HDSENTINEL GUIDE FOR SYNOLOGY DS220 PLUS

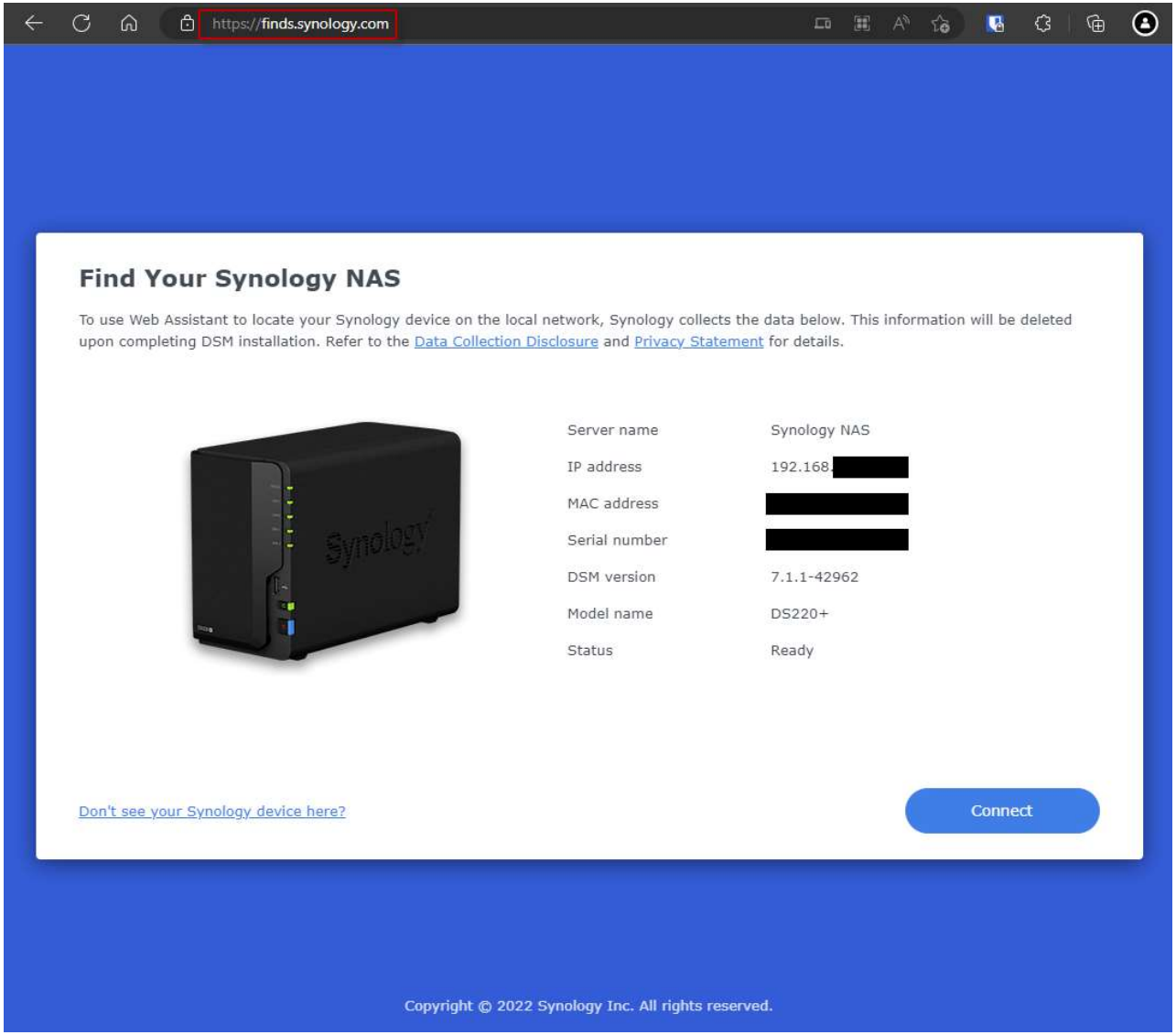
HIGH LEVEL STEPS:

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

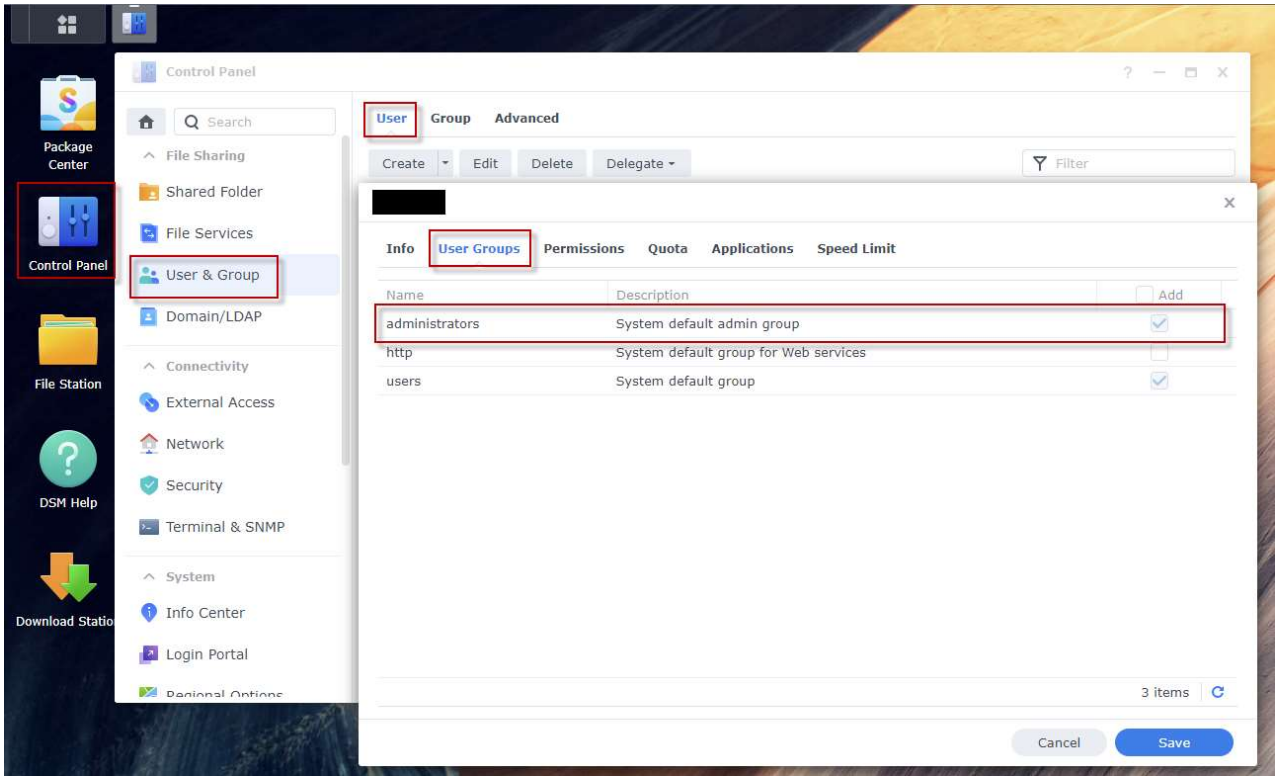
DETAILED STEPS (SYNOLOGY NAS WEB UI SETUP):

