA 6G Mixed Use LFF LPC 5300M SSD	8,760	5.00	520 / 490	125 / 37	67,000 / 52,000	76,000@Q256 / 52,000@Q4
P19982-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC 5300M SSD	17,520	5.00	520 / 490	125 / 37	67,000 / 52,000	75,000@Q256 / 52,000@Q4
P21517-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC SM883 SSD	24,200	3.00	525 / 480	140 / 76	61,000 / 32,000	69,000@Q32 / 32,500@Q32
875498-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	450	0.50	500 / 425	130 / 40	61,000 / 46,000	67,000@Q32 / 46,000@Q64
P04556-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC PM883 SSD	350	0.80	535 / 315	105 / 70	70,000 / 14,000	79,000@Q32 / 14,000@Q1
P04560-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC PM883 SSD	700	0.80	535 / 495	105 / 40	68,000 / 25,000	77,000@Q32 / 25,000@Q1

Technical Specifications

SATA Interface – (Speeds & Feeds)								
HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P04564-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC PM883 SSD	1,400	0.80	535 / 495	105 / 36	65,000 / 29,000	76,000@Q32 / 29,000@Q4
P04566-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC PM883 SSD	2,800	0.80	535 / 495	120 / 36	64,000 / 30,000	73,000@Q32 / 30,000@Q4
P04570-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC PM883 SSD	5,600	0.80	535 / 495	120 / 36	63,000 / 30,000	72,000@Q32 / 30,000@Q4
P05924-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC S4510 SSD	900	1.90	530 / 255	110 / 65	66,000 / 16,000	76,000@Q32 / 16,500@Q4
P05928-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC S4510 SSD	1,200	1.30	530 / 465	110 / 75	68,000 / 17,500	76,000@Q32 / 19,000@Q4
P05932-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC S4510 SSD	3,400	1.90	525 / 480	110 / 60	68,000 / 33,000	76,000@Q32 / 35,000@Q32
P05938-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC S4510 SSD	7,100	2.00	530 / 480	110 / 60	69,000 / 33,000	76,000@Q32 / 34,000@Q32
P05946-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC S4510 SSD	13,100	1.90	525 / 480	110 / 65	69,000 / 28,000	76,000@Q32 / 30,500@Q32
P06194-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC SE4011 SSD	430	0.50	530 / 300	120 / 65	65,000 / 15,000	65,500@Q32 / 15,400@Q1
P06196-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC SE4011 SSD	1,710	1.00	530 / 480	120 / 42	58,500 / 36,500	58,500@Q32 / 38,200@Q16
P06198-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC SE4011 SSD	3,100	0.90	530 / 470	120 / 42	55,500 / 31,000	56,000@Q32 / 32,500@Q4
P06200-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC SE4011 SSD	3,400	0.50	530 / 480	120 / 42	54,000 / 26,000	56,000@Q32 / 25,000@Q4
P09685-**X21**	HPE 240GB SATA 6G Read Intensive SFF RW PM883 SSD	250	0.80	535 / 315	105 / 70	70,000 / 14,000	79,000@Q32 / 14,000@Q1
P09687-**X21**	HPE 480GB SATA 6G Read Intensive LFF SCC PM883 SSD	700	0.80	535 / 495	105 / 40	68,000 / 25,000	77,000@Q32 / 25,000@Q1
P09691-**X21**	HPE 960GB SATA 6G Read Intensive LFF LPC PM883 SSD	1,400	0.80	535 / 495	105 / 36	65,000 / 29,000	76,000@Q32 / 29,000@Q4
P09697-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF RW PM883 SSD	5,600	0.80	535 / 495	120 / 36	63,000 / 30,000	72,000@Q32 / 30,000@Q4
P19935-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC 5300P SSD	657	1.50	520 / 300	124 / 37	57,000 / 43,000	65,000@Q64 / 44,000@Q32
P19937-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC 5300P SSD	1,324	1.50	510 / 395	125 / 38	65,000 / 38,500	75,000@Q256 / 4,0000@Q4
P19939-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC 5300P SSD	2,628	1.50	515 / 495	125 / 38	66,000 / 36,000	76,000@Q64 / 37,000@Q4
P19941-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC 5300P SSD	5,256	1.50	520 / 495	125 / 38	67,000 / 31,000	76,000@Q32 / 33,000@Q32

Technical Specifications

SATA Interface – (Speeds & Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P19943-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC 5300P SSD	8,410	1.20	510 / 490	125 / 43	67,000 / 22,500	76,000@Q256 / 23,000@Q1
P19945-**X21**	HPE 7.68TB SATA 6G Read Intensive SFF SC 5300P SSD	9,111	0.65	505 / 495	126 / 87	67,000 / 11,500	76,000@Q32 / 11,800@Q64
P19974-**X21**	HPE 480GB SATA 6G Read Intensive LFF LPC 5300P SSD	1,324	1.50	510 / 395	125 / 38	65,000 / 38,500	75,000@Q256 / 40,000@Q4
P23495-**X21**	HPE 7.68TB SATA 6G Very Read Optimized LFF (3.5in) LPC 3yr Wty SSD	700	0.05	500 / 340	175 / 225	54,000 / 4,500	62,000@Q64 / 4,500@Q128
P24190-**X21**	HPE 960GB SATA 6G Very Read Optimized SFF (2.5in) SC 3yr Wty SSD	350	0.20	500 / 135	170 / 505	43,000 / 1,950	49,000@Q128 / 1,950@Q4

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

SATA Power and Height Specifications

SATA Interface – (Power & Height)

HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
P05976-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC S4610 SSD	1.31	2.94	2.94	2.32	3.33	2.94	4.00	7mm
P05980-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC S4610 SSD	1.37	2.79	2.79	2.36	3.23	2.79	4.00	7mm
P05986-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC S4610 SSD	1.37	3.04	3.04	2.32	3.30	3.04	4.00	7mm
P05994-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC S4610 SSD	1.36	3.11	3.11	2.36	3.74	3.11	4.00	7mm
P09712-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SM883 SSD	1.12	2.55	2.55	1.86	2.16	2.55	2.16	7mm
P09716-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SM883 SSD	1.12	2.57	2.57	1.86	2.18	2.57	2.18	7mm
P09718-**X21**	HPE 960GB SATA 6G Mixed Use LFF SCC SM883 SSD	1.12	2.57	2.57	1.86	2.18	2.57	2.18	7mm
P09722-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SM883 SSD	1.12	2.60	2.60	1.89	2.22	2.60	1.89	7mm
P09724-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC SM883 SSD	1.12	2.60	2.60	1.89	2.22	2.60	1.89	7mm

Technical Specifications

SATA Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
P13658-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SE5031 SSD	1.14	2.34	2.34	3.56	3.44	2.34	3.56	7mm
P13660-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SE5031 SSD	1.15	2.81	2.81	3.09	3.93	2.81	3.93	7mm
P13662-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SE5031 SSD	1.20	2.91	2.91	3.20	4.10	2.91	4.10	7mm
P13664-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF RW SE5031 SSD	1.26	3.17	3.17	3.66	4.39	3.17	4.39	7mm
P19947-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC 5300M SSD	1.18	1.44	1.44	2.05	2.76	1.44	2.76	7mm
P19949-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC 5300M SSD	1.17	1.47	1.47	2.29	2.97	1.47	2.97	7mm
P19951-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC 5300M SSD	1.20	1.39	1.39	2.24	3.23	1.39	3.23	7mm
P19953-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC 5300M SSD	1.21	1.59	1.59	2.45	2.98	1.59	2.98	7mm
P19978-**X21**	HPE 480GB SATA 6G Mixed Use LFF SCC 5300M SSD	1.18	1.44	1.44	2.05	2.76	1.44	2.76	7mm
P19980-**X21**	HPE 960GB SATA 6G Mixed Use LFF LPC 5300M SSD	1.17	1.47	1.47	2.29	2.97	1.47	2.97	7mm
P19982-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC 5300M SSD	1.20	1.39	1.39	2.24	3.23	1.39	3.23	7mm
P21517-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC SM883 SSD	1.11	2.44	2.44	1.85	2.14	2.44	2.44	7mm
875498-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	1.07	3.02	3.02	3.42	4.03	3.00	5.00	2280 M.2
P04556-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC PM883 SSD	1.12	2.11	2.11	1.84	1.84	2.11	3.00	7mm
P04560-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC PM883 SSD	1.12	2.29	2.29	1.89	2.50	2.29	3.00	7mm
P04564-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC PM883 SSD	1.12	2.33	2.33	1.93	2.63	2.33	3.00	7mm
P04566-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC PM883 SSD	1.12	2.35	2.35	1.78	2.65	2.35	3.00	7mm
P04570-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC PM883 SSD	1.12	2.21	2.21	1.78	2.65	2.21	3.00	7mm
P05924-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC S4510 SSD	1.23	2.48	2.48	2.21	2.44	2.48	3.00	7mm
P05928-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC S4510 SSD	1.27	2.92	2.92	2.26	3.15	2.92	4.00	7mm

Technical Specifications

HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
SATA Interface – (Power & Height)									
P05932-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC S4510 SSD	1.35	3.02	3.02	2.30	3.18	3.02	4.00	7mm
P05938-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC S4510 SSD	1.35	3.15	3.15	2.36	3.31	3.15	4.00	7mm
P05946-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC S4510 SSD	1.11	3.46	3.46	2.47	3.88	3.46	4.00	7mm
P06194-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC SE4011 SSD	0.78	1.61	1.61	1.68	1.90	1.61	2.00	7mm
P06196-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC SE4011 SSD	0.78	1.61	1.61	1.69	2.35	1.61	3.00	7mm
P06198-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC SE4011 SSD	0.81	1.67	1.67	1.77	2.41	1.67	3.00	7mm
P06200-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC SE4011 SSD	0.90	1.87	1.87	2.08	2.68	1.87	3.00	7mm
P09685-**X21**	HPE 240GB SATA 6G Read Intensive SFF RW PM883 SSD	1.23	2.11	2.11	1.84	2.23	2.11	2.23	7mm
P09687-**X21**	HPE 480GB SATA 6G Read Intensive LFF SCC PM883 SSD	1.23	2.29	2.29	1.89	2.50	2.29	2.50	7mm
P09691-**X21**	HPE 960GB SATA 6G Read Intensive LFF LPC PM883 SSD	1.23	2.33	2.33	1.93	2.63	2.33	2.63	7mm
P09697-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF RW PM883 SSD	1.23	2.21	2.21	1.78	2.65	2.21	2.65	7mm
P19935-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC 5300P SSD	1.16	1.41	1.41	2.00	2.43	1.41	2.43	7mm
P19937-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC 5300P SSD	1.16	1.45	1.45	1.91	2.61	1.45	2.61	7mm
P19939-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC 5300P SSD	1.17	1.48	1.48	1.91	2.85	1.48	2.85	7mm
P19941-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC 5300P SSD	1.21	1.51	1.51	2.20	2.88	1.51	2.88	7mm
P19943-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC 5300P SSD	1.23	1.80	1.80	2.19	2.89	1.80	2.89	7mm
P19945-**X21**	HPE 7.68TB SATA 6G Read Intensive SFF SC 5300P SSD	1.25	2.01	2.01	2.26	2.76	2.01	2.76	7mm
P19974-**X21**	HPE 480GB SATA 6G Read Intensive LFF LPC 5300P SSD	1.16	1.45	1.45	1.91	2.61	1.45	2.61	7mm

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

Technical Specifications

SATA Certifications

HPE Option Kit SKU	Long Description	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
P05976-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC S4610 SSD	Certified	Certified	Certified	Certified	Certified
P05980-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC S4610 SSD	Certified	Certified	Certified	Certified	Certified
P05986-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC S4610 SSD	Certified	Certified	Certified	Certified	Certified
P05994-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC S4610 SSD	Certified	Certified	Certified	Certified	Certified
P09712-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SM883 SSD	Certified	Certified	Certified	Certified	Certified
P09716-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SM883 SSD	Certified	Certified	Certified	Certified	Certified
P09718-**X21**	HPE 960GB SATA 6G Mixed Use LFF SCC SM883 SSD	Certified	Certified	Certified	Certified	Certified
P09722-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SM883 SSD	Certified	Certified	Certified	Certified	Certified
P09724-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC SM883 SSD	Certified	Certified	Certified	Certified	Certified
P13658-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC SE5031 SSD	Certified	Certified	Certified	Certified	Certified
P13660-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC SE5031 SSD	Certified	Certified	Certified	Certified	Certified
P13662-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC SE5031 SSD	Certified	Certified	Certified	Certified	Certified
P13664-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF RW SE5031 SSD	Certified	Certified	Certified	Certified	Certified
P19947-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC 5300M SSD	Certified	Certified	Certified	Certified	Certified
P19949-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC 5300M SSD	Certified	Certified	Certified	Certified	Certified
P19951-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC 5300M SSD	Certified	Certified	Certified	Certified	Certified
P19953-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC 5300M SSD	Certified	Certified	Certified	Certified	Certified
P19978-**X21**	HPE 480GB SATA 6G Mixed Use LFF SCC 5300M SSD	Certified	Certified	Certified	Certified	Certified
P19980-**X21**	HPE 960GB SATA 6G Mixed Use LFF LPC 5300M SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

