Abstract
This document describes how to deploy the StoreOnce VSA using vSphere Client, Hyper-V Manager, KVM Virtual Machine Manager, and Azure PowerShell cmdlets. It also describes how to add storage and apply a purchased license. This document is for administrators with experience working within a VMware vSphere 6.5, 6.0 or 5.5, a Hyper-V environment, as a virtual machine with the Microsoft Azure ARM model, or a KVM on Ubuntu or SUSE. This guide was most recently updated for StoreOnce 3.18.0 software.
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Introduction to StoreOnce VSA

StoreOnce VSA product description

StoreOnce VSA is a software-only version of the StoreOnce System. Packaged as a virtual appliance, it can be deployed and run on the following environments installed by the customer:

- Microsoft Server 2012 R2 Hyper-V
- Microsoft Azure
- vSphere 6.5, 6.0, and 5.5 hypervisors
- KVM (Ubuntu 14.04 LTS, SUSE Linux Enterprise Server 11 SP3)

Once deployed, the user has access to Web Management through the StoreOnce GUI and to command-line management through the StoreOnce CLI. The user can create the following StoreOnce backup target devices on the StoreOnce VSA:

- StoreOnce Catalyst stores
- iSCSI VT libraries
- CIFS and NFS NAS shares
- VTL FC libraries
- CoFC stores

The virtual appliance is fully compatible with StoreOnce hardware products for Replication and Catalyst Copy functions.

**IMPORTANT:**

No deployment method configures any user data storage automatically. **Before** initially powering on the StoreOnce VSA, follow the instructions in the appropriate chapter to add user data storage.

StoreOnce VSA licensing

A single license key enables the appliance and all features, including StoreOnce Catalyst, Replication, and Security Pack features. Perpetual licenses may be purchased for a number of different capacities. Additional licenses are available to extend terms or expand capacity. A 1 TB, 3-year Freeware license is also available.

**NOTE:**

Only perpetual licenses are available with StoreOnce software v 3.16.0 and later. Existing term-based licenses are valid for the remainder of their terms.

Perpetual and 20 TB licenses are only available for systems running StoreOnce software v 3.13.2 or later. 32 TB licenses are only available for systems running StoreOnce software v 3.16.0 or later.

StoreOnce VSA versions and hypervisor support

For current information on hypervisor support with StoreOnce software versions, see the HPE Data Availability, Protection, and Retention Matrix at:
Release-specific installation and upgrade paths

<table>
<thead>
<tr>
<th>Current installed version</th>
<th>Target version</th>
<th>Upgrade path</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.13.2 or earlier</td>
<td>3.16.x</td>
<td>Upgrade to 3.13.3 and then use the OS conversion upgrade package to upgrade to a 3.16.x version.</td>
</tr>
<tr>
<td>3.13.3 or later 3.13.x</td>
<td>3.16.x</td>
<td>Use the 3.16.x OS conversion upgrade package to upgrade to a 3.16.x version</td>
</tr>
<tr>
<td>3.13.3 or later 3.13.x</td>
<td>3.18.x</td>
<td>Use a 3.16.x OS conversion upgrade package to upgrade to 3.16.2 or later, and then use the regular upgrade package to upgrade to 3.18.x</td>
</tr>
<tr>
<td>3.16.x</td>
<td>3.18.2</td>
<td>Not supported. New installations are supported.</td>
</tr>
</tbody>
</table>

Microsoft Azure

The VSA image currently available in Azure is 3.16.2. The VSA image for 3.18.0 will be available in Azure Marketplace after the release of version 3.18.0.

StoreOnce VSA system requirements

<table>
<thead>
<tr>
<th>Properties</th>
<th>VMware VSphere</th>
<th>Microsoft Hyper-V</th>
<th>KVM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical host</td>
<td>• ESXi 6.5</td>
<td>• Microsoft Server 2012 R2 Hyper-V</td>
<td>• Ubuntu 14.04LTS</td>
</tr>
<tr>
<td></td>
<td>• ESXi 6.0</td>
<td>• Microsoft 2012 R2 Hyper-V core installation</td>
<td>• SUSE Linux Enterprise Server 11 SP3</td>
</tr>
<tr>
<td></td>
<td>• ESXi 5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual CPU</td>
<td>Minimum: 2 x vCPUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recommended number of Virtual CPUs for optimal performance based on storage capacity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 6 x vCPUs for 10 - 20 TB</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 8 x vCPUs for 20 - 32 TB</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 12 x vCPUs for more than 32 TB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual RAM</td>
<td>Minimum: 16 GB of vRAM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Properties</td>
<td>VMware vSphere</td>
<td>Microsoft Hyper-V</td>
<td>KVM</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Recommended amount of Virtual RAM for optimal performance based on storage capacity:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 24 GB vRAM for 4 - 10 TB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 26 GB vRAM for 10 - 20 TB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 29 GB vRAM for 20 - 32 TB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserve ALL memory allocated to the StoreOnce VSA.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Disk</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 50 GB thin provisioned system disk</td>
<td>• 50 GB fixed system disk</td>
<td>• 50 GB thin provisioned system disk</td>
<td></td>
</tr>
<tr>
<td>• 1 TB thick provisioned lazy zeroed or thin provisioned disk for data storage (see note). Can be any size in multiples of 1 TB (1,024 GB), for example 1 TB, 2 TB, 3 TB.</td>
<td>• 1 TB fixed or dynamically expanding disk for data storage (see note). Can be any size in multiples of 1 TB (1,024 GB) are supported for data storage, for example 1 TB, 2 TB, 3 TB.</td>
<td>• 1 TB thick provisioned lazy zeroed or thin provisioned disk for data storage (see note). Can be any size in multiples of 1 TB (1,024 GB), for example 1 TB, 2 TB, 3 TB.</td>
<td></td>
</tr>
<tr>
<td><strong>Virtual NIC</strong></td>
<td><strong>SCSI ports</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 x 1GbE or 10GbE virtual network interfaces</td>
<td><strong>Sufficient SCSI ports available on the controller to support the number of virtual disks that will be deployed.</strong></td>
<td><strong>Sufficient SCSI ports available on the controller to support the number of virtual disks that will be deployed.</strong></td>
<td><strong>Sufficient SCSI ports and PCI slots (for VirtIO support) available on the controller to support the number of virtual disks that will be deployed.</strong></td>
</tr>
</tbody>
</table>

**IMPORTANT:**
The system resource requirements identified for the StoreOnce VSA are the minimum required resources. When using StoreOnce VSA features, such as Data at Rest encryption, or Data in Flight encryption (IPSEC), you must assign additional resources to the StoreOnce VSA. In this case, configure an additional four virtual CPUs on top of the minimum recommended configuration.

**IMPORTANT:**
The hypervisors report on the StoreOnce VSA resource usage for the user environment and load. Provide enough resources (virtual CPU and virtual RAM) to ensure that the StoreOnce VSA resource utilization is below the hypervisor warning thresholds.

**Azure compute specifications**

StoreOnce VSA is available as a Virtual Machine Service offering in Microsoft Azure ARM (Azure Resource Manager) model. StoreOnce VSA on Microsoft Azure supports up to a maximum capacity of 32TB.

Select the appropriate Azure template for StoreOnce VSA based on the planned storage capacity.
Table 1: Azure compute specifications

<table>
<thead>
<tr>
<th>Recommended VM sizes</th>
<th>CPU</th>
<th>RAM (GB)</th>
<th>Max. no of disks (Page Blobs of size 1023 GB each)</th>
<th>Maximum StoreOnce VSA capacity for the given VM size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard_D11_v2</td>
<td>2</td>
<td>14</td>
<td>4</td>
<td>4 TB</td>
</tr>
<tr>
<td>Standard_D12_v2</td>
<td>4</td>
<td>28</td>
<td>8</td>
<td>8 TB</td>
</tr>
<tr>
<td>Standard_D4_v2</td>
<td>8</td>
<td>28</td>
<td>16</td>
<td>16 TB</td>
</tr>
<tr>
<td>Standard_D5_v2</td>
<td>16</td>
<td>56</td>
<td>32</td>
<td>32 TB</td>
</tr>
</tbody>
</table>

You can instantiate the StoreOnce VSA through Microsoft Azure Market Place or by selecting the StoreOnce VSA Virtual Machine Offering from Microsoft Azure using any of the above Virtual Machine Sizes.

StoreOnce VSA on Microsoft Azure supports Page blobs only. The VM disk type can be either HDD (Standard) or SSD (Premium) storage. Storage is allocated to the StoreOnce VSA on Azure by adding individual disks (page blobs) of size 1023 GB.

**If you are running StoreOnce software earlier than 3.13.2**

StoreOnce VSA systems running StoreOnce software versions earlier than 3.13.2 support only 1 TB, 5 TB, and 10 TB disk sizes for data storage.

StoreOnce VSA systems running StoreOnce software versions earlier than 3.13.2 require a minimum Virtual CPU of 4 vCPU. When the storage capacity is increased beyond 4 TB, the resources must be increased to 32 GB of vRAM to ensure optimal performance.

**VMware based StoreOnce VSA**

**Supported datastores on VMware vSphere ESXi**

StoreOnce VSA is supported on VMFS3, VMFS5, VMFS6, and NFS datastores. StoreOnce VSA is not supported on Raw Device Mapping (RDM).

No qualification has been done on VAAI supported NAS storage. StoreOnce VSA supports Storage vMotion between NFS datastores and between VMFS and NFS datastores. To achieve greater throughput and performance on NFS datastores, VMware recommends increasing the Net.TcpipHeapSize and Net.TcpipHeapMax parameters. Refer to the best practices recommended by your NAS storage provider for additional improvements.

Hewlett Packard Enterprise recommends deploying and using the StoreOnce VSA on LUNs that are hosted on different physical spindles to avoid I/O bottlenecks and latencies.

**Fibre Channel Support for StoreOnce Catalyst and VTL (VMware only)**

With StoreOnce software 3.16.0 and later, StoreOnce VSA supports Fibre Channel (target mode) connectivity over StoreOnce Catalyst and VTL targets.

**NOTE:**

Fibre Channel support for StoreOnce Catalyst and VTL is supported only on VMware based StoreOnce VSAs. This feature is not supported on Hyper-V-based StoreOnce VSAs.
To enable Fibre Channel device support on StoreOnce VSA, users must set up VM-direct path I/O to the VSA from the ESXi host. The FC HBA device is provided directly to the StoreOnce VSA via a physical device passthrough mechanism. Once VM-direct path I/O is set up, the StoreOnce VSA can act as an FC target over StoreOnce Catalyst and VTL interfaces.

**NOTE:**

NPIV must be enabled on the FC switch under the SAN fabric to support VTL over Fibre Channel on the StoreOnce VSA.

### StoreOnce VSA FC parameters and reference material

#### Table 2: StoreOnce VSA Fibre Channel parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of FC cards supported</td>
<td>Qlogic 8Gb (2500 series)</td>
</tr>
<tr>
<td>Maximum number of FC cards supported</td>
<td>2</td>
</tr>
<tr>
<td>Maximum number of raw FC ports supported</td>
<td>4</td>
</tr>
</tbody>
</table>

Fibre Channel connectivity on StoreOnce VSA follows the same generic feature usage guidelines and restriction as a StoreOnce hardware product. The only difference is the way in which the Fibre Channel HBA device is added and set up on the StoreOnce VSA.

Detailed documentation for configuring passthrough is available in the VMware KB article at: [https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1010789](https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1010789)

Refer also to the VMware Compatibility Guide for Supported Server Models with FC VM-Direct Path Feature.

### Hyper-V-based StoreOnce VSA

**NOTE:**

Fibre Channel support for StoreOnce Catalyst and VTL is supported only on VMware based StoreOnce VSAs. This feature is not supported on Hyper-V-based StoreOnce VSAs.

### Supported datastores on Hyper-V

StoreOnce VSA is supported on NTFS file system-based storage.

StoreOnce VSA is not supported on passthrough disks and ReFS based storage.

### AMD Platform NUMA Settings (Hyper-V only)

With Hyper-V server on AMD-based hardware, review the virtual NUMA settings before deploying the StoreOnce VSA.

Once the VSA is deployed on Hyper-V, check the settings of the virtual machine for virtual NUMA.

In the following example, the virtual NUMA node has a RAM of 31542 MB. However, 32768 MB (32 GB) was allocated to the StoreOnce VSA, and the VSA does not boot up properly. This example applies to any virtual machine in general. For more information, refer to the Microsoft documentation entitled, “How to Configure Virtual NUMA for VMM”, at [http://technet.microsoft.com/en-us/library/ij614459.aspx](http://technet.microsoft.com/en-us/library/ij614459.aspx).
In the following example, the RAM value was increased to 32768 MB, so that the StoreOnce VSA boots up and is configured properly.
Microsoft Azure-based StoreOnce VSA

HPE StoreOnce VSA is available as a cloud solution with Microsoft Azure, starting with StoreOnce version 3.16.2. StoreOnce VSA is available as a Virtual Machine Offering with Microsoft Azure Market Place. StoreOnce VSA on Azure supports all of the core features of StoreOnce Virtual Machines.

StoreOnce VSA is deployed using the Bring Your Own License (BYOL) model and supports the existing StoreOnce VSA license schemes. The base StoreOnce VSA product is available with 4, 10, 20, or 32 TB Perpetual licenses. When the base capacity is fully used, you can upgrade to a higher capacity by purchasing and applying a capacity upgrade license (4TO10TB, 10TO20TB, and 20TO32TB). The perpetual licenses include three years of support and entitlement to software updates.

The StoreOnce VSA has an embedded instant-on license that enables operation for up to 60 days without the addition of a license key. While running with the instant-on license, you can add up to 32 TB of storage. If no license key is added within 60 days, the StoreOnce VSA will operate in degraded mode. Note that the added license must be of equal or greater capacity than the storage configured during the trial period. See StoreOnce VSA licenses.

In addition to the StoreOnce VSA license, you will need to pay Microsoft Azure for the cloud resources used including compute, storage, and network bandwidth, depending on their Azure Subscriptions terms. When planning to deploy StoreOnce VSA on Microsoft Azure, include the Microsoft Azure costs in your organizational StoreOnce VSA operation budget. For detailed information and cost estimates, see the

Azure allows users to change the VM size of an existing VM at any given time. So you can change the StoreOnce VSA VM Size to a higher size template (for example from Standard_D11_v2 to Standard_D4_v2) during the course of the VSA lifetime, to support capacity expansion to an existing VSA.

StoreOnce VSA on Azure does not support Catalyst over Fiber Channel or VT over Fiber Channel.

StoreOnce VSA performance on Azure is always subject to Azure VM size, page blob/storage account backing disk performance, and Network bandwidth in and out of Azure StoreOnce VSA.

StoreOnce VSA instances running in Azure are primarily supported as replication targets.

### StoreOnce VSA Backup key parameters

This section applies to StoreOnce VSA deployed in Hyper-V and VMware environments. For StoreOnce VSA deployed on Azure, see [Azure compute specifications](https://azure.microsoft.com/en-us/pricing/calculator/).

**Table 3: Key parameters for StoreOnce VSA Backup**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Required vCPU cores at 2.2GHz</th>
<th>Required memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSA 1 TB and VSA 4 TB minimum config.</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>VSA 10 TB minimum config.</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>VSA 20 TB minimum config.</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>VSA 32 TB minimum config.</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>VSA 50 TB minimum config.</td>
<td>12</td>
<td>32</td>
</tr>
</tbody>
</table>

**System limits**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Recommended maximum number of libraries, shares, and StoreOnce Catalyst Stores in this recipe</th>
<th>Recommended overall maximum concurrent inbound data streams in this recipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSA 1 TB and VSA 4 TB minimum config.</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>VSA 10 TB and VSA 20 TB minimum config.</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>VSA 32 TB minimum config.</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>VSA 50 TB minimum config.</td>
<td>8</td>
<td>32</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th></th>
<th>Maximum cartridges per library</th>
<th>Maximum cartridge size (GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VTL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All configurations</td>
<td>512</td>
<td>3200</td>
</tr>
<tr>
<td><strong>NAS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All configurations</td>
<td></td>
<td>1 million items</td>
</tr>
<tr>
<td><strong>StoreOnce Catalyst</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum concurrent outbound copy jobs (per node)</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>VSA 1 TB and VSA 4 TB minimum configuration</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>VSA 10 TB minimum configuration</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>VSA 20 TB, VSA 32 TB, and VSA 50 TB minimum configuration</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td><strong>Replication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum replication appliances fan-in (per node)</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Maximum replication appliances fan-out (per node)</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**NOTE:**

The System Resource Requirements provided for the VSA are the minimum required resources for each given configuration. The StoreOnce Catalyst parameter configurations in the table can be increased beyond the recommended setting through the StoreOnce VSA GUI. When using higher than the recommended configuration, assign additional resources to the StoreOnce VSA. For more information, see [StoreOnce VSA system requirements](#).
StoreOnce VSA licensing

StoreOnce VSA licenses

StoreOnce VSA uses a single license key to enable the appliance and the following StoreOnce VSA licensable features: StoreOnce Catalyst, Replication, and Security Pack. Cloud Bank Storage Read/Write Capacity and Cloud Bank Storage Detach Capacity licenses are available separately.

License terminology:

- **Base license**: The first license applied to a VSA appliance. The base license is for a specific capacity (4 TB, 10 TB, 20 TB, 32 TB, or 50 TB). See [Base license](#).
  - 20 TB licenses require StoreOnce software version 3.13.2 or later.
  - 32 TB licenses require StoreOnce software version 3.16.0 or later.
  - StoreOnce VSA on Microsoft Azure does not support the 50 TB license.