LOGIN TO SYNOLOGY NAS WEB UI

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

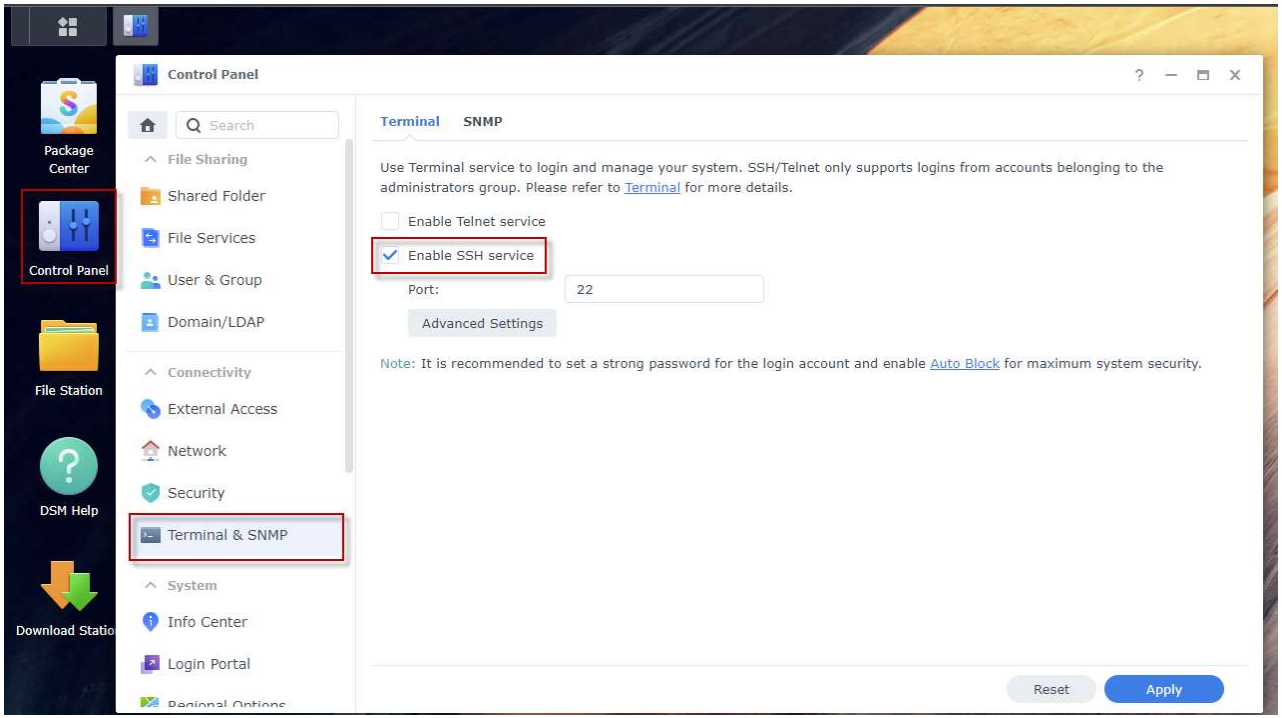


2. Login to the Synology NAS with a username with administrative rights.
    a. Confirm if the logged in user has administrative rights by going to the path below:
        i. Control Panel -> User & Group -> User -> User Groups -> administrators (must be ticked)



ENABLE SSH SERVICE FOR SYNOLOGY NAS

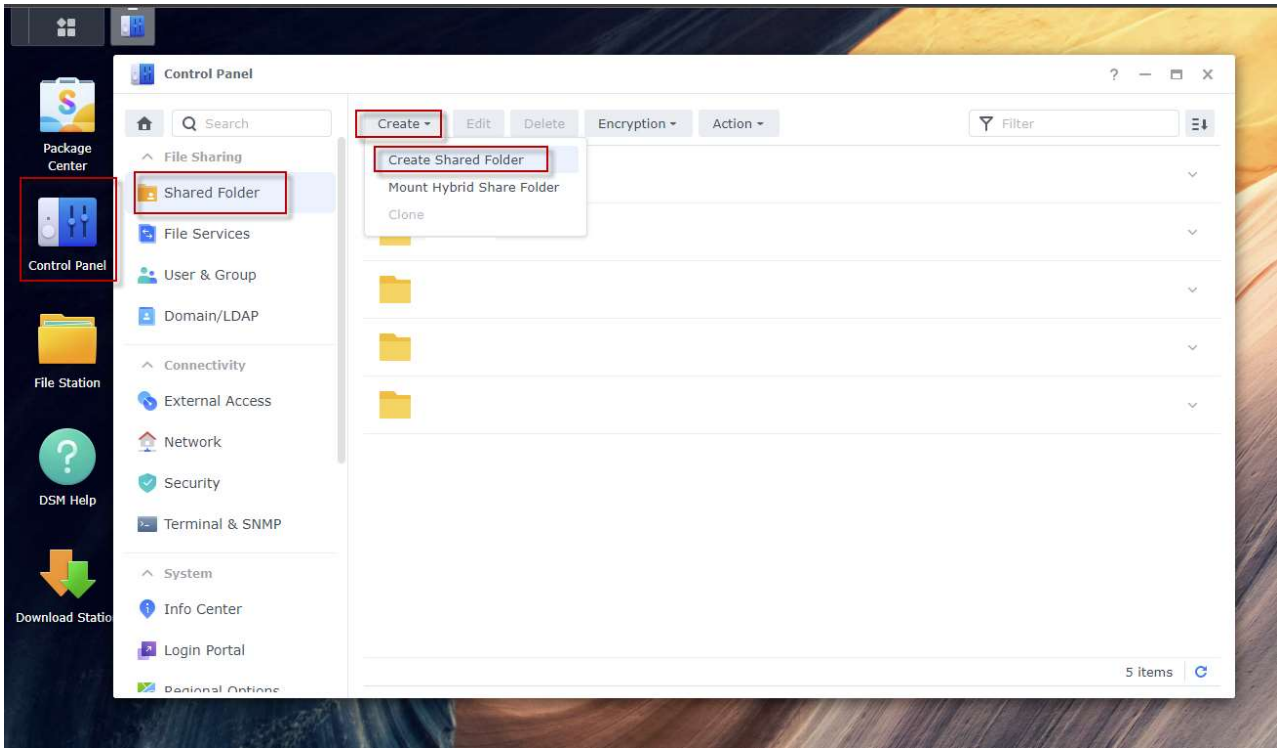
1. Enable SSH service on the Synology NAS by going to the path below:
    b. Control Panel -> Terminal & SNMP -> Enable SSH Service (must be ticked). Retain the default port number:



