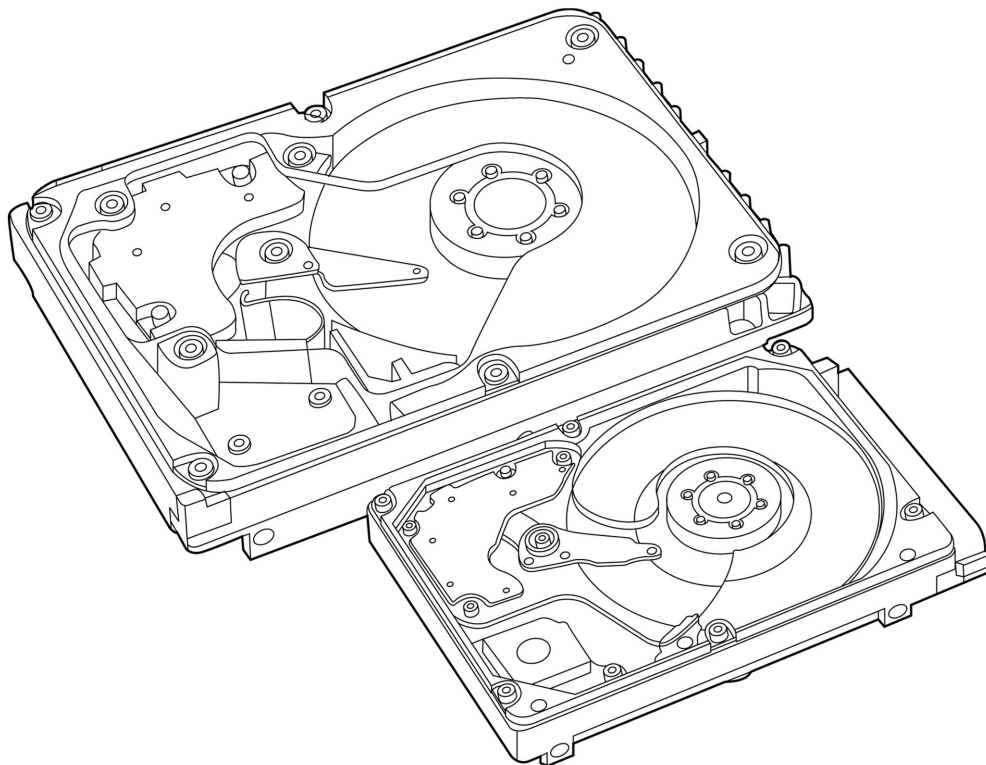## Overview

HP SATA drives are designed for the reliability and larger capacities demanded by today's entry server and external storage environments. The SATA portfolio is categorized into two categories: Entry (ETY) and Midline (MDL) drives. HP SATA Entry drives are the lowest unit-cost solution for entry-level servers. HP SATA Midline drives are designed with economical reliability and performance for external storage, backups and archival applications. These high capacity drives provide the lowest $/GB to our customers. Both Entry and Midline SATA drives provide the best price advantage for non-mission critical applications with low workloads of 40% or less. HP SATA drives are available in both 3.5" and 2.5" form factors and ship with a standard one year warranty.

All HP hard drives pass a rigorous qualification process, which ensures that every HP drive is proven to perform in your HP ProLiant server. Before final certification, all HP SATA hard drives are optimized for compatibility and functionality, including support of SMART and HP Systems Insight Manager.

*S.M.A.R.T.: Self Monitoring Analysis and Reporting Technology, first developed at HP, detects possible hard disk failure before it occurs, allowing replacement of the component before failure occurs.

NOTE: For additional information regarding the different features of SATA Entry drives please visit the SATA hard drive website: www.hp.com/go/SATA

Overview

What's New

- Introducing the 1st generation of Small form factor (2.5") SATA Midline drives. Offering 160GB and 500GB capacities with robust Midline features, such as, rotational vibration sensors, native command queuing (NCQ), Time Limited Error Recovery (TLER) and 3Gb/s.

