HDSENTINEL GUIDE FOR SYNOLOGY DS216 PLAY

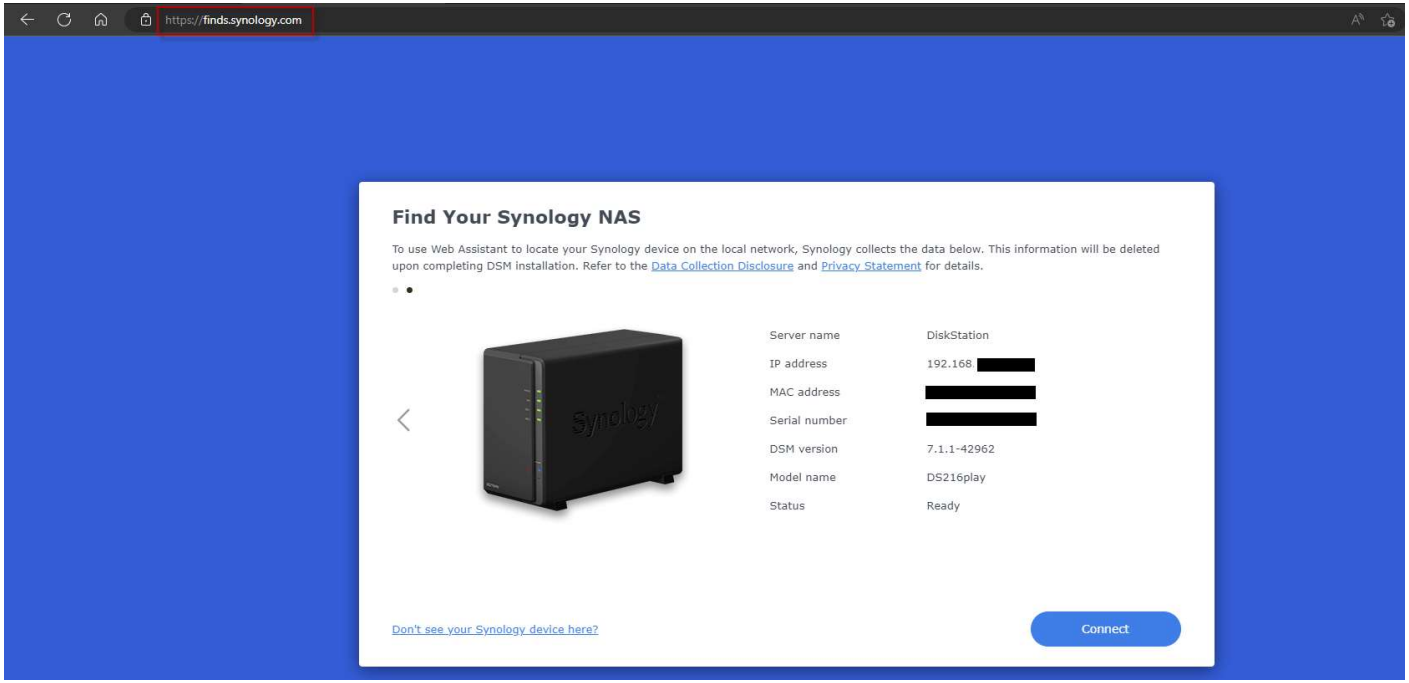
HIGH LEVEL STEPS:

1. Synology NAS Web UI Setup:
    a. Enable ssh service for Synology NAS
    b. Create shared folder in Synology NAS to be used by hdsentinel for Synology NAS
2. SSH Connection Setup:
    a. Install hdsentinel for Synology NAS
    b. Test if hdsentinel is working for Synology NAS
    c. Schedule background job for hdsentinel on Synology NAS to generate the disk report
3. Hdsentinel for Windows Setup:
    a. Test if hdsentinel in Synology NAS is able to generate a report
    b. Configure hdsentinel in Windows to monitor the hdsentinel disk report from Synology NAS

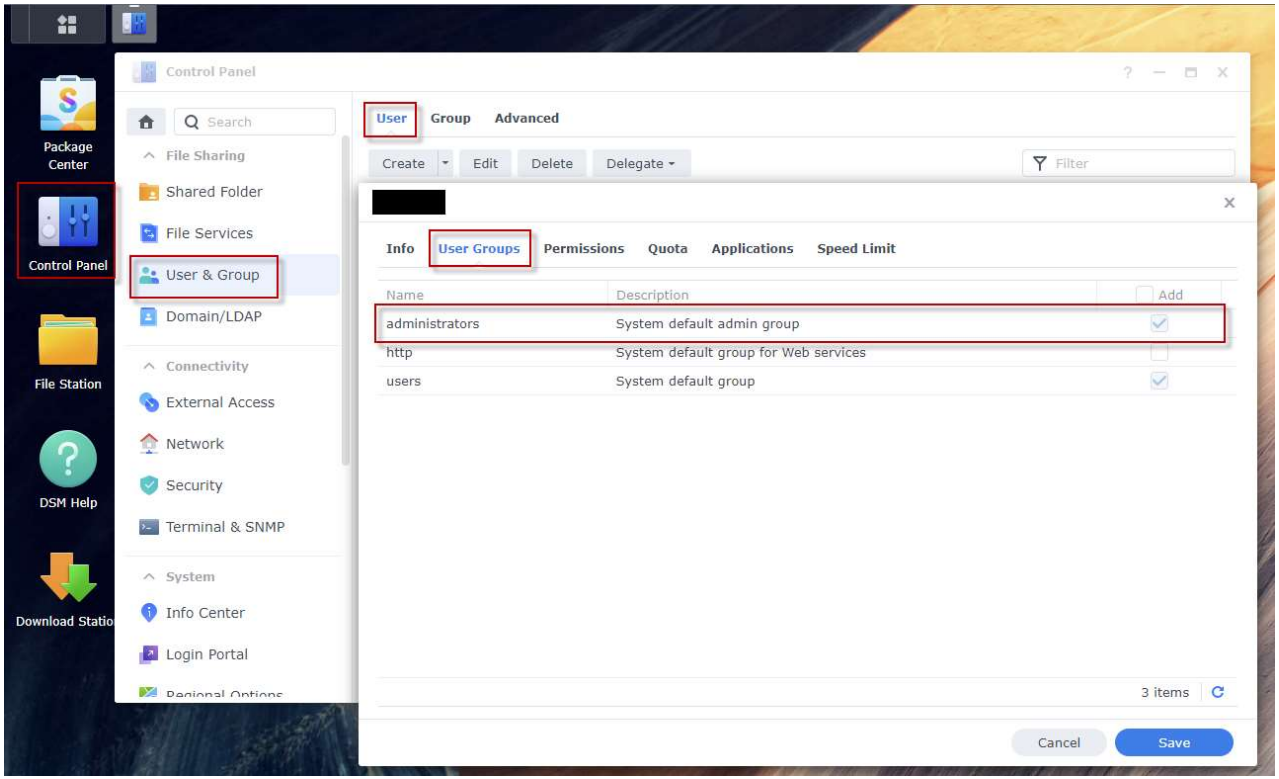
DETAILED STEPS (SYNOLOGY NAS WEB UI SETUP):

LOGIN TO SYNOLOGY NAS WEB UI

1. Open Web Browser and type the IP address of your Synology NAS (with port 5000 or 5001)
    a. Alternatively, you may type https://finds.synology.com/ in your web browser to automatically find the Synology NAS:

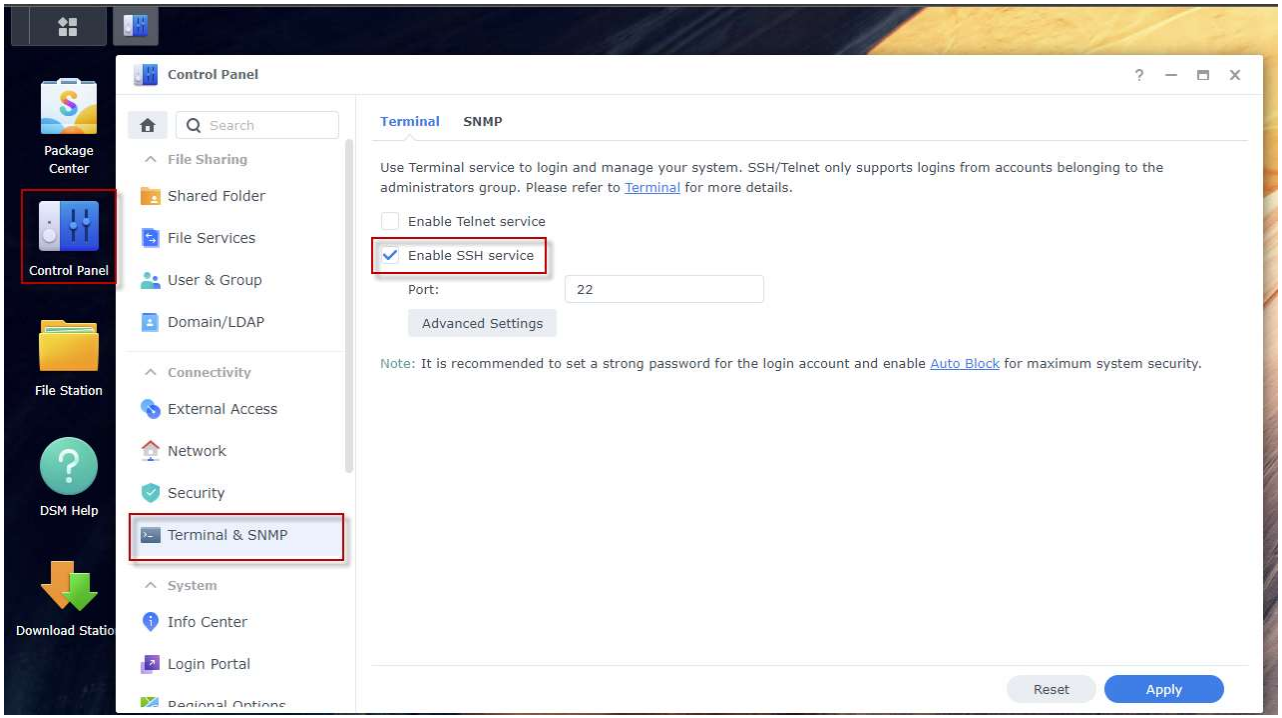


2. Login to the Synology NAS with a username with administrative rights.
    a. Confirm if the logged in user has administrative rights by going to the path below:
        i. Control Panel -> User & Group -> User -> User Groups -> administrators (must be ticked)



ENABLE SSH SERVICE FOR SYNOLOGY NAS

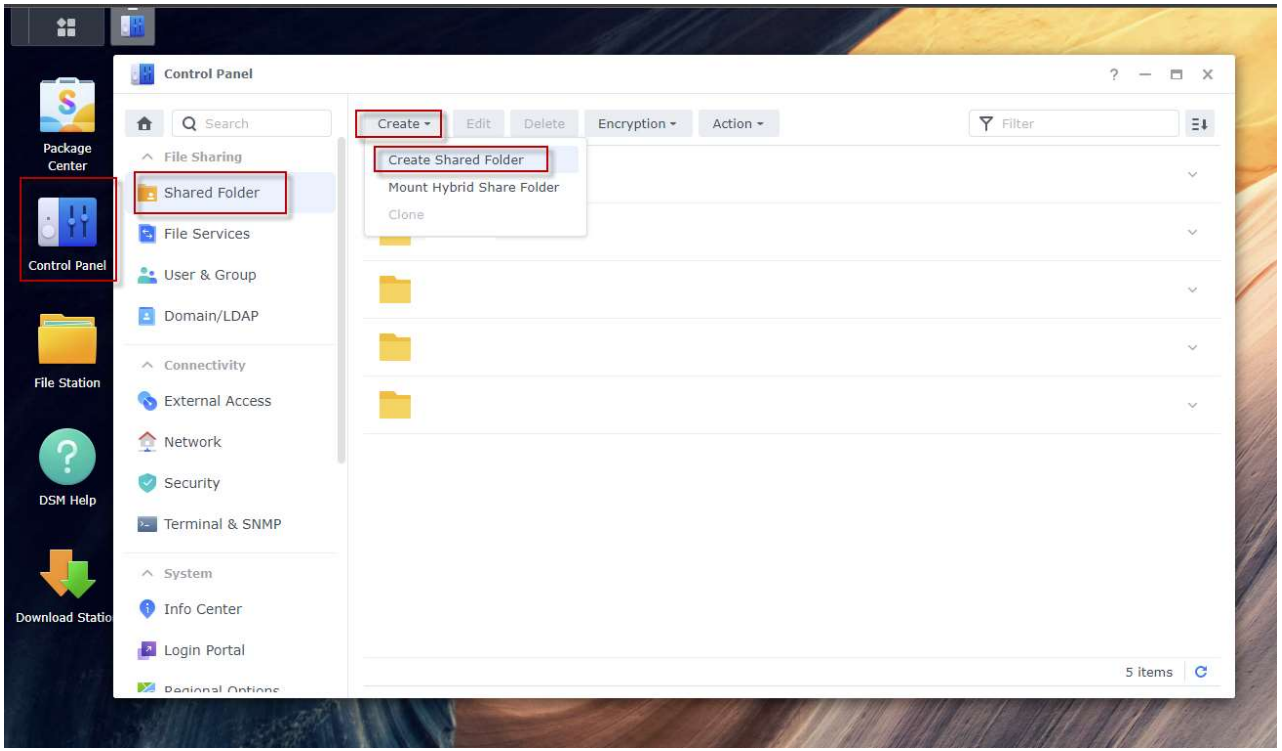
1. Enable SSH service on the Synology NAS by going to the path below:
    b. Control Panel -> Terminal & SNMP -> Enable SSH Service (must be ticked). Retain the default port number:



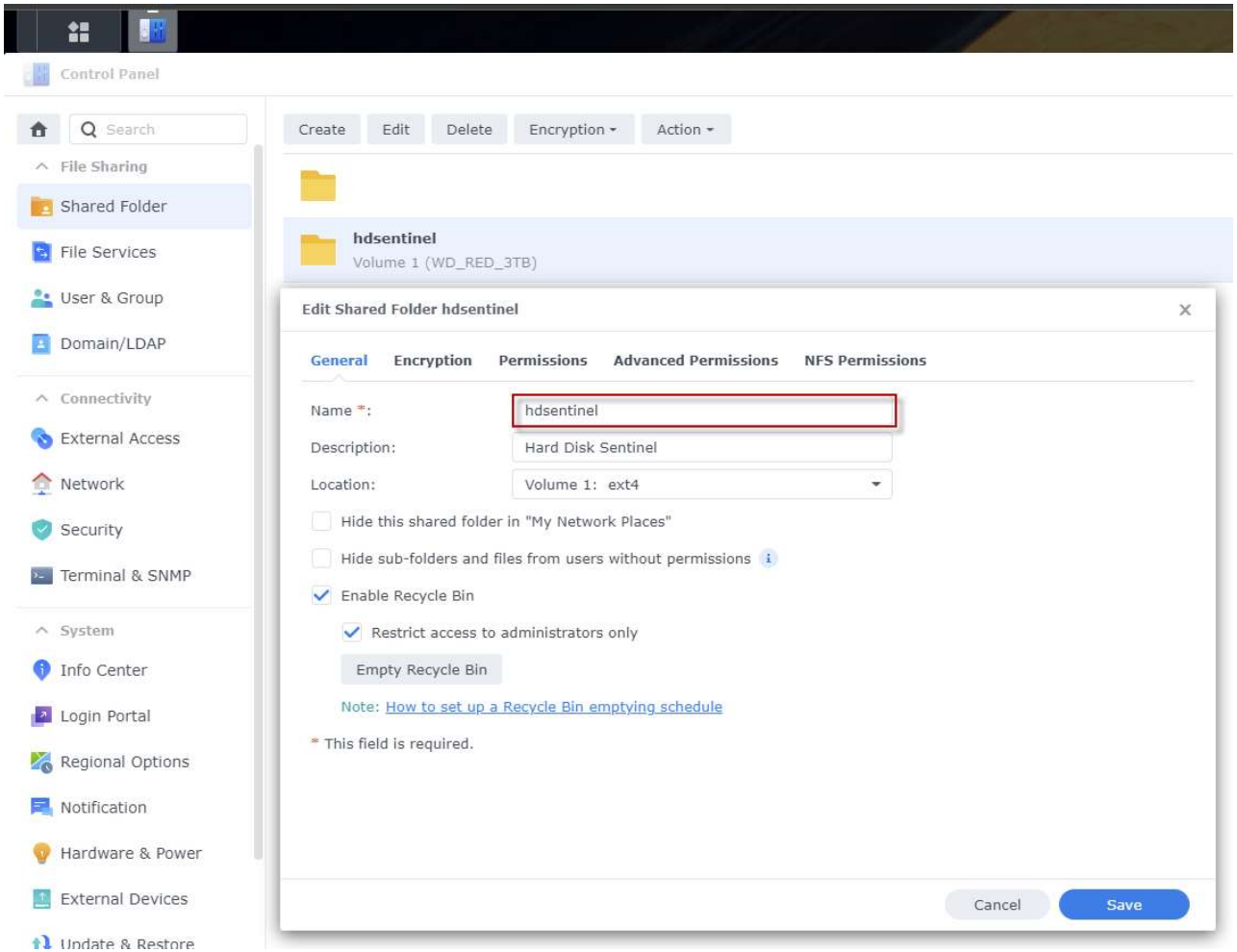
c. Click “Apply” to save the changes

CREATE SHARED FOLDER IN SYNOLOGY NAS

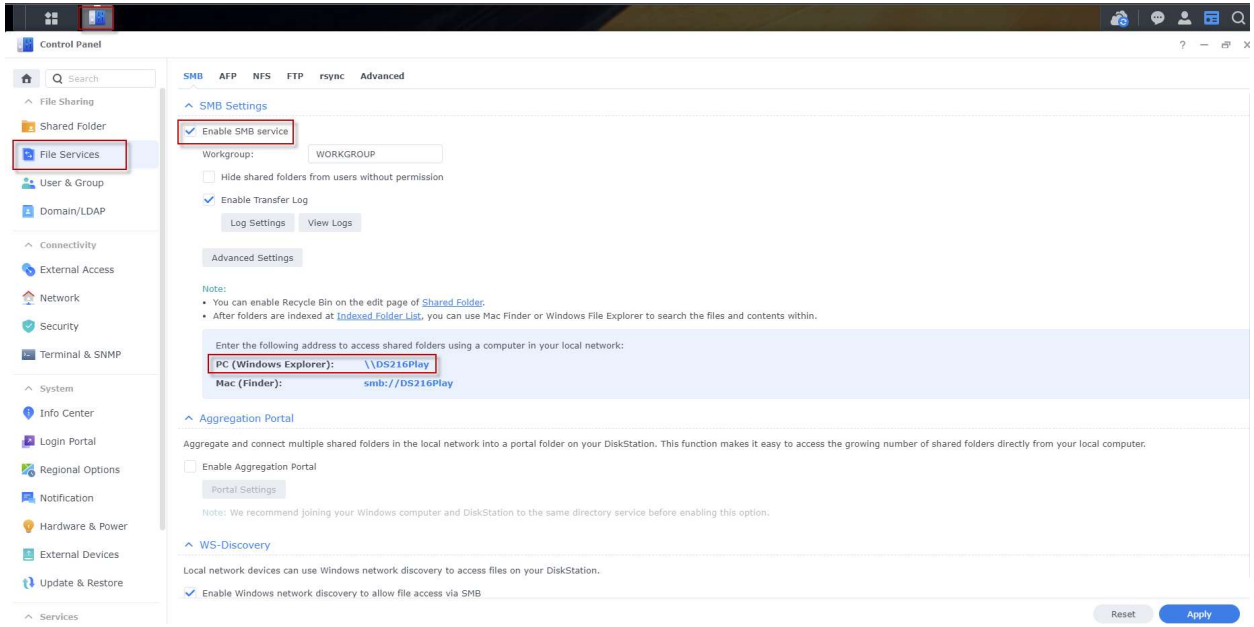
1. Create a shared folder to be used by hdsentinel for Synology NAS by going to the path below:
    a. Control Panel -> Shared Folder -> Create -> Create Shared Folder:



b. Use a descriptive name for the folder (in this guide, the folder name is “hdsentinel”):

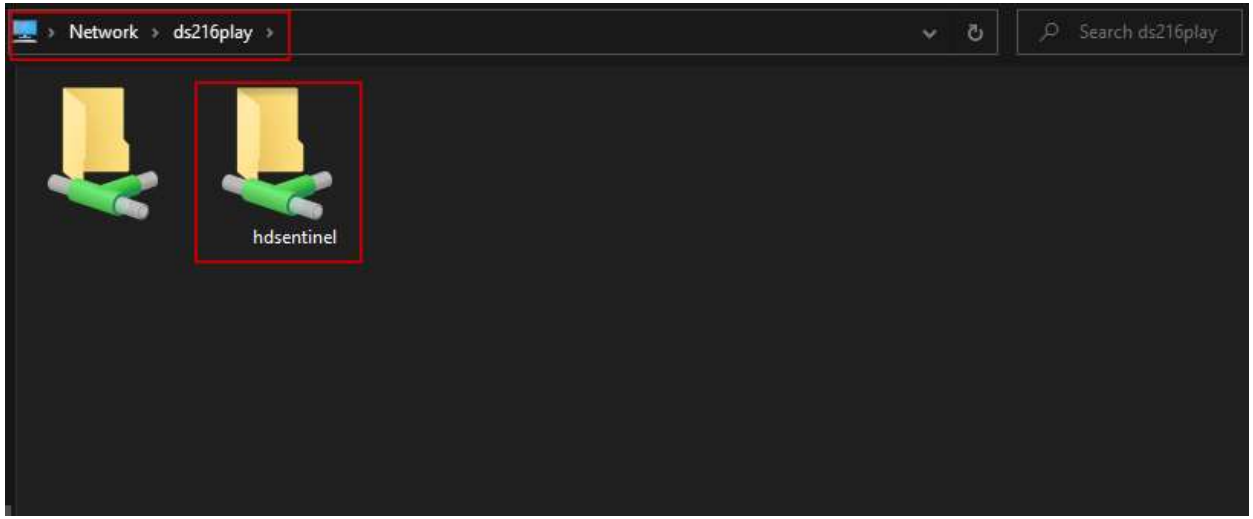


2. Verify if the shared folder can be seen from Windows Explorer:
    a. Identify the name of your Synology NAS for SMB by going to the path below:
        i. Control Panel -> File Services -> SMB -> Enable SMB service (must be ticked)
        ii. Check the value in “PC (Windows Explorer)”:



b. In Windows Explorer, check if the created shared folder can be seen:

   i. In the folder path, type the SMB name in the previous step, and check if the “hdsentinel” folder exists:

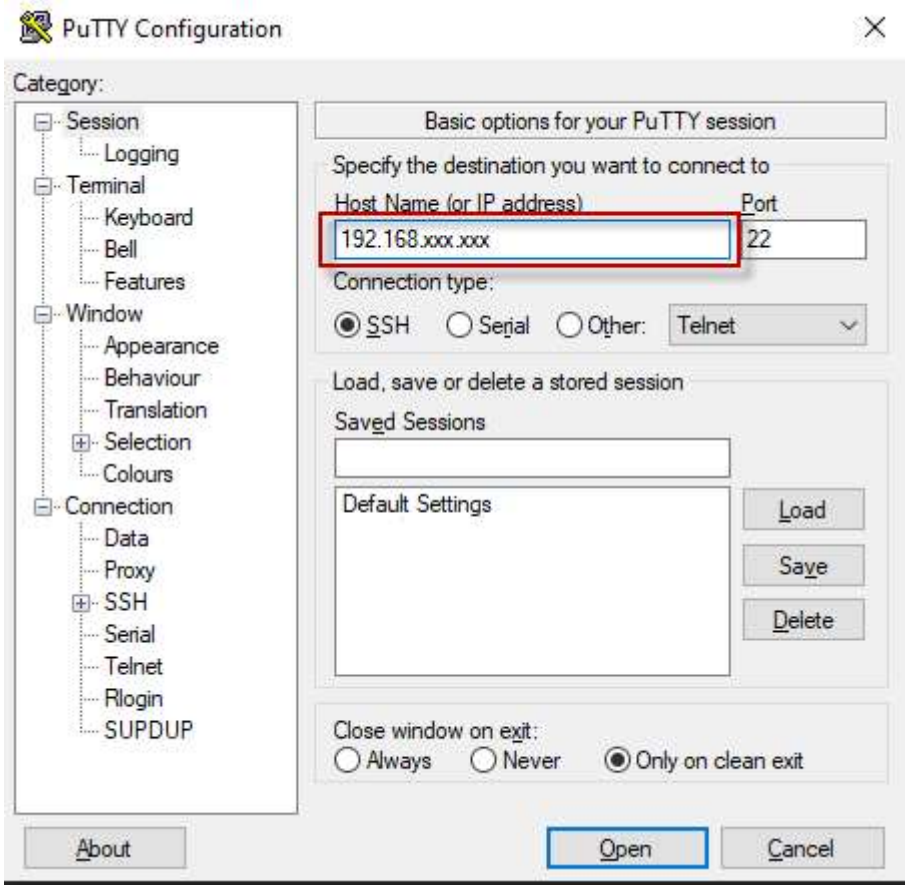


DETAILED STEPS (SSH CONNECTION SETUP):