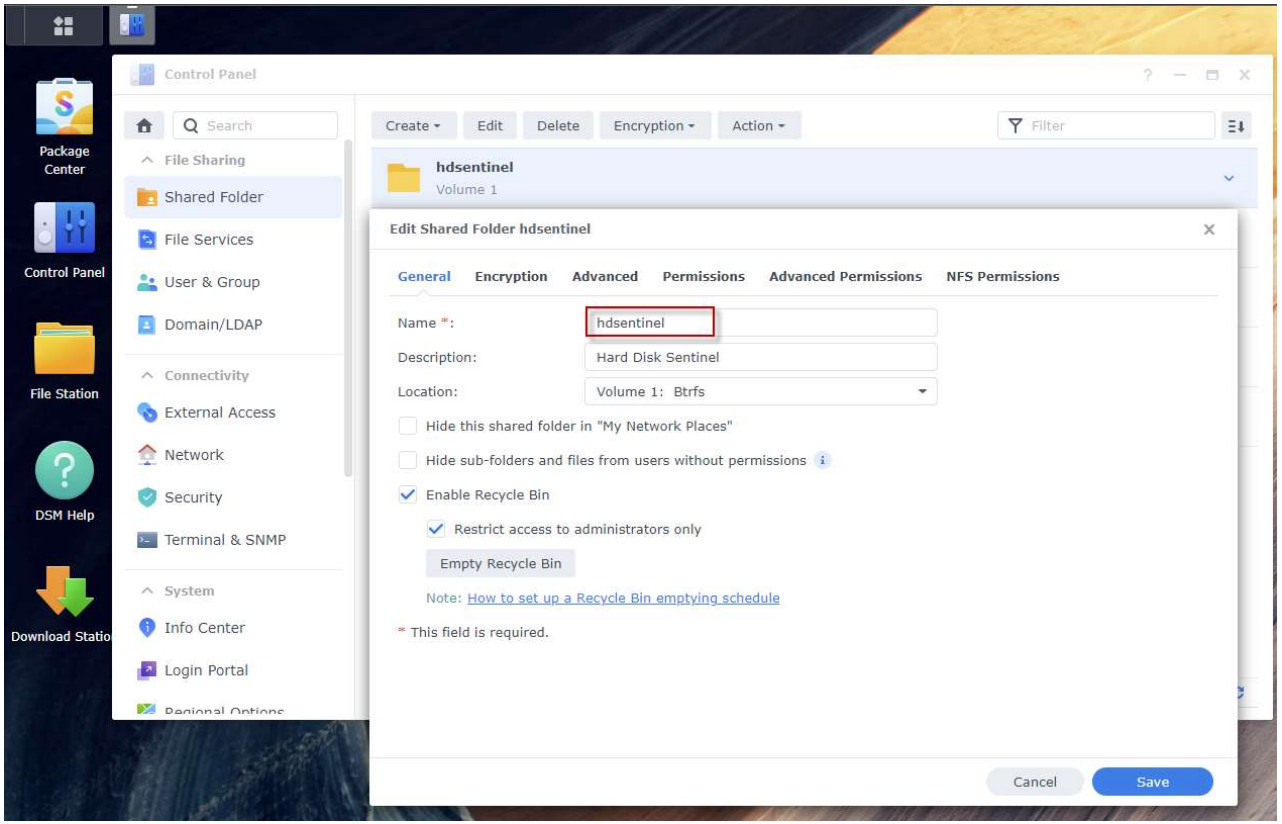
c. Click “Apply” to save the changes

CREATE SHARED FOLDER IN SYNOLOGY NAS

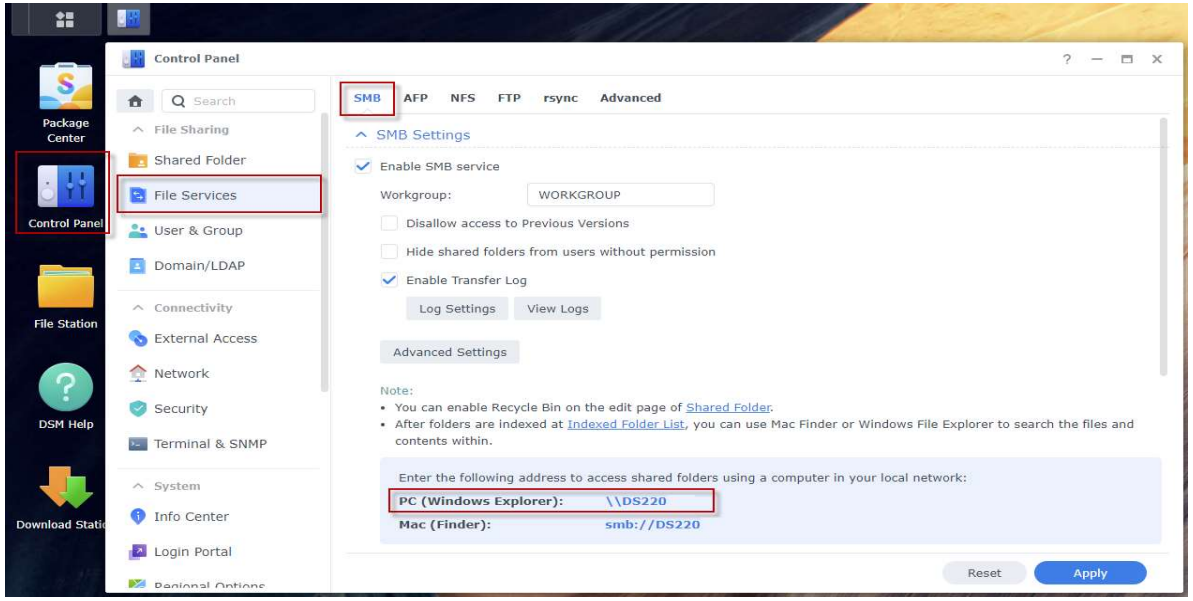
1. Create a shared folder to be used by hdsentinel for Synology NAS by going to the path below:
    a. Control Panel -> Shared Folder -> Create -> Create Shared Folder:



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

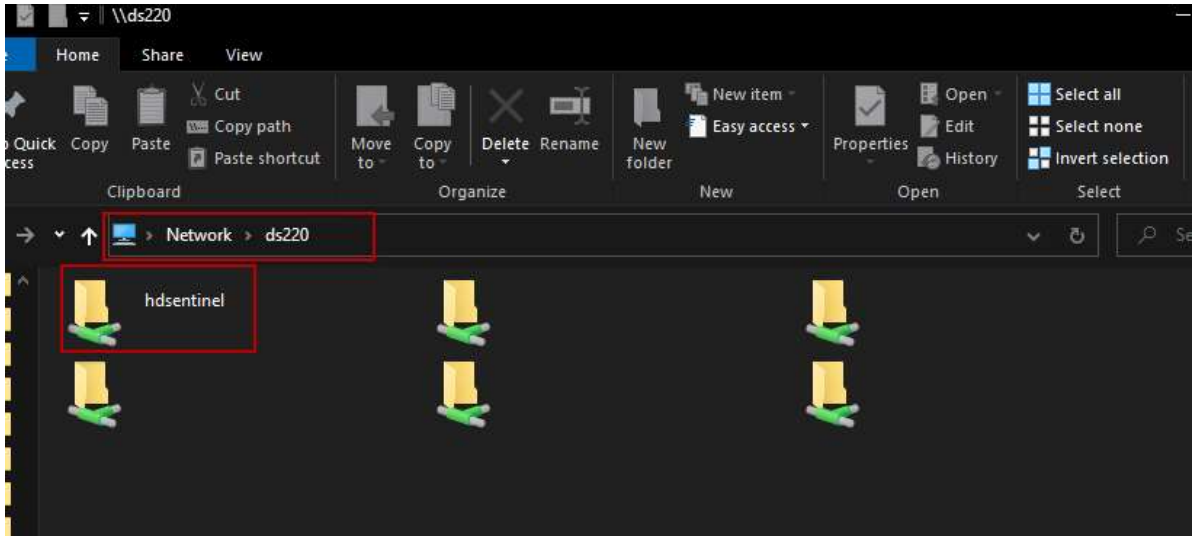


2. Verify if the shared folder can be seen from Windows Explorer:
    a. Identify the name of your Synology NAS for SMB by going to the path below:
        i. Control Panel -> File Services -> SMB -> Enable SMB service (must be ticked)
        ii. Check the value in “PC (Windows Explorer)”:



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:

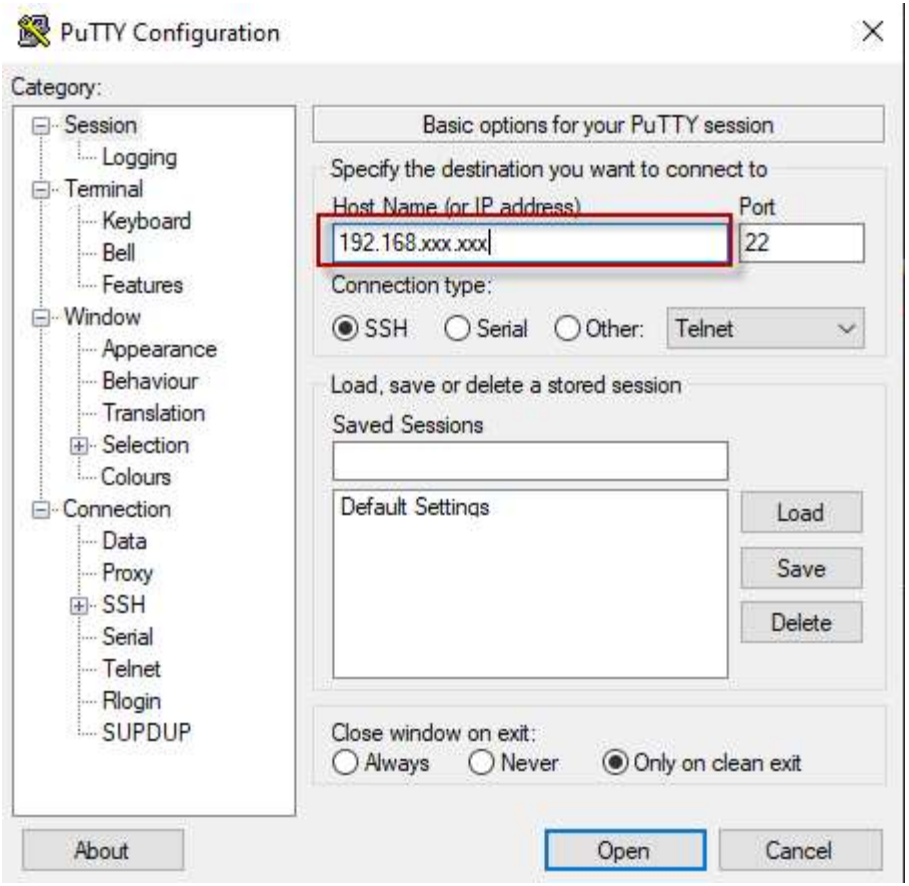


DETAILED STEPS (SSH CONNECTION SETUP):

