Overview

HPE StoreOnce VSA Software

The HPE StoreOnce products are secondary storage systems for data protection and copy data management. Using data deduplication and compression, backup data is efficiently and economically stored. HPE StoreOnce Integrity Plus - industry leading patented technology – ensures the backup data is available for restore and recovery whenever it is needed. StoreOnce systems are available as purpose built hardware appliances and as virtual appliances hosted by a hypervisor.

This document describes the virtual appliance; the StoreOnce VSA. The StoreOnce VSA and the purpose built appliances have the same feature set and can be managed through the same centralized management console.

The StoreOnce VSA is a virtual appliance, for VMware vSphere and Microsoft Hyper-V*, which allows flexible software defined, secondary storage to be quickly deployed. It can easily be deployed in small and branch locations with backup data replication configured to a remote StoreOnce system. Or, StoreOnce VSA can be deployed in a high availability configuration to reduce unavailability in the event of a host failure. A single VSA can scale up to 500 TB of usable capacity, which is extended to 1,500 TB with the Cloud Bank Storage option, and protect up to 36 TB of data per hour.

The StoreOnce systems are integrated with HPE Primera, HPE 3PAR, HPE Nimble and data protection software to deliver an end-to end data protection solution. A simple, capacity based, scheme is used to license StoreOnce VSAs. For environments with many StoreOnce VSAs, or a dynamic population of StoreOnce VSAs, a license server can be used to simplify StoreOnce VSA license management and enable licenses to be recycled when the StoreOnce VSA is decommissioned.

For evaluation, 90 day StoreOnce VSA trialware is available. For an extended evaluation or deployment into non-critical, self-supported environments, a 1 TB freeware StoreOnce VSA is also available.

Note: *Hyper-V support is not currently supported with VSA version 4.2 code

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What's New (October 2019)

StoreOnce VSA 4.2 extends the capabilities of StoreOnce VSAs deployed in high availability VMware environments to enable automated failover, from a failed host to a standby host, when using IP and Fibre Channel data connections. A new virtual appliance, the StoreOnce High Availability Manger, makes it simple to manage StoreOnce VSAs in high availability configurations.

Standard Features

Compatibility with StoreOnce VSA 3.x
Only StoreOnce VSA 4.x licenses can be installed on StoreOnce VSA 4.x virtual appliances. StoreOnce 3.x licenses cannot be applied to StoreOnce 4.x virtual appliances. StoreOnce 4.x licenses cannot be applied to StoreOnce 3.x virtual appliances. There is no upgrade path from StoreOnce VSA 3.x to StoreOnce VSA 4.x. The StoreOnce VSA 3.x licenses remain available for existing StoreOnce VSA 3.x users. For details see the StoreOnce 3.x QuickSpecs. StoreOnce VSA 4.x is replication compatible with all StoreOnce 3.x systems.

Software-defined capacity and performance
A StoreOnce VSA can be configured with up to 500 TB capacity. The starting capacity point for a StoreOnce VSA is 4 TB when individually licensed, or 1 TB if allocated licenses from a license server. Each StoreOnce VSA can be expanded in 1 TB increments using one or many 1 TB stackable licenses. When the Cloud Bank Storage feature is used to connect to object storage, the usable capacity can be expanded by 1,000 TB up to 1,500 TB.

A StoreOnce VSA can be configured for backup data to be written at up to 36 TB/hour. The number of backup targets and concurrency can also be configured according to the solution requirements.

Choice of interfaces for integration into your environment
The following are available to connect to your backup environment

- StoreOnce Catalyst; over IP & Fibre Channel
- Virtual tape libraries (VTL); over iSCSI & Fibre Channel
- NAS; StoreOnce NFS, StoreOnce CIFS

StoreOnce Catalyst
StoreOnce Catalyst is a protocol and interface optimized for data protection workloads. The Catalyst server runs on the StoreOnce system and the Catalyst client is integrated into the data protection application. This design enables the data protection application to control the execution and retention of backups and backup copies to and between StoreOnce systems. This means the data protection application has control of the protected data through its lifecycle. Using StoreOnce Catalyst, the data deduplication can be configured to be executed on the StoreOnce System or on a data protection software component such as a media agent.

Compared to the NAS and VTL interfaces, StoreOnce Catalyst has no limiting geometry (cartridges, libraries) or upper limit on the number of items within a store. The Catalyst protocol also enables higher performance backup as well as enhanced reporting and control in the data protection application.

Deduplication optimized offsite replication
StoreOnce enables backup data to be replicated to a StoreOnce system in another rack, building, site, continent or public cloud. This data replication is deduplication-optimized to reduce bandwidth requirements so the job finishes faster and link costs are kept down. One StoreOnce system can be the replication target for multiple source StoreOnce systems to consolidate the storage of replicas

Extensive compatibility
HPE StoreOnce VSA works with many hypervisors, data protection software and business applications. Detailed compatibility information is published on the StoreOnce **support matrix***

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here**.

