Setting up the Seagate D4 NAS with Hard Disk Sentinel Pro

By Gary Ryan

Adapted from:

https://www.hdsentinel.com/how_to_monitor_network_attached_storage_nas_status.php

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How to: monitor Network Attached Storage (NAS) status

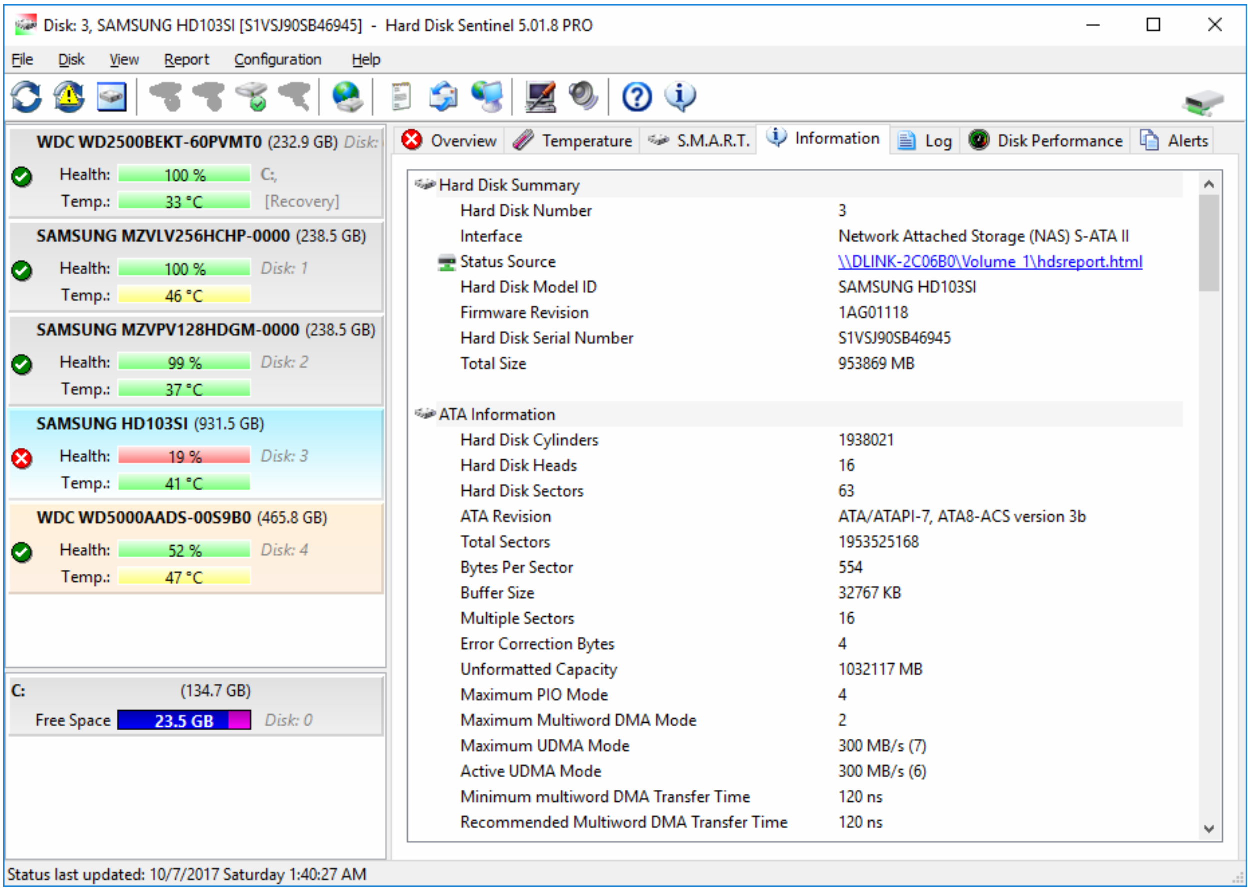
In this tutorial it is described how to monitor the complete status of hard disks, SSDs or other storage devices connected over the network with Hard Disk Sentinel - like if they would be directly connected to the computer.

Generally, Network Attached Storage (NAS) devices provide no self-monitoring status about themselves. From the viewpoint of the user (and software) we can read and write files and folders - but it is not possible to identify the hard disks, detect their temperature, health and complete self-monitoring S.M.A.R.T. data, error counters and statistical information. NAS devices sometimes provide internal S.M.A.R.T. checking - but it is not too detailed; it does not provide correct, real time temperature, monitoring about changes / degradations and there may be no alert on different issues.

Hard Disk Sentinel can do all of the above - but only for disk drives connected directly to the computer. Until now.

To access and detect the status information, it is required to "extend" the functionality of the Network Attached Storage (NAS) devices: to periodically detect and store the current status. These status information reports (**status sources** in the following) read, interpreted by Hard Disk Sentinel Professional so it displays the appropriate hard disks, SSDs, industrial memory cards and other storage devices like if they'd be connected directly to the actual computer.

Below we discuss how to extend the functionality of the Network Attached Storage devices (NAS boxes, routers, etc.) and how to configure Hard Disk Sentinel to read the created **status source** files.



WDC WD2500BEKT-60PVMT0 (232.9 GB) Disk:
Health: 100 % C:,
Temp.: 33 °C [Recovery]