- **Capacity upgrade license**: A license that expands the capacity of the existing perpetual or term license. See [Capacity upgrade license for StoreOnce VSA](#).

- **Cloud Bank Storage Read/Write Capacity license**: Enables the creation and use of Cloud Bank stores that multiple systems can access. Available as a demo license. Required before installing a Cloud Bank Storage Detach Capacity license.
  
  You can add up to 50 Cloud Bank Storage license keys to a system. The license key limit is for Read/Write Capacity and Detach Capacity combined. The capacity enabled by a license key is specified in 1 TB multiples using the MyHPELicensing portal. For larger systems, HPE recommends generating license keys with larger multiples of 1 TB so the capacity is not limited by the 50 license key limit.

- **Cloud Bank Storage Detach Capacity license**: Allows Cloud Bank stores to be disconnected from the host system in a reattachable and readable state.

- **Perpetual license**: A license to use (LTU) that entitles use of all product features indefinitely. Perpetual licenses require StoreOnce software version 3.13.2 or later.
  
  StoreOnce VSA on Microsoft Azure does not support the 32 TB to 50 TB Upgrade license.

- **Term license**: An LTU that entitles use of all product features for a specific number of years. In earlier software versions, licenses were available with three or five year terms.

  **IMPORTANT:**
  
  Starting with StoreOnce version 3.16.0, only perpetual licenses are available. In earlier software versions, 4 TB, 10 TB, and 50 TB licenses were available with three or five year terms. The existing term licenses are valid through the length of their term.

- **Term extension license**: A license that extends the term of the existing term license. See, [License to extend license to use term](#).

- **Freeware license**: A 1 TB freeware product with a three-year license. The freeware license can be upgraded by applying a base license on top of the 1 TB license. See [1 TB Freeware license](#).
IMPORTANT:
The StoreOnce VSA license to use (LTU) entitles use of all product features for the duration of the license to use term. It is illegal to attempt to apply the license key to any other StoreOnce VSA instance and the operation will fail. It is illegal to attempt to copy or clone the StoreOnce VSA. A copied or cloned StoreOnce VSA will not be usable for backup and restore operations. If the StoreOnce VSA is destroyed due to some genuine issue with VSA, contact HPE Support. HPE Support might provide a new license key to enable the replaced StoreOnce VSA instance to operate for the remainder of the original LTU term.

NOTE:
StoreOnce VSA on Microsoft Azure uses the Bring Your Own License (BYOL) model - you must provide the LTU for Microsoft Azure. You will also need a StoreOnce VSA license.

StoreOnce VSA instant-on license

The StoreOnce VSA has an embedded instant-on license that enables operation for up to 60 days without the addition of a license key. (Licenses keys are 1 TB, 4 TB, 10 TB, 20 TB, 32 TB or 50 TB). If no license key is added within 60 days, the StoreOnce VSA will operate in degraded mode. While running with the instant-on license, you can add up to 50 TB of storage. Take care, if you intend to install a 1 TB free, or a purchased 4 TB, 10 TB, 20 TB or 32 TB product license at the end of the instant-on period. Do not add storage capacity that exceeds the capacity that the planned license will cover.

IMPORTANT:
Once storage is added, it cannot be removed without destroying the StoreOnce VSA. If you attempt to add a license key with a lower capacity than the storage capacity configured on the StoreOnce VSA, the license addition will fail.

The StoreOnce VSA GUI advises how many days are left until the license expires; and updates the value daily.

The following example is from the Events page of the StoreOnce VSA GUI.

When an Instant-On license expires after 60 days, a message is displayed in the Events page on the StoreOnce VSA GUI. The message states: “StoreOnce Instant-On license expired.”
1 TB Freeware license

The 1 TB, 3-year, Freeware license does not enable the StoreOnce VSA to be configured for more than 1 TB. To increase capacity, a 4 TB, 10 TB, 20 TB, 32 TB, or 50 TB license must be acquired and installed.

The 1 TB, 3-year, Freeware license cannot be extended beyond 3 years by another freeware license. To continue use beyond 3 years a 4 TB, 10 TB, 20 TB, 32 TB, or 50 TB license must be acquired and installed. To find out about and acquire the 1 TB freeware product, go to http://www.hpe.com/storage/FreeBackup.

Base license

A base license is the first license applied to a StoreOnce VSA instance. Term extension licenses and capacity expansion licenses can be applied to a base license.

StoreOnce VSA 3.13.2 and later supports the following base licenses. One of these licenses must be acquired, activated, and applied to use the StoreOnce VSA beyond the 60 day instant-on period.

Table 4: Perpetual base capacity licenses

<table>
<thead>
<tr>
<th>License</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P9L02A/AAE</td>
<td>HPE StoreOnce VSA Perpetual 4 TB</td>
<td></td>
</tr>
<tr>
<td>P9L03A/AAE</td>
<td>HPE StoreOnce VSA Perpetual 10 TB</td>
<td></td>
</tr>
<tr>
<td>P9L04A/AAE</td>
<td>HPE StoreOnce VSA Perpetual 20 TB</td>
<td>Requires StoreOnce version 3.13.2 or later.</td>
</tr>
<tr>
<td>Q0Q47A/AAE</td>
<td>HPE StoreOnce VSA Perpetual 32 TB</td>
<td>Requires StoreOnce version 3.16.0 or later.</td>
</tr>
<tr>
<td>P9L05A/AAE</td>
<td>HPE StoreOnce VSA Perpetual 50 TB</td>
<td>Not supported for VSA on Microsoft Azure.</td>
</tr>
</tbody>
</table>
### Table 5: Term base capacity licenses

<table>
<thead>
<tr>
<th>License</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4T77A/AAE</td>
<td>HPE StoreOnce VSA 3 year 4 TB</td>
<td>Not supported for StoreOnce VSA 3.16.0 and later.</td>
</tr>
<tr>
<td>D4U49A/AAE</td>
<td>HPE StoreOnce VSA 5 year 4 TB</td>
<td>Not supported for StoreOnce VSA 3.16.0 and later.</td>
</tr>
<tr>
<td>TC458A/AAE</td>
<td>HPE StoreOnce VSA 3 year 10 TB</td>
<td>Not supported for StoreOnce VSA 3.16.0 and later.</td>
</tr>
<tr>
<td>D4U62A/AAE</td>
<td>HPE StoreOnce VSA 5 year 10 TB</td>
<td>Not supported for StoreOnce VSA 3.16.0 and later.</td>
</tr>
<tr>
<td>D4U47A/AAE</td>
<td>HPE StoreOnce VSA 3 yr 50 TB</td>
<td>Not supported for StoreOnce VSA 3.16.0 and later.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not supported for VSA on Microsoft Azure.</td>
</tr>
<tr>
<td>D4U48A/AAE</td>
<td>HPE StoreOnce VSA 5 yr 50 TB</td>
<td>Not supported for StoreOnce VSA 3.16.0 and later.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not supported for VSA on Microsoft Azure.</td>
</tr>
<tr>
<td></td>
<td>Freeware 3 year 1 TB</td>
<td></td>
</tr>
</tbody>
</table>

### License to extend license to use term

Term-based licenses have a three or five year license-to-use period. At the end of the term, another license-to-use must be acquired, activated, and applied to continue to use all product features. If the StoreOnce VSA license term expires, all backup targets will become read-only. It will not be possible to write new backup or replication data to the StoreOnce VSA. Purchase either a perpetual license or another term license to enable continued usage.

**IMPORTANT:**

Before you purchase a license to extend an existing license-to-use term, check how much of the existing term remains. The existing license must have less than 180 days left to run. The number of days left is checked at activation time, not at purchase time. If the existing license has more than 180 days left to run, the activation will fail.

A license to extend an existing license-to-use period must match the capacity of the existing base license. If you attempt to activate a license for an already licensed StoreOnce VSA and the capacities do not match, the activation will fail. Both base licenses and capacity upgrade licenses can be used to extend a license-to-use term.
IMPORTANT:
The StoreOnce VSA software must be at 3.13.2 or newer:

- To use a perpetual license to extend the use of an existing term license.
- Or to use a perpetual license to increase the capacity of an existing term license.

The 32 TB perpetual license requires StoreOnce software version 3.16.0 or later.

The following table shows compatibility between installed license and new license to extend license to use term. Only those combinations listed are supported; all other combinations are not supported. Freeware cannot be extended and perpetual licenses are never extended.

### Table 6: License to be added to extend license to use term

<table>
<thead>
<tr>
<th>Already installed license</th>
<th>License that may be added to extend license to use term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeware 3 year 1 TB, D4U67AAE</td>
<td>None allowed</td>
</tr>
<tr>
<td>3 year 4 TB</td>
<td>Perpetual 4 TB</td>
</tr>
<tr>
<td>5 year 4 TB</td>
<td>Perpetual 4 TB to 10 TB upgrade</td>
</tr>
<tr>
<td>Perpetual 4 TB</td>
<td>P9L02A/AAE</td>
</tr>
<tr>
<td>Perpetual 4 TB</td>
<td>P9L06A/AAE</td>
</tr>
<tr>
<td>3 year 10 TB</td>
<td>Perpetual 10 TB</td>
</tr>
<tr>
<td>5 year 10 TB</td>
<td>Perpetual 10 TB to 20 TB upgrade</td>
</tr>
<tr>
<td>Perpetual 10 TB</td>
<td>P9L03A/AAE</td>
</tr>
<tr>
<td>Perpetual 10 TB</td>
<td>P9L07A/AAE</td>
</tr>
<tr>
<td>3 year 50 TB</td>
<td>Perpetual 50 TB</td>
</tr>
<tr>
<td>5 year 50 TB</td>
<td>P9L05A/AAE</td>
</tr>
<tr>
<td>3 year 10 - 50 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>5 year 10 - 50 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>Perpetual 20 TB</td>
<td>Perpetual 20 TB to 50 TB upgrade</td>
</tr>
<tr>
<td>Perpetual 10 TB to 20 TB upgrade</td>
<td>P9L08A/AAE</td>
</tr>
<tr>
<td>Perpetual 20 TB to 32 TB upgrade</td>
<td>Q0Q48A/AAE</td>
</tr>
</tbody>
</table>

### Capacity upgrade license for StoreOnce VSA

When the base capacity is fully used, it is possible to upgrade to a higher capacity by purchasing and applying a capacity upgrade license. The following table lists the available capacity upgrade licenses. There are a number of factors to consider before purchasing a capacity upgrade license; these factors are described after the table.
Table 7: Capacity upgrade licenses

<table>
<thead>
<tr>
<th>License</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P9L06A/AAE</td>
<td>StoreOnce VSA Upgrade 4 TB to 10 TB LTU/E-LTU</td>
</tr>
<tr>
<td>P9L07A/AAE</td>
<td>StoreOnce VSA Upgrade 10 TB to 20 TB LTU/E-LTU</td>
</tr>
<tr>
<td>P9L08A/AAE</td>
<td>StoreOnce VSA Upgrade 20 TB to 50 TB LTU/E-LTU</td>
</tr>
<tr>
<td>Q0Q48A/AAE</td>
<td>StoreOnce VSA Upgrade 20 TB to 32 TB LTU/E-LTU</td>
</tr>
<tr>
<td>Q0Q49A/AAE</td>
<td>StoreOnce VSA Upgrade 32 TB to 50 TB LTU/E-LTU</td>
</tr>
</tbody>
</table>

Rules for applying capacity upgrade licenses

You cannot add a base capacity license on top of another base capacity license to upgrade the capacity of the StoreOnce VSA. For example, you cannot add a 10 TB base capacity license on top of 4 TB base capacity license. You cannot add a 50 TB base capacity license onto a 10 TB base capacity license. Always purchase and apply the appropriate capacity upgrade license.

The capacity upgrade license that you purchase must be appropriate for the capacity that is licensed on your StoreOnce VSA.

**NOTE:**

Once the capacity upgrade license is added, the licensed term of the StoreOnce VSA will be perpetual. The remaining term of the previous smaller capacity license is disregarded.

The following table illustrates compatibility between installed licenses and licenses to expand licensed capacity. Only those combinations marked as ‘Allowed’ are supported; all other combinations are not supported.

Table 8: License to be added to increase capacity

<table>
<thead>
<tr>
<th>Already installed license</th>
<th>License that may be added to increase capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeware 3 year 1 TB, D4U67AAE</td>
<td>Perpetual 4 TB, Perpetual 10 TB, Perpetual 20 TB, Perpetual 32 TB, Perpetual 50 TB</td>
</tr>
<tr>
<td></td>
<td>P9L02A/AAE, P9L03A/AAE, P9L04A/AAE, Q0Q47A/AAE, P9L05A/AAE</td>
</tr>
<tr>
<td>3 year 4 TB</td>
<td>Perpetual 4 TB to 10 TB upgrade</td>
</tr>
<tr>
<td>5 year 4 TB</td>
<td></td>
</tr>
<tr>
<td>Perpetual 4 TB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P9L06A/AAE</td>
</tr>
<tr>
<td>Perpetual 10 TB</td>
<td>Perpetual 10 TB to 20 TB upgrade</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Perpetual 4 TB - 10 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>3 year 10 TB</td>
<td></td>
</tr>
<tr>
<td>3 year 4 TB - 10 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>5 year 10 TB</td>
<td></td>
</tr>
<tr>
<td>5 year 4 TB - 10 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>Perpetual 20 TB</td>
<td>Perpetual 20 TB to 50 TB upgrade</td>
</tr>
<tr>
<td>Perpetual 10 - 20 TB Upgrade</td>
<td>Perpetual 20 TB to 32 TB upgrade</td>
</tr>
<tr>
<td>Perpetual 32 TB</td>
<td>Perpetual 32 TB to 50 TB upgrade</td>
</tr>
<tr>
<td>Perpetual 20 TB to 32 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>Perpetual 50 TB</td>
<td>No further capacity expansion allowed</td>
</tr>
<tr>
<td>Perpetual 20 TB to 50 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>3 year 50 TB</td>
<td></td>
</tr>
<tr>
<td>5 year 50 TB</td>
<td></td>
</tr>
<tr>
<td>3 year 10 - 50 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>5 year 10 - 50 TB upgrade</td>
<td></td>
</tr>
<tr>
<td>StoreOnce serial numbers</td>
<td></td>
</tr>
</tbody>
</table>

The appliance Serial Number is unique for each StoreOnce VSA and is created during the installation process.

When redeeming licenses for the StoreOnce VSA, the HPE licensing portal will ask for the Serial Number (a unique identifier with which a license is generated). Use the System ID that can be found on the Device Configuration page of the StoreOnce VSA GUI for license generation.

The license can also be obtained using the following StoreOnce CLI command and response sequence.

```
# system show config

System ID      : HP1259312EFF
Description    : HP1259312EFF
Product Class  : HP StoreOnce VSA Software
Hardware Type  : Virtual
CLI output     : text
Page control   : On
```
NOTE:
You may also use the Serial Number (highlighted in the example) that can be found on the Status page of the GUI. The HPE licensing portal accepts the UUID with, or without, the leading HP.

Redeeming a purchased license

NOTE:
With StoreOnce software version 3.12.2 and later, you can also use the StoreOnce GUI to add license keys. See the StoreOnce VSA User Guide for details.

IMPORTANT:
The host (ESXi/Hyper-V) and the StoreOnce VSA must have the correct date and time settings before generating and applying licenses to the StoreOnce VSA.

Prerequisites
The Entitlement Order Number (EON) on the email or letter received when you purchased StoreOnce VSA

Procedure

1. Go to the HPE Licensing web site and, to generate the license to use (LTU) for the StoreOnce VSA, follow the instructions.
   
   HPE recommends that you select the option to save the license to a .DAT file.
   
   The file can also be emailed to the email address of the registered license owner. Or you can use Cut and Paste to copy it to a temporary file (for example to a text file).

2. If you save the license as a file, sftp it into the repository directory of the StoreOnce VSA system.
   
   a. Ensure that the File Protocol is set to SFTP, not SCP.

   b. Log in to the StoreOnce VSA as a user with Admin rights.

   c. SFTP <LTU>.dat to repository.

3. Apply the license using one of the following StoreOnce CLI commands:
- `license load <file-image>`: to load a license that has been saved as a file image. The file image must exist in the repository directory of the StoreOnce System.

- `license add <string>`: to key in the license directly. If you used email or a temporary file, cut and paste the string exactly as you obtained it from the HPE Licensing website. Entering the license manually is not advised. If there is any descriptor text within quotation marks at the start of the license string, delete it. The following example can be processed correctly because the descriptor string occurs at the end of the license.

```
#HPE StoreOnce VSA 4TB 3-year LTU
QCAC BQ9A H9PA CHV3 USB4 H9PA Y53L KMPL H9PA 6EJE DXUW H9PA GHTG
L762 H9PA FB69 KJVT H9PA GFVM D35J H9PA N330 QMTR H9PA CSQE U5SR
H9PA A52X D52B H9PA WP7Y HXEH H9PA 4DCG TV22 H9PA 5G86 MC4X H9PA
G3G7 G5Y7 H9PA FDG5 LA4Q H9PA DFTF 4ZVB H9PA Y8TA QK3C H9PA J545
S87S EUU4 H9PA 2RTY V6C5 H9PA "IPP20160727064303 D4T77A HPE
StoreOnce VSA 4TB 3-year LTU"
```

**NOTE:**

If preferred, use the StoreOnce GUI to add the license, as described in the *StoreOnce VSA User Guide*.

4. Check that the license is installed using the StoreOnce CLI command: `license show`

See the *HPE StoreOnce System CLI Reference Guide* for more information.
Unpacking StoreOnce VSA deployment packages

This procedure is applicable to VMware, Hyper-V, and KVM platforms. For Microsoft Azure Cloud-based deployment, see Deploying StoreOnce VSA on Microsoft Azure.

