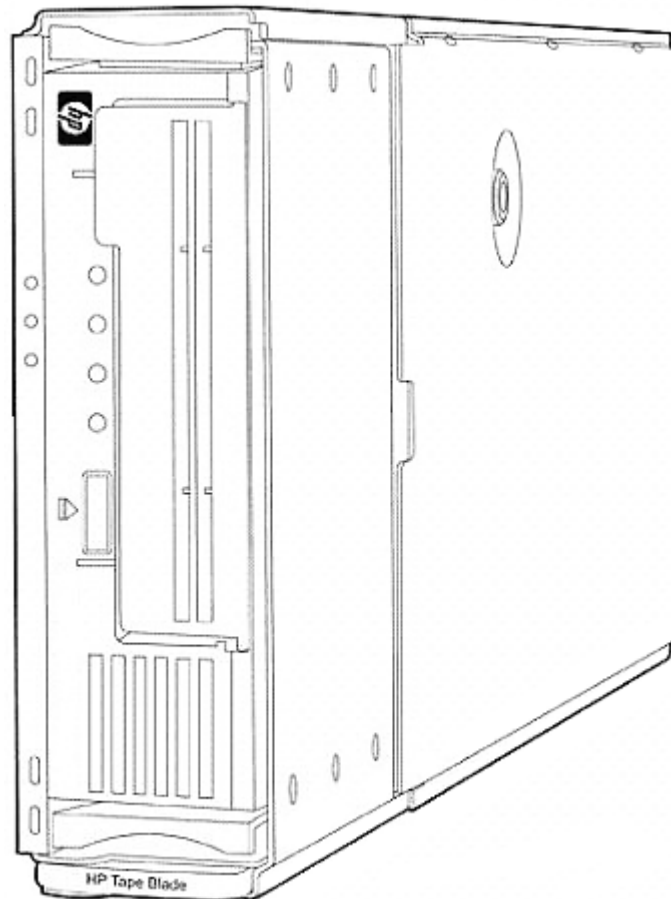## Overview

HP Ultrium Tape Blades

The HP Ultrium Tape Blades are ideal for HP BladeSystem c-Class customers who need an integrated data protection solution. These half-height tape blades provide direct attach data protection for the adjacent server and network backup protection for all data residing within the enclosure. HP Ultrium Tape Blades offer a complete data protection, disaster recovery and archiving solution for BladeSystem c-Class customers.

Each HP Ultrium Tape Blade solution ships standard with the option to download Yosemite Server Backup Basic backup and recovery software. In addition, each tape blade supports HP One-Button Disaster Recovery (OBDR), which allows quick recovery of the operating system, applications and data from the latest full backup set. HP Ultrium Tape Blades are the industry's first tape blades and are developed exclusively for HP BladeSystem c-Class enclosures.

HP Ultrium Tape Blades

Overview

What's New

- Increased capacity and performance with the LTO-5 SB3000c, with capacity up to 3 TB on a single data cartridge (2:1 compression) and performance up to 1 TB/hr (2:1 compression).
- TapeAssure makes managing, optimizing and archiving on the HP LTO Ultrium tape drives easier. This tool provides additional management and monitoring capabilities.
- Compliance to 2013 ROHS requirements

NOTE: Yosemite Server Backup Basic replaces Data Protector Express Basic as the software (downloadable) included with the HP LTO Ultrium tape drives.

At A Glance

- **Integrated into BladeSystem c-Class enclosures**:
  - Ideal direct attach tape-based data protection solution for customers who need an integrated data protection solution.
- **Complete data protection and disaster recovery solution**:
  - Ships standard with the option to download Yosemite Server Backup Basic software ideal for data protection needs. Supports One-Button Disaster Recovery (OBDR) for adjacent backup server. OBDR allows quick recovery of operating system, applications and data from the latest backup set in the event of a hard drive failure.
- **Versatility**:
  - Direct attach data protection of adjacent server and network backup of data via Ethernet for all other servers within the BladeSystem c-Class enclosure.
    Protects both half-height and full-height server blades.
- **Hardware Data Encryption**:
  - LTO-4 SB1760c and LTO-5 SB3000c Tape Blades offer AES 256-bit hardware data encryption.
- **Form Factor**:
  - Half-height blade optimizing slot utilization.
- **Warranty**:
  - Hewlett-Packard provides a 3-year, next-day, parts exchange, limited warranty for the HP tape blades, plus 9x5 phone support for the duration of the warranty

Models

HP StoreEver LTO-5 Ultrium SB3000c Tape Blade	BS580B

NOTE: 0D1 will appear after this part number on your sales order if factory integration is indicated.

