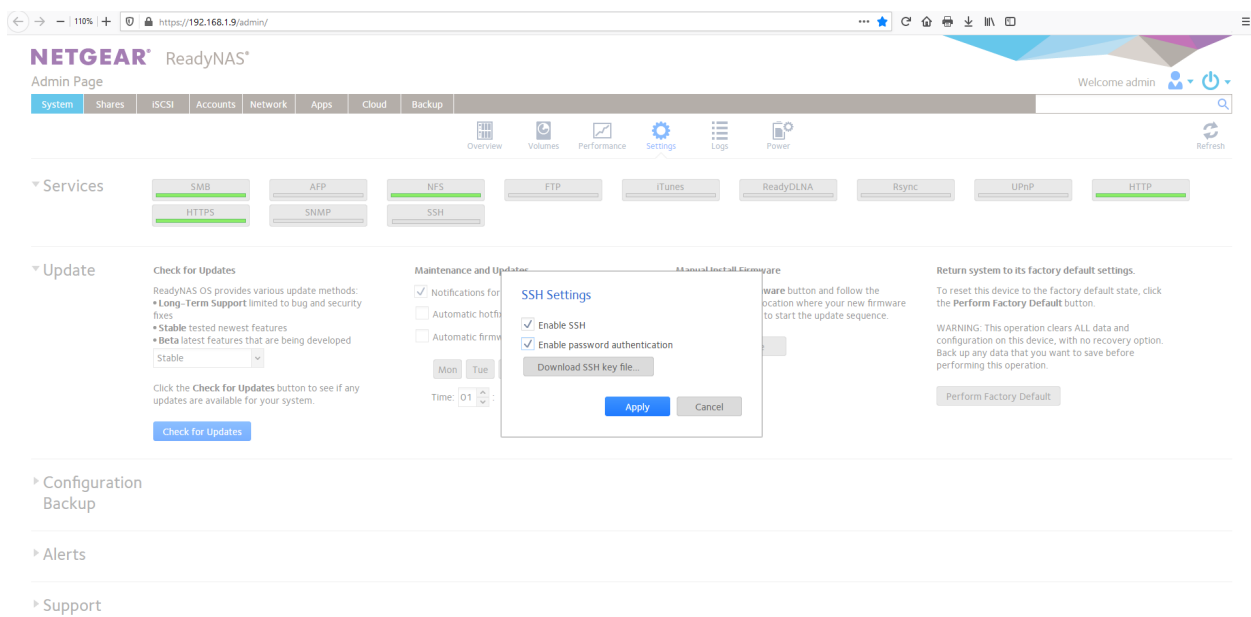


Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

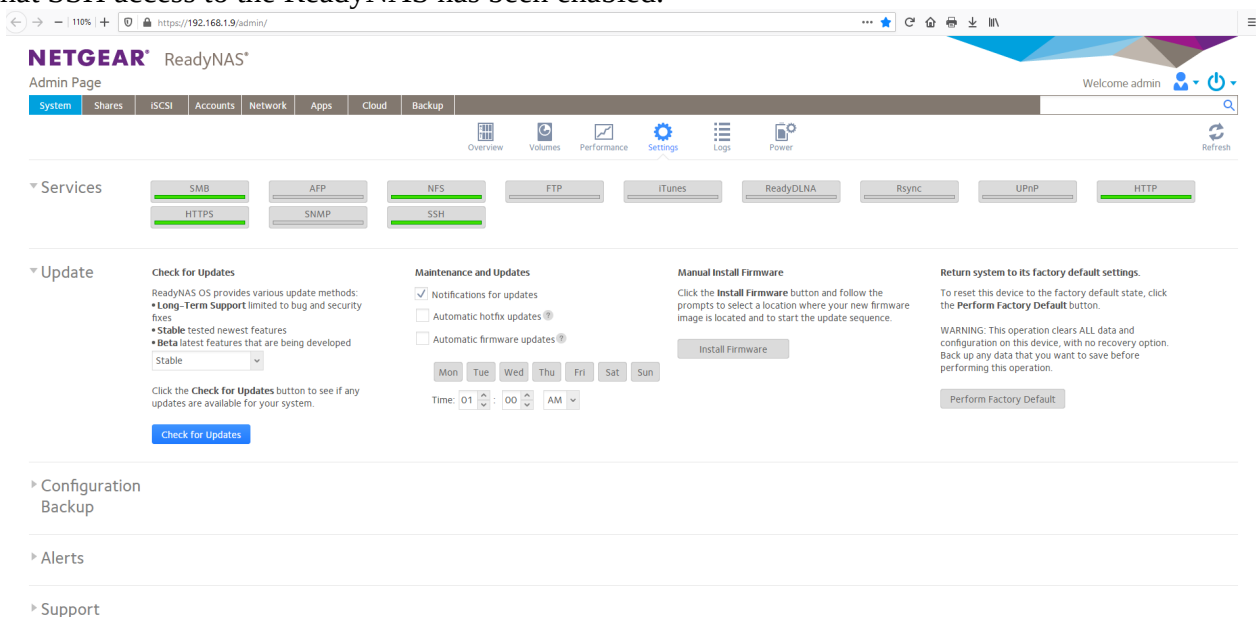
This document describes how to use HDSentinel to remotely monitor SMART information from the Netgear ReadyNAS. This has been implemented and found to work on a Netgear ReadyNAS RN 104 (ARMv7 based) running Netgear ReadyNAS OS 6.10.2