If you ordered StoreOnce VSA for electronic delivery, you will get a link to download a ZIP file in your order confirmation email. If you ordered StoreOnce VSA for physical delivery, you will receive a DVD with an ISO image. The ZIP file and the ISO image cannot be used directly to deploy the StoreOnce VSA.

Unpacking the StoreOnce VSA deployment package for electronic delivery

This procedure is applicable to VMware, Hyper-V, and KVM platforms. For Microsoft Azure Cloud-based deployment, see Deploying StoreOnce VSA on Microsoft Azure.

Procedure

1. Select the link in the order confirmation email. This link takes you to a web page from where you can go to download the software and get your license key.
2. To download software, select the link. Then select the StoreOnce VSA ZIP file appropriate to your hypervisor environment and follow the instructions. You will be required to sign in with HP Passport, which can be created when you first access the site.
3. Download the package to the appropriate location for your platform.
   
   • Hyper-V: Copy the StoreOnce VHD.ZIP to the Windows server on which Hyper-V is enabled.
   
   • VMware: Unzip the StoreOnce VSA ZIP file to the appropriate location for the deployment method. The OVF/OVA package may be unzipped into any folder accessible on the network. If the OVF/OVA package is not on the same machine as the client, bear in mind that deployment speed will depend upon network performance.
   
   • KVM: Copy the HP StoreOnce VSA KVM TAR file (QCOW2.tar) to the KVM server. The unzipped file contains the VSA QCOW2 base image that will be used for KVM deployment.

Unpacking the StoreOnce VSA deployment package for physical delivery

This procedure is applicable to VMware and Hyper-V platforms. For Microsoft Azure Cloud-based deployment, see Deploying StoreOnce VSA on Microsoft Azure.

Procedure

1. The box contains a DVD for VMware deployment and a DVD for Hyper-V deployment. Select the DVD for your environment, mount the required StoreOnce VSA ISO image, and copy the files to the appropriate location for the deployment method.

   StoreOnce VSA ISO image for VMware file name: STOREONCEVSA_VMWARE.iso
   
   StoreOnce VSA ISO image for Hyper-V file name: STOREONCEVSA_HYPERV.iso

2. The envelope that you received with the DVD box has instructions for getting your license key.
Adding the license key after running an evaluation copy of StoreOnce VSA

Procedure

1. Follow the instructions above to get your license key.
2. Add the license key to the StoreOnce VSA as described in Applying the license using StoreOnce CLI commands on page 122.

NOTE:
With StoreOnce software version 3.12.2 and later, you can also use the License Management page in the StoreOnce GUI to add license keys. See the StoreOnce VSA User Guide for details about using this page.

StoreOnce VSA files required for deployment

The StoreOnceVSA package contains the files required for deployment. For product documentation, see Finding StoreOnce documents in the HPE Information Library.

NOTE:
See the latest release notes for the current release and build version numbers.

VMware deployment files

The StoreOnce VSA package for VMware contains two deployment options:

- **StoreOnce VSA package for VCenter deployment:**
  The StoreOnce VSA for VCenter deployment contains an OVF package. The OVF package deployment is allowed only through a VCenter connection and not directly through an ESX host connection. It allows the user to preconfigure the StoreOnce VSA during deployment (network, Admin credentials, and timezone settings).

- **StoreOnce VSA package for direct ESXi server deployment:**
  The StoreOnce VSA for ESXi deployment contains an OVA package and is intended for users without a VCenter environment. The OVA package deployment is allowed both through a vCenter connection and through an ESXi host connection. The OVA package deployment will not provide any options for users to configure the StoreOnce VSA during deployment.
Table 9: StoreOnce VSA package for VCenter deployment

<table>
<thead>
<tr>
<th>Filename</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>storeoncevsa-734561-B21-49-&lt;software-build-version&gt;.mf</td>
<td>The checksum validation file for the .ovf and .vmdk files</td>
</tr>
<tr>
<td>storeoncevsa-734561-B21-49-&lt;software-build-version&gt;.ovf</td>
<td>The StoreOnce VSA ovf descriptor file</td>
</tr>
<tr>
<td>storeoncevsa-734561-B21-49-&lt;software-build-version&gt;-disk1.vmdk</td>
<td>The Thin Provisioned virtual disk for the operating system</td>
</tr>
</tbody>
</table>

Table 10: StoreOnce VSA package for direct ESXi server deployment

<table>
<thead>
<tr>
<th>Filename</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>storeoncevsa-734561-B21-49-&lt;software-build-version&gt;.ova</td>
<td>The StoreOnce VSA OVA package for direct ESXi Server deployments</td>
</tr>
</tbody>
</table>

Microsoft Hyper-V deployment files

The StoreOnce VSA package for Hyper-V contains the following files:

Table 11: StoreOnce VSA package for Hyper-V

<table>
<thead>
<tr>
<th>Filename</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>storeoncevsa-764490-B21-49-&lt;software-version&gt;.vhd.zip</td>
<td>Virtual Hard Disk ZIP file for StoreOnce VSA on Hyper-V</td>
</tr>
<tr>
<td>StoreOnceVSA-Installer.zip</td>
<td>Zip file containing the PowerShell deployment script for StoreOnce VSA on Hyper-V</td>
</tr>
</tbody>
</table>

KVM deployment files

Table 12: StoreOnce VSA package for Ubuntu and SUSE KVM

<table>
<thead>
<tr>
<th>Filename</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>storeoncevsa-779770-B21-49-&lt;software-build-version&gt;.qcow2</td>
<td>StoreOnce VSA KVM qcow2 base image</td>
</tr>
<tr>
<td>StoreOnceVSA_Installer.tar</td>
<td>Tar file containing the deployment script for StoreOnce VSA on KVM</td>
</tr>
</tbody>
</table>

StoreOnce VSA deployment overview

This procedure is applicable to VMware, Hyper-V, and KVM platforms. For Microsoft Azure Cloud-based deployment, see Deploying StoreOnce VSA on Microsoft Azure.
Procedure

1. Download the StoreOnce package to the correct folder.

2. See Unpacking StoreOnce VSA deployment packages on page 25.

3. Based on your hypervisor environment, decide which deployment option to use and make sure that all prerequisites are met. Make sure that you have all networking information available before you start.

4. All installation methods deploy a 50 GB Thin Provisioned virtual disk for the StoreOnce VSA. All platforms require you to create and add the data virtual disks manually and power on the StoreOnce VSA.

5. From StoreOnce 3.13.2, data disks of any size in multiples of 1 TB (1024 GB) are supported for data storage. (For example 1 TB, 2 TB, 3 TB.) (Before StoreOnce 3.13.2, data disk sizes of 1 TB (1024 GB), 5 TB, and 10 TB were supported.)

6. Deploy on virtual environment.
   - Deployment on Microsoft Hyper-V on page 31
   - Deployment on VMware vSphere on page 60
   - Deployment on Ubuntu and SUSE KVM on page 97

7. Decide how much backup capacity will be required. To enable this capacity, create and add disks. Depending upon the license applied, users can configure virtual disks in a number of ways. From StoreOnce 3.13.2, data disks of any size in multiples of 1 TB (1024 GB) are supported for data storage. (For example 1 TB, 2 TB, 3 TB.) See StoreOnce VSA licensing on page 16.

8. If you intend to increase storage, you may also need to increase and reserve memory for the StoreOnce VSA, as described in Virtual memory for optimal performance on page 125.

9. License the StoreOnce VSA, as described in StoreOnce VSA licensing on page 16.

10. At deployment, a 60-day Instant On license is applied, which enables StoreOnce Catalyst and Replication features. After 60 days, this license must be replaced with a purchased license to enable continued use of these features. Use the serial number of the StoreOnce VSA to obtain a purchased license-to-use from the HPE Licensing site.

    **IMPORTANT:**
    The Instant On license enables you to add storage up to the full capacity of 50 TB. Take care, if you intend to install a 1 TB free, or a purchased product license with less than 50 TB capacity at the end of the trial period. The storage on the VSA must not increase beyond the planned license capacity during the Instant On period.

    **NOTE:**
    Backup targets become read-only if a purchased license is not applied within 60 days. They revert to read-write targets as soon as the purchased license is applied.

11. Read the supporting documentation for using the StoreOnce VSA. See For more information on page 29.

12. Once installed StoreOnce VSA will be visible in vSphere client on the ESXi server or in Hyper-V. It will also be accessible via the StoreOnce GUI and Command Line Interface (CLI).
Logging on to the StoreOnce VSA after deployment

Procedure

1. To log on to the StoreOnce VSA after deployment, use the host name or IP address that you specified for the StoreOnce VSA during deployment.

   You may connect to the StoreOnce Management Console from any machine connected to the network. Use the StoreOnce GUI or Command Line Interface (CLI) to access the StoreOnce Management Console.

   • StoreOnce web GUI:
     
     https:<ip_address> or <Fully_Qualified_Domain_Name>

     At the Login screen, enter your user name and password.

   • StoreOnce CLI:
     
     Access the StoreOnce CLI from an ssh terminal using an SSH client application (freely available on the Internet):

     ssh <username>@<ip_address>

     You will be prompted to enter a password.

   NOTE:
   After deployment, the default Admin user name and password are Admin, admin.

2. Use the StoreOnce GUI or CLI to configure and manage all backup targets and StoreOnce Replication and Catalyst copy functions.

HPresetpassword account

An HPresetpassword user account that can only be used via the local console or via the iLO remote console is also created at installation. This account is used only to access the StoreOnce VSA system and reset the Admin user password to the factory default. The HPresetpassword account does not provide any access to StoreOnce functions or data that may already be on the system. See also Management of the HPresetpassword account on page 162.

For more information

There are three separate sources of information: StoreOnce System documentation, vSphere documentation, and Hyper-V documentation.

StoreOnce System documentation can be obtained from: http://www.hpe.com/info/storeonce/docs.

StoreOnce documentation for StoreOnce VSA

The following documents are relevant:
• StoreOnce VSA user guide (also available as online help)
• StoreOnce System CLI Reference Guide for software versions 3.13.2 and earlier
• StoreOnce RPM software release notes

vSphere documentation
Refer to any available documentation for vSphere hypervisor. This documentation is not listed in this guide.

Azure and Hyper-V documentation
For Hyper-V documentation, see https://docs.microsoft.com
For Microsoft Azure documentation, see https://docs.microsoft.com/azure

KVM documentation
Installing KVM requires the following set of packages:

• libvirt-bin
• qemu-kvm
• bridge-utils
• ubuntu-vm-builder
• virt-manager

Ubuntu KVM 14.04 documentation
The following links on the Ubuntu website provide information about installing KVM on a standard Ubuntu 14.04 operating system:

• https://help.ubuntu.com/community/KVM/Installation
• https://help.ubuntu.com/community/KVM/Networking

SLES KVM documentation link
Deployment on Microsoft Hyper-V

Audience and platform for StoreOnce VSA deployment on Microsoft Hyper-V

This deployment option is available for experienced Windows Server 2012 administrators. It is used to deploy StoreOnce VSA 3.11.0 (VSA 2.0) or later on one of the following Hyper-V options:

- Microsoft Windows Server 2012 R2 with Hyper-V role enabled: the standard Windows 2012 R2 OS installation on a physical server. The Hyper-V role enables users to create and manage virtual machines, such as StoreOnce VSA.
- Microsoft Hyper-V 2012 R2 core installation: a minimal server installation with required roles and features to support Hyper-V.

Deployment and configuration using the Microsoft Hyper-V Manager wizard

Deploying the StoreOnce VSA using the Microsoft Hyper-V Manager wizard

Procedure

1. Extract the `storeoncevsa-764490-B21-<software-version>.vhd.zip` file. The extracted file is of 50 GB in size and contains the system disk image for the VSA. The extraction process takes approximately 15 minutes.

2. The ZIP file also contains an MD5 checksum for the VHD (virtual hard disk). Once extracted, this checksum can be verified against the one present in the HyperV-VSA directory to ensure the validity of the VHD.

3. Once the extraction is complete on the Windows server, go to **Start**. Type **Hyper-V Manager** to open a search window automatically. To display a screen similar to the following, click on **Hyper-V Manager**.
NOTE:
This Hyper-V Manager contains two Windows Server 2012 R2 servers in a cluster configuration. One of them is the server that has been logged on to. In a noncluster configuration, only one server would be present.

4. To start deploying a VSA, right click on the server and select **New — Virtual Machine**...
5. The New Virtual Machine Wizard is displayed. To enter the required details for the VSA configuration, click **Next**.
6. Enter the name for the virtual machine, such as `StoreOnce_VSA`, and choose the preferred location to deploy the VSA. Click **Next >**

![New Virtual Machine Wizard](image)

7. Verify that **Generation 1** is selected and click **Next >**

**NOTE:**

**Generation 2** is not supported.
8. Specify a minimum of 16384 MB for the **Startup memory** and click **Next >**
9. To configure the network select **New Virtual Switch** for the **Connection** and click **Next >**
10. Click **Use an existing virtual hard disk** and use the **Browse...** button to retrieve the **Location** of the StoreOnce VSA virtual hard disk. Click **Next >**

**NOTE:**

The zip package for the initial configuration contains the required virtual hard disk. This VHD.ZIP must be extracted once for every VSA to be deployed. The VHD disk image being used for one VSA instance cannot be reused for another.
11. The Summary page is displayed. Check the details and click **Finish**.
12. The StoreOnce VSA is now deployed on the Hyper-V server. The storage must be configured, as described in the next section, before the StoreOnce VSA is powered on.

**Configuring the StoreOnce VSA using the Microsoft Hyper-V Manager wizard**

**IMPORTANT:**

To configure the storage, follow the steps before powering on the StoreOnce VSA.

**Procedure**

1. Right click on the StoreOnce VSA and select Settings...
2. The default vCPU value on Hyper-V is 1 for all VSAs. Navigate to the Hardware — Processor settings and increase the Number of virtual processors to 2.
3. A disk as initial storage must be added before powering on the StoreOnce VSA. The minimum data size of the disk is 1 TB. Data disks of any size in multiples of 1 TB (1024 GB) are supported. Go to the **SCSI Controller** section and select **Hard Drive**. Click on **Add** to add a new hard drive to the SCSI controller.
4. Select the **Virtual Hard disk** radio button and click on **New**.
5. The New Virtual Hard Disk Wizard is displayed. Click **Next >**.
6. For the Disk Format, select **VHDX** and click **Next >**.

**NOTE:**

**VHD** is supported, but the newer **VHDX** version is recommended.
7. Select **Fixed Size** or **Dynamically expanding** and click **Next >**.

8. Make sure that you have sufficient free space on the storage. Hyper-V will initialize the entire disk before presenting it to the StoreOnce VSA. This process takes 35-40 minutes for 1 TB.

**NOTE:**
When using Dynamically Expanding disks, make sure that the total free space on the volume is greater than 10% of the requested disk size.
9. Specify the **Name** and, if the default is not acceptable, **Location** for the virtual hard disk and click **Next >**.
10. Select **Create a new blank virtual hard disk** and enter a **Size**. Click **Next >**.

**NOTE:**
Data disks of any size in multiples of 1 TB (1024 GB) are supported with StoreOnce software 3.13.2 and later.

11. The Summary page is displayed. Check the details and click **Finish**.
12. The **Settings** page for the StoreOnce VSA now includes the new hard drive under **SCSI Controller**. The storage configuration now has a hard drive available for use during the first power on of the StoreOnce VSA.
13. Right click on the StoreOnce VSA and click **Start** to power on the VSA. You can also click **Connect...** to open the StoreOnce VSA console.
14. The StoreOnce VSA powers up and the storage and Instant On license are configured automatically.

15. A DHCP network configuration is applied by default, but may be amended for static IP addresses after deployment.

**NOTE:**
If there is a heavy load on the Hyper-V server, the StoreOnce services on the VSA may take a long time to come up. The Instant On license application will fail. Use the StoreOnce CLI commands as follows:

- Use the `license show` command to check if an Instant On license is installed.
- If not, use the `license add demo` command to add the Instant On license.

The Instant On license will enable StoreOnce Replication and Catalyst on the VSA for a period of 60 days.

**NOTE:**
If the system is not able to assign a valid DHCP address, the service set will be in a failed to start state. Resolve the DHCP address or configure a static IP address. To bring the service set online, reboot the StoreOnce VSA.

---

**The StoreOnce VSA Hyper-V PowerShell Installer**

StoreOnce VSA on Hyper-V offers another method of deployment and configuration using a PowerShell script provided by HPE. This method offers the following advantages:
Hyper-V Manager requirements | Benefits of the PowerShell installer
---|---
Hyper-V Manager requires you to unzip the VHD.ZIP manually before starting the deployment. | The PowerShell script does the unzipping as part of the deployment.
The number of processors must be manually changed from 1 to 2. | The PowerShell script has this value preconfigured.
Hyper-V Manager offers selection of the virtual switch but no step to configure the network settings on the VSA. | The PowerShell script provides options to configure DHCP or static network on one or both the network interfaces. The PowerShell script also allows user to configure the Admin User Password and Time Zone for the StoreOnce VSA as part of deployment.

Running the Hyper-V PowerShell Installer script

The StoreOnce VSA Hyper-V PowerShell Installer script is part of the downloadable package.

Procedure

To run this script, right-click on the script and select Run with PowerShell.

A screen similar to the following appears:
The screen displays the minimum virtual hardware requirements of the VSA that will be preconfigured while deploying the VSA. The script takes you through the steps described in the next section.