SATA Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P19982-**X21**	HPE 1.92TB SATA 6G Mixed Use LFF SCC 5300M SSD	Certified	Certified	Certified	Certified	Certified
P21517-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC SM883 SSD	Certified	Certified	Certified	Certified	Certified
875498-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P04556-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC PM883 SSD	N/A	Certified	Certified	Certified	Certified
P04560-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC PM883 SSD	Certified	Certified	Certified	Certified	Certified
P04564-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC PM883 SSD	Certified	Certified	Certified	Certified	Certified
P04566-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC PM883 SSD	Certified	Certified	Certified	Certified	Certified
P04570-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC PM883 SSD	Certified	Certified	Certified	Certified	Certified
P05924-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC S4510 SSD	Certified	Certified	Certified	Certified	Certified
P05928-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC S4510 SSD	Certified	Certified	Certified	Certified	Certified
P05932-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC S4510 SSD	Certified	Certified	Certified	Certified	Certified
P05938-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC S4510 SSD	Certified	Certified	Certified	Certified	Certified
P05946-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC S4510 SSD	Certified	Certified	Certified	Certified	Certified
P06194-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC SE4011 SSD	Certified	Certified	Certified	Certified	Certified
P06196-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC SE4011 SSD	Certified	Certified	Certified	Certified	Certified
P06198-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC SE4011 SSD	Certified	Certified	Certified	Certified	Certified
P06200-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC SE4011 SSD	Certified	Certified	Certified	Certified	Certified
P09685-**X21**	HPE 240GB SATA 6G Read Intensive SFF RW PM883 SSD	N/A	Certified	Certified	Certified	Certified
P09687-**X21**	HPE 480GB SATA 6G Read Intensive LFF SCC PM883 SSD	Certified	Certified	Certified	Certified	Certified
P09691-**X21**	HPE 960GB SATA 6G Read Intensive LFF LPC PM883 SSD	Certified	certified	Certified	Certifed	Certified

Technical Specifications

SATA Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P09697-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF RW PM883 SSD	Certified	certified	Certified	Certified	Certified
P19935-**X21**	HPE 240GB SATA 6G Read Intensive SFF SC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P19937-**X21**	HPE 480GB SATA 6G Read Intensive SFF SC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P19939-**X21**	HPE 960GB SATA 6G Read Intensive SFF SC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P19941-**X21**	HPE 1.92TB SATA 6G Read Intensive SFF SC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P19943-**X21**	HPE 3.84TB SATA 6G Read Intensive SFF SC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P19945-**X21**	HPE 7.68TB SATA 6G Read Intensive SFF SC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P19974-**X21**	HPE 480GB SATA 6G Read Intensive LFF LPC 5300P SSD	Certified	Certified	Certified	Certified	Certified
P23495-**X21**	HPE 7.68TB SATA 6G Very Read Optimized LFF (3.5in) LPC 3yr Wty SSD	N/A	Certified	Certified	Certified	Certified
P24190-**X21**	HPE 960GB SATA 6G Very Read Optimized SFF (2.5in) SC 3yr Wty SSD	N/A	Certified	Certified	Certified	Certified
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.						

Technical Specifications

SATA Interface– (Capacity, Workload, Carrier...) MULTI VENDOR											
HPE Option Kit SKU	**Long Description**	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
***Mixed Use Multi Vendor SATA Drives**											
P18432-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	480	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18434-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	960	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18436-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	1,920	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18438-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	3,840	MU	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
***Read Intensive Multi Vendor SATA Drives**											
P18420-**X21**	HPE 240GB SATA 6G Read Intensive SC Multi Vendor SSD	240	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18422-**X21**	HPE 480GB SATA 6G Read Intensive SC Multi Vendor SSD	480	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18424-**X21**	HPE 960GB SATA 6G Read Intensive SC Multi Vendor SSD	960	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18426-**X21**	HPE 1.92TB SATA 6G Read Intensive SC Multi Vendor SSD	1,920	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18428-**X21**	HPE 3.84TB SATA 6G Read Intensive SC Multi Vendor SSD	3,840	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
P18430-**X21**	HPE 7.68TB SATA 6G Read Intensive SC Multi Vendor SSD	7,680	RI	SATA	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9, 10
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.											

Notes: * Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SATA capacity SKU. When ordering a particular SKU-B21 number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.

Technical Specifications

SATA Speeds and Feeds Specifications MULTI VENDOR

SATA Interface – (Speeds & Feeds) MULTI VENDOR							
HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
*Mixed Use Multi Vendor SATA Drives							
P18432-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	3,000	4.00	510 / 430	125 / 52	62,000 / 40,000	72,000@Q32 / 29,000@Q4
P18434-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	6,000	3.00	520 / 480	125 / 50	63,000 / 31,000	64,500@Q32 / 31,000@Q4
P18436-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	10,000	3.00	520 / 480	125 / 52	59,000 / 31,000	62,000@Q32 / 31,000@Q4
P18438-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	17,600	3.00	510 / 480	125 / 55	56,000 / 28,000	60,000@Q32 / 28,000@Q4
*Read Intensive Multi Vendor SATA Drives							
P18420-**X21**	HPE 240GB SATA 6G Read Intensive SC Multi Vendor SSD	350	1.00	505 / 255	203 / 121	57,000 / 14,000	65,000@Q32 / 10,500@Q1
P18422-**X21**	HPE 480GB SATA 6G Read Intensive SC Multi Vendor SSD	430	1.00	510 / 300	125 / 65	65,000 / 15,000	65,500@Q32 / 15,400@Q1
P18424-**X21**	HPE 960GB SATA 6G Read Intensive SC Multi Vendor SSD	1,400	1.00	515 / 480	125 / 60	58,500 / 29,000	58,500@Q32 / 29,000@Q4
P18426-**X21**	HPE 1.92TB SATA 6G Read Intensive SC Multi Vendor SSD	2,800	1.00	520 / 470	125 / 60	55,500 / 24,000	56,000@Q32 / 25,000@Q32
P18428-**X21**	HPE 3.84TB SATA 6G Read Intensive SC Multi Vendor SSD	3,400	1.00	510 / 480	125 / 65	54,000 / 21,000	56,000@Q32 / 22,000@Q4
P18430-**X21**	HPE 7.68TB SATA 6G Read Intensive SC Multi Vendor SSD	8,400	1.00	505 / 480	126 / 100	54,000 / 10,000	57,000@Q32 / 10,000@Q1
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.							

Notes: * Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SATA capacity SKU. When ordering a particular SKU-B21 number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.

Technical Specifications

SATA Power and Height Specifications MULTI VENDOR

SATA Interface – (Power & Height) MULTI VENDOR									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
*Mixed Use Multi Vendor SATA Drives									
P18432-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	1.31	2.94	2.94	2.32	3.33	2.94	3.33	7mm
P18434-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	1.37	2.81	2.81	3.09	3.93	2.81	3.93	7mm
P18436-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	1.37	3.04	3.04	2.32	3.30	3.04	3.30	7mm
P18438-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	1.36	3.11	3.11	2.45	3.92	3.11	3.92	7mm
*Read Intensive Multi Vendor SATA Drives									
P18420-**X21**	HPE 240GB SATA 6G Read Intensive SC Multi Vendor SSD	1.23	2.48	2.48	2.21	2.44	2.48	2.48	7mm
P18422-**X21**	HPE 480GB SATA 6G Read Intensive SC Multi Vendor SSD	1.40	2.29	2.29	2.45	2.72	2.29	2.72	7mm
P18424-**X21**	HPE 960GB SATA 6G Read Intensive SC Multi Vendor SSD	1.42	3.02	3.02	2.30	3.37	3.02	3.37	7mm
P18426-**X21**	HPE 1.92TB SATA 6G Read Intensive SC Multi Vendor SSD	1.45	3.15	3.15	2.36	3.31	3.15	3.31	7mm
P18428-**X21**	HPE 3.84TB SATA 6G Read Intensive SC Multi Vendor SSD	0.90	3.46	3.46	2.47	3.88	3.46	3.88	7mm
P18430-**X21**	HPE 7.68TB SATA 6G Read Intensive SC Multi Vendor SSD	1.38	3.46	3.46	2.63	3.88	3.46	3.88	7mm

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

Notes: *Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SATA capacity SKU. When ordering a particular SKU-**X21** number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.

Technical Specifications

SATA Certifications MULTI VENDOR

SATA Interface – (Certifications) MULTI VENDOR						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
***Mixed Use Multi Vendor SATA Drives**						
P18432-**X21**	HPE 480GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18434-**X21**	HPE 960GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18436-**X21**	HPE 1.92TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18438-**X21**	HPE 3.84TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
***Read Intensive Multi Vendor SATA Drives**						
P18420-**X21**	HPE 240GB SATA 6G Read Intensive SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18422-**X21**	HPE 480GB SATA 6G Read Intensive SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18424-**X21**	HPE 960GB SATA 6G Read Intensive SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18426-**X21**	HPE 3.84TB SATA 6G Read Intensive SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18428-**X21**	HPE 3.84TB SATA 6G Read Intensive SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
P18430-**X21**	HPE 7.68TB SATA 6G Read Intensive SC Multi Vendor SSD	Certified	Certified	Certified	Certified	Certified
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.						

Notes: *Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SATA capacity SKU. When ordering a particular SKU-**X21** number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.

Technical Specifications

SAS Capacity, Workload, Carrier Specifications

SAS Interface – (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	**Long Description**	**Capacity**	**Workload Type**	**Interface Type**	**Form Factor**	**Plug Type**	**Carrier Type**	**Digitally Signed Firmware (DS)**	**Flash Type**	**Port**	**Server Gen Supported (Select Platforms)**
P04541-**X21**	HPE 400GB SAS 12G Write Intensive SFF SC PM5 SSD	400	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04543-**X21**	HPE 800GB SAS 12G Write Intensive SFF SC PM5 SSD	800	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04545-**X21**	HPE 1.6TB SAS 12G Write Intensive SFF SC PM5 SSD	1,600	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04558-**X21**	HPE 400GB SAS 12G Write Intensive SFF ST PM5 SSD	400	WI	SAS	SFF	Hot Plug	ST	Yes	TLC	Dual	Gen9,10
P04562-**X21**	HPE 800GB SAS 12G Write Intensive SFF ST PM5 SSD	800	WI	SAS	SFF	Hot Plug	ST	Yes	TLC	Dual	Gen9,10
P21125-**X21**	HPE 400GB SAS 12G Write Intensive SFF SC SS540 SSD	400	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21127-**X21**	HPE 800GB SAS 12G Write Intensive SFF SC SS540 SSD	800	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P09100-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	800	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P26295-**X21**	HPE 400GB SAS 24G Write Intensive SFF SC PM6 SSD	400	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26372-**X21**	HPE 800GB SAS 24G Write Intensive SFF SC PM6 SSD	800	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26376-**X21**	HPE 1.6TB SAS 24G Write Intensive SFF SC PM6 SSD	1,600	WI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P04527-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM5 SSD	800	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04529-**X21**	HPE 800GB SAS 12G Mixed Use LFF SCC PM5 SSD	800	MU	SAS	LFF	Hot Plug	SCC	Yes	TLC	Dual	Gen9,10
P04533-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM5 SSD	1,600	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04535-**X21**	HPE 1.6TB SAS 12G Mixed Use LFF LPC PM5 SSD	1,600	MU	SAS	LFF	Hot Plug	LPC	Yes	TLC	Dual	Gen9,10
P04537-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM5 SSD	3,200	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04539-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM5 SSD	6,400	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	960	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	960	MU	SAS	LFF	Hot Plug	LPC	Yes	TLC	Single	Gen9,10

Technical Specifications

SAS Interface – (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	1,920	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	1,920	MU	SAS	LFF	Hot Plug	SCC	Yes	TLC	Single	Gen9,10
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	3,840	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P19913-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM1645a SSD	800	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19915-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM1645a SSD	1,600	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19917-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM1645a SSD	3,200	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19919-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM1645a SSD	6,400	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21131-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC SS540 SSD	800	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21133-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC SS540 SSD	1,600	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21135-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC SS540 SSD	3,200	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21137-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC SS540 SSD	6,400	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P09092-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	1,600	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P09094-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	3,200	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P09096-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	6,400	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P26290-**X21**	HPE 800GB SAS 24G Mixed Use SFF SC PM6 SSD	800	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26354-**X21**	HPE 1.6TB SAS 24G Mixed Use SFF SC PM6 SSD	1,600	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26358-**X21**	HPE 3.2TB SAS 24G Mixed Use SFF SC PM6 SSD	3,200	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26362-**X21**	HPE 6.4TB SAS 24G Mixed Use SFF SC PM6 SSD	6,400	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P04517-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM5 SSD	960	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04519-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM5 SSD	1,920	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P04521-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM5 SSD	3,840	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10

Technical Specifications

SAS Interface – (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	**Long Description**	**Capacity**	**Workload Type**	**Interface Type**	**Form Factor**	**Plug Type**	**Carrier Type**	**Digitally Signed Firmware (DS)**	**Flash Type**	**Port**	**Server Gen Supported (Select Platforms)**
P04523-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM5 SSD	7,680	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P19903-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM1643a SSD	960	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19905-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM1643a SSD	1,920	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19907-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM1643a SSD	3,840	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19909-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM1643a SSD	7,680	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P19911-**X21**	HPE 15.36TB SAS 12G Read Intensive SFF SC PM1643a SSD	15,300	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21139-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC SS540 SSD	960	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21141-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC SS540 SSD	1,920	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21143-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC SS540 SSD	3,840	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P21145-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC SS540 SSD	7,680	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen10, 10.5
P06592-**X21**	HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	15,300	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Dual	Gen9,10
P26285-**X21**	HPE 960GB SAS 24G Read Intensive SFF SC PM6 SSD	960	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26302-**X21**	HPE 1.92TB SAS 24G Read Intensive SFF SC PM6 SSD	1,920	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26306-**X21**	HPE 3.84TB SAS 24G Read Intensive SFF SC PM6 SSD	3,840	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26310-**X21**	HPE 7.68TB SAS 24G Read Intensive SFF SC PM6 SSD	7,680	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5
P26314-**X21**	HPE 15.3TB SAS 24G Read Intensive SFF SC PM6 SSD	15,300	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10, 10.5