SAMSUNG MZVLV256HCHP-0000 (238.5 GB)
Health: 100 % Disk: 1
Temp.: 46 °C

SAMSUNG MZVPV128HDGM-0000 (238.5 GB)
Health: 99 % Disk: 2
Temp.: 37 °C

SAMSUNG HD103SI (931.5 GB)
Health: 19 % Disk: 3
Temp.: 41 °C

WDC WD5000AADS-00S9B0 (465.8 GB)
Health: 52 % Disk: 4
Temp.: 47 °C

C: (134.7 GB)
Free Space 23.5 GB Disk: 0

Hard Disk Summary	
Hard Disk Number	3
Interface	Network Attached Storage (NAS) S-ATA II
Status Source	\\DLINK-2C06B0\Volume_1\hdsreport.html
Hard Disk Model ID	SAMSUNG HD103SI
Firmware Revision	1AG01118
Hard Disk Serial Number	S1VSJ90SB46945
Total Size	953869 MB
ATA Information	
Hard Disk Cylinders	1938021
Hard Disk Heads	16
Hard Disk Sectors	63
ATA Revision	ATA/ATAPI-7, ATA8-ACS version 3b
Total Sectors	1953525168
Bytes Per Sector	554
Buffer Size	32767 KB
Multiple Sectors	16
Error Correction Bytes	4
Unformatted Capacity	1032117 MB
Maximum PIO Mode	4
Maximum Multiword DMA Mode	2
Maximum UDMA Mode	300 MB/s (7)
Active UDMA Mode	300 MB/s (6)
Minimum multiword DMA Transfer Time	120 ns
Recommended Multiword DMA Transfer Time	120 ns

Status last updated: 10/7/2017 Saturday 1:40:27 AM

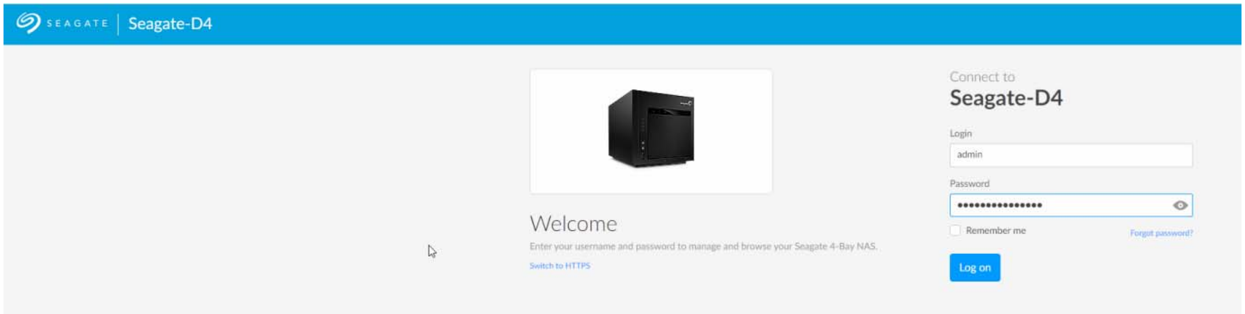
Hard Disk Sentinel shows complete hard disk status of a NAS drive

Requirements

In order to make things work, we need Hard Disk Sentinel Professional 5.01.8 or newer running on a Windows computer which reads the **Status Sources** and displays the hard disk status, collect statistics, issue alerts and so. Also, we need a Network Attached Storage (NAS) which can produce the **Status Source** file. The NAS need to have **SSH access with root rights** for the customization and the user should be familiar about basic Linux commands (knowledge of chmod and cron is at least recommended).

You'll need to have SSH client, for example PUTTY. You can download directly from this link: putty.exe

To configure your Seagate D4 NAS, log in to the web console as your admin account:



Welcome

Enter your username and password to manage and browse your Seagate 4-Bay NAS.