Reliable backup and restore
In any storage system it is essential that the integrity of the data stored is maintained so data can be recovered exactly as it was written. StoreOnce Systems include HPE StoreOnce Integrity Plus - industry leading patented technology to deliver data integrity throughout the lifecycle. With Integrity Plus you get inbuilt protection which checks data at many stages in the backup and recovery processes and also continually checks the data when at rest, correcting errors if necessary.

Standard Features

Federated Management
Up to 100** StoreOnce systems can be managed from a single console by creating a federation of StoreOnce systems; VSAs and/or appliances. Any StoreOnce system within the federation can be configured as the federation lead. The federation lead hosts the federated management console. For management flexibility, a StoreOnce system can be a member of one or more federations. A system can be a lead in one federation and a member of one or more other federations. Connectivity is required from member systems to the federation lead system but member systems in a federation do not need to be able to communicate with other member systems.
NOTE:**With StoreOnce 4.2 or later up to 40 StoreOnce systems can be managed in a federation using a single console. This can be increased up to 100 with agreement from HPE. Please make the request via your HPE representative if you want to manage more than 40 and up to 100 StoreOnce systems in a federation using a single console.

Integrated protection for HPE Primera, HPE 3PAR and HPE Nimble primary storage
Direct backup of the data on HPE Primera, 3PAR and Nimble storage systems is executed using HPE Recovery Manager Central (RMC) software. RMC is available at zero cost to all owners of HPE Primera, 3PAR and Nimble storage systems with a current support entitlement. The RMC Express Protect feature enables backups from snapshots for high efficiency data protection. BY using RMC software you get the simplicity and performance of snapshot-based protection to generate application-consistent recovery points combined with the reliability and efficiency of deduplicated backups. See the **RMC QuickSpecs** for more information.

Encryption for secure data transmission and storage
StoreOnce data at rest and data in flight encryption prevents unauthorized access to data on disk and unauthorized access to data being transmitted between StoreOnce systems. StoreOnce also has a secure erase function to prevent unwanted recovery of expired or deleted data. For flexibility, these functions can be configured on a data protection application or StoreOnce store basis. Data in flight encryption is used to secure links between data centers for StoreOnce low bandwidth Catalyst copies.

NOTE: Data in flight encryption for backup to the StoreOnce VSA over a LAN (typically the connection between the media server and the StoreOnce VSA) is not supported due to the performance impact of the encryption.
NOTE: Data in Flight encryption via IPSec is only supported with StoreOnce Catalyst. It is not supported with VTL or StoreOnce NAS interfaces. The use of IPSec encryption may reduce write performance. Performance reductions reduce after first the first write

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High Availability deployments
To prevent extended interruptions to backup, copy or restore operations in the event of a host failure, StoreOnce VSA can be deployed in a VMware vSphere High Availability cluster. To simplify management of StoreOnce VSAs in a vSphere HA cluster a StoreOnce High Availability Manager can be deployed. It makes is easy to see the active host(s) and host(s) designated for failover for the StoreOnce VSAs in the cluster. Using the High Availability Manager, unavailability due the host failure is limited to minutes with automated StoreOnce VSA failover from a failed host to a standby host, when using IP and Fibre Channel data connections. The High Availability Manager is a dedicated virtual appliance available at zero cost from HPE.

All-inclusive, perpetual, capacity-based licensing
StoreOnce VSA licensing is based on usable physical capacity, net of space saving from deduplication and compression. Licenses are perpetual and software updates are available to all users with support entitlement. All features, except encryption and Cloud Bank Storage, are included in the capacity licenses.

License server for simplified license management
The standard license mechanism for StoreOnce VSA is to license each StoreOnce VSA individually. For environments with many StoreOnce VSAs or a dynamic population of StoreOnce VSAs, the AutoPass License Server (APLS) adds flexibility and control over license management. In an APLS deployment, capacity licenses are added to the APLS in 100 TB increments. This creates a pool of capacity that is allocated to connected StoreOnce VSAs as required. If a VSA is disconnected from the APLS the license capacity is returned to pool of capacity.

Standard Features

Cloud Bank Storage to lower the cost of long term backup data retention
Cloud Bank Storage is an extension to StoreOnce Catalyst that extends the usable capacity of StoreOnce and provides a lower cost storage location for long term retention backup data. It does this by combining low object storage costs with StoreOnce deduplication.

The object storage can be an on-premises system or a cloud-based service. This reduces the storage costs of long term backup data retention and enables off site data protection without investing in offsite facilities or changing existing workflows. Up to 1,000 TB object storage can be connected via Cloud Bank Storage to increase the usable capacity of the StoreOnce VSA to up to 1,500 TB.

This equates to up to 30 PB of data storage with typical space saving of StoreOnce deduplication*. To control costs for users connected public cloud hosted object storage, Cloud Bank Storage uses a cloud-optimized data transfer and storage. For information on the supported object storage systems and services see the **StoreOnce support matrix.**

NOTE: Cloud Bank Storage is supported for use a Catalyst Copy target. The performance of object storage means it is not supported to use Cloud Bank Storage as a backup target.
NOTE:* Based on a 20:1 (95%) space saving from StoreOnce deduplication and compression.