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

Technical Specifications

SAS Speeds and Feeds Specifications

SAS Interface – (Speeds & Feeds)								
HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P04541-**X21**	HPE 400GB SAS 12G Write Intensive SFF SC PM5 SSD	7,300	10.00	1,075 / 1,030	135 / 35	104,000 / 115,000	165,000@Q32 / 115,000@Q16
P04543-**X21**	HPE 800GB SAS 12G Write Intensive SFF SC PM5 SSD	14,600	10.00	1,075 / 1,030	135 / 35	109,000 / 120,000	165,000@Q32 / 120,000@Q16
P04545-**X21**	HPE 1.6TB SAS 12G Write Intensive SFF SC PM5 SSD	29,200	10.00	1,075 / 1,030	135 / 35	110,000 / 120,000	165,000@Q32 / 120,000@Q16
P04558-**X21**	HPE 400GB SAS 12G Write Intensive SFF ST PM5 SSD	7,300	10.00	1,075 / 1,030	135 / 35	104,000 / 115,000	165,000@Q32 / 115,000@Q16
P04562-**X21**	HPE 800GB SAS 12G Write Intensive SFF ST PM5 SSD	14,600	10.00	1,075 / 1,030	135 / 35	109,000 / 120,000	165,000@Q32 / 120,000@Q16
P21125-**X21**	HPE 400GB SAS 12G Write Intensive SFF SC SS540 SSD	7,134	10.00	1,095 / 1,000	155 / 90	113,000 / 120,000	205,000@Q256 / 124,000@Q16
P21127-**X21**	HPE 800GB SAS 12G Write Intensive SFF SC SS540 SSD	14,268	10.00	1,095 / 1,040	98 / 32	130,000 / 120,000	210,000@Q256 / 124,000@Q64
P09100-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	15,000	10.00	1,095 / 1,045	100 / 33	130,000 / 120,000	210,000@Q32 / 120,000@Q16
P26295-**X21**	HPE 400GB SAS 24G Write Intensive SFF SC PM6 SSD	7,134	10.00	1080 / 1035	95 / 32	150000 / 125000	173000@Q64 / 135000@Q16
P26372-**X21**	HPE 800GB SAS 24G Write Intensive SFF SC PM6 SSD	14,267	10.00	1080 / 1035	100 / 32	145000 / 125000	173000@Q64 / 130000@Q16
P26376-**X21**	HPE 1.6TB SAS 24G Write Intensive SFF SC PM6 SSD	28,534	10.00	1080 / 1035	108 / 32	135000 / 125000	173000@Q64 / 130000@Q16
P04527-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM5 SSD	4,380	3.00	1,075 / 1,030	135 / 35	104,000 / 85,000	165,000@Q32 / 85,000@Q16
P04529-**X21**	HPE 800GB SAS 12G Mixed Use LFF SCC PM5 SSD	4,380	3.00	1,075 / 1,030	135 / 35	104,000 / 85,000	165,000@Q32 / 85,000@Q16
P04533-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM5 SSD	8,760	3.00	1,075 / 1,030	135 / 35	109,000 / 105,000	165,000@Q32 / 105,000@Q16
P04535-**X21**	HPE 1.6TB SAS 12G Mixed Use LFF LPC PM5 SSD	8,760	3.00	1,075 / 1,030	135 / 35	109,000 / 105,000	165,000@Q32 / 105,000@Q16
P04537-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM5 SSD	17,520	3.00	1,075 / 1,030	135 / 35	110,000 / 110,000	165,000@Q32 / 110,000@Q16
P04539-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM5 SSD	35,040	3.00	1,075 / 1,030	135 / 35	113,000 / 105,000	165,000@Q32 / 108,000@Q16

Technical Specifications

SAS Interface – (Speeds & Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	5,250	3.00	790 / 635	130 / 35	108,000 / 47,000	155,000@Q32 / 48,000@Q4
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	5,250	3.00	790 / 635	130 / 35	108,000 / 47,000	155,000@Q32 / 48,000@Q4
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	10,500	3.00	810 / 635	140 / 35	98,000 / 52,000	155,000@Q32 / 52,000@Q4
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	10,500	3.00	810 / 635	140 / 35	98,000 / 52,000	155,000@Q32 / 52,000@Q4
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	21,000	3.00	810 / 635	140 / 35	103,000 / 52,000	155,000@Q32 / 52,000@Q4
P19913-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM1645a SSD	4,280	3.00	1,080 / 1,030	165 / 95	115,000 / 100,000	175,000@Q256 / 100,000@Q16
P19915-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM1645a SSD	8,560	3.00	1,080 / 1,030	185 / 95	115,000 / 125,000	175,000@Q256 / 125,000@Q32
P19917-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM1645a SSD	17,121	3.00	1,080 / 1,030	165 / 95	110,000 / 125,000	175,000@Q256 / 125,000@Q32
P19919-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM1645a SSD	34,241	3.00	1,080 / 1,030	195 / 95	105,000 / 125,000	175,000@Q256 / 125,000@Q32
P21131-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC SS540 SSD	4,280	3.00	1,095 / 1,000	155 / 90	113,000 / 120,000	205,000@Q256 / 124,000@Q16
P21133-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC SS540 SSD	8,561	3.00	1,095 / 1,040	98 / 32	130,000 / 120,000	210,000@Q64 / 124,000@Q64
P21135-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC SS540 SSD	17,121	3.00	1,095 / 1,040	98 / 32	135,000 / 120,000	210,000@Q256 / 124,000@Q64
P21137-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC SS540 SSD	34,242	3.00	1,095 / 1,040	98 / 32	140,000 / 120,000	210,000@Q256 / 124,000@Q64
P09092-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	8,500	3.00	1,095 / 1,045	100 / 33	130,000 / 123,000	210,000@Q32 / 124,000@Q16
P09094-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	17,500	3.00	1,095 / 1,045	100 / 34	140,000 / 123,000	210,000@Q32 / 124,000@Q16
P09096-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	35,000	3.00	1,095 / 1,045	100 / 34	140,000 / 123,000	210,000@Q32 / 124,000@Q16
P26290-**X21**	HPE 800GB SAS 24G Mixed Use SFF SC PM6 SSD	4,280	3.00	1080 / 1035	95 / 32	150000 / 125000	173000@Q64 / 130000@Q4

Technical Specifications

SAS Interface – (Speeds & Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P26354-**X21**	HPE 1.6TB SAS 24G Mixed Use SFF SC PM6 SSD	8,560	3.00	1080 / 1035	100 / 32	145000 / 125000	173000@Q64 / 130000@Q16
P26358-**X21**	HPE 3.2TB SAS 24G Mixed Use SFF SC PM6 SSD	17,121	3.00	1080 / 1035	108 / 32	135000 / 125000	173000@Q64 / 130000@Q16
P26362-**X21**	HPE 6.4TB SAS 24G Mixed Use SFF SC PM6 SSD	34,241	3.00	1080 / 1035	108 / 32	135000 / 125000	173000@Q64 / 130000@Q16
P04517-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM5 SSD	1,752	1.00	1,075 / 1,030	135 / 35	104,000 / 47,000	165,000@Q32 / 47,000@Q4
P04519-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM5 SSD	3,504	1.00	1,075 / 1,030	135 / 35	109,000 / 54,000	165,000@Q32 / 54,000@Q4
P04521-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM5 SSD	7,008	1.00	1,075 / 1,030	135 / 35	110,000 / 54,000	165,000@Q32 / 54,000@Q4
P04523-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM5 SSD	14,016	1.00	1,075 / 1,030	135 / 35	110,000 / 48,000	165,000@Q32 / 48,000@Q4
P19903-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM1643a SSD	1,712	1.00	1,080 / 1,030	180 / 96	115,000 / 46,000	175,000@Q128 / 46,000@Q4
P19905-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM1643a SSD	3,424	1.00	1,080 / 1,030	190 / 95	115,000 / 70,000	175,000@Q128 / 70,000@Q32
P19907-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM1643a SSD	6,848	1.00	1,080 / 1,030	175 / 95	110,000 / 92,000	175,000@Q128 / 92,000@Q16
P19909-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM1643a SSD	13,697	1.00	1,080 / 1,030	190 / 95	105,000 / 94,000	175,000@Q128 / 92,000@Q16
P19911-**X21**	HPE 15.36TB SAS 12G Read Intensive SFF SC PM1643a SSD	27,393	1.00	1,080 / 1,030	185 / 95	100,000 / 67,000	175,000@Q128 / 67,000@Q32
P21139-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC SS540 SSD	1,712	1.00	1,050 / 1,000	98 / 34	119,000 / 90,000	205,000@Q256 / 90,000@Q128
P21141-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC SS540 SSD	3,424	1.00	1,050 / 1,040	98 / 35	130,000 / 80,000	210,000@Q256 / 80,000@Q64
P21143-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC SS540 SSD	6,848	1.00	1,090 / 1,040	98 / 35	140,000 / 95,000	210,000@Q128 / 100,000@Q64
P21145-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC SS540 SSD	13,697	1.00	1,090 / 1,040	98 / 35	140,000 / 105,000	210,000@Q256 / 115,000@Q64
P06592-**X21**	HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	28,032	1.00	1,080 / 1,030	120 / 35	110,000 / 58,000	178,000@Q64 / 58,000@Q16
P26285-**X21**	HPE 960GB SAS 24G Read Intensive SFF SC PM6 SSD	1,712	1.00	1080 / 1035	95 / 32	150000 / 75000	173000@Q64 / 76000@Q4

Technical Specifications

SAS Interface – (Speeds & Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P26302-**X21**	HPE 1.92TB SAS 24G Read Intensive SFF SC PM6 SSD	3,424	1.00	1080 / 1035	100 / 32	145000 / 79000	173000@Q64 / 80000@Q4
P26306-**X21**	HPE 3.84TB SAS 24G Read Intensive SFF SC PM6 SSD	6,848	1.00	1080 / 1035	108 / 32	135000 / 78000	173000@Q64 / 78000@Q4
P26310-**X21**	HPE 7.68TB SAS 24G Read Intensive SFF SC PM6 SSD	13,697	1.00	1080 / 1035	108 / 32	135000 / 55000	173000@Q64 / 56000@Q4
P26314-**X21**	HPE 15.3TB SAS 24G Read Intensive SFF SC PM6 SSD	27,393	1.00	1080 / 1035	108 / 32	135000 / 63000	173000@Q64 / 64000@Q16

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

SAS Power and Height Specifications

SAS Interface – (Power & Height)

HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
P04541-**X21**	HPE 400GB SAS 12G Write Intensive SFF SC PM5 SSD	4.20	4.82	4.82	6.21	5.75	4.82	6.21	15mm
P04543-**X21**	HPE 800GB SAS 12G Write Intensive SFF SC PM5 SSD	4.26	4.97	4.97	6.71	6.95	4.97	6.71	15mm
P04545-**X21**	HPE 1.6TB SAS 12G Write Intensive SFF SC PM5 SSD	5.00	6.00	6.00	6.98	6.98	5.43	8.98	15mm
P04558-**X21**	HPE 400GB SAS 12G Write Intensive SFF ST PM5 SSD	4.20	4.82	4.82	6.21	5.75	4.82	6.21	15mm
P04562-**X21**	HPE 800GB SAS 12G Write Intensive SFF ST PM5 SSD	4.26	4.97	4.97	6.71	6.95	4.97	6.71	15mm
P21125-**X21**	HPE 400GB SAS 12G Write Intensive SFF SC SS540 SSD	3.63	5.82	5.82	5.98	6.47	5.82	6.47	15mm
P21127-**X21**	HPE 800GB SAS 12G Write Intensive SFF SC SS540 SSD	3.68	6.49	6.49	5.90	9.06	6.49	9.06	15mm
P09100-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	3.00	5.55	5.55	4.52	6.92	5.55	6.92	15mm
P26295-**X21**	HPE 400GB SAS 24G Write Intensive SFF SC PM6 SSD	2.77	5.72	5.72	6.68	8.29	5.72	8.29	15mm

Technical Specifications

SAS Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
P26372-**X21**	HPE 800GB SAS 24G Write Intensive SFF SC PM6 SSD	2.84	5.37	5.37	6.45	9.64	5.37	9.64	15mm
P26376-**X21**	HPE 1.6TB SAS 24G Write Intensive SFF SC PM6 SSD	2.98	5.77	5.77	7.15	9.91	5.77	9.91	15mm
P04527-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM5 SSD	4.26	4.97	4.97	6.71	6.95	4.97	6.71	15mm
P04529-**X21**	HPE 800GB SAS 12G Mixed Use LFF SCC PM5 SSD	4.26	4.97	4.97	6.71	6.95	4.97	6.71	15mm
P04533-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM5 SSD	5.00	6.00	6.00	6.98	6.98	5.43	8.98	15mm
P04535-**X21**	HPE 1.6TB SAS 12G Mixed Use LFF LPC PM5 SSD	5.00	6.00	6.00	6.98	6.98	5.43	8.98	15mm
P04537-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM5 SSD	5.00	6.17	6.17	8.56	8.56	5.90	8.56	15mm
P04539-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM5 SSD	5.00	6.20	6.20	8.56	8.56	5.90	8.56	15mm
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	4.47	5.40	5.40	7.93	7.56	7.96	7.96	15mm
P19913-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM1645a SSD	3.47	5.09	5.09	5.79	6.66	5.09	6.66	15mm
P19915-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM1645a SSD	3.47	5.47	5.47	6.31	9.03	5.47	9.03	15mm
P19917-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM1645a SSD	3.42	5.56	5.56	6.44	9.19	5.56	9.19	15mm
P19919-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM1645a SSD	3.66	5.74	5.74	6.84	8.86	5.74	8.86	15mm
P21131-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC SS540 SSD	3.89	5.83	5.83	6.01	6.40	5.83	6.40	15mm

