

Simple HDD/SSD Benchmarks

Christian Külker

2017-10-25

Contents

1	Introduction	1
1.1	History	1
2	Tools	2
3	Hints	2
4	Gnome Disk Utility	2
5	hdparm	3
6	smartctl	3
7	Further Reading	3
7.1	smartctl	3
8	Disclaimer of Warranty	3
9	Limitation of Liability	3

1 Introduction

This document introduces some utilities and test to help to understand the performance of Hard Disk Drives (HDD), Solid State Drives (SSD), and others.

1.1 History

Version	Date	Notes
0.1.1	2022-05-24	+Introduction, +History
0.1.0	2017-10-25	Initial release

2 Tools

```
1 smartctl
2 hdparm
3 bonnie++
4 gnome-disk-utility
5 dd
6 iohzone
```

3 Hints

Make sure the device interface (SATA/SAS/mSATA/M.2/NVMe) of the host system is the best that the disk can support. See `smartctl` for more info: SATA Version is: SATA 3.1, 6.0 Gb/s (2017: 3.0 Gb/s)

4 Gnome Disk Utility

```
aptitude install gnome-disk-utility
/usr/bin/gnome-disks
```

1. Select disk, Push cog button, select SMART Data and Self-Tests “Start Self-Test”: short, long and conveyance.
2. Select disk, Push cog button, select Benchmark

```
1 Transfer Rate:
2   Number of Samples: 100
3   Sample Size: 10 MiB (10,485,760 bytes)
4 Access Time:
5   Number of Samples: 1000
```

Make screenshot

5 hdparm

```
for i in {1..10}; do hdparm -t /dev/sdb > hdparm-t-$i.log;done  
for i in {1..10}; do hdparm -T /dev/sdb > hdparm-T-$i.log;done
```

Use a spread sheet and `psppire` to analyse.

6 smartctl

```
smartctl -a /dev/sdb > smartctl-a.log  
smartctl -i /dev/sdb > smartctl-i.log  
smartctl -x /dev/sdb > smartctl-x.log
```

7 Further Reading

- <https://wiki.archlinux.org/index.php/Benchmarking>

7.1 smartctl

- https://www.thomas-krenn.com/de/wiki/SMART_Tests_mit_smartctl
- https://www.thomas-krenn.com/de/wiki/Analyse_einer_fehlerhaften_Festplatte_mit_smartctl

8 Disclaimer of Warranty

THERE IS NO WARRANTY FOR THIS INFORMATION, DOCUMENTS AND PROGRAMS, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE INFORMATION, DOCUMENT OR THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE INFORMATION, DOCUMENTS AND PROGRAMS IS WITH YOU. SHOULD THE INFORMATION, DOCUMENTS OR PROGRAMS PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

9 Limitation of Liability

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE INFORMATION, DOCUMENTS OR PROGRAMS AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE INFORMATION, DOCUMENTS OR PROGRAMS (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE INFORMATION, DOCUMENTS OR PROGRAMS TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.