Creating a StoreOnce VSA

Procedure

1. Enter the directory where the VHD.ZIP is located.

2. The script displays the available ZIP files in the entered directory, select the StoreOnce VSA VHD ZIP to proceed.

3. Enter the directory where the VSA Image will be created.

4. Enter the name that you wish to use for the StoreOnce VSA virtual machine.

NOTE:

Make sure the specified directory does not exist on the server. The deployment script will create a directory with the directory name specified by the user and will copy the VSA system disk VHD file to create the StoreOnce VSA.
5. The script configures the folder and files.

6. It then prompts to configure the **Time Zone** for the StoreOnce VSA. To continue with host configuration, enter **Y**. (If you wish to configure the time zone after deployment using StoreOnce CLI commands, enter **S** to skip the host configuration.)
7. At the prompt to configure Admin user credentials for the StoreOnce VSA, enter Y to continue with host configuration. (If you wish to configure the admin user password after deployment using StoreOnce CLI commands, enter S to skip the host configuration.)

NOTE:
The length of password must be greater than 0 and less than or equal to 24 characters. It may contain only uppercase/lowercase alphabetical characters, numbers, and the following symbols !@#$%^* The two password entries must match. Password validation occurs during StoreOnce VSA boot-up. If validation fails, the password is reset to the StoreOnce VSA default Admin password.
8. It then prompts to configure eth0 for the network. To continue with the network configuration, enter Y. (If you wish to configure the network after deployment using StoreOnce CLI commands, enter S to skip network configuration.)

9. Choose the IP Configuration mode: **DHCP** or **Static**. If you select **Static**, you will be prompted to provide IP address details.

10. Select the required **VM Switch** from the list of available Virtual switches on the Hyper-V host.

11. (In our example only one VM switch is available and it has been configured with the name Management Switch.)
12. If necessary, repeat the steps to configure eth1.

13. If necessary, configure up to three DNS servers.

14. The script completes the installation process, saving the configuration to file and creating the ISO image.
15. The next step is to configure the storage for the StoreOnce VSA. To continue with the installation process, a minimum of one 1 TB data disk must be added to the VSA.

NOTE:
By default the script will choose “dynamic” as the disk provisioning type.

16. Select the data disk size and number of data disks to be added. By default, the data disks will be placed in the same directory as the VSA base disk. Users can also choose to place the data disks in a different location on different volumes.
17. After storage configuration inputs are saved, the script uncompresses the StoreOnce VSA VHD.zip

18. The script then deploys the StoreOnce VSA on to the Hyper-V server. On completion of deployment, the script shows a summary of the configuration and displays a power-on prompt. Select yes [Y] to power on the StoreOnce VSA immediately or select no [N] and use Hyper-V Manager to power on the StoreOnce VSA later.
Deployment on Microsoft Hyper-V

Configuration Step: 13 of 14

Creating VM

VM Creation: Using VMDK from paths: E:\StoreOnceVSA\StoreOnce_VSA_demo\storeonce_deployment\storeonce_deployment.wvd
VM Creation: Creating VM without switch configuration as no VM Switch was chosen by user...
VM Creation: Adding VM network adapter...
VM Creation: Adding VM vCPUs...
VM Creation: Adding DVD drive with config ISO path E:\StoreOnceVSA\StoreOnce_VSA_demo\vsas\config.iso ...

Adding dynamic disk | size: 1 TB, location: E:\StoreOnceVSA\StoreOnce_VSA_demo\vsas\dataDisks\storeonce_deployment\dataDisk_1_dynamic.vhdx
VMDK creation for data disk in progress...
VMDK created for data disk. Adding to VM...
Data disk successfully added to VM
Installation completed successfully

Configuration Step: 14 of 14

Summary of configuration:

Network preferences:
Interface Boot Protocol IP Address IP Subnet Mask Gateway Domain Name VM Switch
--------- -------------- -------------- -------------- -------------- -------------
et01 dhcp

DNS Server DNS Name
-----------
DNS Server-1
DNS Server-2
DNS Server-3

Data disks preferences:
Disk Type Disk Size (in TB) Disk Path
----------- ----------- ---------------
dynamic 1 E:\StoreOnceVSA\StoreOnce_VSA_demo\vsas\dataDisks\storeonce_deployment\dataDisk_1_dynamic.vhdx

Number of virtual CPUs: 2
Virtual RAM allocated: 16 GB
This installer has finished creating a StoreOnce VSA with the above configuration that is in powered off state

Things to note before powering on the StoreOnce VSA

* Once the VSA boots up, please verify that the instant on license is installed by using 'license show' command from the StoreOnce VSA command line interface
* If not, use the 'license add demo' command to add the instant on license

Please refer the StoreOnce VSA user guide for detailed information.

Do you want to power on the StoreOnce VSA?
[V] Yes [W] No [H] Help [Q] Quit
The StoreOnce VSA has been successfully powered on

*** End of program ***
Deployment on VMware vSphere

Audience and platform for StoreOnce VSA deployment on VMware vSphere

This deployment option is available for VMware administrators using vSphere client or vSphere web client.

The StoreOnce VSA can be deployed with the OVF or the OVA package.

- The StoreOnce VSA OVF package deployment is allowed only through a vCenter connection and not directly through an ESX host connection. The OVF package deployment allows user to configure the StoreOnce VSA during deployment (network, Admin credentials, and timezone settings).
- The StoreOnce VSA OVA package deployment is allowed both through a vCenter connection and through an ESX host connection. The OVA package deployment does not provide any options for users to configure the StoreOnce VSA during deployment.

StoreOnce VSA on VMware vSphere

Deployment prerequisites on VMware vSphere

This deployment method requires you to ensure that all deployment pre-requisites have been met; there are no in-built checks within the deployment process.

Procedure

1. Make sure that you have downloaded the latest StoreOnce VSA OVF/OVA package to a network location where the vSphere client can access it. (For optimum performance, download the StoreOnce VSA OVF/OVA package to the vSphere client machine.)

2. Make sure that you have an available datastore with sufficient free space to support the virtual disks that will be created. The process also requires the name of the virtual network on which the StoreOnce VSA is to be deployed. Data disks of any size in multiples of 1 TB (1024 GB) are supported with StoreOnce software 3.13.2 and later.

Deploying the StoreOnce VSA on VMware vSphere

The following steps show the deployment of the StoreOnce VSA OVF package through a vCenter connection.

The StoreOnce VSA OVA package deployment follows similar steps without Step 10.

Procedure

1. Log in to the vSphere client and select VMs and Templates from the Inventory section of the Home page.
2. Select the appropriate vCenter server/ESXi host in the Navigation pane and display the Virtual Machines tab.

3. From the File menu, select Deploy OVF Template...

4. Enter the URL or pathname for the StoreOnceVSA OVF or OVA file (or use the Browse... button to locate the file) and click Next >
5. Check the details of the StoreOnceVSA OVF or OVA file and click Next >
6. Enter a **Name**, such as StoreOnce VSA, for the deployed template and select an **Inventory Location** for it on the server. Click **Next >**
7. Select a datastore from the list and click **Next**

8. Only one datastore may be selected at deployment and it will be used for the StoreOnce VSA system files. The virtual disk created will be thin provisioned, with a capacity of 50 GB.
9. Check that the disk format, **Thin Provision**, is selected and click **Next >**

10. The deployment creates the Thin Provisioned virtual disk for the operating system. (The Thick or Thin Provisioned virtual disk for storage must be added separately after deployment.)
11. Select the appropriate network for the StoreOnce VSA and click **Next >**. If you do not know which network to select, ask the VMware administrator.
12. If available, use the **Properties** dialog to configure **DNS Server Settings**, the **Time Zone Setting** and **Admin User Credential Setting**, and to edit **Ethernet0 settings** and **Ethernet1 settings**, if necessary. The default deployment is DHCP. After deployment, network settings may be amended using StoreOnce CLI commands. See the *StoreOnce System CLI Reference Guide* for further details.

**NOTE:**

To use FQDNs (Fully Qualified Domain Names) rather than IP addresses to access the StoreOnce system, the DNS server addresses that you provide must be able to resolve addresses for all configured subnets. If you are using IPv4 and IPv6 addressing, the DNS servers that are configured must be able to resolve both IPV4 and IPV6 FQDNs. Up to three DNS servers (one primary, and two backup servers if the primary is unavailable) may be configured for the StoreOnce Backup system. The DNS servers may have IPv4 and/or IPv6 addresses.
NOTE:
The length of password must be greater than 0 and less than or equal to 24 characters. It may contain only uppercase/lowercase alphabetical characters, numbers, and the following symbols !@#$%^*

The two password entries must match. Password validation occurs during StoreOnce VSA boot-up. If validation fails, the password is reset to the StoreOnce VSA default Admin password.

13. Check the Summary screen and click Finish to start the deployment process. (Leave the Power on after deployment box unchecked so that you can add datastores before the StoreOnce VSA is powered on.)
NOTE:
The deployment creates the Thin Provisioned virtual disk for the operating system. See the next section for more information about creating virtual disks for storage after deployment.

14. The deployment process can take up to 15 minutes to complete, depending on the datastore selected and how heavily loaded it is. It may take longer if the vSphere client is accessing the StoreOnceVSA_OVF file across the network. During deployment, a progress meter is displayed.
The StoreOnce VSA is now added to vSphere Client

Virtual disk creation for the StoreOnce VSA on VMware vSphere

After deployment, you create one or more virtual disks for storage. Data disks of any size in multiples of 1 TB (1024 GB) are supported with StoreOnce software 3.13.2 and later. (For example 1 TB (1024 GB), 2 TB (2 x 1024 GB), 3 TB (3 x 1024 GB).)

- You can use vSphere client to create a 1 TB or 2 TB virtual disk.
- When using ESXi 5.5 or 6.0, you must use the vSphere Web Client to create or extend a virtual disk beyond 2 TB.

The first boot script incorporates the commands to prepare and add the storage to the StoreOnce VSA. Therefore, if you create the virtual disk before you power on the StoreOnce VSA, the total storage will be made available to the StoreOnce VSA automatically after power-on. If you create virtual disks after power-on, use the following StoreOnce CLI command to license the storage:

```
# license add demo
```

**IMPORTANT:**

If you experience a reduction in performance when you increase storage, you must also increase resources and reboot the StoreOnce VSA.

Creating a 1 TB or 2 TB virtual disk using vSphere client

This section illustrates how to create a 1 TB virtual disk using vSphere client. 2 TB virtual disks may also be created using vSphere client.

**Procedure**

1. From the vSphere client, expand the vCenter server and select the StoreOnce VSA.
2. To display information about deployment, including the resources and disk storage, select the Summary tab.
3. Click on **Edit Settings**... in the **Commands**.
NOTE:
You can also right-click on the StoreOnce VSA in the Navigation pane and select **Edit Settings...** from the menu.

4. With the **Hardware** tab selected, click **Add...**

5. Select a **Device Type** of **Hard Disk** and click **Next >**
6. Ensure that Create a new virtual disk is selected and click Next >
7. Specify a **Capacity** of **1 TB** and select **Thick Provision Lazy Zeroed** or **Thin Provision**. Select a **Location**, as appropriate. Click **Next >**
8. Select an unassigned SCSI ID for the Virtual Device Node of the new disk and click Next >
9. Check the Summary screen and click **Finish**.
10. The process is now complete for the first virtual disk. To create additional virtual disks, repeat the process.

   a. If powering on the StoreOnce VSA for the first time, the total storage will be made available to the StoreOnce VSA automatically. The instant-on license is applied.

   b. If the StoreOnce VSA has already been powered on, use StoreOnce CLI commands to discover and add storage to the StoreOnce VSA. To check progress, use the StoreOnce CLI command, `system show status`. When discovery is complete, use the following StoreOnce CLI command to license the storage, `license add demo`.

**NOTE:**

If there is a heavy load on the VMware server, the StoreOnce services on the VSA may take a long time to come up. The Instant On license application will fail. If this happens, use the StoreOnce CLI commands as follows:

- Use the `license show` command to check if an Instant On license is installed.
- If not, use the `license add demo` command to add the Instant On license. StoreOnce Replication and Catalyst on the VSA is enabled for a period of 60 days.

See also [Further configuration options for StoreOnce VSA](#) on page 120 for the following information:
Creating a virtual disk with a capacity of more than 2 TB using vSphere web client

1 TB and 2 TB virtual disks may be created from vSphere client, as described in Creating a 1 TB or 2 TB virtual disk using vSphere client on page 70. Virtual disks with a capacity of more than 2 TB must be created using vSphere web client.

Procedure

1. From the vSphere Web Client, expand the vCenter server and select the StoreOnce VSA.
2. To display information about deployment, including the resources and disk storage, select the Summary tab.
3. Click on Edit Settings... in the VM Hardware section.
4. In the **Edit Settings** tab, select **Virtual Hardware**.

5. Select **New Hard Disk** from the dropdown menu of **New device** tab and click **Add**.
6. Click the **New Hard disk** tab to expand it.
7. Specify a capacity of 5 or 10 TB and select **Thick provision lazy zeroed** or **Thin Provision**. Select a **Location**, as appropriate. Select an unassigned SCSI ID for the **Virtual Device Node** of the new disk and click **OK** to finish.

8. In the following example, a 5 TB disk is created.
9. In the following example, a 5 TB disk is created.
The process is now complete for the first virtual disk. To create additional virtual disks, repeat the process.

a. If powering on the StoreOnce VSA for the first time, the total storage will be made available to the StoreOnce VSA automatically. The Instant On license will be applied.

**NOTE:**

The Instant On license will work with the total amount of storage that you have configured. However, you must ensure that you have the correct licenses for the amount of data storage that you have created before the Instant On license expires.

b. If the StoreOnce VSA has already been powered on, use StoreOnce CLI commands to prepare and add storage to the StoreOnce VSA. To check progress, use the StoreOnce CLI command, `system show status`. When discovery is complete, use the following StoreOnce CLI command to license the storage, `license add demo`. 
NOTE:
If there is a heavy load on the VMware server, the StoreOnce services on the VSA may take a long
time to come up. The Instant On license application will fail. If this happens, use the StoreOnce CLI
commands as follows:

- Use the `license show` command to check if an Instant On license is installed.
- If not, use the `license add demo` command to add the Instant On license. StoreOnce
  Replication and Catalyst is enables on the VSA for a period of 60 days.

Fibre Channel device support on StoreOnce VSA

Fibre Channel device support is only available on VMware-based StoreOnce VSAs. It is available with
StoreOnce software version 3.16.0 and later.

NOTE:
To support VTL over Fibre Channel on StoreOnce VSA, NPIV must be enabled on the FC switch under
the SAN fabric.

Configuring passthrough devices on an ESX/ESXi host

Procedure

1. Select an ESX\ESXi host from the Inventory of the VMware vSphere Client.
2. In the **Configuration** tab, click **Hardware Advanced Settings**. The passthrough Configuration page
 lists all available pass-through devices.

NOTE:
A green icon indicates that a device is enabled and active. An orange icon indicates that the state of
the device has changed and the host must be rebooted before the device can be used.

3. Click **Edit**.
4. Select the devices and click **OK**.
5. When the devices are selected, they are marked with an orange icon. Reboot for the change to take
effect. After rebooting, the devices are marked with a green icon and are enabled.
Configuring a PCI device on a virtual machine

Procedure

1. From the Inventory in vSphere Client, right-click the virtual machine and click Edit Settings.
2. Click the Hardware tab.
3. Click Add.
4. Choose the PCI Device.
5. Click Next.

NOTE:
It may take time to reflect the Fibre Channel settings on the StoreOnce VSA GUI after presenting the FC PCI device to the VSA for the first time. If this occurs, perform a refresh and logout/login from the current GUI session.
Deployment on Microsoft Azure

StoreOnce VSA is available as a Microsoft Azure Market Place Offering and is deployed as a Virtual Machine in the Microsoft Azure Resource Manager (ARM) model. Deploying StoreOnce VSA on Microsoft Azure requires a Microsoft Azure Subscription.

NOTE:

StoreOnce VSA 3.17.0 is not supported on Microsoft Azure. The VSA image for 3.18.0 will be available in Azure Marketplace after the release of version 3.18.0.

Deploying StoreOnce VSA on Microsoft Azure

StoreOnce VSA on Azure virtual machine can be created through the Azure portal or accessed through the Azure Market Place.

The procedure described in this section provides a browser-based user interface for creating and configuring StoreOnce VSA, and all related Azure resources from the Microsoft Azure Portal. To access the StoreOnce Virtual Machine from the Microsoft Marketplace, see Accessing the StoreOnce Virtual Machine from the Microsoft Marketplace.

Procedure

2. In the upper left-hand corner of the Azure portal, click New.
3. Select the current HPE StoreOnce VSA version.
   Select Storage from the New blade, and then select the current HPE StoreOnce VSA version from the Storage blade.
4. Read the notes and then click **Create**.
5. Fill out the virtual machine Basics form and then click OK.

For Authentication type, select Password and provide a valid password.

**NOTE:**

This Username and Password will not be applied to StoreOnce VSA and will be treated as dummy inputs. Always use the default StoreOnce username and password to log in to the StoreOnce VSA after deployment.

For Resource group, either create a resource group or choose an existing one. A resource group is a logical container into which Azure resources are created and collectively managed.
6. Select a size for the StoreOnce VSA VM from the recommended VM sizes. Alternatively, select the View All option to see and select other similar VM sizes. When possible, use one of the VM sizes recommended for StoreOnce VSA.
7. On the settings blade, select **Yes** under **Use managed disks**.
   Using managed disks simplifies disk management by managing the storage account associated with VM disks.
   If you do not want to use managed disks, select **NO** and then specify any existing Storage Account.

