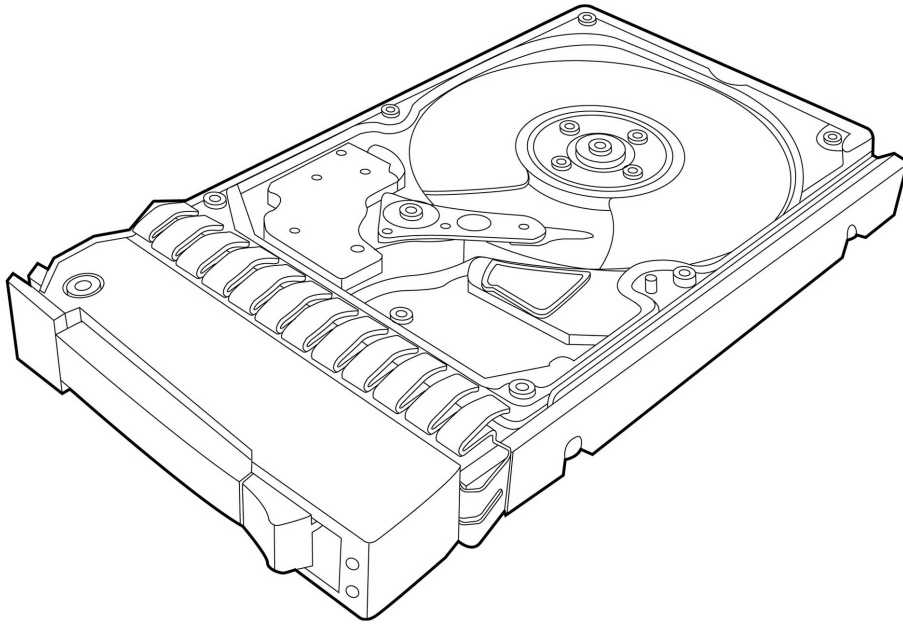


Overview

Serial Attached SCSI (SAS) provides a superior storage solution. With some storage requirements escalating and others becoming more complex, factors such as flexibility, performance, increased reliability, greater density, security, scalability and accessibility are more critical than ever. Today's organizations consist of different kinds of environments. Enterprise data centers must be online 24X7, fulfill requests from numerous users simultaneously, and allow for constant growth and expansion while in operation. Other customer environments require high capacity storage and high data availability for low I/O environments. HP's portfolio of SAS drives meets all these demands.



What's New

- HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive

Models

HP SAS Hot Plug SmartDrive Carriers for Gen8 Servers only

SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21

SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
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Overview

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21
SAS Hot Plug SmartDrive LFF (3.5-inch) Enterprise Drives	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21
SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives	
HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	695510-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21
HP SAS Hot Plug Drives	
NOTE: These drives are not supported by Gen8 servers	
SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	718160-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	619291-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581286-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581284-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3yr Warranty Hard Drive	627117-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516816-B21
HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516814-B21
SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	605835-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	693689-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	625031-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507616-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507614-B21
HP SAS Non-Hot Plug Drives	
SAS Non-Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	590698-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	537809-B21
SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516830-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516826-B21
HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516824-B21
HP SAS Quick Release Drives	
SAS Quick Release SFF (2.5-inch) Enterprise (ENT) Drives	
HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Quick Release Dual Port ENT 3yr Warranty Hard Drive	718164-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Quick-release Dual Port Enterprise 3yr Warranty Hard Drive	574879-B21
SAS Quick Release LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Quickrelease Dual Port Enterprise 3yr Warranty Hard Drive	574758-B21



Overview

HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Quickrelease Dual Port Enterprise 3yr Warranty Hard Drive 585980-B21

SAS Quick Release LFF (3.5-inch) Midline (MDL) Drives

HP 4TB 6G SAS 7.2k rpm LFF (3.5-inch) Quickrelease Midline 1yr Warranty Hard Drive 697956-B21

HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Quickrelease Dual Port Midline 1yr Warranty Hard Drive 574761-B21

NOTE: Refer to the appropriate server QuickSpecs for full compatibility details

Standard Features

What is SAS?

