Overview

Does data growth leave you struggling with complex, distributed, and costly data protection? Keep pace with HP StoreOnce Backup systems, disk-based data protection with StoreOnce deduplication delivering enterprise-wide data protection through a range of scalable dedicated appliances and flexible virtual machines.

HP StoreOnce Backup systems reduce the amount of backup data you need to store by up to 95%, so with our scale-out architecture you can pay-as-you-grow to retain up to 34 petabytes of data in a single pool. They provide automated backup and DR operations with all the features you'd expect from disk backup, together with secure data retention with built-in data encryption for data at rest.

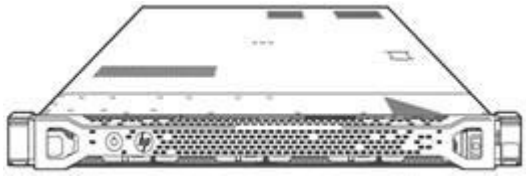
HP StoreOnce Catalyst delivers industry-leading backup speeds of up to 139 TB/hr to meet shrinking backup windows, plus Federated Deduplication across the enterprise so you can dedupe data anywhere to suit your configuration. Choose between powerful dedicated appliances for larger offices and data centers, and flexible virtual appliances for highly virtualized or smaller and remote offices. With HP's single StoreOnce deduplication technology, managing the movement of data across the enterprise has never been easier.

Protect data from unauthorized access through data-at-rest encryption and secure erase functionality for disks that are lost, stolen or discarded.

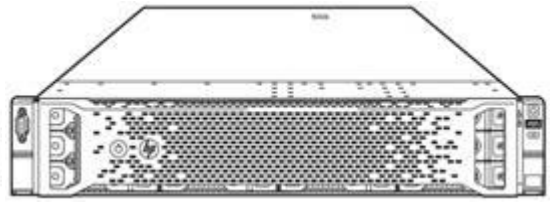
Seamlessly integrating with your current backup applications, StoreOnce Backup provides flexible integration into both SAN, virtualized and other environments.

*Actual performance is dependent upon configuration data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.

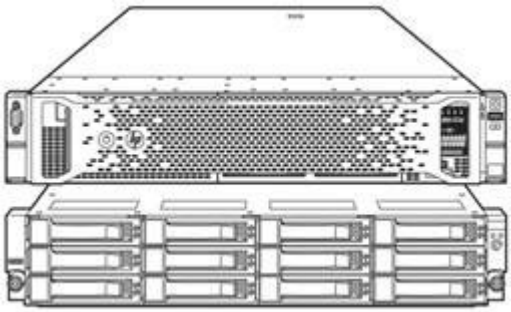
HP StoreOnce VSA 10 TB Backup

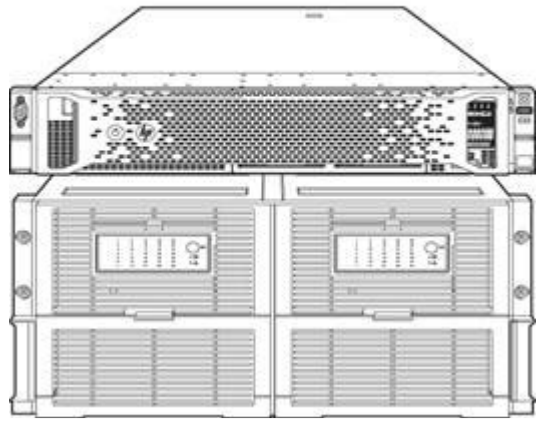


HP StoreOnce 2700 Backup



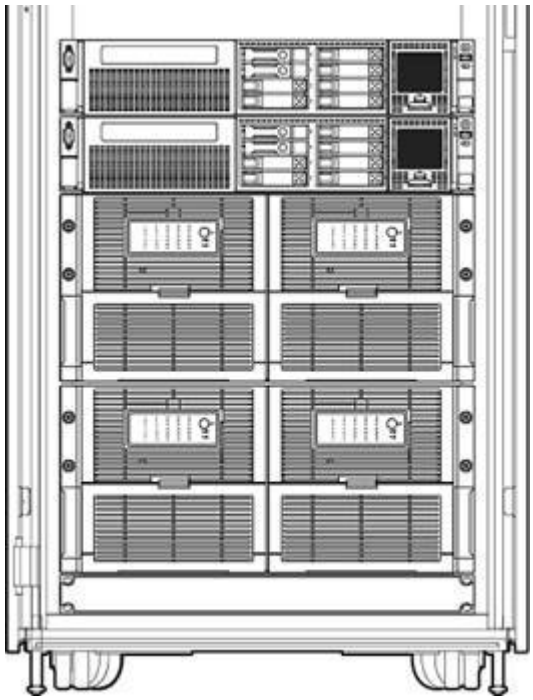
HP StoreOnce 4500 Backup



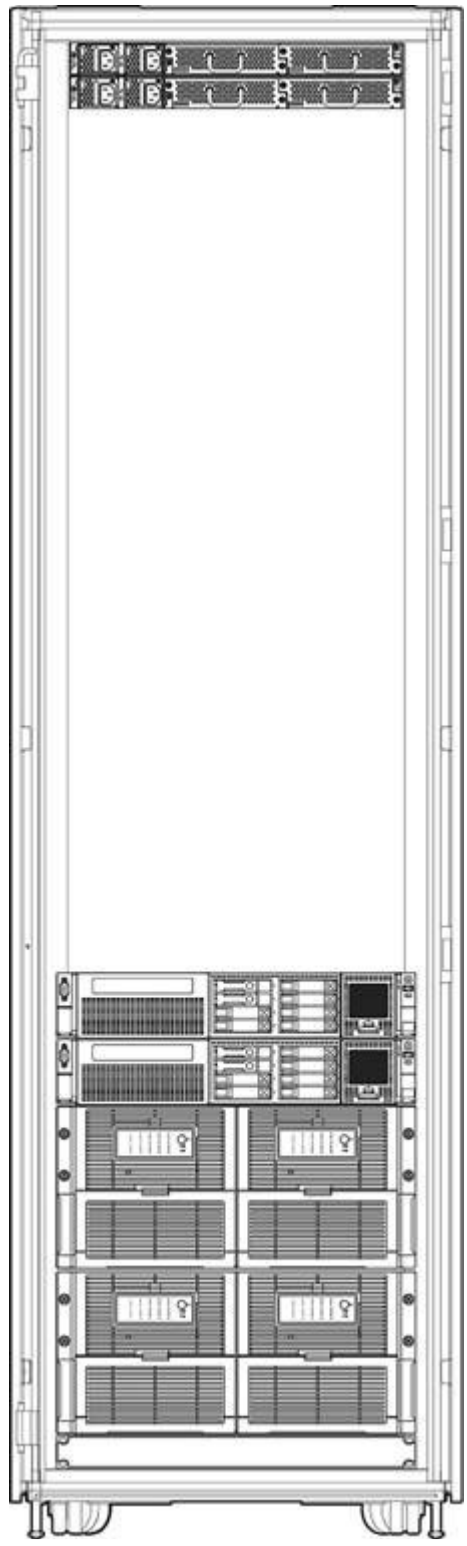


Overview

HP StoreOnce 4700
(shown with StoreOnce 4500/4700 24TB Upgrade Kit)



HP StoreOnce 4900 Backup



Overview

HP StoreOnce 6500 120TB for Initial Rack

HP StoreOnce 6500 120TB for Initial Rack with HP StoreOnce 6500 88TB Capacity Upgrade Kit in 42U rack

What's New

December 2013 sees the introduction of an enhanced StoreOnce portfolio. The new StoreOnce 2700, 4500, 4700, 4900 and 6500, offering increased capacity and performance for cost effective data protection for remote offices to data centers. StoreOnce 6500 and 4900 now feature 4TB drives for greater storage density.

NOTE: The table below details which models are being replaced by the new StoreOnce products.

In addition, all HP StoreOnce products will be available with data-at-rest encryption and secure erase through HP StoreOnce Security Packs delivering essential protection against unauthorized access to data on lost, stolen or discarded disk drives.

HP StoreOnce Catalyst has also been extended to include Oracle RMAN and BridgeHead software support. StoreOnce Catalyst licensing by backup application has also been replaced by a simplified license covering Oracle RMAN, BridgeHead, Symantec and HP Data Protector.

VLAN Tagging is now available with HP StoreOnce 4900 and will be made available across the rest of the portfolio at a later date.

Current - HP StoreOnce Backup Model	Replaced by - new HP StoreOnce Backup Model
VSA	No change
HP StoreOnce 2620 iSCSI	HP StoreOnce 2700
HP StoreOnce 4210 iSCSI / 4210FC and HP StoreOnce 4220	HP StoreOnce 4500
StoreOnce 4210/4220 Upgrade Kit	StoreOnce 4500/4700 24TB Upgrade Kit
HP StoreOnce 4420 and HP StoreOnce 4430	HP StoreOnce 4700
	HP StoreOnce 4900 (NEW)
HP StoreOnce B6200	HP StoreOnce 6500 120TB Backup*
	HP StoreOnce 6500 88TB Upgrade Kit
	Security Pack SKUS
StoreOnce Catalyst support in HP Data Protector and Symantec Netbackup and Backup Exec	Suport extended to include Oracle RMAN and BridgeHead software
StoreOnce Catalyst licesned per appliance and backup application	Simplified StoreOnce Catalyst Licenses - one per appliance using StoreOnce Catalyst

*B6200 capacity upgrade kits remain available for expanding currently installed B6200 appliances. The ability to scale out, add additional couplets, to a currently installed B6200 couplet(s) with StoreOnce 6500 will be available Mid 2014

Features and Benefits

Scale out capacity for across the enterprise

Keep pace with data growth, HP StoreOnce Backup offers scale-out architecture that allows you to pay as you grow.

Choose from dedicated backup appliances to match the capacity and performance requirements of larger offices and data center deployments. For virtualized environments and smaller and remote offices, HP StoreOnce is also available as a VMware virtual appliance for virtualized data protection that utilizes existing infrastructure.

Whatever the HP StoreOnce solution that meets your needs, you can choose capacity points that start small and scale-out - just configure for a higher capacity (with StoreOnce VSA), or use upgrade kits with expansion shelves or additional nodes (for StoreOnce 6500 only):

For your data center: grow from 120 TB raw (72 TB usable) to 2240TB raw (1728 TB usable) with the multi-node, highly available 6500 appliance, or expand from 60 TB raw (36 TB usable) to 560 TB raw (432 TB usable) with the new single-node 4900 appliance.

For mid-size or regional offices: Scale from 24 TB (20 TB usable) to 192 TB raw (160 TB usable) with the StoreOnce 4700 or grow from 60 TB (36 TB usable) to 560 TB raw (432 usable) with StoreOnce 4900

For smaller and remote offices:
Flexible StoreOnce VSA : grow from 1 TB to 10 TB in increments of 1 TB
Dedicated appliances: start with an entry level StoreOnce 2700 appliance at 8 TB raw (5.5 TB usable) or choose the StoreOnce 4500 to grow from 24 TB raw (16 TB usable) to 48 TB raw (36 TB usable)

Note that the capacities given above are prior to deduplication (which can increase logical capacity by 20x). Also capacity upgrades happen while StoreOnce remains online so you don't incur system downtime.

*To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following Recommended Configuration Guidelines

Please refer to the latest Concepts and Configuration Guide for more information:

http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

Reduce your backup data storage needs with HP StoreOnce deduplication

HP StoreOnce deduplication reduces the disk space required to store backup data sets by typically 20x without impacting backup performance. Retaining more backup data on disk for longer, enables greater backup data accessibility for rapid restore of lost or corrupt files and reduces impact on business productivity while providing cost savings in disk storage, IT resource, physical space, and power requirements.

For example, using HP StoreOnce deduplication with a fully configured HP StoreOnce 6500 can provide extended data retention on the same disk footprint for up to 34 PBs of backup data.

