Test Drive:

SoftNAS Cloud on Microsoft Azure

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SoftNAS®, Inc.

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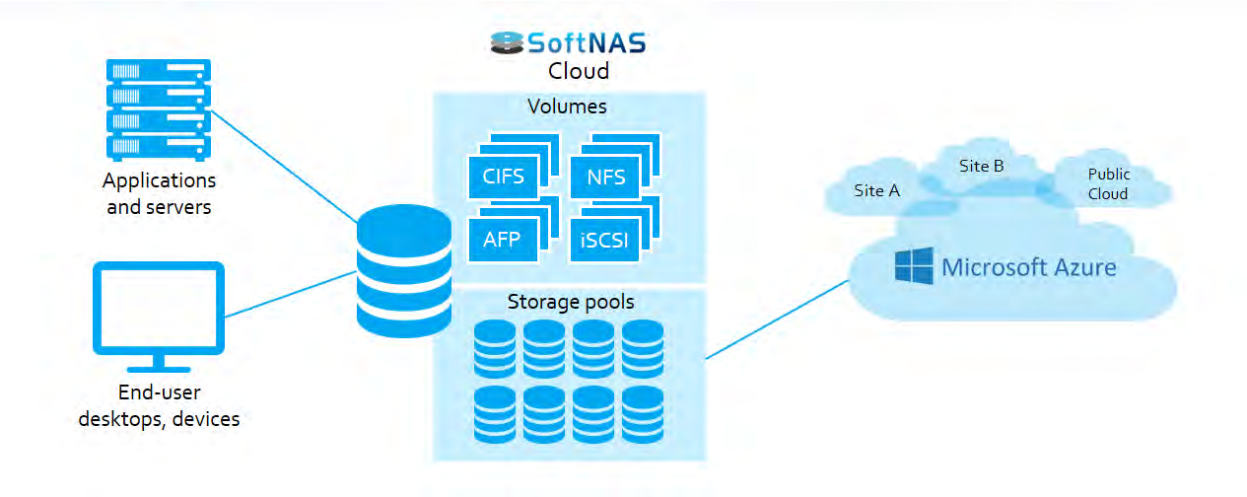
Contents

Introduction

The goal of this Test Drive is to allow you to become more familiar with SoftNAS Cloud® on Microsoft Azure®. In this test drive of SoftNAS Cloud, we have made it easy for you to view and try SoftNAS Cloud features and to discover the ease of configuring common storage protocols within the SoftNAS Cloud user interface (UI).

To do this, we've provided you with a SoftNAS Cloud Virtual Machine (VM) hosted on Azure. We've preconfigured a single disk, storage pool and volume which is provisioned as an NFS export, CIFS share, iSCSI LUN and Apple File Protocol (AFP) share. This configuration could easily be extended, simply by adding more disks, volumes and pools, to serve an organization's application and end-user services. SoftNAS Cloud's flexibility allows us to meet a customer's requirements simply by changing the properties of compute and storage capacity. The end result of such a configuration looks similar to the image below:



SoftNAS Cloud extends native file storage capacities on Microsoft Azure, providing an enterprise-class NAS filer virtual storage appliance that scale to petabytes with high-availability and is backed by the No Storage Downtime Guarantee.

Company Details

SoftNAS®, Inc. is the leading provider of software-defined NAS solutions and protects mission-critical data for customers using any combination of public, private (on-premise) and hybrid clouds. SoftNAS gives its customers the enterprise-class data security, protection, and performance required to safely, predictably and reliably operate IT systems and applications. SoftNAS believes in powerful, hassle-free data management and works with any hardware, any data type, across any geography, and with any IT environment, including the most popular public, private, and hybrid cloud computing platforms: Microsoft® Azure™, Amazon® AWS™, CenturyLink Cloud® and VMware® vSphere®.

SoftNAS Cloud is a software-defined, enterprise-class NAS filer delivered as a virtual appliance for public, private and hybrid clouds. It supports multiple protocols including: NFS, CIFS/SMB, iSCSI, and AFP (Apple File Protocol). With Active Directory and LDAP integration, SoftNAS Cloud runs in the Microsoft Azure, AWS and CenturyLink Cloud public cloud

platforms, as well as, in your own datacenter, on VMware vSphere. SoftNAS Cloud requires neither proprietary hardware nor prior storage experience. You can easily scale up or down while only paying for what you use on the various cloud platforms.

SoftNAS Cloud Features

An Apache® webserver provides robust, secure access along with Secure Shell® (SSH). Storage is accessible via TCP/IP protocols including NFS v3, NFS v4, SMB/CIFS (Microsoft® Windows File Shares), iSCSI and AFP.

SoftNAS Cloud is packaged with a primary administration interface called: SoftNAS Cloud StorageCenter™, which provides commercial-grade storage administration and management functionalities for businesses of all sizes.

Reliable – SoftNAS Cloud® is built on proven, industry-standard platforms including VMware, Linux and ZFS for a solid and reliable foundation.

- Rapid Recovery
- Data Integrity & Data Protection
- Error Detection & Correction
- Data is always safe, protected, and available

Enterprise NAS Features – The commercial-grade features previously only found on cumbersome, expensive NAS appliances are now available to you as a robust software solution – regardless of company size and budget.

Azure Blob Object Storage Support – SoftNAS Cloud® frontends the object-based scalable storage, provided by Azure Blob Storage, by presenting it as NFS, CIFS/SMB, iSCSI or AFP file sharing protocols for business applications and workloads. SoftNAS Cloud allows easy application and workload migrations to the Azure cloud without the requirement for changing your existing application data structures or workflows. SoftNAS Cloud allows you to scale your NAS deployments using Azure Blob Storage from gigabytes to multi-petabytes.

SNAP HA™ – now on Azure – SoftNAS' patent-pending SNAP HA™ allows easy high-availability (HA) and cluster configurations for robust, non-stop application operation with automatic failover and seamless transfer across controllers. SNAP HA, combined with Azure availability sets, makes the unique SoftNAS No Storage Downtime Guarantee available for customers using SoftNAS Cloud for Microsoft Azure.

DeltaSync™ – Reduces the Recovery Time Objective (RTO) from days to hours for cluster recovery, from a high-availability (HA) failover event.

Role-based Access Control (RBAC) – Ensure greater security and control for organizations with multiple users or systems on Microsoft Azure. RBAC allows management of users, roles and permissions to provide defined parameters for delegated administration.

Low Cost – SoftNAS Cloud® is a low cost, flexible NAS software solution, affordable enough for any small to medium-sized business, yet powerful enough to scale to very large

enterprise requirements. With Azure Blob support, there is no need to purchase larger instance sizes, if your primary need is additional storage!

No Training Needed – SoftNAS Cloud makes it easy to get started without the need for time-consuming and expensive training courses. The SoftNAS Knowledge base (KB) and helpdesk resources are available from day one.

High Performance – Improve any organization's productivity and streamline business-critical requirements with:

- Up to 10,000 IOPS per Azure D3 node (adjustable based on the compute instance selected)
- Multiple layers of read and write caching
- High-performance capabilities make applications run at top speeds

Easy to Implement – From zero to Cloud NAS in record time.

- Quickly download and install SoftNAS Cloud to rapidly create a full-featured Cloud NAS on Microsoft Azure
- Operate with existing and off-the-shelf server hardware with affordable, commodity disk drives.
- Re-use existing server hardware
- .

High Availability – SoftNAS' patent-pending SNAP HA™ allows easy setup of high-availability (HA) and cluster configurations for robust, non-stop application operation with automatic failover and seamless transfer across controllers. Combined with Azure Availability Sets, SNAP HA makes the unique SoftNAS "No Storage Downtime Guarantee" available for our Azure-based SoftNAS Cloud customers.

Other SoftNAS Cloud features include:

- Deduplication & Compression
- Standard Disk, Premium Disk, Hot Blob Storage and Cool Blob Storage Support
- Use Blob Storage as a POSIX File System
- Industry-standard file-sharing protocols including: NFS, CIFS/SMB, iSCSI and AFP
- High-performance, multi-tier caching (RAM and SSD)
- Scheduled and user-initiated snapshots
- Thin provisioning
- Block replication through patent-pending SnapReplicate™ technology
- Data integrity through built-in error detection and correction
- Software and hardware RAID support
- Azure Role-Based Access Control (RBAC) integration
- Active Directory and LDAP integration and support

Note: *As Test Drive is a single instance deployment of SoftNAS Cloud, it cannot be configured as highly available (HA). SNAP HA™ requires a paired configuration of SoftNAS Cloud nodes.*

How to use this Test Drive Guide

In this SoftNAS Cloud Test Drive, we have kept things simple. We will guide you to where key configurations can be made, and highlight the benefits of these features. Guidance on the configurations themselves is available via our Installation Guide and Reference Guide, but we recommend a full SoftNAS Cloud free trial to begin that journey. The time constraints of this Test Drive are not sufficient for a full exploration of the product. We recommend you spend no more than 5 minutes on each section of this guide, or focus mainly on your key areas of interest first.

