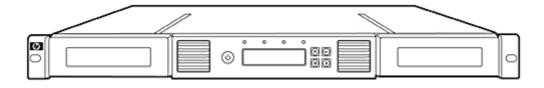# QuickSpecs

Overview

The HP 1/8 G2 Tape Autoloader provides a cost-effective, easy-to-install, unattended backup that is ideal for an entry-level or remote office automated backup solution. The HP 1/8 G2 autoloader combines incredible storage density and tape library features into a compact 1U form factor. Capable of up to 24TB of compressed capacity in only a 1U form factor, the autoloader is well equipped to offer room for uncertain data growth. Web-based remote management offers the capability to quickly and easily access, configure, monitor, and troubleshoot the autoloader that will reduce dependencies on local IT staff while allowing multiple sites to be supported centrally. Protect confidential business information with native encryption, ensuring that if a tape is lost or stolen your data is protected from unauthorized access. Proactively monitor utilization, operational performance, as well as life and health information for both the drive and media with TapeAssure. In addition, All 1/8 G2 Tape Autoloaders include HP Data Protector Express Basic backup and recovery software for Windows, Linux and NetWare.

What's New
- Integration of the HP LTO-5 Ultrium 3000 Fibre Channel Tape Drive.
- Proactively monitor drive and media utilization, operational performance, life and health information for drive and media with TapeAssure.

Key Features
- The HP 1/8 G2 Tape Autoloader packs the maximum amount of storage into the minimum amount of space. LTO-5 Ultrium 3000tape technology delivers 24 TB of compressed capacity (2:1) in a 1U form factor.
- Easy to install, manage and use integrated solution
- Protect and secure your data with native autoloader encryption
- Predicative and proactive monitoring with Tape Assure
- Integrated web-based remote management
- Flexible tape technology and interface choices to suit your needs
- Easy to use and manage
- Customer serviceable and replaceable components
- Complete solution in the box with HP Data Protector Express Basic backup and recovery software

Customer benefits
- Express Basic backup and recovery software.

QuickSpecs

Overview

Family Comparison	1/8 G2 LTO-5 Ultrium 3000 Tape Autoloader	1/8 G2 LTO-4 Ultrium 1760 Tape Autoloader	1/8 G2 LTO-3 Ultrium 920 Tape Autoloader
Drive Technology	Ultrium 3000	Ultrium 1760	Ultrium 920
Capacity (compressed 2:1)	24 TB	12.8 TB	6.4 TB
Maximum Data Transfer (compressed 2:1)	1.0 TB/hr	576 GB/hr	432 GB/hr
Interface	8 Gb/sec Fibre Channel (LTO 5 only) 6 Gb/sec SAS (LTO 5 only)	3 Gb/sec SAS (LTO 5, 4, 3) Ultra320 LVD SCSI (LTO 4, 3)	3 Gb/sec SAS (LTO 5, 4, 3) Ultra320 LVD SCSI (LTO 4, 3)

QuickSpecs

QuickSpecs

Product Highlights

Easy Installation

The 1/8 G2 Tape Autoloader ships as a rack-ready unit. A separate 1/8 G2 Tape Autoloader Rack Kit must be purchased to allow installation in a variety of HP racks which include the 10000 series, 9000 series, 5000 series and System/E racks.

A set of rubber feet are included in the box if you choose to use the unit on a tabletop or desk. For additional structural rigidity, HP recommends the purchase of the 1/8 G2 Rack-to-Tabletop conversion kit which has a maximum load of 33 pounds (15 kilograms) and fully encloses the unit.

Included backup and recovery software

The HP 1/8 G2 Tape Autoloaders include HP Data Protector Express Basic backup and recovery software. Data Protector Express Basic is based on HP Data Protector Express software. It is an easy-to-use backup and recovery application that is installed in minutes and includes all the features needed to protect a single machine by backup to a HP tape product. Data Protector Express Basic includes pre-defined and customizable media rotation schemes so you can define when you backup and how long your backups are retained, while easily managing your tape data cartridges.
For more information please visit: http://www.hp.com/go/dataprotectorexpress/basic.

NOTE: Data Protector Express Basic will run in evaluation mode for up to 60 days from installation. For continued use a free permanent license key is acquired by registration at https://webware.hp.com. For more information see www.hp.com/go/dataprotectorexpress/basic/register

NOTE: Data Protector Express 5.0 Basic replaces Data Protector Express Single Server Edition as the software included with the HP 1/8 tape autoloaders. If your tape drive includes Data Protector Express Single Server Edition you should register this. At the end of the registration process you will be able to download Data Protector Express Basic.

Easy and economical upgrade of the included software to Data Protector Express

An additional benefit is a discount to the purchase of Data Protector Express. This discount is delivered using a special part number only available for customers of HP tape products. Part number TC333AAE enables Data Protector Express Basic to be upgraded to Data Protector Express for 1 Server at a significant discount to the regular buy price. Upgrading to Data Protector Express for 1 Server unlocks all the features of Data Protector Express while retaining all the jobs and settings created while using Data Protector Express Basic. Once upgraded to Data Protector Express for 1 Server, additional licenses can be purchased to protect other servers and to take advantage of the unique and all inclusive licensing of Data Protector Express.
For more information please visit: http://www.hp.com/go/dataprotectorexpress/basic/upgrade.