Connect to

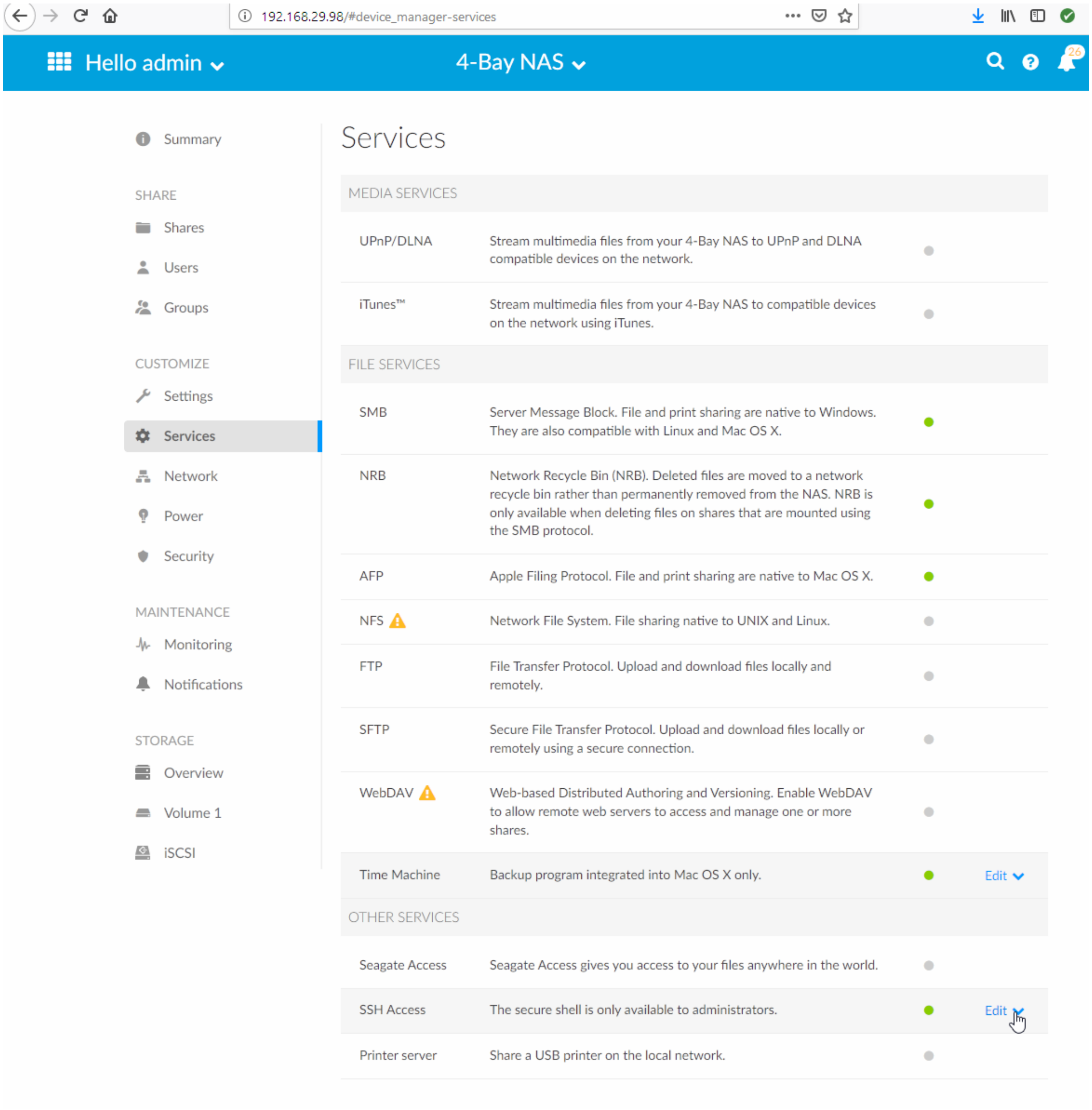
Seagate-D4

Login: admin

Password: •••••••••••••••

□ Remember me

Then go to Services (on the left) and enable SSH (click “Edit” on the right):

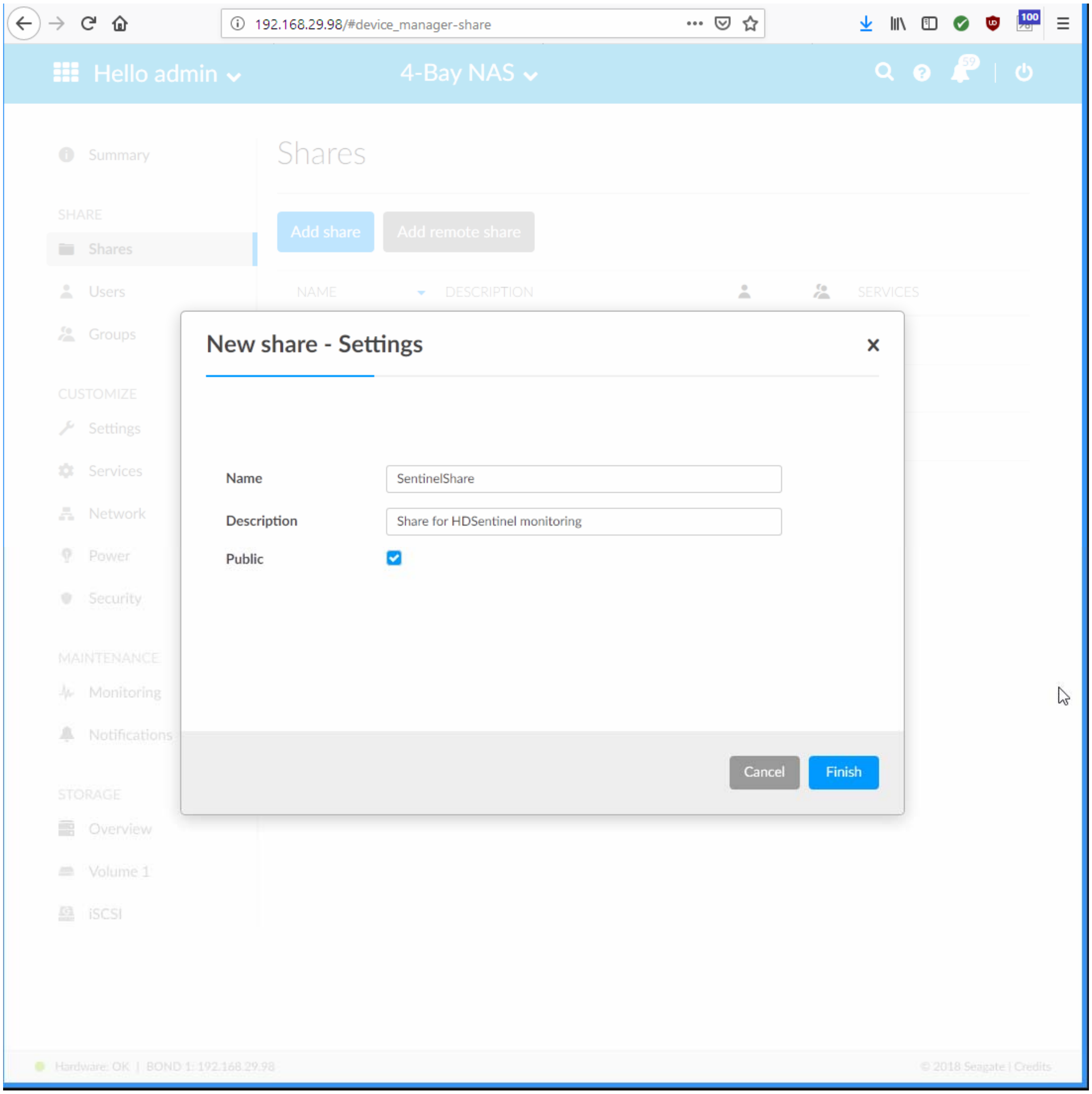


Services

MEDIA SERVICES			
UPnP/DLNA	Stream multimedia files from your 4-Bay NAS to UPnP and DLNA compatible devices on the network.	○	
iTunes™	Stream multimedia files from your 4-Bay NAS to compatible devices on the network using iTunes.	○	
FILE SERVICES			
SMB	Server Message Block. File and print sharing are native to Windows. They are also compatible with Linux and Mac OS X.	●	
NRB	Network Recycle Bin (NRB). Deleted files are moved to a network recycle bin rather than permanently removed from the NAS. NRB is only available when deleting files on shares that are mounted using the SMB protocol.	●	
AFP	Apple Filing Protocol. File and print sharing are native to Mac OS X.	●	
NFS ⚠	Network File System. File sharing native to UNIX and Linux.	○	
FTP	File Transfer Protocol. Upload and download files locally and remotely.	○	
SFTP	Secure File Transfer Protocol. Upload and download files locally or remotely using a secure connection.	○	
WebDAV ⚠	Web-based Distributed Authoring and Versioning. Enable WebDAV to allow remote web servers to access and manage one or more shares.	○	
Time Machine	Backup program integrated into Mac OS X only.	●	Edit
OTHER SERVICES			
Seagate Access	Seagate Access gives you access to your files anywhere in the world.	○	
SSH Access	The secure shell is only available to administrators.	●	Edit
Printer server	Share a USB printer on the local network.	○	

We are going to set up a separate dedicated share for Hard Disk Sentinel Pro.