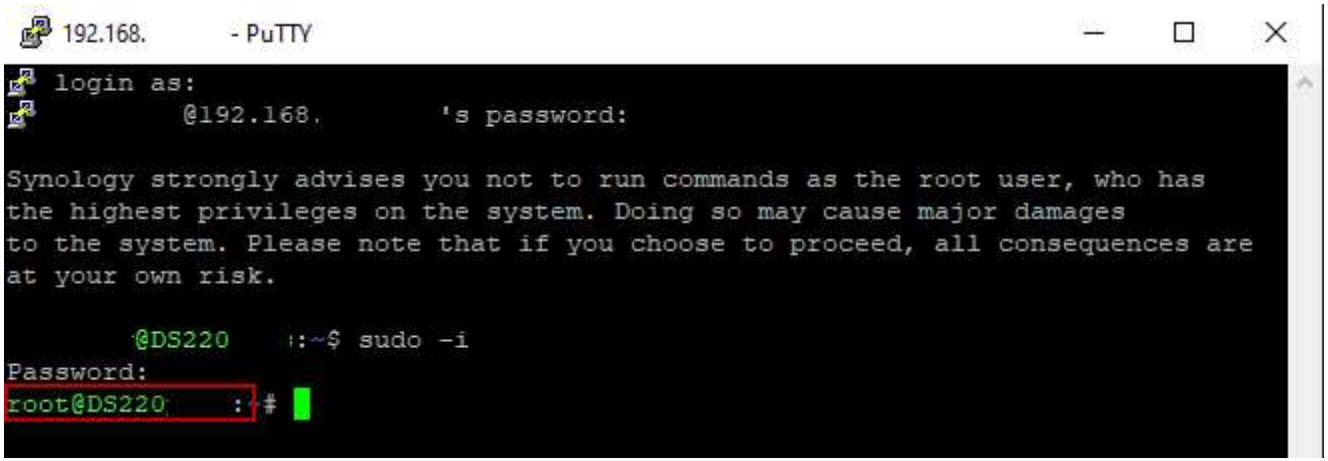
LOGIN TO SYNOLOGY NAS VIA SSH

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

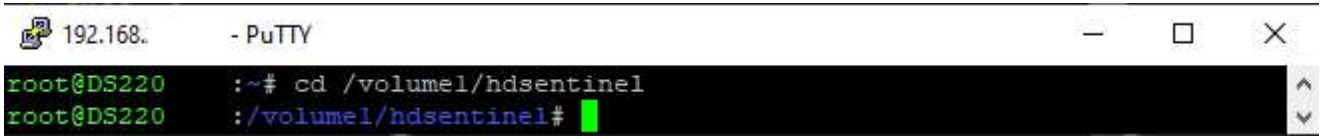
2. Open PuTTY and connect to Synology NAS via SSH:
    a. Input the IP address of your Synology NAS (retain the default port number) and click “Open”:



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:

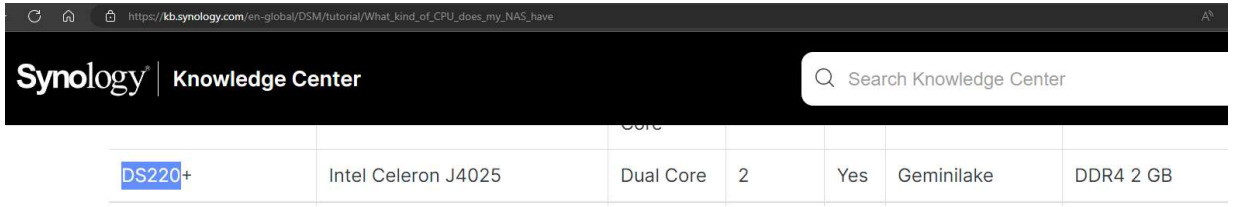


c. Change to the shared folder by typing “cd /volume1/hdsentinel”:



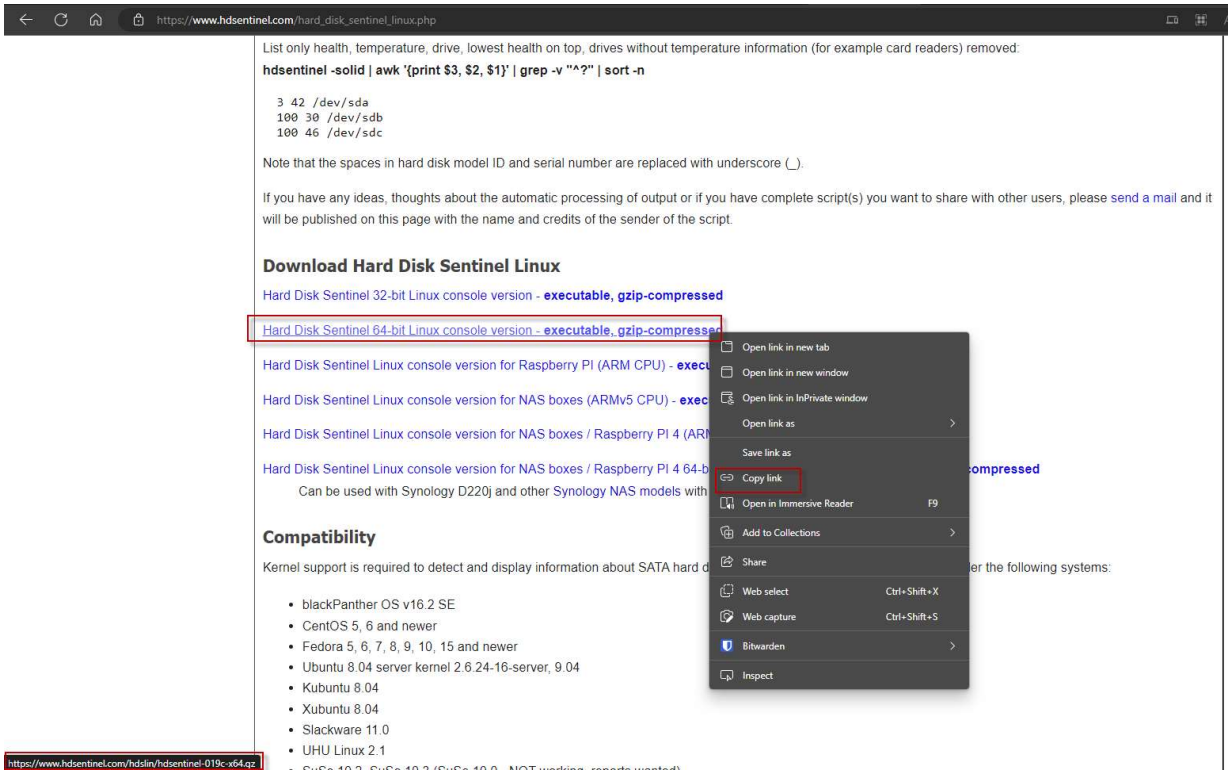
INSTALL HDSENTINEL FOR SYNOLOGY NAS

1. Download prerequisites:
    a. The DS220 Plus has an Intel 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 DS220 Plus, the 64-bit linux 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

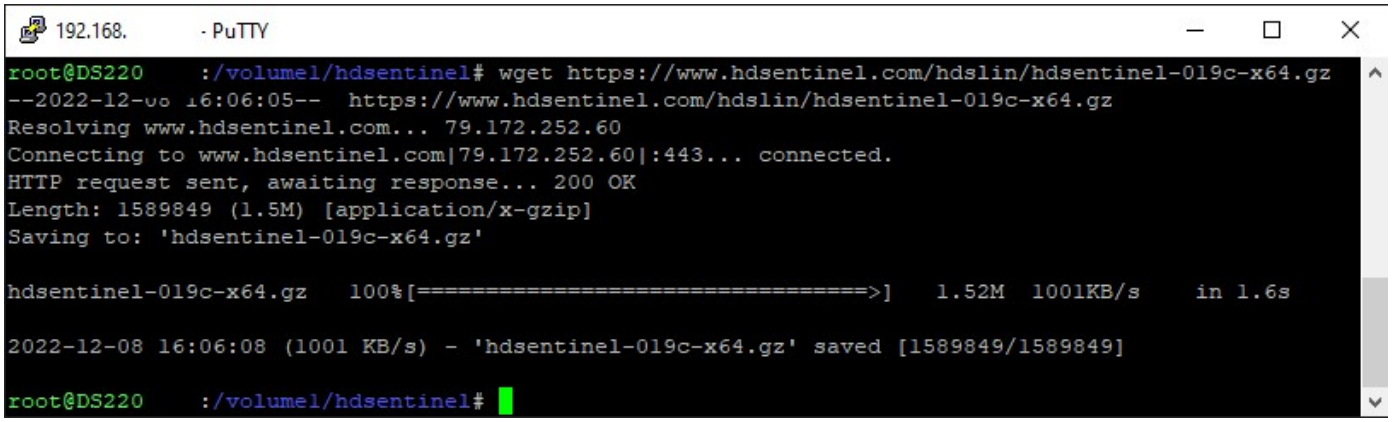
ii. Note the URL of the download link by doing any of the following:
    1. Hovering the mouse on the download icon and noting the text in the status bar
    2. Right clicking the link, then click “copy link”
    3. Sample screenshot can be seen below:



iii. The latest version when this guide is written is version 0.19. 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-019c-x64.gz”:

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

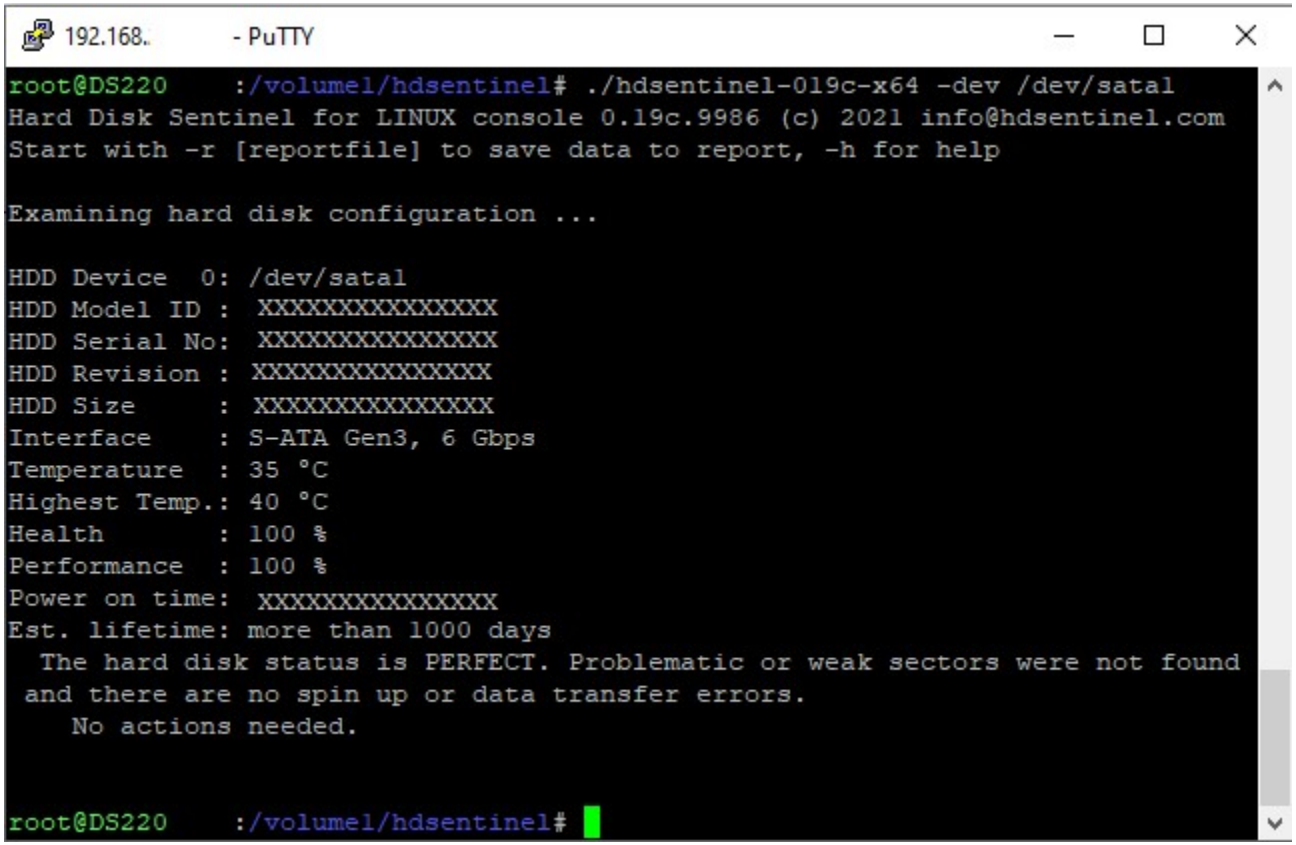


c. After downloading the installer, perform the following steps to prepare the installer:
    i. Decompress the downloaded installer by typing the command below:
        1. "gunzip hdsentinel-019c-x64.gz"
            a. The command doesn't return any status, but should not raise any error
    ii. Change permission for the downloaded installer by typing the command below:
        1. "chmod 0755 hdsentinel-019c-x64"
            a. The command doesn't return any status, but should not raise any error

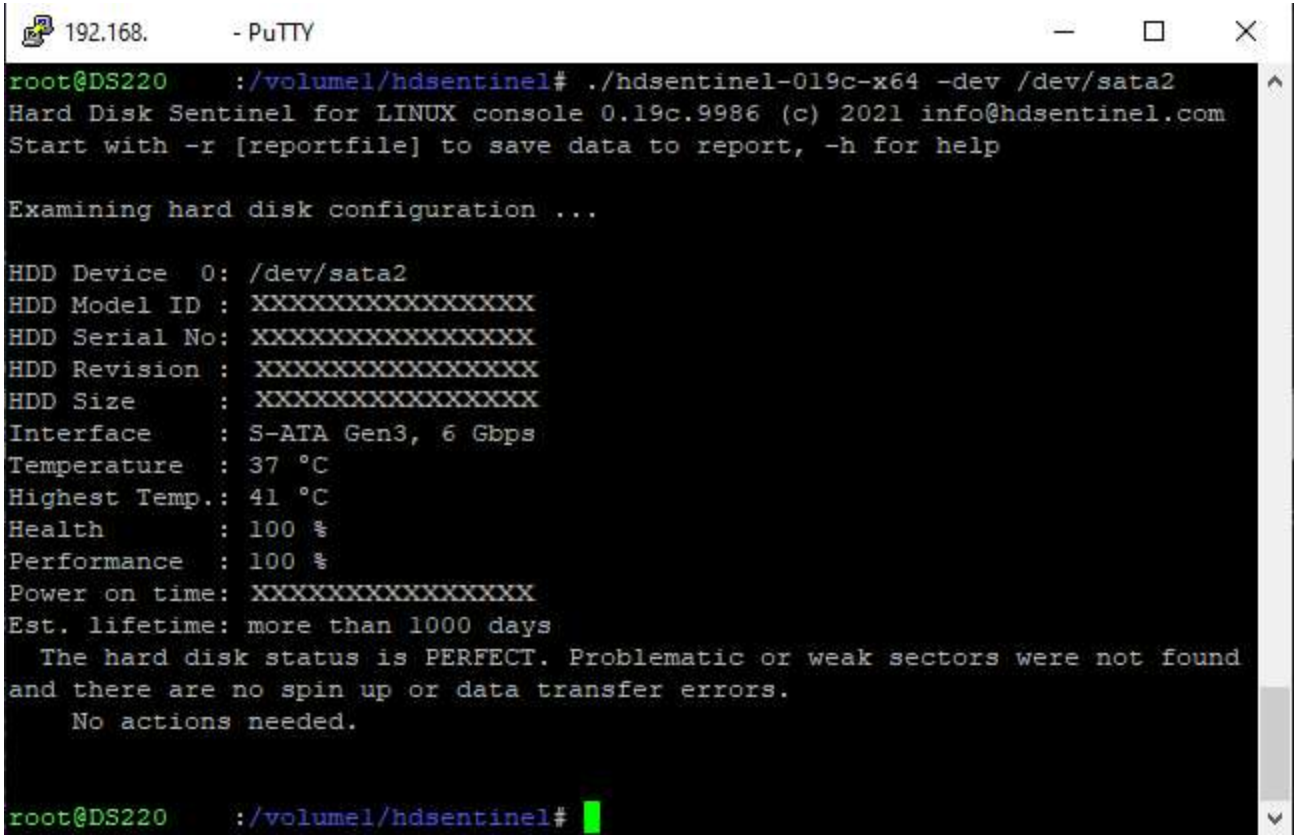
d. Sample screenshot after doing the previous steps to prepare the installer:

TEST IF HDSENTINEL IS WORKING FOR SYNOLOGY NAS

1. Type the command below to check the report for the 1st hard disk:
    a. ./hdsentinel-019c-x64 -dev /dev/sata1
    b. There should be a detailed information for the 1st hard disk, which can look like the screen below:



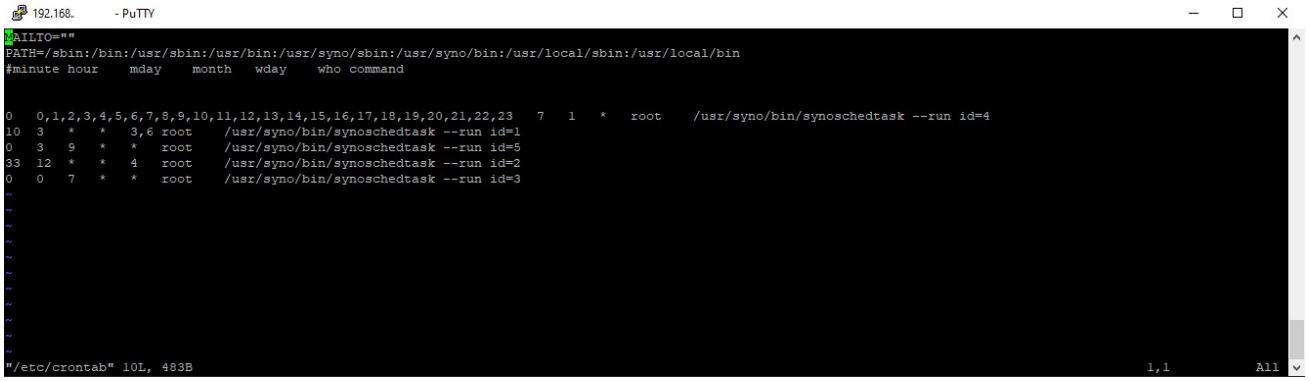
2. Type the command below to check the report for the 2nd hard disk:
    a. ./hdsentinel-019c-x64 -dev /dev/sata2
    b. There should be a detailed information for the 2nd hard disk, which can look like the screen below:



SCHEDULE BACKGROUND JOB FOR HDSENTINEL ON SYNOLOGY NAS

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

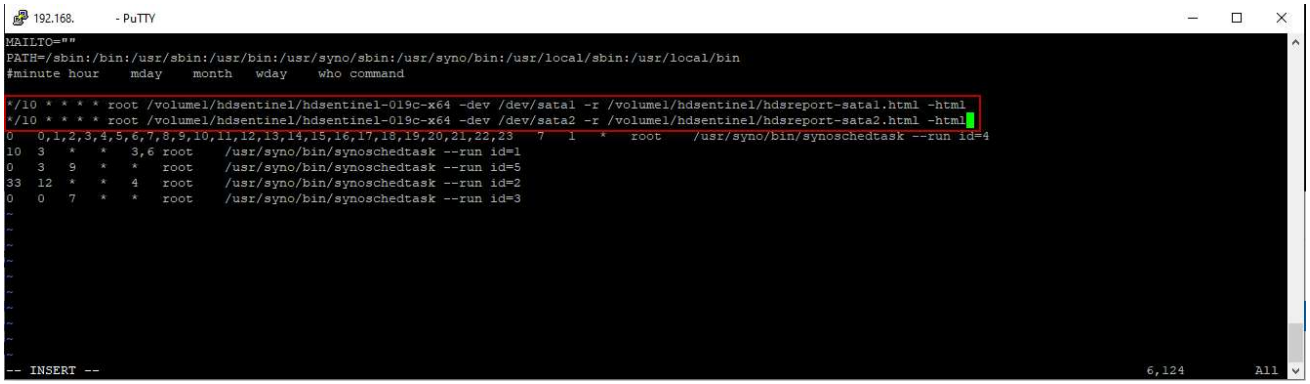
b. The VIM editor will be displayed:



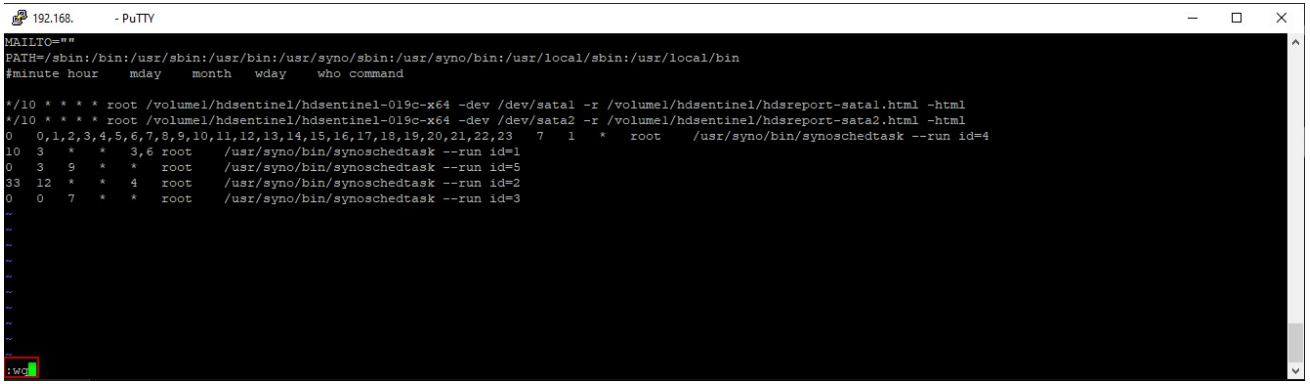
2. Once in the VIM editor, perform the following steps:
   a. Press “down” arrow four (4) times to go down four (4) lines
   b. Press “o” key to insert a new line
   c. We would like to generate the hdsentinel report for the Synology NAS HDDs every ten (10) minutes. Paste the following lines in the editor (right-click the mouse in PuTTY to paste the line):

**/10 * * * * root /volume1/hdsentinel/hdsentinel-019c-x64 -dev /dev/sata1 -r /volume1/hdsentinel/hdsreport-sata1.html -html*
**/10 * * * * root /volume1/hdsentinel/hdsentinel-019c-x64 -dev /dev/sata2 -r /volume1/hdsentinel/hdsreport-sata2.html -html*

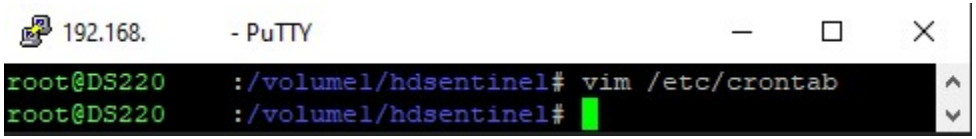
   d. Sample output should look like below:



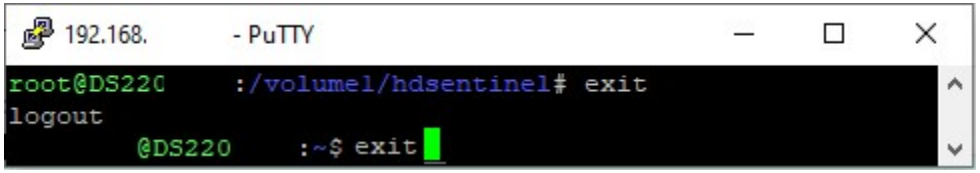
   e. Press “ESC” key, then type the values “:wq”. The values should appear in the lower left part of the window:



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



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

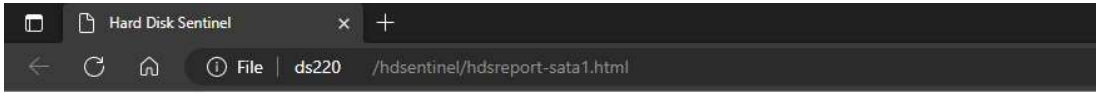


DETAILED STEPS (HDSENTINEL FOR WINDOWS SETUP):

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:



Hard Disk Sentinel

www.hdsentinel.com

General Information

Application Information

Installed Version	:	Hard Disk Sentinel 0.19c
Current Date And Time	:	8-12-22 17:30:01

Computer Information

Computer Name	:	
MAC Address	:	

System Information

OS Version	:	Linux : 4.4.180+ (#42962 SMP Tue Oct 18 15:07:03 CST 2022)
Process ID	:	3684
Uptime	:	

Physical Disk Information - Disk:

Hard Disk Summary

Hard Disk Number	:	0
Hard Disk Device	:	/dev/sata1
Interface	:	S-ATA Gen3, 6 Gbps
Hard Disk Model ID	:	
Firmware Revision	:	
Hard Disk Serial Number	:	
Total Size	:	
Current Temperature	:	35 °C (95 °F)
Maximum Temperature (during Entire Lifespan)	:	40 °C (104 °F)
Power On Time	:	
Estimated Remaining Lifetime	:	more than 1000 days
Health	:	♦ 100 % (Excellent)
Performance	:	♦ 100 % (Excellent)