The steps provided will guide you to key locations in the SoftNAS Cloud user interface, and we have avoided including any steps that build upon previous steps, allowing you free reign of the product. This user guide points out key functions / features and explains their significance. As such, you can navigate to the areas that interest you, skip scenarios, or explore on your own as you see fit.

Note: You may see a certificate warning message. This occurs because it is a demo system. Your production environment would normally have you add the certificate. Please ignore the message and proceed to the login page.

Opening your SoftNAS Cloud instance

This document assumes you have already registered for our Test Drive demonstration and have now provisioned your instance, or are waiting for it to provision. A prompt will provide the URL of your instance and the default username and password. Simply navigate to the URL provided, and enter the default username and password. The default username and password have been provided for your convenience.

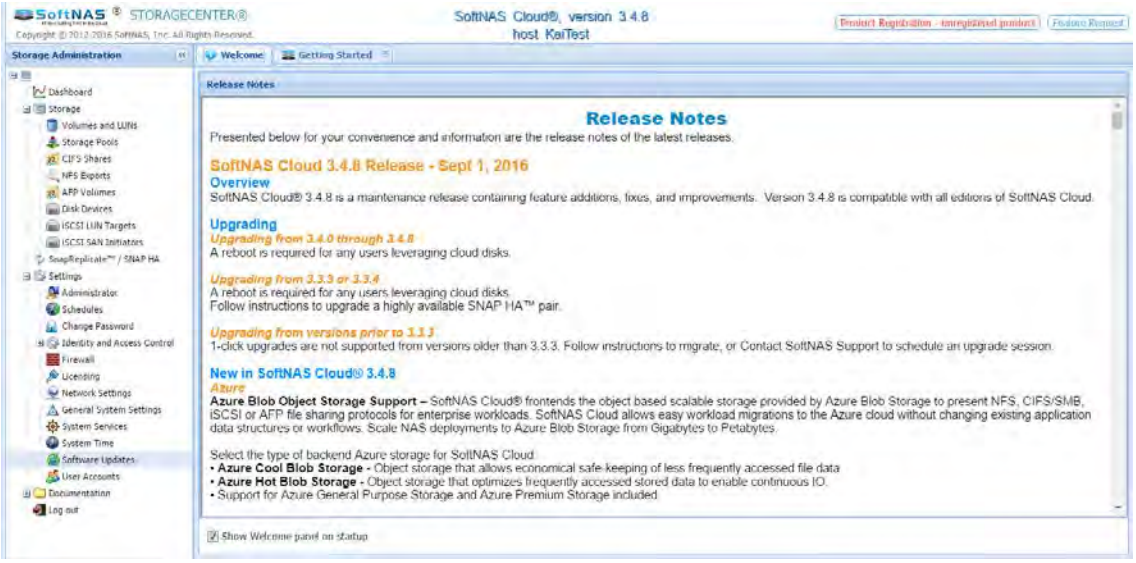
Username: softnas

Password: Pass4W0rd

(Note the zero instead of capital O)

You will be presented with an end user license agreement. Scroll down and click: **I accept**.

You are now logged into the product and will see a Welcome screen highlighting the recent changes/upgrades to the product. SoftNAS is constantly improving SoftNAS Cloud features to better serve our customers' needs.



What you will learn from this Test Drive

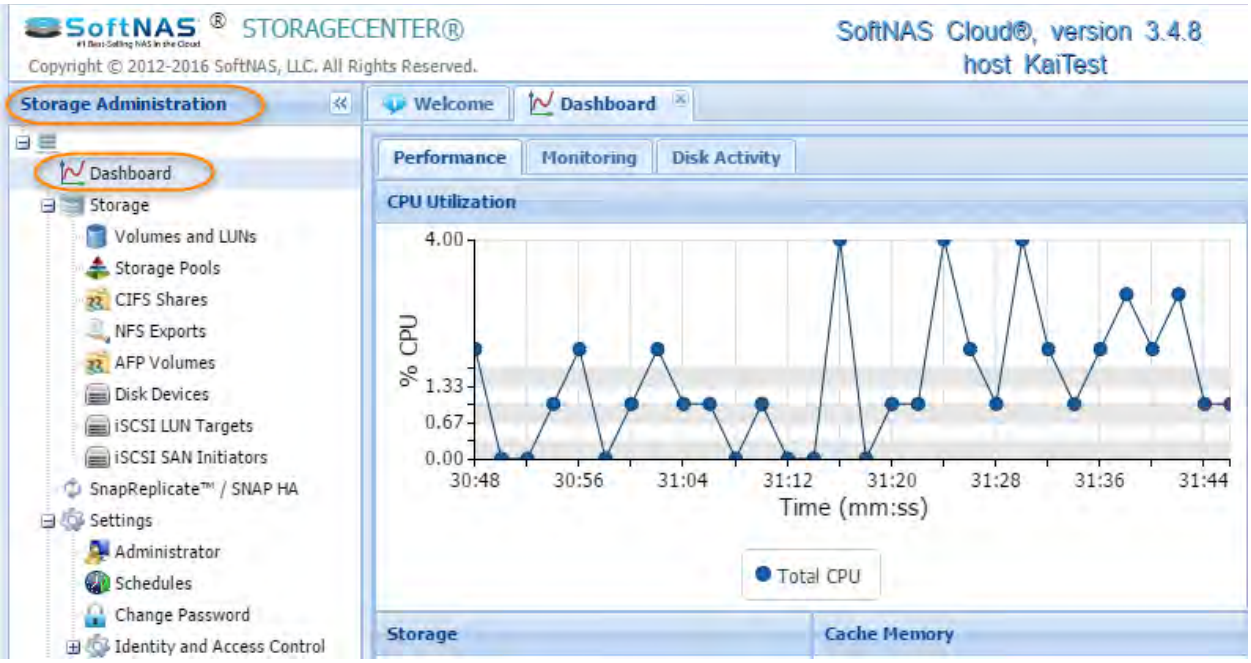
This guide will illustrate key concepts in managing cloud storage and highlight key features of the SoftNAS Cloud user interface (UI) in order to help the user navigate the StorageCenter™ administration UI. This guide focuses on key features that are important in any SoftNAS Cloud deployment, as well as, key topics focused on using SoftNAS Cloud in Azure.

Key topics this guide focuses on:

- Dashboard (Performance Monitoring)
- Storage Administration
- Performance Management
- Active Directory Integration
- Replication and High Availability

Dashboard (Performance Monitoring)

The SoftNAS Cloud® StorageCenter Dashboard provides a visual overlay of key performance metrics, allowing you to monitor system activity and proactively identify potential issues. Since this is not an active data service, the dashboard will not show a great deal of activity during a Test Drive. However, it is important that we show this feature to you during your trial. To view system performance metrics, monitor system services and view disk usage reports, simply click **Dashboard** under the **Storage Administration** pane.



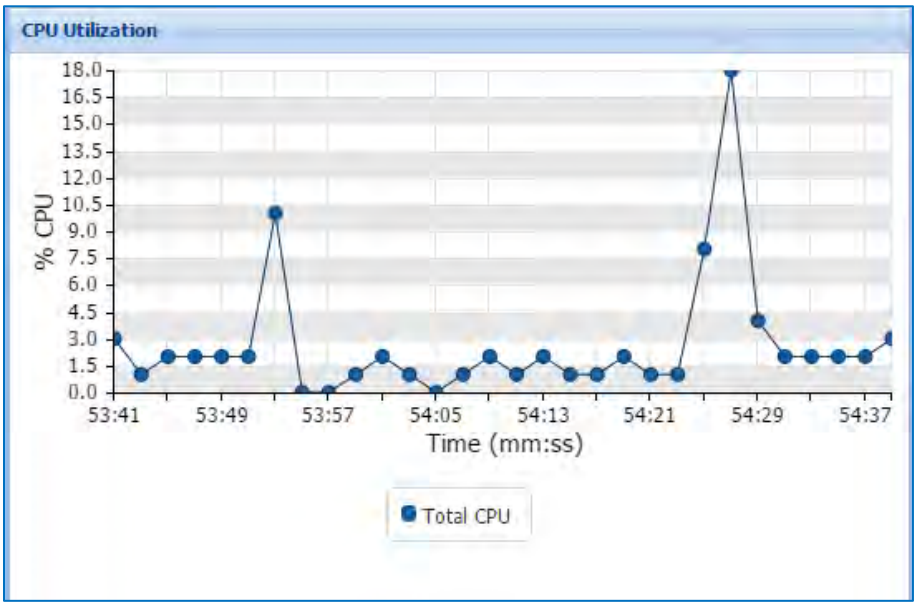
The Performance Tab

By default, the **Dashboard** will open to the **Performance** tab which will provide you an at-a-glance review of key performance metrics, including:

CPU Utilization:

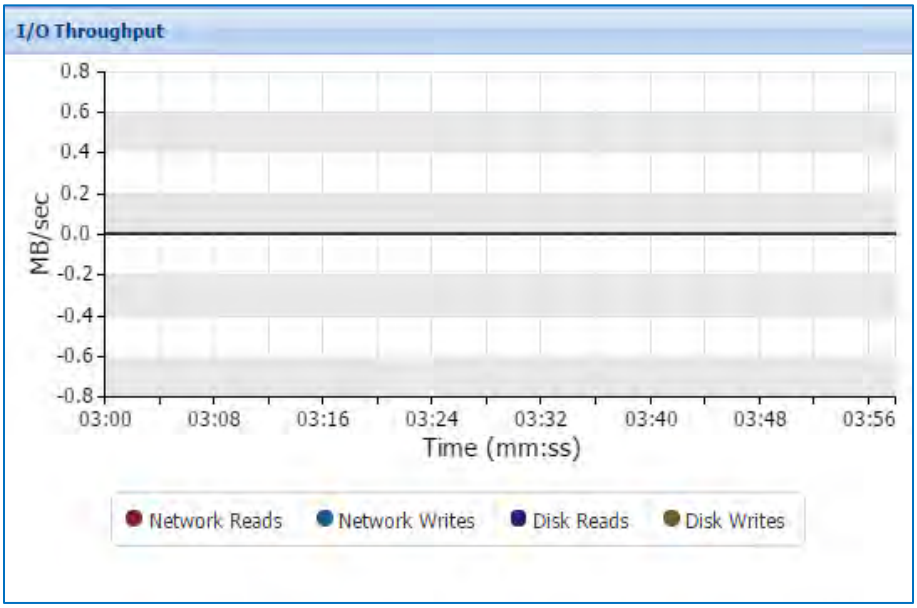
CPU Utilization provides an overview of real-time CPU (Cores) activity for SoftNAS Cloud. Consistently high CPU usage can indicate that inadequate system resources have been assigned for your intended workload. Using alternative compute instance sizes from Azure enables you to scale the performance you need to meet your needs. Unlike various other

on-premise storage systems, SoftNAS Cloud allows you to quickly change the compute instance resources to meet the needs of your workload.



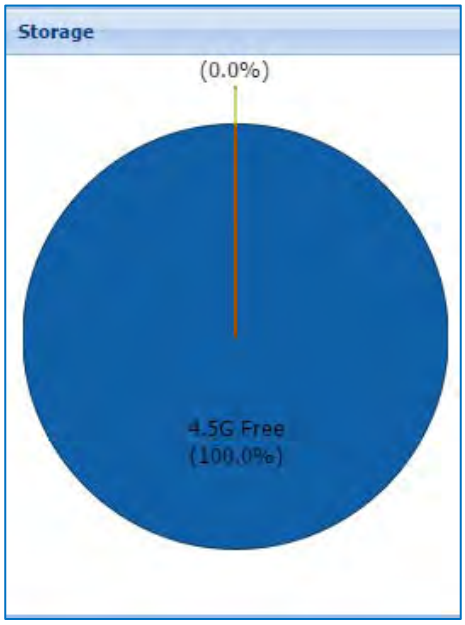
I/O Throughput:

I/O Throughput displays network and disk throughput for your SoftNAS Cloud instance. This provides a strong measure of system activity, by showing the Read/Write loads on your instance. This panel will only show activity when data is actively being written to or is being read from the SoftNAS Cloud managed storage.



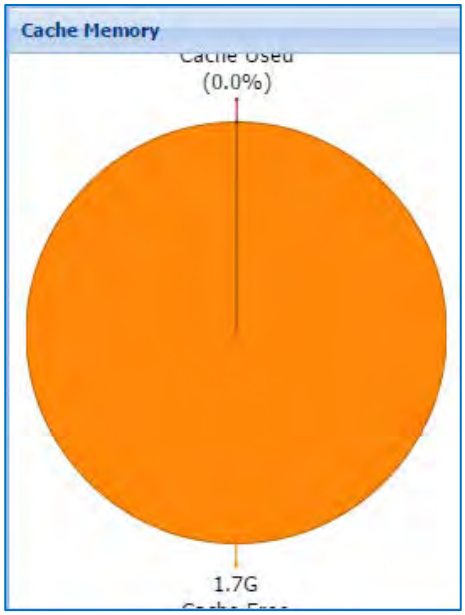
Storage (Capacity)

The **Storage** panel allows you to view the storage capacity remaining on your SoftNAS Cloud instance; proactively letting you know when it may be time to increase the amount of storage required to meet the demands of your current workload.



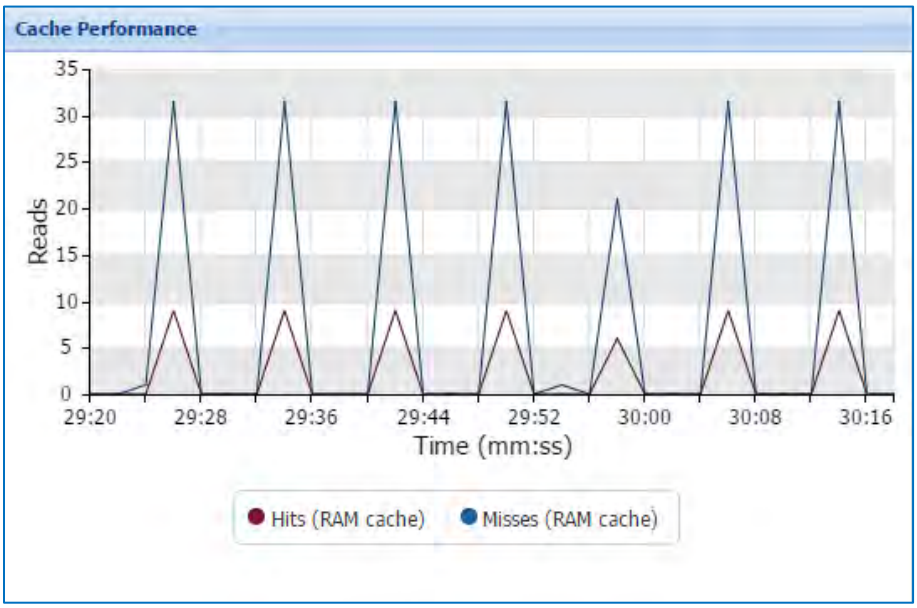
Cache Memory:

Cache Memory allows you to see the current cache usage of your instance. This can help you to determine whether your throughput is adequately meeting your needs, or if a change to your cache resources may be needed to achieve optimal performance. SoftNAS Cloud allows you to adjust the cache sizing as needed to adjust for performance requirements.



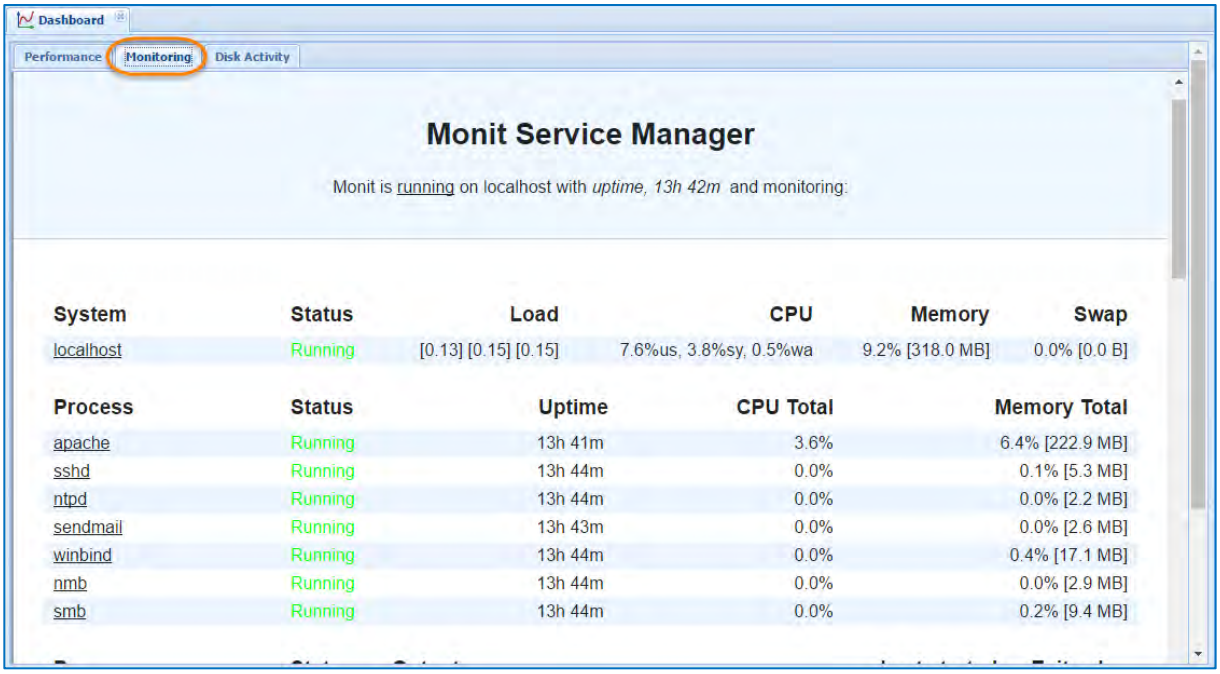
Cache Performance:

Cache Performance provides real time performance metrics for system cache performance.



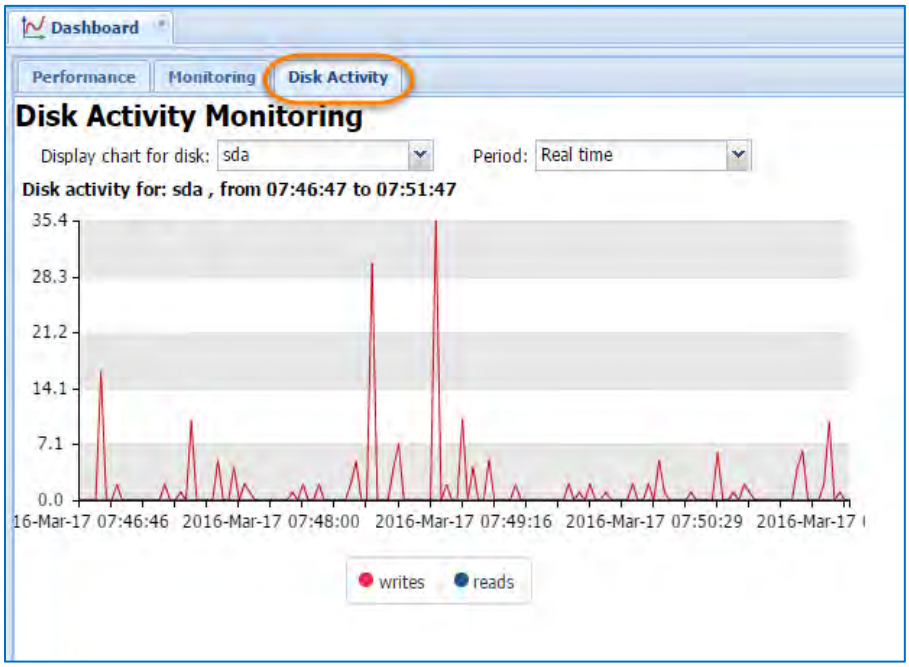
Monitoring Tab

The **Monitoring Tab** provides real-time reporting on the status and uptime of all running critical system services, processes, filesystems, files, disks, hosting services and the system resources they are consuming.

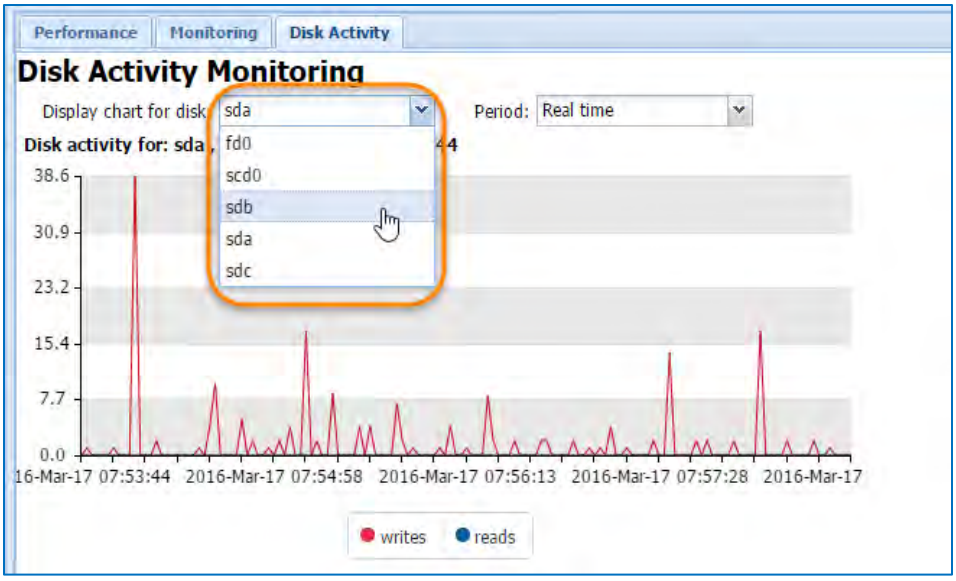


Disk Activity

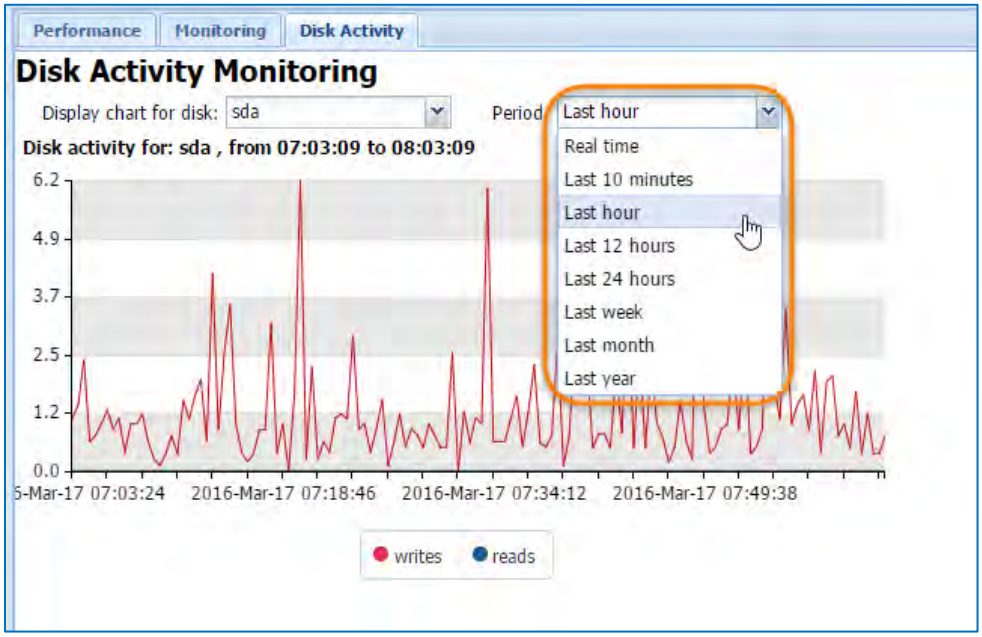
By default, the **Disk Activity** tab will show real-time activity for the primary disk in your system.



You can select any of the available disks associated with the instance by selecting from the **'Display chart for disk:'** dropdown.

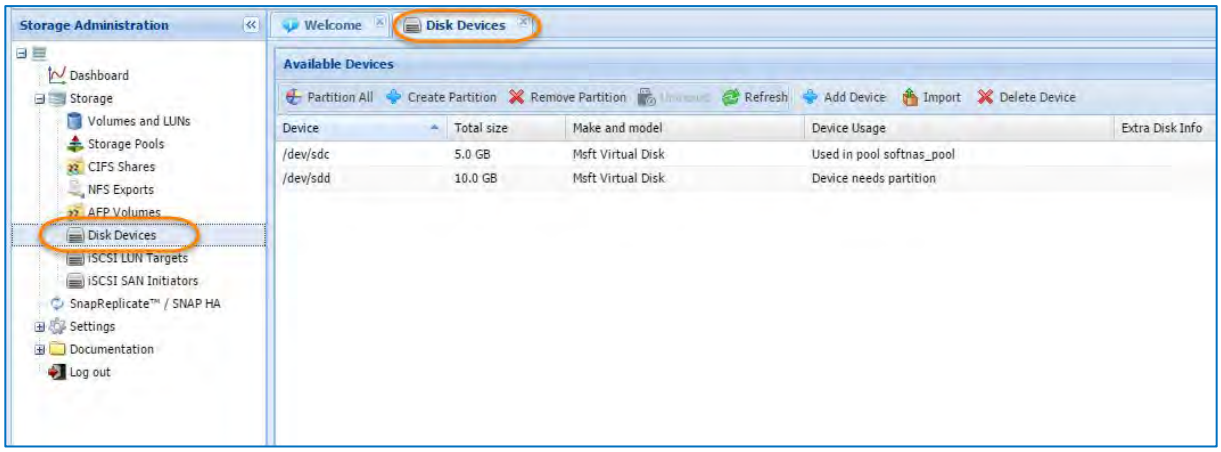


You can also obtain reports for a given time period by selecting from the **'Period:'** dropdown.



