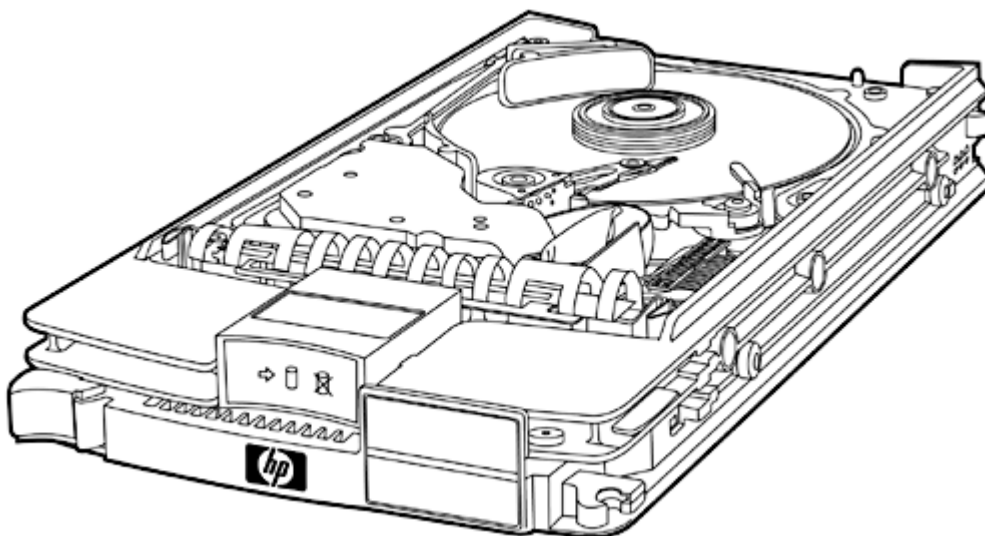


Overview

A wide variety of rigorously tested, HP-qualified, SMART capable, Ultra320 Hard Drives offering data integrity and availability in hot pluggable and non-pluggable models. HP 15,000 rpm Hard Drives provide up to 26 percent better performance over standard 10,000 rpm drives. Actual performance increases will vary depending upon application and configuration.

All HP hard drives pass a rigorous qualification process, which ensures that every HP drive is proven to perform in your ProLiant server or workstation. Before final certification, all HP hard drives are provided with HP-unique firmware specifically designed to optimize compatibility and functionality, including support of SMART and Insight Manager.

HP received the 1999 Gold Idea Award for design excellence for the innovative design of the Hot Pluggable Universal drive carrier. The carrier is praised for both its ergonomics and aesthetics, as well as its many functional enhancements such as the compact design, improved cooling properties and more secure drive mounting for reduced vibration.



Models

Hot Plug Drives

15,000 RPM Universal Hard Drive

HP 300GB U320 15K Universal HDD

411089-B22

HP 146GB U320 15K Universal HDD

347708-B22

Standard Features

Drive Quality

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 data integrity problems, firmware and O/S incompatibilities and other causes of data corruption or premature failure. 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.

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 Warranty

When used in conjunction with a SMART Array Controller and 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, Insight Manager and/or SMART hard disk drive lets you know in advance so you can have the drive replaced, before it fails, under the HP Pre-Failure Warranty. **NOTE:** All drives are protected by a Pre-Failure Warranty when used with a HP array controller (SMART or SMART-2) and Insight Manager, allowing hard drives to be replaced before failure free of charge. In addition, all drives are covered by a one to three-year limited on-site warranty, or the remaining warranty of the HP CPU in which it is installed (up to three years).

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.