Custom reporting and management with HPE StoreOnce REST API SDK
The StoreOnce REST API SDK provides a well-defined RESTful API that you can use for integrating and automating reporting/management capabilities with StoreOnce systems. These APIs deliver a programming interface for polling StoreOnce systems with reporting queries at a desired granularity and the information extracted can be integrated with your reporting tools for flexibility in monitoring large StoreOnce environments. The SDK also allows you to automate and integrate management tasks such as creating and deleting backup targets. Download the **StoreOnce REST API SDK.**

StoreOnce VSA trialware
All StoreOnce VSA deployments have an instant-on license to enable a 90-day evaluation of all StoreOnce VSA features and up to 500 TB capacity. At any point during this 90 day period a StoreOnce VSA license can be added – see the 'part numbers and licensing' section below. The trialware is available from the **HPE My License Portal***

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here.**

StoreOnce VSA freeware
For an extended evaluation or deployment into non-critical, self-supported environments a 1 TB freeware StoreOnce VSA is available. The StoreOnce VSA freeware license enables perpetual use with self-service support. The StoreOnce VSA freeware enables all product features to be used except for backup data encryption and Cloud Bank Storage. The freeware capacity is limited to 1 TB usable capacity. The StoreOnce VSA freeware license from the **HPE My License Portal** *

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here.**

Standard Features

Key parameters and resource requirements

Parameter	Value
Form factor	Virtual appliance
Target types (interfaces)	StoreOnce Catalyst: over IP[5] & Fibre Channel[6] Virtual tape libraries (VTL): over iSCSI[5] & Fibre Channel[6] NAS[5] StoreOnce NFS, StoreOnce CIFS
VTL emulations	D2DBS Generic Libraries: Ultrium-VT, LTO-2 - LTO-7 EML & ESL E Series Libraries: LTO-2 - LTO-7 IBM-TS3500 Libraries: IBM LTO-3 & IBM LTO-5 MSL G3 Series Libraries: LTO-2 - LTO-7
Virtual tape cartridges per VSA	Up to 131,072
Virtual tape cartridges per VTL	Up to 4,096
Host support	Vmware-vSphere Microsoft Hyper-V* Note: *Hyper-V support is not currently supported with VSA version 4.2 code For detailed compatibility information see the **StoreOnce support matrix**[7]
NIC support	Per host and hypervisor support
Fibre Channel HBA support	HPE StoreFabric Fibre Channel HBAs using VMDirectPath I/O Passthrough. For detailed compatibility information see the **StoreOnce support matrix**[7]

StoreOnce VSA can be configured to provide the capacity and performance needed to meet your data protection requirements. The first table below shows the minimum StoreOnce VSA configuration and the incremental resources required to increase capacity, performance, stream count and/or the number of backup targets up to the maximum configuration. The second table below shows resource requirements for some example configurations.

Minimum configuration, maximum configuration and resources needed to scale StoreOnce VSA

Parameter	Minimum	Maximum	To scale from minimum configuration
Local capacity [8]	4 TB[9]	500 TB	100 MB vRAM per incremental TB
Cloud Bank capacity [8]	-	1 PB	100 MB vRAM per TB
Backup performance [10]	2 TB/hr	36 TB/hr	1 vCPU + 300 IOPS per incremental TB/hr
Concurrency	16 streams	256 streams	500 MB vRAM per incremental stream
Backup targets	4 stores	32 stores	1 GB vRAM per incremental store
Fan-in ratio	8 sources	8 sources	

NOTE:

[5] IPv4 or IPv6 connection.

[6] Fibre Channel data connections supported for VSAs on VMware vSphere hosts only.

[7] This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account here.

[8] Usable capacity net of deduplication and compression.

[9] When connected to a license server the minimum licensed capacity is 1 TB.

[10] This is with StoreOnce Catalyst source side deduplication. Backup performance to a VTL target, StoreOnce NAS target and Catalyst store with target deduplication is approximately 25% of this. The numbers quoted here are for VMware vSphere. For StoreOnce VSA in Hyper-V environments performance is up to 25% less.

[11] The CPUs should be 1.5 GHz or faster. Additional vCPUs should be added in multiples of two.

[12] Based on 128 KB average read/write sizes. The read/write mix, hypervisor caching and application caching may make the stated performance achievable with lower storage IOPS. Deploying a StoreOnce VSA provisioned with lower than the stated storage IOPS should only be done after validation of performance.

[13] Indicative numbers based on 7,200 rpm SAS HDDs and assuming 150 IOPS per HDD. The number is net of RAID overhead and spares.

Standard Features

The key parameters for the StoreOnce VSA are shown in the table below.