Industry-leading performance to meet shrinking backup windows

Backup large amounts of data within short backup windows with HP StoreOnce high performance multi-streaming capability. Choose Ethernet (to Catalyst, VTL or NAS targets) or Fibre Channel (To VTL targets) to integrate into your network environment. Consolidate multiple parallel backup streams via standard Ethernet or Fibre Channel network to a single disk-based system to achieve industry-leading aggregate backup speeds of up to 139 TB* per hour with the top of the range HP StoreOnce 6500 and HP StoreOnce Catalyst.

	You can enhance performance by deduplicating anywhere; at the application source or at the backup server or at the target HP StoreOnce Backup appliance. Federated Deduplication means you can dedupe where it makes sense for your business, not where technology vendor limitations mandate. Federated Deduplication is available across all new HP StoreOnce Backup systems, in conjunction with all applications that support Catalyst. *Actual performance is dependent upon configuration data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.
Consolidate and automate daily backup to free-up IT resources	Consolidate and automate your backup processes using a single HP StoreOnce Backup system, allowing you to reduce the time spent managing multiple data protection devices and processes. What's more, HP StoreOnce Backup can help you reduce complexity by spanning multiple enterprise network platforms to consolidate your backup in one. With HP StoreOnce Catalyst movement of deduplicated data across the enterprise is even easier. There's no need to dedupe and rehydrate at each step, and backup data movement is seamlessly controlled by your backup application.
Lower the cost of disaster recovery and remote office data protection	HP StoreOnce deduplication also enables network efficient offsite data replication. All HP StoreOnce Backup systems use StoreOnce data deduplication to significantly reduce the amount of data that needs to be replicated, enabling the use of lower bandwidth, lower cost links to transmit data offsite. StoreOnce enabled replication opens the way to cost-effective centralized backup from remote sites or branch offices, and delivers a consolidated disaster recovery solution for the data center.
Reliable remote office data protection	HP StoreOnce Backup is ideal for remote offices - providing a local backup target and an efficient deduplicated local data repository. Choose the flexibility and simplicity of the HP StoreOnce VSA, or choose dedicated appliances such as the StoreOnce 2700 depending on the infrastructure, performance and management requirements of your remote office deployments. HP StoreOnce also enables a Federated Deduplication solution for replication of backup to other sites, including the consolidation of backup and DR from multiple remote offices to the data center. Multiple StoreOnce appliances and virtual machines can replicate to central StoreOnce appliance; for example you can fan-in up to 384 remote offices to a single HP StoreOnce 6500 target at the data center. With HP StoreOnce Catalyst the movement of data between sites is configured and controlled using your backup application as a single interface for the data protection solution. StoreOnce Catalyst supports a range of flexible configurations that enable the concurrent movement of data from one site to multiple sites, and the ability to cascade data around the enterprise (sometimes referred to as multi-hop).
Industry leading restore speeds	HP is the only manufacturer to quote industry-leading restore speeds; HP StoreOnce restores at up to 100% of ingest performance.
Reducing the risk to data at rest	With high-profile reports of data loss, and increasing levels of government legislation concerning data security, companies are seeking data encryption for their data. HP StoreOnce Security Pack for data at rest encryption prevents unauthorized access to data on disk that has been lost, stolen, or discarded. It also offers secure erase functionality.

HP StoreOnce Security pack is available for all new HP StoreOnce Backup systems, it will also be available for HP StoreOnce VSA in the near future.

Seamlessly integrates into your environment

The HP StoreOnce Backup systems offer flexibility with virtual tape library (VTL), NAS and StoreOnce Catalyst targets for backup applications. This means that you can easily integrate StoreOnce Backup into your existing IT environment with minimum disruption. Supported by all leading backup applications, this allows each Backup System to be installed and used without additional investment in software.

The 1U, 2U and 4U HP StoreOnce Backup systems are easily rack-mounted in standard racks, while the leading performance HP StoreOnce 6500 is pre-integrated into HP's standard depth 42U racks for efficient use of space in the data center and remote offices.

Highly available solution increases backup reliability

HP StoreOnce Backup systems can enhance reliability by automating and consolidating backup to reduce operator intervention and consequently user-generated errors.

HP understands the need for highly reliable, highly available data protection. Consequently HP StoreOnce Backup systems feature hardware RAID hardware 6 and RAID 5 on StoreOnce 2700 to reduce the risk of data loss due to disk failure. The high performance HP StoreOnce 6500 extends this reliability with autonomic restart and no single point of failure in your backup process by offering redundancy at every level:

- Autonomic restart and node failover - simply swap to the other node in the couplet if one node fails. The backup application with appropriate script or configuration settings, where supported, will continue to retry backup jobs.
- Built-in hardware redundancy - dual path disk arrays, dual path internal network, dual power supplies throughout.
- Multiplefabric support for the backup jobs to the system via bonded Ethernet connections and multiple fibre channel ports per node.
- Hot add server nodes and storage without the need to have scheduled maintenance.
- Built-in Hot spare HDDs in the event of disk failures (available with StoreOnce 6500 and 4900 products)

Special Features

Scale-out, future-ready designs to deliver leading capacity and performance

HP StoreOnce Backup systems are designed to deliver scale-out capacity and performance to keep pace with shrinking backup windows, reliable disaster recovery, simplified protection of remote offices and rapid file restore to meet today's SLAs.

All HP StoreOnce Backup models, apart from the HP StoreOnce 2700, offer expansion capabilities. Customers can start out by purchasing a single HP StoreOnce base unit/couplet, and then expanding with additional capacity upgrade kits/couplets (in the case of the StoreOnce 6500), capacity upgrade kits/drawers (in the case of the StoreOnce 4900), or additional expansion kits (with the other StoreOnce Backup systems).

Upgrading with HP StoreOnce VSA:
The HP StoreOnce VSA is enabled with a single license. This allows up to 10 TB of usable backup capacity. This capacity is configured in 1 TB increments up to 10 TB. The capacity is provided by thick provisioned 1 TB vdisks. To most efficiently use resources it is recommended to provision the required capacity and

scale up, by adding additional vdisksvdisks, as needed.) The upgrade process fully described in the user manual.

Upgrading with HP StoreOnce 4500:
Start out with the HP StoreOnce base unit at 2U with 24 TB of RAW capacity (16 TB usable). When you're ready, simply purchase the additional storage expansion/capacity upgrade kit to increase available capacity to a total of 48TB RAW (36 TB usable). A fully configured StoreOnce 4500 is 4U.

Upgrading with HP StoreOnce 4700:
Start out with the HP StoreOnce base unit at 4U with 24TB RAW (20 TB usable) capacity. When you're ready, simply purchase up to 8 additional shelves using the corresponding storage expansion/capacity upgrade kit for up to 192 TB RAW (160 TB) of total usable storage. A fully configured StoreOnce 4700 is 18U.

Upgrading with HP StoreOnce 4900:
Start out with the 7U HP StoreOnce base unit with 60TB RAW (36 TB usable) capacity. When you're ready, simply purchase up to 5x 44 TB (36 TB usable) capacity upgrade kits to complete the first storage drawer for up to 280 TB RAW (216 TB usable).

If more storage is needed, simply purchase an additional expansion kit containing 60 TB RAW (36 TB usable) capacity and again add up to 5 additional 44 TB (36 TB usable) capacity upgrade kits to complete the second set of drawers for a total capacity of up to 560 TB RAW (432 TB usable).

Note that fully expanded the HP StoreOnce 4900 includes 4 drawers of disk (2 in each unit). A fully configured HP StoreOnce 4900 is 12U (or 36 TB per U in terms of density).

NOTE:
The StoreOnce 4900 can only be installed in racks which provide a distance from the front mounting-rail of the rack to the rear rack-face (the vertical rack surface onto which the rear doors close, the depth of the doors themselves should not be included) of at least 920mm to allow sufficient clearance at the rear for cabling and to allow the hot-swapping of fan modules, PSU modules and I/O modules. Additionally, 35mm of space is required between the front mounting-rail and the nearest point on the inside surface of the front door of the rack to provide sufficient space for the front panels of the system components when the front door is closed.

Upgrading with HP StoreOnce 6500:
Start out with the HP StoreOnce 6500 120 TB system consisting of two nodes connected in failover configuration as a couplet. This is delivered pre-integrated into HP's standard depth 42U racks which also contains the necessary networking capabilities for future expansion within the entire rack using an HP StoreOnce 6500 switch assembly.

To scale-out in terms of capacity, simply add up to 5 capacity upgrade kits to each couplet. Each upgrade kit comprises 22 disks which are added symmetrically. Each upgrade kit contains 22x 4 TB disks, giving 88 TB raw capacity (72TB usable), allowing up to a maximum of 560 TB raw capacity (432 TB usable) associated with the original couplet. Capacity upgrade kits can be added to the couplet while the Backup System is online in order to reduce unnecessary downtime.

A fully configured couplet with 5 capacity upgrade kits, can be managed as a single file system of up to 560 TB raw capacity (432TB usable), however to optimize performance within a couplet, capacity usage should be balanced across both nodes within a couplet.

To scale-out in terms of performance, add in one more HP StoreOnce 6500 120TB system and again scale up by adding capacity upgrade kits. This gives you a maximum configuration of two fully configured HP StoreOnce 6500 120 TB systems of two couplets with a total capacity of 1120 TB raw capacity (864 TB usable) in a single rack.

To scale-out to 2240TB raw (1728 TB usable) purchase the HP StoreOnce 6500 120TB Backup for extra Racks (contains additional base couplet, switch, cables and pulls in another 42U rack) , and populate as before.

Upgrading an existing HP StoreOnce B6200
Customers who have already invested in the HP StoreOnce B6200 are still able to expand their storage to its full capacity of 768 TB RAW (512 TB usable) by purchasing upgrade kits.

To scale out in terms of capacity, simply add up to 3 capacity upgrade kits to each couplet for a maximum of 192 TB RAW capacity (128 TB usable) per couplet. A fully configured couplet with 3 capacity upgrade kits, can be managed as a single file system of up to 192 TB RAW capacity (128 TB usable), however to optimize performance within a couplet, capacity usage should be balanced across both nodes within a couplet.

To scale-out in terms of performance, add in one more HP StoreOnce B6200 48 TB system and again scale up by adding capacity upgrade kits. This gives you a maximum configuration of two fully configured HP StoreOnce B6200 48 TB system of two couplets with a total capacity of 384 TB RAW capacity (256 TB usable) in a single rack.

To scale-out to 768 TB RAW (512 TB usable) purchase a second rack with expansion switch assembly, and populate as before.

In mid 2014, customers will also have the ability to add StoreOnce 6500 couplet(s) to and existing B6200 couplet(s) utilizing available mixed cluster support.

See ordering information for details.

*To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following Recommended Configuration Guidelines

Please refer to the latest Concepts and Configuration Guide for more information:

http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

HP StoreOnce deduplication - extend data retention on disk

Data deduplication is a method of reducing storage needs by eliminating redundant data so that over time only one unique instance of the data is actually retained on disk. As a result, typically 20x more backup data can be retained in the same disk footprint.

Adding data deduplication to disk-based backup delivers a number of benefits:

- A cost effective way of keeping your backup data on disk for a number of weeks or even months. More efficient use of disk space effectively reduces the cost-per-gigabyte of storage and the need to purchase more disk capacity.
- Making file restores fast and easy from multiple available recovery points. By extending data retention periods on disk, your backup data is more accessible for longer periods of time, before archiving to tape. In this way, lost or corrupt files can be quickly and easily restored from backups

taken over a longer time span.

- Ultimately, data deduplication makes the replication of backup data over lower bandwidth WAN links financially viable (providing offsite protection for backup data) as only changed data is sent across the connection to a second device (either a second identical device or one that comes from this product family).

