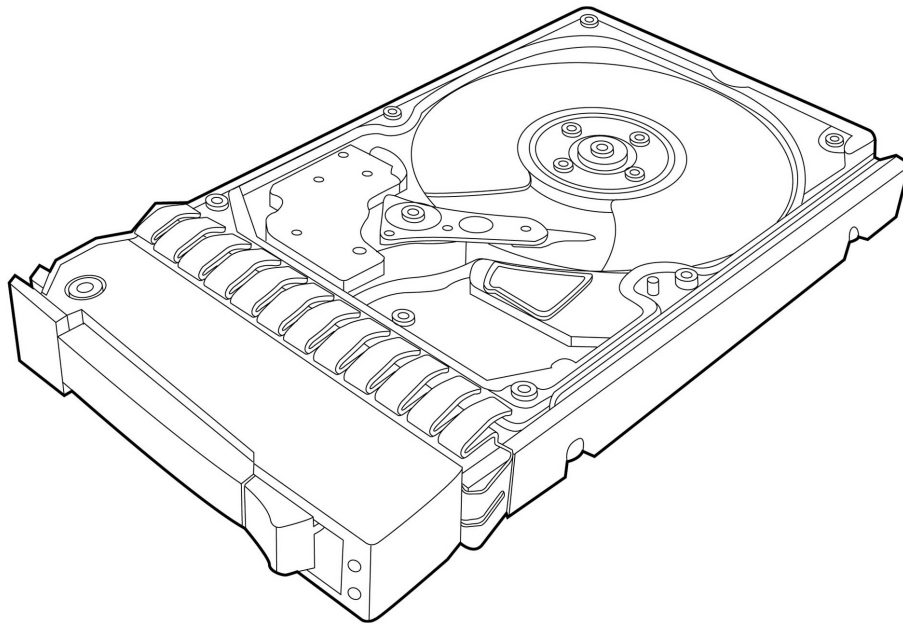


Overview

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 3TB 6G SAS 7.2K 3.5-inch Midline Hard Drive
-

Overview

Models

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

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 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 512547-B21

HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 507125-B21

HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 512545-B21

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

HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive 537807-B21

HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive 537805-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 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

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 3TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port 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



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>

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>

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>

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 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



Service and Support

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/bladestystem



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 900GB 6G SAS 10K rpm SFF (2.5-inch) Enterprise 3yr Warranty Hard Drive	619291-B21	Capacity	900,185,481,216	
		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	0.21 ms
			Average	3.57 ms
			Full-Stroke	7.30 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
Operating Temperature (System Inlet Air Temperature)	Logical Blocks	1,758,174,768		
	50° to 95° F (10° to 35° C)			

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
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
Logical Blocks	1,172,123,568			



QuickSpecs

HP SAS Enterprise and SAS Midline Hard Drives

Technical Specifications

		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	
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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
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
			Logical Blocks	879,097,968
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	
		<hr/>		
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 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	0.14 ms
			Average	2.58 ms
			Full-Stroke	4.85 ms
		Physical Configuration	Rotational Speed	15,000 rpm
			Bytes/Sector	512
			Logical Blocks	286,749,488
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-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	0.20 ms
			Average	4.0 ms
			Full-Stroke	7.48 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
			Logical Blocks	286,749,488
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21	Capacity Height Width Depth Interface Transfer Rate Synchronous (Maximum) Seek Time (typical reads, including settling) Physical Configuration Operating Temperature (System Inlet Air Temperature)	73,407,865,856 0.63 in (16.0 mm) 3.1 in (78.7 mm) 5.45 in (138.4 mm) SAS 6 Gb/sec Single Track 0.14 ms Average 2.58 ms Full-Stroke 4.85 ms Rotational Speed 15,000 rpm Bytes/Sector 512 Logical Blocks 143,374,738 50° to 95° F (10° to 35° C)
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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.