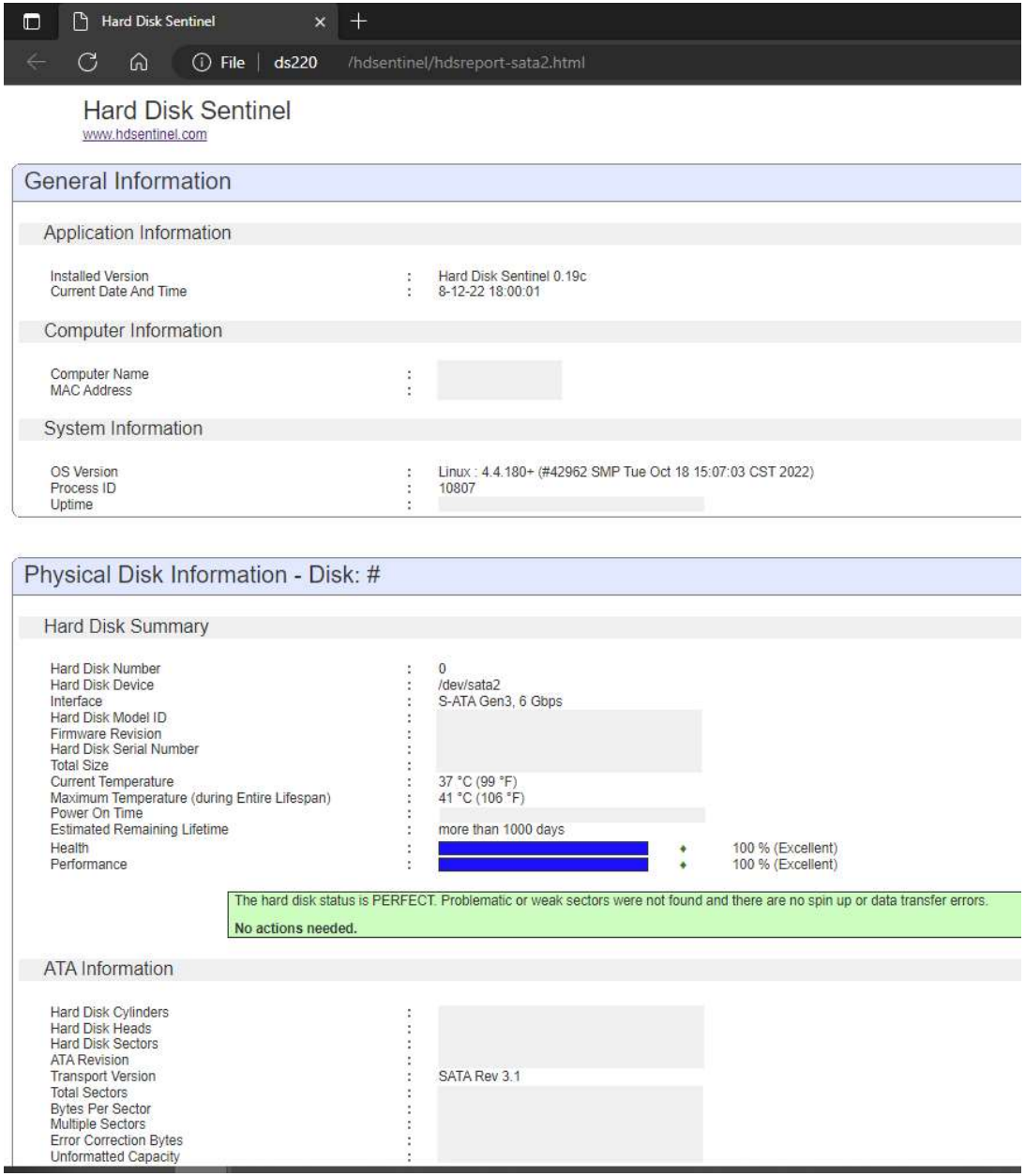
The hard disk status is PERFECT. Problematic or weak sectors were not found and there are no spin up or data transfer errors.

No actions needed.

ATA Information

Hard Disk Cylinders	:	
Hard Disk Heads	:	
Hard Disk Sectors	:	
ATA Revision	:	
Transport Version	:	SATA Rev 3.1
Total Sectors	:	
Bytes Per Sector	:	
Buffer Size	:	
Multiple Sectors	:	
Error Correction Bytes	:	

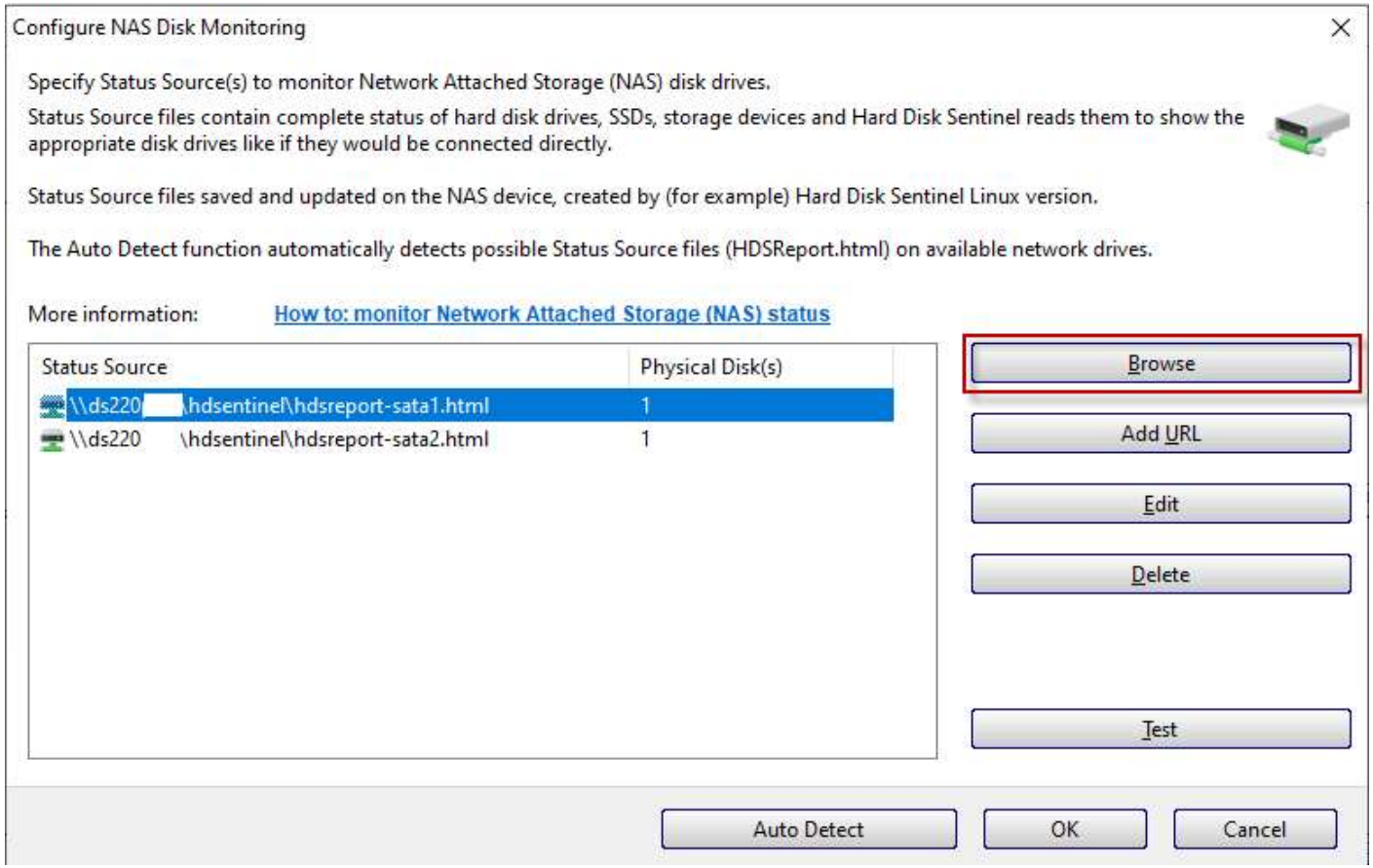
b. Sample for Disk 2:


Hard Disk Sentinel
File | ds220 /hdsentinel/hdsreport-sata2.html
Hard Disk Sentinel
www.hdsentinel.com
General Information
Application Information
Installed Version : Hard Disk Sentinel 0.19c
Current Date And Time : 8-12-22 18:00:01
Computer Information
Computer Name :
MAC Address :
System Information
OS Version : Linux : 4.4.180+ (#42962 SMP Tue Oct 18 15:07:03 CST 2022)
Process ID : 10807
Uptime :
Physical Disk Information - Disk: #
Hard Disk Summary
Hard Disk Number : 0
Hard Disk Device : /dev/sata2
Interface : S-ATA Gen3, 6 Gbps
Hard Disk Model ID :
Firmware Revision :
Hard Disk Serial Number :
Total Size :
Current Temperature : 37 °C (99 °F)
Maximum Temperature (during Entire Lifespan) : 41 °C (106 °F)
Power On Time :
Estimated Remaining Lifetime : more than 1000 days
Health : 100 % (Excellent)
Performance : 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.
No actions needed.
ATA Information
Hard Disk Cylinders :
Hard Disk Heads :
Hard Disk Sectors :
ATA Revision :
Transport Version : SATA Rev 3.1
Total Sectors :
Bytes Per Sector :
Multiple Sectors :
Error Correction Bytes :
Unformatted Capacity :