HP StoreOnce deduplication

HP StoreOnce deduplication software simplifies the deployment of deduplication technology across IT infrastructures. With explosive data growth driving IT sprawl, deduplication technology is quickly becoming a requirement for many customers to help reduce the capacity required to store information.

Traditional deduplication technologies tend to approach the problem from a fragmented perspective and this results in multiple deduplication methodologies being deployed adding to the management complexity of the infrastructure.

HP StoreOnce is different; as a next generation deduplication architecture, it is not sold as standalone software, but rather is a portable engine that can be consistently embedded in multiple products, eliminating the complexity of first generation deduplication. HP StoreOnce uses patented innovation and features designed by HP Labs to maximize backup and restore performance while minimizing management and hardware overhead.

How it works

Deduplication works by examining the data stream as it arrives at the storage appliance, checking for blocks of data that are identical and eliminating redundant copies. If duplicate data is found, a pointer is established to the original set of data as opposed to actually storing the duplicate blocks, removing or "deduplicating" the redundant blocks from the volume. The key here is that the data deduplication is being done at the block level to remove far more redundant data than deduplication done at the file level where only duplicate files are removed.

Data deduplication is especially powerful when it is applied to backup, since most backup data sets have a great deal of redundancy. The amount of redundancy will depend on the type of data being backed up, the backup methodology and the length of time the data is retained.

Example. Backing up a large customer database that gets updated with new orders throughout the day. With the typical backup application you would normally have to back up, and store the entire database. Even incremental backups will result in storing the full database to disk once again, taking up increasing amounts of disk space with almost identical backup data sets. With block-level deduplication, you can back up the same database to the device on two successive nights and, due to its ability to identify redundant blocks, only the blocks that have changed will be stored. All the redundant data will have pointers established.

The HP approach to deduplication

HP StoreOnce deduplication software simplifies the deployment of deduplication technology across IT infrastructures. With explosive data growth driving IT sprawl, deduplication technology is quickly becoming a requirement for many customers to help reduce the capacity required to store information.

Traditional deduplication technologies tend to approach the problem from a fragmented perspective and this results in multiple deduplication methodologies being deployed adding to the management complexity of the infrastructure. HP StoreOnce is different; as a next generation deduplication architecture, it is not sold as standalone software, but rather is a portable engine that can be consistently embedded in multiple products, eliminating the complexity of first generation deduplication. HP StoreOnce uses patented algorithms and features designed by HP Labs to maximize backup and restore

performance while minimizing management and hardware overhead.

HP Backup systems feature HP StoreOnce deduplication which uses an optimized in-line process to provide enhanced performance and is architected to be portable to other HP products in the future.

NOTE: The HP VLS product family uses a post-process, object-level data deduplication scheme for increased performance in large scale Fibre Channel deployments. StoreOnce and VLS deduplication platforms are not compatible. They use different technologies that cannot be used together.

For more information on HP StoreOnce deduplication refer to the white papers available on http://www.hp.com/go/StoreOnce

What deduplication ratio can I expect?
The actual data deduplication ratio you can expect will depend on a number of factors including: the type of data, the backup methodology used, and the length of time you retain your data. However, assuming standard business data mix and extended on disk retention (periods of more than 12 weeks) you could expect to see 20:1 deduplication ratio assuming a weekly full and daily incremental backup model

Is there likely to be any impact on performance?
The actual performance achieved using an HP StoreOnce Backup system is dependent upon a number of factors including data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as backup and deduplication, housekeeping, and replication. In general, the more process steps, the longer it may take. Consequently, when compared to back up without deduplication, a reduced amount of data will be backed up AND replicated within the same timeframe.

For help with choosing the most appropriate HP StoreOnce Backup configuration for your specific environment, we recommend you talk to your HP partner or sales advisor about using the HP storage Sizing Tool which can be downloaded from the Downloads section of www.hp.com/go/StoreOnceSizer

Making use of the backup systems ability to run multiple backups in parallel can substantially improve aggregate throughput. This and a number of other best practices can help you to optimize the performance of a StoreOnce Backup System.

For more information, refer to:

Please refer to the latest Concepts and Configuration Guide for more information:

http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

Data replication - for network efficient DR

Data replication is the process of making a duplicate copy of a data set across a network to a "target site". It is generally used to transmit backup data sets off-site to provide disaster recovery (DR) protection in the event of catastrophic data loss at the "source site"

Replicating large volumes of data backup over a typical WAN is expensive. However, today's products with data deduplication have made it possible to replicate data over lower bandwidth links for a more cost-effective, network efficient replication solution that provides a practical disaster recovery solution and an ideal solution for centralizing the backup of remote offices.

Data deduplication shrinks the amount of backup data that needs to be replicated from the source HP appliance, and as a result significantly reduces replication bandwidth requirements. Once a replica of the data backup set has been created on a remote HP target appliance all that is required to keep the replica

identical to the source is the automatic, periodic copying and movement of the new data segments which are created during each backup. With such small amounts of data being transmitted asynchronously, lower bandwidth networks offer sufficient performance and a much lower cost solution.

NOTE: Replication/copy of data can be configured between all StoreOnce appliances and virtual appliances. Replication cannot be configured between HP StoreOnce and HP VLS appliances.

HP's data replication feature includes replication bandwidth limiting functionality, restricting the amount of bandwidth being used when replicating data for even more network-efficient replication. Without replication bandwidth limiting, a replication job could use as much bandwidth as is available, potentially making other network activities unresponsive. Replication bandwidth limiting is customer configurable at the appliance level via the graphical user interface and is set as a percentage of the available network bandwidth.

Replication Licensing:
HP delivers replication by license, either as a standalone replication solution, or as part of the HP StoreOnce Catalyst licensing (see the following section below). With HP StoreOnce Backup, replication is licensed by VTL/NAS target, this means that with one replication license:

1 source appliance can replicate to a single HP StoreOnce VSA*

8 source appliances can replicate to a single HP StoreOnce 2700
24 source appliances can replicate to a single HP StoreOnce 4500
50 source appliances can replicate to a single HP StoreOnce 4700
50 source appliances can replicate to a single HP StoreOnce 4900
96 source appliances can replicate to a single HP StoreOnce 6500 120 TB target

***NOTE:** The StoreOnce VSA license enables use as a replication target and does not require an additional replication license. For the HP StoreOnce 6500 a set of four replication licenses will enable up to 384 source appliances to replicate to the 4 couplets of a fully populated 6500. For the HP StoreOnce 6500 a set of four replication licenses will enable up to 384 source appliances to replicate to the 4 couplets of a fully populated 6500.

Replication by target makes replication from multiple remote sites to a single data center a more cost effective option with StoreOnce than with competitor products.

Once licensing has been applied, configuring and using replication is made straightforward by the graphical user interface and configuration wizard on the HP appliance. For the 6500, replication licensing requirements grow as you system grows.

NOTE: if using your StoreOnce Backup for both VTL/NAS and StoreOnce Catalyst targets, additional licensing may be required as described in the following section.

Also refer to the 'Related Options - Replication licenses' section of these QuickSpecs for more details. Electronic licenses are available and delivered via http://www.webware.hp.com

HP StoreOnce Catalyst - seamless data movement across the enterprise

HP StoreOnce Catalyst brings to fruition the HP StoreOnce vision of seamless movement of deduplicated data across the enterprise. This is enabled by the single, integrated enterprise-wide deduplication algorithm. This means that you can benefit from:

- Simplified management of data movement from a single pane of glass: tighter integration with your backup application to centrally manage file replication across the enterprise.
- Seamless control across complex environments: supporting a range of flexible configurations that

enable the concurrent movement of data from one site to multiple sites, and the ability to cascade data around the enterprise (sometimes referred to as multi-hop).

- Enhance performance: distributed deduplication processing using StoreOnce Catalyst stores on the StoreOnce Backup systems and on multiple servers can optimize loading and utilization of backup hardware, network links and backup servers for faster deduplication and backup performance.
- Faster time to backup to meet shrinking backup windows: up to 139 TB/hour *aggregate throughput, 4x faster than backup to a NAS target

*Actual performance is dependent upon configuration data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.

HP StoreOnce Catalyst is available by electronic license for customers of any of the latest HP StoreOnce Backup systems with a wide range of backup applications

For StoreOnce Catalyst implementation with StoreOnce 2700, 4500, 4700 and 4900:
Each Catalyst-enabled product requires a StoreOnce Catalyst license per base unit that is to be used as a target for Catalyst backups or copy operations.

For StoreOnce Catalyst implementations with 6500:
Each Catalyst-enabled couplet requires a StoreOnce Catalyst license, for a fully configured 6500 up to 4 Catalyst licenses will be required.

NOTE: Catalyst Stores can be created on the StoreOnce VSA without an additional license. The capability to create Catalyst Stores and execute Catalyst Copy operations is included in the StoreOnce VSA license. Note that, with Catalyst licenses, additional StoreOnce replication licenses may be required if you also intend to replicate between VTL and/or NAS targets in addition to Catalyst targets. In this case, a replication license is required for each target backup system, or couplet (6500) - no VTL/NAS replication license is required for source systems.

Electronic licenses are available and delivered via http://www.webware.hp.com

It is possible for existing StoreOnce customers to convert existing StoreOnce D2D products so that they can then employ StoreOnce Catalyst. However, the conversion process is a destructive upgrade and will also reduce the usable capacity available. Therefore caution is recommended when deciding to convert existing products. For further information please refer to conversion documentation posted on: www.hp.com/support/manuals

HP StoreOnce Enterprise Manager

HP StoreOnce Enterprise Manager (SEM) is a centralized management console to analyze up to 400 physical and virtual StoreOnce devices across multiple sites. It provides advanced monitoring, reporting, forecasting and trend analysis in NAS, VTL, and StoreOnce Catalyst environments and integrates with the StoreOnce GUI for single pane-of-glass management - for both physical appliances and the StoreOnce VSA.

In particular, StoreOnce VSA customers can benefit from centralized deployment of StoreOnce VSA through SEM remotely.

Specifically, SEM provides granular reporting and trends analysis of vital parameters such as disk capacity utilization, deduplication ratios, and performance and helps customers plan ahead by providing forecasts of disk usage and replication duration. All reports and graphs can be exported in CSV or PNG formats for futher analysis. Users can also schedule e-mail reports for alerts and notifications, such as when pre-set capacity thresholds are crossed. SEM is supported on 64 bit machines only.StoreOnce Enterprise Manager software is available for download from the HP

Features and Benefits

StoreOnce Software Depot Kiosk www.software.hp.com/kiosk.

Login: STOREONCE_KIOSK

Password: STOREONCEAPPS

In order to benefit from StoreOnce Enterprise Manager, StoreOnce Backup systems require the latest firmware, which can be obtained via a free firmware upgrade by following the "Support & Drivers" link on www.hp.com/go/storeonce or by following the "HP Support & Drivers" link from: www.hp.com

The flexibility of virtual machines - HP StoreOnce VSA

The HP StoreOnce VSA extends the StoreOnce portfolio with the agility and flexibility of StoreOnce delivered as a VMware virtual appliance, removing the need to install dedicated hardware.

Now you can benefit from StoreOnce capability by installing HP StoreOnce VSA into your VMware environment, providing a cost-effective backup target with all the benefits of StoreOnce.

StoreOnce VSA can deliver a flexible backup target for service providers and organizations with an ITaaS (IT as a service) infrastructure; rapidly stand-up the StoreOnce VSA and retire it again when the backup capacity is no longer needed to regain the resources. In multi-tenant environments, one StoreOnce VSA per tenant provides security of backup data between tenants.

About StoreOnce VSA
Packaged as a VMware virtual appliance, the StoreOnce VSA is available to license up to 10 TB - configured in 1 TB increments. It is enabled by a three year license to use (LTU).