Technical Specifications

SAS Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
P21133-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC SS540 SSD	3.83	6.59	6.59	6.00	9.12	6.59	9.12	15mm
P21135-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC SS540 SSD	3.74	6.95	6.95	6.42	10.16	6.95	10.16	15mm
P21137-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC SS540 SSD	3.69	7.10	7.10	6.50	9.82	7.10	9.82	15mm
P09092-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	3.00	6.30	6.30	5.39	9.24	6.30	9.24	15mm
P09094-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	3.20	6.11	6.11	5.45	9.31	6.11	9.31	15mm
P09096-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	3.50	6.69	6.69	6.07	9.68	6.69	9.68	15mm
P26290-**X21**	HPE 800GB SAS 24G Mixed Use SFF SC PM6 SSD	2.80	6.24	6.24	6.73	8.32	6.24	8.32	15mm
P26354-**X21**	HPE 1.6TB SAS 24G Mixed Use SFF SC PM6 SSD	2.84	6.16	6.16	6.55	9.60	6.16	9.60	15mm
P26358-**X21**	HPE 3.2TB SAS 24G Mixed Use SFF SC PM6 SSD	2.92	6.33	6.33	6.60	9.68	6.33	9.68	15mm
P26362-**X21**	HPE 6.4TB SAS 24G Mixed Use SFF SC PM6 SSD	3.25	7.63	7.63	7.70	9.82	7.63	9.82	15mm
P04517-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM5 SSD	5.00	6.00	6.00	6.98	6.98	5.43	8.98	15mm
P04519-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM5 SSD	5.00	6.00	6.00	6.98	6.98	5.43	8.98	15mm
P04521-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM5 SSD	5.00	6.17	6.17	8.56	8.56	5.90	8.56	15mm
P04523-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM5 SSD	5.00	6.20	6.20	8.56	8.56	5.90	8.56	15mm
P19903-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM1643a SSD	3.47	5.09	5.09	5.79	6.66	5.09	6.66	15mm
P19905-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM1643a SSD	3.47	5.47	5.47	6.31	9.03	5.47	9.03	15mm
P19907-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM1643a SSD	3.42	5.56	5.56	6.44	9.19	5.56	9.19	15mm
P19909-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM1643a SSD	3.66	5.74	5.74	6.84	8.86	5.74	8.86	15mm

Technical Specifications

HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
SAS Interface – (Power & Height)									
P19911-**X21**	HPE 15.36TB SAS 12G Read Intensive SFF SC PM1643a SSD	4.18	6.28	6.28	7.97	9.59	6.28	9.59	15mm
P21139-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC SS540 SSD	3.67	5.81	5.81	6.13	6.58	5.81	6.58	15mm
P21141-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC SS540 SSD	3.69	6.47	6.47	6.13	8.52	6.47	8.52	15mm
P21143-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC SS540 SSD	3.89	6.75	6.75	6.64	10.14	6.75	10.14	15mm
P21145-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC SS540 SSD	4.04	7.18	7.18	6.96	10.26	7.18	10.26	15mm
P06592-**X21**	HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	4.14	10.05	10.05	7.91	10.48	10.05	10.48	15mm
P26285-**X21**	HPE 960GB SAS 24G Read Intensive SFF SC PM6 SSD	2.77	6.68	6.68	6.76	8.35	6.68	8.35	15mm
P26302-**X21**	HPE 1.92TB SAS 24G Read Intensive SFF SC PM6 SSD	2.78	6.74	6.74	6.47	9.57	6.74	9.57	15mm
P26306-**X21**	HPE 3.84TB SAS 24G Read Intensive SFF SC PM6 SSD	2.86	7.00	7.00	6.63	9.72	7.00	9.72	15mm
P26310-**X21**	HPE 7.68TB SAS 24G Read Intensive SFF SC PM6 SSD	3.08	7.92	7.92	7.36	9.43	7.92	9.43	15mm
P26314-**X21**	HPE 15.3TB SAS 24G Read Intensive SFF SC PM6 SSD	3.53	8.67	8.67	7.96	9.88	8.67	9.88	15mm

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

SAS Certifications

HPE Option Kit SKU	Long Description	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
SAS Interface – (Certifications)						
P04541-**X21**	HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

SAS Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P04543-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P04545-**X21**	HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P04558-**X21**	HPE 400GB SAS 12G Write Intensive SFF (2.5in) ST 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P04562-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) ST 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P21125-**X21**	HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
P21127-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
P09100-**X21**	HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P26295-**X21**	HPE 400GB SAS 24G Write Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26372-**X21**	HPE 800GB SAS 24G Write Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26376-**X21**	HPE 1.6TB SAS 24G Write Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P04527-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04529-**X21**	HPE 800GB SAS 12G Mixed Use LFF SCC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04533-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04535-**X21**	HPE 1.6TB SAS 12G Mixed Use LFF LPC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04537-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04539-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

SAS Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P19913-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC PM1645a SSD	Certified	Certified	Certified	Certified	Certified
P19915-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC PM1645a SSD	Certified	Certified	Certified	Certified	Certified
P19917-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC PM1645a SSD	Certified	Certified	Certified	Certified	Certified
P19919-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC PM1645a SSD	Certified	Certified	Certified	Certified	Certified
P21131-**X21**	HPE 800GB SAS 12G Mixed Use SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P21133-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P21135-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P21137-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P09092-**X21**	HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P09094-**X21**	HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P09096-**X21**	HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P26290-**X21**	HPE 800GB SAS 24G Mixed Use SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26354-**X21**	HPE 1.6TB SAS 24G Mixed Use SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending

Technical Specifications

SAS Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P26358-**X21**	HPE 3.2TB SAS 24G Mixed Use SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26362-**X21**	HPE 6.4TB SAS 24G Mixed Use SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P04517-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04519-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04521-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P04523-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM5 SSD	Certified	Certified	Certified	Certified	Certified
P19903-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC PM1643a SSD	Certified	Certified	Certified	Certified	Certified
P19905-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC PM1643a SSD	Certified	Certified	Certified	Certified	Certified
P19907-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC PM1643a SSD	Certified	Certified	Certified	Certified	Certified
P19909-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC PM1643a SSD	Certified	Certified	Certified	Certified	Certified
P19911-**X21**	HPE 15.36TB SAS 12G Read Intensive SFF SC PM1643a SSD	Certified	Certified	Certified	Certified	Certified
P21139-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P21141-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P21143-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P21145-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC SS540 SSD	Certified	Certified	Certified	Certified	Certified
P06592-**X21**	HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P26285-**X21**	HPE 960GB SAS 24G Read Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26302-**X21**	HPE 1.92TB SAS 24G Read Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending

Technical Specifications

SAS Interface – (Certifications)

HPE Option Kit SKU	Long Description	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
P26306-**X21**	HPE 3.84TB SAS 24G Read Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26310-**X21**	HPE 7.68TB SAS 24G Read Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending
P26314-**X21**	HPE 15.3TB SAS 24G Read Intensive SFF SC PM6 SSD	Pending	Pending	Pending	Pending	Pending

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

Value SAS Capacity, Workload, Carrier Specifications

Value SAS Interface – (Certifications)

HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
Mixed Use Value SAS Drives											
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	960	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	960	MU	SAS	LFF	Hot Plug	LPC	Yes	TLC	Single	Gen9,10
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	1,920	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	1,920	MU	SAS	LFF	Hot Plug	SCC	Yes	TLC	Single	Gen9,10
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	3,840	MU	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
Read Intensive Value SAS Drives											
P10440-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	960	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P10442-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	1,920	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10
P10444-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	3,840	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10

Technical Specifications

Value SAS Interface – (Certifications)											
P10446-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	7,680	RI	SAS	SFF	Hot Plug	SC	Yes	TLC	Single	Gen9,10

Notes:
– Value SAS Drives are single-port SAS SSDs. They offer a significant performance boost over SATA SSDs with roughly twice the IOPS, and are typically lower in cost than traditional SAS SSD drives.

Value SAS Speeds and Feeds Specifications

Value SAS Interface – (Speeds & Feeds)							
HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
Mixed Use Value SAS Drives							
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	5,250	3.00	790 / 635	130 / 35	108,000 / 47,000	155,000@Q32 / 48,000@Q4
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	5,250	3.00	790 / 635	130 / 35	108,000 / 47,000	155,000@Q32 / 48,000@Q4
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	10,500	3.00	810 / 635	140 / 35	98,000 / 52,000	155,000@Q32 / 52,000@Q4
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	10,500	3.00	810 / 635	140 / 35	98,000 / 52,000	155,000@Q32 / 52,000@Q4
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	21,000	3.00	810 / 635	140 / 35	103,000 / 52,000	155,000@Q32 / 52,000@Q4
Read Intensive Value SAS Drives							
P10440-**X21**	HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	1,750	1.00	810 / 635	130 / 35	108,000 / 32,000	155,000@Q32 / 32,000@Q4
P10442-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	3,500	1.00	810 / 635	140 / 35	97,000 / 36,000	155,000@Q32 / 36,000@Q4
P10444-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	7,000	1.00	810 / 635	140 / 35	102,000 / 37,000	155,000@Q32 / 37,000@Q4
P10446-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	14,000	1.00	810 / 635	140 / 35	105,000 / 36,000	155,000@Q32 / 37,000@Q4

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

Technical Specifications

Value SAS Power and Height Specifications

Value SAS Interface – (Power & Height)									
HPE Option Kit SKU	**Long Description**	**Power Idle Time (Watts)**	**Power Random Read (Watts)**	**Power Random Write (Watts)**	**Power Sequential Read (Watts)**	**Power Sequential Write (Watts)**	**Power Random R/W (Watts)**	**Power MAX (Watts)**	**z- Height**
Mixed Use Value SAS Drives									
P10448-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P10452-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P10454-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm

Value SAS Interface – (Power & Height)									
HPE Option Kit SKU	**Long Description**	**Power Idle Time (Watts)**	**Power Random Read (Watts)**	**Power Random Write (Watts)**	**Power Sequential Read (Watts)**	**Power Sequential Write (Watts)**	**Power Random R/W (Watts)**	**Power MAX (Watts)**	**z- Height**
Mixed Use Value SAS Drives									
P10456-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
Read Intensive Value SAS Drives									
P10440-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P10442-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
P10444-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.47	5.40	5.40	7.93	7.56	7.96	7.96	15mm
P10446-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	4.80	5.90	5.90	8.56	8.18	8.56	8.56	15mm

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

Technical Specifications

Value SAS Certifications

Value SAS Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
Mixed Use Value SAS Drives						
P10448-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10452-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10454-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10456-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10460-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
Read Intensive Value SAS Drives						
P10440-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10442-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10444-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
P10446-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD	Certified	Certified	Certified	Certified	Certified
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility						

Technical Specifications

Value SAS Capacity, Workload, Carrier Specifications MULTI VENDOR

Value SAS Interface– (Capacity, Workload, Carrier…) MULTI VENDOR											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
*Mixed Use Multi Vendor Value SAS Drives											
P37005-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	960	MU	SAS	Value SAS MU	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
P37009-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD	960	MU	SAS	Value SAS MU	LFF	Hot Plug	LPC	TLC	Single	Gen10, 10.5
P37011-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	1,920	MU	SAS	Value SAS MU	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
P37013-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS Multi Vendor SSD	1,920	MU	SAS	Value SAS MU	LFF	Hot Plug	SCC	TLC	Single	Gen10, 10.5
P37017-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	3,840	MU	SAS	Value SAS MU	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
*Read Intensive Multi Vendor Value SAS Drives											
P36997-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	960	RI	SAS	Value SAS RI	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
P36999-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	1,920	RI	SAS	Value SAS RI	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
P37001-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	3,840	RI	SAS	Value SAS RI	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
P37003-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	7,680	RI	SAS	Value SAS RI	SFF	Hot Plug	SC	TLC	Single	Gen10, 10.5
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility											

Notes: * Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SAS capacity SKU. When ordering a particular SKU-B21 number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.

Technical Specifications

Value SAS Speeds and Feeds Specifications MULTI VENDOR

Value SAS Interface – (Speeds & Feeds) MULTI VENDOR							
HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
*Mixed Use Multi Vendor Value SAS Drives							
P37005-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	5,250	3.00	790 / 635	130 / 35	108,000 / 47,000	155,000@Q32 / 48,000@Q4
P37009-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD	5,250	3.00	790 / 635	130 / 35	108,000 / 47,000	155,000@Q32 / 48,000@Q4
P37011-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	10,500	3.00	810 / 635	140 / 35	98,000 / 52,000	155,000@Q32 / 52,000@Q4
P37013-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS Multi Vendor SSD	10,500	3.00	810 / 635	140 / 35	98,000 / 52,000	155,000@Q32 / 52,000@Q4
P37017-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	21,000	3.00	810 / 635	140 / 35	103,000 / 52,000	155,000@Q32 / 52,000@Q4
*Read Intensive Multi Vendor Value SAS Drives							
P36997-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	1,750	1.00	810 / 635	130 / 35	108,000 / 32,000	155,000@Q32 / 32,000@Q4
P36999-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	3,500	1.00	810 / 635	140 / 35	97,000 / 36,000	155,000@Q32 / 36,000@Q4
P37001-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	7,000	1.00	810 / 635	140 / 35	102,000 / 37,000	155,000@Q32 / 37,000@Q4
P37003-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	14,000	1.00	810 / 635	140 / 35	105,000 / 36,000	155,000@Q32 / 37,000@Q4
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility							

Notes: * Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SAS capacity SKU. When ordering a particular SKU-B21 number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.