Go to Shares and create new share for HDSentinel (called *SentinelShare* below). Check the "*Public*" box



New share - Settings

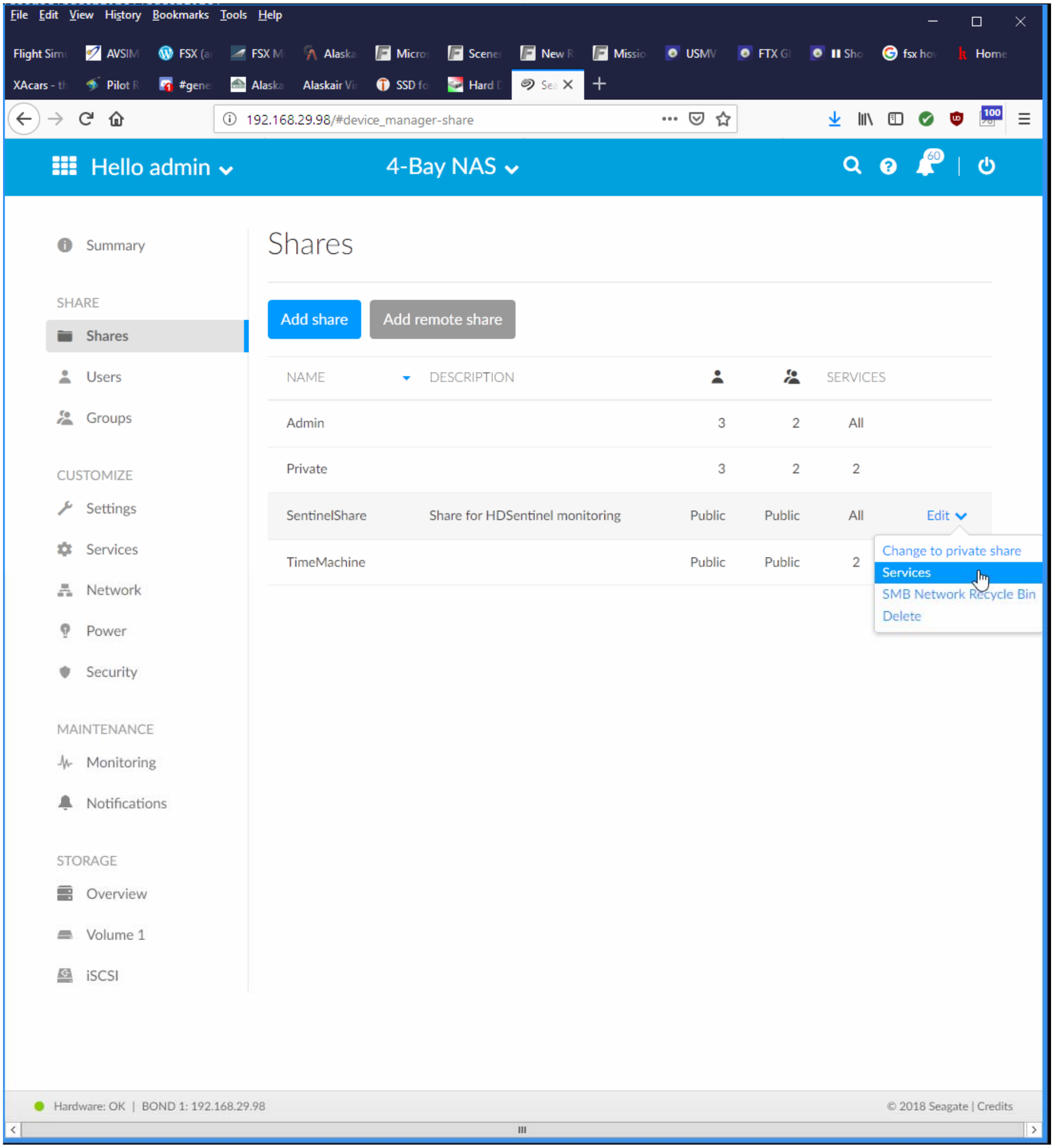
Name: SentinelShare

Description: Share for HDSentinel monitoring

Public: ☑

Cancel | Finish

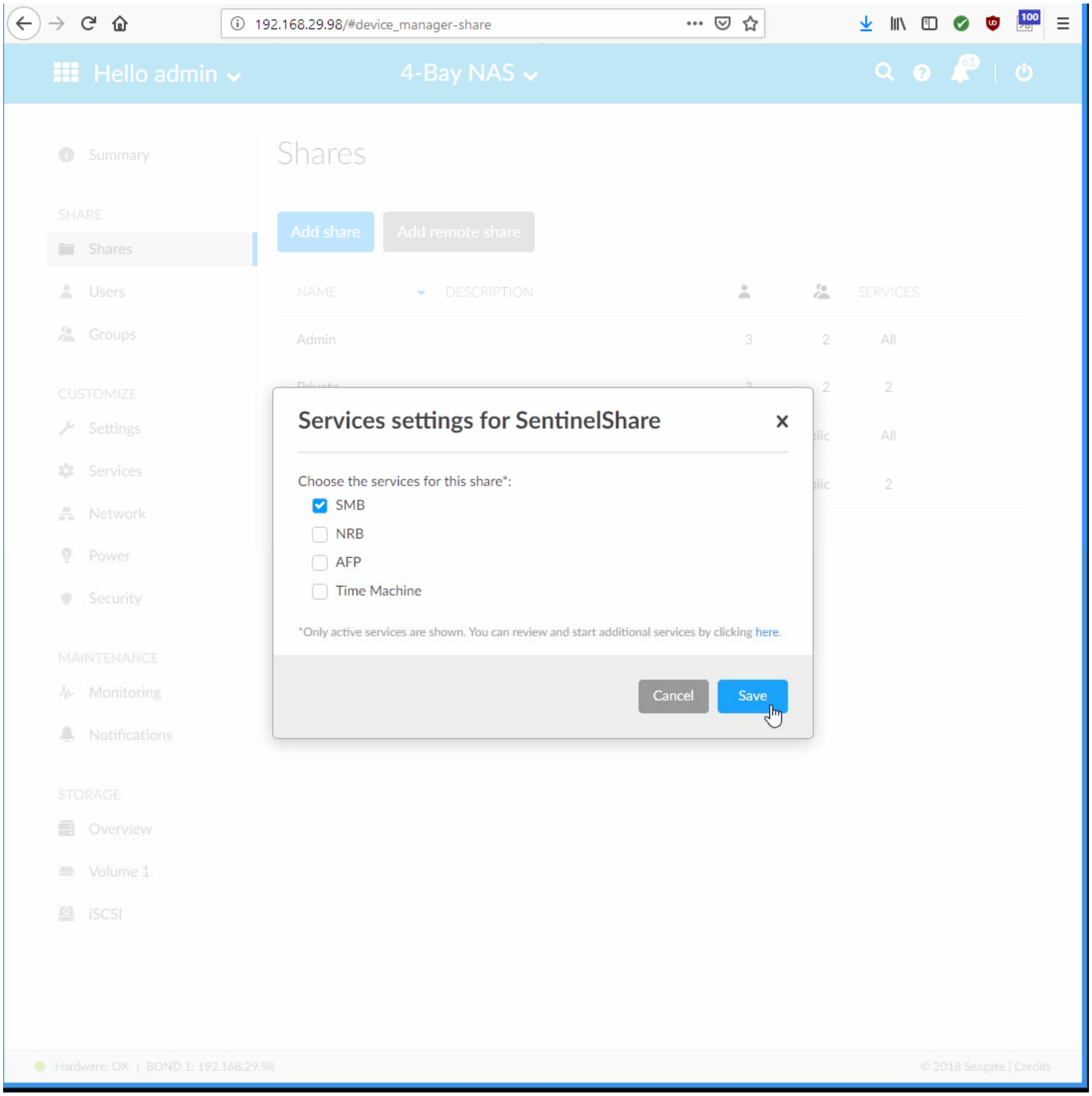
To lock down the security of the new share somewhat, we'll disable unneeded services. Go to the *Edit* option of the new share:



Shares

