

Overview

The HP 64-bit/133-MHz Dual Channel Ultra320 SCSI host bus adapter (HBA) provides customers with the flexibility and speed they have come to expect from HP. The 64-bit/133-MHz Dual Channel Ultra320 SCSI HBA is ideal for HP tape arrays and larger non-RAID storage applications. This adapter supports Ultra320 SCSI, Wide Ultra3 SCSI, and Wide Ultra2 SCSI protocols. It is the primary building block for non-RAID SCSI storage solutions that provide the maximum of 320 MB/second bandwidth, twice the speed of our current SCSI adapters. HP's 64-bit/133-MHz Dual Channel Ultra320 SCSI Adapter has two primary uses: 1) high-end tape backup and 2) large JBOD file and print applications. Neither application requires fault tolerance but both have large bandwidth requirements.

HP's 64-bit/133-MHz Dual Channel Ultra320 SCSI HBA has been thoroughly tested and integrated into many of the HP ProLiant servers. When you need an Ultra320 storage solution, think HP!

Models

64-Bit/133-MHz Dual Channel Ultra320 SCSI host bus adapter

268351-B21

Standard Features

Performance

Designed as to be as flexible as HP's legendary servers, the HP 64-Bit/133-MHz Dual Channel Ultra320 SCSI HBA provides support for up to 28 SCSI devices, while only taking up a single PCI-X slot. The HP adapter delivers exceptional system performance, along with up to two separate Ultra320 SCSI channels that each provide up to 64-bit/133-MHz bus-master capabilities, transferring data as fast as 320 MB/s between storage subsystem and system memory.

HP Server Integration	Fully integrated and tested with most ProLiant servers and management software.
Tagged Command Queuing	Improves performance by accepting commands simultaneously, sorting efficiently and minimizing response time.
Suggested Solutions	HP's U320 dual channel adapter is ideal for high-end tape drives, tape automation and disk storage solutions such as the Ultrium tape drives, and SLDT tape drives and the StorageWorks Modular Smart Array 30.

Fault Tolerance

Supports software-based fault tolerant configurations available under Microsoft Windows 2000, Microsoft Windows 2003, and Linux.

Compatibility

Fully integrated and tested with most ProLiant servers and management software.

- **ProLiant ML (expansion-optimized):**
 - HP ProLiant ML310
 - HP ProLiant ML310 G2
 - HP ProLiant ML310 G3
 - HP ProLiant ML330 G3 (SCSI Models only)
 - HP ProLiant ML350 G3
 - HP ProLiant ML350 G4
 - HP ProLiant ML350 G4p
 - HP ProLiant ML370 G3
 - HP ProLiant ML370 G4
 - HP ProLiant ML530 G2
 - HP ProLiant ML570 G2
 - HP ProLiant ML570 G3
- **ProLiant DL (rack-optimized):**
 - HP ProLiant DL140 G2
 - HP ProLiant DL145
 - HP ProLiant DL320
 - HP ProLiant DL320 G2
 - HP ProLiant DL320 G3
 - HP ProLiant DL320 G4
 - HP ProLiant DL360 G2
 - HP ProLiant DL360 G3
 - HP ProLiant DL360 G4
 - HP ProLiant DL360 G4p
 - HP ProLiant DL380 G2
 - HP ProLiant DL380 G3
 - HP ProLiant DL560
 - HP ProLiant DL580 G2
 - HP ProLiant DL580 G3
 - HP ProLiant DL585
 - HP ProLiant DL740
 - HP ProLiant DL760

Standard Features

NOTE: This is a list of compatible servers, some may be discontinued.

Option Kit Contents

- Adapter
 - Installation Guide
 - Warranty Card
 - Support Software CD
 - RTF Card
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Warranty

Maximum: The remaining warranty of the HP product in which it is installed (to a maximum three-year limited warranty)

Minimum: One-year, on-site limited warranty

NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center at 1-800-345-1518 for details.

Options

NOTE: This is a list of supported options - some may be discontinued.