Serial Attached SCSI (SAS) is the evolution of the SCSI interface. SAS Enterprise drives satisfy the enterprise data center requirement of scalability, performance, reliability and manageability, while providing an enterprise storage infrastructure for both enterprise SAS drives and SATA disk drives. SAS Midline drives provide the lowest dollars per gigabyte and economical reliability and performance. The SAS interface is compatible with SATA devices. This compatibility provides users with unprecedented choices for server and storage subsystem deployment

Drive Quality and Performance

Today's distributed enterprise is seeing larger, more complex applications, an increase of mission-critical data moving to the server, increasing demand for transaction processing and critical server consolidation. In this environment, storage has become a critical component of the information system, significantly defining both the systems reliability and performance. This is why HP drives undergo an intense qualification process that eliminates firmware and O/S incompatibilities. All drive firmware is specific to our drives and is designed to maximize both functionality and compatibility. All drives are proven to perform in the HP systems for which they were designed.

While selecting the drives in our Enterprise portfolio, only those drives whose performance is suitable for an enterprise environment are selected through the HP qualification process and are labeled "best-in-class." All our Enterprise drives are proven to be reliable and tuned for optimum performance in the HP equipment for which they were designed. The drives in our Midline portfolio undergo a similar qualification process to ensure that you get the economical reliability and performance you need for your low workload (less than 40% I/O) environments.

Performance

Only those drives whose performance is suitable for an enterprise environment are selected through the HP qualification process and are labeled "best-in-class." All our drives are proven to be reliable and tuned for optimum performance in the HP equipment for which they were designed.

Pre-Failure Alert

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

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

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. HP hard drives are specifically designed and tested for flawless operation in your HP equipment. The integration of hard drives in HP systems means that cables, SCSI ID settings, termination, hot plug drive trays and firmware are right for your ProLiant server or storage system.

Standard Features

Support Matrix

Please see the following URL for the latest list of supported servers and enclosures:
<http://www.hpproliantoptions.com/>

Warranty

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

Service and Support

Service and Support

HP Technology Services

HP Technology Services offers you consultants and support experts to solve your most complex infrastructure problems. We help keep your business running, boost availability and avoid downtime.

Protect your business beyond warranty with HP Care Pack Services

When you buy HP Options, it's also a good time to think about what level of service you may need. HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

Recommended HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services

3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

Related HP Care Pack Services to enhance your HP product experience

Related Services

3-Year HP 6 hour Hardware Support Onsite Call-to-Repair Service

Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf>

HP Proactive Select Service

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

Insight Remote Support

Delivers secure remote monitoring and support for HP servers and storage, 24x7 at no additional cost. Available as part of HP Warranty, Care Pack and Service Contract offers.

Parts and materials

HP will provide HP-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. Supplies and consumable parts will not be provided as part of this service; standard warranty terms and conditions apply. Parts and components that have exceeded their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual or the technical product data sheet will not be provided, repaired or replaced as part of this service.

Coverage

For ProLiant servers and storage systems, this service covers HP-branded hardware options qualified for

Service and Support

the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; 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 exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

For more information

To learn more on services for HP ESSN Options, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: <http://www.hp.com/services/proliant> or www.hp.com/services/bladessystem

Technical Specifications

SAS Hot Plug SmartDrive SFF (2.5-inch) Enterprise Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21	Capacity	1,200,243MB	
		Height	0.62 in (15.6 mm)	
		Width	2.98 in (75.7 mm)	
		Depth	4.67 in (118.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.3 ms
			Average	4.6 ms
			Full-Stroke	8.9 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
		Logical Blocks	2,344,225,968	
	Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)		

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21	Capacity	900,185MB	
		Height	0.62 in (15.6 mm)	
		Width	2.98 in (75.7 mm)	
		Depth	4.67 in (118.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.21 ms
			Average	3.8 ms
			Full-Stroke	7.4 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
		Logical Blocks	1,758,174,768	