Resourse Requirements	Min Config	Max Config
Minimum vRAM	24 GB	320 GB
Minimum vCPU [11]	2	36
IOPS [12]	600	10,800
Dedicated hard drives [13]	4	72

Example configurations (with and without Cloud Bank Storage)

Parameter	Small	Medium	Large	Maximum
Local capacity	10 TB	150 TB	400 TB	500TB
Cloud Bank capacity	-	150 TB	-	1,000
Backup performance*	4 TB/hr	8 TB/hr	20 TB/hr	36TB/hr.
Concurrency	16 streams	24 streams	64 streams	256 streams
Backup targets	6 stores	12 stores	16 stores	32 stores
Fan-in ratio	8 sources	8 sources	8 sources	8 sources
Resource Requirements				
vRAM	27 GB	66 GB	100 GB	181 GB
vCPUs	4	8	20	36
IOPS	1,200	2,400	6,000	10,800
Dedicated hard drives	8	16	40	72

NOTE:*This is for a VSA hosted on VMware vSphere with StoreOnce Catalyst source side deduplication.

The StoreOnce High Availability Manager resource requirements are shown in the table below.

Minimum resources needed for StoreOnce High Availability Manager

Resource Requirements	Min Config
Minimum vRAM	24 GB
Minimum vCPU	2

AutoPass License Server (APLS) for StoreOnce VSA

If you have large or dynamic populations of StoreOnce VSAs the AutoPass License Server (APLS) simplified license management. The APLS centralizes license management and allows licenses to be returned to the license server when the StoreOnce VSA is decommissioned. The APLS is available for free at **www.hpe.com/software/apls.**

Capacity and feature licenses are added to the license server in 100 TB increments to create a pool of licenses. As needed, these are allocated in 1 TB increments to connected StoreOnce VSAs. See the 'licensing and part numbers' section below for license details.

NOTE: Once a licensing mode (individual license | connect to license server) is selected it cannot be changed.

Host requirements

The APLS can run on a Windows or Linux physical or virtual machine. It is accessed using a Google Chrome, Microsoft Internet Explorer or Mozilla Firefox browser. For details of supported APLS versions, host resource requirements, OS support and browser version support see the **StoreOnce support matrix** *.

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here**.

Standard Features

APLS operation

- To acquire and maintain use of licenses the StoreOnce VSA must be connected to the APLS. The connected StoreOnce VSAs are polled approximately each hour to check connection to the APLS.
- On connection to the APLS a 1 TB capacity license is allocated to the StoreOnce VSA.
- Licenses returned, using the StoreOnce VSA management console, are added back to the APLS pool and available for allocation to any connected StoreOnce VSA.
- If the StoreOnce VSA is disconnected from the APLS, the allocated licenses remain with the StoreOnce VSA for 7 days from the most recent connection and all capacity and features enabled by the allocated licenses remain usable.
- If the StoreOnce VSA is disconnected for more than 7 days the allocated licenses are returned to the APLS and the StoreOnce VSA moves to an unlicensed (read only) state.
- After 7 days and for up to 60 days from the most recent connection, the StoreOnce VSA can reconnected to licenses be allocated to the StoreOnce VSA to return it to a licensed state.
    - If the StoreOnce VSA is not connected to the APLS for 60 days it moves to an unlicensed and unusable state.

Use of Cloud Bank Storage with StoreOnce VSA

Operation

The usable capacity of the StoreOnce VSA can be expanded up to 1,500 TB by using Cloud Bank Storage to connect up to 1,000 TB of object storage. A bucket/container from the connected object storage is associated with a Catalyst store. This Catalyst store is used as a Catalyst Copy target in the same way as a regular Catalyst store. The translation of the backup data to object storage format is efficiently handled by StoreOnce and transparent to the data protection application.

Host resources

Resources should be allocated to the StoreOnce VSA to host the Cloud Bank store(s) as laid out in the resource requirements section above.

Detach

Many object storage vendors offer 'cold' storage tiers with reduced costs. The performance of 'cold' tiers is not sufficient for Cloud Bank Storage operations. For Cloud Bank stores with backup data that has to be retained but access requests are unlikely, the Cloud Bank store can be detached to enable it to be moved to a cold tier. On detach the Cloud Bank store is put into a read only state and is no longer visible to the StoreOnce system or the data protection application. The bucket/container associated with the detached store can then be moved, independently of StoreOnce and the data protection application, using the object storage console, to a 'cold' tier or other location for long term low cost retention.

If the detached store needs to be read it has to be moved back to a supported storage tier and reconnected to a StoreOnce system. This can be the original StoreOnce VSA or any StoreOnce system running the same or newer version of the StoreOnce software. A detached store is reconnected read only. To reconnect, details and credentials of the object storage provider and bucket/container are required. For encrypted Cloud Bank stores the encryption key needs to be provided if it is not stored on the host StoreOnce system.

Licensing

Cloud Bank Storage and the Cloud Bank Storage Detach feature are licensed features. The licenses are capacity based with the licensed capacity measured as the capacity written after deduplication and compression. The Cloud Bank licenses are added in any multiple of 1 TB up to 1,000 TB. The Cloud Bank Storage Detach licenses are added in any multiple of 1 TB with no upper limit. See the licensing and part numbers section below.