Server and Storage Support

Please see the following URL for the latest list of supported servers and enclosures:
<http://h18004.www1.hp.com/products/servers/proliantstorage/drives-enclosures/docs/index.html>

Ultra320 SCSI Hard Drives

HP's Ultra320, Ultra3 and Ultra2 hard drives increase the maximum transfer rate of the SCSI bus to 320 MB/s (Ultra320), 160 MB/s (Ultra3) or 80 MB/s (Ultra2). By reducing the opportunity for SCSI bus saturation, this increased data rate allows all SCSI devices to perform at optimum levels. Ultra320, Ultra3 and Ultra2 hard drives are being offered in an improved hot plug drive carrier and can be used interchangeably in HP Ultra2, Ultra3 or Ultra320 capable systems. In addition to improved drive performance and increased storage density, the new carrier will also help prevent the inadvertent insertion of single-ended SCSI drives into Low Voltage Differential SCSI capable equipment (avoiding inadvertent performance degradation of LVD-capable systems). To achieve the maximum (320 MB/s) transfer rates of Ultra320, the hard drive and the array controller (or SCSI host bus adapter) must both be Ultra320 capable.

Standard Features

Ultra320 SCSI Universal Disk Drives

HP Ultra320 SCSI Universal hard drives provide storage commonality across the enterprise. Ultra320 Universal drives add the feature of hot plug compatibility between any Ultra320, Ultra3 or Ultra2 capable ProLiant Servers, ProLiant Storage Systems, AlphaServers, and Modular Array enclosures by HP. These hot plug drives are offered in multiple capacities and spindle speeds. Storage commonality across these platforms provides many benefits including reduced cost of ownership, reduced storage complexity, and a minimized hard drive spares inventory.

Service and Support, HP Care Pack, and Warranty Information

Support Services

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 same business day 13 ours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call-To-Repair.
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials, and VMWare-based IT solutions helping to deliver high level of application availability. Response times ranging from 30 minutes for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

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>

Ultra320 Hot Plug Hard Disk Drives

(For ease of deployment it is recommended that RAID sets not contain a combination of Ultra2 / Ultra3 drives and previous version SCSI drives. Mixed RAID sets may be used if desired, however some combinations may require reconfiguring the RAID array)

Application Information HP Ultra320 SCSI hard drives provide a maximum data transfer rate of 320 MB/s - twice the rate of Ultra3 systems. These Universal Hard Disk Drives provide the ability to hot plug between various HP Ultra320, Ultra3 and Ultra2 SCSI platforms. All HP Hard Disk Drives are required to meet our rigorous standards for reliability and performance. These drives are intended for use in today's demanding, data-critical enterprise environments. Universal option kits are configured and pre-mounted in the appropriate hot plug tray for immediate installation into your ProLiant server or storage system.

HP 300GB U320 15K Universal HDD 411089-B22	300GB 15K	Capacity	300,000 MB	
		Height	1.0 in (2.54 cm)	
		Width	4.0 in (10.16 cm)	
		Interface	Ultra320 SCSI	
		Transfer Rate Synchronous (Maximum)	320 MB/s	
		Seek Time (typical reads, including settling)	Single Track	0.4 ms
			Average	3.8 ms
			Full-Stroke	8.0 ms
		Physical Configuration	Rotational Speed	15,000 rpm
			Bytes/Sector	512
			Logical Blocks	585,937,500
Operating Temperature	50° to 95° F (10° to 35° C)			

HP 146GB U320 15K Universal HDD 347708-B22	146GB 15K	Capacity	146,000 MB	
		Height	1.0 in (2.54 cm)	
		Width	4.0 in (10.16 cm)	
		Interface	Ultra320 SCSI	
		Transfer Rate Synchronous (Maximum)	320 MB/s	
		Seek Time (typical reads, including settling)	Single Track	0.4 ms
			Average	3.8 ms
			Full-Stroke	8.0 ms
		Physical Configuration	Rotational Speed	15,000 rpm
			Bytes/Sector	512
			Logical Blocks	286,749,488
Operating Temperature	50° to 95° F (10° to 35° C)			

Ultra320 Hot Plug Hard Disk Drives

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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The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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