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive

652583-B21

Capacity 600,127MB
Height 0.62 in (15.6 mm)
Width 2.98 in (75.7 mm)
Depth 4.67 in (118.7 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6 Gb/sec
Seek Time Single Track 0.3 ms
 (typical reads, including settling) Average 4.0 ms
 Full-Stroke 8.0 ms
 Rotational Speed 10,000 rpm
Physical Configuration Bytes/Sector 512
 Logical Blocks 1,172,123,568
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Quick Release Dual Port ENT 3yr Warranty Hard Drive

718164-B21

Capacity 1,200,243MB
Height 0.740 in (18.8 mm)
Width 2.909 in (73.9 mm)
Depth 3.945 in (100.2 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6 Gb/sec
Seek Time Single Track 0.3ms
 (typical reads, including settling) Average 4.6ms
 Full-Stroke 8.9ms
 Rotational Speed 10,000rpm
Physical Configuration Bytes/Sector 512
 Logical Blocks 2,344,225,968
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

Technical Specifications

**HP 450GB 6G SAS 10K rpm
SFF (2.5-inch) SC
Enterprise 3yr Warranty
Hard Drive**

652572-B21

Capacity	450,098MB	
Height	0.62 in (15.6 mm)	
Width	2.98 in (75.7 mm)	
Depth	4.67 in (118.7 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.3 ms
	Average	4.0 ms
	Full-Stroke	8.0 ms
	Rotational Speed	10,000 rpm
Physical Configuration	Bytes/Sector	512
	Logical Blocks	879,097,968
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

**HP 300GB 6G SAS 10K rpm
SFF (2.5-inch) SC
Enterprise 3yr Warranty
Hard Drive**

652564-B21

Capacity	300,000MB	
Height	0.62 in (15.6 mm)	
Width	2.98 in (75.7 mm)	
Depth	4.67 in (118.7 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.3 ms
	Average	4.0 ms
	Full-Stroke	8.0 ms
	Rotational Speed	10,000 rpm
Physical Configuration	Bytes/Sector	512
	Logical Blocks	585,937,500
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

**HP 300GB 6G SAS 15K rpm
SFF (2.5-inch) SC
Enterprise 3yr Warranty
Hard Drive**

652611-B21

Capacity	300,000MB	
Height	0.62 in (15.6 mm)	
Width	2.98 in (75.7 mm)	
Depth	4.67 in (118.7 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.4 ms
	Average	2.9 ms
	Full-Stroke	5.3 ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	585,937,500
	50° to 95° F (10° to 35° C)	

**HP 146GB 6G SAS 15K rpm
SFF (2.5-inch) SC
Enterprise 3yr Warranty
Hard Drive**

652605-B21

Capacity	146,815MB	
Height	0.62 in (15.6 mm)	
Width	2.98 in (75.7 mm)	
Depth	4.67 in (118.7 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.4 ms
	Average	3.0 ms
	Full-Stroke	7.0 ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	286,749,488
	50° to 95° F (10° to 35° C)	

Technical Specifications

SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives

Application SAS Midline drives are intended for servers and storage solutions where high capacities are required. These drives have moderately-priced reliability and performance for non-mission critical, low workload applications, such as disk backup, archival, and reference applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21	Capacity	1,000,204MB	
		Height	0.62 in (15.6 mm)	
		Width	2.98 in (75.7 mm)	
		Depth	4.67 in (118.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.7 ms
			Average	8.7 ms
			Full-Stroke	17.16 ms
		Physical Configuration	Rotational Speed	7200 rpm
			Bytes/Sector	512
			Logical Blocks	1,953,525,168
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)			

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21	Capacity	500,107MB	
		Height	0.62 in (15.6 mm)	
		Width	2.98 in (75.7 mm)	
		Depth	4.67 in (118.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.7 ms
			Average	8.7 ms
			Full-Stroke	17.16 ms
		Physical Configuration	Rotational Speed	7200 rpm
			Bytes/Sector	512
			Logical Blocks	976,773,168

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

SAS Hot Plug SmartDrive LFF (3.5-inch) Enterprise Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21	Capacity	600,127MB	
		Height	1.06 in (26.8 mm)	
		Width	4.16 in (105.8 mm)	
		Depth	6.69 in (170.0 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.2 ms
			Average	3.5 ms
			Full-Stroke	6.8 ms
		Physical Configuration	Rotational Speed	15000 rpm
			Bytes/Sector	512
			Logical Blocks	1,172,123,568
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