Data Protector backup and recovery software

If the HP DAT tape drive is for a large environment that requires UNIX support and/or enterprise class application and feature support then HP Data Protector is the recommended backup and recovery software. There is no upgrade path from Data Protector Express Basic or Data Protector Express to Data Protector. If current or future requirements will require Data Protector, this software should be installed from day 1. For more information and evaluation software please visit:
http://www.hp.com/go/dataprotector.

NOTE: Backup and recovery applications write to tape using different formats. Tape cartridges should not be shared between autoloaders and libraries running Data Protector, Data Protector Express or other backup applications because they are incompatible.

QuickSpecs

HP 1/8 G2 Tape Autoloader

Product Highlights

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

HP StoreOpen Automation

HP StoreOpen Automation is a free downloadable application that extends the LTFS capability to HP Autoloaders, HP MSL and ESL Tape Libraries. By simply mounting the tape autoloader or library as a file system, the intuitive HP StoreOpen Automation interface makes it easier to copy, rename, create or move files. When a cartridge folder is selected for use, that tape is automatically moved to an available tape drive.

When two drives are present, HP StoreOpen Automation supports tape-to-tape operations. HP StoreOpen Automation takes advantage of other standard HP Tape Library features including data encryption and HP TapeAssure.

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

Manageability

The 1/8 G2 Tape Autoloader allows web-based remote manageability; the unit can be monitored and managed from across the room or across the globe. Functions included in the management tool include:

- Status information on the drive and system
- System configuration operations and reporting
- System error and status logs
- Library and drive firmware upload capabilities
- Diagnostic tests and information
- Cartridge movement for maintenance and management purposes
- Cleaning cartridge support
- Security and access control
- SNMP support for IP communications

Proven Reliability

With a rating of 2,000,000 robot load/unload cycles, the 1/8 G2 Tape Autoloader provides necessary high reliability for today's demanding environment. To improve reliability and longevity, all HP Ultrium products feature Data Rate Matching (DRM). This allows the tape drive to dynamically and continuously adjust the speed of the drive, from 7 MB/s to 140 MB/s, to match the speed of the host or network. This increases performance, reduces mechanical wear on the tape drive and extends tape life.

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Product Highlights

Encryption

The HP Secure Advantage portfolio is expanding to include a new offering intended for data protection in small to medium businesses. The HP 1/8 G2 & MSL Encryption Kit provides a library-enabled encryption solution that greatly enhances data privacy, confidentiality, and integrity of your critical business data while supporting compliance requirements. While there are a wide range of encryption solutions available, the HP 1/8 G2 & MSL Encryption Kit is intended to be an easy and affordable library-enabled solution for small businesses.

Protect the confidentiality and integrity of your data:
The encryption kit includes two USB key server tokens, product documentation, and firmware support. One encryption kit is needed per library or autoloader and it must be physically accessible so that the USB token can be inserted into the automation device. One of the two tokens will plug into the USB port in the autoloader or library and will generate and maintain encryption keys for the LTO-5 and LTO-4 drives/libraries. The USB key server token uses a hardware random number generator, a cryptographic module running on FIPS 140-2 Level 3 validated hardware, password authentication, and digital envelopes for strong encryption keys and security operations. The second USB token is intended to provide a backup to the first. The keys are transferred securely token-to-token for backup or export, with no exposure to insecure PCs, servers, or networks. The encryption kit provides a self-contained solution for MSL libraries with no additional software, PCs, or servers required or involved.

Protect IT resources and meet compliance requirements:
With the HP 1/8 G2 & MSL Encryption Kit, users can enable or disable encryption, configure the USB key server tokens, restore encrypted data, as well as a variety of other tasks. In addition, the LTO-5 and LTO-4 tape drives use the Advanced Encryption Standard (AES) with the longest and most secure keys -- 256 bits. AES-256 encryption is implemented using the Galois Counter Mode (GCM). This method adds Message Authentication Codes to ensure the integrity as well as privacy of the backup data stored on tape. The HP LTO-5 and LTO-4 Ultrium Tape Drives are designed to be compliant with the emerging standard for tape media security (IEEE 1619.1).

Serviceability

Modular in construction, the 1/8 G2 Tape Autoloader has easily replaceable components minimizing the Mean-Time-to-Repair on the unit. Replaceable components include the tape drive, the magazines, and the chassis (includes robot, power supply, and controller board). HP Library and Tape Tools (L&TT) provides easy access to the 1/8 G2 Tape Autoloader error log, generates support tickets, and enables firmware downloads. L&TT can be downloaded for free at: http://www.hp.com/support/tapetools

LTO Ultrium Technology

HP LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology. By taking the best features from other tape technologies and combining them into a single new technology, Ultrium tape drives are in a league of their own. Inclusion of innovative features such as Adaptive Tape Speed (ATS) ensure that Ultrium drives can meet the performance and reliability demands of a library environment. LTO technology is an open industry standard format; thus data written on HP Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

Product Highlights

Data Rate Matching

Data Rate Matching combines sophisticated buffer management with the HP exclusive variable Adaptive Tape Speed technology, to allow the tape drive to match its transfer rate to the host speed dynamically and continuously across the wide range of transfer rates. This feature ensures that the tape drive continues to stream data regardless of the environment, and brings three big advantages:

- It optimizes performance and maximizes overall efficiency, allowing the drive to respond immediately to any speed changes from the host.
- It minimizes rewinding and repositioning of the tape, significantly reducing physical wear and increasing reliability.
- It minimizes the power requirements for the drive by reducing the number of repositions needed.

