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hdparm speed test

```
hdparm -t --direct /dev/sda
```

read test

```
dd if=/dev/sda of=/dev/null bs=1M
```

LINUX: How to measure storage speed

Write (10GB File):

```
# dd if=/dev/zero of=erase.bin bs=1M count=10000
```

Read (10GB File):

```
# dd if=erase.bin of=/dev/null bs=1M count=10000
# rm erase.bin
```

FIO

```
fio --ioengine=libaio --filename=/filenameorblockdevice --direct=1 --sync=1 --rw=write --
bs=4M --numjobs=1 --iodepth=1 --runtime=600 --time_based --group_reporting --name=fio-disk --
output-format=terse,json,normal --output=fio.log --bandwidth-log
```

```
fio --filename=/file --direct=1 --fsync=1 --rw=randwrite --bs=4k --numjobs=1 --iodepth=1 --
runtime=60 --time_based --group-reporting --name=4k-sync-write-test
```

Sample output

NAS results

ARM 1.6GHz + WD Green

Write 10485760000 bytes (10 GB) copied, 143.207 s, **73.2 MB/s**
Read 10485760000 bytes (10 GB) copied, 130.184 s, **95.8 MB/s**

ARM 1.6GHz + USB3.0 External HDD

Read and Write, **71/71 MB/s** (ntfs)

Raspberry PI4 + USB3.0 External SDD

Read and Write, **358/217 MB/s** (ext4)

Vibe Z2 Pro Internal Flash

Sequential Read: **205 MB/s**, Write: **69 MB/s**
Random Read: 12 MB/s (3300 IOPS 4KB), Write: 9 MB/s (2348 IOPS 4KB)

Patriot Zephyr 256GB SSD

Sequential Read: **214 MB/s**, Write: **143 MB/s**
Random Read: 17 MB/s (4567 IOPS 4KB), Write: 12 MB/s (3181 IOPS 4KB)

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