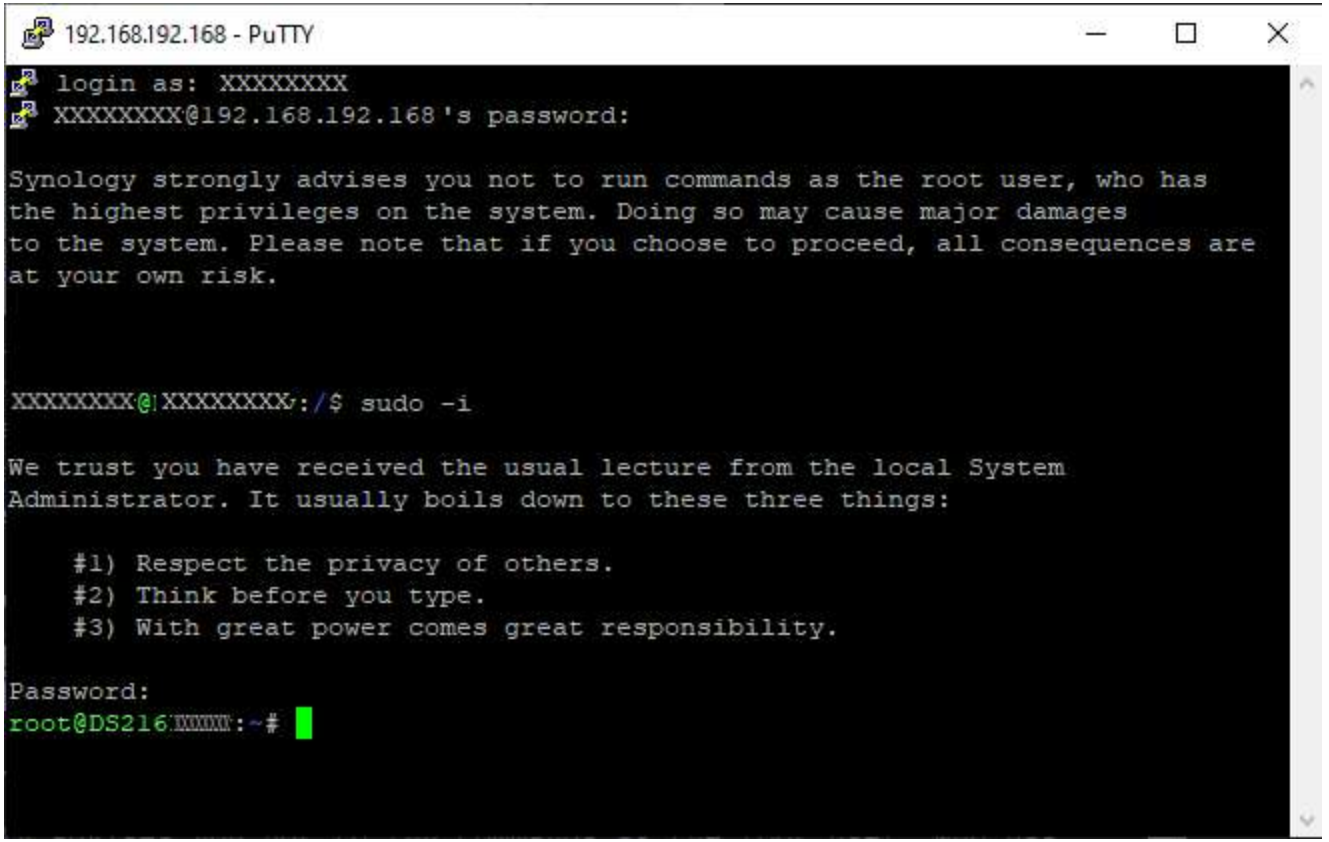
LOGIN TO SYNOLOGY NAS VIA SSH

1. Download and install PuTTY:
    a. URL of PuTTY is https://putty.org:

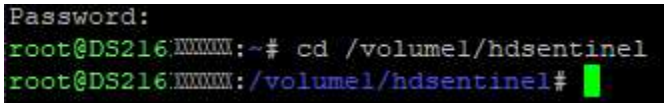
2. Open PuTTY and connect to Synology NAS via SSH:
    a. Input the IP address of your Synology NAS (retain the default port number) and click “Open”:



b. The tasks to be executed needs to have root privileges. Perform the following steps:
   i. Login as user with administrative rights.
   ii. Once successfully logged in, temporarily elevate privilege by typing “sudo -i” and re-entering your password for the user with administrative rights. This step is necessary to skip entering the password for each of the commands to be executed in the succeeding steps.
   iii. If successful, the user should appear “root@[nas_name]” on the left side of the prompt
   iv. Sample output can be seen below:



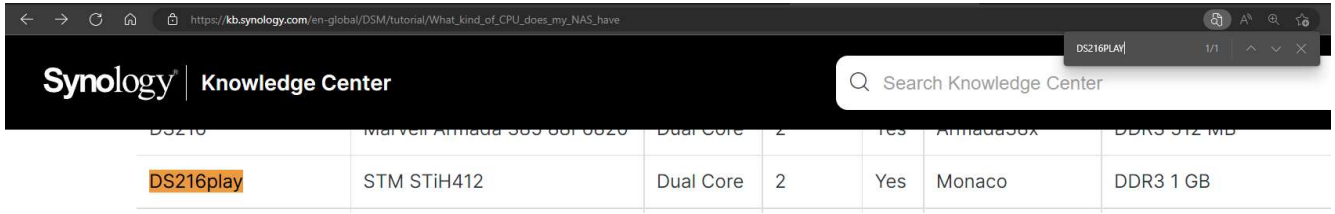
c. Change to the shared folder by typing “cd /volume1/hdsentinel”:



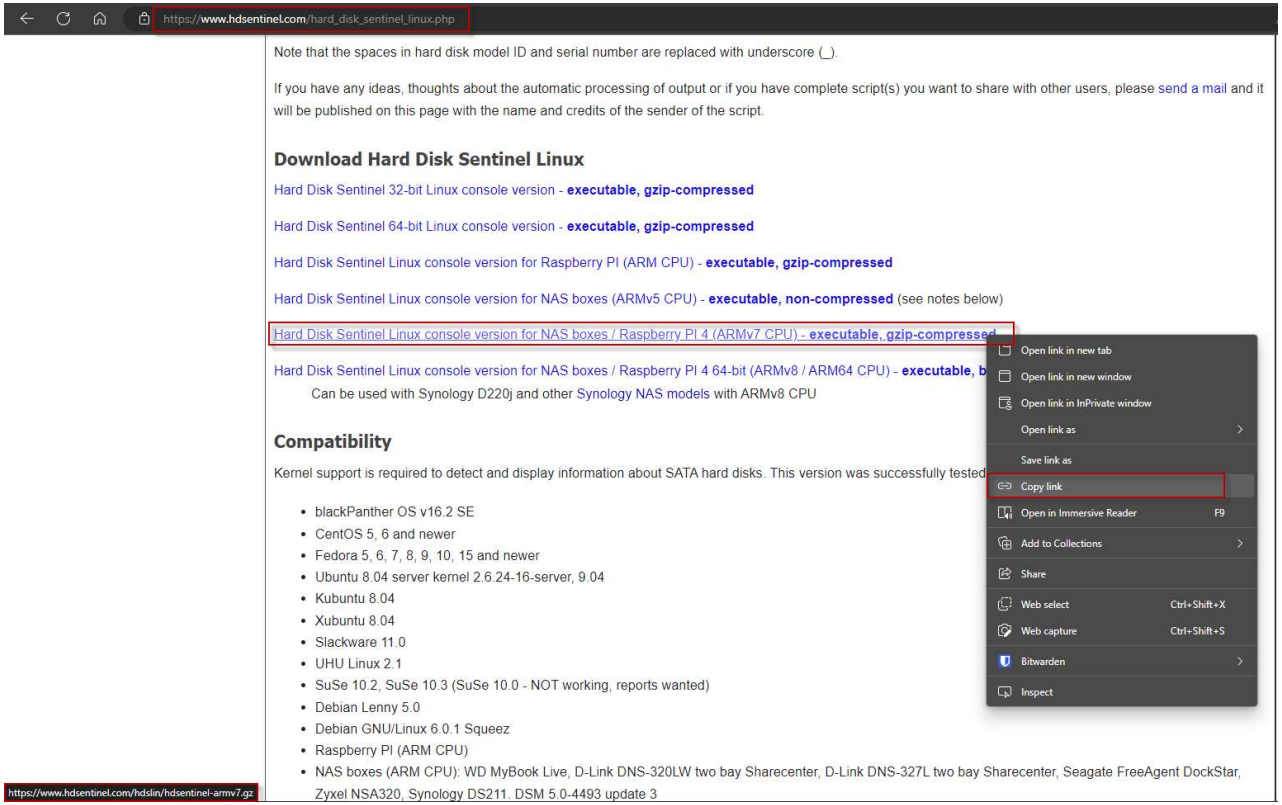
INSTALL HDSENTINEL FOR SYNOLOGY NAS

1. Download prerequisites:

a. The DS216 PLAY has an ARM-based processor (which can be verified in the URL below):
    i. https://kb.synology.com/en-global/DSM/tutorial/What_kind_of_CPU_does_my_NAS_have