Technical Specifications

Value SAS Power and Height Specifications MULTI VENDOR

Value SAS Interface – (Power & Height) MULTI VENDOR									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
*Mixed Use Multi Vendor Value SAS Drives									
P37005-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P37009-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P37011-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
P37013-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS Multi Vendor SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
P37017-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	4.47	5.40	5.40	7.93	7.56	7.96	7.96	15mm
*Read Intensive Multi Vendor Value SAS Drives									
P36997-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	4.26	4.97	4.97	6.71	6.95	6.95	9.65	15mm
P36999-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	4.34	5.05	5.05	6.98	7.26	7.26	7.26	15mm
P37001-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	4.47	5.40	5.40	7.93	7.56	7.96	7.96	15mm
P37003-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	4.80	5.90	5.90	8.56	8.18	8.56	8.56	15mm
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility									
Notes: *Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SAS capacity SKU. When ordering a particular SKU-**X21** number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.									

Technical Specifications

Value SAS Certifications MULTI VENDOR

Value SAS Interface – (Certifications) MULTI VENDOR						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
***Mixed Use Multi Vendor Value SAS Drives**						
P37005-**X21**	HPE 960GB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P37009-**X21**	HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P37011-**X21**	HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P37013-**X21**	HPE 1.92TB SAS 12G Mixed Use LFF SCC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P37017-**X21**	HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
***Read Intensive Multi Vendor Value SAS Drives**						
P36997-**X21**	HPE 960GB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P36999-**X21**	HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P37001-**X21**	HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
P37003-**X21**	HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	N/A	Certified	Certified	Certified	Certified
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility						
Notes: *Multi-vendor SKUs are composed of numerous vendor manufactured SSDs within a given SAS capacity SKU. When ordering a particular SKU-**X21** number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has met or exceeds the HPE qualification standards published above.						

Technical Specifications

PCIe/NVMe Capacity, Workload, Carrier Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
NVMe High Performance Low Latency SSDsWrite Intensive SSDs											
878014-**X21**	HPE 375GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	375	WI	NVMe	SFF	Hot Plug	SCN	Yes	SLC	Single	Gen9, Gen10
878038-**X21**	HPE 750GB NVMe Gen3 x4 High Performance Low Latency Write Intensive AIC HHHL P4800X SSD	750	WI	NVMe	AIC	Non-Hot Plug	AIC	Yes	SLC	Single	Gen9, Gen10
P06952-**X21**	HPE 750GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	750	WI	NVMe	SFF	Hot Plug	SCN	Yes	SLC	Single	Gen9, Gen10
NVMe High Performance and Mainstream Mixed Use Drives											
P07179-**X21**	HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P10222-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P10224-**X21**	HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P10226-**X21**	HPE 6.4TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P12114-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) RW 3yr Wty Digitally Signed Firmware SSD	1,600	MU	NVMe	SFF	Non-Hot Plug	RW	Yes	TLC	Single	Gen9,10
P13668-**X21**	HPE 800GB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13670-**X21**	HPE 1.6TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13672-**X21**	HPE 3.2TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10

Technical Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P13674-**X21**	HPE 6.4TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13699-**X21**	HPE 1.6TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13701-**X21**	HPE 3.2TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13703-**X21**	HPE 6.4TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P16497-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	1,600	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P16499-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	3,200	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19823-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	800	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19825-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P19827-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	1,600	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19829-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P19831-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	3,200	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19833-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P19835-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	6,400	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19837-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20084-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	800	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5

Technical Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	**Long Description**	**Capacity**	**Workload Type**	**Interface Type**	**Form Factor**	**Plug Type**	**Carrier Type**	**Digitally Signed Firmware (DS)**	**Flash Type**	**Port**	**Server Gen Supported (Select Platforms)**
P20086-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	1,600	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20088-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	3,200	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20094-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20096-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20098-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20100-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20195-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	1,600	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20197-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	3,200	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20199-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	6,400	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20203-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20205-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20207-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22268-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	1,600	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22270-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	3,200	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22272-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	6,400	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10

Technical Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P22274-**X21**	HPE 12.8TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	12,800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22329-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P25948-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	800	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P25953-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	800	MU	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P26124-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	6,400	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P26543-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	800	MU	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P26934-**X21**	HPE 1.6TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	1,600	MU	NVMe	HH	Non Hot Plug	AIC	Yes	TLC	Single	Gen 10
P26936-**X21**	HPE 3.2TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	3,200	MU	NVMe	HH	Non Hot Plug	AIC	Yes	TLC	Single	Gen 10
NVMe High Performance and Mainstream Read Intensive Drives											
P10212-**X21**	HPE 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	3,840	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P10214-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	1,920	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13676-**X21**	HPE 960GB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	960	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13678-**X21**	HPE 1.92TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	1,920	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13680-**X21**	HPE 3.84TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	3,840	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10

Technical Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P13695-**X21**	HPE 2TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	2,000	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P13697-**X21**	HPE 4TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	4,000	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen9,10
P16501-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	1,920	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P16503-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	3,840	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19807-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	960	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19809-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	960	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P19811-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	1,920	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19813-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	1,920	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P19815-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	3,840	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19817-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	3,840	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P19819-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	7,680	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P19821-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	7,680	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10

Technical Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier...)											
HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P20007-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	1,920	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20009-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	3,840	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20017-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	1,920	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20019-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	3,840	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20131-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	1,920	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20133-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	3,840	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20135-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	7,680	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P20139-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	1,920	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20141-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	3,840	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P20143-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	7,680	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22276-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	1,920	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22278-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	3,840	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22280-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	7,680	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22282-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	15,360	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10
P22331-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	960	RI	NVMe	SFF	Hot Plug	SCN	Yes	TLC	Single	Gen10

Technical Specifications

PCIe/NVMe Interface – SKUs (Capacity, Workload, Carrier…)

HPE Option Kit SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Port	Server Gen Supported (Select Platforms)
P26104-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	7,680	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P26109-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	15,360	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5
P26538-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	960	RI	NVMe	SFF	Hot Plug	SC	Yes	TLC	Single	Gen10.5

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

PCIe/NVMe Speeds and Feeds Specifications

PCIe/NVMe Interface – SKUs (Speeds and Feeds)

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
NVMe High Performance Low Latency SSDsWrite Intensive SSDs							
878014-**X21**	HPE 375GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	20,500	30.0	2,550 / 2,150	17 / 17	585,000 / 550,000	585,000@Q16 / 550.000@Q16
878038-**X21**	HPE 750GB NVMe Gen3 x4 High Performance Low Latency Write Intensive AIC HHHL P4800X SSD	41,000	30.0	2,550 / 2,300	17 / 18	575,000 / 580,000	575,000@Q16 / 580,000@Q16
P06952-**X21**	HPE 750GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	41,000	30.0	2,500 / 2,300	17 / 17	575,000 / 585,000	575,000@Q16 / 585,000@Q16
NVMe High Performance and Mainstream Mixed Use Drives							
P07179-**X21**	HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	4,380	3.00	3,150 / 1,250	125 / 21	118,000 / 110,000	370,000@Q256 / 110,000@Q16
P10222-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	14,600	5.00	3,400 / 1,900	86 / 24	160,000 / 135,000	720,000@Q256 / 145,000@Q16
P10224-**X21**	HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	29,200	5.00	3,400 / 2,900	86 / 26	165,000 / 145,000	780,000@Q256 / 195,000@Q64

Technical Specifications

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
P10226-**X21**	HPE 6.4TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	58,400	5.00	3,400 / 2,800	100 / 25	149,000 / 155,000	780,000@Q256 / 200,000@Q32
P12114-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) RW 3yr Wty Digitally Signed Firmware SSD	14,600	5.00	3,400 / 1,900	86 / 24	160,000 / 135,000	720,000@Q256 / 145,000@Q16
P13668-**X21**	HPE 800GB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	5,037	3.45	3,300 / 650	100 / 27	126,000 / 67,000	230,000@Q256 / 68,000@Q16
P13670-**X21**	HPE 1.6TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	10,162	3.48	3,300 / 1,250	100 / 25	147,000 / 125,000	425,000@Q256 / 125,000@Q16
P13672-**X21**	HPE 3.2TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	20,440	3.50	3,300 / 2,400	100 / 25	157,000 / 169,000	650,000@Q256 / 175,000@Q16
P13674-**X21**	HPE 6.4TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	40,997	3.51	3,100 / 2,550	100 / 25	155,000 / 165,000	635,000@Q256 / 170,000@Q16
P13699-**X21**	HPE 1.6TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	12,250	4.10	3,200 / 1,950	83 / 18	165,000 / 200,000	660,000@Q256 / 205,000@Q32
P13701-**X21**	HPE 3.2TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	21,850	3.70	3,200 / 2,900	83 / 18	165,000 / 215,000	660,000@Q256 / 230,000@Q32
P13703-**X21**	HPE 6.4TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	36,540	3.10	3,200 / 3,100	83 / 18	170,000 / 205,000	680,000@Q256 / 225,000@Q32
P16497-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	8,560	3.00	6,300 / 2,400	90 / 41	150,000 / 180,000	600,000@Q128 / 225,000@Q64
P16497-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	8,560	3.00	6,300 / 2,400	90 / 41	150,000 / 180,000	600,000@Q128 / 225,000@Q64
P16499-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	17,121	3.00	6,600 / 3,700	85 / 37	165,000 / 170,000	680,000@Q128 / 290,000@Q256
P19823-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	5,741	3.80	5,900 / 1,400	79 / 28	190,000 / 145,000	530,000@Q256 / 145,000@Q256
P19825-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	5,741	3.80	5,900 / 1,400	79 / 28	190,000 / 145,000	530,000@Q256 / 145,000@Q256
P19827-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	11,512	3.80	6,200 / 2,800	77 / 24	210,000 / 270,000	870,000@Q256 / 275,000@Q256

Technical Specifications

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
PCIe/NVMe Interface – SKUs (Speeds and Feeds)							
P19829-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	11,512	3.80	6,200 / 2,800	77 / 24	210,000 / 270,000	870,000@Q256 / 275,000@Q256
P19831-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	23,143	3.80	6,200 / 3,650	77 / 24	215,000 / 310,000	980,000@Q256 / 335,000@Q32
P19833-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	23,143	3.80	6,200 / 3,650	77 / 24	215,000 / 310,000	980,000@Q256 / 335,000@Q32
P19835-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	46,406	3.80	6,200 / 3,650	77 / 24	215,000 / 320,000	1,000,000@Q256 / 345,000@Q32
P19837-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	46,406	3.80	6,200 / 3,650	77 / 24	215,000 / 320,000	1,000,000@Q256 / 345,000@Q32
P20084-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	4,280	3.00	6,500 / 1,400	93 / 25	175,000 / 100,000	850,000@Q256 / 100,000@Q16
P20086-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	8,561	3.00	6,500 / 2,700	93 / 25	180,000 / 220,000	950,000@Q256 / 220,000@Q256
P20088-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	17,121	3.00	6,500 / 4,000	93 / 24	180,000 / 350,000	950,000@Q256 / 350,000@Q32
P20094-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	4,280	3.00	6,500 / 1,400	93 / 25	175,000 / 100,000	850,000@Q256 / 100,000@Q16
P20096-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	8,561	3.00	6,500 / 2,700	93 / 25	180,000 / 220,000	950,000@Q256 / 220,000@Q256
P20098-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	17,121	3.00	6,500 / 4,000	93 / 24	180,000 / 350,000	950,000@Q256 / 350,000@Q32
P20100-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	34,242	3.00	6,500 / 3,800	101 / 25	170,000 / 330,000	930,000@Q256 / 340,000@Q64
P20195-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	8,561	3.00	5,500 / 1,150	105 / 25	155,000 / 87,000	700,000@Q256 / 85,000@Q32
P20197-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	17,121	3.00	5,900 / 2,300	105 / 25	155,000 / 170,000	900,000@Q256 / 170,000@Q4
P20199-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	34,242	3.00	5,900 / 3,800	110 / 25	155,000 / 250,000	900,000@Q256 / 250,000@Q16

Technical Specifications

HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Throughput (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
PCIe/NVMe Interface – SKUs (Speeds and Feeds)							
P20203-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	8,561	3.00	5,500 / 1,150	105 / 25	155,000 / 87,000	700,000@Q256 / 85,000@Q32
P20205-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	17,121	3.00	5,900 / 2,300	105 / 25	155,000 / 170,000	900,000@Q256 / 170,000@Q4
P20207-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	34,242	3.00	5,900 / 3,800	110 / 25	155,000 / 250,000	900,000@Q256 / 250,000@Q16
P22268-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	8,561	3.00	7,000 / 2,500	85 / 30	190,000 / 235,000	890000@Q256 / 240,000@Q256
P22270-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	17,121	3.00	7,000 / 3,900	82 / 26	200,000 / 270,000	960000@ Q256 / 300,000@Q256
P22272-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	34,242	3.00	7,000 / 3,750	91 / 26	180,000 / 270,000	960000@Q256 / 280,000@Q64
P22274-**X21**	HPE 12.8TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	68,484	3.00	7,000 / 3,800	95 / 30	175,000 / 265,000	960000@Q256 / 280,000@Q128
P22329-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	4,280	3.00	5,200 / 1,250	85 / 30	180,000 / 140,000	530,000@Q256 / 145,000@Q4
P25948-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	4,280	3.00	5,500 / 1,300	100 / 22	160,000 / 92,000	700,000@Q256 / 9,0000@Q4
P25953-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	4,280	3.00	5,500 / 1,300	100 / 22	160,000 / 92,000	700,000@Q256 / 9,0000@Q4
P26124-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	34,242	3.00	7,000 / 3,750	91 / 26	180,000 / 270,000	960000@Q256 / 280,000@Q64
P26543-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	4,280	3.00	5,200 / 1,250	85 / 30	180,000 / 140,000	530,000@Q256 / 145,000@Q4
P26934-**X21**	HPE 1.6TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	8,760	3.00	7,000 / 2,500	80 / 25	195,000 / 235,000	900,000@Q256 / 240,000@Q64
P26936-**X21**	HPE 3.2TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	17,520	3.00	7,000 / 4,000	80 / 27	200,000 / 260,000	950,000@Q256 / 290,000@Q256