NAME	DESCRIPTION	👤	👥	SERVICES
Admin		3	2	All
Private		3	2	2
SentinelShare	Share for HDSentinel monitoring	Public	Public	All
TimeMachine		Public	Public	2

…and disable all services but SMB



Services settings for SentinelShare ×

Choose the services for this share*:

☑ SMB

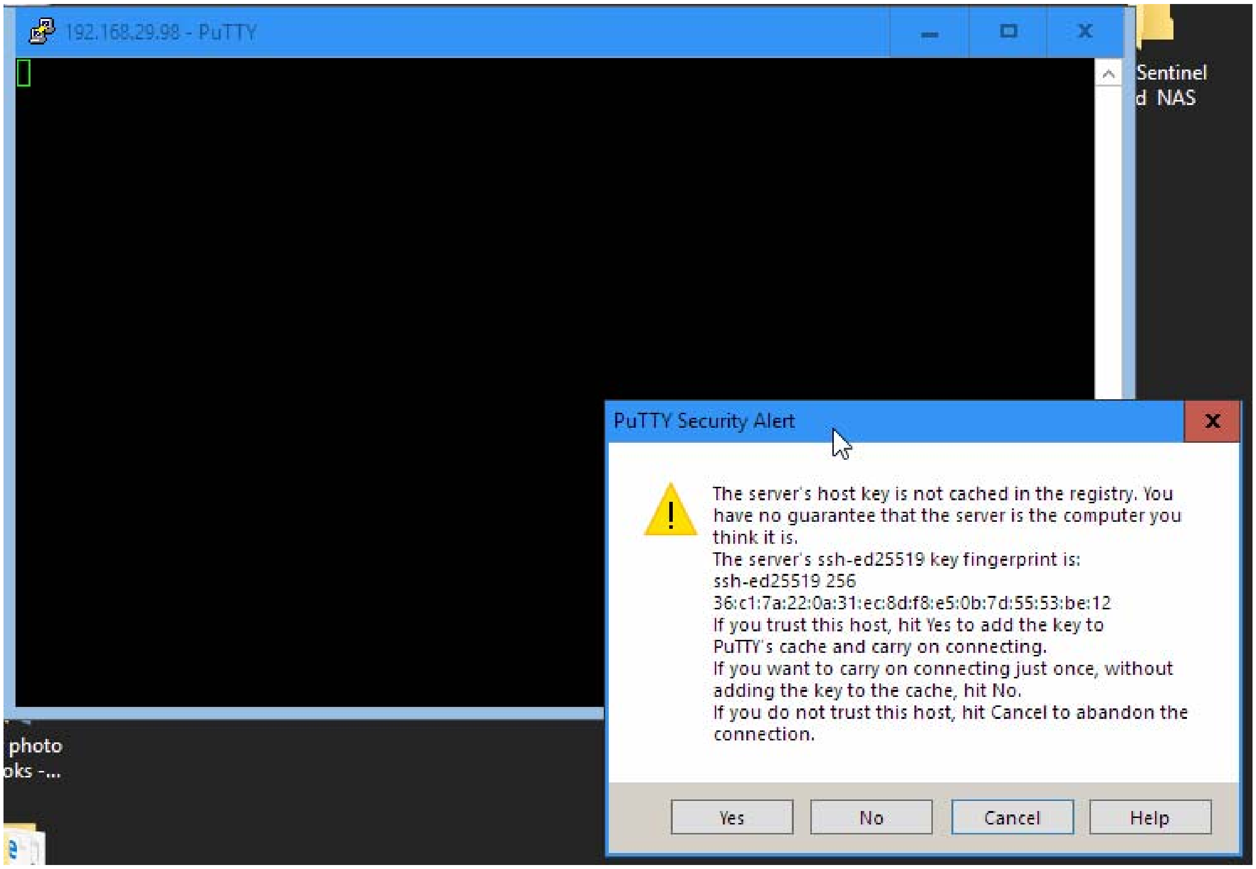
☐ NRB

☐ AFP

☐ Time Machine

*Only active services are shown. You can review and start additional services by clicking here.