Models

NOTE: SATA Drive Write Cache is disabled by default to minimize the risk of data loss in case of power loss. For information on how to enable Drive Write Cache on SATA drives via supported controllers and HBAs and what precautions should be followed please visit: www.hp.com/go/SATA

NOTE: 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.

SATA Hot Plug SFF Midline (MDL) Drives

HP 500GB 3G SATA 7.2K 2.5in MDL HDD	507750-B21
HP 160GB 3G SATA 7.2K 2.5in MDL HDD	530888-B21

SATA Non-Hot Plug SFF Midline (MDL) Drives

HP 500GB 3G SATA 7.2K 2.5in NHP MDL HDD	507753-B21
HP 160GB 3G SATA 7.2K 2.5in NHP MDL HDD	530891-B21

SATA Hot Plug 3.5" Midline (MDL) Drives

HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD	462595-B21
HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD	458941-B21
HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	458939-B21

SATA Hot Plug SFF Entry (ETY) Drives

HP 250GB 3G SATA 5.4K SFF ETY HDD	460355-B21
HP 120GB 1.5G SATA 5.4K SFF ETY HDD	458924-B21

SATA Non-Hot Plug SFF Entry (ETY) Drives

HP 250GB 3G SATA 5.4K NHP SFF ETY HDD	460357-B21
HP 120GB 1.5G SATA 5.4K NHP SFF ETY HDD	459357-B21

SATA Hot Plug 3.5" Entry (ETY) Drives

HP 160GB 3G SATA 7.2K 3.5" ETY HDD	458945-B21

SATA Non-Hot Plug 3.5" Entry (ETY) Drives

HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD	458947-B21

Standard Features

Drive Quality	Today's entry-level servers and external storage solutions are seeing an increase in maximum storage capacity and demand for increased levels of drive quality. In the often-changing entry-level server and storage environment, storage has become a critical component of the information system, significantly defining both the systems reliability. This is why HP drives undergo an intense qualification process that eliminates firmware and O/S incompatibilities. All drives are proven to perform in the HP ProLiant and StorageWorks Modular Smart Array (MSA) storage systems for which they were designed.
Performance	Only those drives whose quality is suitable for an entry-level, external storage enclosures and server environments are selected through the HP qualification process. All our drives are proven to be reliable in the ProLiant server and MSA storage environment.
Native Command Queuing	Native Command Queuing (NCQ) is a technology designed to increase performance of SATA hard disk drives by allowing the individual hard disk to internally optimize the order in which received read and write commands are executed. This can reduce the amount of unnecessary going back-and-forth on the drive's heads, resulting in increased performance for workloads where multiple simultaneous read/write requests are outstanding, most often occurring in server or storage-type applications. Without NCQ the drive has to process and complete one command at a time. For NCQ to be enabled, it must be supported and turned on in the controller and in the hard drive itself. **NOTE:** Please reference the HP Smart Array Controller website for NCQ enabled controllers at: http://www.hp.com/products/smartarray. Please see SATA hard drive Technical Specifications section for specific capacities supported with NCQ.
Integration	Many issues customers have with third party Serial-ATA drives are integration related issues. When buying from another supplier, there is no guarantee that a drive has been correctly set for proper operation with ProLiant entry-level servers or MSA enclosures. These incompatibilities can create problems in configuration, can rob your system of performance, or at their worst, can result in data corruption. 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, controllers, and firmware are right for your ProLiant entry level server or MSA enclosures.
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 1 or 3 year limited on-site warranty, regardless of the warranty period of the system in which they are installed. However, the drive warranty is automatically uplifted when used in a server or MSA for which a care pack is purchased. Please see the below HP Care Pack Information section for additional services. **NOTE:** SATA hard drives have a 1 year limited warranty regardless of the warranty period for the system in which they are installed.
Server and Storage Support	Please see the following URL for the latest list of supported servers and enclosures: http://www.hp.com/servers/hdd-documentation

Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Information Keeping industry standard systems truly available requires high-quality service with a single point of contact. The HP Care Pack program is tailored specifically to protect your HP ProLiant system and options. These convenient packages allow you to maximize server utilization and performance with fewer resources. Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from Next Business Day to 24 hours a day, 7 days a week with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft and Linux-based IT solutions helping to deliver high level of application availability.
- Response times range from 30 minutes for critical problems to 2 hours.
- System management, performance services and Mission Critical Support Solution

HP Premium integrated hardware and software support and Mission Critical offers are available either as Care Pack offers or as tailored solutions to meet your business needs. These solutions deliver high levels of application availability. Delivered by experienced, certified engineers, these packages help you maximize server utilization and performance with fewer resources. Available as Support Plus, Support Plus 24, Proactive 24, Critical Services and Mission Critical Partnership.