8. Under **Network**, select an existing **Virtual Network** and **Subnet** to connect to the VM.

9. Configure the **Public IP** and **Network Security Group (NSG)**.
- Accept the default selections for **Public IP** and **Network Security Group (NSG)**. By default, Azure creates a **dynamic Public IP** for the VM and a new **Network Security Group**.

- Select an existing **Public IP** and **NSG**.

- Create a **Public IP** and an **NSG** by clicking the drop next icon and selecting **Create New** option.

10. Configure the **Extensions**, **High Availability**, and **Monitoring** options, and click **OK**.
11. On the summary page, click OK to move to Buy and then click Purchase to start the StoreOnce VSA virtual machine deployment.

12. Wait 15-20 minutes until the StoreOnce services are running.
   After deployment of StoreOnce VSA on to Azure, the VSA will come up in a few minutes, with default 1 TB storage configured with a 60-day instant-on license. Wait for another 10 to 15 minutes for the StoreOnce services to be running.

   • To verify that the StoreOnce services are running, use the StoreOnce CLI `system show status` command.
   
   • To verify that the Instant-on license is installed, use the StoreOnce CLI `license show all` command.
     If the instant-on license is not installed, use the CLI `license add demo` command to enable it.

Logging in to StoreOnce VSA after deployment on Microsoft Azure

Procedure

1. In the Azure portal, click the StoreOnce VSA virtual machine.
   You can find the VM on the home screen of the Azure portal or by selecting from Virtual Machines on the left-hand menu.

2. Verify the network parameters on the Overview pane, including the Public IP and DNS name label of the deployed VM.

3. Log in to the StoreOnce VSA using the Public IP address and DNS provided from the Azure portal.
   • StoreOnce web GUI: `https : ip_address` or `Fully_Qualified_Domain_Name`.
     Enter user name and password.
   • StoreOnce CLI: Access the StoreOnce CLI from an ssh terminal, such as Putty:
     `ssh username@ip_address`
     Enter password.

   ! IMPORTANT:
   Do not use the StoreOnce CLI commands to configure network within StoreOnce VSA.

Adding data disks to StoreOnce VSA on Microsoft Azure

With this procedure, you can attach Azure-managed disks or unmanaged disks through the Azure portal.

NOTE:
StoreOnce VSA on Microsoft Azure only supports page blobs of size 1023GB.
The Azure platform manages managed disks and these disks do not require preparation or location. See https://docs.microsoft.com/en-us/azure/storage/storage-managed-disks-overview.

Unmanaged disks require a storage account and are subject to quotas and limits. For information on quotas and limits, see https://docs.microsoft.com/en-us/azure/azure-subscription-service-limits#storage-limits.

Procedure

1. Click the StoreOnce VSA virtual machine.
2. Under Essentials, click Disks.
3. On the Disks blade, click + Add data disk.
4. In the Name menu, select Create disk.

   a. When attaching a new unmanaged data disk, provide the storage account container URL location.
5. Create the disk.
   a. Enter a name for the new disk.
   b. Review the default settings and update as necessary.
   c. Click Create.
6. Click **Save** to create the managed disk and update the VM configuration.

After Azure creates the disk and attaches it to the virtual machine, the new disk is listed in the virtual machine disk settings under Data Disks. As managed disks are a top-level resource, the disk appears at the root of the resource group.

7. Once the data disk addition is complete, log in to StoreOnce VSA and update the Storage Configuration with the StoreOnce CLI.

   a. `hardware discover storage`

   b. `hardware add storage`

---

**Security recommendations for StoreOnce VSA on Microsoft Azure**

HPE recommends following Microsoft Azure security guidelines and best practices to secure the StoreOnce VSA instances in Azure. You will need to use "Network Security Groups" to set up rules to allow or deny traffic to the deployed StoreOnce VSA instance appropriately.

To enable secure access to the StoreOnce VSA on the cloud, use the Microsoft Azure VPN connectivity or "Express Route" features.

For additional details on Azure network security groups and VPN features, see:

IMPORTANT:
StoreOnce VSA on Azure does not support the StoreOnce "In-Flight Encryption" feature.
StoreOnce VSA does not support the following Microsoft Azure features:

- Availability
- Load Balancing
- Backup
- Capture

Accessing the StoreOnce Virtual Machine from the Microsoft Marketplace

Procedure

- Link to the 3.16.2 version directly at: https://azuremarketplace.microsoft.com/en-gb/marketplace/apps/hpe.storeoncevsa

NOTE:
The link changes when StoreOnce VSA is updated. If the link does not work, use the search method.

- Search the Azure Market Place to select the StoreOnce VSA Azure Market Place offering.
  
  Search for: hpe storeonce vsa
Deployment on Ubuntu and SUSE KVM

This deployment option is available for experienced Ubuntu and SUSE KVM administrators who wish to use KVM to deploy StoreOnce VSA 3.16.x or later. StoreOnce VSA is supported on the Linux operating system distribution Ubuntu 14.04LTS and SLES Enterprise Server 11 SP3.

Virtual Machine Manager, also known as the virt-manager application, is a desktop user interface for managing virtual machines through libvirt. The StoreOnce VSA may be deployed using either the Virtual Machine Manager GUI or CLI.

Deploying StoreOnce VSA using the Virtual Machine Manager GUI

Prerequisites

- The following RPMs are installed:
  - `libvirt-bin`
  - `qemu-kvm`
  - `bridge-utils`
  - `ubuntu-vm-builder`
- The KVM is configured.

Procedure

1. Download the latest StoreOnce VSA for KVM image to the server and extract the QCOW2 base image file.
2. Start `virt-manager`.
   
   Use the command:
   ```
   root@Master-server:~# virt-manager
   ```
   This command displays a screen similar to the following, which depicts the virtual machines currently deployed under `localhost (QEMU)` on the Linux system.
3. Click **New**, which will create a new virtual machine.

4. Provide the information requested to create a new virtual machine and then click **Forward**.
   a. Enter a valid **Name** for the virtual machine that is easy to identify, such as StoreOnce VSA.
   b. Select **Import existing disk image**, which will install the operating system.
      The operating system for HPE StoreOnce VSA is already present on the system image.

5. Provide the storage path for the VSA QCOW2 system image that you downloaded to the server.
a. Click **Browse** and navigate to the correct location.

![Image of virtual machine configuration](image)

b. Select the appropriate QCOW2 file and click **Open**.

**NOTE:**
The QCOW2 system disk image used for one StoreOnce VSA instance cannot be reused for another instance.
c. Leave the OS type and Version as Generic, and click Forward.

6. Enter the minimum memory and CPU settings and click Forward.
   - Memory (RAM) = 16384 MB
   - CPUs = 2
7. The next screen displays a summary of the VSA configuration. Configure the **Advanced options**.

   a. Enable **Customize configuration before install**.

   b. In the **Advanced options** dropdown menu, select **Specify shared device name**. Specify the **Bridge name** that has been configured previously for the network, in this case br0.

   c. Click **Finish**.
The next screen displays the settings for the VSA.
8. Configure the NIC.

For optimal performance, HPE recommends using the NIC device type of Virtio.

a. Select the NIC adapter.

b. In the Virtual Network Interface pane, change the Device model from its default setting to Virtio.
c. Click Apply.

9. Add a storage disk.

A storage disk must be added to the StoreOnce VSA before it is powered on. This disk can be any size in multiples of 1 TB (1024 GB). For example, 1 TB, 2 TB, or 5 TB.

a. Click Add Hardware.

b. In the Add New Virtual Hardware screen, select one of the two location options based on the location of the data storage.

   This example uses Select managed or other existing storage. Click Browse... and then locate the storage pool.
c. Select the appropriate storage pool and then click **New Volume**.
d. Configure the new volume and then click **Finish**.

- **Name** to identify the new volume that will be available to the StoreOnce VSA virtual machine.
- **Max Capacity**: For example, a 1 TB disk = 1048576 MB
- **Allocation**: For example, a 1 TB disk = 1048576 MB

**NOTE:**

StoreOnce VSA supports both Thick and Thin Provision data disks. Set the **Allocation** field to 0 MB when creating Thin Provisioned disks.
A progress meter is displayed as the storage volume is created.

e. On completion, the new volume is highlighted in the list of volumes for the selected storage pool. Click **Choose Volume**.
This action returns you to the Storage step of the Add New Virtual Hardware wizard.

10. Select a device type and storage format for the data disk.

**NOTE:**
StoreOnce VSA supports both SCSI and Virtio data disks with a format of raw or qcow2.

a. In the **Device type** dropdown menu, you may select **SCSI disk** or **Virtio disk** (recommended).

b. In the **Storage format** field, select **raw**.
c. Click Finish, which adds the newly created 1 TB data disk to the StoreOnce VSA.

The settings page for the StoreOnce VSA is redisplayed.

11. Select Disk 1. Make the following changes to Advanced options and then click Apply.

- **Disk bus** = Virtio

  IMPORTANT:
  
  Use the Virtio base or system operating system disk for StoreOnce VSA on KVM. (For data disks, you can select Virtio or SCSI, but HPE recommends Virtio for optimal performance.)

- **Storage format** = qcow2
12. Click **Begin Installation**.

The amount of time to complete installation depends upon the back-end storage in the site setup.
The StoreOnce VSA powers up and the storage and Instant On license are configured automatically.

**NOTE:**

If the system is not able to assign a valid DHCP address, the service set will be in a failed to start state. This issue must be resolved or a static IP address configured. Bring the service set online by rebooting the StoreOnce VSA.

**Symptom:** The Instant On license application fails

**Cause:** A heavy load on the KVM server can make the time needed for the StoreOnce services on the VSA too long. In this case, the Instant On license application can fail.

**Action:** Use the StoreOnce CLI commands to install the license.

1. Use the `license show` command to see if an Instant On license is installed.
2. If not, use the `license add demo` command to add the Instant On license.

**Deploying StoreOnce VSA using the Virtual Machine Manager command line**

**Procedure**

```
virt-install --connect qemu:///system -n VSA004 -r 16384 --os-type=linux --os-variant=rhel5 --disk path=/root/storeoncevsa-779770-B21-50-3.16.2-1712.1-qcow2.tar,device=disk,bus=virtio,format=qcow2 --vcpus=2 --vnc --noautoconsole
```
Deploying StoreOnce VSA using the KVM bash installer

HPE provides a bash script for deploying and configuring StoreOnce VSA on KVM. The script is included in the downloadable package. The script provides the following benefits over using the KVM virtual manager:

- The script unzips the QCOW2.tar file as part of deployment.
- The script preconfigures the number of processors to 2.
- The script can configure DHCP or static networking on one or both of the network interfaces.
- The script can configure the admin user password and time zone for the StoreOnce VSA as part of deployment.

Procedure

1. Run the script using `bash` shell.
   ```bash
   # bash StoreOnceVSA_Installer.sh
   ``
   A screen similar to the following appears:
The screen displays the minimum virtual hardware requirements of the StoreOnce VSA that will be preconfigured while deploying the VSA. The script takes you through the steps described in the rest of the procedure.

2. Enter the directory (absolute path) where the StoreOnce VSA base qcow2 file is located.
3. Select the appropriate qcow2 file from the available qcow2 files in the directory.

```
Qcow2 file(s) found in current folder /home/administrator/demo :
No.  File
    1  /home/administrator/demo/storeoncesva-779770-821-50-3.16.2-1710.2-disk1.qcow2
Enter your choice[1..1,X - to exit this menu]: 1
```

4. Enter the directory where the VSA image will be created.

**NOTE:**
The qcow2 system disk image being used for one StoreOnce VSA instance cannot be reused for another instance.

Ensure that the specified directory does not exist on the server. The deployment script creates a directory with the specified directory path and copies the VSA system disk qcow2 file to create the StoreOnce VSA.

5. Enter the name for the StoreOnce VSA virtual machine.

The script configures the folder and files.
6. The script prompts to configure the **Timezone**. To continue with the host configuration, enter **Y**. To skip the host configuration until after deployment, enter **N**.

7. At the prompt to configure the **Admin User credentials**, enter **Y** to continue with the host configuration. (To configure the admin user password after deployment using the StoreOnce CLI commands, enter **S** to skip the host configuration.)
NOTE:
The length of password must be greater than 0 and less than or equal to 24 characters. The password may contain only uppercase/lowercase alphabetical characters, numbers, and the following symbols: !@#$%^* The two password entries must match. Password validation occurs during StoreOnce VSA boot-up. If validation fails, the password is reset to StoreOnce VSA default Admin password.

8. At the prompt to configure the network, enter Y to continue with the network configuration. To configure the network after deployment using StoreOnce CLI commands, enter S to skip configuration.

9. Select the IP Configuration mode: DHCP or Static. If you select Static, the script will prompt for IP address details.

10. Specify the required Host Bridge for the StoreOnce VSA.

This example is for configuring br0.
If required, repeat these steps to configure eth1.

11. If required, configure up to three DNS servers.

The script continues, saving the network configuration to the configuration file and creating the ISO image.
12. The next step is to configure storage. To continue with the installation process, a minimum of one 1 TB data disk must be added to the StoreOnce VSA. To add the storage, select the pool where the volume will be created.

13. Provide the volume details.

**NOTE:**

If you select Skip when prompted for the disk provisioning type, by default a dynamic/thin provisioned data disk is created. To create a fixed/thick provisioned disk, select **Fixed** for the disk provisioning type. On creation of more than one disk, the new volume name is automatically generated by appending a time stamp to the original volume name specified. For Dynamic/Thin disk creation, each individual data disk must be less than or equal to the pool size.

**NOTE:**

For data disks StoreOnce VSA supports both SCSI and VirtIO disks with a format of raw or qcow2. This deployment script defaults to VirtIO with a format of raw when configuring data disks.
14. The script completes the installation process by copying the qcow2 file to the base directory and starts installing the StoreOnce VSA.

On completion, the script displays a message that the StoreOnce VSA is successfully deployed. The StoreOnce VSA will power on immediately.
Further configuration options for StoreOnce VSA

StoreOnce Configuration Wizard

When deploying or upgrading to StoreOnce version 3.16.0 or later, the first time a user logs in to the StoreOnce GUI, the user must select whether to configure Remote Support or No Support. Once this selection is made, the HPE StoreOnce Configuration Wizard is automatically displayed.

The wizard is primarily a tool for StoreOnce software running on hardware products, but is also available for StoreOnce VSA users. The wizard guides the user through the recommended configuration steps. It provides a shortcut to the relevant GUI pages and help for the chosen task is accessed, as normal, directly from the GUI page.

The wizard guides you through the system's first-time installation of:

• Time and date
• User management
• License management
• Optional hardware
• Network configuration
• Storage
• Email configuration

Configuration notes:

• With the exception of Email Configuration, all the configuration is normally performed during VSA deployment.
• The Optional Hardware and the Storage options are not relevant for StoreOnce VSA.
• Network configuration is not supported for StoreOnce VSA on Microsoft Azure.

Using the StoreOnce Configuration Wizard

If you do not wish to follow the steps in the wizard, click Discard.

If you wish to follow the steps on the wizard:

Procedure

1. Click Proceed to display the recommended configuration steps and sequence.
2. Click the link to the first step.
3. Make the required changes and click **Finish** to return to the wizard.

4. Continue to work through the tasks shown in the wizard that are relevant to your implementation. Refer to either the online help or the appropriate chapter in the *StoreOnce VSA User Guide* for more information about individual tasks. Check the **Advanced** box to display additional, optional configuration tasks.

5. You may leave the configuration wizard at any time by clicking **Exit**. The system gives you the option of creating StoreOnce backup targets. Either click on one of the links or click **OK** to finish.

### Finish Configuration Wizard

Thank you for using configuration wizard for setting up your StoreOnce appliance. You may re-open this wizard using the ‘Configuration Wizard’ link at the top of the navigation bar.

If you would like to configure StoreOnce backup targets now then select one of the links below:

1. **StoreOnce Virtual Tape Library**
2. **StoreOnce NAS Shares**
3. **StoreOnce Catalyst Stores**

6. To redisplay the wizard, select **Configuration Wizard** from the Navigator.

7. The wizard will also display every time you log on. To prevent this happening, check the **Do not show at next login** box.

### Discovering and adding storage using the StoreOnce CLI

This procedure prepares and adds all available storage, and is required for creating virtual disks after the StoreOnce VSA has been powered on. HPE recommends creating all the required virtual disks before adding them to the StoreOnce VSA.

**NOTE:**

There are two StoreOnce CLI commands that can be used to prepare storage; they perform the same function:

- `hardware prepare storage`
- `hardware discover storage`
Procedure

1. Use an ssh session to connect to the StoreOnce VSA Management Console as an Admin user (or use a free ssh client application, such as PuTTY).
   
   `ssh <username>@<ip_address>`

2. Use the following commands to prepare and add the storage:
   
   `hardware discover storage`
   
   `hardware add storage`

3. While the commands complete, use the following StoreOnce CLI command to check the status on the storage addition. In this example, 4 TB is already formatted/configured and 1 TB is being added.
   
   `# system show status`

   
   `Status ------`  
   `Formatted 4,045.55GB, Adding 1,452GB...`

   `Service Sets Status Notes`  
   `------------ ------ -----`  
   `Set 1 Running`  

   **IMPORTANT:**
   
   The capacity of the virtual disks must be multiples of the StoreOnce capacity point of 1 TB (1 TB, 2 TB, 3 TB, and so on). If you add disks with an invalid capacity, the StoreOnce CLI commands, `hardware prepare storage` and `hardware discover storage`, will fail with an error. To add additional storage, remove the invalid virtual disks from the vSphere Client or Hyper-V Manager and reboot the StoreOnce VSA.

4. Exit the StoreOnce CLI.

Applying the license using StoreOnce CLI commands

You may apply the full-term license using either the StoreOnce GUI or StoreOnce CLI commands. (The Instant On license is applied during StoreOnce VSA deployment.)

Run the StoreOnce VSA GUI to obtain the serial number of the product (Serial Number on the StoreOnce page). To acquire a unique license using the serial product number, follow the instructions in Redeeming a purchased license on page 23. We recommend that you save the license string to a file, which must be saved to the repository directory of the StoreOnce System.

For instructions on using the StoreOnce GUI to add a license, see the StoreOnce VSA User Guide.

Procedure

1. Use a ssh session to connect to the StoreOnce VSA Management Console as an Admin user. (Or use a ssh client application, such as PuTTY, which is freely available from the Internet.)

   `ssh <username>@<ip_address>`

   **NOTE:**

   The IP address is the address that you provided for the Host/Cluster step of deployment. The Admin user name and password is Admin/admin.
3. Apply the license using one of the following StoreOnce CLI commands: `license load <file-image>` or `license add <string>`.

   a. Use `license load <file-image>` to load a license that has been saved as a file image. The file image must exist in the repository directory of the StoreOnce System.

   b. Use `license add <string>` to key in the license directly. If you used email or a temporary file, cut and paste the string exactly as you obtained it from the HPE Licensing website. Entering the license manually is not advised.

   For example:
   ```bash
   license add 9D2C D9AA H9PY 8HVZ UBB5 HW65 Y9JL KMPL JCJC 7FJ4 UVUW JH2E
   GPUW LAXG ENQG HXBA KFVS D5GM E7W7 D26C HKKA DXYD QSHA Z9QM DRPE AQVB
   9WKR NBYY P2ZV RHMQ N43J SGGB JWHG 9UMF L8EW R42A V886 FCYX 2KWC K7AD
   WRRB JKFK M2VH KMMU 4NMU FGM6"StoreOnce VSA 4 TB Capacity LTU"
   ```

4. Verify that the license is installed using the StoreOnce CLI command: `license show`

5. Exit the StoreOnce CLI.

**Amending the network configuration after deployment**

This section does not apply to StoreOnce VSA on Microsoft Azure.

**NOTE:**

By default on Hyper-V, the StoreOnce VSA comes up with only one network adapter. StoreOnce VSA supports two network adapters. If necessary, you can edit the settings on the StoreOnce VSA to add and configure another adapter on both of these platforms.

**NOTE:**

When deploying VSA on Microsoft Azure, do not use StoreOnce VSA CLI or GUI to configure the network. For network configuration on Azure Virtual Machines, see the Microsoft Azure documentation.

For instructions on amending the network configuration after deployment using the StoreOnce GUI, see the *StoreOnce VSA User Guide*.

For instructions on amending the network configuration after deployment using the StoreOnce CLI, see the *StoreOnce System CLI Reference Guide*. There are two approaches:

**Procedure**

- Use the StoreOnce CLI command, `net set wizard`

  This option provides a wizard that guides you through the network configuration, ensuring that you provide all the required information.

- Use StoreOnce CLI commands to create, validate and activate a new configuration, or to modify or add to an existing configuration.
Checking the current configuration

Procedure

The default deployment is DHCP. To ascertain which address has been assigned, use the `net show config all` command. See the *StoreOnce System CLI Reference Guide* for further details.

Running the net set wizard

Procedure

1. To run the wizard, using PuTTY (or other ssh application), log in to the StoreOnce CLI.

2. Enter the command:
   
   `net set wizard`

3. Follow the instructions provided in the wizard text. Prompts appear in the following sequence.
   
   a. Step 1: DNS addresses (optional)
   
   b. Step 2: Subnet configuration. The prompts displayed in this section will vary depending upon the responses you make to the prompts for your network configuration. It is at the end of this step that you are able to configure a second subnet.

   **NOTE:**

   On Hyper-V environments, when using the StoreOnce CLI command, `net set wizard`, to configure the network, select 1 (No) at the prompt: “Is this subnet on a Virtual LAN?”

   Do not use the StoreOnce CLI to configure VLAN tagging with Hyper-V.

   ![Figure 1: VLAN tagging section of StoreOnce CLI wizard](image)

   ```
   single: eth0 (1 Gig)

