Reclaim Space within a VM on a HyperFlex Cluster

Contents

Introduction

This document describes options on how to reclaim space within a thin-provisioned virtual machine (VM) that resides on HyperFlex.

Requirements

There are no specific requirements for this document

Components Used

The examples in this document were validated on VMware vSphere Hypervisor (ESXi) 6.5.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Problem:

HyperFlex does not have a mechanism to reclaim space within a thin provision VM that is freed up. Thin provisioning allows for the on-demand growth of a virtual disk. This allows for more efficient use of space from the storage system compared to thick provision. When files on a thin-provisioned virtual drive are deleted, the disk size is not automatically reduced. The reason for this is that the operating system only deletes the indexes from the file system table. This results in the appearance of the quick deletion of files, but no reclamation of space.

Solution:

Reclaim Space Within A Microsoft Windows VM On A HyperFlex Cluster

This section provides some options on how to reclaim space on thinly provisioned virtual drives. These tools zero the blocks of data you deleted. Before you perform any operation that zeros out blocks, ensure you have backups. Also, make sure there are no previous snapshots on the VM that you complete the steps on. This includes SENTINEL snapshots. Removal of the SENTINEL snapshot stuns the VM for a prolonged period of time. You can choose to power down the VM before you remove all snapshots in order to not stun the VM.

Additional information on VMware and Snapshot management is contained in these articles:

[A snapshot removal can stop a virtual machine for a long time](#)

[Best practices to use snapshots in the vSphere environment](#)

Reclaim Space on Thinly Provisioned Disks on Microsoft Windows VMs

[SDelete](#), is a free utility from Microsoft Sysinternals Suite, that is used to reclaim space.

> **Caution**: SDelete -z causes the virtual machine operating system to use up 100% of the available space disk while free space is zeroed. This leads to a temporary increase in used space on the datastore.