Storage Administration

Disk Devices



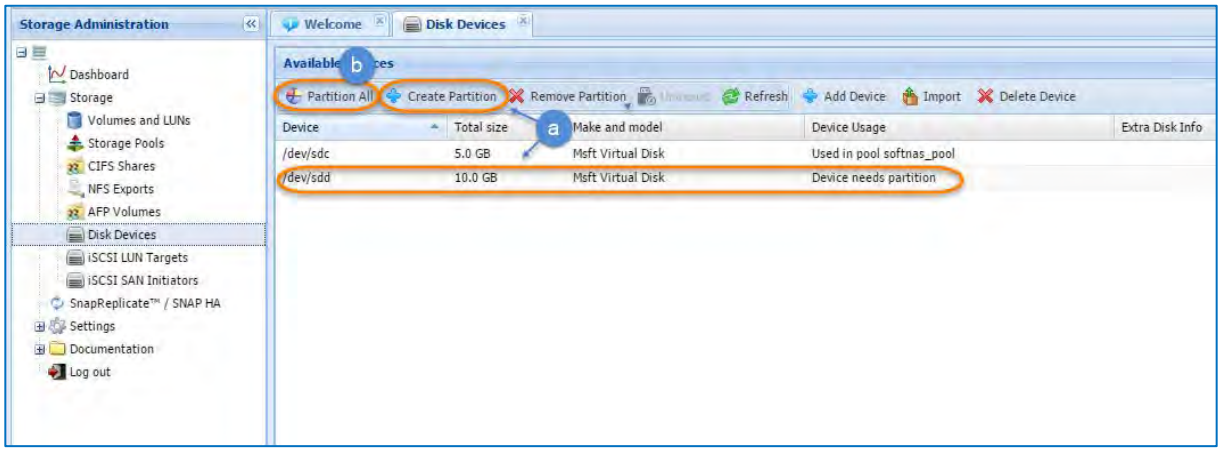
In **Disk Devices**, you can manage existing disks associated with your Azure instance (for the Test Drive, you are limited to the disks provisioned as part of the trial). SoftNAS Cloud on Azure supports standard disks, premium disks, Hot Blob storage and Cool Blob storage.

Further information on how to add addition Azure storage to your SoftNAS Cloud instance can be found in the SoftNAS Cloud Installation Guide:

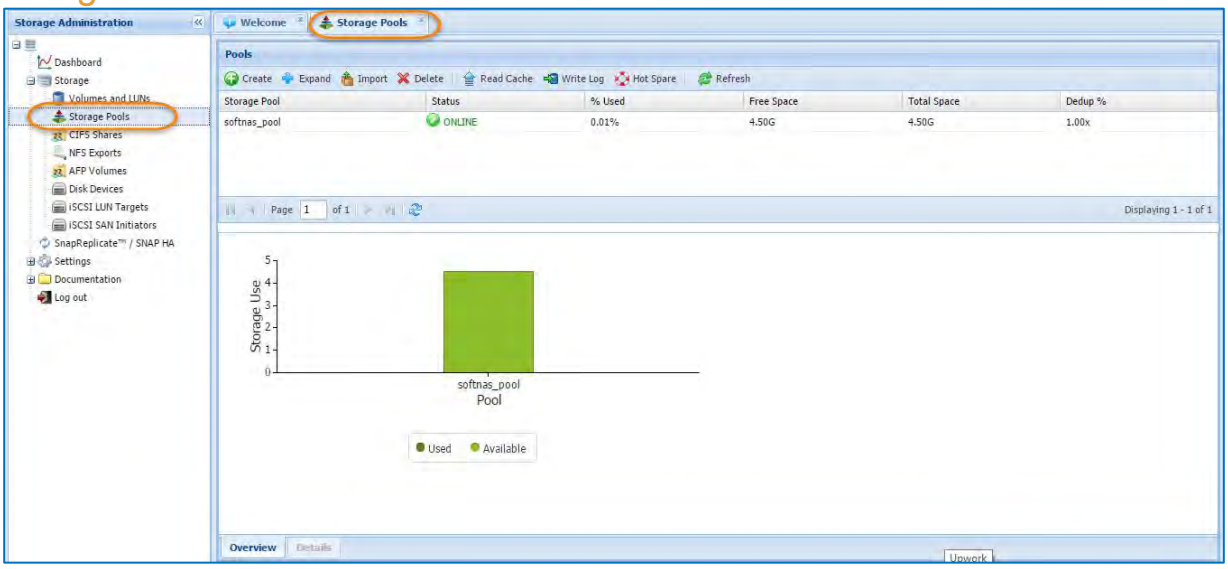
- Adding Disks via the Microsoft Portal
- Adding Block Disks via the SoftNAS Cloud UI
- Adding Blob Storage via the SoftNAS Cloud UI

In **Disk Devices**, you can partition, import, add and delete disks. Remember that a disk must be partitioned in order to be available for use by a storage pool and volume. To partition a new disk, select the disk and choose **Create Partition** or simply click **Partition All** in order to partition all available disks.

Note: The second disk presented in the screen captures below will not be available on your Test Drive instance. It is presented to better illustrate available features on a production-ready SoftNAS Cloud instance.



Storage Pools



Storage Pools allows you to quickly configure and manage storage pools, and provides several advanced features. For this trial instance, a pool has already been configured. For the Test Drive, a single storage pool from single disk has been provisioned.

Learn more about configuring pools and addition storage pool options

Recommended Navigation Steps

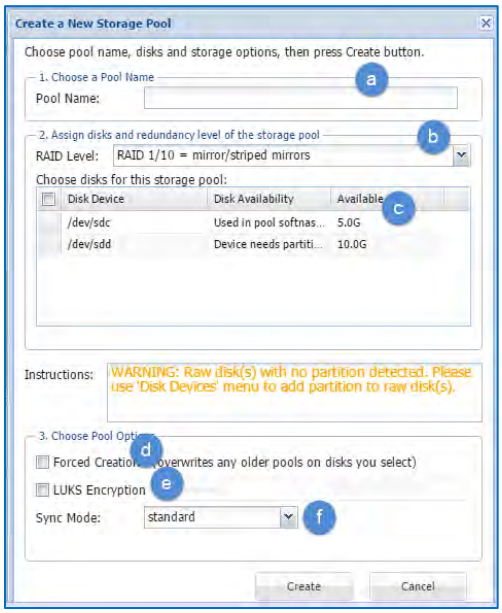
The following steps are navigational only. Click the items selected and note the options.

Creating a Pool

To create a new pool, click **Create**.

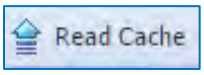
In the configuration screen that appears, you can configure:

a) Name
b) RAID level
c) Assign Disks
d) Forced Creation (overwrites any older pool you select)
e) LUKS encryption
f) Sync Mode

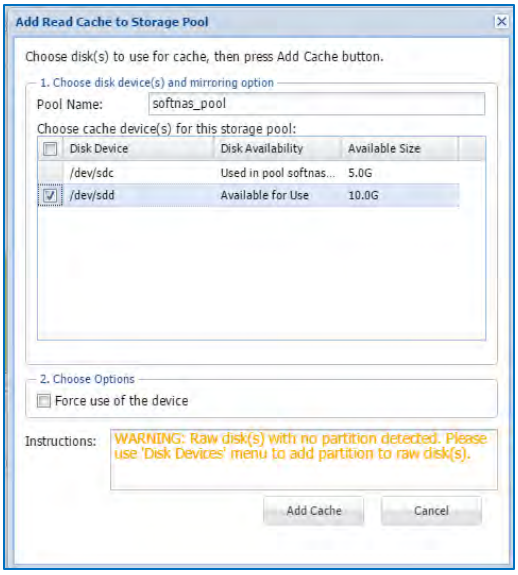


Read Cache and Write Logs

Adding Read Cache to your storage pool is an excellent way to improve performance. Read Cache provides an additional layer of cache, in addition to RAM memory cache. To add Read Cache, simply select the storage pool in question and click **Read Cache**.

