

# Multi-Report

Quick Start Guide  
Version 3.1

26 May 2025



# What is Multi-Report?

- Multi-Report was written a long time ago under a different name, with the purpose of augmenting FreeNAS 8.x (and beyond) for running SMART tests, and monitoring for drive failures as FreeNAS was not very good at it reliably.
- One major change has occurred in version 3.1, the S.M.A.R.T. testing has been removed from Multi-Report and moved into a companion script called “Drive\_Selftest”. This makes maintaining the script easier and the Drive\_Selftest script can run on its own for those people who just want to run the smart tests easily and not receive a report.
- To this day this script still augments for some shortcomings of TrueNAS (scheduling NVMe drive SMART test), and to make people feel a little safer knowing the testing is going on and alarms will be generated if Multi-Report detects a problem. Just call it “Peace of Mind”.
- SMART was designed with the intention to warn a user of pending Hard Drive doom within 0 to 24 hours of a failure. This is not fool proof, not a magic bullet. SMART is not perfect however if it does predict a failure and you are aware of it, you can fend off some danger. There are some failures that cannot be predicted and some failures happen very fast. All the data provided by this script will assist you moving forward once a failure or indication of a pending failure is identified.
- Additionally, I highly recommend running a SMART Short test once a day and running a SMART Long test once a week. If you have a lot of drives, only schedule a few drives a day (Monday), a few others (Wednesday), you get the point. **The new Drive\_Selftest** can automate the scheduling of your SMART tests, example: Daily Short tests and Weekly or Monthly Long Tests, and it is very simple to setup.
- As you look at the chart data, note that the column titles should be self-explanatory.
- Pay attention to the CRON setup between CORE and SCALE, they are different.

# Quick Setup Information

## Place script on your server (location is for example only)

- Create a new dataset titled 'scripts'. Path: /mnt/pool/scripts
  - Make the dataset:
    - Name: scripts
    - Share Type/Dataset Preset: SMB
    - SCALE: Create SMB Share checkbox
    - Submit/Save
- You should now have access to the SMB share you created.
- Copy the script to the 'scripts' dataset, rename the script to "multi\_report.sh".
- Make the script executable: "chmod +x multi\_report.sh"

1

## Setting up the CRON JOB

- (CORE) -> Tasks -> Cron Jobs -> ADD
- (SCALE) -> System -> Advanced -> Cron Jobs -> ADD
- Description: multi\_report
- Command (CORE): ./mnt/pool/scripts/multi\_report.sh
- **Command (SCALE): cd/mnt/pool/scripts && ./multi\_report.sh**
- Run As User: root (or any privileged account)
- Schedule: Custom
  - Preset: Daily
  - Minutes: 0, Hours: 2, Days: \*
  - Select DONE
- Hide Standard Output: Unchecked
- Hide Standard Error: Unchecked
- Enabled: Checked
- Save

3

## First and Second Run

- As a privileged user, open a shell/SSH window and change directory 'cd' to cd/mnt/pool/scripts
- First Run: Enter ./multi\_report.sh -config
  - Follow the instructions to create a multi\_report\_config.txt (configuration file).
- Second Run: Enter ./multi\_report.sh
  - The script should run without error.

2

## Notes:

- To customize Multi-Report run the script with the '-config' switch and select Advanced Configuration. There are a large variety of things which can be customized for almost every situation. If you can't figure out how to do something, drop Joe a message.
- In order to run SMART Self-tests on NVMe drives, you must set NVM\_Smartmontools\_74\_Override="enable". You can manually edit the multi\_report\_config.txt file or use the Advanced Configuration section.
- If you run into a real problem, search the TrueNAS forums first, and if you cannot figure it out, use the '-dump email' switch to send me the required information I need to assist you. I will return an email to you once I have looked at it. I normally get back to people in less that 24 hours, keep in mind time zones, I'm in the USA, NY (ET).