Hard Drives

NOTE: For complete compatibility information, refer to the HP SCSI Hard Drive Compatibility table located at <http://www.hp.com/servers/hdd-documentation>.

Ultra320 Universal Drives – Hot Plug

HP 300GB U320 10K Universal HDD	350964-B22
HP 146GB U320 10K Universal HDD	286716-B22
HP 72GB U320 10K Universal HDD	286714-B22
HP 300GB U320 15K Universal HDD	411089-B22
HP 146GB U320 15K Universal HDD	347708-B22
HP 72GB U320 15K Universal HDD	286778-B22
HP 36GB U320 15K Universal HDD	286776-B22

Ultra320 Drives - Non Hot Plug

HP 146GB U320 10K NHP HDD	356990-B21
HP 72GB U320 10K NHP HDD	332751-B21
HP 36GB U320 15K NHP HDD	357012-B21

Tape Drives

Internal and External DAT Tape Drives

HP StorageWorks DAT 40 SCSI Internal Tape Drive (Carbon)	C5686C
HP StorageWorks DAT 40 SCSI External Tape Drive (Carbon)	C5687D
HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)	Q1522B
HP StorageWorks DAT 72 SCSI External Tape Drive (Carbon)	Q1523B

Internal and External Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive(Carbonite)	DW064A
HP StorageWorks Ultrium 232 External Tape Drive (Carbonite)	DW065B
HP StorageWorks Ultrium 448 External Tape Drive (Carbonite)	DW017B
HP StorageWorks 1U Rack-mount kit with one Ultrium 448 (Carbonite)	DW028B
HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite)	DW016A
HP StorageWorks Ultrium 460 Internal Tape Drive (Carbon)	Q1518B
HP StorageWorks Ultrium 460 External Tape Drive (Carbon)	Q1520B
HP StorageWorks 3U Rack-mount kit with one Ultrium 460 (Carbon)	350546-B22
HP StorageWorks Ultrium 460,Array Module (Carbon)	Q1512C
HP StorageWorks Ultrium 960 Internal Tape Drive (Carbonite)	Q1538A
HP StorageWorks Ultrium 960 External Tape Drive (Carbonite)	Q1539B
HP StorageWorks 3U Rack-mount kit with one Ultrium 960 (Carbonite)	Q1595B
HP StorageWorks Ultrium 960 Array Module (Carbonite)	Q1540A

Internal and External DLT VS/SDLT Tape Drives

HP StorageWorks DLT VS160 Internal Tape Drive (Carbon)	A7569B
HP StorageWorks DLT VS160 External Tape Drive, North America (Carbon)	A7570B
HP StorageWorks DLT VS160 External Tape Drive, International (Carbon)	A7571B
HP StorageWorks SDLT 600 Internal Tape Drive (Carbon)	A7518B

Options

HP StorageWorks SDLT 600 External Tape Drive, North America (Carbon)	A7519B
HP StorageWorks SDLT 600 External Tape Drive, Worldwide (Carbon)	A7520B
HP StorageWorks 3U Rack-mount kit with one SDLT 600 (Carbon)	A7965B

Rack-mount Tape Drive Kits

HP StorageWorks 1U Rack-Mount Kit	A7445B
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NOTE: The 1U Rack-mount Kit can support up to (2) half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232 and Ultrium 448 tape drives.

HP StorageWorks 3U Rack-Mount Kit	274338-B22
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NOTE: The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, SDLT 320, SDLT 600, Ultrium 215, Ultrium 230, Ultrium 232, Ultrium 460, Ultrium 448 and Ultrium 960 tape drives.