If you hit the ENOSPC condition or have a Hyperflex cluster in read-only mode please be aware of this since there is a possibility it is counterproductive. That is if one or multiple VMDKs usage increased up to 100% (as a consequence of SDelete) represents a considerable increment of the Hyperflex overall cluster storage capacity used then it must be used with caution
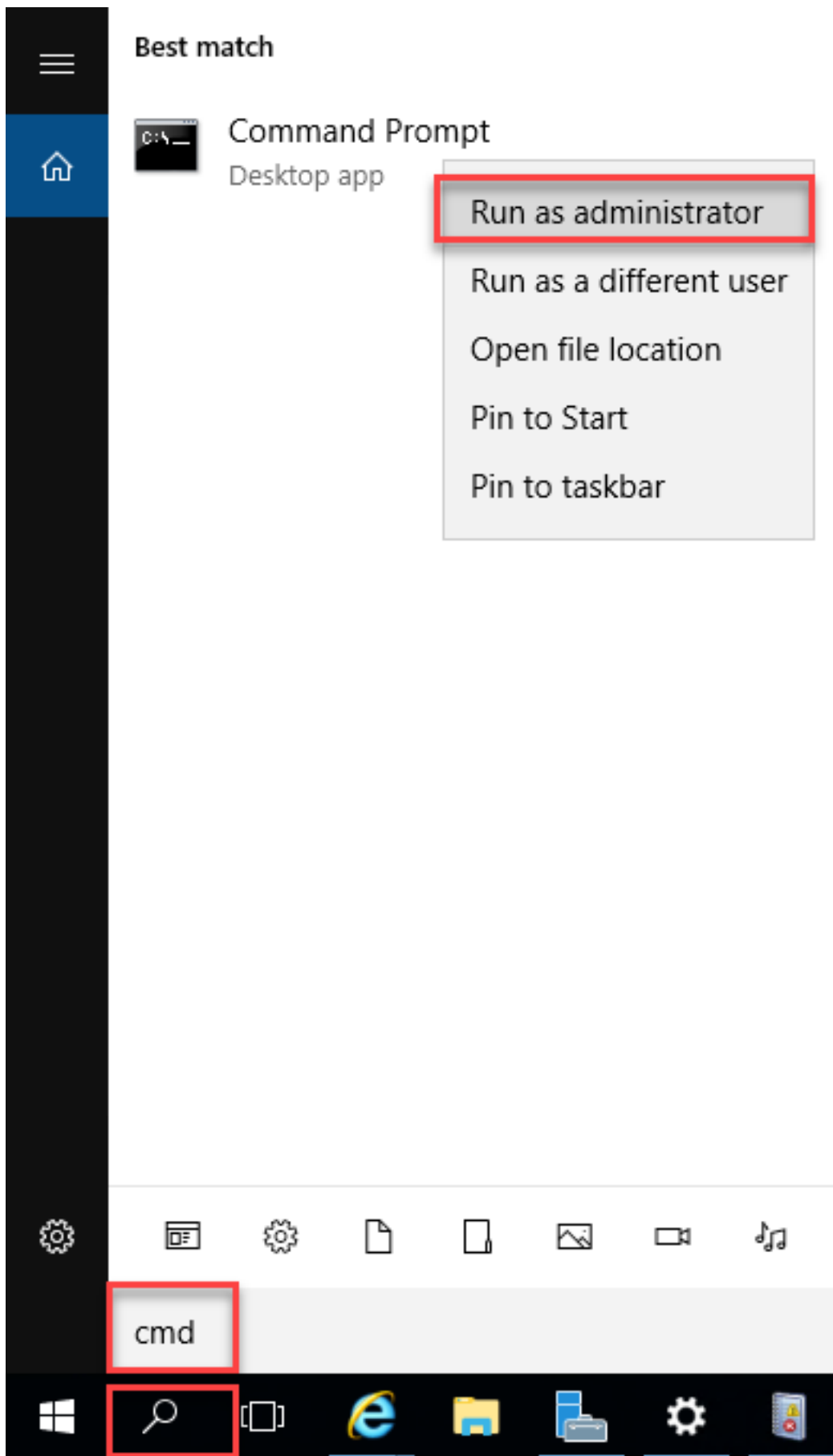
This screenshot shows the VM VMDK side before you run SDelete:
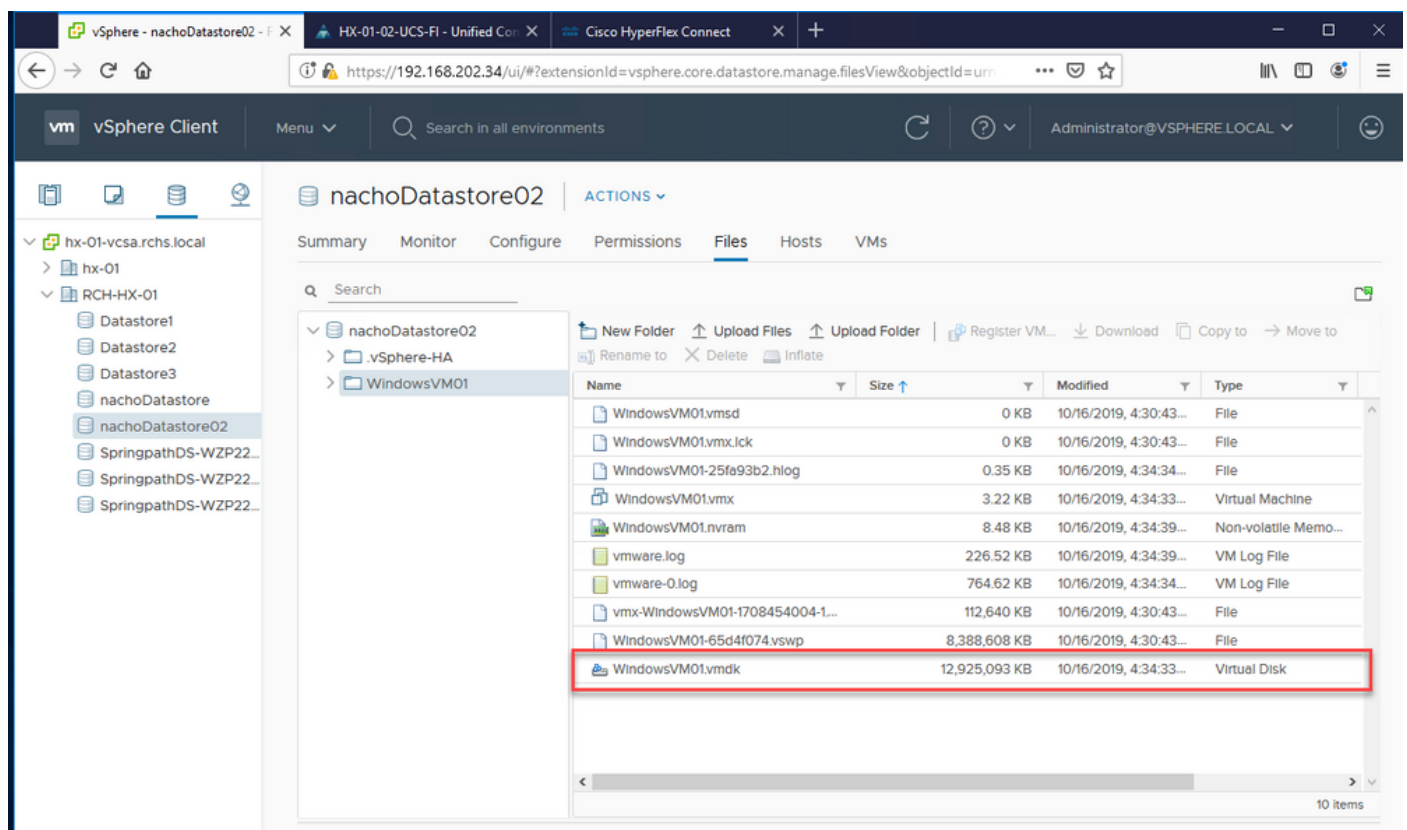
Once you download SDelete to the target VM, unzip the file.
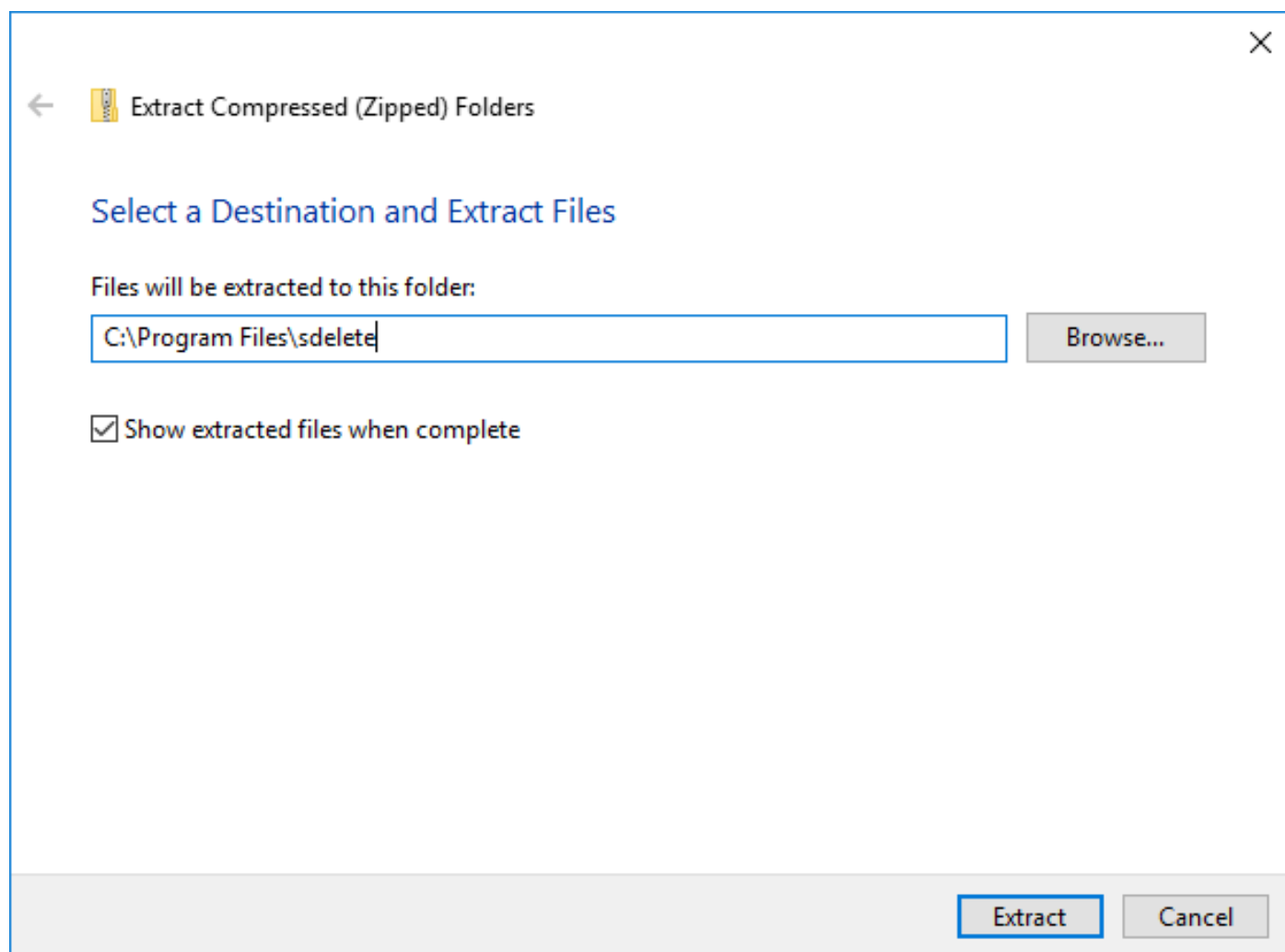
Enter **cmd** to open the Command Prompt application. Right-click and choose **Run as administrator**.

