Hedvig VAAI NAS Plugin
User Guide

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Overview of the Hedvig VAAI NAS Plugin

The *Hedvig VAAI NAS Plugin* enables the use of *VMware vSphere Storage APIs – Array Integration* (VAAI) in the Hedvig environment.

VAAI are a set of APIs that are used to offload certain storage operations from VMware vSphere ESXi hosts to the storage devices.

Starting from VMware vSphere 5.0, VMware supports *NAS hardware acceleration primitives*, which enable virtual disks to be cloned by the storage arrays, rather than by using VMware vSphere Data Movers, which consume ESXi host CPU, memory, and network bandwidth.

The supported VAAI NAS hardware acceleration primitives are bundled as a *VIB (vSphere Installation Bundle)* by Hedvig to be installed on the ESXi host.
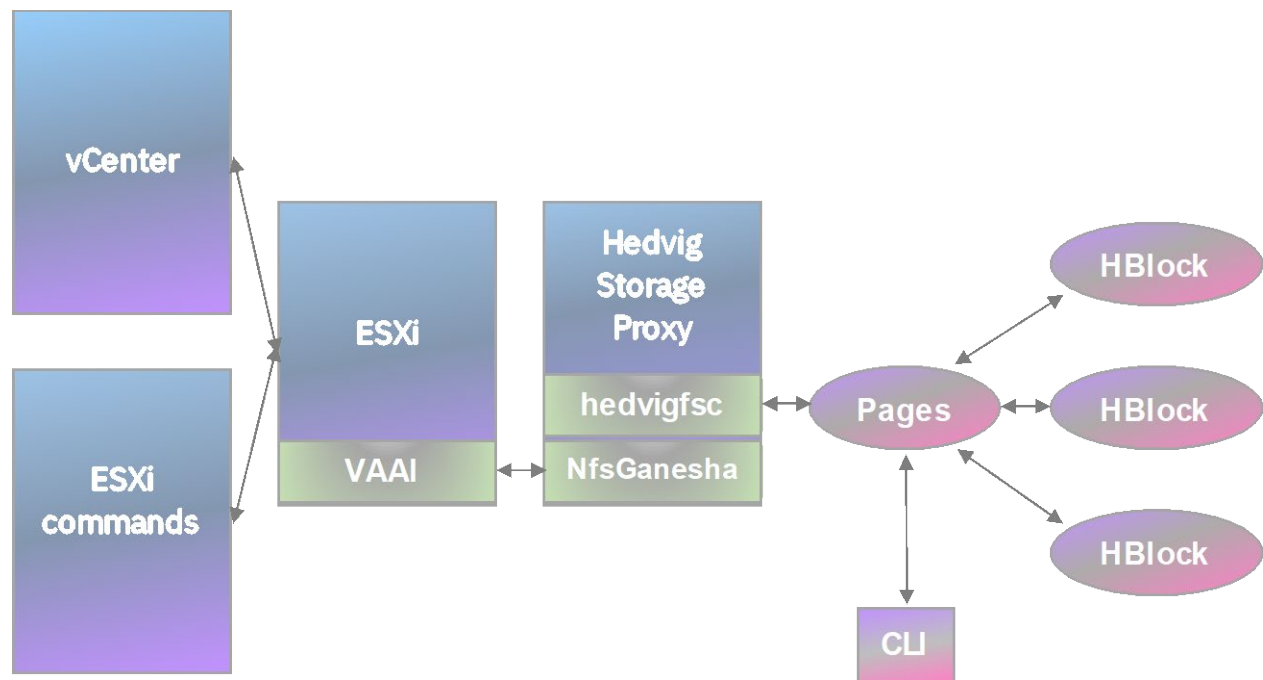

Figure 1: Hedvig VAAI NAS Plugin

Support matrix for ESXi versions

This table shows the supported versions of ESXi, related to the NFS Datastore version, for the *Hedvig VAAI NAS Plugin.*

NFS Datastore version	Supported ESXi version
NFS v3 Datastores	6.x or newer
NFS v4.1 Datastores	6.7 and later versions

Supported VAAI NAS hardware acceleration primitives

This table lists the VAAI NAS hardware acceleration primitives that are currently supported by the Hedvig VAAI NAS Plugin.

VAAI NAS hardware acceleration primitive	notes
Full File Clone	The Hedvig VAAI NAS plugin enables virtual disks to be cloned by Hedvig Storage for Hedvig virtual disks. VMware will offload the Full File Clone feature to Hedvig when the underlying datastore is a Hedvig datastore. Hedvig does not support clone of clones.
Extended Statistics	Hedvig supports Extended Statistics only for full clones.

Installing the Hedvig VIB

Follow these steps to install the Hedvig VIB (vSphere Installation Bundle):

1. Go to the Commvault Store for the latest VAAI NAS plugin software:

    https://cloud.commvault.com/webconsole/softwarestore/store.do#!/130/713/16644

2. Download the following file to the desired ESXi host:

    ```
    HED-ESX-HedvigNasPlugin.zip
    ```

3. After the VIB is installed, all supported operations will be routed through the Hedvig VAAI NAS Plugin.

    ```
    esxcli software vib install -d "<path to the VIB>" --no-sig-check
    ```

4. To check which VIBs are installed on the ESXi host, run:

    ```
    esxcli software vib list
    ```

    ```
    [root@esxi6-dev2:~] esxcli software vib list | grep "HedvigNasPlugin"
    HED-ESX-HedvigNasPlugin          1.0-0                                 HED     VMwareAccepted     2018-04-26
    ```

5. To list the NFS datastores on the ESXi host and their hardware acceleration status:

    ```
    esxcli storage nfs list
    ```

6. After the Hedvig VAAI NAS Plugin is installed, any new Hedvig datastores should display **Supported** in the **Hardware Acceleration** field.