4

# Anatomy of the Multi-Report Email

truenas - Script Update Available



[REDACTED]@hotmail.com>

Subject Line with  
Summary (Warning,  
Caution, Script Update  
Available, or Custom)

Multi-Report v3.17 dtd:2025-05-25 (TrueNAS SCALE - Fangtooth 25.04.0)  
Report Run 25-May-2025 Sunday @ 11:43:16  
Total Memory: 19Gi, Used Memory: 13Gi, Free Memory: 5.3Gi, Swap Used: 0B  
System Uptime: 13 days, 19:28:59.720814  
Script Execution Time: 10 Seconds  
SENDEMAIL.PY UPDATE AVAILABLE: V1.10 --> V1.11

Version Info  
Date/Time of Report  
RAM/SWAP Specs  
Uptime  
Run Duration of the Script  
Updates if available

Total Lifetime Data  
Values for all the drives  
in a pool.

## \*ZPool/ZFS Status Report Summary

Pool Name	Status	Pool Size	Free Space	Used Space	Frag	Read Errors	Write Errors	Cksum Errors	Scrub Repaired Bytes	Scrub Errors	Last Scrub Age	Last Scrub Duration	Total Data Read / Total Data Written
boot-pool	ONLINE	14.52G	4.52G	10.0G (66%)	41%	0	0	0	0B	0	1	00:00:20	Virtual Drive
farm	ONLINE	6.92T	3.77T	3.15T (44%)	0%	0	0	0	0B	0	18	00:27:32	515.1 TB / 30.7 TB

\*Data obtained from zpool and zfs commands.



# Anatomy of the Multi-Report Email

SMR Checking  
Yellow = Alarm Override

"0" = Compensated Value  
"2" = Real Value, Yellow = Alarm Override  
Purpose: To easily identify new alarms

30 Day Rolling Average, can  
be set to Calendar Month

Spinning Rust Summary Report

Device ID	Serial Number	Model Number	HDD Capacity	RPM	SMART Status	Curr Temp	Temp Min	Temp Max	Power On Time	Start Stop Count	Load Cycle Count	Spin Retry Count	Re-alloc Sectors	Re-alloc Evnt	Curr Pend Sectors	Offl Unc Sectors	UDMA CRC Error	Raw Error Rate	Seek Error Rate	Multi Zone Error	He Level	Last Test Age	Last Test Type (time conducted)	Total Data Read / Written	30-Day Read / Written
/dev/sdd SMR	S2X1J90CA48799	ST500LM012 HN-M500MBB	500.00G	5400	PASSED	32°C	26°C	35°C	9110	368	31521	0	0	0	0	0	0(2)	0	0	0(31)	---	0	Short offline (9088 hrs)	3.1 GB / 3.4 GB	3.1 GB / 111 MB

Total Lifetime Data Read or  
Written to the drive

SSD Summary Report

Device ID	Serial Number	Model Number	SSD Capacity	SMART Status	Curr Temp	Temp Min	Temp Max	Power On Time	Wear Level	Re-alloc Sectors	Re-alloc Evnt	Curr Pend Sectors	Offl Unc Sectors	UDMA CRC Error	Last Test Age	Last Test Type (time conducted)	Total Data Read / Written	30-Day Read / Written
/dev/sdc	P02618119268	PLEXTOR PX-256M7VC	256.00G	PASSED	47°C	---	---	3242	100	0	0	---	0	0(3)	0	Short offline (3220 hrs)	18.2 GB / 39.7 GB	18.2 GB / <1 MB
/dev/sde	S5B3NS0NB01328R	Samsung SSD 860 EVO 1TB	1.00T	PASSED	28°C	25°C	39°C	835	100	0	---	---	---	0(6007)	0	Short offline (813 hrs)	262.4 GB / 523.7 GB	262.4 GB / 141 MB