HP StoreEver LTO-4 Ultrium SB1760c Tape Blade	AQ697B

NOTE: 0D1 will appear after this part number on your sales order if factory integration is indicated.

Kit Contents LTO-5 SB3000c Tape Blade	• HP StoreEver LTO-5 Ultrium SB3000c Tape Blade HP LTO-5 Ultrium 3 TB Data Cartridge • CD • Yosemite Server Backup Basic (option to download)Coupler • Install poster • Warranty booklet
Kit Contents LTO-4 SB1760c Tape Blade	• HP StoreEver LTO-4 Ultrium SB1760c Tape Blade HP LTO-4 Ultrium 1.6 TB Data Cartridge • CD • Yosemite Server Backup Basic (option to download)Coupler • Install poster • Warranty booklet

Compatibility

Key Features: LTO-5 SB3000c Tape Blade	**Features of the HP StoreEver LTO-5 Ultrium SB3000c Tape Blade include:** • LTO-5 Ultrium tape technology with 3 TB of capacity on a single data cartridge (2:1 compression) and performance up to 1 TB/hr (2:1 compression) • AES 256-Bit hardware data encryption provides easy-to-enable security to protect the most sensitive data and prevent unauthorized access of tape cartridges. • TapeAssure provides life and health information, utilization and operational performance for media and drives • WORM (Write-Once, Read Many) support offering a simple and secure method for archiving records as part of a compliance solution to meet the toughest of industry regulations. • Ship standard with the option to download Yosemite Server Backup Basic software and supports HP's One-Button Disaster Recovery (OBDR) • Integrated data protection solution for BladeSystem c-Class enclosures
Key Features: LTO-4 SB1760c Tape Blade	**Features of the HP StoreEver LTO-4 Ultrium SB1760c Tape Blade include:** • LTO-4 Ultrium tape technology with 1.6 TB of capacity on a single data cartridge (2:1 compression) and performance up to 576 GB/hr (2:1 compression) • AES 256-Bit hardware data encryption provides easy-to-enable security to protect the most sensitive data and prevent unauthorized access of tape cartridges. • WORM (Write-Once, Read Many) support offering a simple and secure method for archiving records as part of a compliance solution to meet the toughest of industry regulations. • Ship standard with the option to download Yosemite Server Backup Basic and supports HP's One-Button Disaster Recovery (OBDR) • Integrated data protection solution for BladeSystem c-Class enclosures
Direct Attach Data Protection	Provides direct attach tape-based data protection of the adjacent server blade within the enclosure.
Network Backup Capability	In addition to direct attach data protection of the adjacent server blade, the HP LTO Ultrium Tape Blades also provide network backup capability for other data residing within the blade enclosure. The adjacent server to the tape blade becomes the designated backup server and other server blades within the enclosure can perform network backups via the Ethernet connection within the enclosure. This functionality is enabled by purchasing additional data protection software client licenses for each server blade that needs network backup capability.
Complete data protection and disaster recovery solution	The HP Ultrium Tape Blades ship standard with the option to download Yosemite Server Backup Basic software. In addition, the tape blade supports HP's One-Button Disaster Recovery (OBDR) disaster recovery solution. OBDR allows quick restores of your operating system, applications and data from you latest full backup set. OBDR is supported for the server blade adjacent to the tape blade. For more information on Yosemite Server Backup Basic software, please visit: www.barracudaware.com/ysbbasic. For more information on HP's One-Button Disaster Recovery, please visit: www.hp.com/go/obdr.