Technical Specifications

NVMe High Performance and Mainstream Read Intensive Drives							
P10212-**X21**	HPE 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	4,480	0.60	3,000 / 1,500	130 / 25	115,000 / 41,500	560,000@Q256 / 41,500@Q1
P10214-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	3,500	1.00	3,400 / 1,900	86 / 29	160,000 / 52,000	720,000@Q256 / 52,000@Q4
P13676-**X21**	HPE 960GB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	2,312	1.32	3,300 / 650	100 / 32	125,000 / 30,000	230,000@Q256 / 30,000@Q4
P13678-**X21**	HPE 1.92TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	4,695	1.34	3,300 / 1,250	100 / 27	147,000 / 55,000	425,000@Q256 / 55000@Q4
P13680-**X21**	HPE 3.84TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	9,461	1.35	3,300 / 2,350	100 / 28	155,000 / 72,000	650,000@Q256 / 72,000@Q4
P13695-**X21**	HPE 2TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	2,600	0.70	3,100 / 1,900	80 / 22	170,000 / 83,000	670,000@Q256 / 83,000@Q16
P13697-**X21**	HPE 4TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	6,300	0.80	2,900 / 2,800	80 / 21	170,000 / 120,000	670,000@Q256 / 120,000@Q16
P16501-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	3,424	1.00	6,300 / 2,400	90 / 41	150,000 / 115,000	690,000@Q128 / 115,000@Q16
P16503-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	6,848	1.00	6,600 / 3,700	90 / 40	155,000 / 130,000	700,000@Q128 / 150,000@Q32
P19807-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	2,691	1.50	5,900 / 1,400	79 / 28	190,000 / 69,000	520,000@Q256 / 69,000@Q256
P19809-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	2,691	1.50	5,900 / 1,400	79 / 28	190,000 / 69,000	520,000@Q256 / 69,000@Q256
P19811-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	5,382	1.50	6,200 / 2,800	79 / 28	205,000 / 120,000	850,000@Q256 / 125,000@Q64
P19813-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	5,382	1.50	6,200 / 2,800	79 / 28	205,000 / 120,000	850,000@Q256 / 125,000@Q64
P19815-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	10,979	1.50	6,200 / 3,650	79 / 29	210,000 / 145,000	930,000@Q256 / 150,000@Q256

Technical Specifications

NVMe High Performance and Mainstream Read Intensive Drives							
P19817-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	10,979	1.50	6,200 / 3,650	79 / 29	210,000 / 145,000	930,000@Q256 / 150,000@Q256
P19819-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	22,103	1.50	6,200 / 3,650	79 / 29	210,000 / 150,000	980,000@Q256 / 150,000@Q128
P19821-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	22,103	1.50	6,200 / 3,650	79 / 29	210,000 / 150,000	980,000@Q256 / 150,000@Q128
P20007-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	3,424	1.00	6,500 / 2,700	93 / 25	180,000 / 100,000	950,000@Q256 / 100,000@Q128
P20009-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	6,848	1.00	6,500 / 4,000	93 / 26	180,000 / 170,000	930,000@Q256 / 175,000@Q16
P20017-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	3,424	1.00	6,500 / 2,700	93 / 25	180,000 / 100,000	950,000@Q256 / 100,000@Q128
P20019-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	6,848	1.00	6,500 / 4,000	93 / 26	180,000 / 170,000	930,000@Q256 / 175,000@Q16
P20131-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	3,424	1.00	5,500 / 1,150	105 / 33	155,000 / 30,000	700,000@Q256 / 30,000@Q256
P20133-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	6,848	1.00	5,900 / 2,300	105 / 25	155,000 / 60,000	880,000@Q256 / 60,000@Q64
P20135-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	13,697	1.00	5,900 / 3,800	107 / 25	155,000 / 85,000	880,000@Q256 / 85,000@Q128
P20139-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	3,424	1.00	5,500 / 1,150	105 / 33	155,000 / 30,000	700,000@Q256 / 30,000@Q256
P20141-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	6,848	1.00	5,900 / 2,300	105 / 25	155,000 / 60,000	880,000@Q256 / 60,000@Q64
P20143-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	13,697	1.00	5,900 / 3,800	107 / 25	155,000 / 85,000	880,000@Q256 / 85,000@Q128
P22276-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	3,424	1.00	7,000 / 2,500	85 / 30	195,000 / 115,000	900000@Q256 / 900000@Q256
P22278-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	6,848	1.00	7,000 / 4,000	85 / 30	200,000 / 145,000	900000@Q256 / 900000@Q256
P22280-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	13,697	1.00	7,000 / 3,800	95 / 30	180,000 / 140,000	900000@Q256 / 900000@Q256

Technical Specifications

NVMe High Performance and Mainstream Read Intensive Drives

P22282-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	27,394	1.00	7,000 / 3,800	95 / 30	175,000 / 145,000	960000 / Q256 / 960000 / Q256
P22331-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	1,712	1.00	5,200 / 1,250	85 / 30	180,000 / 70,000	530000 / Q256 / 530000 / Q256
P26104-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	13,697	1.00	7,000 / 3,800	95 / 30	180,000 / 140,000	900000@Q256 / 900000@Q256
P26109-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	27,394	1.00	7,000 / 3,800	95 / 30	175,000 / 145,000	960000 / Q256 / 960000 / Q256
P26538-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	1,712	1.00	5,200 / 1,250	85 / 30	180,000 / 70,000	530000 / Q256 / 530000 / Q256
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.							

PCIe/NVMe Power & Height Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	**Long Description**	**Power Idle Time (Watts)**	**Power Random Read (Watts)**	**Power Random Write (Watts)**	**Power Sequential Read (Watts)**	**Power Sequential Write (Watts)**	**Power Random R/W (Watts)**	**Power MAX (Watts)**	**z- Height**
NVMe High Performance Low Latency SSDsWrite Intensive SSDs									
878014-**X21**	HPE 375GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	4.00	5.16	5.16	8.50	12.20	5.16	13.00	15mm
878038-**X21**	HPE 750GB NVMe Gen3 x4 High Performance Low Latency Write Intensive AIC HHHL P4800X SSD	4.70	9,8	9.80	9.50	13.90	9.80	14.00	Half Height/ Half Length
P06952-**X21**	HPE 750GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	4.50	9.74	9.74	9.74	9.12	14.04	14.04	15mm
NVMe High Performance and Mainstream Mixed Use SSDs									
P07179-**X21**	HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	4.84	6.13	6.13	6.13	9.02	7.66	9.02	15mm
P10222-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	6.20	10.00	10.00	13.70	14.90	10.00	14.90	15mm

Technical Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
P10224-**X21**	HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	7.20	10.80	10.80	14.40	18.00	10.80	18.00	15mm
P10226-**X21**	HPE 6.4TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	8.66	13.62	13.62	14.40	18.00	13.62	18.00	15mm
P12114-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) RW 3yr Wty Digitally Signed Firmware SSD	6.20	10.00	10.00	13.70	14.90	10.00	15.00	15mm
P13668-**X21**	HPE 800GB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	3.30	5.38	5.38	7.66	5.39	5.38	7.66	15mm
P13670-**X21**	HPE 1.6TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	3.25	7.00	7.00	7.94	7.41	7.00	7.94	15mm
P13672-**X21**	HPE 3.2TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	3.35	8.64	8.64	8.18	11.41	8.64	11.41	15mm
P13674-**X21**	HPE 6.4TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	3.49	10.65	10.65	9.12	13.81	10.65	13.81	15mm
P13699-**X21**	HPE 1.6TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	4.38	10.49	10.49	10.49	8.90	11.83	11.83	15mm
P13701-**X21**	HPE 3.2TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	4.36	10.56	10.56	10.56	8.43	13.37	13.37	15mm
P13703-**X21**	HPE 6.4TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	4.97	12.13	12.13	12.13	8.84	14.48	14.48	15mm
P16497-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	7.00	8.40	8.40	11.00	14.00	8.40	14.00	15mm
P16499-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	7.00	8.40	8.40	11.00	14.00	8.40	14.00	15mm
P19823-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	4.40	7.25	7.95	9.51	7.81	7.27	9.51	15mm
P19825-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	4.40	7.25	7.95	9.51	7.81	7.27	9.51	15mm

Technical Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
P19827-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	4.40	8.45	10.75	10.15	10.92	9.19	10.92	15mm
P19829-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	4.40	8.45	10.75	10.15	10.92	9.19	10.92	15mm
P19831-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	4.60	9.41	12.83	11.78	13.51	11.91	13.51	15mm
P19833-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	4.60	9.41	12.83	11.78	13.51	11.91	13.51	15mm
P19835-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	4.68	14.37	14.37	12.32	14.40	14.37	14.40	15mm
P19837-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	4.68	14.37	14.37	12.32	14.40	14.37	14.40	15mm
P20084-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	6.00	11.90	9.30	13.10	10.20	9.50	13.10	15mm
P20086-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	6.30	15.10	12.80	14.00	14.10	11.50	15.10	15mm
P20088-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	6.30	18.20	16.70	15.70	18.20	15.00	18.20	15mm
P20094-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	6.00	11.90	9.30	13.10	10.20	9.50	13.10	15mm
P20096-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	6.30	15.10	12.80	14.00	14.10	11.50	15.10	15mm
P20098-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	6.30	18.20	16.70	15.70	18.20	15.00	18.20	15mm
P20100-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	6.30	17.80	18.00	16.00	18.80	15.50	18.80	15mm
P20195-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	6.30	11.90	10.10	11.80	10.10	10.50	11.90	15mm
P20197-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	6.30	14.60	13.40	13.40	13.60	12.40	14.60	15mm

Technical Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
P20199-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	6.30	17.40	16.80	15.30	18.60	14.70	18.60	15mm
P20203-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	6.30	11.90	10.10	11.80	10.10	10.50	11.90	15mm
P20205-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	6.30	14.60	13.40	13.40	13.60	12.40	14.60	15mm
P20207-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	6.30	17.40	16.80	15.30	18.60	14.70	18.60	15mm
P22268-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	5.00	12.90	12.90	13.90	13.60	12.90	13.90	15mm
P22270-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	5.00	15.20	15.20	14.00	17.50	15.20	17.50	15mm
P22272-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	5.00	15.30	15.30	14.60	17.90	15.30	17.90	15mm
P22274-**X21**	HPE 12.8TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	5.20	15.80	15.80	16.30	18.50	15.80	18.50	15mm
P22329-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	5.00	10.30	10.30	11.30	11.50	10.30	11.50	15mm
P25948-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	6.00	11.30	9.80	12.20	9.70	10.30	12.20	15mm
P25953-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	6.00	11.30	9.80	12.20	9.70	10.30	12.20	15mm
P26124-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	5.00	15.30	15.30	14.60	17.90	15.30	17.90	15mm
P26543-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	5.00	10.30	10.30	11.30	11.50	10.30	11.50	15mm
P26934-**X21**	HPE 1.6TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	4.87	9.56	9.56	12.48	14.64	9.56	14.64	Half Height/Half length
P26936-**X21**	HPE 3.2TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	4.76	9.42	9.42	12.84	18.64	9.42	18.64	Half Height/Half length

Technical Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
NVMe High Performance and Mainstream Read Intensive Drives									
P10212-**X21**	HPE 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	5.06	6.70	6.70	6.70	9.51	9.71	9.71	15mm
P10214-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	6.20	10.00	10.00	13.70	14.90	10.00	14.90	15mm
P13676-**X21**	HPE 960GB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	3.30	5.38	5.38	7.66	5.39	5.38	7.66	15mm
P13678-**X21**	HPE 1.92TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	3.25	7.00	7.00	7.94	7.41	7.00	7.94	15mm
P13680-**X21**	HPE 3.84TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	3.35	8.64	8.64	8.18	11.41	8.64	11.41	15mm
P13695-**X21**	HPE 2TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	4.53	10.71	10.71	10.71	9.47	11.76	11.76	15mm
P13697-**X21**	HPE 4TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	4.54	10.47	10.47	10.47	8.88	12.56	12.56	15mm
P16501-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	7.00	8.40	8.40	11.00	14.00	8.40	14.00	15mm
P16503-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	7.00	8.40	8.40	11.00	14.00	8.40	14.00	15mm
P19807-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	4.40	7.25	7.95	9.51	7.81	7.27	9.51	15mm
P19809-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	4.40	7.25	7.95	9.51	7.81	7.27	9.51	15mm
P19811-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	4.40	8.45	10.75	10.15	10.92	9.19	10.92	15mm

Technical Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
P19813-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	4.40	8.45	10.75	10.15	10.92	9.19	10.92	15mm
P19815-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	4.60	9.41	12.83	11.78	13.51	11.91	13.51	15mm
P19817-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	4.60	9.41	12.83	11.78	13.51	11.91	13.51	15mm
P19819-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	4.68	14.37	14.37	12.32	14.40	14.37	14.40	15mm
P19821-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	4.68	14.37	14.37	12.32	14.40	14.37	14.40	15mm
P20007-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	6.30	15.10	11.60	14.00	14.10	12.20	15.10	15mm
P20009-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	6.30	17.90	15.30	15.70	18.20	14.60	18.20	15mm
P20017-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	6.30	15.10	11.60	14.00	14.10	12.20	15.10	15mm
P20019-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	6.30	17.90	15.30	15.70	18.20	14.60	18.20	15mm
P20131-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	6.30	11.90	9.90	11.80	10.10	10.30	11.90	15mm
P20133-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	6.30	14.60	13.20	13.40	13.60	12.80	14.60	15mm
P20135-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	6.30	17.40	17.10	15.30	18.60	16.00	18.60	15mm
P20139-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	6.30	11.90	9.90	11.80	10.10	10.30	11.90	15mm

Technical Specifications

PCIe/NVMe Interface – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z- Height
P20141-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	6.30	14.60	13.20	13.40	13.60	12.80	14.60	15mm
P20143-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	6.30	17.40	17.10	15.30	18.60	16.00	18.60	15mm
P22276-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	5.00	12.90	12.90	13.60	13.70	12.90	13.70	15mm
P22278-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	5.00	15.30	15.30	14.30	18.20	15.30	18.20	15mm
P22280-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	5.00	15.60	15.60	14.70	17.90	15.60	17.90	15mm
P22282-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	5.20	16.20	16.20	16.00	18.80	16.20	18.80	15mm
P22331-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	5.00	10.40	10.40	11.20	11.50	10.40	11.50	15mm
P26104-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	5.00	15.60	15.60	14.70	17.90	15.60	17.90	15mm
P26109-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	5.20	16.20	16.20	16.00	18.80	16.20	18.80	15mm
P26538-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	5.00	10.40	10.40	11.20	11.50	10.40	11.50	15mm
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.									