    ```
    [root@esxi6-dev2:~] esxcli storage nfs list
    Volume Name  Host                Share                 Accessible  Mounted  Read-Only   isPE  Hardware Acceleration
    -----------  ------------------  --------------------  ----------  -------  ---------  -----  ---------------------
    vm_images    kvm1.hedviginc.com  /qa_archive/ISO             true     true      false  false  Supported
    vmimages     kvm1                /pub/qa_archive/ISO         true     true      false  false  Supported
    demo         172.22.66.144       /exports/demo               true     true      false  false  Supported
    [root@esxi6-dev2:~]
    ```

Performing the "Clone to Virtual Machine" operation

To perform the **Clone to Virtual Machine** operation, in the vSphere web client/desktop client, right-click on the virtual machine, or virtual machine template, to clone to a virtual machine, as shown in the following figure.
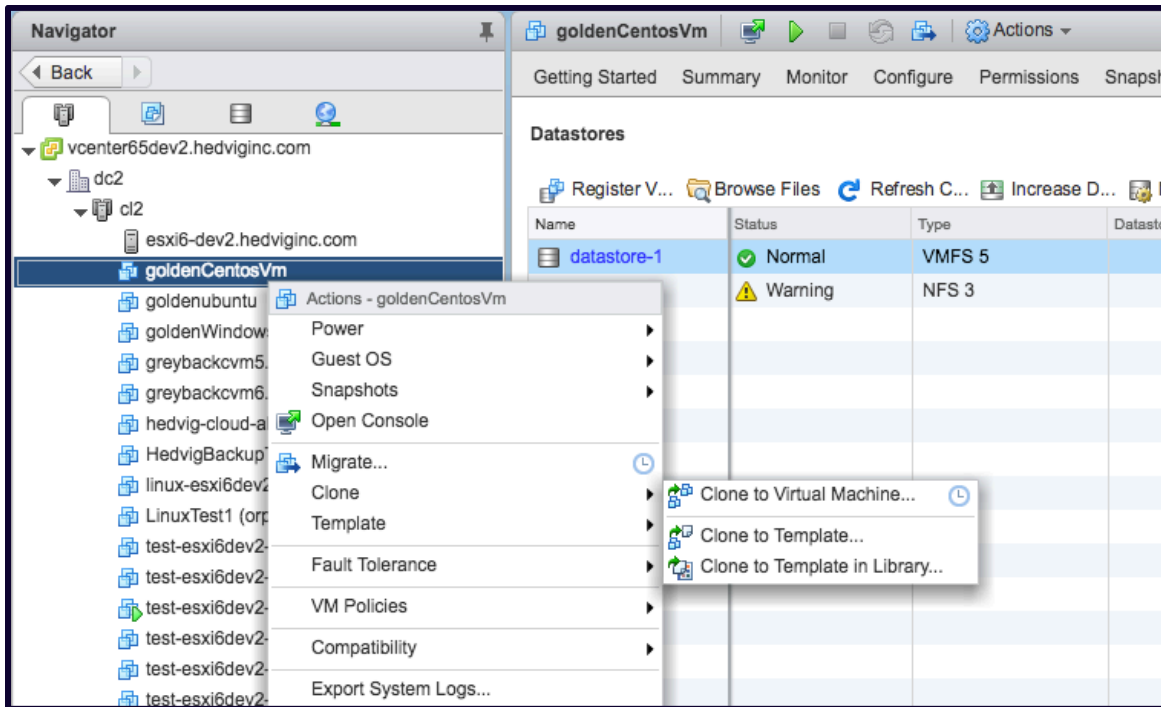

Figure 2: Clone to Virtual Machine operation

Glossary

This glossary contains definitions of terms used in this document.

Table 3: Glossary of terms

term	definition
API	An *application programming interface* is a set of routines, protocols, and tools for building software and applications.
ESXi	VMware *ESXi* (formerly ESX) is an enterprise-class, type-1 hypervisor developed by VMware for deploying and serving virtual computers.
Hedvig Storage Cluster	A *Hedvig Storage Cluster* is an elastic cluster, formed by using any type of commodity server(s).
Hedvig Storage Proxy	A *Hedvig Storage Proxy* is a lightweight software component that deploys at the application tier as a virtual machine or Docker container, or on bare metal, to provide storage access to any physical host or virtual machine in the application tier. The storage proxy presents block, file, and object storage access to app hosts, accelerates read performance with flash caching, drives efficiency with deduplication, and secures data with encryption.
NAS	*Network-attached storage* is a file-level computer data storage server connected to a computer network providing data access to a heterogeneous group of clients.
VAAI	*VMware vSphere Storage APIs – Array Integration* are a set of APIs that are used to offload certain storage operations from VMware vSphere ESXi hosts to the storage devices.
VIB	The *vSphere Installation Bundle* contains the Hedvig-supported VAAI NAS hardware acceleration primitives to be installed on the ESXi host.
virtual disk	A *virtual disk* is an abstracted logical disk volume presented to a computer or application for read/write use.