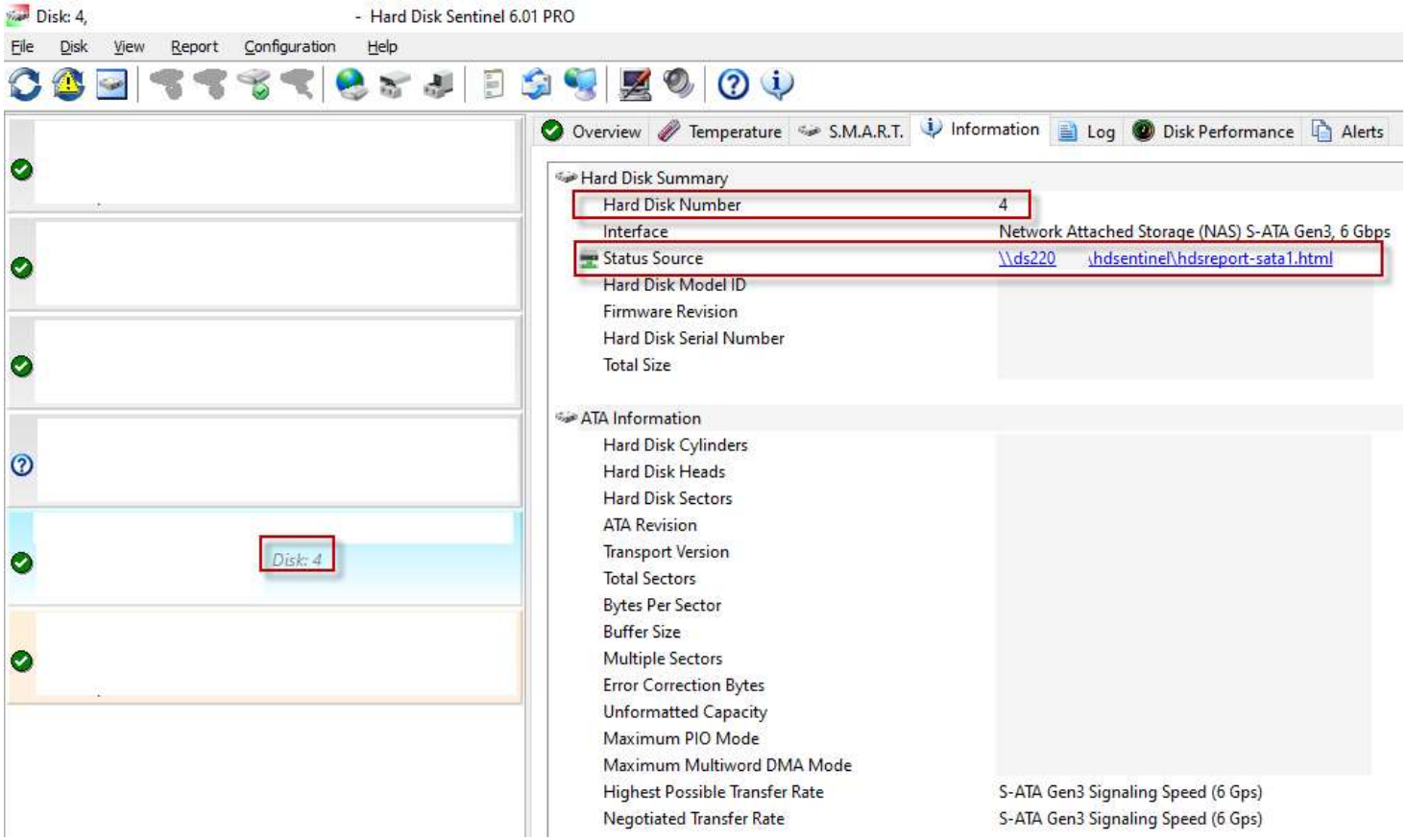
CONFIGURE SYNOLOGY NAS DISK MONITORING

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

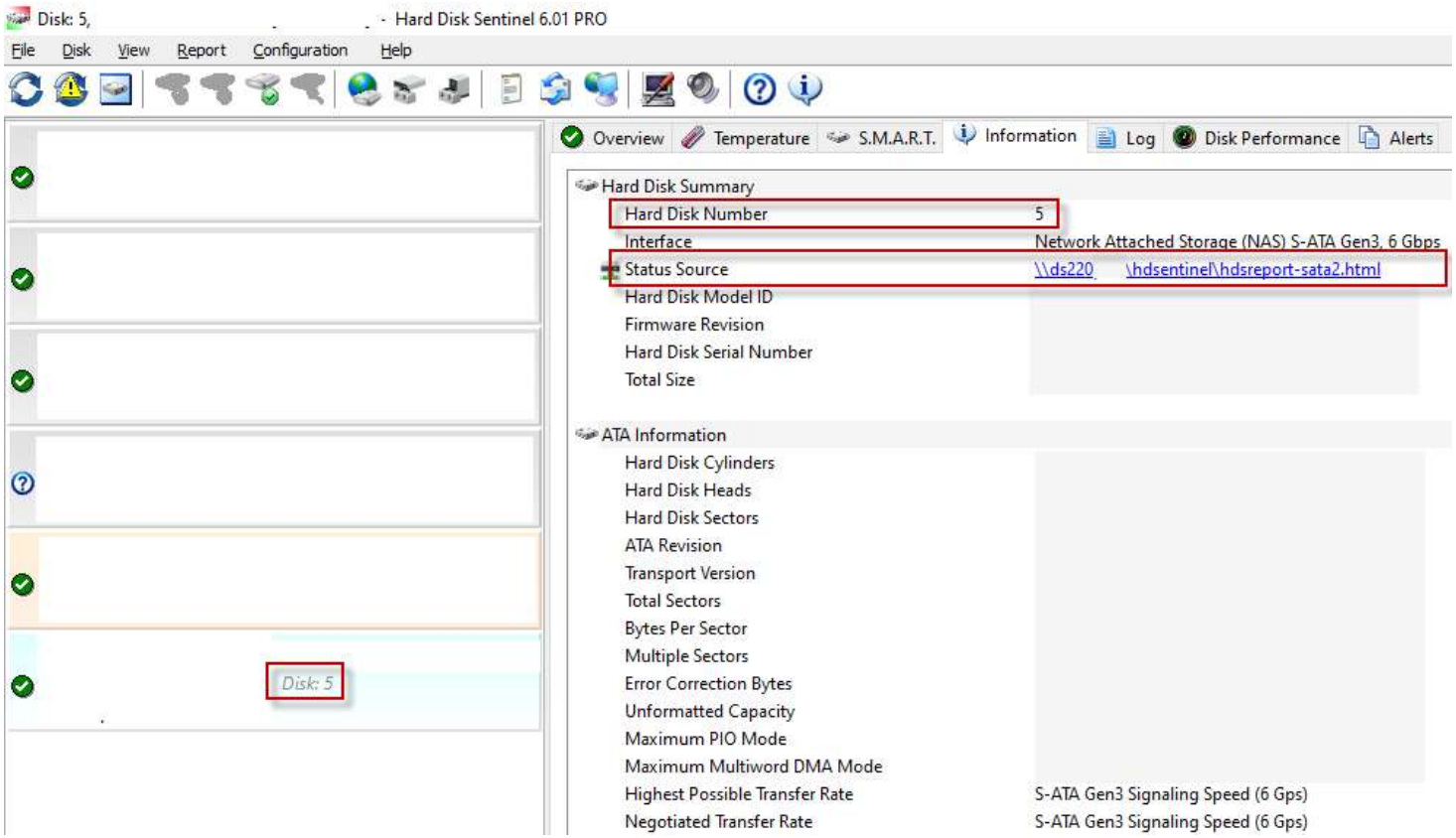
2. Click “Browse” and load the two (2) HTML files generated by the hdsentinel for Synology NAS:



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:



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:

- By: Vince Leonardo
- Date: 2022 December 8