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: http://www.hp.com/hps/carepack

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: http://www.hp.com/hps

NOTE: Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Technical Specifications

SATA Hot Plug SFF Midline (MDL) Drives

HP 500GB 3G SATA 7.2K 2.5in MDL HDD 507750-B21	500GB 7,200 rpm			
		Capacity	500,107MB	
		Height	0.63 in (16.0 mm)	
		Width	3.00 in (72.2 mm)	
		Depth	5.38 in (136.6 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	.5 ms
			Average	8.2 ms
			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)	

HP 160GB 3G SATA 7.2K 2.5in MDL HDD 530888-B21	160GB 7,200 rpm			
		Capacity	160,041MB	
		Height	0.63 in (16.0 mm)	
		Width	3.00 in (72.2 mm)	
		Depth	5.38 in (136.6 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	.5 ms
			Average	8.2 ms
			Full-Stroke	17.55 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

SATA Non-Hot Plug SFF Midline (MDL) Drives

HP 500GB 3G SATA	500GB 7,200 rpm	Capacity	500,107MB

Technical Specifications

7.2K 2.5in NHP MDL HDD 507753-B21			
	Height	0.591 in (15.0 mm)	
	Width	2.750 in (69.85 mm)	
	Depth	3.937 in (100.0 mm)	
	Interface	Serial ATA	
	Transfer Rate (Maximum)	3Gb/s	
	Native Command Queuing	Supported	
	Seek Time (typical reads, including settling)	Single Track	.5 ms
		Average	8.2 ms
		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)	

HP 160GB 3G SATA 7.2K 2.5in NHP MDL HDD 530891-B21	160GB 7,200 rpm		
	Capacity	160,041MB	
	Height	0.591 in (15.0 mm)	
	Width	2.750 in (69.85 mm)	
	Depth	3.937 in (100.0 mm)	
	Interface	Serial ATA	
	Transfer Rate (Maximum)	3Gb/s	
	Native Command Queuing	Supported	
	Seek Time (typical reads, including settling)	Single Track	.5 ms
		Average	8.2ms
		Full-Stroke	17.55 ms
		Rotational Speed	7,200 rpm
	Physical Configuration	Bytes/Sector	512
		Logical Blocks	312,581,808
	Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

SATA Hot Plug 3.5" Midline (MDL) Drives

HP 1TB 3G SATA 7.2K 3.5" MDL HDD 454146-B21	1TB 7,200 rpm	
	Capacity	1,000,204MB
	Height	1.04 in (26.4 mm)
	Width	4.36 in (110.7 mm)
	Depth	7.25 in (184.2 mm)

Technical Specifications

		Interface	Serial ATA
		Transfer Rate (Maximum)	3Gb/s
		Native Command Queuing	Supported
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	25.0 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)

HP 750GB 3G SATA 7.2K 3.5" MDL HDD 458930-B21	750GB 7,200 rpm	Capacity	750,156MB
		Height	1.04 in (26.4 mm)
		Width	4.36 in (110.7 mm)
		Depth	7.25 in (184.2 mm)
		Interface	Serial ATA
		Transfer Rate (Maximum)	3Gb/s
		Native Command Queuing	Supported
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	25.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	1,465,149,168
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)

* Maximum drive dimension

HP 500GB 3G SATA 7.2K 3.5" MDL HDD 458928-B21	500GB 7,200 rpm	Capacity	500,107MB
		Height	1.04 in (26.4 mm)
		Width	4.36 in (110.7 mm)
		Depth	7.25 in (184.2 mm)
		Interface	Serial ATA
		Transfer Rate (Maximum)	3Gb/s

Technical Specifications

		Native Command Queuing	Supported
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	21.0 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)