Navigate to the directory where you uncompressed SDelete.

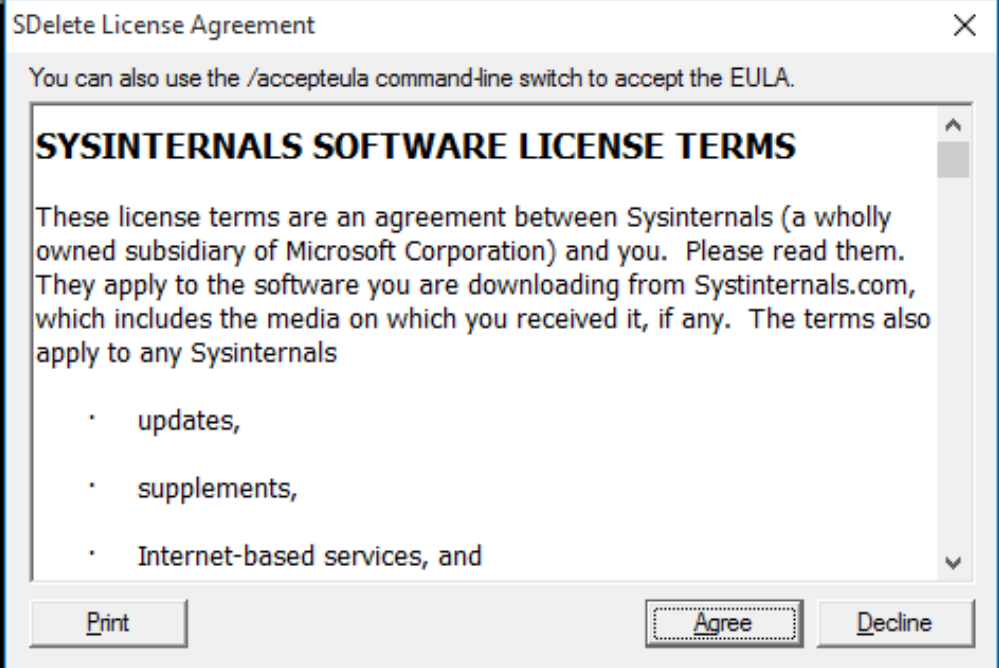Enter the **sdelete.exe -z <drive letter>:** command and click **Agree**.

```
C:\>cd C:\Program Files\sdelete

C:\Program Files\sdelete>sdelete.exe -z C:

SDelete v2.02 - Secure file delete
Copyright (C) 1999-2018 Mark Russinovich
Sysinternals - www.sysinternals.com

SDelete is set for 1 pass.
Cleaning free space on C:\: 2%_
```

```
C:\Program Files\SDelete>sdelete.exe -z c:

SDelete v2.02 - Secure file delete
Copyright (C) 1999-2018 Mark Russinovich
Sysinternals - www.sysinternals.com

SDelete is set for 1 pass.
Purging MFT files 17% complete
```

```
C:\>cd C:\Program Files\sdelete

C:\Program Files\sdelete>sdelete.exe -z C:

SDelete v2.02 - Secure file delete
Copyright (C) 1999-2018 Mark Russinovich
Sysinternals - www.sysinternals.com

SDelete is set for 1 pass.
Free space cleaned on C:\
1 drive cleaned.

C:\Program Files\sdelete>
```