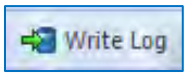


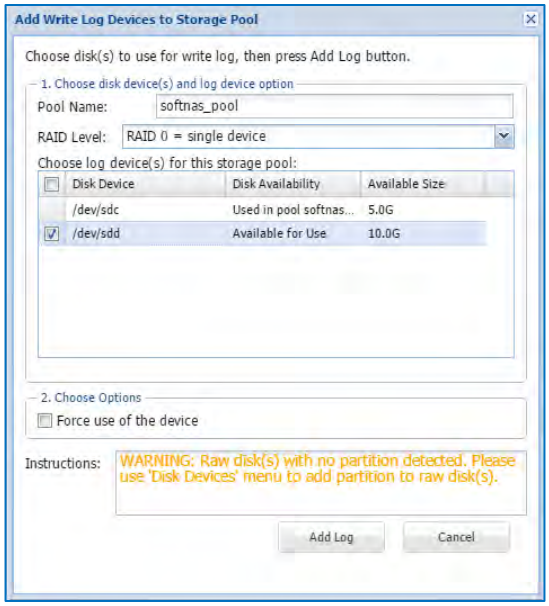
In Read Cache, select the disk you wish to use as cache, click **Add Cache**, and you are good to go.



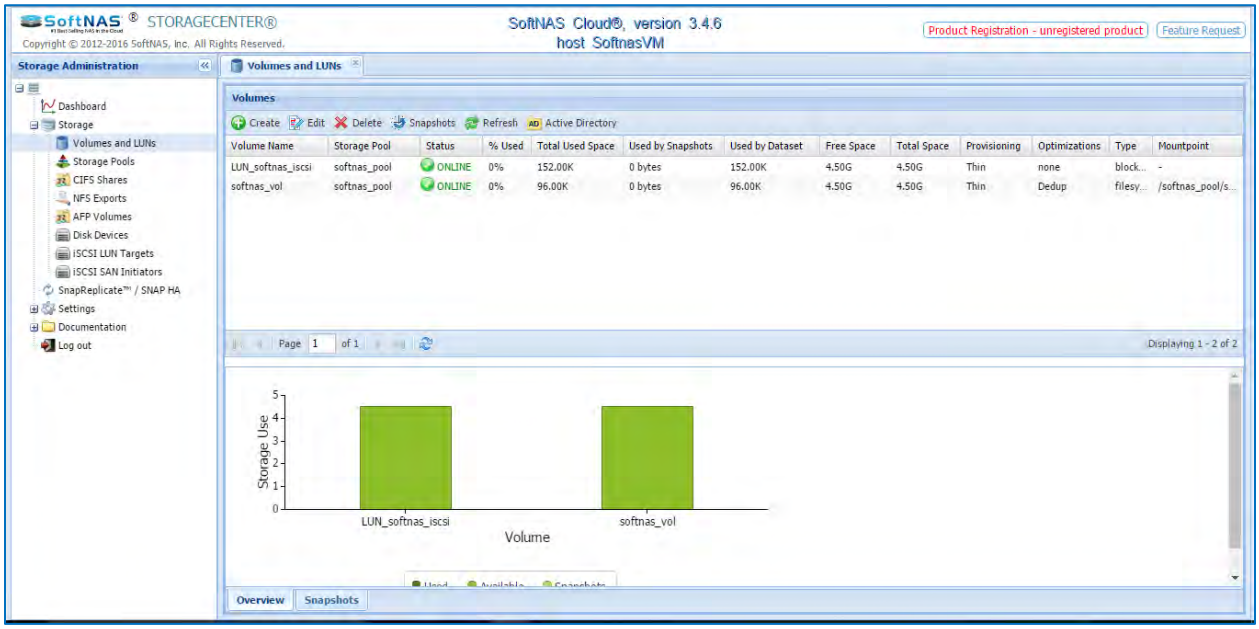
You can also add Write Logs for your storage pool by clicking Write Logs. The Write Log provides a cache for incoming writes to be written temporarily to high-speed storage, then later staged to lower-speed spindle-based storage. SSD is recommended for both Read Cache and Write Log. SoftNAS Cloud allows you to elastically configure this caching space to tune performance to your workloads. As with other adjustable performance parameters available on SoftNAS Cloud, you can adjust these throughout the lifecycle use of our product to meet the requirements of your current workload.

Important: The Write Log becomes a critical element of the storage pool, so it is highly recommended to always use a RAID 1 mirror for Write Log (that way, if a write log device fails, the storage pool won't be at risk of invalidation because the write log is now an integral part of the pool).





Volumes and LUNs



Volumes and LUNs is where volumes are created, edited and managed. Two volumes have been pre-configured for you in your Test Drive instance. However, this is one volume, shared as an iSCSI block device, as well as, a CIFS, NFS and AFP shared volume. This preconfigured setup illustrates the flexibility of SoftNAS Cloud, allowing a single volume to be presented in a number of ways, to a number of different targets.

SoftNAS Cloud enables existing applications to continue to use standard storage protocols to access Azure backed storage without requiring you to rewrite your application. SoftNAS Cloud provides all of the enterprise NAS capabilities in the cloud so customers don't need to

re-write their applications to make the move to Azure. SoftNAS Cloud helps customers make the move to Azure and reduce the expenses of the move by alleviating costs normally associated with re-architecting their applications to meet the changes required to use a new storage type like Azure Blob – that SoftNAS Cloud allows you to use Blob Storage, as a POSIX File System.

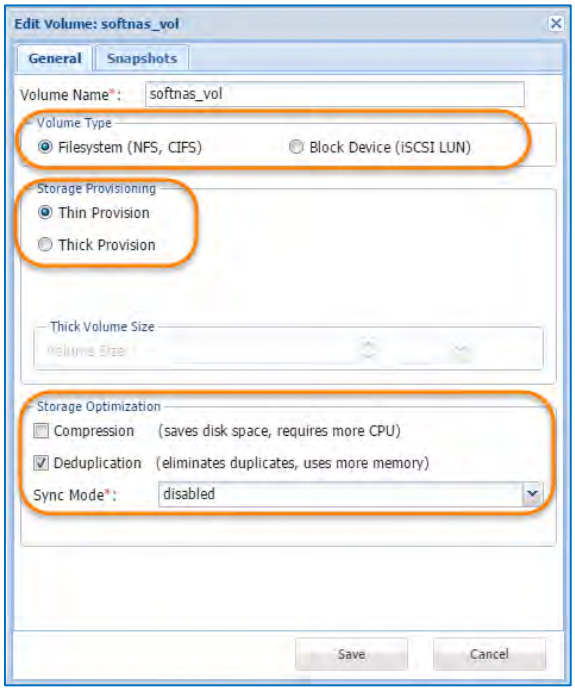
Recommended Navigational Steps

The following steps are navigational only. Click the items selected and note the options.

Edit Volume

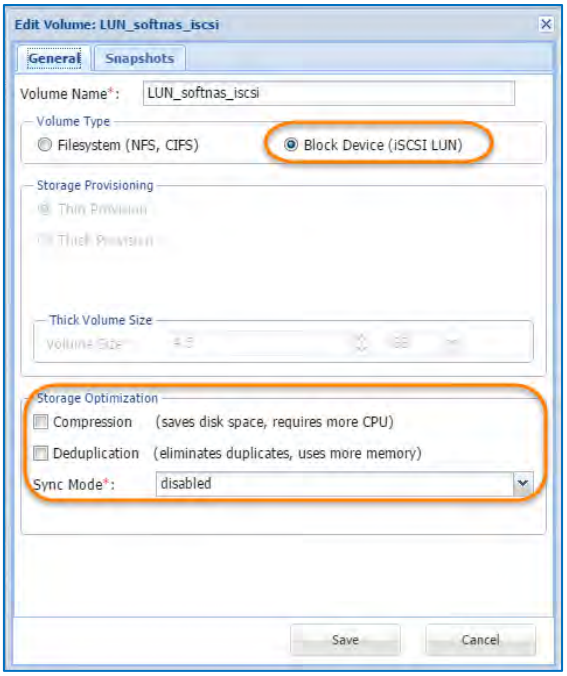
First, select the **softnas_vol** volume, and click the **Edit** button.

In the pop-up that appears, note that it is configured as a NFS and CIFS file system. You can dynamically add or remove a protocol after the volume has been created. Storage Provisioning options (Thin or Thick Provision), as well as, Compression and Deduplication, can also be applied at any time.