1. Enable SSH on the ReadyNAS

- Logon to the ReadyNAS via the web interface. Click the **System** tab. In **Services**, click **SSH**
- Select the checkboxes for **Enable SSH** and **Enable password authentication**. Click **Apply**



The SSH service will be turned on and the indicator on the SSH option will turn green indicating that SSH access to the ReadyNAS has been enabled.



Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

2. Logon via SSH to the ReadyNAS

- If a SSH client on Microsoft Windows is needed, download and use Putty from <http://www.chiark.greenend.org.uk/~sgtatham/putty/> to logon to the ReadyNAS

See

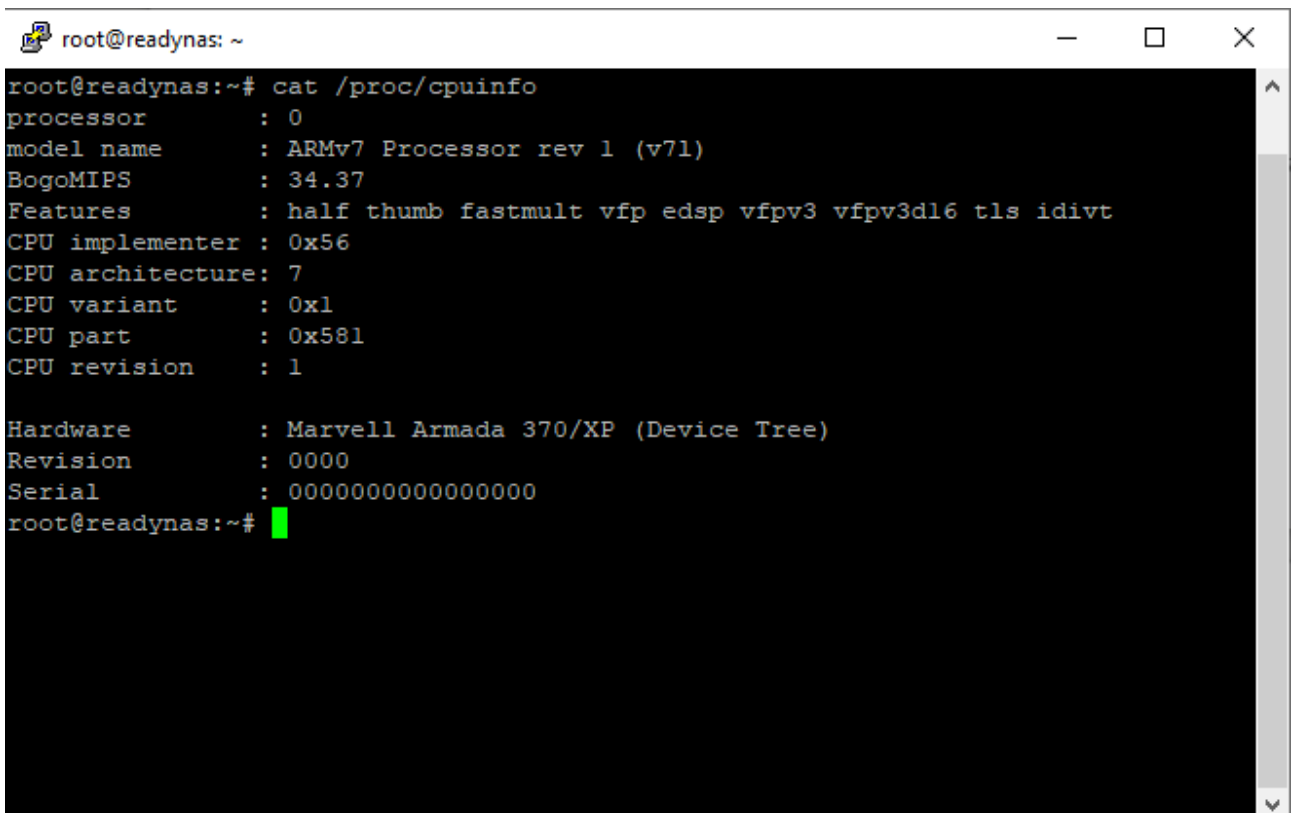
<https://support.rackspace.com/how-to/connecting-to-linux-from-windows-by-using-putty/>