The StoreOnce VSA is supported to run on all bare metal versions of VMware 5.x. Once installed and powered on, it is used by backup and recovery applications as a backup target, in the same way as physical StoreOnce appliances and delivers the following benefits:

- Exceptional value: install into existing vSphere environment for software defined deduplicating backup storage. The StoreOnce VSA license to use (LTU) includes HP StoreOnce Catalyst capability, for seamless data movement across the enterprise, and Replication capability to enable it to be a replication target and 3 years HP support for peace of mind.
- Easy to manage - locally: StoreOnce VSA can be managed using a local graphical interface (GUI) or the StoreOnce Enterprise Manager application. The local GUI is the same, well proven, interface used to manage the HP StoreOnce Backup appliances and provides a consistent experience for enterprise-wide deployments.
- Easy to manage - across the enterprise: for users with multiple StoreOnce appliances and multiple StoreOnce VSAs, StoreOnce Enterprise Manager (SEM) enables centralized management. Through the centralized StoreOnce Enterprise Manager up to 400 StoreOnce appliances and StoreOnce virtual appliances can be managed across multiple sites. As well as advanced monitoring, reporting, forecasting and trend analysis, HP StoreOnce Enterprise Manager can be used to deploy and configure StoreOnce VSA appliances.
- Rapid installation: Installation and configuration is simple using StoreOnce Enterprise Manager guiding the user through the necessary installation steps. For users without access to StoreOnce Enterprise Manager, installation using the vSphere client is possible.

HP StoreOnce VSA can be configured in Ethernet environments with StoreOnce Catalyst, VTL and CIFS backup targets. For users wanting to integrate with a Fibre Channel environment a physical StoreOnce Backup appliance should be used. Users with backup and recovery applications that write to NFS interfaces should choose a physical StoreOnce Backup appliance.

Features and Benefits

Support for VMware advanced features: StoreOnce VSA is supported for use with VMware VMotion and VMware Storage VMotion. It is not supported for use with the following VMware features: VMware High Availability (HA), VMware Fault Tolerance (FT), VMware Distributed Resource Scheduler (DRS), VMware Distributer Power Manager (DPM), VMware Site Recovery Manager (SRM)

How to buy:
The HP StoreOnce VSA is purchased with a three year license. One license is required per StoreOnce VSA regardless of the capacity (max 10TB) configured. At the end of the three year term, the license to use (LTU) must be renewed for continued use. Licenses are available in eDelivery format for fast fulfillment or, for users that want the virtual appliance image on physical media it can be delivered on a DVD. The StoreOnce VSA license enables user to create Catalyst Stores and act as a replication target.
Whilst the StoreOnce VSA license enables users to create Catalyst Stores and act as a replication target, configuration of the Catalyst Stores and Replication Targets is covered in the optional configuration services.

- Data Replication Service: http://dccappshares01.austin.hp.com/SALES_LIBRARY-PRO/CONCENTRA/Autofed%20Content/UCM/UCM-Concentra/Pub/ucm4AA4-3945ENW/4AA4-3945ENW.pdf
- Catalyst Solution service: http://dccappshares01.austin.hp.com/SALES_LIBRARY-PRO/CONCENTRA/Autofed%20Content/UCM/UCM-Concentra/Pub/ucm4AA4-4489ENW/4AA4-4489ENW.pdf

NOTE: The StoreOnce VSA is fully functional from its first installation. This instant on period lasts up to 60 days. In that 60 days a license key should be added. If no license key is added within 60 days of start up all backup targets become read-only. Once a license key is added full functionality is returned.

Choosing the best backup target for data protection - VTL, NAS or StoreOnce Catalyst

Most HP StoreOnce Backup systems are capable of supporting VTL, NAS (NFS & CIFS) and StoreOnce Catalyst targets for backup applications on a single platform. The HP StoreOnce VSA provides support for StoreOnce Catalyst , VTL (over iSCSI) and CIFS backup targets only.

StoreOnce Catalyst targets are recommended for more complex data protection environments were flexibility of data movement is required. StoreOnce Catalyst can also enable distributed deduplication processing, balancing the load for optimum server, backup appliance and network.

VTL targets appear to the backup application as physical tape devices, with backup and recovery jobs managed in the same manner as with a physical tape device. The primary difference being that there is no physical media that must be managed. They are recommended for customers in Fibre Channel environments, or where a continued investment in tape hardware and software is a key consideration.

NAS appliances provide general disk file share and protection. HP StoreOnce Backup is designed as target storage for backup applications that need rapid restores and reduced backup windows. The device will present standard NAS protocols over the front-end 10GbE ports of the device, thus providing a LAN backup target (with deduplication) that can be used transparently with qualified enterprise backup application. Compared with general purpose NAS appliances, HP StoreOnce Backup uniquely offers:

- Easier setup and administration of backup
- Data deduplication, allowing more backup data to be retained on disk for longer periods
- Data replication for cost-effective, off-site storage

NAS targets are recommended for customers in non-tape environments. NAS targets consist of one or more file shares that appear to the backup application as standard CIFS or NFS shares, while still

supporting data deduplication and replication. The StoreOnce Backup systems should not be used for general purpose NAS operations such as file sharing.

Enhanced Data Security- HP StoreOnce Security Package

The HP StoreOnce Security Package delivers Data-At-Rest encryption solution and secure Data Shredding features for data privacy, confidentiality, and integrity of your critical business data while supporting compliance requirements.

HP StoreOnce Data-at-Rest encryption feature is a software-based solution which provides protection against unauthorized access to data through a stolen, discarded or replaced disk.

- Encryption occurs after data has been deduplicated and prior to writing the data onto disk
- " Encryption is enabled on a per store basis (StoreOnce Catalyst or VTL targets only)
- Meets compliance needs using industry standard Advanced Encryption Standard (AES)-256 encryption algorithm
- Standard FIPS 140-2 level 1 capable
- Local Key Management is included with 1 key per store and the ability to backup and restore keys

HP StoreOnce Secure Erase feature protects against unauthorized recovery of deleted data by allowing customers to securely and permanently shred confidential data.

- Secure Erase can be carried out on all data backed up to a VTL, NAS or StoreOnce Catalyst Store
- The HP StoreOnce Secure Erase feature meets industry standards of NIST SP 800-88

*NOTE: HP StoreOnce Security Pack is available to license - you will require 1 license for each 2700, 4500, 4700 and 4900 product, and 1 license per couplet for the 6500

Highly Available data protection appliances

HP StoreOnce Backup systems are designed to deliver utmost reliability, with RAID 6 implemented across the product family (with RAID 5 on StoreOnce 2700 Backup systems). However, the highest performance member of the HP StoreOnce family, the StoreOnce 6500 offers additional protection for the multi-node configuration.

HP StoreOnce 6500 is designed with no single point of hardware failure. The hardware of the HP StoreOnce 6500's couplet is resilient to any one component failing. This means the following high availability features:

- Autonomic Restart and node failover
- RAID storage, with RAID6 as the minimum redundancy level (so each RAID set can survive a double disk failure)
- The front-end controllers (nodes) within a couplet are configured in failover mode so that if one controller fails all critical non-replaceable aspects of that controller are transparently moved to another controller and the failed controller is disabled.
- Dual storage controllers (RAID and JBOD), with cache mirroring between the RAID controllers (so that if a controller fails the data is preserved and is still written to media by the other controller)
- Dual paths to the disk drives
- 8 hot spare drives included within each couplet in the event of a disk failure
- Power failure protection for all caching within the storage
- Dual power supplies, such that the hardware will continue operating at full performance if one power supply is offline.
- Redundant fans, such that the hardware will continue operating at full performance if one fan is offline

Features and Benefits

- Mirrored system disks in each controller (node) to store the device operating system and software
- Front-end high availability (dual fabric support): each controller will have at least two front-end ports per port type to support the customer's external LAN/SAN fabrics. Thus if any external fabric fails there is still full access to every node in the device.
- Hot add additional storage or server nodes without scheduled downtime.
- A single GUI/CLI interface is presented from any one node in the system, if that controller fails then the GUI will automatically move to a different controller whilst still being presented at the same network address.

Models

For help with choosing the most appropriate StoreOnce Backup systems for your specific environment, we recommend you talk to your HP partner or sales advisor about using the HP Storage Sizing Tool which can be downloaded from the Downloads section of www.hp.com/go/d2dsizer

NOTE: For previous versions of HP StoreOnce Backup models please refer to:

http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

NOTE: * - In all cases, actual performance is dependent upon configuration, data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.

To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following Recommended Configuration guidelines.

Please refer to the latest Concepts and Configuration Guide for more information:

http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

HP StoreOnce 6500 Backup

HP StoreOnce 6500 takes HP StoreOnce to the enterprise, providing disk based backup with deduplication for cost effective, longer term on site data retention and off site disaster recovery. The highest performance HP StoreOnce Backup system, these highly scale-out solutions offer from 72 TB to 1728 TB of usable capacity (120 to 2240 TB raw) and industry-leading aggregate speeds of up to 139 TB/hr* with StoreOnce Catalyst to match enterprise performance requirements and meet ever shrinking backup windows.

HP StoreOnce 4900 Backup

HP StoreOnce 4900 delivers cost-effective, scalable disk-based backup with deduplication for longer term on-site data retention and off-site disaster recovery for large data centers or regional offices. It also provides a replication target device for up to 50 remote or branch offices. The StoreOnce 4900 delivers a scalable 7U to 12U solution from 36 TB to 432 TB of usable capacity (60 to 560 TB RAW) and speeds of up to 22TB/hour* with HP StoreOnce Catalyst for protection of over 74 TBs* of data in a 4-hour window.

NOTE:
The StoreOnce 4900 can only be installed in racks which provide a distance from the front mounting-rail of the rack to the rear rack-face (the vertical rack surface onto which the rear doors close, the depth of the doors themselves should not be included) of at least 920mm to allow sufficient clearance at the rear for cabling and to allow the hot-swapping of fan modules, PSU modules and I/O modules. Additionally, 35mm of space is required between the front mounting-rail and the nearest point on the inside surface of the front door of the rack to provide sufficient space for the front panels of the system components when the front door is closed.

Features and Benefits

HP StoreOnce 4700 Backup	HP StoreOnce 4700 delivers cost-effective, scalable disk-based backup with deduplication for longer term on-site data retention and off-site disaster recovery for larger data centers or regional offices. It also provides a replication target device for up to 50 remote or branch offices. The StoreOnce 4700 delivers a scalable 4U to 18U solution from 20 TB to 160 TB of usable capacity (24 TB to 192 TB RAW) and speeds of up to 22TB/hour* with HP StoreOnce Catalyst for protection of over 60 TB* of data in a 4-hour window.
HP StoreOnce 4500 Backup	HP StoreOnce 4500 is designed for small to midsized data centers and as a replication target device for up to 24 remote and branch offices. The StoreOnce 4500 delivers a scalable 2U to 4U solution from 16 to 36 TB of usable capacity (24 to 48 TB RAW) using a simple and cost effective capacity upgrade. Meet backup windows with speeds of up to 9.9 TB/hour* using HP StoreOnce Catalyst for protection of up to 23 TB* of data in a 4-hour window.
HP StoreOnce 2700 Backup	HP StoreOnce 2700 delivers entry-level disk-based backup and disaster recovery that's ideal for smaller remote or branch offices and data centers. This 1U Backup system offers 5.5 TB of usable capacity (8 TB RAW) and speeds of up to 3.7 TB/hour* with StoreOnce Catalyst, allowing a full 11 TB* of backup to be completed in just 4 hours.
HP StoreOnce VSA 10 TB Backup	HP StoreOnce VSA delivers the StoreOnce features in a VMware virtual appliance that's ideal for service provider and other highly virtualized environments as well as small and remote or branch offices. It offers from 1 TB to 10 TB of usable capacity (configured in 1 TB increments) and speeds of up to 0.5 TB/hour* with StoreOnce Catalyst, allowing 1 TB of data to be protected in just 2 hours. The StoreOnce VSA license enables the use of StoreOnce Catalyst, VTL and NAS Replication and includes three years of HP support.