HP 250GB 3G SATA 7.2K 3.5" MDL HDD 458926-B21	250GB 7,200 rpm	Capacity	250,059MB
		Height	1.04 in (26.4 mm)
		Width	4.36 in (110.7 mm)
		Depth	7.25 in (184.2 mm)
		Interface	Serial ATA
		Transfer Rate (Maximum)	3Gb/s
		Native Command Queuing	Supported
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	21.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	488,397,168
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD 462595-B21	750GB 7,200 rpm	Capacity	750,156MB
		Height	1.028 in (26.1 mm)
		Width	4.00 in (101.6 mm)
		Depth	5.787 in (147.0 mm)
		Interface	Serial ATA
		Transfer Rate (Maximum)	3Gb/s
		Native Command Queuing	Supported

Technical Specifications

		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	25.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	1,465,149,168
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD 458941-B21	500GB 7,200 rpm	Capacity	500,107MB	
		Height	1.028 in (26.1 mm)	
		Width	4.00 in (101.6 mm)	
		Depth	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	21.0 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)	

HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD 458939-B21	250GB 7,200 rpm	Capacity	250,059MB	
		Height*	1.028 in (26.1 mm)	
		Width	4.00 in (101.6 mm)	
		Depth*	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<8.5 ms
			Full-Stroke	21.0 ms
			Rotational Speed	7,200 rpm

Technical Specifications

Physical Configuration	Bytes/Sector	512	
	Logical Blocks	488,397,168	
Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)		

SATA Hot Plug SFF Entry (ETY) Drives

HP 250GB 3G SATA 5.4K SFF ETY HDD 460355-B21	250GB 5,400 rpm	**Capacity**	250,059MB	
		Height	0.63 in (16.0 mm)	
		Width	3.00 in (76.2 mm)	
		Depth	5.38 in (136.6 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	1.5 ms
			Average	12 ms
			Full-Stroke	22 ms
			Rotational Speed	5400 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	488,397,168
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

HP 120GB 1.5G SATA 5.4K SFF ETY HDD 458924-B21	120GB 5,400 rpm	**Capacity**	120,022MB	
		Height	0.63 in (16.0 mm)	
		Width	3.00 in (76.2 mm)	
		Depth	5.38 in (136.6 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	1.5Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	1.5 ms
			Average	12 ms
			Full-Stroke	22 ms
			Rotational Speed	5400 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	234,441,648

Technical Specifications

		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

SATA Non-Hot Plug SFF Entry (ETY) Drives

HP 250GB 3G SATA 5.4K NHP SFF ETY HDD 460357-B21	250GB 5,400 rpm	Capacity	250,059MB	
		Height	0.591 in (15.0 mm)	
		Width	2.750 in (69.85 mm)	
		Depth	3.937 in (100.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	1.5 ms
			Average	12 ms
			Full-Stroke	22ms
			Rotational Speed	5400 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	488,397,168
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

* Maximum drive dimension

HP 120GB 1.5G SATA 5.4K NHP SFF ETY HDD 459357-B21	120GB 5,400 rpm	Capacity	120,022MB	
		Height	0.591 in (15.0 mm)	
		Width	2.750 in (69.85 mm)	
		Depth	3.937 in (100.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	1.5Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	1.5 ms
			Average	12 ms
			Full-Stroke	22ms
			Rotational Speed	5400 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	234,441,648
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

Technical Specifications

SATA Hot Plug 3.5" Entry (ETY) Drives

HP 160GB 3G SATA 7.2K 3.5" ETY HDD 458945-B21	160GB 7,200 rpm			
		Capacity	160,041MB	
		Height	1.04 in (26.4 mm)	
		Width	4.36 in (110.7 mm)	
		Depth	7.25 in (184.2 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<11 ms
			Full-Stroke	22.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

SATA Non-Hot Plug 3.5" Entry (ETY) Drives

HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD 458947-B21	160GB 7,200 rpm			
		Capacity	160,041MB	
		Height*	1.028 in (26.1 mm)	
		Width	4.00 in (101.6 mm)	
		Depth*	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<11 ms
			Full-Stroke	22.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		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.