   Is this subnet on a Virtual LAN?
   1 - No (default)
   2 - Yes

   single: VLAN/Not VLAN: No

   Select Static or DHCP addressing:
   1 = DHCP (default)
   2 = Static
   ```

---

124 Checking the current configuration
NOTE:
On the VMware environment, it is possible to use the StoreOnce CLI to configure VLAN tagging on the VSA. Make sure that the VLAN ID is set up (VGT Mode) on the vSwitch portgroup on the host server.

c. Step 3: Network configuration summary. The final step provides network configuration details. If you are satisfied that the network is configured correctly, key 1 to finish the wizard and apply the settings.

4. StoreOnce VSA 3.13.x and later allows you to define the amount of data contained in an Ethernet frame, the default is 1500 bytes. Larger size frames, often referred to as "jumbo" frames, can improve performance. To find out how to enable jumbo frames on StoreOnce VSA, refer to the StoreOnce VSA User Guide.

   IMPORTANT:
The hypervisor network adapter settings must also be changed to enable jumbo frames. Refer to the corresponding hypervisor documentation for instructions on enabling jumbo frames. Also, ensure that all networking equipment is enabled for jumbo frames.

5. Your network is now configured and you can access the StoreOnce VSA System remotely via the StoreOnce GUI or StoreOnce CLI. Be sure to save a copy of the configuration, as described in the StoreOnce VSA User Guide. If subsequent changes to the network configuration are required, use the StoreOnce GUI or the StoreOnce CLI. See also the StoreOnce VSA User Guide and the StoreOnce CLI Reference Guide.

Virtual memory for optimal performance

For optimal performance, especially at higher capacity configurations, it may be necessary to increase the Virtual RAM resources allocated to StoreOnce VSA.

- Minimum vRAM required: 16 GB
- Recommended vRAM for more than four virtual disks: 32 GB

   IMPORTANT:
It is recommended to avoid over-committing CPU and/or memory resources for the hosted VSA. If the virtual resources have been overcommitted, it is recommended to reserve CPU and memory for the StoreOnce VSA.

Increasing vRAM on VMware

Procedure

1. Use the StoreOnce CLI command, system shutdown, to power down the StoreOnce VSA.

2. From the vSphere client, expand the ESXi server and right-click on the StoreOnce VSA.

3. Select Edit Settings… from the menu.

4. To change the virtual RAM, select Memory on the Hardware tab and enter the required Memory Size (we have used 32 GB for the purposes of this example).
NOTE:
Use the slider bar on the Resources tab to reserve memory. The value chosen will depend upon individual configurations and other demands on memory. It is recommended to reserve the entire guest memory for the StoreOnce VSA.

5. To apply the resource changes, click **OK**.

6. Right click on the StoreOnce VSA and select **Power – Power On**.

7. The **Summary** page for the StoreOnce VSA now reflects the changes to the resources.
Increasing vRAM on Hyper-V

Procedure

1. Use the StoreOnce CLI command, `system shutdown`, to power down the StoreOnce VSA.

2. On the Hyper-V Manager screen, right-click on the VSA, select the settings for **Hardware — Memory**. Increase the **Startup RAM** value to 32768 MB.
3. Power On the VSA from Hyper-V Manager GUI.

4. The StoreOnce VSA will now have the increased amount of memory.

Further configuration options for StoreOnce VSA
Software update from StoreOnce 3.13.x to StoreOnce 3.16.x software

NOTE:
HPE does not support upgrading from StoreOnce 3.13.x to StoreOnce 3.16.x on KVM.

OS conversion upgrade for StoreOnce VSA with 3.16.x software

IMPORTANT:
The StoreOnce 3.16.x software update is valid only on StoreOnce VSAs that are already running StoreOnce 3.13.3 or a later 3.13.x software. If your system is running earlier software, upgrade first to the latest StoreOnce 3.13.x software.

The 3.13.x to 3.16.0 software conversion upgrade provides a major upgrade of the underlying StoreOnce Operating System. Customers who upgrade to 3.16.0 software will benefit from improvements to the performance, security, and long-term supportability of their StoreOnce Systems.

This OS conversion upgrade differs from a typical StoreOnce software upgrade by using a unique 3.13.x to 3.16.0 for VSA upgrade RPM file. The user is first prompted to perform an intermediary step to download and to save securely an automatically generated saved_config.tgz file and its hashsum file from the StoreOnce System. Then the software upgrade process is restarted and completes.

All customer data is protected, but you will notice a few differences in the Upgrade process. Ensure that you follow the upgrade instructions carefully.

IMPORTANT:
It is strongly recommended to take a copy of your StoreOnce VSA base disk (OS disk 50/500GB) before proceeding with the 3.13.x to 3.16.x software upgrade.

StoreOnce VSA snapshots

IMPORTANT:
Only use the snapshot feature during a StoreOnce VSA upgrade operation (and not during any normal functioning of the StoreOnce VSA). Revert to an existing snapshot only if the upgrade fails. Reverting to an existing snapshot after a successful upgrade may lead to instabilities in StoreOnce VSA functioning and operation, which may be nonrecoverable.

Creating a StoreOnce VSA

Procedure

1. Enter the directory where the VHD.ZIP is located.
2. The script displays the available ZIP files in the entered directory, select the StoreOnce VSA VHD ZIP to proceed.

   \[
   \text{Zip files found in current folder:}
   \]
   \[
   \begin{array}{|c|}
   \hline
   \text{No.} \mid \text{File Name} \\
   \hline
   1 \mid \text{storeonceva-76490-821-49-3.13.0-1516.1.vhd.zip} \\
   \hline
   \end{array}
   \]

   Select HP StoreOnce VSA zip file to install (type 'x' to exit this menu): 1
   HP StoreOnceVSA file selected: storeonceva-76490-821-49-3.13.0-1516.1.vhd.zip
   Saving zip file path: E:\3.13.0\storeonceva-76490-821-49-3.13.0-1516.1.vhd.zip

3. Enter the directory where the VSA Image will be created.

   \[
   \text{Configuration Step: 2 of 14}
   \]
   \[
   \text{Enter a new directory name where you want to create the VSA Image (type 'x' to end): E:\3.13.0\StoreOnceVSA}
   \]
   \[
   \text{VSA base directory is: E:\3.13.0\StoreOnceVSA}
   \]
   \[
   \text{Verifying VSA base directory path ... directory does not exist, will be created}
   \]
   \[
   \text{VM base directory path set to: E:\3.13.0\StoreOnceVSA}
   \]

   \textbf{NOTE:}

   Make sure the specified directory does not exist on the server. The deployment script will create a directory with the directory name specified by the user and will copy the VSA system disk VHD file to create the StoreOnce VSA.

4. Enter the name that you wish to use for the StoreOnce VSA virtual machine.

   \[
   \text{Configuration Step: 3 of 14}
   \]
   \[
   \text{VM Name Configuration}
   \]
   \[
   \text{Enter VM Name (e.g. StoreOnceVSA, type 'x' to end): StoreOnce_VSA_demo}
   \]
   \[
   \text{Successfully verified, no VM with the same name found on this system.}
   \]
   \[
   \text{VM name is: StoreOnce_VSA_demo}
   \]

5. The script configures the folder and files.
6. It then prompts to configure the Time Zone for the StoreOnce VSA. To continue with host configuration, enter Y. (If you wish to configure the time zone after deployment using StoreOnce CLI commands, enter S to skip the host configuration.)
7. At the prompt to configure **Admin user credentials** for the StoreOnce VSA, enter Y to continue with host configuration. (If you wish to configure the admin user password after deployment using StoreOnce CLI commands, enter S to skip the host configuration.)

**NOTE:**

The length of password must be greater than 0 and less than or equal to 24 characters. It may contain only uppercase/lowercase alphabetical characters, numbers, and the following symbols !@#$%^* The two password entries must match. Password validation occurs during StoreOnce VSA boot-up. If validation fails, the password is reset to the StoreOnce VSA default Admin password.
8. It then prompts to configure eth0 for the network. To continue with the network configuration, enter Y.
(If you wish to configure the network after deployment using StoreOnce CLI commands, enter S to skip network configuration.)

9. Choose the IP Configuration mode: **DHCP** or **Static**. If you select **Static**, you will be prompted to provide IP address details.

10. Select the required **VM Switch** from the list of available Virtual switches on the Hyper-V host.

11. (In our example only one VM switch is available and it has been configured with the name Management Switch.)
12. If necessary, repeat the steps to configure eth1.

13. If necessary, configure up to three DNS servers.

14. The script completes the installation process, saving the configuration to file and creating the ISO image.
15. The next step is to configure the storage for the StoreOnce VSA. To continue with the installation process, a minimum of one 1 TB data disk must be added to the VSA.

NOTE:
By default the script will choose “dynamic” as the disk provisioning type.

16. Select the data disk size and number of data disks to be added. By default, the data disks will be placed in the same directory as the VSA base disk. Users can also choose to place the data disks in a different location on different volumes.
17. After storage configuration inputs are saved, the script uncompresses the StoreOnce VSA VHD.zip

18. The script then deploys the StoreOnce VSA on to the Hyper-V server. On completion of deployment, the script shows a summary of the configuration and displays a power-on prompt. Select yes [Y] to power on the StoreOnce VSA immediately or select no [N] and use Hyper-V Manager to power on the StoreOnce VSA later.
Reverting to a StoreOnce VSA Snapshot on VMware

Procedure

1. From the vSphere client, expand the vCenter server and select the StoreOnce VSA.
2. Right-click on the StoreOnce VSA and select Snapshot > Revert to Current Snapsho.
Reverting to a StoreOnce VSA Snapshot on Hyper-V

Procedure

1. On Hyper-V Manager, expand the Hyper-V Host Server and select the StoreOnce VSA.
2. Right-click the StoreOnce VSA and select **Revert** to revert the StoreOnce VSA to the previous checkpoint.

Obtaining software updates

Procedure

2. Software updates are provided as RPM files. Download the appropriate RPM file and refer to the release notes accompanying the download for instructions.

Updating to StoreOnce VSA 3.16.x software

**IMPORTANT:**
You will run the `system update packages` command twice in this upgrade process. At the first instance, there is an additional manual step in the procedure. This step ensures that the existing configuration is stored safely before the upgrade runs and the underlying operating system is converted.

Enter the following StoreOnce CLI commands.

Procedure

1. Log in to the SSH as an Admin User and run `system show repository` to list out the rpm file you copied over. Verify that it is the 3.13.x to not applicable in this document RPM file.
2. To distribute the package and unpack it, run `system load package P9L02-105xx.rpm`.
3. To display the packages staged ready for update, run `system show packages`.

**NOTE:**
The name of the package once it is loaded and unpacked is in the following format:

<table>
<thead>
<tr>
<th>Package</th>
<th>Version</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2D_Master</td>
<td>not applicable in this document</td>
<td>staged</td>
</tr>
</tbody>
</table>

4. Run `system update packages` for the first time.
NOTE:

To protect Customer data, the upgrade utility will check the status of the Product Hardware, Service Sets, and Event Database size. If any elements are in a degraded or nonfunctional state, the upgrade utility will not carry out the requested software and/or firmware upgrades. Use the system with the existing software and contact HPE Support for further help.

The command creates a saved_config.tgz file on the node that is running Active Fusion Manager and writes it to the saved_config directory. The upgrade process will use this file to rebuild your configuration and data stores after the operating system has been converted. Various messages are displayed requesting you to save this file. You are also advised that you must log back in to the SSH session after saving the file.

Cleaning up old packages The OS conversion is not yet complete. Do not use the system for any other purpose until the update is complete. The current system configuration has been saved and it is available at /saved_config/saved_config.tgz Please use sftp to copy this off the system, save it and then run “system update packages” again. Your CLI session has expired. Please exit the current session and login again.

IMPORTANT:

If you encounter any problems with the subsequent upgrade, HPE Support will be able to restore your system using this file.

5. Use sftp to copy the saved_config.tgz file and its hashsum file from the saved_config directory to a safe location. Use the hashsum file to verify the contents of saved_config.tgz.

6. Log back in to SSH as Admin user.

7. Run system update packages for a second time to begin the process across all nodes to upgrade and reboot the nodes. Service sets will restart automatically at startup.

Required services started successfully.
Saving the system configuration. Can take 20 minutes to complete.
System configuration successfully saved. 4 minutes elapsed.
Start reboot of the system.
Processing,,,
Broadcast message from root (Mon Jun 13 16:52:18 2016):

System rebooting to complete the update process.
The system is going down for reboot NOW!
Update will complete after rebooting.
SSH connection will be lost. Allow 20–30 minutes for reboot to complete before reconnecting.

# Connection to 1.1.1.1 closed by remote host.
Connection to 1.1.1.1 closed.

8. The StoreOnce System reboots to the OS conversion, which completes automatically.

9. At the end of the OS conversion, it restores the saved configuration and boots into the 3.16.x image.

10. Check that update was successful.
Verifying that the update is successful (all systems)

Procedure

1. Wait for the system to reboot.

   **NOTE:**
   Depending upon the updates, the check could take up to 15 minutes.

2. Once access returns to the Management interface, verify that the process has completed successfully, as follows:

   a. From the CLI: Use `system show packages` to check that all packages are now installed, as well as staged.

      The output is in the following format:

      | Package         | Version                      | State                   |
      |-----------------|------------------------------|-------------------------|
      | D2D_Master      | not applicable in this document | installed               |
      | D2D_Master      | not applicable in this document | staged                  |

   b. From the GUI: Check the **System Information** details on the **StoreOnce** screen.

   c. From the GUI: Check the Event log (Event Code: E01070016) for a confirmation message of the software upgrade:

      Update D2D_Master–not applicable in this document completed successfully

Error messages during upgrade from StoreOnce 3.13.x to 3.16.x
Software updates on StoreOnce VSA up to StoreOnce 3.13.x software

StoreOnce VSA upgrade paths

It is **recommended** to always run StoreOnce VSA with the latest StoreOnce software. However, if you are running software that is earlier than 3.13.3, you must follow the correct upgrade path before updating to 3.16.x.

If your system is running StoreOnce 3.13.0, 3.13.1, or 3.13.2, upgrade to StoreOnce 3.13.3 or the latest 3.13.x before upgrading to 3.16.x software. Do not reactivate licenses.

- If your system is running StoreOnce 3.11.7 or StoreOnce 3.12.x software, upgrade to StoreOnce 3.13.3 or the latest 3.13.x. Do not reactivate licenses.
- It is not possible to upgrade directly from StoreOnce 3.7.x to StoreOnce 3.12.x or later. If your system is running StoreOnce 3.7.x software:
  1. Upgrade to StoreOnce 3.11.7 (EJ022–10538). You must reactivate licenses as part of this process.
  2. On successful completion upgrade to StoreOnce 3.13.x.

Software updates from StoreOnce VSA 1.x (software version 3.7.x) to VSA 2.x (software version 3.11.7)

**NOTE:**

The examples in this section show how to apply a StoreOnce VSA 3.11.x (VSA 2.x) update to a StoreOnce VSA with software version 3.7.x (VSA 1.x). A similar process must be applied if updating from StoreOnce 3.11.x to a later StoreOnce software, but there is no need to reactivate licenses.

StoreOnce VSA 2.x provides various enhanced features over StoreOnce VSA 1.x. To update an existing VSA 1.x to this newer version requires the StoreOnce software upgrade file, EJ022-10538.rpm. This RPM file is available on the HPE Software Depot.

These RPM updates apply to:

- StoreOnce VSA 1.0.0 with software version 3.7.0 or
- StoreOnce VSA 1.1.1 with software version 3.7.1 or
- StoreOnce VSA 1.2.0 with software version 3.7.2 or
- StoreOnce VSA 1.3.0 with software version 3.7.3.
Creating a StoreOnce VSA Snapshot

Procedure

1. On VMware
   a. From the vSphere client, expand the vCenter server and select the StoreOnce VSA.
   b. Right click on the StoreOnce VSA and select the Snapshot option, followed by Take Snapshot.

2. On Hyper-V
   a. On Hyper-V Manager, expand the Hyper-V Host Server and select the StoreOnce VSA.
   b. Right click on the StoreOnce VSA and select Checkpoint.

Reverting to a StoreOnce VSA Snapshot

Procedure

1. On VMware
   a. From the vSphere client, expand the vCenter server and select the StoreOnce VSA.
   b. Right click on the StoreOnce VSA and select the Snapshot option, followed by Revert to Current Snapshot.

2. On Hyper-V
   a. On Hyper-V Manager, expand the Hyper-V Host Server and select the StoreOnce VSA.
   b. Right click on the StoreOnce VSA and select Revert to revert the StoreOnce VSA to the previous checkpoint.

sftp to the StoreOnce device and copy the upgrade file to the repository

Download the StoreOnce software version 3.11.7 upgrade package from the Software Depot, part number EJ022-10538. To confirm the part number and build version, always refer to the release notes accompanying the RPM download.

sftp to the StoreOnce appliance and copy the upgrade package (EJ022-10538.rpm) to the software repository on the StoreOnce appliance.
NOTE:
In the following instructions, the term Management IP address is the IP address that you normally use to log on to the StoreOnce GUI or CLI.

- **Using Linux**
  1. `sftp Admin@<Management_IP Address>`
  2. `cd repository`
  3. `put <location of EJ022-10538.rpm>`
  4. `exit sftp`

- **Using a Windows sftp client**
  - Ensure that the File Protocol is set to SFTP, not SCP.
  - Log in to the Management IP address as Admin.
  - Copy EJ022-10538.rpm to repository.

### Running the StoreOnce CLI software update commands

Enter the following StoreOnce CLI commands:

- `system show repository`: lists the rpm file copied over
- `system load package EJ022-10538.rpm`: loads and unpacks the package
- `system show packages`: show the packages staged ready for update

**NOTE:**
The name of the package once it is loaded and unpacked is in the following format:

<table>
<thead>
<tr>
<th>Package</th>
<th>Version</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2D_Master</td>
<td>3.11.7-1508.1</td>
<td>staged</td>
</tr>
</tbody>
</table>

- `system update packages`: begin the process to upgrade and reboot the StoreOnce VSA

### Checking that update is successful

Wait for the system to reboot.

**NOTE:**
Depending upon the updates, the reboot could take 10 minutes or longer.

Once access returns to the Management interface, check that the process has completed successfully, as follows:

- From the StoreOnce CLI:
Use `system show packages` to check that all packages are now Installed. The output will be in the following format:

<table>
<thead>
<tr>
<th>Package</th>
<th>Version</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2D_Master</td>
<td>3.11.7-1508.1</td>
<td>installed</td>
</tr>
<tr>
<td>D2D_Master</td>
<td>3.11.7-1508.1</td>
<td>staged</td>
</tr>
</tbody>
</table>

- From the GUI:
  Check on the StoreOnce screen, to ensure that the software revision number has updated to software version D2D_Master-3.11.7-1508.1.

- From the GUI:
  Check the Event log for a confirmation message of the software upgrade: Update D2D_Master-3.11.7-1508.1 completed successfully.

### Activating licenses when upgrading from VSA 1.x to 2.0

**IMPORTANT:**
This step is necessary only when updating to StoreOnce software version 3.11.7. It is not required on subsequent software upgrades.

On upgrade from VSA 1.x to 2.0, the existing 3–year support license is removed from the StoreOnce VSA. It is recommended that the instant-on license is applied in the first instance. Any remaining time on the existing license can be reinstated as follows.

**Procedure**

1. After a successful software update, the StoreOnce VSA reboots. When the services come up, log in to the StoreOnce CLI and run the StoreOnce CLI command, `license add demo`.
   This command enables a 60 day all-in-one instant-on license.

2. During the 60-day period, contact the HPE Licensing portal with the serial number of the StoreOnce VSA. A product license key is provided, which will enable the StoreOnce VSA for the remaining length of the 3–year license term.

### Upgrading from StoreOnce 3.11.x or 3.12.x to StoreOnce 3.13.3 software

To update an existing VSA 2.x to StoreOnce 3.13.3 (or the latest 3.13.x) software, one StoreOnce software upgrade file is required. This RPM file is available on the HPE Software Depot. Make sure that your system is running at least StoreOnce 3.11.x software before attempting to upgrade to StoreOnce 3.13.x software.

Use the same procedure described in the previous section. Be sure to download the file and use the StoreOnce CLI commands to upgrade the VSA. Refer to the release notes supplied with the software update for further instructions.
IMPORTANT:

After upgrade, if you want to increase the Maximum Concurrent Outbound Copy Jobs or Data and Inbound Copy Jobs, go to the StoreOnce GUI. Select **StoreOnce Catalyst - Settings**. Click **Edit**, increase the sessions appropriately, and click **Update**.

Software updates on StoreOnce VSA up to StoreOnce 3.13.x software
Troubleshooting

Deployment problems

StoreOnce VSA deployment on Hyper-V fails

Symptom
StoreOnce VSA deployment on Hyper-V using the powershell based deployment script fails with the following error message:

New-VM : The operation failed. User 'CFT41R15S6\Administrator' failed to create external configuration store at 'E:\Hyper-V\config': The system cannot find the path specified.. (0x80070003) The operation failed because the file was not found.

Cause
The default path to Virtual Machines configuration and hard disks files is not accessible or not configured on the Hyper-V Server.

Action
• Virtual Hard disks:
  Specify the default folder to store virtual hard disks.
• Virtual Machines:
  Specify the default folder to specify virtual machine configuration files.

StoreOnce GUI shows no services running or configured immediately after VSA is deployed on Azure

Symptom
Immediately after deployment of VSA on Azure, the StoreOnce GUI shows no services running or configured.

Cause
StoreOnce VSA was deployed successfully on Azure and VSA is completing its first-time boot configuration. As part of this process, StoreOnce is still provisioning the first 1 TB of storage.

Action
1. Wait another 15 to 20 minutes for StoreOnce services to start running.
2. Verify that services are running using the StoreOnce CLI `system show status` command.
**StoreOnce CLI shows storage provisioning state as 1TB discovered or adding immediately after VSA is deployed on Azure**

**Symptom**
Immediately after deployment of VSA on Azure, the StoreOnce CLI `system show status` command shows storage provisioning state as 1TB discovered or adding.

**Cause**
StoreOnce VSA was deployed successfully on Azure and VSA is completing its first-time boot configuration. As part of this process, StoreOnce is still provisioning the first 1 TB of storage.

**Action**
1. Wait another 15 to 20 minutes for StoreOnce services to start running.
2. Verify that services are running using the StoreOnce CLI `system show status` command.

**StoreOnce VSA power-on fails after deployment**

**Symptom**
StoreOnce VSA power-on fails after deployment.

**Cause**
The ESXi or Hyper-V host on which the StoreOnce VSA was deployed has insufficient resources.

**Action**
Verify that the ESXi or Hyper-V host meets the minimum resource requirements for the StoreOnce VSA.

**StoreOnce GUI displays blank**

**Symptom**
The StoreOnce GUI displays blank and the StoreOnce CLI command, `system show status`, shows the Service Set as unavailable or in a Failed to Start state.

**Solution 1**

**Cause**
The StoreOnce VSA has been powered on after deployment without adding any data vDisks. In this scenario, the application of the Instant On license will fail, rendering the service set as unavailable. A “StoreOnce Instant-on license not installed” alert is generated on the GUI.

**Action**
1. If data vdisks have not been added, create or add virtual disks using the vSphere Client or Hyper-V Manager.
2. Run the StoreOnce CLI commands to add storage.
3. Reboot the StoreOnce VSA to enable Instant On licensing.
Solution 2

Cause
The network configuration is not complete or has failed.
HP-SMB fails to start if the network is not configured with a valid IPv4 address. The service set will be in a ‘Failed to start’ state. As a result, the Instant On license is not applied.

Action

1. Ensure that the StoreOnce VSA is configured with a valid IPv4 address.
   If not, choose the appropriate destination network mapping.

2. If you wish to configure an IP by DHCP.
   Choose the correct network connection and REBOOT the StoreOnce VSA.
   The network will be configured with a valid IPv4 address, Instant On license enabled and service sets started.
3. If you wish to configure a static IP: Use the StoreOnce GUI or the StoreOnce CLI command, `net set wizard`. See Amending the network configuration after deployment on page 123.

4. To enable the Instant On license once the static IP is assigned, use the StoreOnce CLI command, `license add demo`.

Storage addition problems

Virtual disks can be any size that is a multiple of 1 TB and within the limits of the installed capacity licenses. When adding storage to the StoreOnce VSA, the following guidelines apply:

- Always allow the StoreOnce CLI command, `hardware discover storage`, to complete before running the command, `hardware add storage`.

**NOTE:**

There are two StoreOnce CLI commands that perform the same function: `hardware discover storage` and `hardware prepare storage`. The same comments apply to both.

- If you add data vdisks to the StoreOnce VSA and reboot it, the StoreOnce VSA automatically discovers the disks. There is no need to run the StoreOnce CLI command, `hardware discover storage`. You must still run the command, `hardware add storage`.

- Do NOT remove any of the data vdisks from the StoreOnce VSA while or after executing the StoreOnce CLI command, `hardware add storage`. The removal of data vdisks may lead to an unstable VSA and even data loss.

Also note that:

- If you wish to reconfigure the storage on the VSA, use the StoreOnce `hardware delete storage ALL` command. This command will delete all the data and the entire file system on the VSA. To create a file system, you may remove virtual disks, reboot the StoreOnce VSA and present new virtual disks, and rerun the StoreOnce storage CLI commands. After reconfiguring the storage and file system on the VSA, wait for a maximum of one hour to activate the license automatically back on the VSA.

- Never remove or delete a VSA data vdisk that is already a part of the VSA file system.

- The `hardware delete storage node1_logicaldisk_1` command is not supported on the VSA.

**hardware discover storage or hardware prepare storage**

**StoreOnce CLI command fails**

**Symptom**

While adding new data vdisks to the StoreOnce VSA, the StoreOnce CLI command `hardware discover storage` (or `hardware prepare storage`) may produce the following error:

```
# hardware discover storage This command will take several minutes to complete, however it could take up to two hours depending on the amount of storage. Storage provisioning was unable to complete the requested operation [ Incorrect virtual disk sizes. The system allows data disks of size in multiples of 1099511627776 bytes (1 TiB).. Please remove all incorrect size
```
virtual disks and reboot the StoreOnce VSA before configuring additional storage. Command Failed.

**Cause**

This message can occur when data vdisks of incorrect size are added to the StoreOnce VSA. Virtual disks added for user data must ALWAYS be in multiples of 1 TB, depending upon the capacity licenses that are installed.

**Action**

1. Using vSphere Client, delete all data disks which have incorrect data sizes from the StoreOnce VSA.
2. Add the data vdisks again, making sure each is a multiple of 1099511627776 bytes (1 TB), as appropriate.
3. Reboot the StoreOnce VSA.
4. Run the StoreOnce CLI command, `hardware add storage`.

**NOTE:**

On Hyper-V, hardware prepare/discover storage command may throw up the following error messages:

```
device-mapper: table: 253:0: multipath: error getting device
device-mapper: ioctl: error adding target to table
```

These error messages can be safely ignored.

### Error running system show status

**Symptom**

The StoreOnce CLI command, `system show status`, displays an additional size for the "Discovered" storage size.