**HP 450GB 6G SAS 15K rpm
LFF (3.5-inch) SC
Enterprise 3yr Warranty
Hard Drive**

652615-B21

Capacity	450,098MB	
Height	1.06 in (26.8 mm)	
Width	4.16 in (105.8 mm)	
Depth	6.69 in (170.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.2 ms
	Average	3.5 ms
	Full-Stroke	6.8 ms
Physical Configuration	Rotational Speed	15000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	879,097,968
	50° to 95° F (10° to 35° C)	

SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives

Application

SAS Midline drives are intended for servers and storage solutions where high capacities are required. These drives have moderately-priced reliability and performance for non-mission critical, low workload applications, such as disk backup, archival, and reference applications.

Transfer rate

The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**HP 4TB 6G SAS 7.2K rpm
LFF (3.5-inch) SC Midline
1yr Warranty Hard Drive**

695510-B21

Capacity	4,000,787MB	
Height	1.06 in (26.8 mm)	
Width	4.16 in (105.8 mm)	
Depth	6.69 in (170.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.7 ms
	Average	8.5 ms
	Full-Stroke	15.7 ms
Physical Configuration	Rotational Speed	7200 rpm
	Bytes/Sector	512
	Logical Blocks	7,814,037,168

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

NOTE: To support HP hard drives exceeding 2.2 TB, HP Smart Array Firmware version 5.0 or later is required for the following controllers:

- HP Smart Array P212 Controller
- HP Smart Array P410 Controller
- HP Smart Array P411 Controller
- HP Smart Array P711m Controller
- HP Smart Array P812 Controller

To use hard drives exceeding 2.2 TB, you must create a boot volume using offline ACU version 8.75 or later. HP Smart Array controllers do not support boot volumes exceeding 2.2 TB. Other controllers are not supported

**HP 3TB 6G SAS 7.2K rpm
LFF (3.5-inch) SC Midline
1yr Warranty Hard Drive**

652766-B21

Capacity	3,000,592MB	
Height	1.06 in (26.8 mm)	
Width	4.16 in (105.8 mm)	
Depth	6.69 in (170.0 mm)	
Interface	SAS	
Transfer Rate	6 Gb/sec	
Synchronous (Maximum)		
Seek Time	Single Track	0.7 ms
(typical reads, including settling)	Average	8.3 ms
	Full-Stroke	15.7 ms
	Rotational Speed	7200 rpm
Physical Configuration	Bytes/Sector	512
	Logical Blocks	5,860,533,168
Operating Temperature	50° to 95° F (10° to 35° C)	
(System Inlet Air Temperature)		

NOTE: To support HP hard drives exceeding 2.2 TB, HP Smart Array Firmware version 5.0 or later is required for the following controllers:

- HP Smart Array P212 Controller
- HP Smart Array P410 Controller
- HP Smart Array P411 Controller
- HP Smart Array P711m Controller
- HP Smart Array P812 Controller

To use hard drives exceeding 2.2 TB, you must create a boot volume using offline ACU version 8.75 or later. HP Smart Array controllers do not support boot volumes exceeding 2.2 TB. Other controllers are not supported

Technical Specifications

**HP 2TB 6G SAS 7.2K rpm
LFF (3.5-inch) SC Midline
1yr Warranty Hard Drive**

652757-B21

Capacity	2,000,398MB	
Height	1.06 in (26.8 mm)	
Width	4.16 in (105.8 mm)	
Depth	6.69 in (170.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.7 ms
	Average	8.5 ms
	Full-Stroke	18.2 ms
Physical Configuration	Rotational Speed	7200 rpm
	Bytes/Sector	512
	Logical Blocks	3,907,029,168
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