LTO Ultrium Tape Drive	ATS data transfer rate range (native)
HP LTO-5 Ultrium 3000	47 to 140 MB/s
HP LTO-4 Ultrium 1760	33 to 80 MB/s
HP LTO-3 Ultrium 920	26 to 60 MB/s

HP Ultrium WORM

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 LTO-5, LTO-4, and LTO-3 Ultrium tape drives 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 LTO-5, LTO-4, and LTO-3 Ultrium can archive large amounts of data for periods of up to 30 years in a secure, untampered state. Since all LTO-5, LTO-4, and LTO-3 Ultrium tape drives 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. As compared to other technologies that feature support for WORM storage, the LTO-5, LTO-4 and LTO-3 Ultrium tape drives offer the advantages of:

- 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 3.0 TB 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- and fourth-generation LTO Ultrium products

NOTE: While all HP LTO-5, LTO-4 and LTO-3 Ultrium tape drives support LTO Ultrium WORM media, some third, fourth and fifth -generation LTO Ultrium tape drives from other manufacturers may not include read and write support for LTO Ultrium WORM media. For non-HP third- and fourth-generation LTO Ultrium tape drives, please check the manufacturers' specifications to ensure this support is provided if you are using your WORM media. If WORM support is not provided, the drive will eject the WORM tape cartridge immediately upon insertion into to the tape drive.

Product Highlights

HP Library and Tape Tools	The 1/8 G2 Tape Autoloader is supported on The HP industry-leading diagnostic tool - HP Library and Tape Tools (L&TT). L&TT is a single, convenient program that's a snap to install and simple to operate. L&TT's intuitive user interface eliminates the need for training and deploys in less than five minutes. This robust diagnostic tool is designed for both the experienced professional and the untrained administrator. It ensures product integrity through self-diagnostics and fast resolution to device concerns. Additional information on L&TT plus download information can be found at: http://www.hp.com/support/tapetools.
HP Storage Media	HP recommends that you use HP-branded cartridges in the 1/8 G2 Tape Autoloader to assure the highest level of protection for your valuable data. The test program for HP media is the most thorough and comprehensive in the industry. All HP cartridges must satisfy an exhaustive battery of additional tests that relate directly to real life situations, where real data and real businesses are at stake. The benefit of the HP brand specification for media is consistent quality. Through the testing of thousands of HP drives and HP cartridges, the ideal formulation for backup performance is defined and then continuously monitored. This hugely resource-intensive process is unique to HP and affords deep insight into the HP+HP backup solution for a wide range of environments and duty cycles. Your best choice for ease of support and maximum dependability is to use HP-branded Ultrium cartridges at all times.
Factory Express Portfolio for Servers and Storage	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Customization must comply with all relevant product specifications and factory supported configurations. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, and HP 9000 servers as well as MSA, VA7xxx, EVA, and XP disk arrays, rackable tape libraries and configurable network switches. Type of service support varies by platform and product family. For more information on Factory Express services for your specific server model or storage device please contact your sales representative or go to: http://www.hp.com/go/factory-express.

Compatibility

The HP extensive compatibility testing program assures that your HP 1/8 G2 Tape Autoloader works with leading servers, operating systems, and backup applications - and not just those sold by HP. The 1/8 G2 Tape Autoloader works seamlessly in many environments, making them especially suitable if you have a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support the 1/8 G2 Tape Autoloader, check the HP Enterprise Backup Solution compatibility matrix at: http://www.hp.com/go/ebs.

NOTE: The 1/8 G2 Tape Autoloader requires an HBA with multiple LUN support and should not be used with RAID or Array controllers.

Server Compatibility
The 1/8 G2 Tape Autoloader is supported on a wide range of HP systems. For details of which 1/8 G2 Tape Autoloader works with which systems, including third-party systems, reference the EBS compatibility matrix at: http://www.hp.com/go/ebs for the latest hardware compatibility information.

OS Support
Reference the EBS compatibility matrix for the most up-to-date OS compatibility information at: http://www.hp.com/go/ebs.

Software Support
Reference the EBS compatibility matrix for the most up-to-date software compatibility information at: http://www.hp.com/go/ebs.

Service and Support, HP Care Pack, and Warranty Information

Warranty   The warranty for this product consists of 1-year parts exchange, next business day.

For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage
These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

Protect your business beyond the warranty
When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services
For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Storage Services: Offering reliability, flexibility and value-just like your storage
HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. http://www.hp.com/hps/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

QuickSpecs

Service and Support, HP Care Pack, and Warranty Information

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

Recommended Services   3-Year HP Support Plus 24

For a higher return on your 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/5981-6638EN.pdf

HP Install Storage Autoloader/Tape Drive Array Service

For smooth startup and better business outcomes, HP Install Storage Autoloader/Tape Drive Array Service- this service provides initial hardware installation into your server technology environment (system configuration is not included). 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.

