

### Overview

Introducing the 64-Bit/66-MHz Dual Channel Alt OS Wide Ultra3 SCSI Adapter which allows customers to store data at the Ultra 3 SCSI speeds. The flexible 64-bit/66-MHz single and dual channel PCI SCSI adapters provide support for up to 28 SCSI devices with data transfer rates up to 160 MB/s per second.

### Models

64-Bit/66-MHz Dual Channel Alt OS Wide Ultra3 SCSI Adapter

284688-B21

### Standard Features

#### Performance

Designed as to be as flexible as HP's legendary servers, the HP StorageWorks SCSI adapter family provides support for up to 28 SCSI devices, while only taking up a single PCI slot. HP adapters deliver exceptional system performance, along with up to two separate Wide Ultra3 SCSI channels that each provide up to 64-bit/66-MHz bus-master capabilities, transferring data as fast as 160 MB/s between storage subsystem and system memory.

<b>HP Server Integration</b>	Fully integrated and tested with the entire line of ProLiant servers and management software.
<b>Tagged Command Queuing</b>	Improves performance by accepting commands simultaneously, sorting efficiently and minimizing response time.
<b>Suggested Solutions</b>	HP's dual channel adapters are ideal for high-end tape drives, tape automation and disk storage solutions such as the Ultrium 460 & 230 tape drives, SDLT 320 & 220 tape drives, both ESL and MSL Series Libraries, and the StorageWorks 43xx Enclosure.

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#### Fault Tolerance

Supports software-based fault tolerant configurations available under Microsoft® Windows® NT® and NetWare

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#### Compatibility

Available for all HP PCI server configurations and compatible with a variety of SCSI devices, including hard drives, CD-ROM drives and tape drives.

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#### Option Kit Contents

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

36.4GB 10,000 rpm, U320 Universal Hard Drive, 1"	286713-B22
72.8GB 10,000 rpm, U320 Universal Hard Drive, 1"	286714-B22
146.8GB 10,000 rpm, U320 Universal Hard Drive, 1"	286716-B22
300GB 10,000 rpm, U320 Universal Hard Drive, 1"	350964-B22
18.2GB 15,000 rpm, U320 Universal Hard Drive, 1"	286775-B22
36.4GB 15,000 rpm, U320 Universal Hard Drive, 1"	286776-B22
72.8GB 15,000 rpm, U320 Universal Hard Drive, 1"	286778-B22

#### Ultra320 Drives – Non Hot Plug

36.4-GB Ultra320 SCSI 10,000 rpm Drive, 1"	271832-B21
72.8-GB Ultra320 SCSI 10,000 rpm Drive, 1"	332751-B21
36.4-GB Ultra320 SCSI 15,000 rpm Drive, 1"	357012-B21

#### Wide Ultra3 SCSI Universal Drives – Hot Plug

36.4-GB Wide Ultra3 SCSI 15,000 rpm Drive, 1"	232916-B22
18.2-GB Wide Ultra3 SCSI 15,000 rpm Drive, 1"	188122-B22
72.8-GB Wide Ultra3 SCSI 10,000 rpm Drive, 1"	232432-B22
36.4-GB Wide Ultra3 SCSI 10,000 rpm Drive, 1"	176496-B22
18.2-GB Wide Ultra3 SCSI 10,000 rpm Drive, 1"	142673-B22

#### Tape Automation

#### SSL1016 Tape Autoloaders

SSL1016 SDLT 460 Tape Autoloader	330821-B21
SSL1016 SDLT 320 Tape Autoloader	330816-B21
SSL1016 DLT1 Tape Autoloader	330815-B21

#### 1/8 Autoloader

1/8 Ultrium 460 Tape Autoloader	AA927A
1/8 SDLT 320 Tape Autoloader	AA926A
1/8 DLT VS80 Tape Autoloader	C9264CB
1/8 Ultrium 230 Tape Autoloader	C9572CB