Compatibility

HP extensive compatibility testing program assures that your HP Backup Systems work with leading servers, operating systems, and backup applications, including those not manufactured by HP.

Server Compatibility

HP StoreOnce Backup systems are supported on servers that use Microsoft Windows or Linux operating systems, including HP ProLiant, HP Integrity Servers and a variety of third-party servers.

For compatibility details on specific servers and the latest hardware compatibility information, please refer to: http://www.hp.com/go/ebs

OS Support

HP StoreOnce Backup systems are supported with Microsoft Windows, Linux, HP-UX and Solaris operating systems.

For more details, refer to our website for the latest information: http://www.hp.com/go/ebs

Software Support

StoreOnce Catalyst is licensed feature. It is supported by HP Data Protector, Symanted NetBackup (via a HP OST plugin), Symantec Backup Exec (via a HP OST plugin), Oracle RMAN (via a HP plugin) and BridgeHead Software.

For details of specific backup application compatibility, refer to our website for the latest information: http://www.hp.com/go/ebs

Network Compatibility

For the best performance, HP StoreOnce 4500, 4700, 4900 and 6500 Backup systems should be connected to the servers they protect via a 10Gb Ethernet network. They are supported on all 10Gb Ethernet network interface cards (NICs) and switches, dependent on product. 1Gb Ethernet network connections are also supported for sites without 10Gb Ethernet networks (with reduced performance)

HP StoreOnce Backup systems are also supported on 100 base-T Ethernet networks, for connection for the Web GUI and CLI access, such as a management network in a Data Centre.

This product is not supported on networks using slower Ethernet technology.

SAN Compatibility

HP StoreOnce Backup systems support a variety of Fibre Channel switches and HBAs.

For more details of SAN compatibility, refer to our website for the latest information: http://www.hp.com/go/ebs

Tape compatibility migrating data to Tape

HP StoreOnce Backup systems are an excellent solution for regular and daily backup with data deduplication allowing more data to be retained on disk for longer, and enabling network-efficient data replication to deliver a cost-effective off-site disaster recovery solution.

Using the device should enable a significant reduction in the amount of data stored on physical tape, so that for example, there is no longer any need to store daily incremental backups on tape. However, HP still recommends periodic off-load to tape as the most cost-effective, energy efficient and robust solution for:

- Long-term archival of data to meet regulatory requirements
- Long-term archival of rich media for repurposing (for example in media and entertainment)
- Or off-site storage for disaster recovery where data replication is not an option

HP StoreOnce Backup systems do not support direct attach to tape. However, there are two methods

Compatibility

available to migrate data to tape:

For highest performance, create a separate physical tape backup. This uses the backup application to create a completely separate tape backup from the server to a physical tape drive or library in parallel to the StoreOnce disk backup. However, this will require the user to periodically manage two separate backup processes (StoreOnce on a daily basis, and both StoreOnce and Tape where archival is being prepared).

For a straight-forward and easier to manage solution, and where performance is less of an issue, use backup application copy. This uses the backup application to copy cartridges or NAS file shares that have been backed up to the target device to a physical tape drive or library that is connected elsewhere in the storage network either directly connected to a media server or on a Fibre Channel SAN. This method may have a performance impact, as the data has to be re-assembled on the backup system for copy and performance depends on the number of streams read/copied in parallel.

Capacity reporting

The StoreOnce appliances and StoreOnce VSA report capacity using decimal bytes. For StoreOnce reporting, 1KB = 1,000bytes, 1MB = 1,000KB and so on. This requires care when translating backup capacity between the StoreOnce products and other products that use binary bytes for capacity reporting. Some backup and recovery software reports capacity using the formula 1KB = 1,024bytes. For StoreOnce VSA care should be taken when converting capacities between VMware reporting and StoreOnce reporting. A 1TB VMware vDisk is 1,0244 bytes StoreOnce reports 1TB as 1,0004 bytes. For the hard drives used in the StoreOnce appliances, 1 GB = 1 billion bytes. Actual formatted capacity is less.

Service and Support, HP Care Pack, and Warranty Information

Warranty and Services Included with the Product

Hewlett-Packard provides a 1 year parts exchange, 1 year labor, 1 year on site, normal business hours, next business day response for StoreOnce 4500, StoreOnce 4700, StoreOnce 4900 and StoreOnce 6500 Backup systems, plus 9x5 phone support for the duration of the warranty.

The StoreOnce 2700 includes a1-year, next-day, parts exchange, limited warranty for the HP plus 9x5 phone support for the duration of the warranty.

The StoreOnce VSA includes 3 years 9x5 phone support.
A range of Care Packs are described below that can be purchased to extend and/or upgrade the coverage of the included support.

For more information about HP's Global Limited Warranty and Technical Support, visit:
ftp://ftp.compaq.com/pub/products/storageworks/warranty/321708-408.pdf

Service and Support

Services to accelerate time to results

HP Storage Services bring you a rich portfolio of consulting and support services designed to add value to our core storage products and solutions. We have the know-how and experience to put storage technology to work for you. We work closely with you as your strategic partner, leveraging our full services portfolio to make sure that everything works to optimize your enterprise.
Choose from services aligned to our storage product offerings and lifecycle. From mission-critical onsite services to innovative web-based remote support, you choose the precise level of attention and support your business demands.

Discover, plan, and design

Choose from a rich portfolio of services to make the most of HP StoreOnce Storage, so you can efficiently and affordably consolidate, manage, and extract value from unstructured data.

Start here to understand your data protection options. Next, develop a methodical plan and design the optimal HP StoreOnce Storage solution that addresses your unique technology requirements.

HP Backup Recovery Efficiency Analysis - Assessment of how efficiently backup components are being used as the amount of data to be backed up continues to grow exponentially via analysis intelligence and a snapshot of your current backup environment. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8490ENW.pdf

HP Backup Recovery Impact Analysis - Focus placed on service requirements and design as the key to success for gaining a clear understanding of the role of increasingly diverse data protection strategies. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-1175ENW.pdf

HP Backup Recovery Modernization - Initial discovery, interviews, reference architecture design, proposal content development, vendor grading, and final recommendations carried out so as to require minimal resources and locations on your part. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-1199ENW.pdf

Deploy and integrate

Implement HP StoreOnce Storage correctly-right from the start-so you can count on reduced risk and accelerated deployment, while implementing a best-practice configuration from day one. Then move on to proactively leverage products, tools, and technology to avoid problems and optimize performance. In this

way, you get the most out of your HP StoreOnce Storage investment, as you keep your staff certified through project-based or residency services.

Installation of StoreOnce VSA and all aspects of the VMware environment and are a customer responsibility. To configure StoreOnce VSA to act as a replication target or to host Catalyst Stores the appropriate service is required. The HP StoreOnce Data Replication Solution Service is required if the StoreOnce VSA is to act as a replication target. The HP StoreOnce Catalyst Solution Service is required if the StoreOnce VSA is to host Catalyst Stores and use Catalyst Copies.

HP StoreOnce Data Replication Solution Service - Three levels of service to deliver the right level of business continuity that enables you to easily manage disaster recovery while providing data replication across distances with HP StoreOnce Storage. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3945ENW.pdf

HP StoreOnce Catalyst Solution Service - Configuration of the best possible performance for HP StoreOnce Catalyst software environments with your choice of three levels of service, based on the complexity of the environment and the level of service desired.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-4489ENN.pdf

HP StoreOnce Health Check - Proactive review of your HP StoreOnce Storage solution or other HP deduplication systems, including a review of operational, capacity, and performance data so you can rest assured that everything is operating effectively. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3821ENN.pdf

HP Storage Data Migration Services - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network or network attached storage environment and using innovative software to help you migrate to HP storage quickly and efficiently.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-0774ENW.pdf

HP Storage and Data Consultant Residency Service - Strategic augmentation of your current environment with HP resources who become your trusted advisor to provide answers that are right for your storage and backup environment.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-9481ENW.pdf

HP Proactive Select - A flexible way to purchase services to fit your environment with an extensive menu of HP Proactive Select event and technical services, such as onsite firmware upgrades, health checks, assessments, and education.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf

Operate and support

Choose the right support to maximize uptime, free up your resources, and achieve improved value-as you get the most out of the existing IT assets while accelerating time-to-revenue.
HP Proactive Care 24x7 - Hardware and software support services designed specifically for your technology with rapid access to Advanced Solution Center Specialists plus firmware and software management and best practice advice
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf

HP Proactive Care Personalized Support - An option-if you have HP Proactive Care- to bring increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects.

Service and Support, HP Care Pack, and Warranty Information

http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3446ENW.pdf

HP Support Plus 24 - Support for environments where proactive help from HP is not required, with 24x7 hardware and software support onsite that includes third-party support with a maximum four-hour onsite response. http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf

HP Education Services - Comprehensive training for new, as well as experienced, storage administrators designed to expand your skills and keep you up to speed with the latest storage and virtualization technology from HP Storage. http://education.hp.com/curr-storsan.htm

Optimized Care- delivers best performance and stability through deployment and proactive management practices

Optimized Care- delivers best performance and stability through deployment and proactive management practices

- **HP Proactive Care 3 year, 6 hour CTR, 80 HP Proactive Select credits first year (covers 8 days ASM)**

Standard Care-maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support

Standard Care-maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support

- **HP Proactive Care 3 year, 4hr, 24x7, 80 HP Proactive Select credits first year (covers 8 days ASM)**

Basic Care-Minimum recommended support

Basic Care-Minimum recommended support

- **HP Proactive Care 3 year, 4hr, 24x7, 30 HP Proactive Select credits (1 day per year)**

Remote Support Automation

HP Insight Remote Support-Available at no additional cost to all warranty, HP Care Pack Service and service agreement customers, uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis and problem resolution.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-4676ENW.pdf

http://h18004.www1.hp.com/products/servers/management/insight-remote-support/overview.html

For more information
www.hp.com/services/storage
To learn more on HP Storage Services, please contact your HP sales representative or HP Authorized Channel Partner

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 www.hp.com/go/lookuptool

HP Care Pack Flex Install Startup SKU & option bands

Service and Support, HP Care Pack, and Warranty Information

6500 StoreOnce Backup System

		Up to 4-Couplets, Initial Installation	Add-On Couplet without #0D1	Add-On 2 or 3 Couplets with Expansion Rack	Capacity Upgrade
		Same Site	Same Site	Same Site	Same Site
		(Quote qty one for each additional site)			
Part	**Description**	**Service SKU**			
BB896A	HP StoreOnce 6500 120TB Backup Couplet for Initial Rack	HA124A1#5RZ			
BB897A	HP StoreOnce 6500 120TB Backup Couplet for Existing Racks		HA124A1#5S0	HA124A1#5S1	
BB900A	HP StoreOnce 6500 120TB Backup Couplet for Additional Racks				
BB899A	HP StoreOnce 6500 88TB Capacity Upgrade Kit				HA124A1#5S2

Advanced start-up services - HP StoreOnce Catalyst Solution and Replication Solution Services . These are mandatory services included when the appropriate licenses are ordered. They provide a configuration and verification service in the Customer environment to optimise the benefits of deploying Replication and\or Catalyst functionality

HP StoreOnce Replication Solution Service Sales Brief

- http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-4540ENW.pdf

HP StoreOnce Replication Solution Service data sheet

- http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-3945ENW.pdf

HP StoreOnce Catalyst Solution Service Sales Brief

- http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-4480ENW.pdf

HP StoreOnce Catalyst Solution Service data sheet (B6200 only)

- http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-4489ENW.pdf

HP Care Pack Flex Advanced Install Startup SKU & option bands

HP 6500StoreOnce Backup System

Service and Support, HP Care Pack, and Warranty Information

		Level 1	Level 2	Scope of work
		Same Site (Quote qty one for each additional site)		
Related Licenses	**Description**	**Service SKU (level one required)**		
EJ026A/AE HP StoreOnce 6000 Replication LTU (EJ026A/AE)	Data Replication Service	HA124A1#58E	HA115A1#58F	HA115A1#58G
TC397AAE TC396AAE BB895A/AE HP StoreOnce 6000 Catalyst LTU (BB895A/AE)	Catalyst Service	HA124A1#5TY	HA115A1#5TZ	HA115A1#5U0

HP StoreOnce Rack Transition service - This service provides for the reracking of HP StoreOnce B6200 and 6500 products into a rack other than originally installed in. Per rack - HA124A1#5UK

HP StoreOnce Installation and Startup for single-node products; 2700, 4500, 4700, 4900 (Optional) -
First StoreOnce System - HA124A1 #55Q
Additional StoreOnce Systems on same site - HA124A1 #55R
Capacity upgrade (non #0D1) - HA113A1 #5KK

Per Event Service - HP StoreOnce System Health Check Service provides an assessment service for up to 2 StoreOnce Backup systems. Comparisons are made between the Customer set up and HP Best Practices and reports provided on how to improve the utilization of the StoreOnce product(s).