QuickSpecs

Compatibility

AES 256-Bit Hardware Data Encryption

The HP LTO-4 SB1760c and LTO-5 SB3000c Tape Blades offer AES 256-bit hardware data encryption. AES 256-bit hardware data encryption provides easy-to-enable security to protect the most sensitive data and prevent unauthorized access of tape cartridges. By using LTO-4 or LTO-5 encryption, not only is data fully capable of being compressed therefore maximizing capacity, encrypted backups are completed without a loss in performance.

TapeAssure

HP TapeAssure makes managing, optimizing and archiving on the HP LTO Ultrium tape drives easier. This tool provides additional management and monitoring capabilities including:

- Life and health information for media and drives
- Information on media and drive utilization and operational performance
- Notifications of drive and media characteristics that fall below HP recommended standards

TapeAssure health reports and alerts give you peace of mind knowing the condition of the drives, the tapes and the data on each tape. TapeAssure monitors every backup to ensure the highest standards of reliability, sends alerts when these standards are not met, and ensures that you can maintain the drives and tapes used in an archive environment to have the highest integrity.

TapeAssure builds a database of drive and tape history information that you can export as .CSV (comma-separated-value) files and import into Excel or other tools to create pivot-charts, pie charts and bar charts for graphical presentation or further analysis. This data can be automatically exported on a schedule or on demand and written to a local or network drive where analysis scripts can also be run.

Instructions and downloads of HP TapeAssure are available at: http://www.hp.com/go/TapeAssure

Linear Tape File System (LTFS)

HP LTFS makes tape self-describing, file-based, and easy-to-use, it also provides users with the ability to use standard file operations on tape media for accessing, managing and sharing files with an interface that behaves just like a hard disk. In addition, LTFS provides the ability to share data across platforms, as you would with a USB drive or memory stick. Simply load a tape into the drive, mount it into the file system, and it becomes visible as a disk.

For more information, including user guide, downloads and compatibility, visit:
http://www.hp.com/go/LTFS

Compatibility

WORM (Write-Once, Read-Many)	Critical to the success of data retention policies in highly regulated environments is the ability to store and manage data in an unalterable state. Following stringent guidelines set forth by regulatory agencies such as the SEC and HIPPA, IT organizations must now integrate new solutions and policies that can verify the integrity of stored data for periods that can extend well beyond seven years.

The HP SB3000c, SB1760c and SB920c Tape Blades feature the ability to archive and store data in a non-rewriteable format that meets the most stringent regulatory guidelines. Using a combination of integrated fail-safe features in the drive firmware, cartridge memory, and tape formatting, the SB3000c, SB1760c and SB920c can archive large amounts of data for periods of up to 30 years in a secure, untampered state. Since all SB3000c, SB1760c and SB920c Tape Blades include support for both rewritable and WORM media, IT organizations can now easily integrate a secure, long-term archiving solution into their current data protection strategy:

- A single drive to support all backup and archiving needs
- Two distinctive tape cartridges to easily distinguish and manage both rewriteable and WORM data cartridges
- A specially designed WORM data cartridge with multiple integrated fail-safe features to prevent accidental or intentional overwriting of data
- High-capacity, low-cost HP WORM media that can store up to 3 TB (SB3000c) or1.6 TB (SB1760c) of data on a single data cartridge
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry
- The LTO open standard that offers greater choice and compatibility across all third-generation Ultrium products

Density

The HP Ultrium Tape Blades fit into a half height bay on the BladeSystem c-Class c3000 and c7000 enclosures.

Manageability

- Onboard Administrator module which provides a single point of control for intelligent management of the entire enclosure.
- Insight Display powered by the Onboard Administrator provides local management through an LCD display conveniently sited on the front of the system.
- HP TapeAssure provides life and health information, utilization and operational performance for media and drives
- HP Library and Tape Tools provide a robust diagnostic tool for Ultrium Tape Blades.

Compatibility and Integration Testing

Extensive compatibility testing with HP BladeSystem c-Class server blades for the highest level of integration available in the industry. Please visit http://www.hp.com/storage/SPOCK for a complete list of qualified tape blade solutions.