Start PUTTY and log in to the NAS device as your **admin** account (SSH as **root** is denied by default). If this is the first time you are SSH'ing in, accept the security alert.



The server's host key is not cached in the registry. You have no guarantee that the server is the computer you think it is.
The server's ssh-ed25519 key fingerprint is:
ssh-ed25519 256
36:c1:7a:22:0a:31:ec:8d:f8:e5:0b:7d:55:53:be:12
If you trust this host, hit Yes to add the key to PuTTY's cache and carry on connecting.
If you want to carry on connecting just once, without adding the key to the cache, hit No.
If you do not trust this host, hit Cancel to abandon the connection.

Change to the root account by typing the following

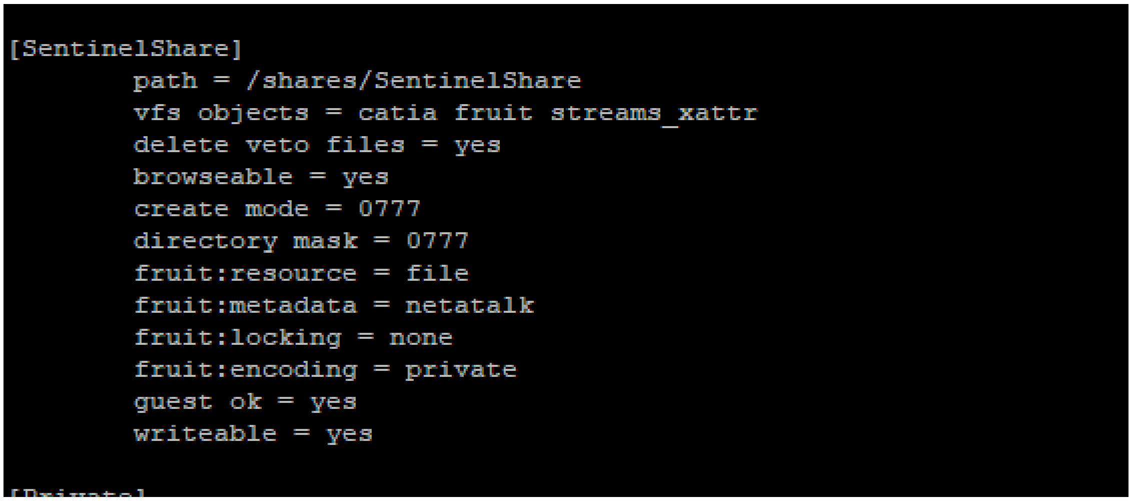
sudosu root

And entering your **root** password

Verify the *SentinelShare* folder we created above is readable over the network (shared with samba) from the remote computer running Windows and Hard Disk Sentinel Professional by entering

cat /etc/samba/smb.conf

The output will produce a list of SMB shares. If our new share appears on the list of folders, it’s successfully shared on the network, so we should create **status source** in that folder:



```
[SentinelShare]
        path = /shares/SentinelShare
        vfs objects = catia fruit streams_xattr
        delete veto files = yes
        browseable = yes
        create mode = 0777
        directory mask = 0777
        fruit:resource = file
        fruit:metadata = netatalk
        fruit:locking = none
        fruit:encoding = private
        guest ok = yes
        writeable = yes

[Private]
```

Create a folder for the Hard Disk Sentinel executable, by entering:

cd /shares/SentinelShare/

mkdir /hdsentinel

Then move into that directory by entering

cd /hdsentinel/

Once there, download [Hard Disk Sentinel Linux version designed for ARMv5 CPU]() by entering

wget http://www.hdsentinel.com/hdslin/armv5/hdsentinelarm

When the download completes, use **chmod** to enable executable permissions:

chmod 755 hdsentinelarm

(You shouldn’t need to use **sudo** here, since you’re running as root. If you get a permission error, add **sudo** to the beginning of the command.)

Set the editor that the **crontab** command will use (it’s not set by default by the BusyBox version of Linux installed on the NAS). Enter:

```
EDITOR=vi
```

```
export EDITOR
```

To make sure it worked, type

```
which $EDITOR
```

Which should return

```
/bin/vi
```

(For better or worse, we have to use **vi** as neither of the more user-friendly options **pico** or **nano** are installed on the NAS)

To create a new cron job that will start Hard Disk Sentinel Linux edition enter

```
sudocrontab -e
```

To enter “*insert*” mode in **vi**, press

```
i
```

then add the following line at the end of the list of cron jobs (don’t add the line break…type it as one long single line):

```
*/10 * * * * /shares/SentinelShare/hdsentinel/hdsentinelarm -
r/shares/SentinelShare/hdsreport.html -html
```

Then to save and exit **vi** enter by entering the following:

(hit the Escape key to exit “*insert*” mode and enter “*command*” mode)

```
:
```

```
wq
```