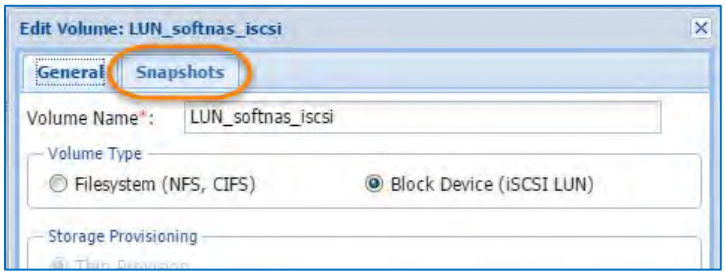


Click **Cancel**, then select the **LUN_softnas_iscsi** volume, and the **Edit** button again.

In the pop-up that appears note that it is configured as an iSCSI block device, and that this can be changed on the fly if necessary. Compression and Deduplication can also be selected. However, for iSCSI, thin and thick provisioning can only be applied at volume creation time.

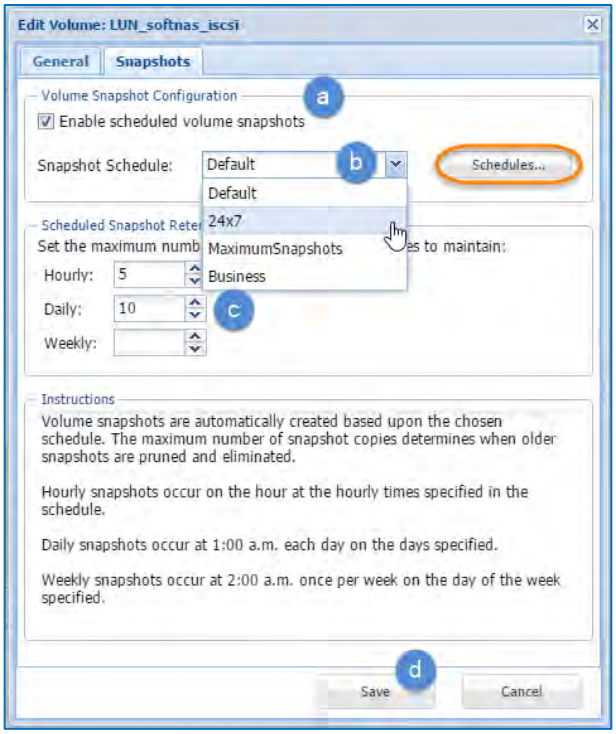


You can protect your iSCSI and NFS/CIFS/AFP volumes by scheduling Snapshots at any time, not just at volume creation. To do so, simply select the **Snapshots** tab.

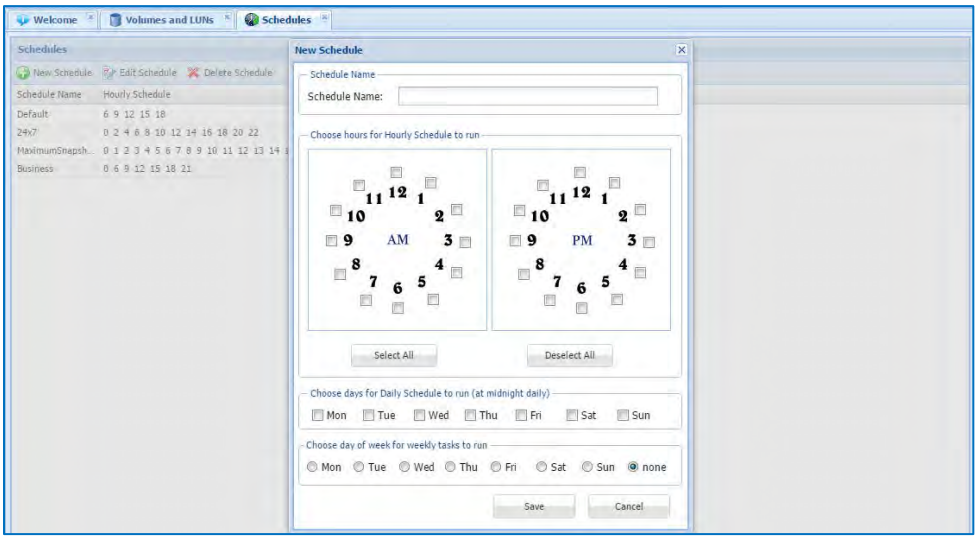


In the Snapshots tab, you can easily configure a Snapshot schedule for this particular volume. To set a Snapshot schedule, simply:

a) Check the box to enable the snapshot schedule.
b) Select the desired schedule from the available options.
c) Determine the number of snapshots to maintain.
d) Click Save.



You can also set your own schedule, or modify one of the existing schedules by clicking the **Schedules** button (circled in orange above). This will take you to **Schedules**, where you can configure any number of schedules to be applied to a given task.



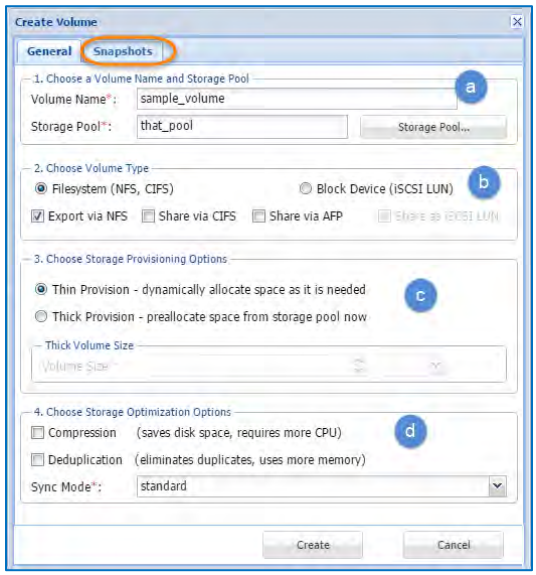
Any new schedule created will become available within the dropdown in the **Snapshot** tab, and any other task requiring scheduling. If an existing schedule is modified, tasks using the schedule will be modified accordingly.

Create Volume

To create a volume, simply click the **Create** button.

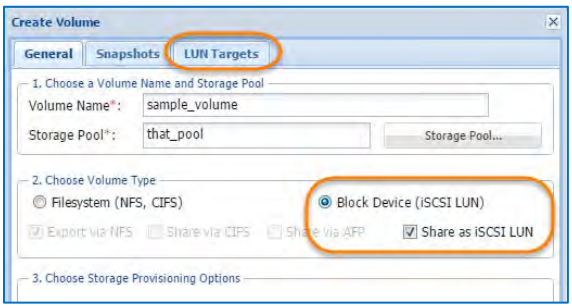
In the **Create Volume** pop-up, simply:

a) Provide a name, and specify the storage pool.
b) Determine the file system/s you wish to support, or whether it will be presented as and iSCSI LUN.
c) Determine provisioning options (thick or thin).
d) Determine if you wish to apply compression or deduplication at the volume level.

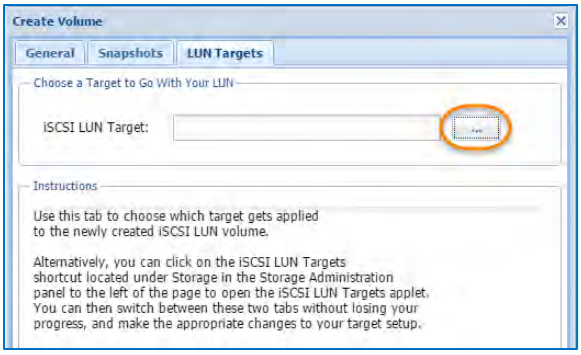


Snapshots can be applied at the creation of a volume as well – in the same manner described earlier.

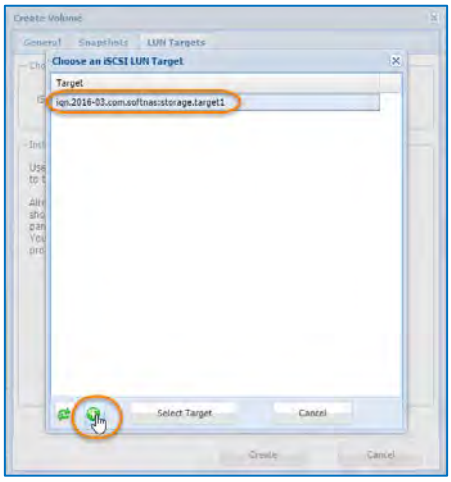
In **Create Volume**, however, note that additional options present themselves if you select **Block Device (iSCSI LUN)**, in order to simplify the setup. If Block Device is selected, an additional tab appears, labeled **LUN targets**.