**HP 1TB 6G SAS 7.2K rpm
LFF (3.5-inch) SC Midline
1yr Warranty Hard Drive**

652753-B21

Capacity	1,000,204MB	
Height	1.06 in (26.8 mm)	
Width	4.16 in (105.8 mm)	
Depth	6.69 in (170.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.7 ms
	Average	8.5 ms
	Full-Stroke	18.2 ms
Physical Configuration	Rotational Speed	7200 rpm
	Bytes/Sector	512
	Logical Blocks	1,953,525,168
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	718160-B21	Capacity	1,200,243MB	
		Height	0.63 in (16.0 mm)	
		Width	3.1 in (78.7 mm)	
		Depth	5.45 in (138.4 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.3 ms
			Average	4.6 ms
			Full-Stroke	8.9 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
		Logical Blocks	2,344,225,968	
	Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)		

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	619291-B21	Capacity	900,185,481,216	
		Height	0.63 in (16.0 mm)	
		Width	3.1 in (78.7 mm)	
		Depth	5.45 in (138.4 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.21 ms
			Average	3.57 ms
			Full-Stroke	7.30 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
		Logical Blocks	1,758,174,768	

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive

581286-B21

Capacity 600,127,266,816
Height 0.63 in (16.0 mm)
Width 3.1 in (78.7 mm)
Depth 5.45 in (138.4 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6 Gb/sec
Seek Time (typical reads, including settling)
 Single Track 0.4 ms
 Average 4.0 ms
 Full-Stroke 8.0 ms
 Rotational Speed 10,000 rpm
Physical Configuration
 Bytes/Sector 512
 Logical Blocks 1,172,123,568
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive

581284-B21

Capacity 450,098,159,616
Height 0.63 in (16.0 mm)
Width 3.1 in (78.7 mm)
Depth 5.45 in (138.4 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6 Gb/sec
Seek Time (typical reads, including settling)
 Single Track 0.4 ms
 Average 4.0 ms
 Full-Stroke 8.0 ms
 Rotational Speed 10,000 rpm
Physical Configuration
 Bytes/Sector 512
 Logical Blocks 879,097,968
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

Technical Specifications

**HP 300GB 6G SAS 15K rpm
SFF (2.5-inch) Hot Plug
Enterprise 3 yr Warranty
Hard Drive**

627117-B21

Capacity	300,000,000,000	
Height	0.63 in (16.0 mm)	
Width	3.1 in (78.7 mm)	
Depth	5.45 in (138.4 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.40 ms
	Average	2.9 ms
	Full-Stroke	5.30 ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
	Logical Blocks	585,937,500
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

**HP 300GB 6G SAS 10K rpm
SFF (2.5-inch) Dual Port
Enterprise 3yr Warranty
Hard Drive**

507127-B21

Capacity	300,000,000,000	
Height	0.63 in (16.0 mm)	
Width	3.1 in (78.7 mm)	
Depth	5.45 in (138.4 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.20 ms
	Average	4.0 ms
	Full-Stroke	7.45 ms
Physical Configuration	Rotational Speed	10,000 rpm
	Bytes/Sector	512
	Logical Blocks	585,937,500
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

**HP 300GB 6G SAS 15K rpm
SFF (2.5-inch) Hot Plug
Enterprise 3 yr Warranty
Hard Drive**

627117-B21

Capacity	300,000,000,000	
Height	0.63 in (16.0 mm)	
Width	3.1 in (78.7 mm)	
Depth	5.45 in (138.4 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.40 ms
	Average	2.9 ms
	Full-Stroke	5.30 ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	585,937,500
		50° to 95° F (10° to 35° C)

**HP 146GB 6G SAS 15K rpm
SFF (2.5-inch) Dual Port
Enterprise 3yr Warranty
Hard Drive**

512547-B21

Capacity	146,815,737,856	
Height	0.63 in (16.0 mm)	
Width	3.1 in (78.7 mm)	
Depth	5.45 in (138.4 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.4 ms
	Average	3.0 ms
	Full-Stroke	7.0 ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	286,749,488
		50° to 95° F (10° to 35° C)

Technical Specifications

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21	Capacity	600,127,266,816	
		Height	1.04 in (26.4 mm)	
		Width	4.36 in (110.7 mm)	
		Depth	7.43 in (188.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.2ms
			Average	3.5ms
			Full-Stroke	6.8ms
		Physical Configuration	Rotational Speed	15,000rpm
			Bytes/Sector	512
		Logical Blocks	1,172,123,568	
	Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)		