The power state of the  
NVMe when the script is  
near completion

"---" means No Value is available for this drive

NVMe Summary Report

Device ID	Serial Number	Model Number	NVMe Capacity	SMART Status	Critical Warning	Curr Temp	Power State	Power On Time	Wear Level	Media Errors	Last Test Age	Last Test Type (time conducted)	Total Data Read / Written	30-Day Read / Written
/dev/nvme0	511230818150000088	Nextorage SSD NEM-PA4TB	4.00T	PASSED	GOOD	32°C	PS-4 0.0440W	988	100	0	0	Short (988 hrs)	93.1 TB / 2.6 TB	93.1 TB / 2.5 GB
/dev/nvme1	511230818150000051	Nextorage SSD NEM-PA4TB	4.00T	PASSED	GOOD	32°C	PS-4 0.0440W	988	100	0	0	Short (988 hrs)	92.9 TB / 2.5 TB	92.9 TB / 3.6 GB
/dev/nvme2	511230818150000096	Nextorage SSD NEM-PA4TB	4.00T	PASSED	GOOD	32°C	PS-3 0.0620W	987	100	0	0	Short (987 hrs)	93.0 TB / 2.6 TB	93.0 TB / 3.6 GB
/dev/nvme3	511230818150000089	Nextorage SSD NEM-PA4TB	4.00T	PASSED	GOOD	33°C	PS-3 0.0620W	988	100	0	0	Short (987 hrs)	92.9 TB / 2.5 TB	92.9 TB / 2.5 GB

How many 24 hour periods (value is based on 24 hours)  
have past since last S.M.A.R.T. test

A Short S.M.A.R.T. Test Completed  
(987) Hours the test completed. If the last test  
was a Long test, that would be indicated here

# Anatomy of the Multi-Report Email

Warranty Remaining

Warranty Exceeded  
(Yellow Background)

Total Lifetime Data Read or  
Written to the drive

Spinning Rust Summary Report

Device ID	Serial Number	Model Number	HDD Capacity	RPM	SMART Status	Warranty	Curr Temp	Temp Min	Temp Max	Power On Time	Start Stop Count	Load Cycle Count	Spin Retry Count	Re-alloc Scts	Re-alloc Evnt	Curr Pend Scts	Offl Unc Scts	UDMA CRC Error	Raw Error Rate	Seek Error Rate	Multi Zone Error	He Level	Last Test Age	Last Test Type (time conducted)	Lifetime Data Read / Written	30-Day Read / Written
/dev/ada0	ZR13JRL0	ST6000VN001-2BB186	6.00T	5425	PASSED	9m 29d	36°C	31°C	40°C	18608	141	863	0	0	---	0	0	0	0	0	---	---	0	90% Remaining (18608 hrs)	109.9 TB / 20.5 TB	959.3 GB (70%) / 289.7 GB (30%)
/dev/ada1	K1JRSWLD	HGST HDN726060ALE614	6.00T	7200	PASSED	4y 7m 28d	41°C	34°C	46°C	57757	327	4251	0	0	0	0	0	0	0	0	---	---	0	80% Remaining (57757 hrs)	313.6 TB / 69.2 TB	1.0 TB (76%) / 255.7 GB (24%)
/dev/ada2	K1JUMW4D	HGST HDN726060ALE614	6.00T	7200	PASSED	4y 7m 28d	44°C	35°C	46°C	57757	328	4220	0	0	0	0	0	0	0	0	---	---	0	90% Remaining (57756 hrs)	309.5 TB / 68.9 TB	1.0 TB (75%) / 258.2 GB (25%)
/dev/ada3	K1GVD84B	HGST HDN726060ALE614	6.00T	7200	PASSED	4y 7m 16d	38°C	33°C	43°C	57757	327	4272	0	0	0	0	0	0	0	0	---	---	0	80% Remaining (57757 hrs)	315.3 TB / 69.3 TB	1.0 TB (76%) / 262.8 GB (24%)

"---" means No Value Exists

(xx%) is the percentage of  
Writing to Reading for the  
given period of time

NVMe Summary Report

Device ID	Serial Number	Model Number	NVMe Capacity	SMART Status	Warranty	Critical Warning	Curr Temp	Power State	Power On Time	Wear Level	Media Errors	Last Test Age	Last Test Type (time conducted)	Lifetime Data Read / Written	30-Day Read / Written
/dev/nvme0	HBSE43211100274	HP SSD EX900 Plus 1TB	1.02T	PASSED	7m 4d	GOOD	35°C 37/35	PS-4 0.0090W	4291	99	0	0	Short self-test in progress 89% Remaining (4291 hrs)	5.7 TB / 2.5 TB	743.0 GB (100%) / 175 MB (0%)