- On Linux use the ssh command to logon to the ReadyNAS

3. Download and setup the hdsentinelalarm software on the ReadyNAS

- Verify that the Netgear ReadyNAS is based on an ARM processor

```
cat /proc/cpuinfo
```



```
root@readynas: ~  
root@readynas:~# cat /proc/cpuinfo  
processor       : 0  
model name     : ARMv7 Processor rev 1 (v71)  
BogoMIPS      : 34.37  
Features       : half thumb fastmult vfp edsp vfpv3 vfpv3d16 tls idivt  
CPU implementer : 0x56  
CPU architecture: 7  
CPU variant    : 0x1  
CPU part      : 0x581  
CPU revision   : 1  
  
Hardware       : Marvell Armada 370/XP (Device Tree)  
Revision       : 0000  
Serial        : 0000000000000000  
root@readynas:~#
```

If the model name in the output of the above command does not indicate an ARM based device, do not proceed further.

The file downloaded from the link specified in the wget command below will only work on the ARM based Netgear ReadyNAS devices and will not work on the Intel processor based Netgear ReadyNAS devices.

Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

- Create a folder "hdsentinel" using the following command

```
mkdir ~/hdsentinel
```

- Change directory to the newly created "hdsentinel" folder:

```
cd ~/hdsentinel
```

- Download the ARMv5 version of hdsentinel as follows:

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

Note: The ARMv5 version of hdsentinel has been found to work as is on the ARMv7 based ReadyNAS RN 104.

- Make the downloaded file executable:

```
chmod 755 hdsentinelalarm
```

- Check whether the downloaded file works:

```
./hdsentinelalarm
```

The output of the above command above should display information about the drives on the ReadyNAS.

- Identify a shared folder on the ReadyNAS that will hold the data output of the hdsentinelalarm command. *Note: This folder should be accessible either via SMB or NFS to the PC on which HDSentinel will be used to remotely monitor the ReadyNAS*

- Change directory to the folder identified in the above step

```
cd Replace with the full path to the shared folder
```

- Create a html formatted SMART report in the folder identified above

```
./hdsentinelalarm -r HDSReport.html -html
```

This will create a HDSReport.html file in the folder

- Verify that the file HDSReport.html is displayed correctly in a browser on the PC from which the ReadyNAS will be monitored using HDSentinel.

Open a browser (Google Chrome / Firefox / Edge etc.) In the browser address bar type the full UNC path to the file created in the command above.

As an example, type in:

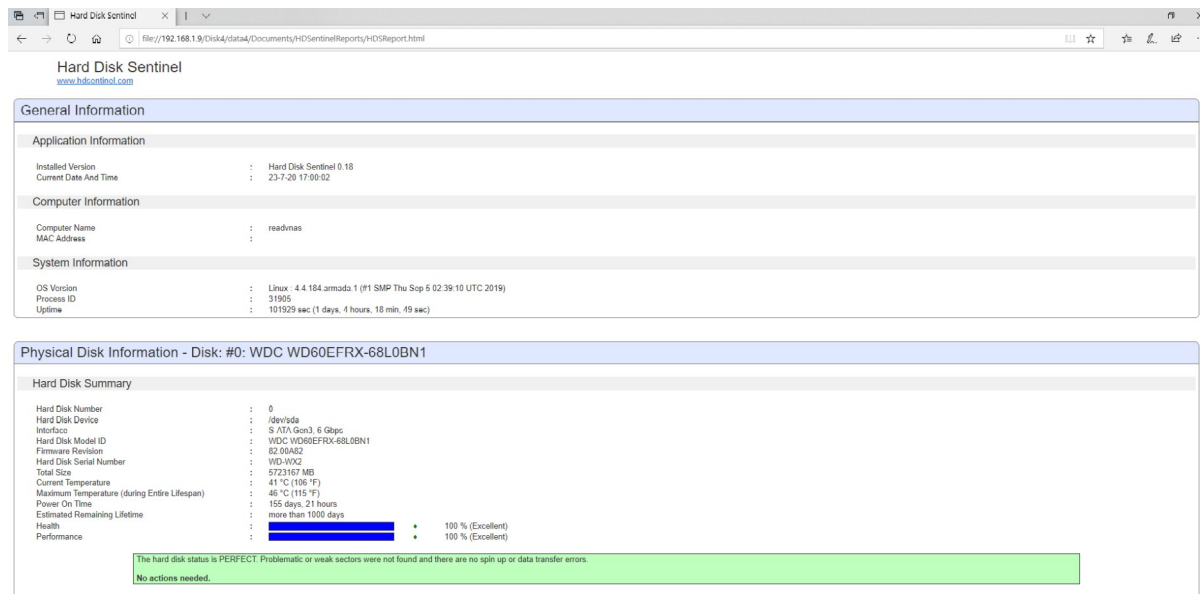
Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

\\192.168.1.9\Disk4\data4\Documents\HDSentinelReports\HDSReport.html
in the browser address bar.

Copy and save the full UNC path into a text file before pressing enter. The full UNC path will be needed in a subsequent step.

On pressing enter the browser will reformat the UNC path into the operating system dependent format specification and then attempt to load the file.

If the shared folder on the ReadyNAS and it's contents are accessible over the network, the HTML formatted report from HDSentinel on the ReadyNAS will be displayed.



The screenshot shows a web browser window with the address bar containing the UNC path: file://192.168.1.9/Disk4/data4/Documents/HDSentinelReports/HDSReport.html. The page title is "Hard Disk Sentinel" and the URL is www.hdsentinel.com. The report is divided into several sections:

- General Information**
 - Application Information**
 - Installed Version: Hard Disk Sentinel 0.18
 - Current Date And Time: 23-7-20 17:00:02
 - Computer Information**
 - Computer Name: readynas
 - MAC Address:
 - System Information**
 - OS Version: Linux 4.4.184-armsada.1 (#1 SMP Thu Sep 5 02:39:10 UTC 2019)
 - Process ID: 31905
 - Uptime: 101929 sec (1 days, 4 hours, 18 min, 49 sec)
- Physical Disk Information - Disk: #0: WDC WD60EFRX-68L0BN1**
 - Hard Disk Summary**
 - Hard Disk Number: 0
 - Hard Disk Device: /dev/sda
 - Interface: S ATA (Gen3, 6 Gbps)
 - Hard Disk Model ID: WDC WD60EFRX-68L0BN1
 - Firmware Revision: 82 00A02
 - Hard Disk Serial Number: WD-1002
 - Total Size: 5723167 MB
 - Current Temperature: 41 °C (106 °F)
 - Maximum Temperature (during Entire Lifespan): 46 °C (115 °F)
 - Power On Time: 155 days, 21 hours
 - Estimated Remaining Lifetime: more than 1000 days
 - Health: 100 % (Excellent)
 - Performance: 100 % (Excellent)
 - A green bar at the bottom of the summary states: "The hard disk status is PERFECT. Problematic or weak sectors were not found and there are no spin up or data transfer errors. No actions needed."

If a 404 error message is displayed, recheck that the shared folder on the ReadyNAS is accessible and the file exists until entering the UNC path in the browser address bar correctly displays the report created by HDSentinel on the ReadyNAS.

4. Setup HDSentinel on the PC to retrieve information from the ReadyNAS

Start HDSentinel on the PC.

From the **File** menu, click **Configure NAS Disk Monitoring**

Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

Unregistered version, please register.