- Allows your IT resources to stay focused on their core tasks and priorities
- Reduces implementation time, impact and risk to your storage environment

http://h71028.www7.hp.com/ERC/downloads/5981-9356EN.pdf

HP Proactive Select Service

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.

- Access to a list of flexible and customizable proactive service activities
- Enhance customers' in-house IT team with complementary assistance from HP
- Improved time to solution
- Reduce business risk and project costs by accessing HP specialists
- Simplify IT operational procedures by leveraging HP best practices

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

Service and Support, HP Care Pack, and Warranty Information

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

Customer Technical Training
Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. www.hp.com/learn/storage

HP Services Awards
HP 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. For a list of all our awards, please visit
http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm

Additional Services Information
For more information about HP Care Pack Services for Storage, please visit:
http://www.hp.com/hps/storage

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

Configuration Information

NOTE: The HP 1/8 G2 Tape Autoloader comes standard as a one drive, 8-slot unit (includes both a right and left 4-slot magazine) which is shipped rack-ready. The separate 1/8 G2 Tape Autoloader Rack Kit must be purchased to complete the rack installation. The HP 1/8 G2 Tape Autoloader no longer ship standard US Power Cord (C13, 10A, 1.83m, P/N AF556A) that allow connection to 110V US wall outlets in a home or office. HP 1/8 G2 Tape Autoloaders are primarily connected to PDU's in data center racks so they now ship with only a PDU power cord (C13/C14, 10A, P/N 142257-002). If a user wishes to power a HP 1/8 G2 Tape Autoloader using a 110V receptacle the US Power Cord (P/N AF556A) must be ordered separately. If customers require a power cord, they can check the power cord matrix for the appropriate cord. Please see the UPS and PDU cable matrix's on the Power Protection page under Power Cords that lists cable descriptions, requirements, and specifications for UPS and PDU units at the new HP Power Cord Link @ HP.com. Use the following new link: www.hp.com/products/powercords

Step 1 – Base Configuration

Select one:

Model Name	Model Description	Part Number
HP 1/8 G2 Tape Autoloader	HP 1/8 G2 LTO-5 Ultrium 3000 Fibre Channel Tape Autoloader	BL541A
	HP 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader	BL536A
	HP 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP 1/8 G2 LTO-4 Ultrium 1760 SCSI Autoloader	AJ816A
	HP 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	HP 1/8 G2 LTO-3 Ultrium 920 SCSI Tape Autoloader	AH165A

Kit Contents (for each autoloader):

- SCSI models:
  - (1) 2.5M PDU Power Cord, C13/C14, 10A
  - (1) 6' VHDCI to HDTS68 SCSI cable
  - (1) RJ-45 Ethernet cable
  - (1) HDTS68 SCSI terminator
  - Set of six rubber feet (for tabletop use)
  - HP Data Protector Express Basic backup and recovery software for Windows/Linux/NetWare.
  - Getting Started Poster
- SAS models:
  - (1) 2.5M PDU Power Cord, C13/C14, 10A
  - (1) 2M External Infiniband (SFF8470) to Mini SAS (SFF8088) 1x SAS Cable
  - (1) RJ-45 Ethernet cable
  - Set of six rubber feet (for tabletop use)
  - HP Data Protector Express Basic backup and recovery software for Windows/Linux/NetWare.
  - Getting Started Poster
- FC models:
  - (1) 2.5M PDU Power Cord, C13/C14, 10A
  - (1) RJ-45 Ethernet cable
  - Set of six rubber feet (for tabletop use)
  - HP Data Protector Express Basic backup and recovery software for Windows/Linux/NetWare.
  - Getting Started Poster

Configuration Information

Step 2 - Additional Options

Select each required option with quantities specified:

Power Cord	Quantity	Description	Part Number
	1 each	Power Cord, US, C13, 10A, 1.83m	AF556A
		NOTE: This cord does not ship standard with 1/8 G2 Tape Autoloader.	
	1 each	PDU Power Cord, C13/C14, 10A, 2.5m	142257-002
		NOTE: This cord ships standard with each 1/8 G2 Tape Autoloader; can be used to connect the rack-mounted device to PDUs with IEC-320 receptacles.	
	1 each	Power Cord, Euro, C13, 10A, 1.83m	AF568A
	1 each	Power Cord, UK, C13, 10A, 1.83m	AF570A
	1 each	Power Cord, Danish, C13, 10A, 1.83m	AF566A
	1 each	Power Cord, Swiss, C13, 10A, 1.83m	AF565A
	1 each	Power Cord, Italian, C13, 10A, 1.83m	AF571A
	1 each	Power Cord, South Africa, C13, 10A, 2.5m	AF567A
	1 each	Power Cord, Taiwan, C13, 12A, 1,83m	AF561A
	1 each	Power Cord, China, C13, 10A, 1.83m	AF557A
	1 each	Power Cord, Japan, C13, 12A, 2.0m	AF572A
	1 each	Power Cord, Australia, C13, 10A, 2.5m	AF569A
	1 each	Power Cord, Argentina, C13, 10A, 2.5m	AF558A
	1 each	Power Cord, Brazil, C13, 10A, 1.83m	AF559A
	1 each	Power Cord, Korea, C13, 10A, 1.83m	AF560A
	1 each	Power Cord, Israel, C13, 10A, 1.83m	AF564A
	1 each	Power Cord, India, C13, 10A, 2.0m	AF562A

NOTE: One power cord is required; please select the correct power cord for your geographical location.