This screenshot shows the VM VMDK size after the SDelete operation:
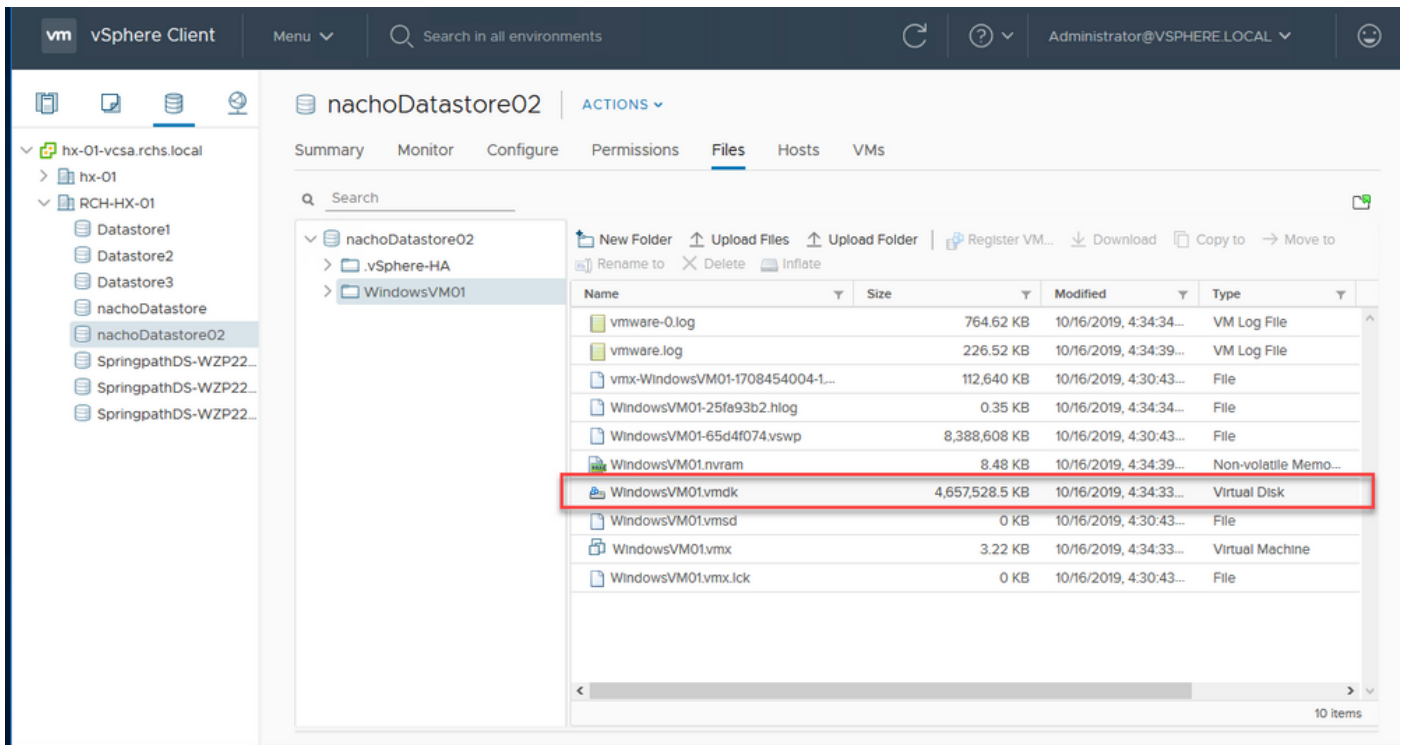
Reclaim Space Within A Linux VM On A HyperFlex Cluster

You can use the dd utility to zero out the areas where the deleted data resides. Enter **df -h** in order to check the free space on the Linux OS.