Compatibility

BladeSystem c-Class compatibility

Installs into half-height bay of a BladeSystem c-Class enclosure. Compatible with the following BladeSystem c-Class server blades:

HP ProLiant Server Blades

- ProLiant BL260c G5 Server Blade (EOL)
- ProLiant BL280c G6 Server Blade
- ProLiant BL460c G6, G7 Server Blade
- ProLiant BL460c G5 Server Blade (EOL)
- ProLiant BL465c G5, G6, G7 Server Blade
- ProLiant BL480c Server Blade
- ProLiant BL490c G6, G7 Server Blade
- ProLiant BL495c G5, G6 Server Blade
- ProLiant BL620c G7 Server Blade
- ProLiant BL680c G5 Server Blade
- ProLiant BL685c G5, G6,G7 Server Blade
- ProLiant BL420c Gen8 Server Blade
- ProLiant BL460c Gen8 Server Blade
- ProLiant BL465c Gen8 Server Blade
- ProLiant BL660c Gen8 Server Blade

> **Note:** In order to connect a standalone tape drive using the P721m Mezz Card, the BL460c Gen8 Server Blade must have 2 processors installed. The Mezz Card and tape drive are not recognized if this Server Blade only has 1 processor installed

HP Integrity Server Blades

- HP Integrity BL860c Server Blade
- HP Integrity BL860c i2 Server Blade
- HP Integrity BL870c i2 Server Blade

NOTE: For the most up-to-date BladeSystem c-Class compatibility, please visit:
http://www.hp.com/storage/SPOCK.

Operating Systems

- Microsoft Windows Server 2003 (Not supported on some G7 Servers)
- Microsoft Windows Server 2008 (x32 and x64)
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- OpenVMS (Integrity Server Blades)
- HP-UX (Integrity Server Blades)

NOTE: For the most up-to-date list of compatible operating systems, please visit
http://www.hp.com/storage/SPOCK
NOTE: For more Linux OS support & certification information, please visit our the ProLiant & BladeSystem Server Linux matrix: http://h18004.www1.hp.com/products/servers/linux/hplinuxcert.html

Compatibility

Software Suite

Yosemite Server Backup Basic software

- Downloadable, Simple data protection that installs from box to backup in minutes
- Fast and robust disaster recovery using One-Button Disaster Recovery (OBDR)

HP Systems Insight Manager (SIM)

- Powerful server and server options/storage manager tool
- Monitors over 1,200 system wide parameters
- Configuration/Diagnostic Utilities

HP Library and Tape Tools

- Robust diagnostic tool for HP tape products
- Free download plus quick installation
- Intuitive user interface requires no training
- Web-based smart firmware downloads, updates and notifications

Warranty Information , HP Care Pack, and Service and Support

Warranty and Services Included with the Product	Hewlett-Packard provides a 3-year, next-day, parts exchange, limited warranty for the HP tape blades, plus 9x5 phone support for the duration of the warranty. For more information about HP's Global Limited Warranty and Technical Support, visit: www.hp.com/storage/warranty
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

Warranty Information , HP Care Pack, and Service and Support

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

3-Year HP Support Plus 24 For a higher return on your server and storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP software at a predictable cost
- Increase customer satisfaction-with no interoperability gaps

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

HP BladeSystem c7000 Infrastructure (ICE + OS) Installation & Startup An HP Care Pack Service, the HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure provides for the installation of an HP BladeSystem c-Class enclosure, c-Class ProLiant and Integrity server blades, storage blades, SAN switch blades, Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and Infiniband, as well as deployment and basic configuration of HP Insight Control Environment for HP BladeSystem software.

- Efficient and effective HP BladeSystem c-Class infrastructure setup, server deployment, and management
- Delivery of the service at a mutually scheduled time convenient to the organization
- Expedited installation, provided all service prerequisites are met prior to commencement of service
- Verification prior to installation that all service prerequisites are met
- Reduced implementation time and cost
- More effective IT resource planning

Remember, HP Care Pack Services:

- Provide a defined portfolio of services to help customers derive measurable business value and agility from their IT investment
- Offer factory configuration, integration, and onsite product and solution deployment
- Uplift the standard hardware warranty to provide additional support for higher levels of availability for an extended period of time

http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW

Warranty Information , HP Care Pack, and Service and Support

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

HP Proactive Select Service	For customers who need to improve IT performance and manageability through the use of cost effective flexible proactive services:

HP Proactive Select Service improves your IT performance and manageability through the use of cost effective flexible services. HP provides technical expertise and best practices to accelerate ROI of your technology investment. Selectable proactive services span a wide range of technology and process services - a flexible way to purchase proactive services that fit your particular environment and situation.