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516816-B21	Capacity	450,098,159,616	
		Height	1.04 in (26.4 mm)	
		Width	4.36 in (110.7 mm)	
		Depth	7.43 in (188.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.2ms
			Average	3.5ms
			Full-Stroke	6.8ms
		Physical Configuration	Rotational Speed	15,000rpm
			Bytes/Sector	512
		Logical Blocks	879,097,968	

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive

516814-B21

Capacity 300,000,000,000
Height 1.04 in (26.4 mm)
Width 4.36 in (110.7 mm)
Depth 7.43 in (188.7 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6 Gb/sec
Seek Time Single Track 0.2ms
(typical reads, including settling) Average 3.5ms
Full-Stroke 6.8ms
Rotational Speed 15,000rpm
Physical Configuration Bytes/Sector 512
Logical Blocks 585,937,500
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

Application

SAS Midline drives are intended for servers and storage solutions where high capacities are required. These drives have moderately-priced reliability and performance for non-mission critical, low workload applications, such as disk backup, archival, and reference applications.

Transfer rate

The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

Technical Specifications

**HP 1TB 6G SAS 7.2K rpm
SFF (2.5-inch) Dual Port
Midline 1yr Warranty Hard
Drive**

605835-B21

Capacity	1,000,204,886,016	
Height	0.63 in (16.0 mm)	
Width	3.1 in (78.7 mm)	
Depth	5.45 in (138.4 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.5 ms
	Average	8.2ms
	Full-Stroke	17.55 ms
Physical Configuration	Rotational Speed	7,200 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	976,773,168
	50° to 95° F (10° to 35° C)	

**HP 500GB 6G SAS 7.2K rpm
SFF (2.5-inch) Dual Port
Midline 1yr Warranty Hard
Drive**

507610-B21

Capacity	500,107,862,016	
Height	0.63 in (16.0 mm)	
Width	3.1 in (78.7 mm)	
Depth	5.45 in (138.4 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.5 ms
	Average	8.2ms
	Full-Stroke	17.55 ms
Physical Configuration	Rotational Speed	7,200 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	976,773,168
	50° to 95° F (10° to 35° C)	

Technical Specifications

SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives

Application SAS Midline drives are intended for servers and storage solutions where high capacities are required. These drives have moderately-priced reliability and performance for non-mission critical, low workload applications, such as disk backup, archival, and reference applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 4TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	693689-B21	Capacity	4,000,787MB	
		Height	1.04 in (26.4 mm)	
		Width	4.36 in (110.7 mm)	
		Depth	7.43 in (188.7 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6 Gb/sec	
		Seek Time	Single Track	0.7 ms
		(typical reads, including settling)	Average	8.5 ms
			Full-Stroke	15.7 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	7,814,037,168
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

NOTE: To support HP hard drives exceeding 2.2 TB, HP Smart Array Firmware version 5.0 or later is required for the following controllers:

- HP Smart Array P212 Controller
- HP Smart Array P410 Controller
- HP Smart Array P411 Controller
- HP Smart Array P711m Controller
- HP Smart Array P812 Controller

To use hard drives exceeding 2.2 TB, you must create a boot volume using offline ACU version 8.75 or later. HP Smart Array controllers do not support boot volumes exceeding 2.2 TB. Other controllers are not supported

Technical Specifications

**HP 3TB 6G SAS 7.2K rpm
LFF (3.5-inch) Midline 1yr
Warranty Hard Drive**

625031-B21

Capacity	3,000,592,982,016	
Height	1.04 in (26.4 mm)	
Width	4.36 in (110.7 mm)	
Depth	7.43 in (188.7 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.5 ms
	Average	<8.1 ms
	Full-Stroke	15.5 ms
	Rotational Speed	7,200 rpm
Physical Configuration	Bytes/Sector	512
	Logical Blocks	5,860,533,168
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

NOTE: To support HP hard drives exceeding 2.2 TB, HP Smart Array Firmware version 5.0 or later is required for the following controllers:

- HP Smart Array P212 Controller
- HP Smart Array P410 Controller
- HP Smart Array P411 Controller
- HP Smart Array P711m Controller
- HP Smart Array P812 Controller

To use hard drives exceeding 2.2 TB, you must create a boot volume using offline ACU version 8.75 or later. HP Smart Array controllers do not support boot volumes exceeding 2.2 TB. Other controllers are not supported

**HP 2TB 6G SAS 7.2K rpm
LFF (3.5-inch) Dual Port
Midline 1yr Warranty Hard
Drive**

507616-B21

Capacity	2,000,398,934,016	
Height	1.04 in (26.4 mm)	
Width	4.36 in (110.7 mm)	
Depth	7.43 in (188.7 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.5 ms
	Average	8.5 ms
	Full-Stroke	16.2 ms
	Rotational Speed	7,200 rpm
Physical Configuration	Bytes/Sector	512
	Logical Blocks	3,907,029,168

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive

507614-B21

Capacity 1,000,204,886,016
Height 1.04 in (26.4 mm)
Width 4.36 in (110.7 mm)
Depth 7.43 in (188.7 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6 Gb/sec
Seek Time
(typical reads, including settling)
Single Track 0.5 ms
Average 8.5 ms
Full-Stroke 16.2 ms
Rotational Speed 7,200 rpm
Physical Configuration
Bytes/Sector 512
Logical Blocks 1,953,525,168
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

SAS Non-Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

Technical Specifications

**HP 300GB 6G SAS 10K rpm
SFF (2.5-inch) Non-hot
Plug Dual Port Enterprise
3yr Warranty Hard Drive**

537809-B21

Capacity	300,000,000,000	
Height	0.591 in (15.00 mm)	
Width	2.750 in (69.85 mm)	
Depth	3.937 in (100.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6 Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.20 ms
	Average	4.0 ms
	Full-Stroke	7.45 ms
Physical Configuration	Rotational Speed	10,000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	585,937,500
	50° to 95° F (10° to 35° C)	

SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

Application

SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate

The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**HP 600GB 6G SAS 15K rpm
LFF (3.5-inch) Non-hot
Plug Dual Port Enterprise
3yr Warranty Hard Drive**

516830-B21

Capacity	600,127,266,816	
Height	1.028 in (26.1 mm)	
Width	4.0 in (101.6 mm)	
Depth	5.787 in (147.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.2ms
	Average	3.5ms
	Full-Stroke	6.8ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
	Logical Blocks	1,172,123,568

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive

516826-B21

Capacity 450,098,159,616
Height 1.028 in (26.1 mm)
Width 4.0 in (101.6 mm)
Depth 5.787 in (147.0 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 6Gb/sec
Seek Time (typical reads, including settling)
 Single Track 0.2ms
 Average 3.5ms
 Full-Stroke 6.8ms
 Rotational Speed 15,000 rpm
Physical Configuration
 Bytes/Sector 512
 Logical Blocks 879,097,968
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive

516824-B21

Capacity 300,000,000,000
Height 1.028 in (26.1 mm)
Width 4.0 in (101.6 mm)
Depth 5.787 in (147.0 mm)
Interface SAS
Transfer Rate Synchronous (Maximum) 3Gb/sec
Seek Time (typical reads, including settling)
 Single Track 0.2ms
 Average 3.5ms
 Full-Stroke 6.8ms
 Rotational Speed 10,000rpm
Physical Configuration
 Bytes/Sector 512
 Logical Blocks 585,937,500
Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

Technical Specifications

SAS Quick Release SFF (2.5-inch) Enterprise (ENT) Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) Quick-release Dual Port ENT 3y Warranty Hard Drive	697572-B21	Capacity	1,200,243MB	
		Height	0.740 in (18.8 mm)	
		Width	2.909 in (73.9 mm)	
		Depth	3.945 in (100.2 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	4.6ms
			Average	8.9ms
			Full-Stroke	8.0ms
		Physical Configuration	Rotational Speed	10,000rpm
			Bytes/Sector	512
			Logical Blocks	2,344,225,968
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