#### DAT Autoloader

DAT 40x6 Autoloader (Internal)	C5716A
DAT 40x6 Autoloader (External)	C5717C
DAT 72x6 Autoloader (Internal)	Q1566A
DAT 72x6 Autoloader (External)	Q1567A
20/40 DAT 8 Cassette Tape Autoloader, Internal (Opal)	166504-B21
20/40 DAT 8 Cassette Tape Autoloader External (Opal) (NA)	166505-001
20/40 DAT 8 Cassette Tape Autoloader External (Opal) (Int'l)	166505-B31
20/40 DAT 8 Cassette Tape Autoloader External (Opal) (Japan)	166505-291

#### StorageWorks MSL6000 System Library

#### MSL6060 Libraries (Ultrium 460 drives)

MSL6060L1, 0 DRV Ultrium 460 RM Library	331196-B23
MSL6060L1, 2 DRV Ultrium 460 RM Library	331195-B21
MSL6060L1, 2 DRV Ultrium 460 TT Library	331196-B21
MSL6060L1FC, 2 DRV Ultrium 460 embedded Fibre RM Library	331196-B22

#### MSL6030 Libraries (Ultrium 460 drives)

MSL6030, 0 DRV, RM Library	330731-B21
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### Options

MSL6030, 1 DRV, LTO Ultrium 460, RM Library	330731-B22
MSL6030, 2 DRV, LTO Ultrium 460, RM Library	330731-B23
MSL6030, 1 DRV, LTO Ultrium 460, embedded Fibre, RM Library	330731-B24
MSL 6030, 2 DRV, LTO Ultrium 460, embedded Fibre, RM Library	330731-B25
MSL6030, 1 DRV, LTO Ultrium 460, TT Library	330788-B21
MSL6030, 2 DRV, LTO Ultrium 460, TT Library	330788-B22
<b>StorageWorks MSL5000 System Library</b>	
<b>MSL5060 Libraries (Ultrium 230 drives)</b>	
MSL5060L1, 0 DRV LTO1 RM Library	301899-B21
MSL5060L1, 2 DRV LTO1 RM Library	301899-B22
MSL5060L1FC, 2 DRV LTO1 RM-with integrated FC router	301899-B23
MSL5060L1, 2 DRV LTO1 TT Library	301900-B21
<b>MSL5052S2 Libraries (SDLT320 drives)</b>	
MSL5052, RM 0 DRV SDLT ALL	255102-B21
MSL5052S2, 2 DRV SDLT320 RM LIB	293474-B21
MSL5052S2FC 2 DRV SDLT320 RM- with integrated FC router	293474-B24
MSL5052S2, 2 DRV SDLT320 TT LIB	293476-B21
<b>MSL5052SL Library (SDLT220 drives)</b>	
MSL5052SL Library, SDLT 110/220, 2 Drive, LVD, RM	249491-B21
MSL5052SL, 2 DRV SDLT110/220 TT LIB	249490-B21
<b>MSL6030 Libraries (Ultrium 460 drives)</b>	
MSL6030, 0 DRV, RM Library	330731-B21
MSL6030, 1 DRV, LTO Ultrium 460, RM Library	330731-B22
MSL6030, 2 DRV, LTO Ultrium 460, RM Library	330731-B23
MSL6030, 1 DRV, LTO Ultrium 460, embedded Fibre, RM Library	330731-B24
MSL 6030, 2 DRV, LTO Ultrium 460, embedded Fibre, RM Library	330731-B25
<b>MSL5030 Libraries (Ultrium 230 drives)</b>	
MSL5030L1, RM, 0 Drive Library	301897-B21
MSL5030L1, RM, 1 Drive, LTO1 Library	301897-B22
MSL5030L1, RM, 2 Drives, LTO1 Library	301897-B23
MSL5030L1FC, RM, 1 Drive, LTO1 Library	301897-B24
MSL5030L1FC, RM, 2 Drives, LTO1 Library	301897-B25
<b>MSL5026DLX Libraries (DLT8000 drives)</b>	
MSL5026DLX, 1 40/80GB DLT, LVD, TT	231821-B21
MSL5026DLX, 2 40/80GB DLT, LVD, TT	231821-B22
MSL5026DLX, 1 40/80GB DLT, LVD, RM	231891-B21
MSL5026DLX, 2 40/80GB DLT, LVD, RM	231891-B22
<b>MSL5026S2 Libraries (SDLT320 drives)</b>	
MSL5026S2, 0 DRV SDLT2 RM Library	293472-B21
MSL5026S2, 1 DRV SDLT2 RM Library	293472-B22
MSL5026S2, 2 DRV SDLT2 RM Library	293472-B23
MSL5026S2FC, 1 DRV SDLT2 RM- with integrated FC router	293472-B24
MSL5026S2FC, 2 DRV SDLT2 RM- with integrated FC router	293472-B25
MSL5026S2, 1 DRV SDLT2 TT Library	293473-B21
MSL5026S2, 2 DRV SDLT2 TT Library	293473-B22
<b>MSL5026SL Libraries (SDLT220 drives)</b>	
MSL5026SL, 1 DRV SDLT RM, graphite	302512-B21
MSL5026SL, 2 DRV SDLT RM, graphite	302512-B22