WARNING: This product can ONLY be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.

QuickSpecs

Related Options

Factory Racking	Factory integrate the 1/8 G2 Tape Autoloader with other HP products such as HP ProLiant Servers. NOTE: #0D1 will appear after the 1/8 G2 Tape Autoloader part number on the sales order if HP factory integration is indicated.	#0D1
	HP Factory Rack Mount Shelf Kit NOTE: Required to safely ship the 1/8 G2 Tape Autoloader via the factory integration option (#0D1); shelf can be removed after the rack is received at the customer site.	AB469A
Rack Kit	HP 1/8 G2 Tape Autoloader Rack Kit NOTE: Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions.	AH166A
Rack-to-Tabletop Conversion Kit	HP 1/8 G2 Rack-to-Tabletop Conversion Kit NOTE: For use in converting the rack-ready 1/8 G2 Tape Autoloader into a structurally rigid and fully enclosed tabletop model; maximum load up to 33 pounds (15 kilograms).	AH199A
Magazine Kit	HP 1/8 G2 Right Magazine Kit NOTE: For use only on the right side of the 1/8 G2 Tape Autoloader; additional 4-slot magazine.	AH167A
	HP 1/8 G2 Tape Autoloader Left Magazine Kit NOTE: For use only on the left side of the 1/8 G2 Tape Autoloader; additional 4-slot magazine which includes an import/export slot.	AH862A
Encryption	HP 1/8 G2 Tape Autoloader and MSL2024/MSL4048/MSL8096 Tape Library LTO-4 Encryption Kit NOTE: For use with new or installed LTO-5 or LTO-4 Ultrium 1/8 G2 Tape Autoloaders and MSL2024/4048/8048/8096 Tape Libraries. The encryption token will generate and retain encryption keys for HP LTO-5 or LTO-4 Ultrium tape drives in the autoloader or library.	AM495A

Related Options

Rack Cabinets	10622 (22U) Universal Rack Cabinet - Shock Pallet	AF022A
	10636 (36U) Universal Rack Cabinet - Shock Pallet	AF012A
	10636 (36U) Universal Rack Cabinet with extension - Shock Pallet	AF014A
	10642 (42U) Universal Rack Cabinet - Shock Pallet	AF002A
	10642 (42U) Universal Rack Cabinet with extension - Shock Pallet	AF004A

NOTE: The 1/8 G2 Tape Autoloader is certified to ship in HP 10000 series racks which include a shock pallet. It is mandatory to use a shock pallet in order to ship racks with equipment installed.

NOTE: This rack ships unassembled and boxed on a standard size pallet. It is an industry standard 19" wide rack with side panels and rear doors; it does not ship with the front door or casters.

NOTE: For additional HP ProLiant rack information, visit: http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html

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SAS Host Bus Adapters	HP Modular Smart Array SC44Ge 1-ports Int/1-ports Ext PCIe x8 SAS Host Bus Adapter	416096-B21

NOTE: Serial-attached SCSI (SAS) HBA that enables HP MSL Tape Libraries to connect with HP ProLiant G5 servers. PCI-Express SAS HBA with one external SFF8470 port.

HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller   462828-B21
NOTE: Recommended for Proliant G6 or G7 SAS tape automation connect. 256MB or larger write cache recommended for more than two tape drives.

HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller   462834-B21
NOTE: Recommended for Proliant G6 SAS tape automation connect.

HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller   462830-B21
NOTE: Recommended for Proliant G6 SAS tape automation connect.

HP Smart Array P411/512 BBWC 2-ports Ext PCIe x8 SAS Controller   462832-B21
NOTE: Recommended for Proliant G6 SAS tape automation connect.

HP Smart Array P711m/1G 6Gb FBWC 4-ports Ext PCIe SAS Controller   513778-B21
NOTE: For direct connection of the 1/8 G2 Autoloader to HP ProLiant BladeServers, the P711 controller is used to connect the BladeServer to the SAS switch. The autoloader is connected to the same SAS switch. The supported SAS switches are the HP 6Gb SAS BL Switch - Single Pack (BK763A) and the HP 6Gb SAS BL Switch - Dual Pack (BK764A).

HP Smart Array P712m/256 6Gb 2-ports Int/2-ports Ext PCIe SAS Controller   488348-B21
NOTE: For direct connection of the 1/8 G2 Autoloader to HP ProLiant BladeServers, the P712 controller is used to connect the BladeServer to the SAS switch. The autoloader is connected to the same SAS switch. The supported SAS switches are the HP 6Gb SAS BL Switch - Single Pack (BK763A) and the HP 6Gb SAS BL Switch - Dual Pack (BK764A).

HP Smart Array P700m/256 4-ports Ext PCIe x8 SAS Controller   507925-B21
NOTE: For direct connection of the 1/8 G2 Autoloader to HP ProLiant BladeServers, the P700 controller is used to connect the BladeServer to the SAS switch. The autoloader is connected to the same SAS switch. The supported SAS switches are the HP 3Gb SAS BL Switch - Single Pack (AJ864A) and the HP 3Gb SAS BL Switch - Dual Pack (AJ865A).