Inbox NVMe Drivers

Inbox NVMe drivers for the minimally supported operating systems listed below have been tested on HPE NVMe SSDs and Add-in Cards. Check the specifications for the HPE server of interest to determine if it supports one of these Operating Systems.

- Windows Server 2019
- Windows Server 2016
- Windows Server 2012R2
- Red Hat Enterprise Linux Server 6.5
- Red Hat Enterprise Linux Server 7.0
- SUSE Linux Enterprise Server 12
- Ubuntu 14.04 VMWare vSphere 6.1

Technical Specifications

NVMe Certifications

NVMe Interface – (Certifications)						
HPE Option Kit SKU	Long Description	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
NVMe High Performance Low Latency SSDsWrite Intensive SSDs						
878014-**X21**	HPE 375GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	Certified	Certified	Certified	Certified	Certified
878038-**X21**	HPE 750GB NVMe Gen3 x4 High Performance Low Latency Write Intensive AIC HHHL P4800X SSD	Certified	Certified	Certified	Certified	Certified
P06952-**X21**	HPE 750GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	Certified	Certified	Certified	Certified	Certified
NVMe High Performance and Mainstream Mixed Use Drives						
P07179-**X21**	HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P10222-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P10224-**X21**	HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P10226-**X21**	HPE 6.4TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P12114-**X21**	HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) RW 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P13668-**X21**	HPE 800GB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	Certified	Certified	Certified	Certified	Certified
P13670-**X21**	HPE 1.6TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	Certified	Certified	Certified	Certified	Certified
P13672-**X21**	HPE 3.2TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

NVMe Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P13674-**X21**	HPE 6.4TB NVMe Gen3 Mainstream Performance Mixed Use SFF SCN U.2 PE6031 SSD	Certified	Certified	Certified	Certified	Certified
P13699-**X21**	HPE 1.6TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	Certified	Certified	Certified	Certified	Certified
P13701-**X21**	HPE 3.2TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	Certified	Certified	Certified	Certified	Certified
P13703-**X21**	HPE 6.4TB NVMe Gen3 High Performance Mixed Use SFF SCN U.2 P4610 SSD	Certified	Certified	Certified	Certified	Certified
P16497-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P16499-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P19823-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19825-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19827-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19829-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19831-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19833-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19835-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P19837-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 PE8030 SSD	Certified	Pending	Pending	Pending	Pending
P20084-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending

Technical Specifications

NVMe Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P20086-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20088-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20094-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20096-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20098-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20100-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20195-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	Certified	Certified	Pending	Pending	Pending
P20197-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	Certified	Certified	Pending	Pending	Pending
P20199-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20199-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20203-**X21**	HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20205-**X21**	HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20207-**X21**	HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P22268-**X21**	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P22270-**X21**	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

NVMe Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
P22272-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P22274-**X21**	HPE 12.8TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P22329-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P25948-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SC U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P25953-**X21**	HPE 800GB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P26124-**X21**	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P26543-**X21**	HPE 800GB NVMe Gen4 High Performance Mixed Use SFF SC U.3 PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P26934-**X21**	HPE 1.6TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	Certified	Certified	Certified	Certified	Certified
P26936-**X21**	HPE 3.2TB NVMe Gen4 x8 High Performance Mixed Use AIC HHHL PM1735 SSD	Certified	Certified	Certified	Certified	Certified
NVMe High Performance and Mainstream Read Intensive Drives						
P10212-**X21**	HPE 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P10214-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	Certified	Certified	Certified
P13676-**X21**	HPE 960GB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	Certified	Certified	Certified	Certified	Certified
P13678-**X21**	HPE 1.92TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

NVMe Interface – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
P13680-**X21**	HPE 3.84TB NVMe Gen3 Mainstream Performance Read Intensive SFF SCN U.2 PE6011 SSD	Certified	Certified	Certified	Certified	Certified
P13695-**X21**	HPE 2TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	Certified	Certified	Certified	Certified	Certified
P13697-**X21**	HPE 4TB NVMe Gen3 High Performance Read Intensive SFF SCN U.2 P4510 SSD	Certified	Certified	Certified	Certified	Certified
P16501-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified
P16503-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified
P19807-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P19809-**X21**	HPE 960GB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P19811-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P19813-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P19815-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P19817-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P19819-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending

Technical Specifications

NVMe Interface – (Certifications)						
HPE Option Kit SKU	Long Description	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
P19821-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 PE8010 SSD	Certified	Pending	Pending	Pending	Pending
P20007-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20009-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20017-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20019-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 CM6 SSD	Pending	Certified	Pending	Pending	Pending
P20131-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20133-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20135-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SC U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20139-**X21**	HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20141-**X21**	HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P20143-**X21**	HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.3 CD6 SSD	Pending	Certified	Pending	Pending	Pending
P22276-**X21**	HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified
P22278-**X21**	HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified
P22280-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified

Technical Specifications

NVMe Interface – (Certifications)

HPE Option Kit SKU	Long Description	VMWare / vSAN HCL Certification	Microsoft Windows Server 2016 Certification	Software Defined Data Center (SDDC) Premium AQ Certification	Microsoft Windows Server 2019 Certification	WS 2019 Software Defined Data Center (SDDC)
P22282-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	Pending	Certified	Certified	Certified	Certified
P22331-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified
P26104-**X21**	HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified
P26109-**X21**	HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	Pending	Certified	Certified	Certified	Certified
P26538-**X21**	HPE 960GB NVMe Gen4 High Performance Read Intensive SFF SC U.3 PM1733 SSD	Certified	Certified	Certified	Certified	Certified

Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.

M.2 Enablement Kits Capacity, Workload, Carrier Specifications

M.2 Enablement Kits – (Capacity, Workload, Carrier...)

HPE Option KIT SKU	Long Description	Capacity	Workload Type	Interface Type	Form Factor	Plug Type	Carrier Type	Digitally Signed Firmware (DS)	Flash Type	Server Gen Supported (Select Platforms)
878783-**X21***	HPE Universal SATA HHHL 3yr Wty M.2 Kit	N/A	N/A	SATA	M.2e	Non-Hot Plug	AIC	Yes	N/A	Gen9, Gen10
P19894-**X21****	HPE Dual 240GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty SSD	240	RI	SATA	SFF	Hot Plug	SCM	Yes	TLC	Gen10, Gen10.5
P19896-**X21****	HPE Dual 480GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty SSD	480	RI	SATA	SFF	Hot Plug	SCM	Yes	TLC	Gen10, Gen10.5

Notes:
- *878783-**X21** enablement Kit is an Add-In-Card, for installation inside of the server, that can be configured to be either Single or Dual with choice of any SATA 2280 M.2 in the HPE M.2 portfolio. See SATA M.2s in Tables above.
- **Speeds and Feeds information should be taken from the M.2 drives used within the enablement kits. See SATA M.2s in tables above and below.
- **Speeds and Feeds information should be taken from the M.2 drives used within the enablement kits. See SATA M.2s in tables above and below.

Technical Specifications

M.2 Enablement Kits Speeds and Feeds Specifications

SATA Interface – (Speeds & Feeds)								
HPE Option Kit SKU	Long Description	Lifetime Writes (TB)	Endurance DWPD	MAX Seq Reads / Max Seq Writes Through-put (MiB/s)	Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)	Random Read / Random Writes IOPS (4KiB, Q=16)	MAX Random Read / MAX Random Write IOPS (4KiB)
878783-**X21***	HPE Universal SATA HHHL 3yr Wty M.2 Kit	N/A	N/A	N/A	N/A	N/A	N/A
P19894-**X21****	HPE Dual 240GB SATA 6G Read Intensive M.2 to SFF SCM 5300B SSD Kit	N/A	N/A	520 / 210	125 / 85	48,000 / 11,500	50,500@Q128 / 11,800@Q16
P19896-**X21****	HPE Dual 480GB SATA 6G Read Intensive M.2 to SFF SCM 5300P SSD Kit	N/A	N/A	510 / 400	125 / 37	65,000 / 38,000	76,000@Q64 / 39,500@Q256
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.								

M.2 Enablement Kits Power and Height Specifications

M.2 Enablement Kits – (Power & Height)									
HPE Option Kit SKU	Long Description	Power Idle Time (Watts)	Power Random Read (Watts)	Power Random Write (Watts)	Power Sequential Read (Watts)	Power Sequential Write (Watts)	Power Random R/W (Watts)	Power MAX (Watts)	z - Height
878783-**X21***	HPE Universal SATA HHHL 3yr Wty M.2 Kit	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Half Height/ Half Length
P19894-**X21****	HPE Dual 240GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty SSD	1.03	1.26	1.26	1.89	2.22	1.26	2.22	7mm
P19896-**X21****	HPE Dual 480GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty SSD	1.03	1.23	1.23	1.89	2.50	1.23	2.50	7mm

Notes:
– Power information should be taken from the M.2 drives used within the enablement kits. See SATA M.2s in tables above and below.
– *878783-**X21** enablement Kit is an Add-In-Card, for installation inside of the server, that can be configured to be either Single or Dual with choice of any SATA 2280 M.2 in the HPE M.2 portfolio. See SATA M.2s in Tables above and below.
– **Speeds and Feeds information should be taken from the M.2 drives used within the enablement kits. See SATA M.2s in tables above and below.

Technical Specifications

M.2 Enablement Kits Certifications

M.2 Enablement Kits – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
878783-**X21***	HPE Universal SATA HHHL 3yr Wty M.2 Kit	N/A	N/A	N/A	N/A	N/A
P19894-**X21***	HPE Dual 240GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
P19896-**X21***	HPE Dual 480GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.						

M.2 Capacity, Workload, Carrier Specifications

M.2s– (Capacity, Workload, Carrier...)										
HPE Option Kit SKU	**Long Description**	**Capacity**	**Workload Type**	**Interface Type**	**Form Factor**	**Plug Type**	**Carrier Type**	**Digitally Signed Firmware (DS)**	**Flash Type**	**Server Gen Supported (Select Platforms)**
Read Intensive SATA M.2s										
P19888-**X21**	HPE 240GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	480	RI	SATA	M.2	N/A	N/A	Yes	TLC	Gen9, Gen10
P19890-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	480	RI	SATA	M.2	Non Hot Plug	N/A	Yes	TLC	Gen10, Gen10.5
P19892-**X21**	HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	960	RI	SATA	M.2	Non Hot Plug	N/A	Yes	TLC	Gen10, Gen10.5
Read Intensive NVMe M.2s										
P13689-**X21**	HPE 960GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	960	RI	NVMe	M.2	Non Hot Plug	N/A	Yes	TLC	Gen9, Gen10
P13691-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	1,920	RI	NVMe	M.2	Non Hot Plug	N/A	Yes	TLC	Gen9, Gen10
P24188-**X21**	HPE 480GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	480	RI	NVMe	M.2	Non Hot Plug	N/A	Yes	TLC	Gen10, Gen10.5
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.										

Technical Specifications

M.2 Speeds and Feeds Specifications

M.2s– (Speeds & Feeds)								
HPE Option Kit SKU	**Long Description**	**Lifetime Writes (TB)**	**Endurance DWPD**	**MAX Seq Reads / Max Seq Writes Throughput**	**Random Read Avg. / Random Write Avg. Latency uSec (4KiB,Q1)**	**Random Read / Random Writes IOPS (4KiB, Q=16)**	**MAX Random Read / MAX Random Write IOPS (4KiB)**
Read Intensive SATA M.2s							
P19888-**X21**	HPE 240GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	438	1.00	520 / 210	125 / 85	48,000 / 11,500	50,500@Q128 / 11,800@Q16
P19890-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	1,324	1.50	510 / 400	125 / 37	65,000 / 38,000	76,000@Q64 / 39,500@Q256
P19892-**X21**	HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	2,628	1.50	510 / 490	125 / 38	67,000 / 37,000	76,000@Q32 / 38,000@Q4
Read Intensive NVMe M.2s							
P13689-**X21**	HPE 960GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	981	0.56	3,300 / 1,350	91 / 29	155,000 / 47,500	480,000@Q256 / 475,00@Q4
P13691-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	4,765	1.36	3,300 / 1,250	97 / 28	145,000 / 54,000	425,000@Q256 / 545,00@Q64
P24188-**X21**	HPE 480GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	482	0.55	2,800 / 690	91 / 45	135,000 / 26,500	250,000@Q256 / 26,500@128
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.							