HP 300 GB 6G SAS 10K SFF (2.5-inch) Quick-release Dual Port ENT 3y Warranty Hard Drive	574879-B21	Capacity	300,000,000,000	
		Height	0.740 in (18.8 mm)	
		Width	2.909 in (73.9 mm)	
		Depth	3.945 in (100.2 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.3ms
			Average	4.0ms
			Full-Stroke	8.0ms
		Physical Configuration	Rotational Speed	10,000rpm
			Bytes/Sector	512
			Logical Blocks	585,937,500

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

SAS Quick Release LFF (3.5-inch) Enterprise (ENT) Drives

Application SAS Enterprise drives are intended for servers and storage solutions with mission critical and high work load intensive applications where 24/7 duty cycles are a requirement, such as database applications and high transaction level applications.

Transfer rate The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

HP 600 GB 6G SAS 15K LFF (3.5-inch) Quick-release Dual Port ENT 3y Warranty Hard Drive	574758-B21	Capacity	600,127,266,816	
		Height	1.165 in (29.6 mm)	
		Width	4.157 in (105.6 mm)	
		Depth	5.787 in (147.0 mm)	
		Interface	SAS	
		Transfer Rate Synchronous (Maximum)	6Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.2ms
			Average	3.5ms
			Full-Stroke	6.8ms
		Physical Configuration	Rotational Speed	15,000 rpm
			Bytes/Sector	512
			Logical Blocks	1,172,123,568
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

**HP 300 GB 6G SAS 15K LFF
(3.5-inch) Quick-release
Dual Port ENT 3y
Warranty Hard Drive**

585980-B21

Capacity	300,000,000,000	
Height	1.165 in (29.6 mm)	
Width	4.157 in (105.6 mm)	
Depth	5.787 in (147.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.2ms
	Average	3.5ms
	Full-Stroke	6.8ms
Physical Configuration	Rotational Speed	15,000 rpm
	Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	585,937,500
	50° to 95° F (10° to 35° C)	

SAS Quick Release LFF (3.5-inch) Midline (MDL) Drives

Application

SAS Midline drives are intended for servers and storage solutions where high capacities are required. These drives have moderately-priced reliability and performance for non-mission critical, low workload applications, such as disk backup, archival, and reference applications.

Transfer rate

The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**HP 4TB 6G SAS 7.2k rpm
LFF (3.5-inch) Quick-
release Dual Port MDL 1y
Warranty Hard Drive**

697956-B21

Capacity	4,000,787MB	
Height	1.165 in (29.6 mm)	
Width	4.157 in (105.6 mm)	
Depth	5.787 in (147.0 mm)	
Interface	SAS	
Transfer Rate Synchronous (Maximum)	6Gb/sec	
Seek Time (typical reads, including settling)	Single Track	0.7 ms
	Average	8.5 ms
	Full-Stroke	15.7 ms
Physical Configuration	Rotational Speed	7,200 rpm
	Bytes/Sector	512
	Logical Blocks	7,814,037,168

Technical Specifications

Operating Temperature 50° to 95° F (10° to 35° C)
(System Inlet Air Temperature)

NOTE: To support HP hard drives exceeding 2.2 TB, HP Smart Array Firmware version 5.0 or later is required for the following controllers:

- HP Smart Array P212 Controller
- HP Smart Array P410 Controller
- HP Smart Array P411 Controller
- HP Smart Array P711m Controller
- HP Smart Array P812 Controller

To use hard drives exceeding 2.2 TB, you must create a boot volume using offline ACU version 8.75 or later. HP Smart Array controllers do not support boot volumes exceeding 2.2 TB. Other controllers are not supported

HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Quick-release Dual Port MDL 1yr Warranty Hard Drive

574761-B21

Capacity	2,000,398,934,016
Height	1.165 in (29.6 mm)
Width	4.157 in (105.6 mm)
Depth	5.787 in (147.0 mm)
Interface	SAS
Transfer Rate Synchronous (Maximum)	6Gb/sec
Seek Time (typical reads, including settling)	Single Track 0.7 ms Average 8.5 ms Full-Stroke 18.2 ms
Rotational Speed	7,200 rpm
Physical Configuration	Bytes/Sector 512 Logical Blocks 3,907,029,168
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)

Technical Specifications

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

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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