Enter the **dd bs=1M count=90112 if=/dev/zero of=zero** command in order to zero out the empty space.

This command zeros out 90GB of space. Modify this command to fit your use case.

Command input breakdown:

bs is the block size used

count is the number of blocks

if is the input file

of is the output file

After this completes, the VMDK file grows.

```
nacho@nacho-virtual-machine:/$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            3.9G     0  3.9G   0% /dev
tmpfs           798M  9.2M  789M   2% /run
/dev/sda1        98G   92G  597M 100% /
tmpfs           3.9G   14M  3.9G   1% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           3.9G     0  3.9G   0% /sys/fs/cgroup
tmpfs           798M  124K  798M   1% /run/user/1000
nacho@nacho-virtual-machine:/$
```

This screenshot shows the size of VMDK in vCenter:
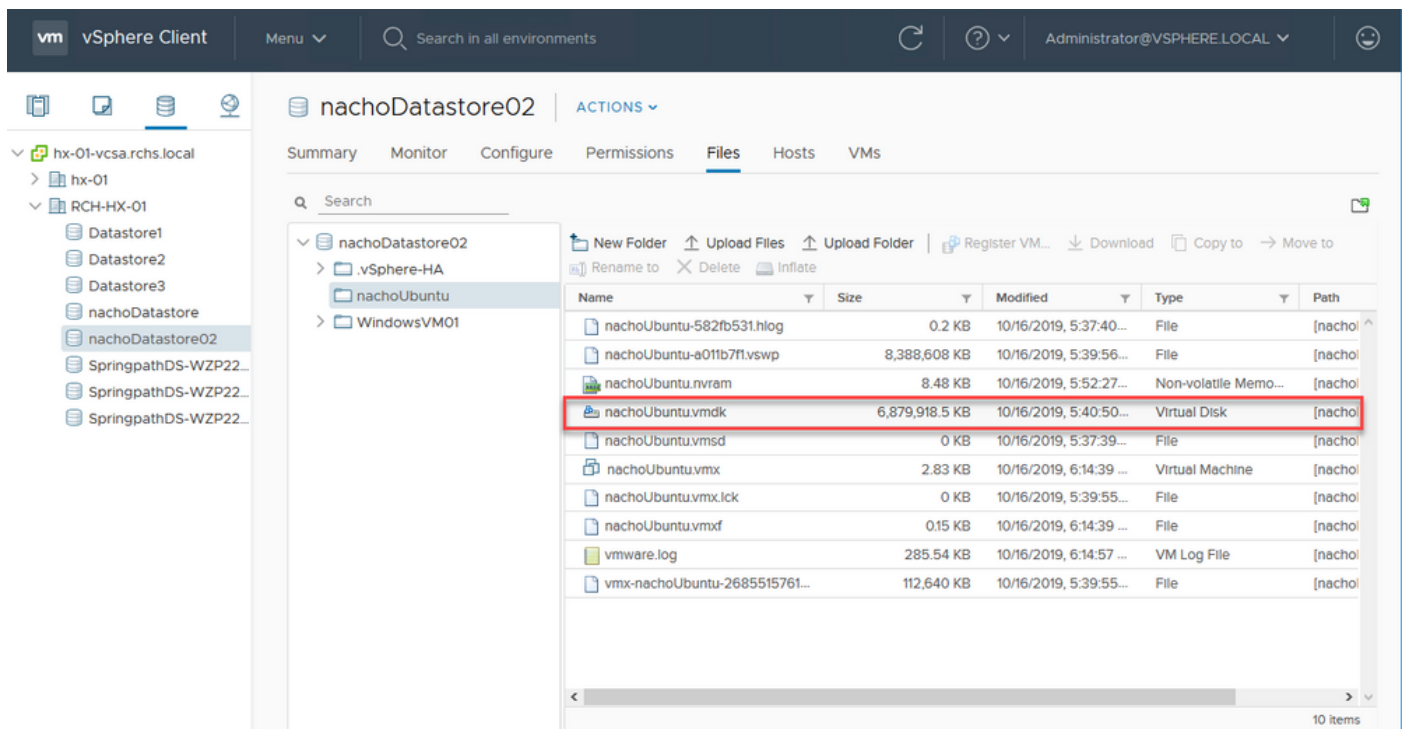
In order to reclaim the space, enter the **rm zero** command:

```
/$ sudo rm zero
[sudo] password for user:      <---Enter password for user
```

```
nacho@nacho-virtual-machine:/$ sudo rm zero
[sudo] password for nacho:
nacho@nacho-virtual-machine:/$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            3.9G     0  3.9G   0% /dev
tmpfs           798M  9.2M  789M   2% /run
/dev/sda1        98G  4.2G   89G   5% /
tmpfs           3.9G  112K  3.9G   1% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           3.9G     0  3.9G   0% /sys/fs/cgroup
tmpfs           798M   56K  798M   1% /run/user/1000
/dev/sr0        1.6G  1.6G     0 100% /media/nacho/Ubuntu 16.04.5 LTS amd64
nacho@nacho-virtual-machine:/$
```