HP StoreOnce Health Check Service
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-3821ENW.pdf

	Care Pack	**Per Event**	**Contractual**
Description	**Service SKU**		
StoreOnce Backup System Health Check Service	HM006A1	HM006AE	HM006AC

Remote Support Tools **HP Insight Remote Support:** Count on proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis, and problem resolution, all available at no extra charge if you have an existing warranty, service agreement, or HP Care Pack Service with HP. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-4676ENW.pdf

Step 1 - Select an Appliance Configuration

The HP StoreOnce Backup Planning Guides help you select the correct options for power and connectivity for your data centre environment. It will also help plan for a successful and smooth installation.

Please refer to the latest Concepts and Configuration Guide for more information:
http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

NOTE: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new SKUs. For previous version of HP StoreOnce D2D Backup system please refer to:
http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

HP StoreOnce 6500 Series

	Part Number
HP StoreOnce 6500 120TB for Initial Rack	BB896A
HP StoreOnce 6500 Backup with 120 TB of raw disk storage **Contents:** HP 6500 Processing Nodes (2) HP 6500 Switch kit HP 6500 Storage Drawers (2)(each with 30* 4 TB HDDs) 4 x 0.5m Mini SAS cables 8 x 2m SAS-HD to Mini SAS cables 16 x Power cords (with IEC 320 C13 plug for Rack PDU) 1x Network Cable loom	
HP StoreOnce 6500 88TB Capacity Upgrade Kit	BB899A
HP StoreOnce 6500 88 TB upgrade kit, offering additional 88 TB of raw disk storage **Contents:** 22 * 4 TB HDDs HP 6500 88TB Capacity Upgrade License Entitlement Certificate	
HP StoreOnce 6500 120TB for Extra Racks	BB900A
HP StoreOnce 6500 Backup with 120 TB of raw disk storage **Contents:** HP 6500 Processing Nodes (2) HP 6500 Switch kit HP 6500 Storage Drawers (2) (each with 30* 4 TB HDDs) 4 x 0.5m Mini SAS cables 8 x 2m SAS-HD to Mini SAS cables 16 x Power cords (with IEC 320 C13 plug for Rack PDU) Rack interlink cables Cables for rack interlink	
HP StoreOnce B6200 to 6500 Interlink Kit*	BB902A

Configuration Information

Cables required to implement mixed cluster support between currently installed B6200 and 6500

*Available calendar mid 2014

HP StoreOnce 6500 120TB for Existing Rack BB897A

Contents:

HP 6500 Processing Nodes (2)
4 x 0.5m Mini SAS cables
8 x 2m SAS-HD to Mini SAS cables
16 x Power cords (with IEC 320 C13 plug for Rack PDU)

HP StoreOnce 4900 60TB Backup Base System BB903A

HP StoreOnce 4900 Backup with 60 TB of raw disk storage

Kit Contents:

HP 4900 Backup (15 x 4 TB disks)
Ethernet cable(Cat 5e) 3m (x2)
2 x Power cords (with IEC 320 C13 plug for Rack PDU)
Installation poster
HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4700 Backup BB879A

HP StoreOnce 4700 Backup with 24 TB of raw disk storage

Kit Contents:

HP 4700 Backup (includes 2 x 1TB OS disks)
HP 4700 Backup Storage Enclosure (12 x 2TB disks) (with 2m SAS Cable)
Ethernet cable(Cat 5e) 3m (x2)
4 x Power cords (with IEC 320 C13 plug for Rack PDU)
Installation poster
HP StoreOnce Documentation CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4500 Backup BB878A

HP StoreOnce 4500 Backup with 24 TB of raw disk storage

Kit Contents:

HP StoreOnce 4500 Backup system (12 x 2 TB disks)
Ethernet cable(Cat 5e) 3m (x2)
2 x Power cords (with IEC 320 C13 plug for Rack PDU)
Installation poster
HP StoreOnce Documentation CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4700 and 4500 Upgrade Kit BB881A

HP 4700 and 4500 Backup upgrade kit, D2600 base enclosure offering additional 24 TB of raw disk storage

Configuration Information

Kit Contents:

D2600 storage enclosure with 12 x 2 TB discs, redundant power supplied and fan modules.
Rack-mounting hardware kit
0.5m mini-SAS cable + 2m mini-SAS cable
Two AC power cords and two PDU interconnect cords
Entitlement certificate
Installation instructions
NOTE: Upgrade kit can be used with StoreOnce 4700 and 4500

HP StoreOnce 4900 60TB Drw/Cap Upg Kit BB904A

HP 4900 Backup drawer and capacity upgrade kit, D6000 base enclosure including additional 60 TB of raw disk storage

Kit Contents:

1 storage enclosure with 15 x 4 TB discs, redundant power supplied and fan modules.
Rack-mounting hardware kit
0.5m mini-SAS cable + 2m mini-SAS cable
Two AC power cords and two PDU interconnect cords
Entitlement certificate

HP StoreOnce 4900 44TB Cap Upgrade Kit BB908A

Contents:

11 x 4 TB disks and entitlement certificate

HP StoreOnce 2700 Backup BB877A

HP StoreOnce 2700 Backup with 8TB of disk storage

Kit Contents:

HP 2700Backup
4x 2 TB Hot swap hard drives
Ethernet cable(Cat 5e) 3m (x2)
Power cable (IEC 320 C13 Connector for Rack PDU)
Installation poster
HP StoreOnce Documentation CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

Select a Virtual Appliance Configuration

HP StoreOnce VSA 10 TB 3-year E-LTU TC458AAE

HP StoreOnce VSA to enable up to 10.0 TB of usable disk storage

Includes

StoreOnce Catalyst capability
Replication capability
Three (3) year HP support
Link to download virtual appliance image
Electronic (email) delivery of license key entitlement

HP StoreOnce VSA 10 TB 3-year LTU TC458A

Configuration Information

HP StoreOnce VSA to enable up to 10.0 TB of usable disk storage
Includes
StoreOnce Catalyst capability
Replication capability
Three (3) year HP support
DVD with virtual appliance image
Paper delivery of license key entitlement

Resource pre-requisites for HP StoreOnce VSA

HP StoreOnce VSA runs on bare metal VMware hypervisors that abstract and allocate processor, memory, storage and networking resources to StoreOnce VSA and other virtual machines. Therefore, to ensure that the StoreOnce VSA runs with acceptable level of performance, we recommend that it configured on systems with the following minimum virtual resources:

Configured capacity:	HDD forvdisksvdisks	Memory (min)	Processor (min)	NIC (min)
1-4 TB	at least 3 disks configured asRAID5 recommended	16GB vRAM	4 vCPUs	2 x 1GbE
5-10 TB	at least 3 disks configured asRAID5 recommended	32GB vRAM	4 vCPUs	2 x 1GbE

NOTE: StoreOnce VSA emulates VMware virtual machine hardware version 7. This defines the maximum supported resources which the StoreOnce VSA can use as:

- 8 x vCPUs
- 255GB vRAM
- 2 x vNICS (this is a StoreOnce defined maximum)

NOTE: It is recommended that the vdisks used to provide capacity for StoreOnce VSA is in a .vmdk format from a VMFS3 or VMFS5 datastore. NFS datastores are supported but careful consideration of the performance implications should be made before deployment. Raw disks are not supported to provide capacity for StoreOnce VSA.

NOTE: Installation will take a minimum of 20 minutes depending on the installation method used and the environment. The guided installation through StoreOnce Enterprise Manager may take longer than the manual installation using the vSphere Client. The time depends on the connection between StoreOnce Enterprise Manager and the target ESXi host. Other factors that determine the installation time are the storage used, the host platform and the storage capacity configured.

NOTE: If the VMware host has AMD CPUs some configuration is needed to run the StoreOnce VSA. It is necessary to create a single host cluster witht the EVC (Enhanced vMotion Compatibiity) mode set to AMD generation 3 or earlier.

NOTE: To meet performance requirements, your HP StoreOnce VSA implementation should be carefully planned according to your deployment. Please refer to: Recommended Configuration Guidelines
http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf

or Best Practices Guidelines for StoreOnce backup systems:
http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#

NOTE: Capacity upgrades are non-disruptive. Adding more memory and processor resources requires the StoreOnce VSA to be restarted so these upgrades should be done outside backup times.

The StoreOnce VSA requires significant disk I/O for backup and recovery operations. The number, type and configuration of hard disks that provide capacity for the vdisks is an important choice. The number of disks and the type of disk will significantly effect the I/O

Configuration Information

potential and consequently backup and recovery performance. Consideration should be given to the design of the DataStores used for the vdisks for the StoreOnce VSA and the DataStores used to provide vdisks for other guests on the hypervisor. Ideally, the physical HDDs used for vdisks for the StoreOnce VSA should be isolated from the physical HDDs for the vdisks for other guests. The underlying HDDs should at least be configured in a RAID5 set for protection, particularly if backup data copy/replication is not used.

It is also recommended that the effect of the resource consumption of the StoreOnce VSA on other virtual machines/applications running on the same pool of resources is assessed. This impact assessment should also consider any backup software components, running in virtual machines, which will require resources to execute backup and recovery jobs.

Step 2- Related Options

NOTE: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new part numbers. For previous version of HP StoreOnce D2D Backup system please refer to:

http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

Replication Licenses	HP StoreOnce 6500 Replication E-LTU	EJ026AAE
	HP StoreOnce 4900 Replication E-LTU	BB905AAE
	HP StoreOnce 4700 Replication E-LTU	BB886AAE
	HP StoreOnce 4500 Replication E-LTU	BB885AAE
	HP StoreOnce 2700 Replication E-LTU	BB884AAE
	HP StoreOnce 6500Replication LTU	EJ026A
	HP StoreOnce 4900 Replication LTU	BB905A
	HP StoreOnce 4700 Replication LTU	BB886A
	HP StoreOnce 4500 Replication LTU	BB885A
	HP StoreOnce 2700 Replication LTU	BB884A
	HP StoreOnce VSA 10 TB E-LTU/LTU **NOTE:** No additional e-LTU required for replication, functionality is included in VSA E-LTU/LTU	N/A

- These licenses enable an appliance to host replication target libraries. (No license is required for appliances which only act as replication sources)
- Licensing is "per appliance" i.e. A single license is required to enable an appliance to host as many replication target libraries as it is capable of.
- For B6200 a separate license is required per couplet. EJ026AAE
- No license is required for StoreOnce VSA to act as a replication target
- Licenses are delivered via www.webware.hp.com and are node-locked by appliance serial number (and are not transferable)
- This account license also provides authorization to download the HP OST Plug-in which enables NetBackup to manage deduplicated replication between appliances. Two replication licenses are required to use the OST Plug-in.
- Total number of source appliances that can replicate into a single target appliance is as follows:
  - StoreOnce 6500 Backup target supports up to 384 source StoreOnce appliances
  - StoreOnce 4900 Backup target supports up to 50 source StoreOnce appliances
  - StoreOnce 4700 Backup target supports up to 50 source StoreOnce appliances
  - StoreOnce 4500 Backup target supports up to 24 source StoreOnce

appliances
- StoreOnce 2700 Backup target supports up to 8 source StoreOnce appliances
- StoreOnce VSA supports up to 1 source StoreOnce appliance

HP StoreOnce Security Pack Licenses	HP StoreOnce 2600/2700 Security Pack LTU	BB891A
	HP StoreOnce 2600/2700 Security Pack E-LTU	BB891AAE
	HP StoreOnce 4200/4500 Security Pack LTU	BB892A
	HP StoreOnce 4200/4500 Security Pack E-LTU	BB892AAE
	HP StoreOnce 4400/4700 Security Pack LTU	BB893A
	HP StoreOnce 4400/4700 Security Pack E-LTU	BB893AAE
	HP StoreOnce 4900 Security Pack LTU	BB907A
	HP StoreOnce 4900 Security Pack E-LTU	BB907AAE
	HP StoreOnce 6000 Security Pack LTU	BB894A
	HP StoreOnce 6000 Security Pack E-LTU	BB894AAE
	NOTE: An HP StoreOnce Security Pack license (2600,2700,4200,4500,4400,4700) is required for each appliance .The StoreOnce Security Pack license for the 6000 is required per couplet. A 90 day trial license is available. Each license includes HP StoreOnce Data-At-Rest and Secure Erase features.	

