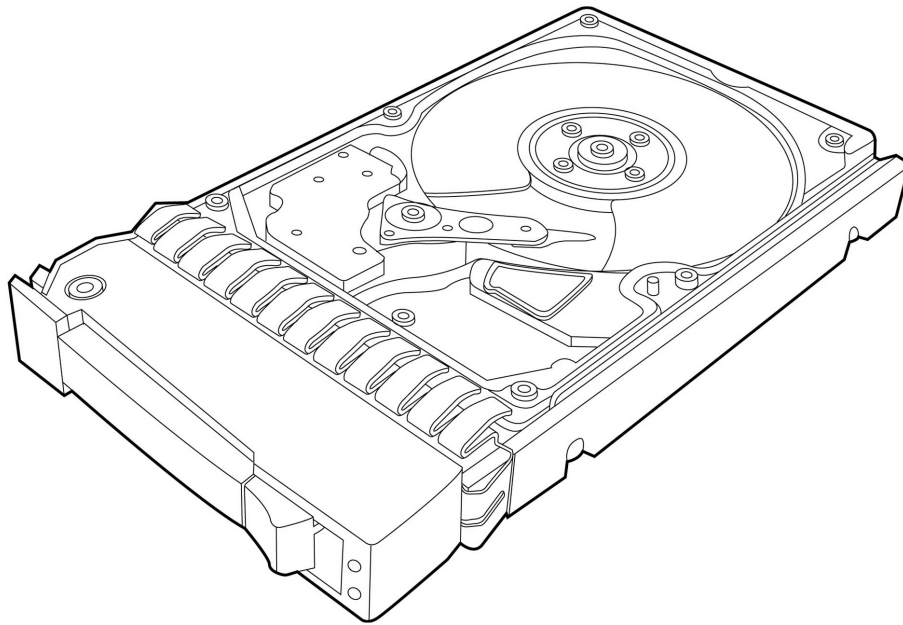# QuickSpecs

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 600GB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive
- HP 600GB 6G SAS 10K SFF (2.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive
- HP 450GB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive

Overview

Models

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

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 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive S-Buy	507127-S21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive S-Buy	512547-S21
HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive S-Buy	507125-S21
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 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 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

QuickSpecs

HP SAS Enterprise and SAS Midline Hard Drives

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.

QuickSpecs

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 Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI** When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage. **Protect your business beyond warranty** When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing. **HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively** HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment and education services. HP server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs-from purchase to equipment retirement. Learn more: www.hp.com/services/servers and www.hp.com/services/storage **NOTE:** Care Pack Services availability may vary by product and country. HP Care Pack Services are sold by HP and HP Authorized Service Partners: ● Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools. ● Customers purchasing from a commercial reseller can find HP Care Pack Services at http://www.hp.com/go/lookuptool

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

Recommended Services	**Hardware Options Support** HP Care Packs provide support for all HP-branded hardware options qualified for inclusion in your server or storage solution. Any additional HP-qualified options installed within the server are covered at the same service level and for the same period as the server and no additional cost.

Service and Support

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

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

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

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.

- This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:
- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

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

HP Installation and Startup of HP ProLiant Servers

Provides for the installation of your new HP ProLiant server and operating system to assist you in bringing your new HP ProLiant server and operating system into operation in a timely and professional manner.

- This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:
- Delivery of the service at a mutually scheduled time convenient to your organization
- Availability of an HP service specialist to answer basic questions during the onsite delivery of this service
- Custom installation as detailed in "Delivery specifications" or in a Statement of Work (SOW)
- Verification prior to installation that all service prerequisites are met

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982?7572ENN

Optional HP Care Pack Services that will enhance your HP product experience

Optional Services

3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour

As an alternative to our recommended support level, for customers who need committed call-to-repair for server hardware.

Provides your 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 or 24 hours of the initial service request to the HP Global Solution Center.

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN

3-Year HP Support Plus 24

As an alternative to our recommended support level, for customers who need access to responsive 24x7 hardware and software support plus software updates on HP and selected third party products:

For a higher return on your server and storage technology, our 3-year combined reactive support service delivers integrated onsite hardware/software support services available 24x7x365, including access to

Service and Support

HP technical resources, 4-hour response onsite hardware support and software updates.

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EEE

HP Proactive Select Service
Customer needs on demand access to consulting, technical proactive services and education courses

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

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eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

Customer Technical Training

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

HP Services Awards

HP Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

Service and Support

Additional Services Information	To learn more on HP ProLiant servers, HP BladeSystem servers and HP StorageWorks storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit www.hp.com/services/proliant or www.hp.com/services/bladesystem or http://www.hp.com/hps/storage

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

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

Technical Specifications

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
			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)	

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
			Rotational Speed	15,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	286,749,488
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

QuickSpecs

Technical Specifications

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
			Rotational Speed	10,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	286,749,488
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21	Capacity	73,407,865,856	
		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
			Rotational Speed	15,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	143,374,738
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

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	600,127,266,816	
		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	0.4 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 (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

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
			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)	

QuickSpecs

Technical Specifications

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
			Rotational Speed	10,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	286,749,488
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

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)	Single Track	0.14 ms
			Average	2.58 ms
			Full-Stroke	4.85 ms
			Rotational Speed	15,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	143,374,738
		Operating Temperature (System Inlet Air Temperature)	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)	6Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.2ms
			Average	3.5ms
			Full-Stroke	6.8ms
			Rotational Speed	15,000rpm
		Physical Configuration	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)	6Gb/sec	
		Seek Time (typical reads, including settling)	Single Track	0.2ms
			Average	3.5ms
			Full-Stroke	6.8ms
			Rotational Speed	15,000rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	879,097,968
		Operating Temperature (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

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
			Rotational Speed	15,000rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	585,937,500
		Operating Temperature (System Inlet Air Temperature)	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
			Rotational Speed	15,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	1,172,123,568

Technical Specifications

		Operating Temperature (System Inlet Air Temperature)	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
			Rotational Speed	15,000 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 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 (System Inlet Air Temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

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 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
			Rotational Speed	7,200 rpm
		Physical Configuration	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.

QuickSpecs

Technical Specifications

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
		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) 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 (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.

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