The VM VMDK size in vCenter after the deletion of the zero files is shown in this screenshot.
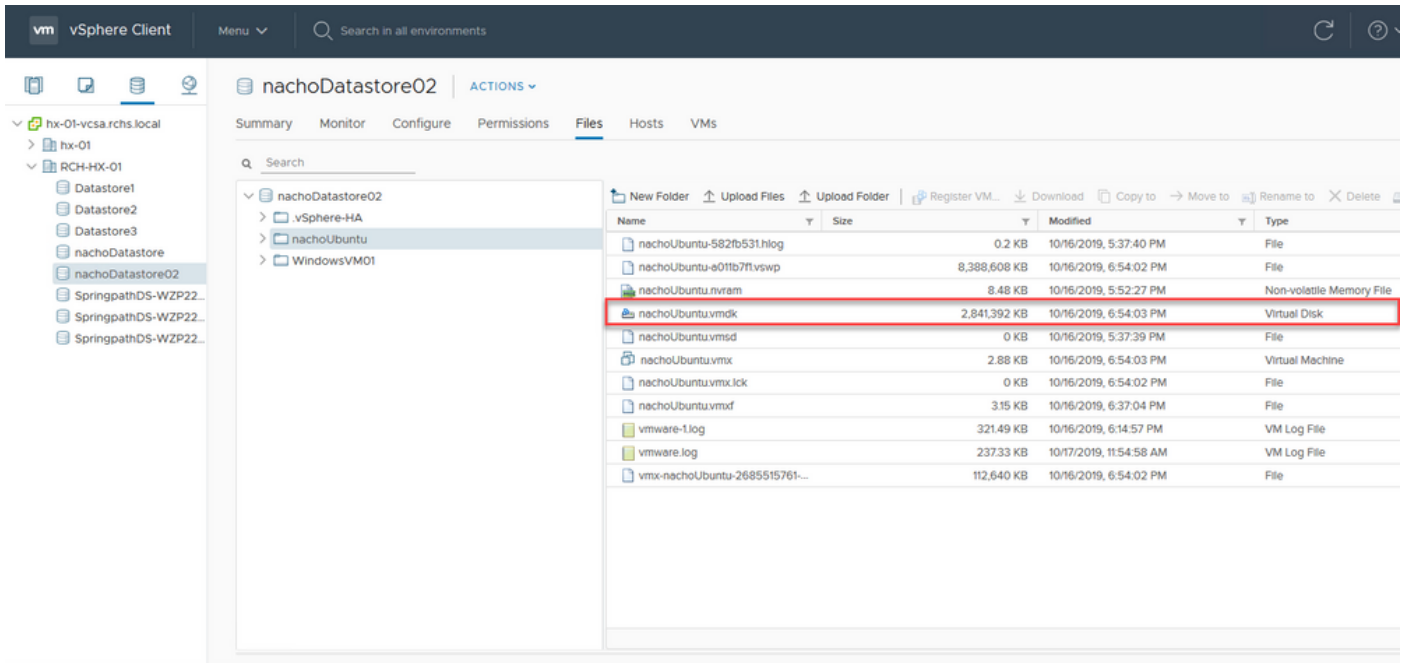
Related Information

- **Technical Support & Documentation - Cisco Systems**
- **Capacity Management in Cisco HyperFlex White Paper**
- **Reclaiming disk space from thin provisioned VMDK files on ESXi**