# Anatomy of the Multi-Report Email

## Multi-Report Text Section

- 1) External Configuration File (Present) dtd:2025-04-05
- 2) Statistical Data Log (Present) @ (/mnt/farm/scripts/statisticalsmartdata.csv)

### Attachments:

- 1) TrueNAS Configuration File (Mon) - (Enabled)
- 2) Multi Report Configuration File (Mon) - (Enabled)
- 3) Statistical Log (Mon) - (Enabled)
- 4) HDD/SSD Partition Backup (Mon) - (Disabled)
- 5) Sendemail (v1.10)

### Checks/Tests:

- 1) SMR Checking - (Enabled) - No Errors Detected
- 2) Partition Check - (Enabled) - No Errors Detected
- 3) Spencer - (Enabled) - No Errors
- 4) S.M.A.R.T. Testing External File (v1.05) - (Enabled)
  - a) Short Test Authorized Test Days (Mon, Tue, Wed, Thu, Fri, Sat) (~1 Drive(s) per day)  
Drives Testing: (none today) - Test Mode 1
  - b) Long Test Authorized Test Days (Mon, Tue, Wed, Thu, Fri, Sat) (~1 Drive(s) per day)  
Drives Testing: (none today) - Test Mode 1
  - c) A SCRUB or RESILVER is NOT in progress.
- 5) Seagate Drive FARM Check - (Enabled)

### UPDATE AVAILABLE LOG FILE

SendEmail.py Update Is Available. Use '-update\_sendemail' switch to update.

END

### ##### ZPool status report for boot-pool #####

pool: boot-pool  
state: ONLINE  
scan: scrub repaired 0B in 00:00:20 with 0 errors on Sat May 24 03:45:21 2025  
config:

NAME	STATE	READ	WRITE	CKSUM
boot-pool	ONLINE	0	0	0
sda3	ONLINE	0	0	0

errors: No known data errors

Drives for this pool are listed below:

Virtual Drive d21260c2-09c2-46e3-8ea8-a8ce21295375 -> sda3 -> S/N:01000000000000000001

The Text Section contains:  
Configuration Information and  
Test Information

### Update and Error Logs

Three logs can be displayed,  
Caution, Warning, and Update.

If you have an alarm on the  
Chart Section, look here for  
amplifying information.

### Zpool Status

Besides the standard zpool status data, this  
example tells you the drive is "Virtual", the gptid  
number, the Drive ID, and Drive Serial Number.

Use this cross reference data to locate the drive  
serial number and use the drive serial number  
when troubleshooting a drive problem.

# Anatomy of the Multi-Report Email

## Multi-Report Text Section

- 1) External Configuration File (Present) dtd:2025-04-07
- 2) Statistical Data Log (Present) @ (/mnt/farm2/scripts/statisticalsmartdata.csv)

### Attachments:

- 1) TrueNAS Configuration File (Mon) - (Enabled)
- 2) Multi Report Configuration File (Mon) - (Enabled)
- 3) Statistical Log (Mon) - (Enabled)
- 4) HDD/SSD Partition Backup (Mon) - (Disabled)
- 5) Sendemail (Not Required)

### Checks/Tests:

- 1) SMR Checking - (Enabled) - No Errors Detected
- 2) Partition Check - (Enabled) - No Errors Detected
- 3) Spencer - (Enabled) - No Errors
- 4) S.M.A.R.T. Testing External File (v1.05) - (Enabled)
  - a) Short Test Authorized Test Days (Mon, Tue, Wed, Thu, Fri, Sat, Sun) (~1 Drive(s) per day)  
Drives Testing: (ada0 ada1 ada2 nvme0) - Test Mode 2
  - b) Long Test Authorized Test Days (Mon, Tue, Wed, Thu, Fri, Sat, Sun) (~1 Drive(s) per day)  
Drives Testing: (ada3) - Test Mode 1
  - c) A SCRUB or RESILVER is NOT in progress.
- 5) Seagate Drive FARM Check - (Enabled)

Drive K1JRSWLD Warranty Expired on 2020-09-30  
Drive K1JUMW4D Warranty Expired on 2020-09-30  
Drive K1GVD84B Warranty Expired on 2020-10-12