### Options

MSL5026SL, 1 DRV SDLT TT, graphite	302511-B21
MSL5026SL, 2 DRV SDLT TT, graphite	302511-B22
<b>StorageWorks Enterprise 9000 System Library</b>	
<b>ESL9322L1 Ultrium Libraries</b>	
ESL9322, 222 slots, zero drives	330832-B21
ESL9322L1 222 slot 2 DRV LTO1	301927-B22
ESL9322L1 222 slot 8 DRV LTO1	301927-B28
ESL9322L1 322 slot 2 DRV LTO1	301928-B22
ESL9322L1 322 slot 8 DRV LTO1	301928-B28
<b>ESL9322 Libraries</b>	
ESL9322, 222 slots, zero drives	330832-B21
ESL9322S2, 222 slot, 2 Drives, SDLT2	293409-B22
ESL9322S2, 222 slot, 8 Drives, SDLT2	293409-B28
ESL9322S2, 322 slot, 2 Drives, SDLT2	293410-B22
ESL9322S2, 322 slot, 8 Drives, SDLT2	293410-B28
<b>ESL9326 Libraries</b>	
ESL9326DX, 0 Drive Unit	146205-B21
ESL9326DX Enterprise Library, 6 40/80-GB Drives	161265-B23
ESL9326DX Enterprise Library, 8 40/80-GB Drives	161265-B24
ESL9326DX Enterprise Library, 10 40/80-GB Drives	161265-B25
ESL9326DX Enterprise Library, 12 40/80-GB Drives	161265-B26
ESL9326DX Enterprise Library, 14 40/80-GB Drives	161265-B27
ESL9326DX Enterprise Library, 16 40/80-GB Drives	161265-B28
ESL9326SL Enterprise Library LVD 0 Drives	234488-B21
ESL9326SL LVD 6 110/220 DDLT Drives	234615-B21
ESL9326SL LVD 8 110/220 DDLT Drives	234615-B22
ESL9326SL LVD 16 110/220 DDLT Drives	234615-B26
<b>ESL9198 Libraries</b>	
ESL9198 Enterprise Library LVD 0 Drives	234615-B26
ESL9198DLX Enterprise Library, 2 40/80 DLT Drives	194993-B22
ESL9198DLX Enterprise Library, 4 40/80 DLT Drives	194993-B24
ESL9198DLX Enterprise Library, 8 40/80 DLT Drives	194993-B28
ESL9198SL Enterprise Library, LVD 4 110/220 SDLT Drives	234618-B21
ESL9198SL Enterprise Library, LVD 8 110/22 SDLT Drives	234618-B22
<b>ESL9595 Libraries</b>	
ESL9595 400 slot, zero drives	330833-B21
ESL9595SL Enterprise Library, 400 slot, 2 Drive	274672-B22
ESL9595SL Enterprise Library, 400 slot, 16 Drive	274672-B28
ESL9595SL Enterprise Library, 500 slot, 2 Drive	281627-B22
ESL9595SL Enterprise Library, 500 slot, 16 Drive	281627-B28
ESL9595SL Enterprise Library, 595 slot, 2 Drive	281628-B22
ESL9595SL Enterprise Library, 595 slot, 16 Drive	281628-B28
ESL9595S2, 400 slot, 2 Drives, SDLT2	293411-B22
ESL9595S2, 400 slot, 16 Drives, SDLT2	293411-B28
ESL9595S2, 500 slot, 2 Drives, SDLT2	293412-B22
ESL9595S2, 500 slot, 16 Drives, SDLT2	293412-B28
ESL9595S2, 595 slot, 2 Drives, SDLT2	293413-B22
ESL9595S2, 595 slot, 16 Drives, SDLT2	293413-B28