HP Proactive Select Service is technology agnostic and purchased in addition to your choice of underlying reactive support.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

HP Entry Storage Data Migration Service for Windows	For customers who need to safely migrate Windows data within their TCP/IP networks with minimal impact to their operations:

You have a need to migrate data between Windows servers within your TCP/IP network. Or you have a need to migrate storage for your Windows servers. Or both. And you need to accomplish these migrations efficiently while minimizing risk at the same time.

HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-4734ENW.pdf

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 monitoring and support for your HP Servers

QuickSpecs

Warranty Information , HP Care Pack, and Service and Support

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

HP Education Services

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.

Additional Services Information

To learn more on HP ProLiant servers, HP BladeSystem servers and HP 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/services/storage

Related Options

NOTE: Some of the options listed below may be discontinued.

Media	HP LTO-5 Ultrium 3TB RW Data Cartridge	C7975A
	HP LTO-5 Ultrium 3TB WORM Data Cartridge	C7975W
	HP LTO-4 Ultrium 1.6TB RW Data Cartridge	C7974A
	HP LTO-4 Ultrium 1.6TB WORM Data Cartridge	C7974W
	HP LTO-3 Ultrium 800GB RW Data Cartridge	C7973A
	HP LTO-3 Ultrium 800GB WORM Data Cartridge	C7973W
	HP LTO-2 Ultrium 400GB Data Cartridge	C7972A
	HP Ultrium Universal Cleaning Cartridge	C7978A

Mezzanine Pass-Thru Card	HP BL c-Class SB40c PCI Express Mezzanine Pass Thru Option Kit	431643-B21
	NOTE: Required when installing an HP Ultrium Tape Blade adjacent to a full-height server blade, with the exception of the HP Integrity i2 server blades. The Mezzanine Card must be installed in mezzanine 3 connector in the server blade.	

Enclosure Configuration
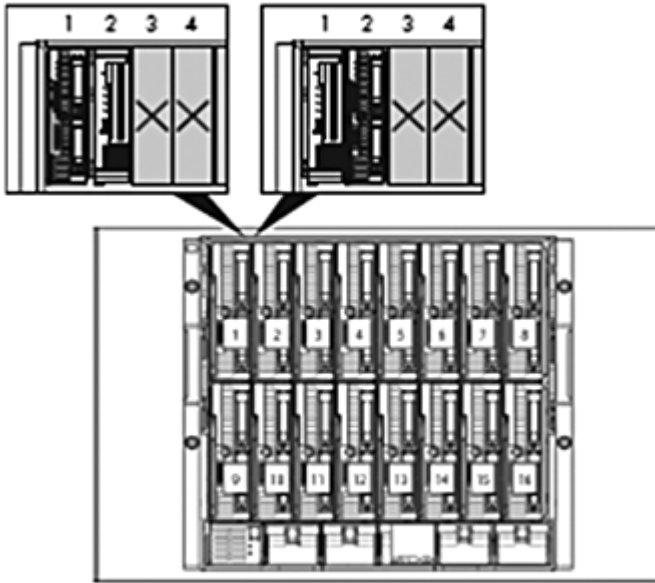
Figure 1   Installing a tape blade adjacent to a half-height server blade in a c7000 enclosure.
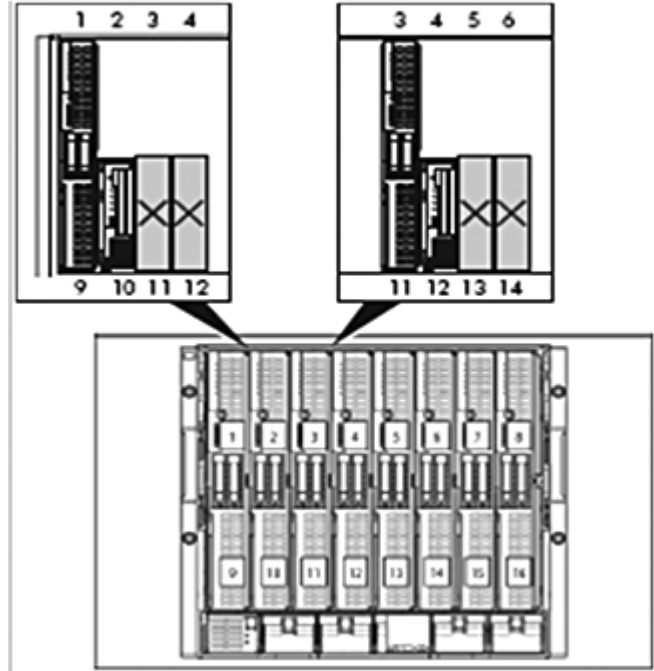
Figure 2   Installing a tape blade adjacent to a full-height server blade in a c7000 enclosure.