In LUN targets, you can specify an existing LUN target, or create one with ease. If you know the target, you can type it out. The easier method is to click the button presented.



Select the desired iSCSI LUN target from those available, if more than one. To create a new target, simply click the **Plus** sign at the bottom. Click **Select Target** and your iSCSI LUN is ready to go. SoftNAS endeavors to make every aspect of managing your storage just that simple.

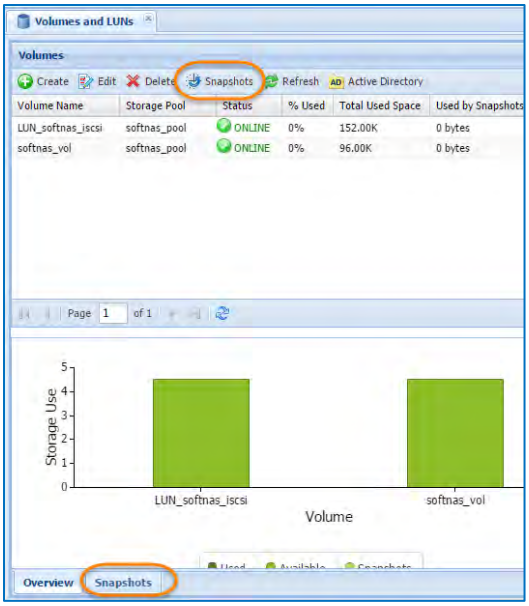


Optional Navigation Steps

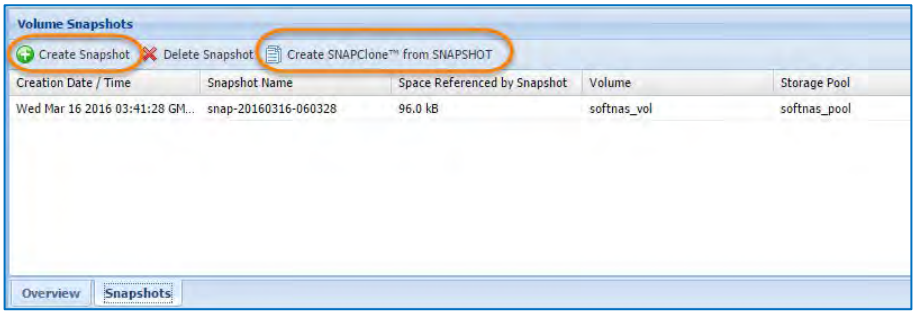
As Snapshots were previously touched upon, the below steps are optional.

Snapshot and Snapshot Management

Managing existing snapshots, creating an unscheduled snapshot or editing the schedule of your snapshot without expanding the volume, can all be done from **Volumes and LUNs**. To manage your snapshots, simply click the **Snapshots** button or select the **Snapshots Tab** below.



In the lower section of Volumes and LUNs, you can then see the existing Snapshots for your instance and create new, unscheduled Snapshots or delete Snapshots you no longer need. The **SnapClone**™ option allows you to create writable volume copies.



Performance Management

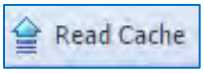
If you have already gone through Storage Management, you are already familiar with one performance management feature: Read Cache and Write Logs to a Storage Pool. Our Dashboard showed you how to monitor system performance. SoftNAS Cloud provides many features to improve system performance, and ensure that you can meet the requirements of your workload.

Read Cache and Write Logs

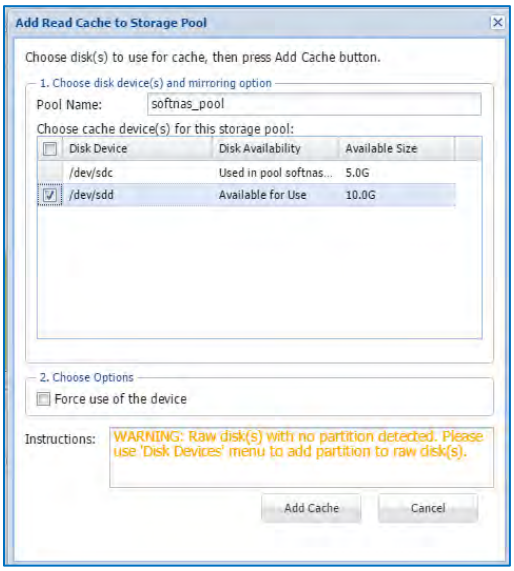
As stated earlier, there is no particular order in which you need to navigate our guide, or the SoftNAS Cloud instance. In case you skipped Storage Management, here is a recap of where and how to apply Read Cache to your SoftNAS Cloud Storage Pools.

First, from the **Storage Administration** pane on the left, navigate to **Storage Pools**.

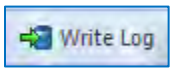
Adding Read Cache to your storage pool is an excellent way to improve performance. Read Cache provides an additional layer of cache, in addition to RAM memory cache. To add Read Cache, simply select the storage pool to attach the cache to and click **Read Cache**.



In Read Cache, select the disk you wish to use as cache, click **Add Cache**, and you are good to go.



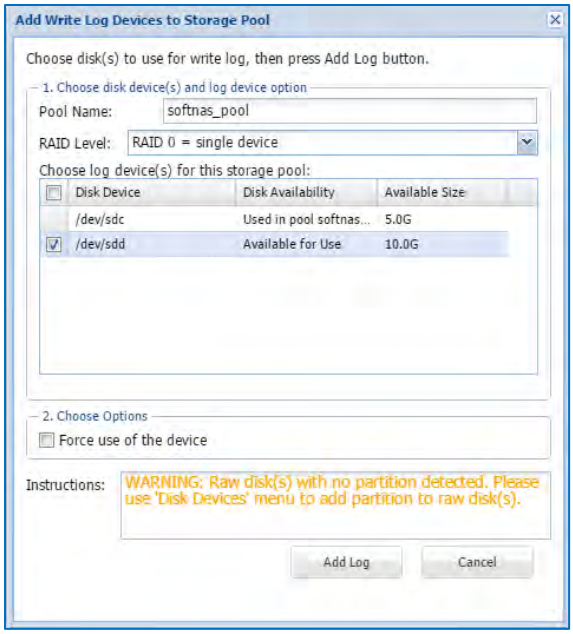
You can also add Write Logs for your storage pool by clicking **Write Logs**.



The Write Log provides a cache for incoming writes to be written temporarily to high-speed storage, then later staged to lower-speed spindle-based storage. SSD is recommended for both Read Cache and Write Log. SoftNAS Cloud allows you to elastically configure this caching space to tune performance to your workloads. As with other adjustable performance parameters available on SoftNAS Cloud, you can adjust these throughout the lifecycle use of our product to suite your needs.

Important: The Write Log becomes a critical element of the storage pool, so it is highly recommended to always use a RAID 1 mirror for Write Log (that way, if a write log device fails, the storage pool won't be at risk of invalidation because the write log is now an integral part of the pool).

Simply select the disk to place the Write Log on, and click **Add Log**.



Key Takeaways/Summary

SoftNAS hopes this guide has provided you a good overview on how to navigate the SoftNAS Cloud StorageCenter and provided you with numerous ideas on how SoftNAS Cloud can help you with your cloud storage needs.

A few key points:

Flexibility

SoftNAS Cloud offers flexibility, not only in terms of multiple NAS protocols; but, in ease of management as well. SoftNAS StorageCenter provides you with the ability to monitor instance performance and to respond accordingly, by adding storage, cache or improving network configurations – to improve performance in meeting the needs of your application workload.

Enterprise ready features and Active Directory (AD) Integration

SoftNAS Cloud offers the benefits of simple configuration and advanced management features – without sacrificing any required configuration settings, security or performance. With support for Active Directory, LDAP, Kerberos, SMB 3.0 for in-flight encryption, LUKS for data-at-rest, high availability and many more features and function that are available right "out-of-the-box", SoftNAS Cloud can meet any organization's cloud storage needs.

Next Steps

Once you have completed your SoftNAS Cloud Test Drive on Azure, you can learn more with these resources:

More detailed information about the SoftNAS Cloud product can be found on our website at: softnas.com/azure.

You can begin a 30-day trial of SoftNAS Cloud on Azure by navigating to: softnas.com/tryazurenow and have access to all of the features described in this guide as well as many more not available in the test drive.

SoftNAS hopes you have enjoyed this demonstration and we hope to hear from you soon.

Contact Information

Test Drive Support

If you have any questions regarding SoftNAS on Azure, its functionality or specifications or any issues running this Test Drive Demo, contact us via azuretestdrives@softnas.com.

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