### ##### ZPool status report for farm1 #####

pool: farm1  
state: ONLINE  
status: Some supported and requested features are not enabled on the pool.  
The pool can still be used, but some features are unavailable.  
action: Enable all features using 'zpool upgrade'. Once this is done,  
the pool may no longer be accessible by software that does not support  
the features. See zpool-features(7) for details.  
scan: scrub repaired 0B in 00:36:12 with 0 errors on Sun May 4 00:36:12 2025  
config:

NAME	STATE	READ	WRITE	CKSUM
farm1	ONLINE	0	0	0
gptid/d01351ec-050a-11ef-beaf-000c296fd555	ONLINE	0	0	0

errors: No known data errors

List of attachments that will be included during a Monday (default) run.

Sendemail is used or not used.

If SMART Testing is enabled:  
List of drives being Short and Long tested this run.

Also report if a SCRUB or Resilver operation is in progress as these operations by default will not allow a SMART Long test to be run.

Seagate Drive FARM Check  
This may be disabled if you have already run the check and it will slightly speed up the script.

If Warranty is enabled and when the drives have expired, the drives will be listed with the expiration date.

The Chart section will display a countdown or count-up (yellow background) as well.



# Anatomy of the Multi-Report Email

##### ZPool status report for farm #####

```
pool: farm
state: DEGRADED
status: One or more devices are faulted in response to persistent errors.
        Sufficient replicas exist for the pool to continue functioning in a
        degraded state.
action: Replace the faulted device, or use 'zpool clear' to mark the device
        repaired.
scan: scrub repaired 472K in 00:34:18 with 0 errors on Sat Jan 11 13:06:34 2025
config:
```

NAME	STATE	READ	WRITE	CKSUM	
farm	DEGRADED	0	0	0	
raidz2-0	DEGRADED	0	0	0	
f41cd7e4-df4c-4f0c-9c24-62a4343c1868	ONLINE	0	0	0	
21e5a651-701d-4150-82c6-446211a8f898	ONLINE	0	0	0	
f18e77b8-82cd-426c-b6e6-9bcc9778e511	FAULTED	15	0	0	too many errors
cee96768-462c-437f-b35b-ab3abcd8fd0f	ONLINE	0	0	0	
d3549c3a-2f33-41b8-8fdb-4096c3fb5248	ONLINE	0	0	0	

errors: No known data errors

Drives for this pool are listed below:

```
21e5a651-701d-4150-82c6-446211a8f898 -> nvme1n1p2 -> S/N:511230818150000096
cee96768-462c-437f-b35b-ab3abcd8fd0f -> nvme4n1p2 -> S/N:511230818150000088
d3549c3a-2f33-41b8-8fdb-4096c3fb5248 -> nvme2n1p2 -> S/N:511230818150000450
f18e77b8-82cd-426c-b6e6-9bcc9778e511 -> nvme3n1p2 -> S/N:511230818150000089 PROBLEM
f41cd7e4-df4c-4f0c-9c24-62a4343c1868 -> nvme0n1p2 -> S/N:511230818150000051
```

All drives for pool called “farm” in this example identified by three things:  
gptid -> Drive ID -> Drive Serial Number

This makes it significantly easier to identify which drive actually failed by serial number.

PROBLEM does not mean the drive has fail. It simply means that a problem is related to this physical drive. It could be a ZFS problem (as in this example) or a real hardware failure. Just do not jump to conclusions without looking at all the data.