HP LTO Ultrium Tape Blades

Description	Quantity Supported	Position Supported	Comments
HP Ultrium Tape Blade **NOTE:** Connected adjacent to a half-height server blade (Figure 1)	Up to 8 per HP BladeSystem c-Class c7000 Enclosure	Odd or Even slots next to partner server blade	• A tape blade supports one partner server blade, and one partner server blade supports one tape blade. • Identify the partner server blade to be installed with the HP tape blade. The two blades always occupy a pair of slots, as follows: 1 & 2, 3 & 4, 5 & 6, 7 & 8, 9 & 10, 11 & 12, 13 & 14, 15 & 16 (see Figure 1). • If the partner server blade is installed in an odd-numbered bay, the HP tape blade is installed in the adjacent even-numbered bay to the right. • If the partner server blade is installed in an even-numbered bay, the HP tape blade is installed in the adjacent odd-numbered bay to the left.
HP Ultrium Tape Blade **NOTE:** Connected adjacent to a full-height server blade (Figure 2)	Up to 4 per HP BladeSystem c-Class c7000 Enclosure	Odd or even slots next to partner server blade (lower bays only)	• A tape blade supports one partner server blade, and one partner server blade supports one tape blade. • When partnering a tape blade with a full height server blade (with the exception of the HP Integrity i2 server blades), an HP PCI Express Mezzanine Pass-Thru Card for BladeSystem c-Class (431643-B21) is required. This card is installed in mezzanine 3 connector in the server blade.