Supported object storage

Most leading cloud and on-premises object storage services are supported for use with Cloud Bank Storage. For information on the current supported object storage systems and services see the **StoreOnce support matrix*.**

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here.**

Standard Features

StoreOnce VSA in high availability deployments

To minimize downtime and survive a host failure, StoreOnce VSA can be deployed in a VMware vSphere cluster. Leveraging the VMware vSphere High Availability feature means the unavailability of the StoreOnce VSA can be limited to minutes if its host fails. In the event of a host failure, the vSphere High Availability feature enables the StoreOnce VSA to be restarted on another host in the cluster so backup, restore or copy operations can resume.

StoreOnce High Availability Manager

The StoreOnce High Availability Manager manages the setup and validation of failover relationships of StoreOnce VSAs deployed in a vSphere HA cluster. It connects to the VMware vCenter Server that manages the VMware vSphere cluster(s) that host the StoreOnce VSAs. When backing up over Fibre Channel, it also removes the need for manual intervention on host failover, caused by the requirement to use VM-direct path I/O for Fibre Channel data connections. It is not necessary, but recommended, for automated failover for StoreOnce VSAs with IP data connections.

The High Availability Manager is a free, unlicensed, lightweight, virtual appliance. For simplicity it is delivered in the same package as the StoreOnce VSA. On deployment, the High Availability Manager deployment mode is selected as part of the First Time Setup Wizard. The High Availability Manager does not provide any data services.

The High Availability Manager takes on the role of the federation lead of the StoreOnce VSAs it is managing. The StoreOnce VSAs managed by the High Availability Manager can also exist in other federations. The StoreOnce High Availability Manager may not be added to another federation.

Service and Support

Support and services overview
All HPE StoreOnce VSA with purchased licenses include three years 24x7 HPE Foundation Care. This is entitled on the HPE StoreOnce VSA base license (BC002AAE/BC002A). This support entitlement includes support for all added capacity, Cloud Bank Storage and encryption licenses added to the StoreOnce VSA.

The licenses for the HPE StoreOnce VSA license server include support for the license server and the connected StoreOnce VSAs. This is entitled on the HPE StoreOnce VSA License Server 100TB license (BC005AAE/BC005A). This support entitlement includes support for all added capacity, Cloud Bank Storage and encryption licenses added to the license server.

For users deploying StoreOnce VSA in high availability configurations, support for the High Availability Manager is entitled based on the support for the managed StoreOnce VSAs. All the managed StoreOnce VSAs must have an active support entitlement to enable support for the High Availability Manager.

The included support can be upgraded to HPE Proactive Care, HPE Proactive Care Advanced or HPE Datacenter Care. Support can also be extended to 4 or 5 years. When the included, or upgraded, support expires it must be renewed to maintain entitlement to HPE Pointnext support and software updates.

Optional HPE Pointnext services are available; to set up StoreOnce VSAs in a high availability configuration; to configure and verify deployment of data protection solutions using StoreOnce Catalyst and StoreOnce VSA; to integrate StoreOnce VSA in an end-to-end solution with your data protection software; and Advanced Start Up services.

NOTE When running the 90-day, instant-on demo license or the freeware license there is no entitlement to HPE Pointnext support or the ability to buy HPE Pointnext Support Services.

Support and services benefits

Deploy and integrate
Implement the HPE StoreOnce VSA in a high availability configuration correctly for 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 investment in the StoreOnce VSA, as you keep your staff up to date on the product features.

Advisory, professional and operational support services
Services to accelerate time to results from HPE Pointnext bring you a rich portfolio of Advisory, Professional and Operational support services 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 organization.

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.

Service and Support

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.

HPE Foundation Care
System-level IT hardware and software support delivers flexible coverage window and response time, for more choice and simplicity. Three year 24x7 HPE Foundation Care support is included in the StoreOnce VSA base licenses and uplifted support levels are available. For more information see the **data sheet.**

HPE Proactive Care
Combined reactive and proactive services provide easy-to-purchase, cost-efficient system-level support coupled with personalized expert advice and products connected to Hewlett Packard Enterprise to help prevent problems and reduce downtime. For more information see the **data sheet.**

HPE Proactive Care Advanced
HPE Proactive Care Advanced builds and incorporates Proactive Care. It gives customers personalized technical and operational advice from an assigned, local Account Support Manager for personalized technical collaboration, flexible access to specialist skills to help optimize business critical IT, and Enhanced Critical Incident Management to help so the business is not affected if there is a system or device outage. For more information see the **data sheet.**

HPE Datacenter Care
Get the support you need to deploy, operate, and evolve your data center environment to be hybrid-cloud ready with single-point-of-accountability for Hewlett Packard Enterprise and others' product. For more information see the **data sheet.**

HPE Education Services
HPE Education Services offers comprehensive training for new, as well as experienced, storage and data protection administrators. This is designed to expand your skills and keep you up to speed with the latest storage, virtualization and data protection technology from HPE Storage. For more information see the **HPE Education Services web page.**

Get connected and get back to business
HPE Pointnext provides the path to get your HPE Storage solutions and your business connected to Hewlett Packard Enterprise. Once connected, our experts are able to scan your system and run health checks, then use that data to create personalized reports and recommendations for actions to take to prevent problems and downtime.

For more information
To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner and see the **Operational Support Services web page**.