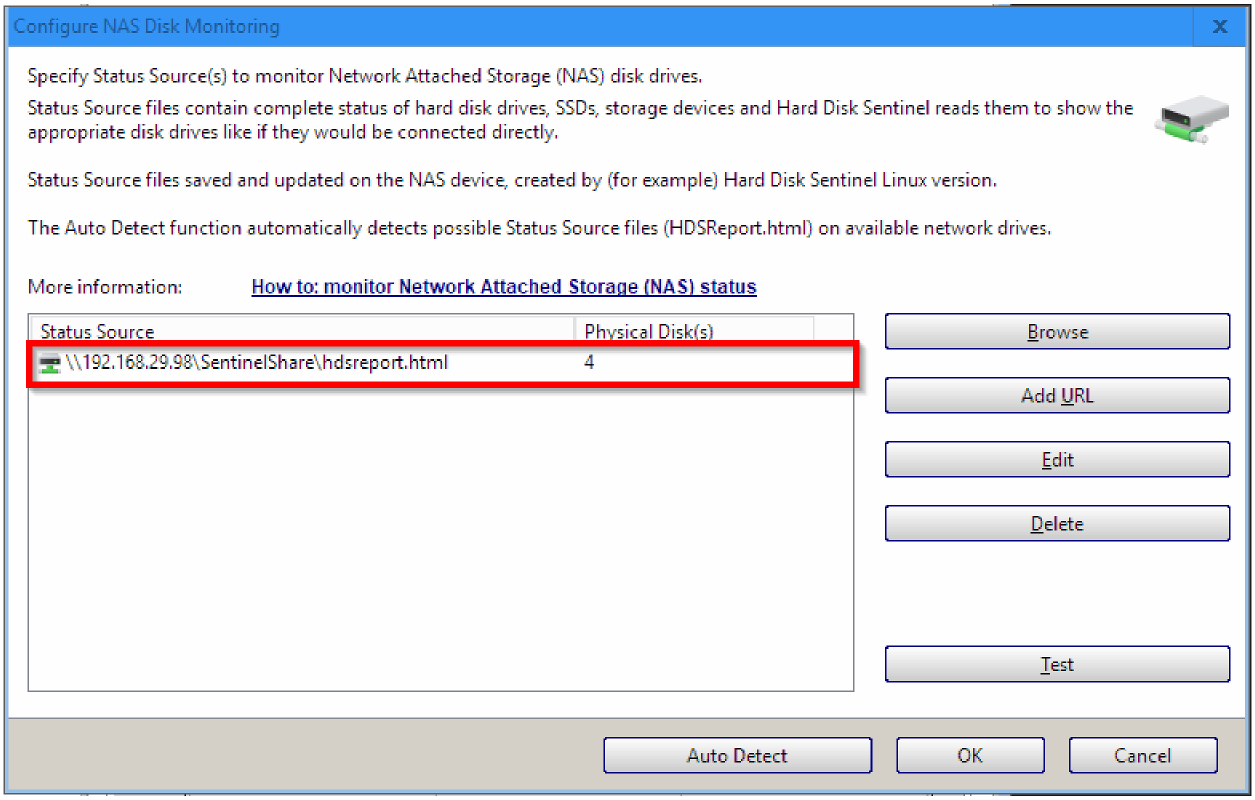
This creates a scheduled task that will save a report (the **Status Source**) in a folder, which is readable over the network.

By this new entry in crontab, the Linux HDSentinel (which we downloaded into the **/shares/SentinelShare/hdsentinel** folder) launches every 10 minutes and saves a report to **/shares/SentinelShare/hdsreport.html,** which is accessible over the network.

After no more than 10 minutes the **hdsreport.html** file is created and saved. This **hdsreport.html** file contains the complete status of all hard disk drives, SSDs, flash drives, industrial memory cards, etc. The file can be opened in any web browser to quickly check the status of the devices, even outside of (i.e. without installation of) Hard Disk Sentinel Professional, which is an instant advantage and by this, the NAS functionality is improved. If the NAS device supports external USB port(s) for additional storage, external hard disk(s) connected there also automatically enumerated, detected and reported

Load status source in Hard Disk Sentinel Pro

Once the **status source(s)**are set to be created and automatically updated by the NAS, we need to configure Hard Disk Sentinel Professional running on the Windows computer to use it: read, process and display the contents. For this, please select **File** menu ->**Configure NAS Disk Monitoring**.



Configure NAS Disk Monitoring

Specify Status Source(s) to monitor Network Attached Storage (NAS) disk drives.

Status Source files contain complete status of hard disk drives, SSDs, storage devices and Hard Disk Sentinel reads them to show the appropriate disk drives like if they would be connected directly.

Status Source files saved and updated on the NAS device, created by (for example) Hard Disk Sentinel Linux version.

The Auto Detect function automatically detects possible Status Source files (HDSReport.html) on available network drives.