# Anatomy of the Multi-Report Email

##### SMART status report for sdd drive (ST500LM012 HN-M500MBB : S2X1J90CA48799) #####

SMART overall-health self-assessment test result: PASSED

ID#	ATTRIBUTE_NAME	FLAG	VALUE	WORST	THRESH	TYPE	UPDATED	WHEN_FAILED	RAW_VALUE
1	Raw_Read_Error_Rate	0x002f	100	100	051	Pre-fail	Always	-	0
2	Throughput_Performance	0x0026	056	054	000	Old_age	Always	-	6116
3	Spin_Up_Time	0x0023	091	091	025	Pre-fail	Always	-	2868
4	Start_Stop_Count	0x0032	100	100	000	Old_age	Always	-	368
5	Reallocated_Sector_Ct	0x0033	252	252	010	Pre-fail	Always	-	0
7	Seek_Error_Rate	0x002e	252	252	051	Old_age	Always	-	0
8	Seek_Time_Performance	0x0024	252	252	015	Old_age	Offline	-	0
9	Power_On_Hours	0x0032	100	100	000	Old_age	Always	-	9110
10	Spin_Retry_Count	0x0032	252	252	051	Old_age	Always	-	0
11	Calibration_Retry_Count	0x0032	100	100	000	Old_age	Always	-	132
12	Power_Cycle_Count	0x0032	100	100	000	Old_age	Always	-	361
13	Read_Soft_Error_Rate	0x003a	100	100	000	Old_age	Always	-	0
181	Program_Fail_Cnt_Total	0x0022	096	096	000	Old_age	Always	-	91972053
191	G-Sense_Error_Rate	0x0022	100	100	000	Old_age	Always	-	9
192	Power-Off_Retract_Count	0x0022	252	252	000	Old_age	Always	-	0
193	Load_Cycle_Count	0x0032	097	097	000	Old_age	Always	-	31523
194	Temperature_Celsius	0x0002	064	059	000	Old_age	Always	-	32 (Min/Max 17/41)
195	Hardware_ECC_Recovered	0x003a	100	100	000	Old_age	Always	-	0
196	Reallocated_Event_Count	0x0032	252	252	000	Old_age	Always	-	0
197	Current_Pending_Sector	0x0032	252	252	000	Old_age	Always	-	0
198	Offline_Uncorrectable	0x0030	252	252	000	Old_age	Offline	-	0
199	UDMA_CRC_Error_Count	0x0036	100	100	000	Old_age	Always	-	2
200	Multi_Zone_Error_Rate	0x002a	100	100	000	Old_age	Always	-	31
240	Head_Flying_Hours	0x0032	100	100	000	Old_age	Always	-	7528
241	Total_LBAs_Written	0x0032	095	094	000	Old_age	Always	-	6812280
242	Total_LBAs_Read	0x0032	096	094	000	Old_age	Always	-	6144661
254	Free_Fall_Sensor	0x0032	252	252	000	Old_age	Always	-	0

No Errors Logged

Most recent Short & Extended Tests - Listed by test number

# 1 Short offline Completed without error 00% 9088 -  
# 4 Extended offline Interrupted (host reset) 70% 9075 -

SCT Error Recovery Control: Read: Disabled Write: Disabled

Header to identify the report is for Drive ID 'sdd' and lists the Model Number and Serial Number

The OUTPUT of "smartctl -a"

Why did I include this in the report you ask?  
Because it is the information at the time of the report. Data can and will change so we grab it here should there be a problem to examine.

The Last SMART Short and Long Tests with the results.

TLDR Can also be set by the script, the default is 70 (7.0 seconds) when enabled. It is Disabled in this example.

# Closing Notes

Always backup your important data  
Always use an Uninterruptable Power Supply (UPS)  
Read the User Guide



If something is not running correctly, **please ensure your CRON Job setup is like the example on the Quick Setup Information.** Having the wrong command can absolutely cause problems. If you are smarter than me, share your wisdom, I will accept it openly. Having the “Hide Standard Output” unchecked provides additional data when the script is run. If you filter your emails and place these into a separate folder, it will keep you email looking clean and consolidated.

This Quick Start Guide is not an “all inclusive” resource. This is a guide. I will not cover every possible problem a drive could indicate, that is not the purpose of the guide. If you have something happen and it is not covered here, try to use Google to find out more, or ask someone. It can be much faster for you if you Google it.

If you find something wrong with the script or these instructions, please reach out to [joeschmuck2023@hotmail.com](mailto:joeschmuck2023@hotmail.com) with the issue, or run the script using the ‘-dump email’ switch to send me data to analyze and include a little message as well. Believe it or not, I appreciate the feedback, good or not so good.

And if you have a recommendation on what the default values should be within the multi\_report\_config.txt file, please reach out to me. If the change makes sense, I will implement it.