HPE Pointnext Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from Hewlett Packard Enterprise or an enterprise reseller are quoted using Hewlett Packard Enterprise order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Pointnext operational services at: **https://findapartner.hpe.com/**

Service and Support

Advanced Start-Up Services

HPE StoreOnce Catalyst Solution Service and HPE StoreOnce Catalyst Solution Services provide a best practice configuration and verification service in the customer environment to optimize the benefits of deploying StoreOnce Catalyst and StoreOnce VSA functionality. These services are available in 3 levels. Within the scope of the service, StoreOnce VSA configuration is part of the solution service.

Description	Service SKU
HPE StoreOnce Catalyst solution service lvl1	HA124A1#5TY
HPE StoreOnce Catalyst solution service lvl2	HA115A1#5TZ
HPE StoreOnce Catalyst solution service lvl3	HA115A1#5UO

For more information see the **data sheet.**

HPE StoreOnce VSA High Availability Installation and Start-up Service

HPE StoreOnce VSA High Availability Installation and Start-up Service provides a high availability deployment of the HPE StoreOnce VSA with features designed to help enable proper installation into your environment.

Description	Service SKU
HPE StoreOnce VSA HA Start-up SVC	HA124A1#5T1 (HG0V7E)

HPE StoreOnce Integration Services

The StoreOnce Integration Services are intended to provide proven HPE best practice integration between the customer's backup software and StoreOnce. This service helps customers utilize the advanced features of their backup software with StoreOnce for an optimized end-to-end solution. Within the scope of the service, StoreOnce VSA configuration is part of the integration service.

Description	Service SKU
HPE StoreOnce Integration Level 1 SVC	H8E02A1
HPE StoreOnce Integration Level 2 SVC	H8E03A1

For more information see the **data sheet.**

Configuration Information

StoreOnce VSA Configuration Guidelines

Please read and understand the following general and hypervisor specific configuration guidelines before deploying StoreOnce VSA.

Recommendations

- It is recommended that at least one virtual disk is allocated to the StoreOnce VSA before the first power on. Additional virtual disks can be added later to increase capacity up to the licensed capacity.
- Plan to add virtual disks as needed to the StoreOnce VSA. Once a virtual disk is added it cannot be removed, to reclaim the space or increase the size, without destroying the StoreOnce VSA.
- Use RAID protection for the storage allocated to the StoreOnce VSA for resilience against hard disk failure.
- The storage used for the StoreOnce VSA should not be shared with the storage used by the protected virtual machines, particularly if backup data replication is not used.
- Reserve all memory and CPU allocated to the Storeonce VSA. Overprovisioning memory or CPU can lead to insufficient resources available to deliver the expected performance.
- Periodically monitor allocated resource utilization and allocate additional resources if the current allocated resources are approaching saturation.
- Performance can be seen using hypervisor performance monitoring tools. These vary between VMware vSphere and Windows Hyper-V. Adding resources requires the StoreOnce VSA to be restarted so these upgrades should be done outside backup times.

VMware configuration notes

- Typical Installation will take 20 minutes depending on the installation method used and the environment. Other factors that determine the installation time are the storage used, the host platform and the storage capacity configured.
- It is recommended that the virtual disks used to provide capacity for StoreOnce VSA are in a .vmdk format from a VMFS3, VMFS5 or VMFS6 data store. NFS data stores are supported but careful consideration of the performance implications should be made before deployment. Raw disks are not supported.
- 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 with the EVC (Enhanced vMotion Compatibility) mode set to AMD generation 3 or earlier.
- Thick and thin provisioned virtual disks are supported to provision storage for backup data. If thin provisioned virtual disks are selected, care should be taken to ensure that the datastore is backed by sufficient physical storage.
- StoreOnce VSA is supported for use with vMotion and Storage vMotion during backup and recovery operations. It is also supported in environments using vSphere High Availability and vSphere Distributed Resource Scheduler. Support for vSphere Fault Tolerance is limited to StoreOnce VSA configurations with a maximum of 8 vCPUs due to this VMWare maximum.

Hyper-V configuration notes

Note: Hyper-V support is not currently supported with VSA version 4.2 code

- Unzipping the virtual machine file can take up to 15 minutes. Installation time depends upon how heavily the Hyper-V Server is being used and how much capacity is configured.
- The StoreOnce VSA requires NTFS storage. There is no support for NFS data stores or pass-through disks. StoreOnce VSA can run on all processors supported for Windows Server Hyper-V provided the performance and quantity meets the minimum requirements for the capacity of the configured StoreOnce VSA.
- Fixed and dynamically expanding virtual hard disks (.VHDX or .VHD) are supported to provision storage for backup data. If dynamically expanding virtual hard disks are selected, care should be taken to ensure that the NTFS Logical Volume is backed by sufficient physical storage.
- StoreOnce VSA supports use of Hyper-V Live Migration during backup and recovery operations.

Configuration Information

Supported configurations and best practices for high availability (HA) deployments

For a high performance and high availability deployment the StoreOnce VSAs and the StoreOnce High Availability Manager should follow these best practices.