No.	Attribute	Thre...	Value	Worst	Status	Data	Offset	Enable
1	Read Error Rate	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
5	Reallocated Sectors Co...	10	100	100	OK	000000000000	0	<input checked="" type="checkbox"/>
9	Power On Time Count	0	100	100	OK (Always...	000000000021	0	<input checked="" type="checkbox"/>
12	Power Cycle Count	0	100	100	OK (Always...	000000000010	0	<input checked="" type="checkbox"/>
171	Program Fail Count	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
172	Erase Fail Count	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
173	Wear Leveling Count	0	100	100	OK (Always...	000000000001	0	<input checked="" type="checkbox"/>
174	Unexpected Power Loss...	0	100	100	OK (Always...	000000000001	0	<input checked="" type="checkbox"/>
180	Unused Reserve (Spare)...	0	0	0	OK (Always...	000000000023	0	<input checked="" type="checkbox"/>
183	SATA Interface Downsh...	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
184	Error Correction Count	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
187	Uncorrectable Error Co...	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
194	Controlled Temperature	0	59	48	OK (Always...	003400000029	0	<input checked="" type="checkbox"/>
196	Reallocation Event Count	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
197	Current Pending Sector...	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>
198	Uncorrectable Error Co...	0	100	100	OK (Always...	000000000000	0	<input checked="" type="checkbox"/>

Read Error Rate

Flags: Self Preserving, Error-Rate, Performance, Statistical, Critical

Show values

Display data field

Status last updated: 22-07-2020 Wednesday 17:03:06

Click the **Add URL** button.

Unregistered version, please register.

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)