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	590698-B21	Capacity Height Width Depth Interface Transfer Rate Synchronous (Maximum) Seek Time (typical reads, including settling) Physical Configuration Operating Temperature (System Inlet Air Temperature)	600,127,266,816 0.591 in (15.00 mm) 2.750 in (69.85 mm) 3.937 in (100.0 mm) SAS 6 Gb/sec Single Track 0.4 ms Average 4.0 ms Full-Stroke 8.0 ms Rotational Speed 10,000 rpm Bytes/Sector 512 Logical Blocks 1,172,123,568 50° to 95° F (10° to 35° C)
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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
			Logical Blocks	585,937,500
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	537807-B21	Capacity	146,815,737,856	
		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	7.48 ms
		Physical Configuration	Rotational Speed	10,000 rpm
			Bytes/Sector	512
			Logical Blocks	286,749,488
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive

537805-B21

Capacity	73,407,865,856						
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)	<table> <tr> <td>Single Track</td> <td>0.14 ms</td> </tr> <tr> <td>Average</td> <td>2.58 ms</td> </tr> <tr> <td>Full-Stroke</td> <td>4.85 ms</td> </tr> </table>	Single Track	0.14 ms	Average	2.58 ms	Full-Stroke	4.85 ms
Single Track	0.14 ms						
Average	2.58 ms						
Full-Stroke	4.85 ms						
Physical Configuration	<table> <tr> <td>Rotational Speed</td> <td>15,000 rpm</td> </tr> <tr> <td>Bytes/Sector</td> <td>512</td> </tr> <tr> <td>Logical Blocks</td> <td>143,374,738</td> </tr> </table>	Rotational Speed	15,000 rpm	Bytes/Sector	512	Logical Blocks	143,374,738
Rotational Speed	15,000 rpm						
Bytes/Sector	512						
Logical Blocks	143,374,738						
Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)						

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)	6Gb/sec						
Seek Time (typical reads, including settling)	<table> <tr> <td>Single Track</td> <td>0.2ms</td> </tr> <tr> <td>Average</td> <td>3.5ms</td> </tr> <tr> <td>Full-Stroke</td> <td>6.8ms</td> </tr> </table>	Single Track	0.2ms	Average	3.5ms	Full-Stroke	6.8ms
Single Track	0.2ms						
Average	3.5ms						
Full-Stroke	6.8ms						
Physical Configuration	<table> <tr> <td>Rotational Speed</td> <td>15,000rpm</td> </tr> <tr> <td>Bytes/Sector</td> <td>512</td> </tr> <tr> <td>Logical Blocks</td> <td>1,172,123,568</td> </tr> </table>	Rotational Speed	15,000rpm	Bytes/Sector	512	Logical Blocks	1,172,123,568
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)						



Technical Specifications

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)	6Gb/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
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

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)	6Gb/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	585,937,500
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

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
		Operating Temperature (System Inlet Air Temperature)	Logical Blocks	1,172,123,568
50° to 95° F (10° to 35° C)				

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
		Physical Configuration	Rotational Speed	15,000 rpm
			Bytes/Sector	512
		Operating Temperature (System Inlet Air Temperature)	Logical Blocks	879,097,968
50° to 95° F (10° to 35° C)				



Technical Specifications

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
		Physical Configuration	Rotational Speed	10,000rpm
			Bytes/Sector	512
			Logical Blocks	585,937,500
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

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.

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Hot plug 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)	6Gb/s	
		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
			Logical Blocks	976,773,168



Technical Specifications

		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) 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)	6Gb/s
		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 Logical Blocks 976,773,168
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)

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.



Technical Specifications

HP 3TB 6G SAS 7.2K rpm
LFF (3.5-inch) Dual Port
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	6 Gb/sec	
Synchronous (Maximum)		
Seek Time	Single Track	0.5 ms
(typical reads, including settling)	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	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) 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	6 Gb/sec	
Synchronous (Maximum)		
Seek Time	Single Track	0.5 ms
(typical reads, including settling)	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
Operating Temperature	50° to 95° F (10° to 35° C)	
(System Inlet Air Temperature)		



Technical Specifications

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	6 Gb/sec	
		Synchronous (Maximum)		
		Seek Time	Single Track	0.5 ms
		(typical reads, including settling)	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)				

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.