HP StoreOnce Catalyst Licenses	HP StoreOnce Catalyst 6000LTU	BB895A
	HP StoreOnce Catalyst 6000 E-LTU	BB895AAE
	HP StoreOnce 4900 Catalyst LTU	BB906A
	HP StoreOnce 4900 Catalyst E-LTU	BB906AAE
	HP StoreOnce Catalyst 4400/4700 LTU	BB889A
	HP StoreOnce 4400/4700 Catalyst E-LTU	BB889AAE
	HP StoreOnce 4200/4500 Catalyst LTU	BB888A
	HP StoreOnce 4200/4500 Catalyst E-LTU	BB888AAE
	HP StoreOnce 2600/2700 Catalyst LTU	BB887A
	HP StoreOnce 2600/2700 Catalyst E-LTU	BB887AAE
	HP StoreOnce VSA 10 TB E-LTU/LTU	N/A
	NOTE: No additional e-LTU required for StoreOnce Catalyst, functionality is included in VSA E-LTU/LTU	

- StoreOnce Catalyst is a licensed feature, every StoreOnce Backup system (and 6500 couplet) that uses StoreOnce Catalyst requires a license
- No license is required for StoreOnce VSA to host Catalyst Stores
- Licenses enable a HP StoreOnce Backup system to create StoreOnce Catalyst targets for backup.
- StoreOnce Catalyst also provides seamless control of data movement across the organization and better utilization of servers, network bandwidth.StoreOnce Catalyst is supported by HP Data Protector, Symanted NetBackup (via a HP OST plugin), Symantec Backup Exec (via a HP OST plugin), Oracle RMAN (via a HP

	plugin) and BridgeHead Software. **NOTE:** A StoreOnce Catalyst license is required for each appliance that will host Catalyst Stores. The license enables backup and copy to Catalyst Stores on the appliance. There is no need to purchase a replication license when using StoreOnce Catalyst Copy. However, if VTL or NAS replication is configured on the same appliance, a replication license will be required for each target appliance.	
Optional second PSU for StoreOnce 2700	HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit	656362-B21
HP 10GbE Connectivity	**The following cables are recommended for HP 10GbE connectivity** **NOTE:** 10GbE SFPs are included in 2700, 4500, 4700 and 4900, but should be purchased separately for the 6500 or previous version of StoreOnce products.	
10GbE Fibre Optic Modules	HP BladeSystem c-Class 10Gb Short Range Small Form-Factor Pluggable Option **NOTE:** Fibre transceivers and cables must be purchased separately for 6500 fibre-optic environments - 4 transceivers are required for each couplet.	455883-B21
HP ProCurve 10GbE Connectivity	The following cables are recommended for 10GbE connectivity with HP ProCurve network switches.	
Direct Attach Copper Cables	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable	J9300A
	HP 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	NOTE: Direct Attach Cable (DAC) must be purchased separately for copper environments.	
Fiber Optic Cables	**PremierFlex OM4 FC cables**	
	HP Premier Flex LC/LC OM4 2f 1m Cbl	QK732A
	HP Premier Flex LC/LC OM4 2f 2m Cbl	QK733A
	HP Premier Flex LC/LC OM4 2f 5m Cbl	QK734A
	HP Premier Flex LC/LC OM4 2f 15m Cbl	QK735A
	HP Premier Flex LC/LC OM4 2f 30m Cbl	QK736A
	HP Premier Flex LC/LC OM4 2f 50m Cbl	QK737A
	OM3 FC cables	
	HP .5m Multi-mode OM3 LC/LC FC Cable	AJ833A
	HP 1m Multi-mode OM3 LC/LC FC Cable	AJ834A
	HP 2m Multi-mode OM3 LC/LC FC Cable	AJ835A
	HP 5m Multi-mode OM3 LC/LC FC Cable	AJ836A
	HP 15m Multi-mode OM3 LC/LC FC Cable	AJ837A
	HP 30m Multi-mode OM3 LC/LC FC Cable	AJ838A
	HP 50m Multi-mode OM3 LC/LC FC Cable	AJ839A

Configuration Information

	NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments. **NOTE:** For additional information on 10Gb cable specifications go to: http://www.hewlett-packard.com/rnd/pdfs/10gig_cabling_technical_brief.pdf	
Other 10GbE switch environments	The following cables are available for connectivity with other 10GbE switch environments	
Fiber Optic Cables	HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
	HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
	HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
	HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
	HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
	HP LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A
	NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.	

HP StoreOnce 6500 Backup Systems Configurations -

NOTE: THE STORAGE SIZER TOOL MUST ALSO BE USED TO CORRECTLY SIZE A DEDUPLICATION AND REPLICATION ENABLED SYSTEM!

Use the steps below as a guide, but TO PLACE ACTUAL ORDERS USE WATSON and CLIC TO CONFIGURE A SYSTEM

THIS IS ESPECIALLY TRUE FOR THE CUSTOMERS 1st or 3rd 6500 WHICH REQUIRE MANDATORY FACTORY EXPRESS INTEGRATION INTO THE HP STANDARD DEPTH 42U RACK THAT DOES NOT NEED TO BE ORDERED SEPARATELY, BUT IS AUTOMATICALLY ADDED TO THE ORDER CONFIGURATION WHEN THE ASSOCIATED BB896A OR BB900A SKUs ARE ORDERED. WHEN WISHING TO EXPAND AN EXISTING SYSTEM, THE CUSTOMERS 2ND or 4TH 6500 COUPLET (BB897A) IS NOT FACTORY INTEGRATED AND CAN BE ORDERED WITHOUT THE #0D1 OPTION, AS THE 1ST AND 3RD 6500 COUPLETS ARE ALREADY HOUSED IN THE 42U RACKS AND HAVE BEEN FACTORY INTEGRATED WITH SWITCH KITS

The HP StoreOnce 6500 StoreOnce Backup Planning Guide helps you select the correct options for power and connectivity for your data centre environment. It will also help plan for a successful and smooth installation of the 6500.

Please refer to the latest Concepts and Configuration Guide for more information:
http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

Step 1 - Configurations (Option #0D1 must be added to products listed for essential factory integration,i.e BB896A HP StoreOnce 6500 120TB for Initial Rack and\or BB900A HP StoreOnce 6500 120TB for Extra Racks

NOTE: The B6200 is factory integrated and shipped in a 42U extended depth rack. It can be re-racked, subject to a number of constraints. Splitting the switch, server and\or storage of a 6500, between racks is not supported. A minimum contiguous space of 18U is required to house a couplet and its associated switches. If a customer does choose to re-rack, then future storage and\or couplet expansion must be taken into account and additional contiguous rack space allowed.

Full details of the re-racking constraints and process are available. For more details please ask your sales rep or partner.

For the most accurate sizing of the solution necessary for your environment please be sure that your sales rep or partner utilizes the HP

Configuration Information

Sizer tool. This is especially important when considering deduplication and replication.

StoreOnce 6500 Configurations

Factory Integrated Cluster

	Couplet 1	Couplet 2	Couplet 3	Couplet 4
	HP StoreOnce 6500 120TB for Initial Rack BB896A		HP StoreOnce 6500 120TB for Extra Racks BB900A	
	Automatically added to Config when BB896A ordered	If required, order BB897A HP StoreOnce 6500 120TB for Existing Rck	Automatically added to Config when BB900A ordered	If required, order BB897A HP StoreOnce 6500 120TB for Existing Rck
Add capacity	BB899A	BB899A	BB899A	BB899A
Add capacity	BB899A	BB899A	BB899A	BB899A
Add capacity	BB899A	BB899A	BB899A	BB899A
Add capacity	BB899A	BB899A	BB899A	BB899A
Add capacity	BB899A	BB899A	BB899A	BB899A
HP 6000 StoreOnce Replication License	Qty 1 - EJ026A\AAE	Qty 1 - EJ026A\AAE	Qty 1 - EJ026A\AAE	Qty 1 - EJ026A\AAE
HP 6000 StoreOnce Encryption License	Qty 1 - BB894A\AAE	Qty 1 - BB894A\AAE	Qty 1 - BB894A\AAE	Qty 1 - BB894A\AAE
HP 6000 StoreOnce Catalyst License	Qty 1 - BB895A\AAE	Qty 1 - BB895A\AAE	Qty 1 - BB895A\AAE	Qty 1 - BB895A\AAE

Factory Integrated Cluster
Form Factors

	Couplet 1	Couplet 2	Couplet 3	Couplet 4
	HP StoreOnce 6500 120TB for Initial Rack BB896A		**HP StoreOnce 6500 120TB for Extra Racks BB900A**	
Couplet	**18U**	**16U**	**18U**	**16U**
Add capacity	**N/A**	**N/A**	**N/A**	**N/A**
Add capacity	**N/A**	**N/A**	**N/A**	**N/A**
Add capacity	**N/A**	**N/A**	**N/A**	**N/A**
Add capacity	**N/A**	**N/A**	**N/A**	**N/A**
Add capacity	**N/A**	**N/A**	**N/A**	**N/A**
NOTE: Capacity additions are housed within the existing Couplet footprint thus require no additional rack space				
HP 642 1075mm Shock Intelligent Series Rack	**42U**		**42U**	

Technical Specifications

NOTE: To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following recommended guidelines

Please refer to the latest Concepts and Configuration Guide for more information:
http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

	StoreOnce VSA 10 TB	**StoreOnce 2700**	**StoreOnce 4500**	**StoreOnce 4700**	**StoreOnce 4900**	**StoreOnce 6500 (more details in next table)**
Form Factor	VM Ware Virtual appliance	1U Rack	2U scalable rack	4U scalable rack	7 to 12U**	Provided in 42U 1075mm rack
Total Capacity (Raw)		8 TB	Up to 48 TB*	Up to 192 TB*	Up to 560 TB*	Up to 2240 TB*
Total Capacity (Useable)	1 to 10 TB	5.5 TB	Up to 36 TB*	Up to 160 TB*	Up to 432TB*	Up to 1728TB*
Data retention with deduplication Total usable capacity assuming data deduplication at 20:1*	200 TB*	110 TB*	720 TB*	3.2 PB*	8.6 PB*	34 PB*
Maximum number of source appliances per target appliance (fan in)	1	8	24	50	50	384
Write Performance* (maximum aggregated data transfer rate using VTL)	300GB/hr*	1.3 TB/hr	5.4 TB/hr*	7.6 TB/hr*	8.5 TB/hr*	63.2 TB/hr*
Read Performance* (maximum aggregated data transfer rate using VTL)	225 GB/hr*	700 GB/hr	3.2 TB/hr*	9.0 TB/hr*	10.1 TB/hr*	75.2 TB/hr*
StoreOnce Catalyst Performance (maximum aggregated data transfer rate)	500GB/hr*	3.7 TB/hr*	9.9 TB/hr*	22 TB/hr*	22 TB/hr*	139.0 TB/hr*
Targets for backup applications	HP StoreOnce Catalyst, Virtual Tape Library (VTL)& CIF	HP StoreOnce Catalyst, Virtual Tape Library (VTL) and NAS				
Device Interfaces	2 x 1GbE vNICs (min)	4 x 1 Gb Ethernet	2 x 8 Gb Fibre Channel and 2 x 10 Gb Ethernet and 4 x 1 Gb Ethernet	4 x 8 Gb Fibre Channel and 2 x 10 Gb Ethernet and 4 x 1 Gb Ethernet	4x 8Gb Fibre Channel and 4x 1Gb Ethernet and 4x10Gb Ethernet	8x 8Gb Fibre Channel and 8 x 1Gb Ethernet and 4x10Gb Ethernet Per Couplet