```
# system show status
Status
------
Formatted 4,045.55GB, Adding 1,452GB...
Service Sets Status Notes
----------------------- ------ ------
Set 1 Running
```

**Cause**

This message is a known issue with the StoreOnce VSA and does not affect device performance or behavior.
Data vdisks not recognized when executing the StoreOnce CLI storage addition commands

Symptom
Data vdisks not recognized when executing the StoreOnce CLI storage addition commands.

Cause
The data virtual disks added are assigned to different SCSI controllers.
This is not applicable for VSA on Azure.

Action
1. If the data disks have been assigned to different SCSI controllers, a reboot of the StoreOnce VSA is required to recognize them.
2. Once rebooted, run the StoreOnce CLI command, `hardware add storage` to add storage.

License alerts and issues

IMPORTANT:
Always ensure that the StoreOnce VSA has the correct date and time settings before generating and applying licenses to the StoreOnce VSA.

If the Instant-on license is not enabled in the StoreOnce VSA after deployment, the StoreOnce GUI generates an alert. The alert message is: “StoreOnce Instant-on license not installed.”
Refer to StoreOnce GUI displays blank on page 147.

StoreOnce Instant-on license expired alert

Symptom
An alert is generated in the StoreOnce GUI with the message “StoreOnce Instant-on license expired”.

Cause
The 60 days Instant On license period has expired on the StoreOnce VSA and a purchased license is not applied.
Action

Purchase a full product license for the StoreOnce VSA and then install it using the StoreOnce CLI commands as described in Redeeming a purchased license.

License addition fails with an Invalid license configuration error

Symptom

License addition fails with Invalid license configuration error.

This license cannot be applied with the current license configuration:
This capacity upgrade license cannot be applied. It is only valid for application when a 10 TB LTU is currently installed. A 10 TB LTU was not detected. Please refer to the StoreOnce VSA Deployment & Configuration guide for more information.

Command failed.

NOTE:
The error strings will change depending upon the capacity license added.

Cause

The license cannot be supported with the current license configuration on the StoreOnce VSA. This message can occur if:

- You applied an upgrade license without having the correct base capacity license installed on the StoreOnce VSA. For example, you attempted to add a 4 TB to 10 TB upgrade license without having a 4 TB base license installed on the StoreOnce VSA.
- You attempted to upgrade the capacity of the StoreOnce VSA using another base capacity license. For example, with a 4 TB to 10 TB upgrade license can only be applied to a system with a 4 TB base license installed. Attempting to apply any other upgrade license will fail.
- You attempted to apply a base license to another base license, which is an invalid license combination. For example, you tried to add a 4 TB base license on top of a 10 TB or 50 TB base license.
- You attempted to apply an upgrade license to a demo license or to a 1 TB free license. The demo and free licenses require a base license to be purchased and applied before upgrades are possible.
- You attempted to apply a 50 TB upgrade license to a StoreOnce VSA deployed on Microsoft Azure. The 50 TB base and upgrade licenses are not supported on StoreOnce VSA on Microsoft Azure.
Table 13: License upgrade paths

<table>
<thead>
<tr>
<th>License installed</th>
<th>Supported upgrade licenses for the installed license</th>
</tr>
</thead>
<tbody>
<tr>
<td>No license</td>
<td>None. Purchase a base license.</td>
</tr>
<tr>
<td>1 TB free</td>
<td>None. Purchase a base license.</td>
</tr>
<tr>
<td>4 TB LTU</td>
<td>4 TB to 10 TB Upgrade</td>
</tr>
<tr>
<td>10 TB LTU</td>
<td>10 TB to 20 TB Upgrade</td>
</tr>
<tr>
<td></td>
<td>10 TB to 50 TB Upgrade</td>
</tr>
<tr>
<td>20 TB LTU</td>
<td>20 TB to 50 TB Upgrade</td>
</tr>
<tr>
<td></td>
<td>20 TB to 32 TB Upgrade</td>
</tr>
<tr>
<td>32 TB LTU</td>
<td>32 TB to 50 TB Upgrade</td>
</tr>
<tr>
<td>50 TB LTU</td>
<td>None. Further capacity expansion is not allowed.</td>
</tr>
</tbody>
</table>

**NOTE:**
The table applies to both Perpetual and term-based capacity upgrades.

**Action**
Read the release notes and licensing section before ordering or applying license on the StoreOnce VSA. Contact the HPE sales or support team for clarification or queries.

**Backup jobs fail with backup target size full error**

**Symptom**
Backup jobs fail with a backup target size full error, The Storage Report on the StoreOnce GUI shows Free Space and Used Space as 0 GB.

**Cause**
If the 60 days Instant On license period has expired on the StoreOnce VSA and a purchased license has not been applied, backup jobs fail with a backup target size full error. Target devices on the VSA (VTLs, NAS shares/ Catalyst Object stores) become read-only.

**Action**
Use the StoreOnce CLI to check the license status. If the license has expired, purchase a full product license for the StoreOnce VSA. Install it using the StoreOnce CLI commands, as described earlier in this guide. Addition of the purchased license will put the backup targets back into read/write mode.

**License addition fails with Invalid Device ID error**

**Symptom**
License addition fails with Invalid Device ID error.
Cause
The license key applied is not valid for the StoreOnce VSA.

Action
Make sure that the license is generated using the correct “Serial Number” of the StoreOnce VSA to which the license will be applied. The “Serial Number” for the StoreOnce VSA can be obtained from the StoreOnce GUI Status page.

Instant-on license validity or number of days remaining is reduced

Symptom
Instant-on license validity or number of days remaining is reduced.

Cause
If you change the date settings on the StoreOnce VSA to an older date, the Instant On license validity period may be reduced. The reduction is because the corresponding number of additional days are deducted from the validity period.

Action
Do not move the date backwards once the Instant On license has been installed on the StoreOnce VSA. Moving the date backwards will result in the deduction of the corresponding number of days from the license validity period.

The system date must be set on the StoreOnce VSA based on the ESXi server date. Always set your ESXi server date correctly before deploying a StoreOnce VSA.

The VSA powers off after every power-on

Symptom
The StoreOnce VSA powers off after every power-on.

Cause
This behavior will be seen when the following operations are performed in vSphere:

• The VSA is a clone/copy of another VSA.
• The VSA was deployed from a VM template.
• During ESXi server upgrade, the VSA was marked as clone or a copy.

Action
Make sure the StoreOnce VSA was not cloned or copied from another StoreOnce VSA. If it has been copied or cloned, it does not have a valid license. deploy a new StoreOnce VSA through vSphere or Hyper-V Manager.

License transfer is required

It is possible to reclaim the purchased license from a crashed StoreOnce VSA or move the license from one StoreOnce VSA to another.
Network problems

This section is not applicable to StoreOnce VSA deployed on Microsoft Azure.

Unable to access VSA over the network when default port —eth0 goes down

**Symptom**
Unable to access VSA over the network when default port —eth0 goes down

**Cause**
Eth0 is set the as default primary IP for the StoreOnce VSA. When Eth0 goes down in the StoreOnce VSA, Eth1 also becomes unavailable. Eth1 does not automatically get switched to the default state when Eth0 goes down.

**Action**

1. From the vSphere Client, access the VSA console using the ‘Open Console’ option.
2. Login using Admin/admin and use StoreOnce CLI commands to enable the Eth1 subnet with the default “yes” option.
3. You can use the StoreOnce `net set wizard`, or `net create config` and `net activate config` CLI commands.
   For details, see the StoreOnce System CLI Reference guide.

VLAN Tagging on Hyper-V

Do not use StoreOnce CLI commands to configure VLAN tagging on Hyper-V. To configure the VLAN, use the Hyper-V virtual machine settings to provide the VLAN tag id. An example is shown below. The example configures the virtual machine in VLAN with a tag id 28. refer to the Microsoft Hyper-V documentation for more details.
Virtual Machines on Hyper-V hang in a Stopping, Stopping-Critical or Paused state

**Symptom**

Virtual Machines on Hyper-V sometimes hang in a ‘Stopping’ or ‘Stopping-Critical’ or ‘Paused’ state.

**Cause**

This issue is specific to Windows Hyper-V. A common cause is that the hard drives that store VM VHD files or snapshots of these virtual machines are out of disk free space.

**Action**

Refer to the appropriate Microsoft Hyper-V documentation to find the resolution.

**net set wizard displays 1 Gbps as the network adapter type**

**Symptom**

The StoreOnce CLI command net set wizard displays the interface speed as 1Gbps.
Cause
This is a display issue. StoreOnce VSA supports both 1Gbps and 10Gbps network interfaces and the actual speed depends on the virtual switch, the virtual network driver and the hypervisor physical network adapter.

Action
No action required.

Poor network performance on StoreOnce VSA on a Windows Server 2012 Hyper-V host with Broadcom network adapters

Symptom
Poor network performance on StoreOnce VSA on a Windows Server 2012 Hyper-V host with Broadcom network adapters

Cause
There is a known issue with Broadcom network drivers, which results in poor network performance when Virtual Machine Queue VMQ is enabled.

Action
The workaround suggested is to disable VMQ on the network adaptors on the Hyper-V hosts. See the Microsoft support link for more information: http://support.microsoft.com/kb/2902166.

Performance problems
A number of factors can negatively affect StoreOnce VSA performance in the ESXi environment.

Make sure that the virtual resources of the ESXi servers on which StoreOnce VSAs are deployed are sufficient. Also verify that the datastores used by StoreOnce VSAs are not in an over-committing state.

VSA writes and reads are slower in ESXi SAN environments

Symptom
VSA writes and reads are slower in ESXi SAN environments

Cause
The memory and CPU resources allocated to the StoreOnce VSA may be less than the minimum requirements of the VSA.

Action
1. Verify that the VSA virtual resources are set to meet the minimum requirements of the VSA.
2. Verify that the virtual resources assigned to the VSA are reserved.
3. To verify that the ESXi SAN environment is set up correctly, refer to the VMware troubleshooting guides.
Power issues

The VSA service set goes down and file system becomes read-only

**Symptom**
The VSA service set goes down and file system becomes read-only when external ESXi storage LUNs are disconnected from the server.

**Cause**
This behavior may be seen when the connection to the ESXi storage is lost and recovered while the VSA is powered on and running.

**Action**
The StoreOnce VSA may become unresponsive in this case. Contact HPE Support for assistance at [http://www.hpe.com/support/hpesc](http://www.hpe.com/support/hpesc).

1. **IMPORTANT:**
   Do not reboot or shutdown the VSA when any storage operation is in progress. Use the StoreOnce CLI command, `system show status`, to verify that storage addition is completed and the storage is formatted before any shutdown or reboot operation. An uncontrolled shutdown/reboot/power outage may result in file system inconsistencies.

Backup jobs on VTLs fail after power shutdown

**Symptom**
Back up jobs on VTLs fail after power shutdown

**Cause**
This behavior may be caused due to various reasons.

**Action**
1. The VTL should be displayed in a “Connected” state on the StoreOnce GUI when the StoreOnce VSA is powered on. If it is in a “Not Connected” state, try the following steps:
   a. Log in to the iSCSI Initiator of your Client and remove the current StoreOnce VSA.
   b. After removing the StoreOnce VSA from the iSCSI initiator, rediscover it through the ISCSI initiator and try connecting the robotics medium changer and VSA drives.
   c. Log in to the StoreOnce GUI and check that the status of the library is connected.

2. For NetBackup, follow these additional steps:
   a. Use NetBackup to remove drives for the library (only the drives and not the robot).
   b. Restart NetBackup Device Manager.
   c. Create the drives manually for the library on top of the existing robot.
d. Restart NetBackup Device Manager.

e. Restart failed jobs again.

3. Repeat the steps if the issue reoccurs.

The StoreOnce KVM VSA reboots instead of shutting down on the StoreOnce CLI command, system shutdown

Symptom
The StoreOnce KVM VSA reboots instead of shutting down on the StoreOnce CLI command, system shutdown.

Cause
There are known issues with the Ubuntu server where shutdown commands reboot instead of shutting down the machine. There may be an issue with the KVM host (Ubuntu) BIOS settings resulting in a reboot of the VSA instead of a shutdown.

This issue can occur rarely on a StoreOnce VSA when the StoreOnce CLI command, system shutdown, is used for the first time after deployment. Subsequent shutdown commands will work correctly and shutdown the VSA.

Action
• Shut down the StoreOnce VSA after it reboots (using the StoreOnce CLI command, system shutdown).
• Disable the Wake-on-LAN functionality in the Ubuntu server (host) BIOS settings.
  This solution might limit use of the Wake-on-LAN functionality.

Miscellaneous issues

Operations fail when using vSphere with the message: <File [unspecified file name] not found>

Symptom
Operations such as power-off, power-on, and storage addition on the StoreOnce VSA may fail when using vSphere with the message: <File [unspecified file name] not found>

Cause
This behavior may happen when the vmdk descriptor file for the StoreOnce VSA is corrupt or missing or locked. Frequently changing the name of the StoreOnce VSA through the vSphere GUI may also cause vmdk file corruption.
Action

Refer to VMware troubleshooting documents on this issue. To find suggestions for resolving the issue, search the VMware knowledge base on Verifying ESX/ESXi virtual machine file integrity (1003743).

All VSAs/VMs on the ESXi server become unresponsive and all operations on StoreOnce VSAs fail

Symptom
All VSAs/VMs on the ESXi server become unresponsive and all operations on StoreOnce VSAs fail

Cause
The VMFS file system heap size on the ESXi server is not set to the maximum value. When total storage provisioned to the VMs/VSAs on the ESXi server exceeds the limit that a certain heap size setting on the server can manage, the VMs on the ESXi server become unresponsive.

Action
The heap size variable for the ESXi server must be set to a maximum (640 MB) allowing smooth handling of VMDKs up to 60 TB. Make sure the ESXi servers are updated to the latest patches released by VMware. refer to VMware Knowledge base - article ID : 1004424.

Putty (ssh client) session expires following idle time with StoreOnce VSA CLI on Azure

Symptom
Putty (ssh client) session expires following idle time while using the StoreOnce VSA CLI deployed on Microsoft Azure.

Cause
This is a known issue with ssh client connections with Azure Virtual Machines.

Action
In the Putty Connection category, set the Seconds between keepalives field to 180 before creating an ssh connection with VSA on Azure.

Emails are not sent to configured accounts

Symptom
The StoreOnce GUI is used to configure SMTP and email recipients for alerts, warnings, and errors.

Cause
This may be a domain name resolution issue, when the SMTP server is represented by a domain name.
Action

Set up the Email configuration using the SMTP server IP address instead of the fully qualified domain name.

**Adding/deleting replication targets fail with error “Maximum no. of sessions reached”**

**Symptom**
Adding/deleting replication targets fail with error “Maximum no. of sessions reached”

**Cause**
This behavior is seen when the fan-out limit on the StoreOnce VSA is reached.

The StoreOnce VSA requires additional time to delete configuration information on the deleted target appliance and enable the addition of a new target device.

This behavior is intermittent and is not seen always.

**Action**
Wait for 10-15 minutes between the deletion of one target appliance and the addition of another target appliance.

**Time settings reset on reboot**

**Symptom**
Time settings are reset when the StoreOnce VSA is rebooted.

**Cause**
This is a known StoreOnce VSA issue, and occurs because the StoreOnce VSA is a software-defined system with no hardware of its own.

**Action**
1. Always sync the StoreOnce VSA time with the ESXi host server automatically. Use the vSphere GUI to enable the synchronize guest time with host option on the StoreOnce VSA under Edit Settings -> Option -> VMware Tools.
2. Verify that the ESXi host server has the correct time and date settings.

**The StoreOnce KVM VSA goes into a Paused state**

**Symptom**
The StoreOnce KVM VSA goes into a Paused state.

**Cause**
The KVM environment has a known issue where it will start to pause the VM when the host runs out of space for the base disk and /root directory. This issue is not a VSA-specific issue.
Action

Free up the KVM host base disk and resume the StoreOnce VSA.
Ensure that there is always enough disk space on the KVM host.

A fifth VT library is created

Symptom

A fifth VT library gets created in the StoreOnce VSA automatically when the iSCSI initiator attached to the StoreOnce VSA is reset or refreshed.

Cause

The Auto Creation functionality in VTL automatically creates a library on the StoreOnce VSA, when the iSCSI initiator attached to it is reset or refreshed. Even though the maximum number of targets (VT libraries or CIFS shares or Catalyst Stores) on the VSA is 4 the Auto Create option creates a fifth library with an “Unknown” state.

Action

You will not be able to use this fifth library. This behavior does not affect any of the other existing targets or data on the VSA. It is recommended to delete this “Unknown” library and proceed with normal operations.

It is recommended to disable the Auto Create feature in the StoreOnce VSA GUI, as described in the StoreOnce VSA user guide.

Logs for the StoreOnce VSA

- For the StoreOnce VSA, use the StoreOnce GUI to generate support tickets to obtain all required logs on the VSA. See the StoreOnce VSA user guide for details.
- For VMware, VCenter/ESXi server logs refer to VMware knowledge base.

Management of the HPresetpassword account

The HPresetpassword account provides a method for the local Admin user to recover the default password. The HPresetpassword account is only available from the StoreOnce CLI and it allows this user to log in via the local vSphere console and change:

- The local Adminaccount back to its factory default password (admin)
- The password of the HPresetpassword account.

This account is not accessible via a remote ssh session.

**IMPORTANT:**

It is recommended that the password for the HPresetpassword account is changed immediately after installation. The new password must be strong and memorable.
Changing the password for the HPresetpassword account

Procedure

1. Gain access to the local system console either using a locally attached USB keyboard and Monitor or via the local StoreOnce VSA console.
2. Log into the system.
   a. At the Login prompt type: HPresetpassword
   b. When prompted for the password enter: hpresetpassword
3. Once logged in a list of available commands will be presented.
   - reset: Reset the 'Admin' password to 'admin'
   - manage: Change the 'HPresetpassword' user's password
   - help: List available commands
   - exit: Log out
4. Run the command manage to change the password for the HPresetpassword user. At the prompts, provide:
   a. (current) UNIX password:
      The default at installation is hpresetpassword.
   b. New UNIX password:
      The new password must be strong and memorable; it will not be accepted if it is weak, for example a dictionary name.
   c. Retype new UNIX password:
      Re-enter the new password to confirm it.
5. Type exit to log out.

Resetting for the local Admin user password

Procedure

1. Gain access to the local system console either using a locally attached USB keyboard and monitor or through iLO remote console.
2. At the Login prompt type: HPresetpassword
3. When prompted for the password enter the current password. The default is hpresetpassword, but if you are following best practices you will have changed the password after installation.
4. Once logged in a list of available commands will be presented.
5. Type `reset`, which will immediately reset the default password of the **Admin** user to `admin`.

6. Type `exit` to log out.

**Reference to a couplet on the StoreOnce VSA GUI Events page**

If the StoreOnce VSA GUI Events page refers to a couplet in one of the alert messages during startup, ignore the message. A couplet is not applicable to the VSA because it is a single node appliance.

![StoreOnce VSA console showing segmentation fault alert](image)

The StoreOnce VSA console may sometimes give the following segmentation fault error while shutting down. The error can be safely ignored as it does not harm any functionality or data stored on the VSA.

![Disabling VMware VIX API guest operations on a guest VM](image)

VIX functions with `Guest` in the name may affect the VSA system settings. It is recommended to disable VIX guest operation support on the StoreOnce VSA. Refer to the following VMware article for instructions on how to disable this feature on a guest VM.

Finding StoreOnce documents in the HPE Information Library

The latest product documentation is available in the StoreOnce Backup section of the Hewlett Packard Enterprise Information Library.

Procedure

2. In Models / Subcategories, select your product.
3. To filter the entries, select the types of documents and your language.
StoreOnce websites

Hewlett Packard Enterprise Information Library for StoreOnce products
  www.hpe.com/info/storeonce/docs
HPE StoreOnce Support Matrix
  www.hpe.com/storage/StoreOnceSupportMatrix
HPE StoreOnce Systems QuickSpecs
  www.hpe.com/support/StoreOnceQuickSpecs
HPE StoreOnce Data Protection Backup Appliances information page
  www.hpe.com/storage/storeonce

General websites
Storage white papers and analyst reports
  www.hpe.com/storage/whitepapers

Enter “StoreOnce” into the keyword search box.
Support and other resources

Accessing Hewlett Packard Enterprise Support

• For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
  http://www.hpe.com/assistance

• To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
  http://www.hpe.com/support/hpesc

Information to collect

• Technical support registration number (if applicable)
• Product name, model or version, and serial number
• Operating system name and version
• Firmware version
• Error messages
• Product-specific reports and logs
• Add-on products or components
• Third-party products or components

Accessing updates

• Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.

• To download product updates:
  Hewlett Packard Enterprise Support Center
  www.hpe.com/support/hpesc
  Hewlett Packard Enterprise Support Center: Software downloads
  www.hpe.com/support/downloads
  Software Depot
  www.hpe.com/support/softwaredepot

• To subscribe to eNewsletters and alerts:
  www.hpe.com/support/e-updates

• To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:
IMPORTANT:

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

http://www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information

HPE Get Connected

www.hpe.com/services/getconnected

HPE Proactive Care services

www.hpe.com/services/proactivecare

HPE Proactive Care service: Supported products list

www.hpe.com/services/proactivecaresupportedproducts

HPE Proactive Care advanced service: Supported products list

www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information

Proactive Care central

www.hpe.com/services/proactivecarecentral

Proactive Care service activation

www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty for your product or to view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products reference document, go to the Enterprise Safety and Compliance website:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts
Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hpe.com). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.