### Options

#### ESL9595 LTO Libraries

ESL9595 400 slot, zero drives	330833-B21
ESL9595L1, 400 slot, 2 Drives, LTO1	301929-B22
ESL9595L1, 400 slot, 16 Drives, LTO1	301929-B28
ESL9595L1, 500 slot, 2 Drives, LTO1	301931-B22
ESL9595L1, 500 slot, 16 Drives, LTO1	301931-B28
ESL9595L1, 595 slot, 2 Drives, LTO1	301932-B22
ESL9595L1, 595 slot, 16 Drives, LTO1	301932-B28

### Tape Drives

#### Internal and External DAT Tape Drives

DAT 24 Internal Tape Drive (Flint)	C1555D
DAT 24 External Tape Drive (Flint)	C1556D
HP StorageWorks DAT 12/24 Tape Drive, Internal (Opal)	295513-B22
DAT 40 Internal Tape Drive (Carbon)	C5686B
DAT 40 External Tape Drive (Carbon)	C5687C
DAT 40 Hot-plug Tape Drive (Carbon)	Q1546A
HP StorageWorks DAT 20/40 Tape Drive, Internal (Carbon)	157769-B22
HP StorageWorks DAT 20/40 Tape Drive, External (Carbon)	157770-002
HP StorageWorks DAT 20/40 Tape Drive, Hot Plug (Carbon)	215488-B21
DAT 72 Internal Tape Drive (Carbon)	Q1522A
DAT 72 External Tape Drive (Carbon)	Q1523A
DAT 72 Hot-plug Tape Drive (Carbon)	Q1529A
HP StorageWorks DAT 72 Tape Drive for ProLiant, Internal (Carbon)	Q1525A
HP StorageWorks DAT 72 Tape Drive for ProLiant, External (Carbon)	Q1527A

#### Internal and External Ultrium Tape Drives

Ultrium 215 Tape Drive, Internal (carbon)	Q1543A
Ultrium 215 Tape Drive, External (carbon)	Q1545A
Ultrium 230 Tape Drive, Internal (carbon)	Q1515A
Ultrium 230 Tape Drive, External (carbon)	Q1517A
Ultrium 460 Tape Drive, Internal (carbon)	Q1518A
Ultrium 460 Tape Drive, External (carbon)	Q1520A