b. For the DS216 PLAY, the ARM installer will be used. Get the URL of the download link by going to the URL below:
    i. https://www.hdsentinel.com/hard_disk_sentinel_linux.php
    ii. Note the URL of the download link by doing any of the following:
        1. Hovering the mouse on the download icon and noting the text in the status bar
        2. Right clicking the link, then click “copy link”
        3. Sample screenshot can be seen below:



iii. The latest version when this guide is written is version 7. The download link may be updated in case a newer version is released

2. Install hdsentinel for linux by using wget command and specifying the download link in the previous step
   a. For this guide, the command is " wget https://www.hdsentinel.com/hdslin/hdsentinel-armv7.gz":

   b. The installer will be downloaded and the successful download will look like the screen below:

```
root@IXXXXXXXX:/volume1/hdsentinel# wget https://www.hdsentinel.com/hdslin/hdsentinel-armv7.gz
--2022-12-17 18:23:28--  https://www.hdsentinel.com/hdslin/hdsentinel-armv7.gz
Resolving www.hdsentinel.com... 79.172.252.60
Connecting to www.hdsentinel.com|79.172.252.60|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1433042 (1.4M) [application/x-gzip]
Saving to: 'hdsentinel-armv7.gz'

hdsentinel-armv7.gz        100%[=====================================>]   1.37M   427KB/s    in 3.3s

2022-12-17 18:23:33 (427 KB/s) - 'hdsentinel-armv7.gz' saved [1433042/1433042]
```

c. After downloading the installer, perform the following steps to prepare the installer:
    i. Decompress the downloaded installer by typing the command below:
        1. “gunzip hdsentinel-armv7.gz”
            a. The command doesn’t return any status, but should not raise any error
    ii. Change permission for the downloaded installer by typing the command below:
        1. “chmod 0755 hdsentinel-armv7”
            a. The command doesn’t return any status, but should not raise any error
d. Sample screenshot after doing the previous steps to prepare the installer:

```
root@IXXXXXXXX:/volume1/hdsentinel# gunzip hdsentinel-armv7.gz
root@IXXXXXXXX:/volume1/hdsentinel# chmod 0755 hdsentinel-armv7
```

TEST IF HDSENTINEL IS WORKING FOR SYNOLOGY NAS

1. Type the command below to check the report for the two (2) hard disks:
    a. ./ hdsentinel-armv7
    b. There should be a detailed information for the two (2) hard disks, which can look like the screen below:

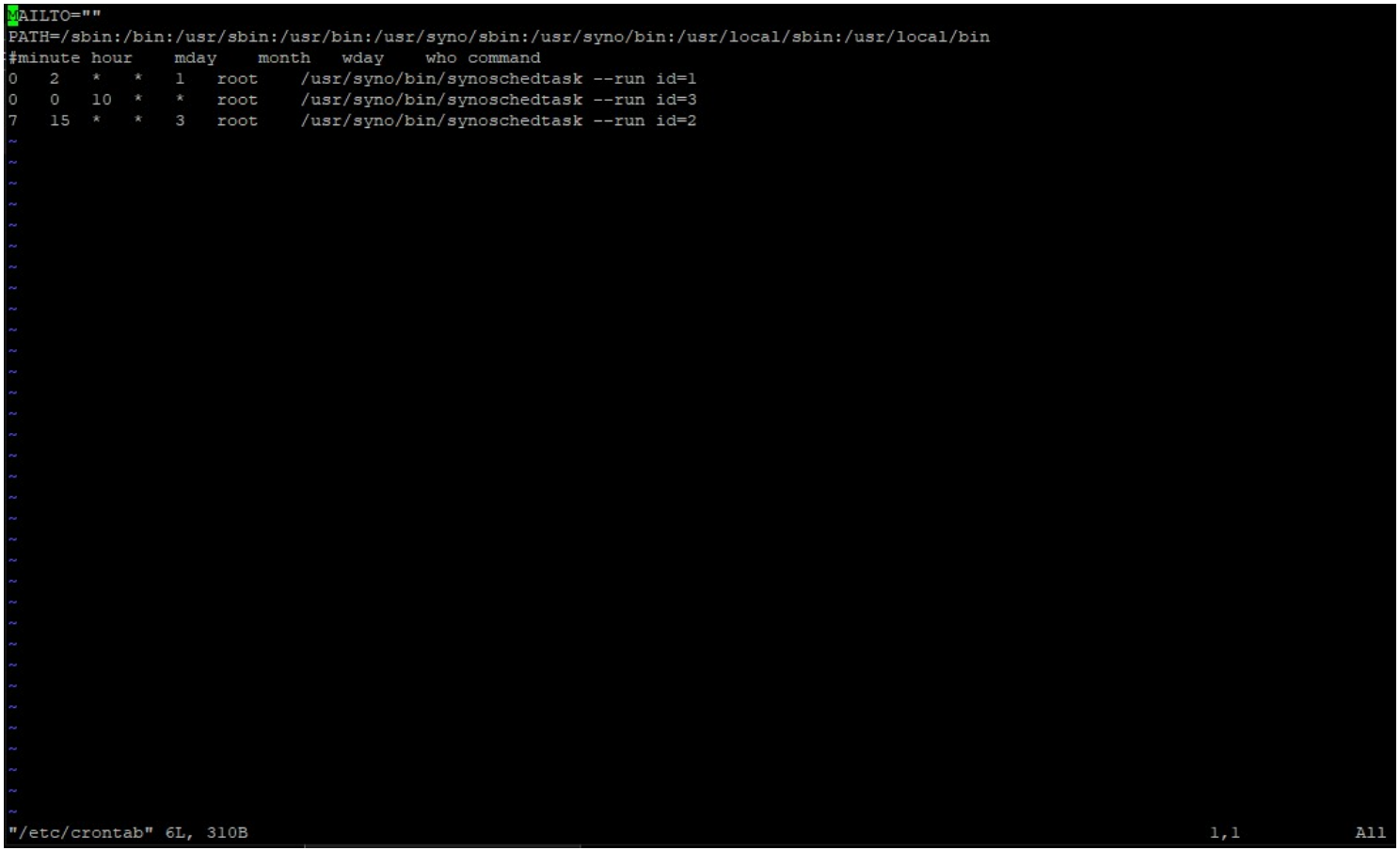
```
root@XXXXXXXX:/volume1/hdsentinel# ./hdsentinel-armv7
Hard Disk Sentinel for LINUX console 0.18e.8675 (c) 2020 info@hdsentinel.com
Start with -r [reportfile] to save data to report, -h for help

Examining hard disk configuration ...

HDD Device  0: /dev/sda
HDD Model ID : XXXXXXXXXXXXXXXXXXXXXXX
HDD Serial No: XXXXXXXXXXXXXXXXXXXXXXX
HDD Revision : XXXXXXXXXXXXXXXXXXXXXXX
HDD Size     : XXXXXXXXXXXXXXXXXXXXXXX
Interface    : S-ATA Gen3, 6 Gbps
Temperature  : 34 °C
Highest Temp.: 40 °C
Health       : 100 %
Performance  : 100 %
Power on time: XXXXXXXXXXXXXXXXXXXXXX
Est. lifetime: more than 1000 days
  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.

HDD Device  1: /dev/sdb
HDD Model ID : XXXXXXXXXXXXXXXXXXXXXXX
HDD Serial No: XXXXXXXXXXXXXXXXXXXXXXX
HDD Revision : XXXXXXXXXXXXXXXXXXXXXXX
HDD Size     : XXXXXXXXXXXXXXXXXXXXXXX
Interface    : S-ATA Gen3, 6 Gbps
Temperature  : 38 °C
Highest Temp.: 47 °C
Health       : 100 %
Performance  : 100 %
Power on time: XXXXXXXXXXXXXXXXXXXXXX
Est. lifetime: more than 1000 days
  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.
```