Browse

Add URL

Edit

Delete

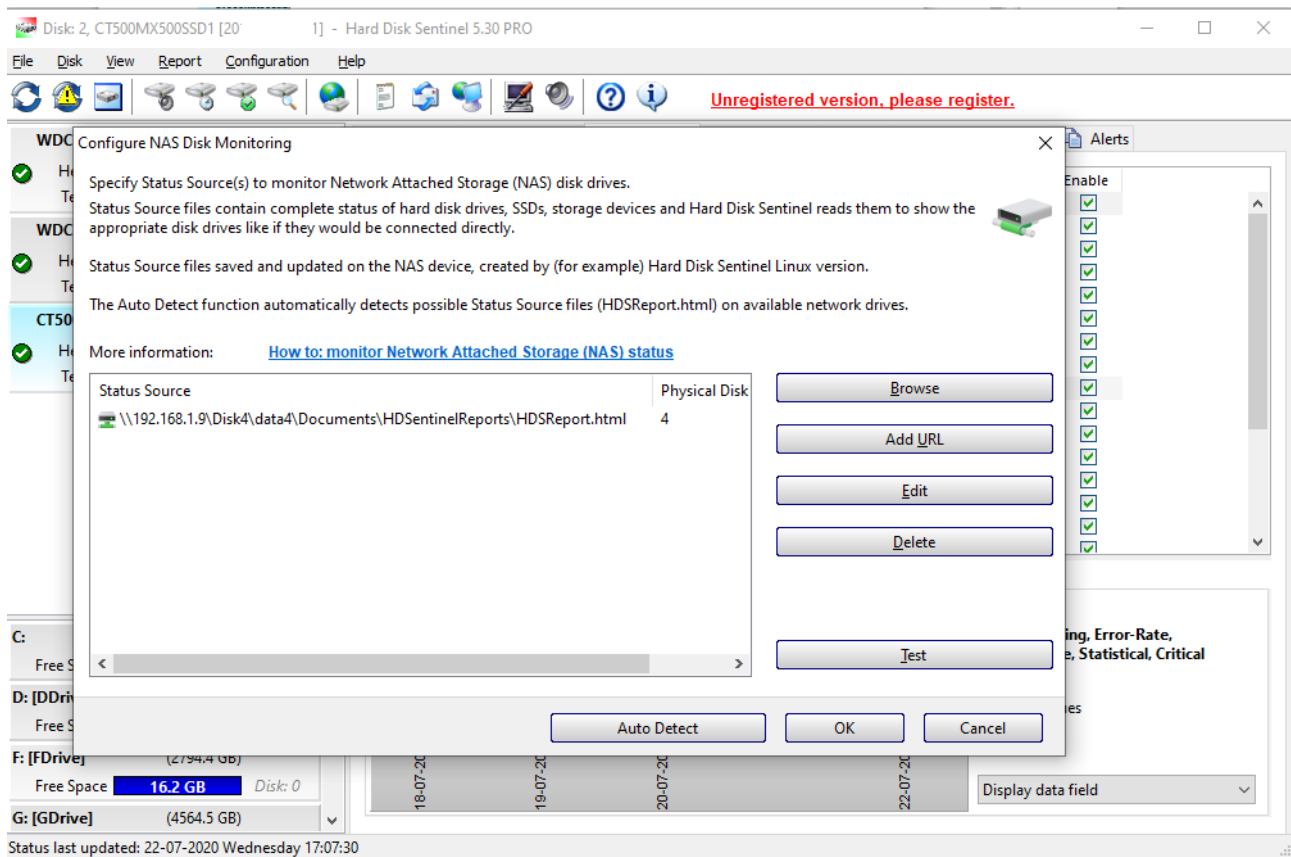
Test

Auto Detect OK Cancel

Status last updated: 22-07-2020 Wednesday 17:03:06

Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

Enter the full UNC path including the file name of the SMART report file on the ReadyNAS or copy and paste the UNC path saved before testing visibility of the SMART report file in the browser.



Click **OK**

Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

HDSentinel will display the SMART information from the ReadyNAS

The screenshot shows the HDSentinel 5.30 PRO interface. On the left, a sidebar lists several disks with their health status (100%) and temperatures (36°C, 41°C, 43°C, 42°C, 39°C). The main area displays a table of SMART attributes for the selected disk (WDC WD60EFRX-68L0BN1). The table includes columns for No., Attribute, Thre..., Value, Worst, Status, Data, Offset, and Enable. Below the table, a graph shows the Raw Read Error Rate over time, with a value of 0 displayed for the date 22-07-2020. The interface also includes a menu bar, a toolbar, and a status bar at the bottom indicating the last update time: 22-07-2020 Wednesday 17:09:32.

No.	Attribute	Thre...	Value	Worst	Status	Data	Offset	Enable	
1	Raw Read Error Rate	51	200	200	OK	Unregistered version, p...	0	+	✓
3	Spin Up Time	21	197	196	OK	00000002394	0	+	✓
4	Start/Stop Count	0	100	100	OK (Always...	Unregistered version, p...	0	+	✓
5	Reallocated Sectors Co...	140	200	200	OK	00000000000	0	+	✓
7	Seek Error Rate	0	200	200	OK (Always...	Unregistered version, p...	0	+	✓
9	Power On Time Count	0	95	95	OK (Always...	00000000E84	0	+	✓
10	Spin Retry Count	0	100	100	OK (Always...	Unregistered version, p...	0	+	✓
11	Drive Calibration Retry ...	0	100	253	OK (Always...	00000000000	0	+	✓
12	Drive Power Cycle Count	0	100	100	OK (Always...	Unregistered version, p...	0	+	✓
192	Power off Retract Cycle ...	0	200	200	OK (Always...	00000000007	0	+	✓
193	Load/Unload Cycle Cou...	0	200	200	OK (Always...	Unregistered version, p...	0	+	✓
194	Disk Temperature	0	111	106	OK (Always...	00000000029	0	+	✓
196	Reallocation Event Count	0	200	200	OK (Always...	Unregistered version, p...	0	+	✓
197	Current Pending Sector...	0	200	200	OK (Always...	00000000000	0	+	✓
198	Off-Line Uncorrectable ...	0	100	253	OK (Always...	Unregistered version, p...	0	+	✓
199	Ultra ATA CRC Error Co...	0	200	200	OK (Always...	00000000000	0	+	✓

5. Create a scheduled task to have HDSentinel on the ReadyNAS automatically generate and update the SMART information report.

- Edit the crontab file:
crontab -e
- Add the line below to the end of the file

```
*/15 * * * * /root/hdsentinel/hdsentinelarm -r  
/Disk4/data4/Documents/HDSentinelReports/HDSReport.html -html >/dev/null 2>&1
```

Notes:

(i) The entire command should be one continuous line and not two as shown which is due to the document formatting.

(ii) The above command runs the `hdsentinelalarm` command every 15 minutes to generate the SMART report into the `HDSReport.html` file in the network share location.

Remote SMART Monitoring of the Netgear ReadyNAS using HDSentinel

Replace

*the periodicity */15,
the location of the hdsentinelalarm file
the location and name of the SMART report file HDSReport.html*

as appropriate.

- Save and exit.