QuickSpecs

HP 1/8 G2 Tape Autoloader

Related Options

	HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller NOTE: For direct connection of the 1/8 G2 Autoloader to HP ProLiant BladeServers, the P700 controller is used to connect the BladeServer to the SAS switch. The autoloader is connected to the same SAS switch. The supported SAS switches are the HP 3Gb SAS BL Switch - Single Pack (AJ864A) and the HP 3Gb SAS BL Switch - Dual Pack (AJ865A).	508226-B21
SCSI Host Bus Adapters	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter NOTE: Single channel PCI-Express (PCI-e) SCSI Ultra 320 HBA that enables HP MSL Tape Libraries to connect to HP ProLiant servers.	412911-B21
	HP U320e SCSI Dual Channel Host Bus Adapter NOTE: Dual channel PCI-Express (PCI-e) SCSI Ultra320 HBA that enables HP MSL Tape Libraries to connect with HP ProLiant servers.	AH627A
	Reference the EBS compatibility matrix for the most up-to-date HBA compatibility information at: http://www.hp.com/go/ebs.	
Cable Kits (SCSI, SAS, FC)	6 ft VHDCI/HDTS68 SCSI Cable Kit	341176-B21
	12 ft VHDCI/HDTS68 SCSI Cable Kit	341177-B21
	2m External Infiniband (SFF8470) to 4 Mini SAS (SFF8088) 1x SAS Cable Kit NOTE: One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP MSL SAS Tape Libraries to HP SAS controllers with Infiniband (SFF8470) connectors.	AH587A
	2m External mini-SAS to 4x1 mini-SAS Cable Kit NOTE: One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	AN975A
	4m External mini-SAS to 4x1 mini-SAS Cable Kit NOTE: One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	AN976A
	HP SAS Min-Min 1x-2M Cable Assembly Kit NOTE: One SAS autoloader only. Use this cable to connect HP SAS external tape devices to HP SAS controllers with external Mini-SAS (SFF8088) connectors.	AE470A
	4m SFF8088-to-SFF8088 1x SAS Cable Kit NOTE: One SAS autoloader only. Use this cable to connect HP SAS external tape devices to HP SAS controllers with external Mini-SAS (SFF8088) connectors.	AE465A

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Related Options

Optical cables	**PremierFlex OM3+ LC/LC type cables**
	0.5m PremierFlex LC/LC Multi-Mode Optical Cable
	1m PremierFlex LC/LC Multi-Mode Optical Cable
	2m PremierFlex LC/LC Multi-Mode Optical Cable
	5m PremierFlex LC/LC Multi-Mode Optical Cable
	15m PremierFlex LC/LC Multi-Mode Optical Cable
	30m PremierFlex LC/LC Multi-Mode Optical Cable
	50m PremierFlex LC/LC Multi-Mode Optical Cable
	OM3 LC-LC type cables
	0.5Multi-mode OM3 LC/LC FC Cable
	1m Multi-mode OM3 LC/LC FC Cable
	2m Multi-mode OM3 LC/LC FC Cable
	5m Multi-mode OM3 LC/LC FC Cable
	15m Multi-mode OM3 LC/LC FC Cable
	30m Multi-mode OM3 LC/LC FC Cable
	50m Multi-mode OM3 LC/LC FC Cable
	OM2 LC-LC type cables
	2m SW LC/SC FC Cable Kit
	5m SW LC/SC FC Cable Kit
	15m SW LC/SC FC Cable Kit
	2m SW LC/LC FC Cable Kit
	15m SW LC/LC FC Cable Kit

Allowed cable lengths:

	2Gb	4Gb	8Gb
OM2	0.5m - 300m	0.5m - 150m	0.5m - 50m
OM3	0.5m - 500m	0.5m - 380m	0.5m - 150m
OM4	N/A	0.5m - 400m	0.5m - 190m

NOTE: The HP 1/8 G2 Tape Autoloader LTO-5 Ultrium 3000 Drive contains an internal OM2 optical cable and limits the maximum allowed cable lengths to those as specified for OM2. The lowest OM rating in a path from the drive to the switch or HBA will dictate the maximum length of the connection path.

Controller/HBA & Cable Recommendation Matrix	Recommended HBA/ Controller for tape automation	HBA/ Controller Product Number	Recommended Cables	Cable Product Number
SAS	HP SC44Ge SAS Host Bus Adapter
NOTE: Recommended for Proliant G5 SAS tape automation connect.	416096-B21	2m SFF8470-to-4 SFF8088 1x SAS Cable Kit	AH587A
	HP P212 Smart Array Controller Zero Memory
NOTE: Recommended for	462828-B21	For one autoloader:
• AE470A -- 2m SFF8088-to-SFF8088 1x SAS	