SCHEDULE BACKGROUND JOB FOR HDSENTINEL ON SYNOLOGY NAS

1. Type the command below to edit the background job file:
    a. vim /etc/crontab

    ```
    root@XXXXXXXX:/volume1/hdsentinel# vim /etc/crontab
    ```

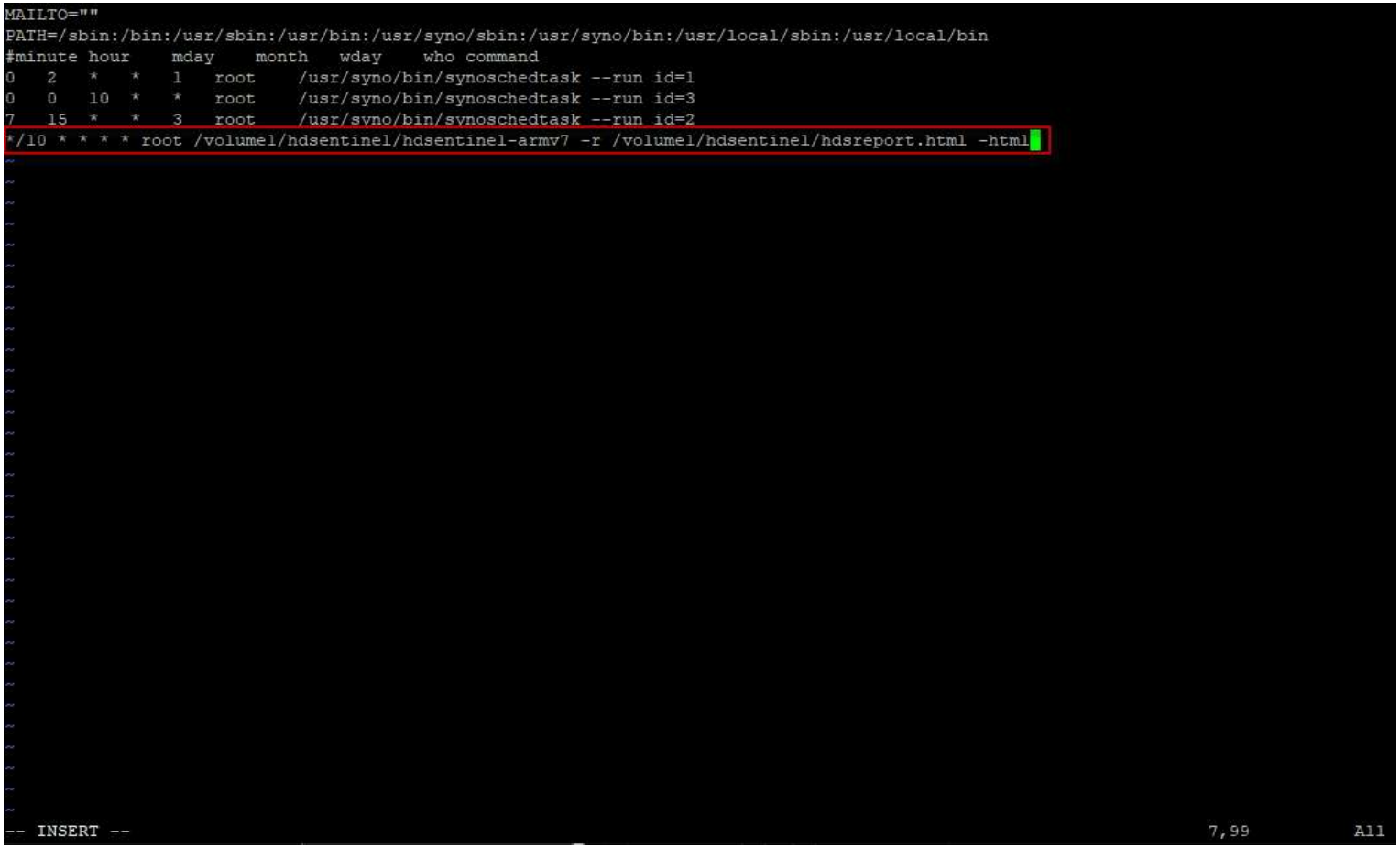
    b. The VIM editor will be displayed:



2. Once in the VIM editor, perform the following steps:
    a. Press “down” arrow five (5) times to go down five (5) lines
    b. Press “o” key to insert a new line
    c. We would like to generate the hdsentinel report for the Synology NAS HDDs every ten (10) minutes. Paste the following lines in the editor (right-click the mouse in PuTTY to paste the line):

**/10 * * * * root /volume1/hdsentinel/hdsentinel-armv7 -r /volume1/hdsentinel/hdsreport.html -html*

    d. Sample output should look like below:



e. Press “ESC” key, then type the values “:wq”. The values should appear in the lower left part of the window:

```
MAILTO=""
PATH=/sbin:/bin:/usr/sbin:/usr/bin:/usr/syno/sbin:/usr/syno/bin:/usr/local/sbin:/usr/local/bin
#minute hour    mday    month   wday    who command
0   2   *   *   1   root    /usr/syno/bin/synoschedtask --run id=1
0   0   10  *   *   root    /usr/syno/bin/synoschedtask --run id=3
7   15  *   *   3   root    /usr/syno/bin/synoschedtask --run id=2
*/10 * * * * root /volume1/hdsentinel/hdsentinel-armv7 -r /volume1/hdsentinel/hdsreport.html -html
~
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:wq
```

f. Press “ENTER” key to save and exit the VIM editor, it will return to the prompt:

```
root@XXXXXXXX:/volume1/hdsentinel# vim /etc/crontab
root@XXXXXXXX:/volume1/hdsentinel#
```

3. Logout the SSH session by typing the “exit” command two (2) times:

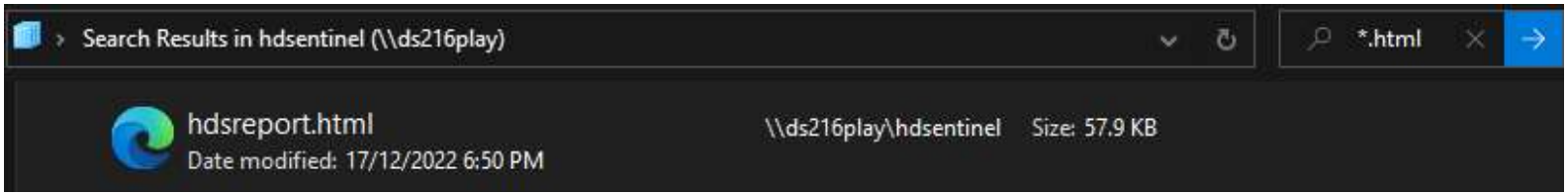
192.168.192.168 - PuTTY

```
root@XXXXXXXX:/volume1/hdsentinel# exit
logout
XXXXXXXX@XXXXXXXX:/$ exit
```