- The VMware vCenter Server and the StoreOnce High Availability Manager should be deployed on a VMware vSphere High Availability cluster.
- All hosts in the cluster have the same or similar specification and are running the same VMware vSphere version.
- For Fibre Channel data connections, each host has supported Fibre Channel HBAs available for the hosted StoreOnce VSA. See the **StoreOnce support matrix** * for supported HBAs.
- The VMware vSphere cluster(s) that host the StoreOnce VSAs should be dedicated to the StoreOnce VSA(s) and not host other virtual machines except a StoreOnce High Availability Manager.
- The hosts and shared storage have sufficient resources to enable the performance and capacity required – as defined in the resource requirements section above.
- The cluster should have a spare host that does not host any StoreOnce VSAs. This spare host can act as a failover destination for StoreOnce VSAs on one, two or three other hosts in the cluster.
- Each vSphere host can have maximum 5 StoreOnce VSAs. A maximum of 2 of these can use Fibre Channel data connections.
- Redundant data connections from the data protection software to all the hosts in the vSphere cluster.
- StoreOnce federated management is used with the StoreOnce High Availability Manager configured as the federation lead and all StoreOnce VSAs in the high availability configured as federation members.
- Each StoreOnce High Availability Manager can manage the failover of StoreOnce VSAs in up to 10 vSphere Clusters.

Data protection software compatibility

During a failover process, the StoreOnce VSA will appear as offline/unavailable to the data protection software. Different data protection software will handle this unavailability differently for the resumption of backup, restore or copy jobs. Settings in the backup software for timeouts and restart options need to accommodate this.

If it is required to return a failed over StoreOnce VSA to a repaired or replaced host, it can be manually failed over to that host using the High Availability Manager console.

See the **StoreOnce support matrix*** for details of the data protection software supported for StoreOnce VSA in HA deployments.

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here.**

Licensing and Part Numbers

Licensing overview

The StoreOnce VSA has a simple and flexible, capacity-based license scheme. All purchased licenses are perpetual and include 3 years HPE Pointnext support entitlement.

On installation, a unique serial number is created for the StoreOnce VSA and a 90-day, instant-on demo license is activated. Before the end of this 90 days the StoreOnce VSA must have one of the three licenses below added:

- Individual license
- License from a license server
- Freeware license

For an individual license and a freeware license, the StoreOnce VSA serial number is needed to acquire the license. These StoreOnce VSA licenses are locked to the serial number and cannot be transferred to another StoreOnce VSA.
For the StoreOnce license server the Locking Code (on the APLS GUI License Management page) is needed to acquire the StoreOnce License Server licenses. The StoreOnce VSA deployment and license option are shown in the diagram below.

NOTE: Once a licensing mode (individual license | connect to license server) is selected it cannot be changed. After a StoreOnce VSA is given a freeware license it cannot be connected to a license server.
NOTE: When using the 90-day, instant-on demo license up to 500 TB of capacity can be configured. When licenses are added to continue use beyond the 90 day demo period the licensed capacity must be greater or equal to the configured capacity.

Configuration Information

NOTE: When running the 90-day, instant-on demo license, there is no entitlement to HPE Pointnext support or the ability to buy HPE Pointnext Support Services.
NOTE: When running the 90-day, instant-on demo license, data at rest encryption and data in flight encryption are not available.

Deploy StoreOnce High Availability Manager, no license needed, or deploy StoreOnce VSA - 90 day demo license then either use:

- Freeware license - 1 TB capacity, which can later be upgraded to Individual license
- Individual license - 4TB base license
  - Add
    - 1TB capacity license
    - Encryption license
    - 1 TB Cloud Bank licenses
    - 1 TB Cloud Bank Detach licenses
- License server - 1 TB allocated
  - Allocate
    - 1 TB capacity licenses
    - Encryption license
    - 1 TB Cloud Bank licenses
    - 1 TB Cloud Bank Detach licenses

Configuration Information

Individual licensing

A StoreOnce VSA starts with a 4 TB Base license. Up to 496 Stackable 1 TB licenses can be added to the base license for licensed capacity of up to 500 TB. Multiple 1 TB LTUs can be activated and applied in a single transaction. Option licenses can be added to enable encryption and to host Cloud Bank Storage stores.

Description	E-LTU Part
License Description	
HPE StoreOnce VSA 4TB Base	BC002AAE
HPE StoreOnce VSA Stackable 1TB	BC003AAE
Optional License	
HPE StoreOnce Cloud Bank Storage Read/Write for Gen4 Systems 1TB	BC012AAE
HPE StoreOnce Cloud Bank Storage Detach for Gen4 Systems 1TB	BC013AAE
HPE StoreOnce Encryption	BB994AAE
License Description	**LTU Part #**
HPE StoreOnce VSA 4TB Base	BC002AE
HPE StoreOnce VSA Stackable 1TB	BC003AE
Optional License	
HPE StoreOnce Cloud Bank Storage Read/Write for Gen4 Systems 1TB	BC012AE
HPE StoreOnce Cloud Bank Storage Detach for Gen4 Systems 1TB	BC013AE
HPE StoreOnce Encryption	BB994AE

NOTE The option licenses are the same as used to add Cloud Bank Storage and encryption to the StoreOnce hardware appliances.