HP StorageWorks Tape Array 5300	C7508B
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Tape Autoloaders

1/8 Autoloader

HP StorageWorks 1/8 Ultrium 960 Tape Autoloader

HP StorageWorks 1/8 Ultrium 960 Tape Autoloader	AF204A
HP StorageWorks 1/8 Ultrium 448 Tape Autoloader	AF203A
HP StorageWorks 1/8 SDLT 320 Tape Autoloader	AA926A
HP StorageWorks 1/8 Ultrium 232 Tape Autoloader	AF202A

Tape Libraries

StorageWorks MSL2024 System Library

HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
HP StorageWorks MSL2024 1 Ultrium 960 FC Drive Library	AG326A
HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
HP StorageWorks MSL2024 2 Ultrium 448 Drive Library	AG117A

HP StorageWorks MSL4048 Tape Library

HP StorageWorks MSL4048 1 Ultrium 448 Drive Library	AG320A
HP StorageWorks MSL4048 2 Ultrium 448 Drive Library	AG321A
HP StorageWorks MSL4048 1 Ultrium 960 Drive Library	AG322A
HP StorageWorks MSL4048 1 Ultrium 960 FC Drive Library	AG324A
HP StorageWorks MSL4048 2 Ultrium 960 Drive Library	AG323A
HP StorageWorks MSL4048 2 Ultrium 960 FC Drive Library	AG325A

StorageWorks MSL6000 System Library

Ultrium 960 technology

HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606B
HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607B
HP StorageWorks MSL6060 2 Ultrium 960 Dr LVDS Library	AD610B

Ultrium 460 technology

HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library	AD598B
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Options

HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library	AD599B
HP StorageWorks MSL6060 2 Ultrium 460 Dr LVDS Library	AD603B
SDLT 600 technology	
HP StorageWorks MSL6026 1 SDLT 600 Dr LVDS Library	AD582C
HP StorageWorks MSL6026 2 SDLT 600 Dr LVDS Library	AD583C
HP StorageWorks MSL6052 2 SDLT 600 Dr LVDS Library	AD587B

NOTE: Please reference the [MSL2024](#), [MSL4048](#) and [MSL6000 Tape Library QuickSpecs](#) at <http://www.hp.com/go/automation> for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>.

External Cables	VHDCI (Very High Density Cable Interconnect) to Wide, 6 foot (1.83 meter)	295644-B21
	VHDCI to Wide, 12 foot (3.66 meter) for racks	295645-B21
	VHDCI to Narrow, 6 foot (1.83 meter)	295646-B21
	VHDCI to Narrow, 12 foot (3.66 meter) for racks	295647-B21

Internal Cables	LVD cable (Ultra2 or Ultra3)	166389-B21
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External Storage Systems	HP StorageWorks Modular Smart Array 30 Enclosure, SB	302969-B21
	HP StorageWorks Modular Smart Array 30 Enclosure, DB	302970-B21
	HP StorageWorks Modular Smart Array OpenView Storage Mirroring Kit - Rack-mountable	359079-B21

NOTE: Ultra3 LVD SCSI adapters must be used with Ultra3 LVD SCSI capable HDDs, cables, drivers and servers/workstations. Ultra3 LVD SCSI operation is only supported for drives internally mounted in the server. Ultra3 LVD SCSI is not supported for external storage systems. HP adapters will default to Wide Ultra2 SCSI for external storage subsystems.

Technical Specifications

SCSI Protocols	Ultra320 SCSI Wide Ultra3 SCSI Wide Ultra2 SCSI Ultra SCSI
Electrical Protocol	Low Voltage Differential (LVD)
Drives Supported	Up to 28 (14 per channel)
Storage Capacity	Up to 8.4TB (28 x 300GB Maximum) (this could be multiple TB if using tape library capacities)
Data Transfer Method	64-bit/133-MHz PCI-X bus-master
Maximum Host Bus Transfer Rate	532 MB/s per channel
Maximum SCSI Transfer Rate	320 MB/s per channel
Operating System Support	Microsoft Windows 2000 Microsoft Windows 2003 Linux Red Hat Advanced Server 2.1 Red Hat 7.3 Red Hat 8.0 SLES SuSE 7
External SCSI Connectors	Two 68-Pin VHDCI connectors
Internal SCSI Connectors	One SCSI-3 (68-Pin) for Channel A

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