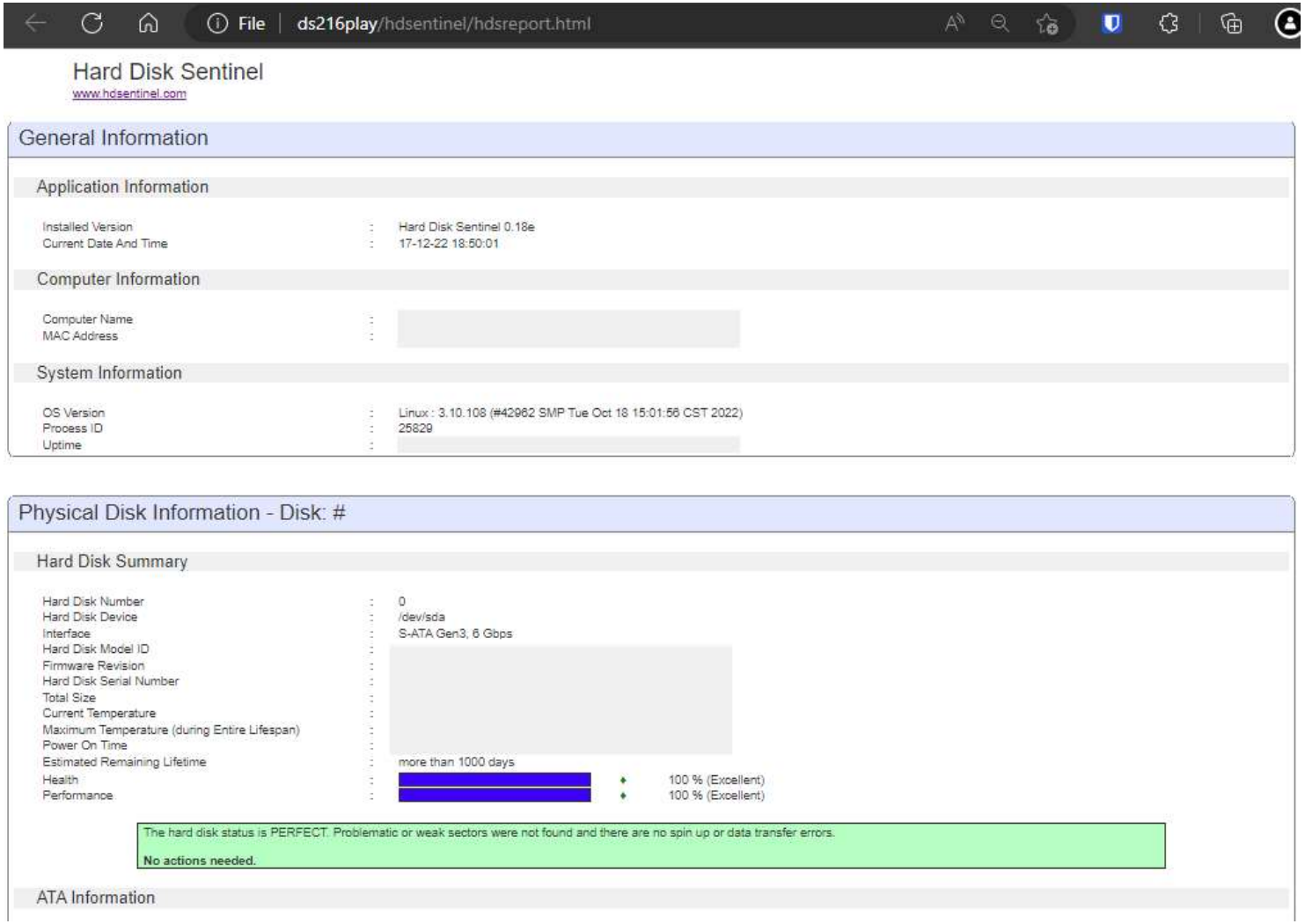
DETAILED STEPS (HDSENTINEL FOR WINDOWS SETUP):

TEST IF HDSENTINEL IN SYNOLOGY NAS IS ABLE TO GENERATE A REPORT

1. Open Windows Explorer and go to the shared folder used by hdsentinel for Synology NAS to see if the background job has generated the hdsentinel output report



2. Open the HTML in the previous step to see the report details:
    a. Sample for Disk 1 (in same file):

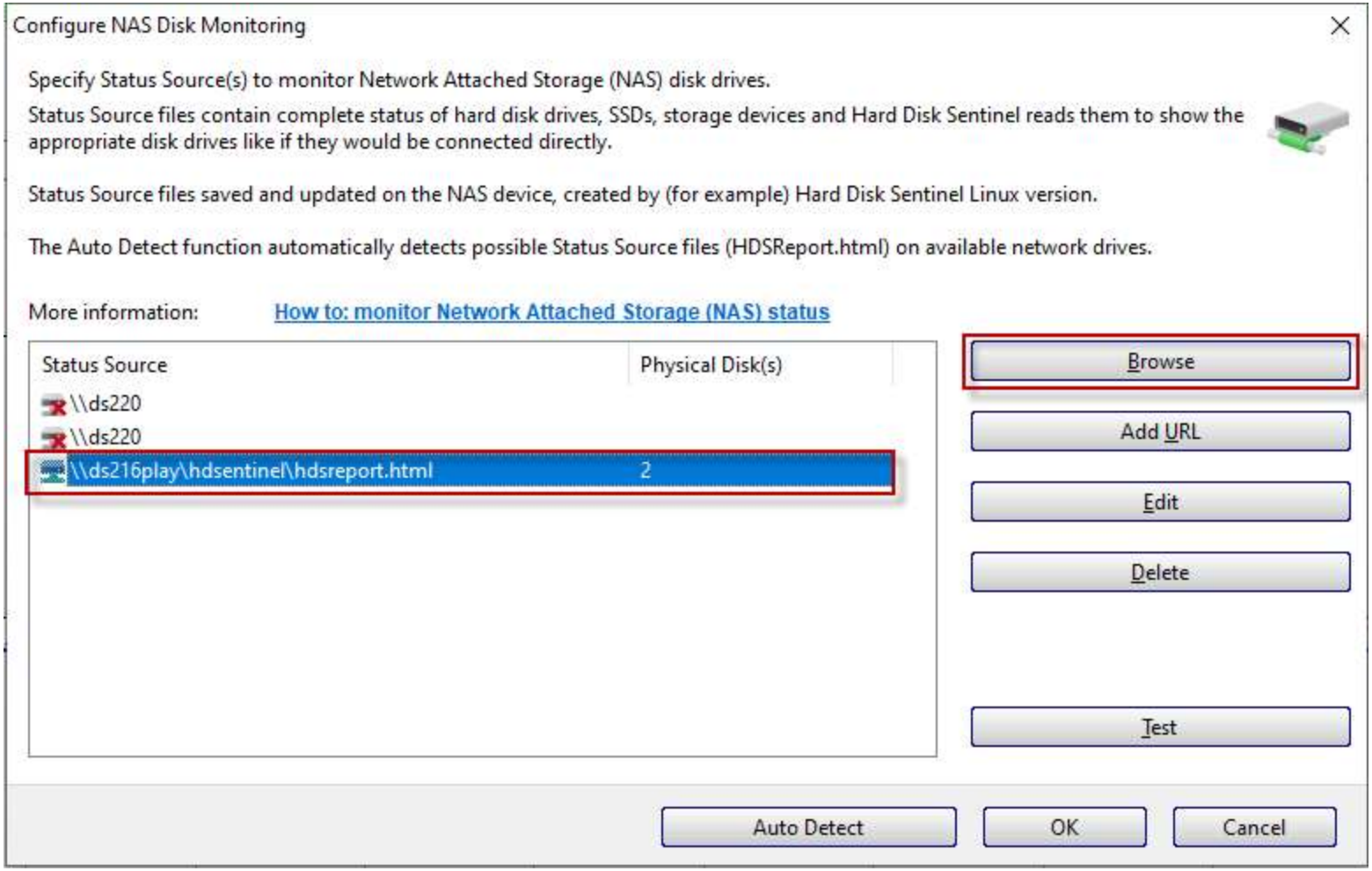


b. Sample for Disk 2 (in same file):