More information: How to: monitor Network Attached Storage (NAS) status

Status Source	Physical Disk(s)
\\192.168.29.98\SentinelShare\hdsreport.html	4

Configure NAS Disk Monitoring in Hard Disk Sentinel Professional

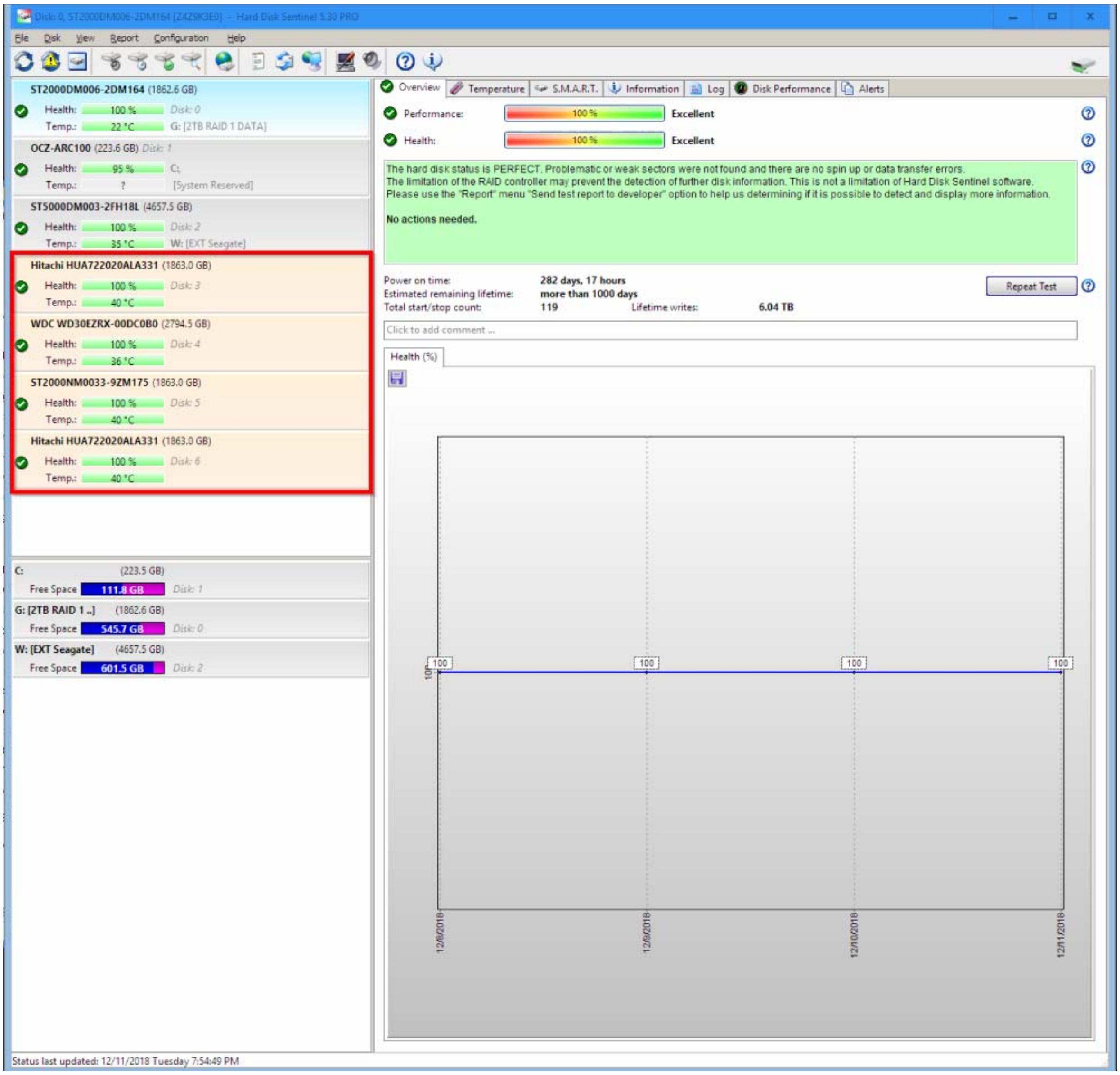
In this window, it is possible to add any number of **status sources** by

- performing automatic detection which scans the root folder of all network mapped drives and automatically add found hdsreport.html files. So, if the shared folder of NAS drive is mapped as network shared drive, then it is only required to click the **Auto Detect** button.
- browse the file system and select the appropriate network location or specify the network path. UNC path names are supported, for example \\nas-device\hdsreport.html
- specify complete path and file name directly or specify http:// connection, so even web servers or distant servers can be monitored this way

Hard Disk Sentinel Professional automatically attempts to connect and read the file and shows the amount of hard disk(s) found in the configured **Status Source**.

After clicking **OK** in this window, the **Status Source(s)** processed and the hard disk drive(s) displayed just like disk drives connected directly to the actual computer (internally or by USB / eSATA).

Hard Disk Sentinel Professional shows Network Attached Storage disk drives with different (light orange) background to indicate that these devices are not direct connected disk drives - but attached to the network.



ST2000DM006-2DM164 (1862.6 GB)
Health: 100 % Disk: 0
Temp.: 22 °C G: [2TB RAID 1 DATA]

OCZ-ARC100 (223.6 GB) Disk: 1
Health: 95 % C:
Temp.: ? [System Reserved]

ST5000DM003-2FH18L (4657.5 GB)
Health: 100 % Disk: 2
Temp.: 35 °C W: [EXT Seagate]

Hitachi HUA722020ALA331 (1863.0 GB)
Health: 100 % Disk: 3
Temp.: 40 °C

WDC WD30EZRX-00DC0B0 (2794.5 GB)
Health: 100 % Disk: 4
Temp.: 36 °C

ST2000NM0033-9ZM175 (1863.0 GB)
Health: 100 % Disk: 5
Temp.: 40 °C

Hitachi HUA722020ALA331 (1863.0 GB)
Health: 100 % Disk: 6
Temp.: 40 °C

C: (223.5 GB)
Free Space 111.8 GB Disk: 1

G: [2TB RAID 1 ..] (1862.6 GB)
Free Space 545.7 GB Disk: 0

W: [EXT Seagate] (4657.5 GB)
Free Space 601.5 GB Disk: 2

Performance: 100 % Excellent

Health: 100 % Excellent

The hard disk status is PERFECT. Problematic or weak sectors were not found and there are no spin up or data transfer errors.
The limitation of the RAID controller may prevent the detection of further disk information. This is not a limitation of Hard Disk Sentinel software.
Please use the "Report" menu "Send test report to developer" option to help us determining if it is possible to detect and display more information.

No actions needed.

Power on time: **282 days, 17 hours**
Estimated remaining lifetime: **more than 1000 days**
Total start/stop count: **119** Lifetime writes: **6.04 TB**

Click to add comment ...

Status last updated: 12/11/2018 Tuesday 7:54:49 PM

The connection state symbol in the upper right corner shows the actual status: green if all configured **Status Sources** could be read and processed - red if one (or more) **Status Sources** unreadable (network error).

Then, in all following periodic detection cycles, Hard Disk Sentinel will attempt to read and update the disk status, issue alerts if required. If you prefer to cancel or adjust monitoring, it is possible in the **File** menu ->**Configure NAS Disk Monitoring** window, where it is possible to edit the **Status Source** location (for example if the device changed name, IP address or so) or delete the **Status Source** from the list.

If you prefer to disable creation of **Status Source** files on the NAS itself, you can log in by SSH and remove the entry from cron jobs, delete the saved software and its associated folder too.

Note: *Un-registered (trial) Hard Disk Sentinel Professional version allows configuring* ***Status Source(s)*** *for evaluation purposes but on restart, the setting automatically discarded (need to be configured again). Also, the trial version shows partial information on the S.M.A.R.T. page only. The registered (complete) version keeps the configured setting and displays the complete status automatically after restarts. Hard Disk Sentinel standard version does not support NAS monitoring, only Hard Disk Sentinel Professional has this option.*