Related Options

	Proliant G6 SAS tape automation connect. 256MB or larger write cache recommended for more than two tape drives.		Cable Kit NOTE: one SAS tape drive only. ● AE465A -- 4m SFF8088-to-SFF8088 1x SAS Cable Kit NOTE: one SAS tape drive only.		
	HP P212 Smart Array Controller 256MB Memory NOTE: Recommended for Proliant G6 SAS tape automation connect.	462834-B21	For two or more autoloaders or tape drives: ● AN975A -- 2m SFF8088-to-4 SFF8088 1x SAS Cable Kit NOTE: One cable is required for every four drives. ● AN976A -- 4m SFF8088-to-4 SFF8088 1x SAS Cable Kit NOTE: One cable is required for every four drives.		
	HP P411 Smart Array Controller 256MB NOTE: Recommended for Proliant G6 SAS tape automation connect.	462830-B21			
	HP P411 Smart Array Controller 512MB NOTE: Recommended for Proliant G6 SAS tape automation connect.	462832-B21			
	HP P711m Smart Array Controller 1G FBWC NOTE: Recommended for C series blade enclosure tape automation connect.	513778-B21			
	HP P712m Smart Array Controller 256MB NOTE: Recommended for C series blade enclosure tape automation connect.	488348-B21			
	HP P700m Smart Array Controller 256MB NOTE: Recommended for C series blade enclosure tape automation connect.	507925-B21			
	HP P700m Smart Array Controller 512MB NOTE: Recommended for C series blade enclosure tape automation connect.	508226-B21			
SCSI	HP SC11Xe SCSI Host Bus Adapter NOTE: Single channel PCI-Express (PCI-e) SCSI Ultra 320 HBA.	412911-B21	6 ft VHDCI/HDTS68 SCSI Cable Kit	341176-B21	
			12 ft VHDCI/HDTS68 SCSI Cable Kit	341177-B21	
	HP U320e SCSI Host Bus Adapter NOTE: Dual channel PCI-Express (PCI-e) SCSI Ultra 320 HBA.	AH627A	6 ft VHDCI/HDTS68 SCSI Cable Kit	341176-B21	
			12 ft VHDCI/HDTS68 SCSI Cable Kit	341177-B21	

Related Options

Controller information (both SAS and SCSI) are located in two locations:
Smart Array: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html
HBA: http://h18004.www1.hp.com/products/servers/proliantstorage/adapters/index.html

Reference the EBS compatibility matrix for the most up-to-date HBA compatibility information at:
http://www.hp.com/go/ebs

You may also visit: www.hp.com/go/ProLiant, and click on the Storage link

Media		
	HP LTO5 Ultrium 3TB RW Data Cartridge (1 pack)	C7975A
	HP LTO5 Ultrium 3TB WORM Data Cartridge (1 pack)	C7975W
	HP LTO4 Ultrium 1.6TB RW Data Cartridge (1 pack)	C7974A
	HP LTO4 Ultrium 1.6TB WORM Data Cartridge (1 pack)	C7974W
	HP Ultrium 800GB RW Data Cartridge (1 pack)	C7973A
	HP Ultrium 800GB WORM Data Cartridge (1 pack)	C7973W
	HP Ultrium 400GB Data Cartridge (1 pack)	C7972A
	HP Ultrium 200GB Data Cartridge (1 pack)	C7971A
	HP Ultrium Universal Cleaning Cartridge (1 pack)	C7978A
	HP LTO5 Ultrium RW Bar Code Labels (100 pack)	
	HP LTO5 Ultrium WORM Bar Code Labels (100 pack)	
	HP LTO4 Ultrium RW Bar Code Labels (100 pack)	Q2009A
	HP LTO4 Ultrium WORM Bar Code Labels (100 pack)	Q2010A
	HP Ultrium 3 RW Bar Code Labels (100 pack)	Q2007A
	HP Ultrium 3 WORM Bar Code Labels (100 pack)	Q2008A
	HP Ultrium 2 Bar Code Labels (100 pack)	Q2002A
	HP Ultrium 1 Bar Code Labels (100 pack)	Q2001A

Custom labeled Data Cartridges
NOTE: Custom labeled products allow customers to customize a specific sequence printed on each label.

HP LTO-5 Ultrium 3TB RW Custom Labeled Data Cartridge (20 pack)	C7975AL
HP LTO-5 Ultrium 3TB RW Eco Pack (no case) Data Cartridge (20 pack)	C7975AC
HP LTO-5 Ultrium 3TB WORM Custom Labeled Data Cartridge (20 pack)	C7975WL
HP LTO4 Ultrium 1.6TB RW Custom Labeled Data Cartridge (20 pack)	C7974AL
HP LTO4 Ultrium 1.6TB WORM Custom Labeled Data Cartridge (20 pack)	C7974WL
HP Ultrium 800GB RW Custom Labeled Data Cartridge (20 pack)	C7973AL
HP Ultrium 800GB WORM Custom Labeled Data Cartridge (20 pack)	C7973WL
HP Ultrium 400GB Custom Labeled Data Cartridge (20 pack)	C7972AL
HP Ultrium 200GB Custom Labeled Data Cartridge (20 pack)	C7971AL

Non-Custom Labeled Data Cartridges
NOTE: Non-Custom labels will come pre-labeled with a pre-determined number sequence.