Enclosure Configuration

- Identify the partner server blade to be installed with the HP tape blade. The two blades always occupy a pair of slots, as follows: 9 & 10, 11 & 12, 13 & 14, 15 & 16 (see Figure 2).
- If the partner server blade is installed in an odd-numbered bay, the tape blade is installed in the adjacent even-numbered bay to the right.
- If the partner server blade is installed in an even-numbered bay, the tape blade is installed in the adjacent odd-numbered bay to the left.
- The tape blade is always located on the lower row of the enclosure when installed next to a full-height server blade.
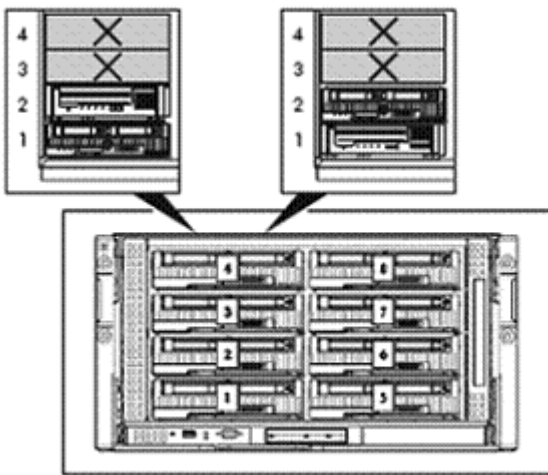
Figure 3   Installing a tape blade adjacent to a half-height server blade in a c3000 enclosure.
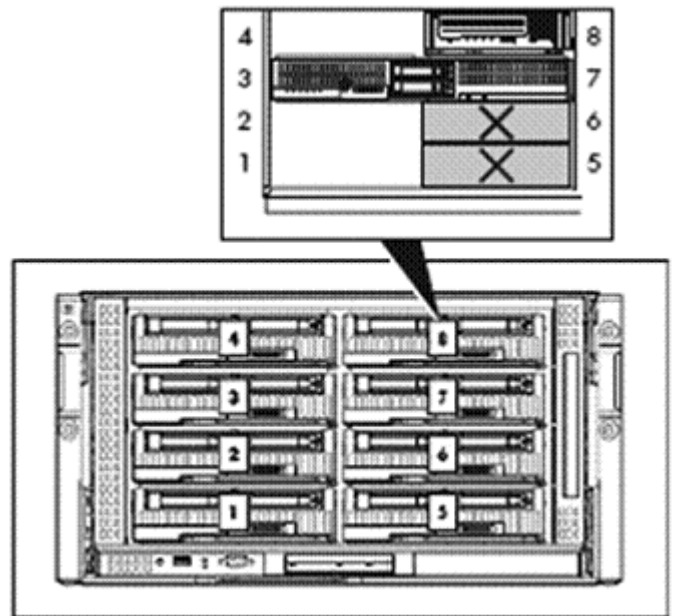
Figure 4   Installing a tape blade adjacent to a full-height server blade in a c3000 enclosure.

Enclosure Configuration

HP Ultrium Tape Blades

Description	Quantity Supported	Position Supported	Comments
HP Ultrium Tape Blade **NOTE:** Connected adjacent to a half-height server blade (Figure 3)	Up to 4 per HP BladeSystem c-Class c3000 Enclosure	Odd or Even slots next to partner server blade	• A tape blade supports one partner server blade, and one partner server blade supports one tape blade. • Identify the partner server blade to be installed with the HP tape blade. The two blades always occupy a pair of slots, as follows: 1 & 2, 3 & 4, 5 & 6 and 7 & 8 (see Figure 3).
HP Ultrium Tape Blade **NOTE:** Connected adjacent to a full-height server blade (Figure 4)	1 per HP BladeSystem c-Class c3000 Enclosure	Paired with a server blade in slots 3 & 7 (tape blade goes in 8)	• A tape blade supports one partner server blade, and one partner server blade supports one tape blade. • When partnering a tape blade with a full height server blade (with the exception of the HP Integrity i2 server blades), an HP PCI Express Mezzanine Pass-Thru Card for BladeSystem c-Class (431643-B21) is required. This card is installed in mezzanine 3 connector in the server blade. • Identify the partner server blade to be installed with the HP tape blade. The two blades always occupy a pair of slots, as follows: 3 & 7 (tape blade in 8).

Technical Specifications

Tape Blade	HP LTO-5 SB3000c Tape Blade		
Dimensions (HxWxD)	2.19 x 7.154 x 20.058 in (5.56 x 18.17 x 50.95 cm)		
Weight (loaded)	11 lb (4.99 kg)		
Capacity	**Native**	1.5 TB	
	Compressed (assumes 2:1 data compression)	3 TB	
	Buffer Size	256 MB	
Performance	**Sustained transfer rate, native**	140 MB/s	
	Sustained transfer rate compressed (assumes 2:1 data compression)	280 MB/s	
	Burst transfer rate	600MB/s	
	Data rate matching range (native)	47-140 MB/s	
	Data access time	52 s typical for a 1.5 TB tape (native) (from BOT)	
	Average load time	>19 s	
	Average unload time	19 s	
	Rewind time from EOT	96 s (1.5TB tape)	
	Rewind tape speed	9.0 m/s	
Reliability	**MTBF**	250,000 hours at 100% duty cycle	
	Uncorrected Error Rate	1 in 1×10^{17} bits	
Media Compatibility	LTO-5 Ultrium(Read and Write) LTO-4 Ultrium - (Read and Write) LTO-3 Ultrium(Read Only)		
Tape Format	**Recording method**	16-channel linear serpentine	
	Recording format	LTO Ultrium 5 LTO Ultrium 4 (for 800 GB tape)	
	Data compression	LTO DC dual mode compression (an enhanced version of ALDC)	
	Error detection/correction	Reed-Solomon	
	Read channel technology	Partial Response Maximum Likelihood (PRML)	
	Data encoding method	RLL 32/33	
Interface	**Interface type**	6Gb/sec	
Power Specifications	**Power requirements**	++12V@2.0A (typical) +12V@3.5A (max)	
	Power Consumption	13 Watts idle 24 Watts typical 42 Watts max	
Environmental	**Temperature range**	Operating	50° F to 95° F (10° C to 40° C) at a minimum of