Freeware licensing

The freeware license is acquired from the **HPE My License Portal** * and added to the StoreOnce VSA to allow perpetual use of most features and up to 1 TB usable capacity. At any time a StoreOnce VSA with a freeware license can be upgrade by adding a 4 TB individual base license. Once upgraded, any the individual stackable capacity and option licenses can be added.

NOTE:*This requires a HPE Passport account – the single sign on for HPE websites and services. Create an account **here.**

NOTE If more than 1 TB capacity is configured during the 90 day instant-on period, it is not possible to add the StoreOnce VSA freeware license.

NOTE The freeware comes without entitlement to HPE Pointnext support services, the ability to buy HPE Pointnext support services, data at rest encryption and data in flight encryption.

Description (To Upgrade Freeware)	E-LTU Part #
HPE StoreOnce VSA 4TB Base	BC002AAE
Description	**LTU Part #**
HPE StoreOnce VSA 4TB Base	BC002AE

AutoPass License Server (APLS) licensing

Licenses are added to the AutoPass License Server (APLS) to create a pool of license capacity that is allocated to one or more connected StoreOnce VSAs. The first license added to the APLS must be a 100 TB License Server license. After this, an unlimited number of stackable 100 TB License Server licenses can be added to increase capacity. Cloud Bank Storage licenses and encryption licenses are added to the license server enable these capabilities to be allocated to connected StoreOnce VSAs.

NOTE: Only one HPE StoreOnce VSA License Server Encryption license needs to be added to the APLS to enable all connected StoreOnce VSAs to use encryption.

Configuration Information

Description (Licenses to populate the license server)	E-LTU Part #
HPE StoreOnce VSA License Server 100TB	BC005AAE
HPE StoreOnce VSA License Server Stackable 100TB	BC006AAE
Description	**LTU Part #**
HPE StoreOnce VSA License Server 100TB	BC005AE
HPE StoreOnce VSA License Server Stackable 100TB	BC006AE
Description (Optional licenses to populate the license server)	**E-LTU Part #**
HPE StoreOnce Cloud Bank Storage Gen4 for VSA License Server 100TB	
HPE StoreOnce Cloud Bank Storage Detach Gen4 for VSA License Server 100TB	
HPE StoreOnce VSA License Server Encryption	
Description	**LTU Part #**
HPE StoreOnce Cloud Bank Storage Gen4 for VSA License Server 100TB	BC015AAE
HPE StoreOnce Cloud Bank Storage Detach Gen4 for VSA License Server 100TB	BC016AAE
HPE StoreOnce VSA License Server Encryption	BC007AAE

StoreOnce High Availability Manager
The High Availability Manager virtual appliance does not require a license.

Cloud Bank Storage licenses
The Cloud Bank Storage feature is licensed and enabled through option licenses for the StoreOnce VSA and StoreOnce VSA license server as shown in the tables above.

Cloud Bank Storage licenses are available in 1 TB increments for individually licensed StoreOnce VSAs and 100 TB increments for license servers. The maximum Cloud Bank Storage capacity that can be enabled for a StoreOnce VSA is 1,000 TB.
Cloud Bank Storage Detach licenses are also available in 1 TB increments for individually licensed StoreOnce VSAs and 100 TB increments for license servers. There is no upper limit to the capacity of Cloud Bank Storage detach licenses that can be added to a StoreOnce VSA or the license server.

Up to a total of 50 Cloud Bank Storage and Cloud Bank Storage Detach license keys can be added to a StoreOnce VSA. For the larger StoreOnce VSAs it is recommended to generate license keys with large multiples of 1 TB to avoid this 50 license key limit becoming a constraint.

Unlicensed Behaviour
StoreOnce VSA
An individual StoreOnce VSA moves to unlicensed mode if no license is added within 90 days of deployment. For the first 60 days in unlicensed mode the StoreOnce VSA operates as read only preventing additional backup or copies being written. At any time during this 60 day unlicensed period a license key can be added to resume full functionality.

When operating in unlicensed mode warnings are issued that the StoreOnce VSA will cease to be operational if no license is added before the end of this 60 day period. If no license key is added within 60 days of StoreOnce VSA going into unlicensed mode it will cease to be operational and move to an unusable state. For a StoreOnce VSA to return from a locked down state to an operational state requires HPE intervention and the addition of the required license(s).

AutoPass License Server (APLS)
A StoreOnce VSA connected to an AutoPass License Server (APLS) moves to unlicensed mode if it is disconnected for more than 7 days. After 7 days and for up to 60 days from the most recent connection to the APLS, the StoreOnce VSA can reconnected to the APLS and be allocated licenses to rfeturn to a licensed state. If the StoreOnce VSA is not connected to the APLS within 60 days from most recent connection and allocated licenses it moves to an unusable state.

Summary of Changes

Date	Version History	Action	Description of Change
07-Oct-2019	Version 1	New	New QuickSpecs

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a00067728enw - 16420 - Worldwide - V1 - 07-October-2019