HP LTO5 Ultrium 3TB RW Non-Custom Labeled Data Cartridge (20 pack)	C7975AN
HP LTO4 Ultrium 1.6TB RW Non-Custom Labeled Data Cartridge (20 pack)	C7974AN

Related Options

	HP Ultrium 800GB RW Non-Custom Labeled Data Cartridge (20 pack)	C7973AN
	HP Ultrium 400GB Non-Custom Labeled Data Cartridge (20 pack)	C7972AN
	HP Ultrium 200GB Non-Custom Labeled Data Cartridge (20 pack)	C7971AN

Storage Media Kits

NOTE: Kit includes 20 HP Ultrium data cartridges, one HP Ultrium Universal cleaning cartridge, 20 colored labels, a protective carrying case that can be used to securely store or transport data cartridges, one copy of "The Essentials of Successful Tape Backup", and one copy of HP Data Protector Express Evaluation Software (60 day free trial).

	HP Ultrium 800GB Storage Media Kit	C8017A
	HP Ultrium 400GB Storage Media Kit	C8014A
	HP Ultrium 200GB Storage Media Kit	C8013A

Upgrade included software to Data Protector Express	Upgrade to HP Data Protector Express for 1 Server from HP Data Protector Express Basic	eDelivery	TC333AAE
		media kit	TC333A

HP Care Pack Options	**Same Day Response**	
	Warranty upgrade to 1-year, 13x5, 4 hour response/onsite, electronic	U6364E
	Warranty upgrade to 1-year, 24x7, 4 hour response/onsite, electronic	U6365E
	Warranty upgrade to 1-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	U6366E
	Warranty upgrade to 3-year, 13x5, 4 hour response/onsite, electronic	H5526E
	Warranty upgrade to 3-year, 24x7, 4 hour response/onsite, electronic	H4624E
	Warranty upgrade to 3-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	U6367E
	Warranty upgrade to 5-year, 13x5, 4 hour response/onsite, electronic	U9376E
	Warranty upgrade to 5-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	U9377E
	Next Business Day Response	
	Warranty upgrade to 3-year next business day/parts exchange, electronic	H2698E
	Warranty upgrade to 3-year next business day/onsite, electronic	H4619E
	Hardware Services	
	Installation services, electronic	U2090E

NOTE: In order to maximize ROI and product uptime, and minimize the cost of ownership, Hewlett-Packard recommends the 3-year, 24 x 7 service options. These offerings will ensure that any product issue can be tackled when they occur (most back up issues will occur outside standard business hours) and that the service coverage regarding period, covers the minimum expected life of the host system.

Technical Specifications

		1/8 G2 LTO-5 Ultrium 3000 Tape Autoloader	1/8 G2 LTO-4 Ultrium 1760 Tape Autoloader	1/8 G2 LTO-3 Ultrium 920 Tape Autoloader
Drive Technology		Ultrium 3000	Ultrium 1760	Ultrium 920
Number of Drives		1	1	1
Number of Slots		8	8	8
Drive Interface		8Gb/sec Fibre Channel (LTO 5 only) 6Gb/sec SAS (LTO 5 only)	3Gb/sec SAS (LTO 5, 4, 3) Ultra320 LVD SCSI (LTO 4, 3)	3Gb/sec SAS (LTO 5, 4, 3) Ultra320 LVD SCSI (LTO 4, 3)
Capacity	Native	12 TB	6.4 TB	3.2 TB
	Compressed (2:1)	24TB	12.8 TB	6.4 TB
Maximum Transfer Rate	Native	504 GB/ hr	288 GB/hr	216 GB/hr
	Compressed (2:1)	1 TB/hr	576 GB/hr	432 GB/hr
Dimensions	Out-of-Box (HxWxD)	1.7 x 19 x 31.9 in (4.4 x 48.2 x 80.9 cm)		
	Shipping (HxWxD)	10 x 23 x 39 in (25 x 58 x 99 cm)		
Weight	Out-of-Box	25.4 lb (11.5 kg)		
	Shipping	33.7 lb (15.3 kg)		
Reliability	MSBF (mean swaps between failures)	2 Million robot load/unload cycles		
	MTBF (mean time between failures)	100,000 hours (based on 1M MSBF)		
Cartridge Swap Time		34 seconds average (drive to slot, slot to drive)		
Initialization Time		76 seconds		
Inventory Time		52 seconds (with bar code labeled cartridges)		
Connectors		Mini-SAS (located on back of 1/8 G2 SAS models only) 68-pin HDTS (located on back of 1/8 G2 SCSI models only) (1) RJ-45 (located on back of 1/8 G2) (1) USB port (located on back of 1/8 G2)		
LED Indicators (on front panel)		Ready LED (Green): shows ready status information Clean LED (Amber): shows fault status information Attention LED (Amber): shows fault status information Error LED (Amber): shows fault status information		
Management Interface		10/100 Mbytes/second, auto-configuring interface. RJ-45 connection. Https configurable.		
Power		80 Watts (max)		
Input Requirements		100 to 240 VAC, 50 to 60 Hz		

Technical Specifications

Relative Humidity (non-condensing)		Operating	20% to 80%
		Shipping	20% to 90%
Temperature Range (wet bulb)		Operating	50° to 95° F (10° to 35° C)
		Shipping	-40° to 140° F (-40° to 60° C)
Altitude		Operating	15,000 ft (4,572 m)
		Shipping	35,000 ft (10,668 m)

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