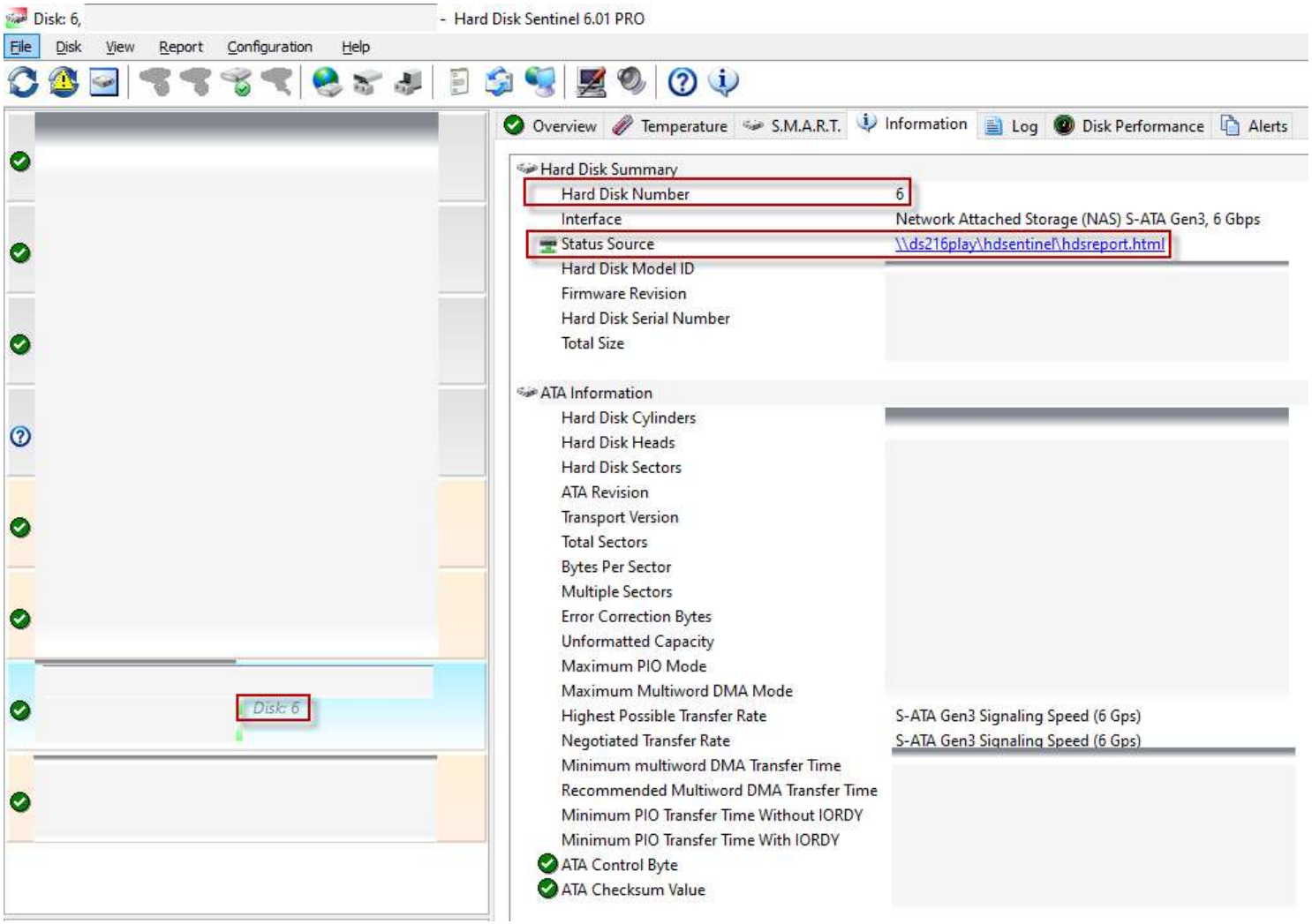
CONFIGURE SYNOLOGY NAS DISK MONITORING

1. Open hdsentinel for windows and go to the path below:
    a. File -> Configure NAS Disk Monitoring

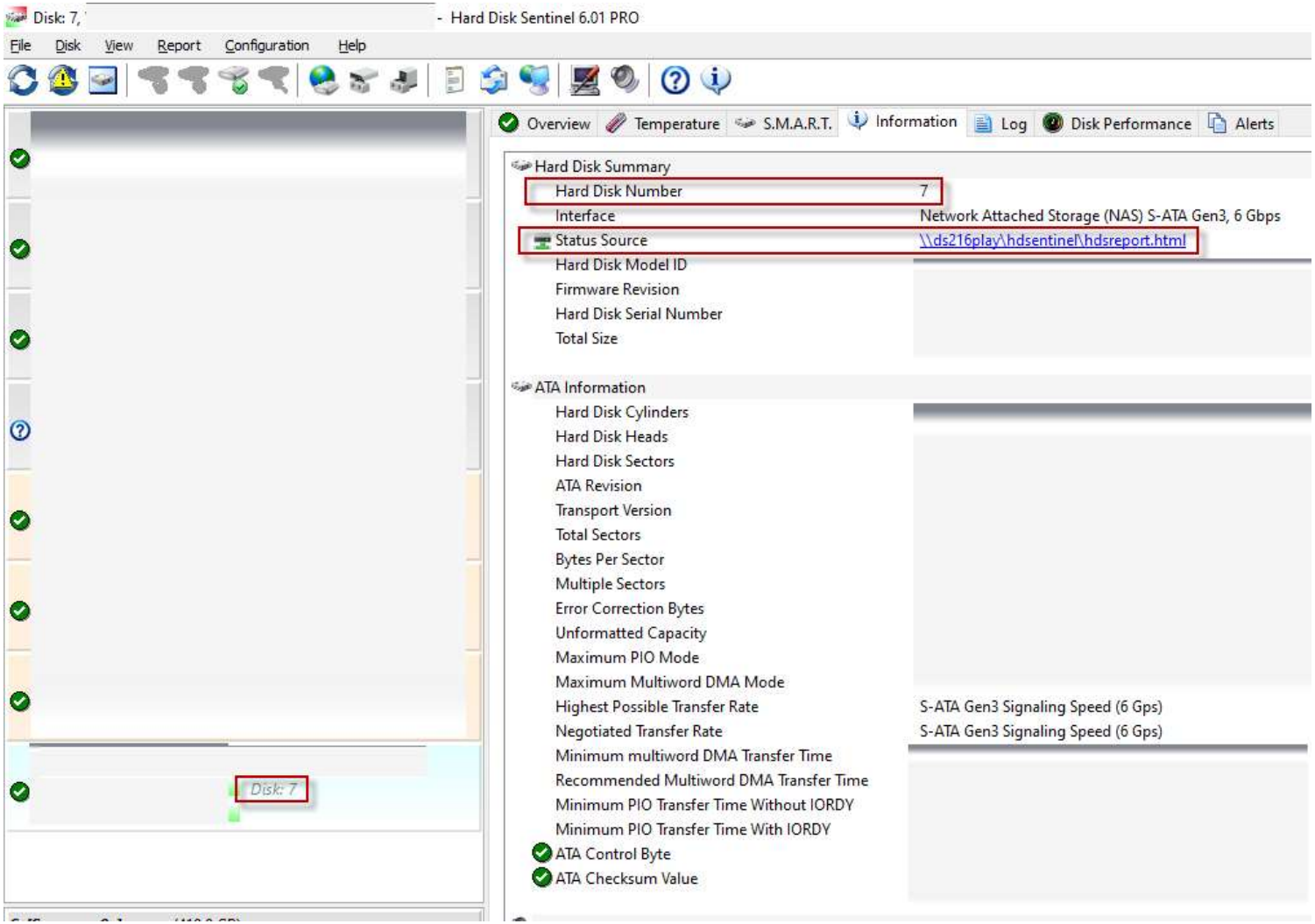
2. Click “Browse” and load the HTML file generated by the hdsentinel for Synology NAS:



3. Click “OK”, the two (2) HDD drives in the Synology NAS should be seen in the main window:
    a. Sample for Disk 1:



b. Sample for Disk 2:


Disk: 7,
- Hard Disk Sentinel 6.01 PRO
File
Disk
View
Report
Configuration
Help
Overview
Temperature
S.M.A.R.T.
Information
Log
Disk Performance
Alerts
Hard Disk Summary
Hard Disk Number
7
Interface
Network Attached Storage (NAS) S-ATA Gen3, 6 Gbps
Status Source
\\ds216play\hdsentinel\hdsreport.html
Hard Disk Model ID
Firmware Revision
Hard Disk Serial Number
Total Size
ATA Information
Hard Disk Cylinders
Hard Disk Heads
Hard Disk Sectors
ATA Revision
Transport Version
Total Sectors
Bytes Per Sector
Multiple Sectors
Error Correction Bytes
Unformatted Capacity
Maximum PIO Mode
Maximum Multiword DMA Mode
Highest Possible Transfer Rate
S-ATA Gen3 Signaling Speed (6 Gps)
Negotiated Transfer Rate
S-ATA Gen3 Signaling Speed (6 Gps)
Minimum multiword DMA Transfer Time
Recommended Multiword DMA Transfer Time
Minimum PIO Transfer Time Without IORDY
Minimum PIO Transfer Time With IORDY
ATA Control Byte
ATA Checksum Value
Disk: 7

END OF GUIDE

CREDITS:

1. Janos Mathe | hdsentinel creator | www.hdsentinel.com | info@hdsentinel.com | www.facebook.com/HDSentinel

REFERENCES:

1. Marcus Wagner's guide to Synology DS416Play
2. Ronald San Jose's guide to Synology DS420J

Guide Creation Details:

Version	Date	Name	Description
1	2022 December 17	Vince Leonardo	Initial Version