#### Internal and External DLT/SDLT Tape Drives

HP StorageWorks DLT 40/80 Tape Drive, Internal (Carbon)	146196-B22
HP StorageWorks DLT 40/80 Tape Drive, External (Carbon)	146197-B23
HP StorageWorks DLT 40/80 Tape Drive, 3U Rackmount (Single Drive)	274332-B21
HP StorageWorks DLT 40/80 Tape Drive, 3U Rackmount (Two Drives)	274335-B21
HP StorageWorks DLT 40/80 Tape Drive, 5U Rackmount (Four Drives)	274337-B21
DLT VS80 Tape Drive, Internal, Worldwide (Carbon)	337699-B21
DLT VS80 Tape Drive, External, North America (Carbon)	337699-B22
DLT VS80 Tape Drive, External, International (Carbon)	337699-B31
DLT VS80 Tape Drive, External, Japan (Carbon)	337699-291
HP StorageWorks DLT VS 40/80 Tape Drive, Internal (Carbon)	280129-B21
HP StorageWorks DLT VS 40/80 Tape Drive, External (Carbon)	280129-B22
HP StorageWorks SDLT 220 Tape Drive, Internal (Carbon)	192106-B25
HP StorageWorks SDLT 220 Tape Drive, External (Carbon)	192103-002
HP StorageWorks SDLT 220, 3U Rackmount (Single Drive)	274331-B21
HP StorageWorks SDLT 220, 3U Rackmount (Two Drives)	274334-B21
HP StorageWorks SDLT 220, 5U Rackmount (Four Drives)	274336-B21

### Options

HP StorageWorks SDLT 320 Tape Drive, Internal (Carbon)	257319-B21
HP StorageWorks SDLT 320 Tape Drive, External (Carbon)	257319-001
<b>Internal and External AIT Tape Drives</b>	
HP StorageWorks AIT 35 Tape Drive, LVD Internal (Carbon)	295513-B22
HP StorageWorks AIT 35 Tape Drive, LVD External (Carbon)	157769-B22
HP StorageWorks AIT 35 Tape Drive, LVD Hot Plug (Carbon)	157770-002
HP StorageWorks AIT 50 Tape Drive, Internal (Carbon)	215488-B21
HP StorageWorks AIT 50 Tape Drive, External (Carbon)	Q1525A
HP StorageWorks AIT 100 Tape Drive, Internal (Carbon)	249189-B21
HP StorageWorks AIT 100 Tape Drive, External (Carbon)	249160-001
HP StorageWorks AIT 100 Tape Drive, Hot-Plug (Carbon)	249161-B21

<b>Hot Plug Tape Drives</b>	HP StorageWorks DAT 20/40 Tape Drive, Hot Plug (Carbon)	215488-B21
	HP StorageWorks AIT 35 Tape Drive, LVD, Hot Plug (Carbon)	216886-B21
	HP StorageWorks AIT 50 Tape Drive, Hot Plug (Carbon)	215487-B21
	HP StorageWorks AIT 100 Tape Drive, Hot Plug (Carbon)	249161-B21

<b>Rackmount Tape Drive Kits</b>	HP StorageWorks 3U Rack-mount Kit	274338-B21
	<b>NOTE:</b> The 3U Rack-mount Kit (PN 274338-B21) 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 the DAT 12/24, DAT 20/40, 20/40 DAT 8 Cassette Autoloader, AIT 35, AIT 50, DLT 20/40, DLT VS 40/80, DLT 40/80, SDLT 110/220, SDLT 160/320, Ultrium 230 and Ultrium 460 tape drives.	
	HP StorageWorks 5U Rack-mount Kit	274339-B21
	<b>NOTE:</b> The 5U Rack-mount Kit (PN 274339-B21) can support up to (4) full-height tape drives and is compatible with all HP DLT/SDLT tape drives including the DLT 20/40, DLT 35/70, DLT 40/80, SDLT 110/220, SDLT 160/320, Ultrium 230 and Ultrium 460 tape drives.	
	<b>Tape Storage Enclosure Cable Kits</b>	
	LVD Cable Kit, VHDCI/HD68	168048-B21
	<b>NOTE:</b> For use with the 3U Rack-mount Kit and 5U Rack-mount Kit only.	
	LVD Cable Kit, HD68/HD68	242381-B21
	<b>NOTE:</b> For use with the 3U Rack-mount Kit and 5U Rack-mount Kit only.	