Technical Specifications

Specifications		6CFM airflow
	Storage	-40° F to 151° F (-40° C to 66° C)
Non-condensing humidity range	Operating	20 to 80% RH (non-condensing)
	Storage	10 to 95% RH (non-condensing)

NOTE: To maintain proper cooling and airflow, a blank or blade must occupy all bays during operation.

Standards Compliance	CSA Certification to C22.2, No.60950 (cCSAus) TÜV EN60950 (IEC 60950) CE Declaration of Conformity FCC 47 CFR Parts 15 NOM VCCI C-TICK RRL BSMI GOSH CB Certificate and Report (IEC 60950)

Tape Blade	HP LTO-4 SB1760c Tape Blade	
Dimensions (HxWxD)	2.19 x 7.154 x 20.058 in (5.56 x 18.17 x 50.95 cm)	
Weight (loaded)	11 lb (4.99 kg)	
Capacity	**Native**	800 GB
	Compressed (assumes 2:1 data compression)	1.6 TB
	Buffer Size	128 MB
Performance	**Sustained transfer rate, native**	80 MB/s
	Sustained transfer rate, compressed (assumes 2:1 data compression)	160 MB/s (576 GB/hr)
	Burst transfer rate	300 MB/s (with 3Gb/sec SAS)
	Data rate matching range	33-80 MB/s (native)
	Data access time (from BOT)	64 s typical for a 800 GB tape (native)
	Average load time	17 s
	Average unload time	16 s
	Rewind time from EOT	121 s (200 GB tape)
	Rewind tape speed	5.0 m/s
Reliability	**MTBF**	250,000 hours at 100% duty cycle
	Uncorrected Error Rate	1 in 1×10^{17} bits

Technical Specifications

Media Compatibility	LTO-4 Ultrium(Read and Write) LTO-3 Ultrium - (Read and Write) LTO-2 Ultrium(Read Only)		
Tape Format	**Recording method**	16-channel linear serpentine	
	Recording format	LTO-4 Ultrium LTO-3 Ultrium(for 400 GB tape)	
	Data compression	LTO DC dual mode compression (an enhanced version of ALDC)	
	Error detection/correction	Reed-Solomon	
	Read channel technology	Partial Response Maximum Likelihood (PRML)	
	Data encoding method	RLL 0,13/11	
Interface	**Interface type**	3Gb/sec SAS	
Power Specifications	**Power requirements**	+12V@2.0A (typical) +12V@3.5A (max)	
	Power consumption	13 Watts idle 24 Watts typical 42 Watts max	
Environmental Specifications	**Temperature range**	Operating	50° F to 95° F (10° C to 40° C) at a minimum of 6CFM airflow
		Storage	-40° F to 151° F (-40° C to 66° C)
	Non-condensing humidity range	Operating	20 to 80% RH (non-condensing)
	Non-condensing humidity range	Storage	10 to 95% RH (non-condensing)
	NOTE: To maintain proper cooling and airflow, a blank or blade must occupy all bays during operation.		
Standards Compliance	CSA Certification to C22.2, No.60950 (cCSAus) TÜV EN60950 (IEC 60950) CE Declaration of Conformity FCC 47 CFR Parts 15 NOM VCCI C-TICK RRL BSMI GOSH CB Certificate and Report (IEC 60950)		

Technical Specifications

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

For tape drives and media, 1 GB = 1 billion bytes. Actual formatted capacity is less.