M.2 Power and Height Specifications

M.2s– (Power & Height)									
HPE Option Kit SKU	**Long Description**	**Power Idle Time (Watts)**	**Power Random Read (Watts)**	**Power Random Write (Watts)**	**Power Sequential Read (Watts)**	**Power Sequential Write (Watts)**	**Power Random R/W (Watts)**	**Power MAX (Watts)**	**z- Height**
Read Intensive SATA M.2s									
P19888-**X21**	HPE 240GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	1.03	1.26	1.26	1.89	2.22	1.26	2.22	2280 M.2
P19890-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	1.03	1.23	1.23	1.89	2.50	1.23	2.50	2280 M.2

Technical Specifications

M.2s– (Power & Height)									
HPE Option Kit SKU	**Long Description**	**Power Idle Time (Watts)**	**Power Random Read (Watts)**	**Power Random Write (Watts)**	**Power Sequential Read (Watts)**	**Power Sequential Write (Watts)**	**Power Random R/W (Watts)**	**Power MAX (Watts)**	**z - Height**
P19892-**X21**	HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	1.04	1.27	1.27	2.10	2.80	1.27	2.80	2280 M.2
Read Intensive NVMe M.2s									
P13689-**X21**	HPE 960GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	2.41	6.16	6.16	6.57	6.33	6.16	6.57	22110 M.2
P13691-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	2.42	6.27	6.27	6.80	6.55	6.27	6.80	22110 M.2
P24188-**X21**	HPE 480GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	2.41	4.62	4.62	6.49	4.66	4.62	6.49	22110 M.2
Notes: Please use HPE Selector Tool **http://ssd.hpe.com/** to determine server compatibility.									

Technical Specifications

M.2 Enablement Kits Certifications

M.2 Enablement Kits – (Certifications)						
HPE Option Kit SKU	**Long Description**	**VMWare / vSAN HCL Certification**	**Microsoft Windows Server 2016 Certification**	**Software Defined Data Center (SDDC) Premium AQ Certification**	**Microsoft Windows Server 2019 Certification**	**WS 2019 Software Defined Data Center (SDDC)**
Read Intensive SATA M.2s						
P19888-**X21**	HPE 240GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
P19890-**X21**	HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
P19892-**X21**	HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty SSD	Certified	Certified	Certified	Certified	Certified
Read Intensive NVMe M.2s						
P13689-**X21**	HPE 960GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	N/A	Certified	Certified
P13691-**X21**	HPE 1.92TB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	N/A	Certified	Certified
P24188-**X21**	HPE 480GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	Certified	Certified	N/A	Certified	Certified

Previous To Current Workload Naming Conversion

Please use the table below for comparing older SSD models to the newer workload descriptions.

Previous Workload	**Current Workload Alignment**
(HE) High Endurance	(WI) Write Intensive (>25 DWPD)
(ME) Mainstream Endurance	(WI) Write Intensive (>25 DWPD)
(LE) Light Endurance	(MU) Mixed Use (>1 & <10 DWPD)
(VE) Value Endurance	(RI) Read Intensive (<=1 DWPD)

Technical Specifications

Carrier Key Decoder

HPE Solid State Drives (SSDs) utilize a wide variety of carriers, which houses the SSD 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 (SC)	SFF
			Smart Carrier NVMe (SCN)	SFF
			Smart Carrier M.2 (SCM)	SFF
		Non-Smart	Standard (ST)	SFF
	Non-Hot Plug		Quick Release (QR)	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
	Non-Hot Plug		Quick Release (QR)	LFF
No Carrier	Non-Hot Plug	Non-Smart	Raw SFF HDD/SSD (RW)	SFF
			Raw LFF HDD (RW)	LFF
			M.2	N/A
			PCIe AIC Card	N/A

Technical Specifications

SAS, SATA, NVMe SSD SKU Decoders

The following charts are provided to assist in decoding the SSD short & long product descriptions; additional details can also be found within the Carrier Key Decoder & the Previous To Current Workload Naming Conversion tables within this document. Please be advise SSD's new naming effective August 2020 is shown below. Please contact product management for any questions.

HPE 960GB SAS 12G Read Intensive SFF SC Value SAS RM5 SSD

Brand	Storage Capacity	Interface Type/ Interface Speed	Endurance *	Form Factor Type / Size	Carriers	Special Features *	Vendor Model	Drive Type
HPE	960GB	**SATA/SAS** 6G/12G/24G NVMe Gen3/Gen4 **High Performance Low Latency** NVMe Gen3/Gen4 **High Performance** NVMe Gen3/Gen4 **Mainstream Performance**	Write Intensive Mixed Use Read Intensive Very Read Optimized	SFF LFF	BC Basic Carrier SC Smart Carrier SCN Smart Carrier NVMe SCM Smart Carrier M.2 SCC Smart Carrier Converter ST Standard STC Standard Converter LP Low Profile LPC Low Profile Converter QR Quick Release RW Raw Drive	U.2 U.3 MV Multi Vendor VS Value SAS SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: RM5	SSD

SSD SKU Decoder Long Name

Notes: If the description exceeds character count
- Abbreviate Special Features starting from lowest priority item
- Drop form factor from the description
- Abbreviate Endurance with the exception Very Read Optimized

HPE 960GB SAS RI SFF SC VS RM5 SSD

Brand	Storage Capacity	Interface Type	Endurance	Form Factor Type *	Carriers	Special Features *	Vendor Model	Drive Type
HPE	960GB	SATA/SAS NVMe	WI MU RI VRO	SFF LFF	BC Basic Carrier SC Smart Carrier SCN Smart Carrier NVMe SCM Smart Carrier M.2 SCC Smart Carrier Converter ST Standard STC Standard Converter LP Low Profile LPC Low Profile Converter QR Quick Release RW Raw Drive	U.2 U.3 MV Multi Vendor VS Value SAS SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: RM5	SSD

SSD SKU Decoder Short Name

Notes: If the description exceeds character count
- Drop Form Factor Type
- Drop Special Features starting from lowest priority with the exception of Special SKUs

Technical Specifications

HPE 480TB SATA 6G Read Intensive M.2 2280 5300B SSD

Brand	Storage Capacity	Interface Type / Interface Speed / Interface Swim lane	Endurance *	Form Factor Type / Size	Special Features *	Vendor Model	Drive Type
HPE	480	NVMe Gen3/Gen4 **Mainstream Performance** SATA 6G	Write Intensive Mixed Use Read Intensive Very Read Optimized	M.2 2280/22110	MV Multi Vendor SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: 5300B	SSD

M.2 SSDs SKU Decoder Long Name

Notes: If the description exceeds character count
– Abbreviate Special Features starting from lowest priority item
– Drop form factor from the description
– Abbreviate Endurance with the exception Very Read Optimized

HPE 480GB SATA RI M.2 2280 5300B SSD

Brand	Storage Capacity	Interface Type	Endurance	Form Factor *	Special Features *	Vendor Model *	Drive Type
HPE	480	NVMe SATA	WI MU RI VRO	M.2 2280/22110	MV Multi Vendor SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: 5300B	SSD

M.2 SSDs SKU Decoder Short Name

Notes: If the description exceeds character count
– Drop Form Factor Type – 2280/22110
– Drop Special Features starting from lowest priority with the exception of Special SKUs

Technical Specifications

HPE Dual 240GB SATA 6G Read Intensive M.2 to SFF SCM 5300B SSD Kit

Brand	Storage Capacity	Interface Type/ Interface Speed	Endurance *	Form Factor Type / Form Factor Size	Carriers	Special Features *	Vendor Model	Drive Type
HPE	Dual • 240GB	SATA 6G	Read Intensive	M.2 to SFF	SCM Smart Carrier M.2	MV Multi Vendor SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: 5300B	SSD Kit

Notes: If the description exceeds character count
– Abbreviate Special Features starting from lowest priority item
– Drop form factor from the description
– Abbreviate Endurance with the exception Very Read Optimized

HPE Universal SATA 6G AIC HHHL M.2 SSD Enablement Kit

Brand	Features	Interface Type/ Interface Speed	Form Factor Type / Form Factor Size	Drive Type
HPE	Universal	SATA 6G	AIC HHHL	M.2 SSD Enablement Kit

M.2 eKits SKU Decoder Long Name

HPE 2x240GB SATA RI M.2 SCM 5300B SSD

Brand	Storage Capacity	Interface Type	Endurance	Form Factor Type *	Carrier	Special Features *	Vendor Model *	Drive Type
HPE	2x • 240GB	SATA	RI	M.2	SCM Smart Carrier M.2	MV Multi Vendor SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: 5300B	SSD

Notes: If the description exceeds character count
– Drop Form Factor Type
– Drop Special Features starting from lowest priority with the exception of Special SKUs

Technical Specifications

HPE Universal SATA AIC HHHL M.2 SSD Kit

Brand	Features	Interface Type/ Interface Speed	Form Factor Type / Form Factor Size	Drive Type
HPE	Universal	SATA	AIC HHHL	M.2 SSD Kit

M.2 eKits SKU Decoder Short Name

HPE 750GB NVMe Gen3x4 High Performance Low Latency Write Intensive AIC HHHL P4800X SSD

Brand	Storage Capacity	Interface Type / Interface Speed and Lanes / Interface Swim lane	Endurance *	Form Factor Type / Size	Special Features *	Vendor Model	Drive Type
HPE	750	NVMe Gen3/Gen4/ X4/X8 **High Performance Low Latency** NVMe Gen3/Gen4/ X4/X8 **High Performance** NVMe Gen3/Gen4/ X4/X8 **Mainstream Performance**	Write Intensive Mixed Use	AIC HHHL	MV Multi Vendor SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: P4800X	SSD

Add-In Card SKU Decoder Long Name

Notes: If the description exceeds character count
– Abbreviate Special Features starting from lowest priority item
– Drop form factor from the description
– Abbreviate Endurance with the exception Very Read Optimized

Technical Specifications

HPE 750GB NVMe WI HH P4800X SSD

Brand	Storage Capacity	Interface Type and Lanes	Endurance	Form Factor Type / Size *	Special Features *	Vendor Model Name	Drive Type
HPE	750	NVMe	WI MU	HH	MV Multi Vendor SPL Special – Special SKUs SED Self Encrypting Drive FIPS Self Encrypting Drive FIPS *In priority order where 1st is closest to Drive Type*	Limited to 7 characters: Examples: P4800X	SSD

AIC SKU Decoder Short Name

Notes: If the description exceeds character count

– Drop Form Factor Type
– Drop Special Features starting from lowest priority with the exception of Special SKUs

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

Hewlett Packard Enterprise offers end-of-life **product return, trade-in, and recycling programs,** 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
01-Feb-2021	Version 38	Changed	Technical Specifications section was updated
07-Dec-2020	Version 37	Changed	Technical Specifications section was updated
05-Oct-2020	Version 36	Changed	Technical Specifications section was updated
17-Aug-2020	Version 35	Changed	Technical Specifications and Overview Sections were updated
13-Jul-2020	Version 34	Changed	Technical Specifications section was updated
18-May-2020	Version 33	Changed	Tables were fixed and updated
27-Apr-2020	Version 32	Changed	Technical Specifications section was updated
03-Feb-2020	Version 31	Changed	Technical Specifications section was updated
16-Dec-2019	Version 30	Changed	Format Revised
02-Dec-2019	Version 29	Changed	New drive models added. Technical Specifications revised and updated
07-Oct-2019	Version 28	Changed	New drive models added. Technical Specifications revised and updated
05-Aug-2019	Version 27	Changed	Technical Specifications section was updated
01-Jul-2019	Version 26	Changed	Technical Specifications section was updated
03-Jun-2019	Version 25	Changed	New drive models added. Technical Specifications revised and updated
02-Apr-2019	Version 24	Changed	New drive models added. Technical Specifications revised and updated
07-Jan-2019	Version 23	Changed	Technical Specifications section was updated
03-Dec-2018	Version 22	Changed	New drive models added. Technical Specifications revised and updated
15-Oct-2018	Version 21	Changed	Technical Specifications Section was updated
01-Oct-2018	Version 20	Changed	New drive models added. Technical Specifications revised and updated
06-Aug-2018	Version 19	Changed	New drive models added. Technical Specifications revised and updated
02-Jul-2018	Version 18	Changed	Overview and SKU description were updated
04-Jun-2018	Version 17	Changed	New drive models added. Technical Specifications revised and updated
02-Apr-2018	Version 16	Changed	New drive models added, Technical Specifications revised and updated
05-Mar-2018	Version 15	Changed	Technical Specifications revised and updated, images revised
05-Feb-2018	Version 14	Changed	Format Revised New drive models added
04-Dec-2017	Version 13	Changed	New drive model was added Technical Specifications were revised
02-Oct-2017	Version 12	Changed	Technical Specifications were revised
25-Sep-2017	Version 11	Changed	New drive models were added Technical Specifications were revised The title was changed to HPE Solid State Disk Drives (SSD & Add-In Cards)
14-Aug-2017	Version 10	Changed	Technical Specifications were revised
07-Aug-2017	Version 9	Changed	Technical Specifications were revised
17-Jul-2017	Version 8	Changed	Technical Specifications were revised
28-Jun-2017	Version 7	Changed	Technical Specifications were revised
12-Jun-2017	Version 6	Changed	Technical Specifications were revised
06-Jun-2017	Version 5	Changed	Technical Specifications were revised
17-Mar-2017	Version 4	Changed	SSD Selection verbiage was revised
10-Mar-2017	Version 3	Changed	Edits to tables and various verbiage
17-Feb-2017	Version 2	Changed	Technical Specifications were revised
13-Feb-2017	Version 1	New	New QuickSpecs

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