### Options

<b>Tape Media</b>	HP DDS-1 data cartridge, 4GB	C5706A	
	HP DDS-2 data cartridge, 8GB	C5707A	
	HP DDS-3 data cartridge, 24GB	C5708A	
	HP DDS-4 data cartridge, 40GB	C5718A	
	HP DAT 72 data cartridge, 72GB	C8010A	
	HP DDS cleaning cartridge	C5709A	
	HP Ultrium 400GB data cartridge	C7972A	
	HP Ultrium 200GB data cartridge	C7971A	
	HP Ultrium universal cleaning cartridge	C7978A	
	HP Ultrium 400GB bar code label pack	Q2002A	
	HP Ultrium 200GB bar code label pack	Q2001A	
	HP DLT IIIXT data cartridge	C5141A	
	HP DLT IV data cartridge, 40/70/80GB	C5141F	
	HP DLT cleaning cartridge	C5142A	
	HP DLT vs cleaning cartridge	C7998A	
	HP DLTIV bar code label pack	Q2004A	
	HP SDLT tape I data cartridge, 220-320GB	C7980A	
	HP SDLT cleaning cartridge	C7982A	
	HP SDLT bar code label pack	Q2003A	
	HP AIT-1 70GB data cartridge	Q1997A	
	HP AIT-2 100GB data cartridge	Q1987A	
	HP AIT-3 200GB data cartridge	Q1999A	
	HP AIT cleaning cartridge	Q1996A	
	HP AIT bar code label packs	Q2005A	
	<b>External Cables</b>	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	
<b>Internal Cables</b>	LVD cable (Ultra2 or Ultra3)	166389-B21	

### Options

<b>External Storage Systems</b>	HP StorageWorks Modular Smart Array 30 Enclosure, SB	302969-B21
	HP StorageWorks Modular Smart Array 30 Enclosure, DB	302970-B21
	StorageWorks Enclosure Model 4314T (tower)	190210-001
	StorageWorks Enclosure Model 4314R (rack-mountable)	190209-001
	StorageWorks Enclosure Model 4354R (rack-mountable)	190211-001
	StorageWorks Enclosure Model 4214R (rack mountable)	103381-001
	StorageWorks Enclosure Model 4214T (tower)	124875-001
	ProLiant Storage System Model F1 (Single Bus, Tower)	272900-001
	ProLiant Storage System Model F2 (Dual Bus, Tower)	272900-002
	ProLiant Storage System Model F1 (Single Bus, Rack)	272800-001
	ProLiant Storage System Model F2 (Dual Bus, Rack)	272800-002
	ProLiant Storage System Model UE (Single Bus, Tower)	348710-002
	ProLiant Storage System Model U1 (Single Bus, Tower)	304110-B21
	ProLiant Storage System Model U2 (Dual Bus, Tower)	304110-B22
	ProLiant Storage System Model UE (Single Bus, Rack)	348700-001
	ProLiant Storage System Model U1 (Single Bus, Rack)	304100-B21
	ProLiant Storage System Model U2 (Dual Bus, Rack)	304100-B22

**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

<b>SCSI Protocols</b>	Wide Ultra3 SCSI Wide Ultra2 SCSI Wide-Ultra SCSI-3 Fast-Wide SCSI-2 Fast SCSI-2
<b>Electrical Protocol</b>	Low Voltage Differential (LVD)
<b>Drives Supported</b>	Up to 28 (14 per channel)
<b>Storage Capacity</b>	Up to 509.6 GB
<b>Data Transfer Method</b>	64-Bit/66-MHz PCI bus-master
<b>Maximum Host Bus Transfer Rate</b>	532 MB/s per channel
<b>Maximum SCSI Transfer Rate</b>	160 MB/s per channel
<b>Operating System Support</b>	OpenUNIX Solaris OS/2 Novell NetWare 3.2, 4.2, 5 Unixware 2.x, 7.x
<b>External SCSI Connectors</b>	Two 68-Pin VHDCI connectors
<b>Internal SCSI Connectors</b>	Two 68-Pin Wide-Ultra SCSI-3 connectors One 50-Pin Narrow Ultra connector

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