Technical Specifications

Disk drives	n/a	2 TB, SAS 7200rpm, 3.5-inch	2 TB, SAS 7200rpm, 3.5-inch	2 TB, SAS 7200rpm, 3.5-inch	4TB, SAS 7200rpm, 3.5-inch	4TB, SAS 7200rpm, 3.5-inch
Number of Disk Drives	1 vDisk per TB of usable capacity	4	12 (min), 12x2 (max)	12 (min), 12x 8 (max)	15 (min), 140 (max)	30 (min), 560 (max)
RAID Support	N/A	Hardware RAID 5	Hardware RAID 6	Hardware RAID 6	Hardware RAID 6	Hardware RAID 6
Number of StoreOnce Catalyst, Virtual Tape Libraries and NAS backup targets (combined)	4	8	24	50	50	384
Maximum Number of Cartridges Emulated	768	768	24,576	204,800	819,200	6,553,600
Replication	Supports data replication. Replication is automatic and appliances may function as both replication targets and sources simultaneously with licensing only being required for appliances acting as a target. Replication of data can occur between VT and NAS devices created on StoreOnce appliances and StoreOnce VSAs					
HP StoreOnce Catalyst	HP StoreOnce Catalyst is available to license, providing seamless control of data movement across the organization and better utilization of servers, network bandwidth and the HP StoreOnce Backup systems for optimum backup performance. HP StoreOnce Catalyst licenses allow replication between HP StoreOnce Catalyst enabled servers and appliances and HP StoreOnce Catalyst backup targets.					

** **NOTE:**
The StoreOnce 4900 can only be installed in racks which provide a distance from the front mounting-rail of the rack to the rear rack-face (the vertical rack surface onto which the rear doors close, the depth of the doors themselves should not be included) of at least 920mm to allow sufficient clearance at the rear for cabling and to allow the hot-swapping of fan modules, PSU modules and I/O modules. Additionally, 35mm of space is required between the front mounting-rail and the nearest point on the inside surface of the front door of the rack to provide sufficient space for the front panels of the system components when the front door is closed.

NOTE: From September 2013 HP StoreOnce Backup systems, expansion kits and associated licenses have been replaced and have new part numbers. For previous version of HP StoreOnce Backup systems please refer to:
http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

HP StoreOnce 6500 Specifications - in detail

StoreOnce 6500 maximum RAW capacity TB

	1 couplet	2 couplet	3 couplet	4 couplet
Base storage	120	240	360	480
1 * 88 TB expansion kit	208	416	624	832
2 * 88 TB expansion kit	296	592	888	1184
3 * 88 TB expansion kit	384	768	1152	1536
4 * 88 TB expansion kit	472	944	1416	1888
5 * 88 TB expansion kit	560	1120	1680	2240

NOTE: A maximum of 5 expansion kits can be used per couplet.

StoreOnce 6500 maximum usable capacity TB

	1 couplet	2 couplet	3 couplet	4 couplet
Base storage	72	144	216	288
1 * 88 TB expansion kit	144	288	432	576

Technical Specifications

2 * 88 TB expansion kit	216	432	648	864
3 * 88 TB expansion kit	288	576	864	1152
4 * 88 TB expansion kit	360	720	1080	1440
5 * 88 TB expansion kit	432	864	1296	1728
Data Deduplication Usable capacity using data deduplication at 20:1*				
	1 couplet	2 couplet	3 couplet	4 couplet
Base storage	1440	2880	4320	5760
1 * 88 TB expansion kit	2880	5760	8640	11520
2 * 88 TB expansion kit	4320	8640	12960	17280
3 * 88 TB expansion kit	5760	11520	17280	23040
4 * 88 TB expansion kit	7200	14400	21600	28800
5 * 88 TB expansion kit	8640	17280	25920	34560
NOTE: Actual results of data deduplication will vary with data type, change rates over time and backup methodologies used. Assuming standard business data mix and extended on-disk retention, typically a 20:1 A maximum of 5 expansion kits can be used per couplet.				
Performance* (maximum aggregated data transfer rate using VTL)				
	1 couplet	2 couplet	3 couplet	4 couplet
Write Performance	15.8 TB/hr	31.6 TB /hr	47.4 TB /hr	63.2 TB /hr
Read Performance	18.8 TB/hr	37.6 TB /hr	56.4 TB /hr	75.2 TB /hr
NOTE: Actual results will vary with data type, change rates over time and backup methodologies used.				
StoreOnce Catalyst Performance				
	1 couplet	2 couplet	3 couplet	4 couplet
Write Performance	34.8 TB/hr	69.6 TB /hr	104.4 TB /hr	139.2 TB /hr
NOTE: Actual results will vary with data type, change rates over time and backup methodologies used.				

* Assumes VTL target for backup and use of maximum upgrade kits to achieve maximum performance. Actual performance is dependent upon configuration, data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.

To optimize performance pleaserefer to the latest Concepts and Configuration Guide for more information:
http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

Technical Specifications

Dimensions and Physical Characteristics

Please refer to refer to the latest Concepts and Configuration Guide for more information:
http://h20565.www2.hp.com/portal/site/hpsc/public/psi/manualsResults/?sp4ts.oid=5196525

StoreOnce Backup system:		2700	4500	4700	4900	6500 120TB for Initial Rack
	Form factor	1U	2U	4U	7U	42U
Dimensions	Out of box	17.1 x 29.5 x 1.7 in (43.47 x 74.67 x 4.32 cm)	17.54 x 29.50 x 3.44 in (44.55 x 74.93 x 8.73 cm)	17.54 x 27.50 x 6.91 in (44.55 x 69.85 x 17.53 cm)	17.6 x 35.1 x 12.2 in (44.7 x 89.12 x 30.83 cm)	23.54 x 44.30 x 79.00 in (59.78 x 112.52 x 200.66 cm)
	Shipping	23.6 x 35.4 x 10.2 in (60 x 90 x 26 cm)	23.6 x 37.8 x 10.2 in (60 x 96 26 cm)	23.6 x 38.6 x 20.3 in (60 x 98 x 51.4 cm)	24.1 x 43 x 31.9 in (61 x 109 x 81 cm)	35.43 x 50.87 x 85.35 in (90 x 129.20 x 216.80 cm)
Weight	Out of box	45.6 lb (20.7 kg)	61.00 lb (27.7 kg)	91.0 lb (41.2 kg)	249.28 lb (113 kg)	953 lb (433 kg)
	Shipping	70.1 lb (31.8 kg)	85.5 lb (38.8 kg)	134 lb (60.9 kg)	297.62 lb (135 kg)	1162 lb (528 kg)
Environmental	Operating temperature	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). System performance may be reduced if operating with a fan fault or above 30°C (86°F).				
	Shipping temperature	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).				
	Operating humidity	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, noncondensing.				

StoreOnce Backup Upgrade Kits:		HP StoreOnce 4700 and 4500 Upgrade Kit	HP StoreOnce 4900 60TB Drw/Cap Upg Kit	6500 120TB fr Existing Rack	6500 120TB for Extra Racks	6500 88TB Capacity Upg Kit
	Form factor	2U	5U	14U	42U	N/A
Dimensions	Out of box	17.99 x 22.3 x 3.47 in (45.0 x 56.7 x 8.8 cm)	17.6 x 35.1 x 8.8 in (44.7 x 89.12 x 22.1 cm)	17.6 x 35.1 x 24.3 in (44.7 x 89.12 x 61.66 cm)	23.54 x 44.30 x 79.00 in (59.78 x 112.52 x 200.66 cm)	N/A
	Shipping	23.4 x 32.2 x 11.2 in (59.4 x 81.8 x 28.4 cm)	24.1 x 43 x 21.3 in (61 x 109 x 54 cm)	24.1 x 43 x 63.8 in (61 x 109 x 162 cm)	35.43 x 50.87 x 85.35 in (90 x 129.20 x 216.80 cm)	21.5 x 12.5 x 19.3 in (54.5 x 31.5 x 49 cm)
Weight	Out of box	50 lb (22.6 kg)	198.68 lb (90.31 kg)	556.87 lb (253.12 kg)	953 lb (433 kg)	43.56 lb (19.8 kg)
	Shipping	69 lb (31.3 kg)	238.78 lb (108.31 kg)	615.35 lb (279.12 kg)	1162 lb (528 kg)	50.16 lb (22.8 kg)

Technical Specifications

Power Requirements (per power supply)	**Range Input Voltage** StoreOnce 2700/4500/4700 and upgrade kit	100 to 120 VAC 200 to 240 VAC (not applicable to upgrade kit)
	Rated Input Frequency (StoreOnce 2700/4500/4700 and upgrade kit)	50 to 60 Hz
	Rated Input Current (StoreOnce 2700)	4.5 A (at 120VAC) 2.2 A (at 240 VAC)
	Rated Input Current (StoreOnce 4500)	4.5 A (at 120VAC) 2.2 A (at 240 VAC)
	Rated Input Current (StoreOnce 4700)	10 A (at 100 VAC) 4.9 A (at 200 VAC)
	Rated Input Current (StoreOnce 4500/4700 Upgrade Kit)	2.68A at115 VAC typical 4A Maximum
	Heat Dissipated BTU Rating (StoreOnce 2700)	1773 BTU/hr (at 120 VAC) 1715 BTU/hr (at 240 VAC)
	Heat Dissipated BTU Rating (StoreOnce 4500)	2925 BTU/hr (at 100 VAC) 2812 BTU/hr (at 200 VAC)
	Heat Dissipated BTU Rating (StoreOnce 4700)	3530 BTU/hr (at 100 VAC) 4600 BTU/hr (at 200 VAC)
	Heat Dissipated BTU Rating (4700/4500 Upgrade Kit)	964 Btu/hr
	Rated Steady-state Power and Max Peak Power (per PSU) (StoreOnce 2700)	460 W (at 100 to 120 VAC) 460 W (at 200 to 240 VAC)
	Rated Steady-state Power and Max Peak Power (per PSU) StoreOnce 4500)	750 W (at 100 to 120 VAC) 750 W (at 200 to 240 VAC)
	Rated Steady-state Power and Max Peak Power (per PSU) StoreOnce 4700)	800 W (at 100 VAC) 900 W (at 120 VAC) 1200 W (at 200 to 240 VAC)
	Rated Steady-state Power and Max Peak Power (per PSU) StoreOnce 4500/4700 Upgrade Kit)	300W
Acoustic Noise StoreOnce 2700	**Idle** (disks spinning)	LWAd 5.9 B LpAm 41.6 dBA
	Operating (random seeks to disks)	LWAd 5.9 B LpAm 41.6 dBA
Acoustic Noise StoreOnce 4500/4700)	**Idle** (disks spinning)	LWAd 5.1B LpAm 35dBA
	Operating (random seeks to disks)	LWAd 5.1B LpAm 35dBA