

# Little Benchmark: HDD L<sup>A</sup>T<sub>E</sub>X2

Author: Łukasz Buśko

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## 2 Requirements

Operating system: Linux, Windows XP or newer  
Library: libboost 1.40 , libcrypto++ 5.6.0-5

## 3 Features

Portability (not tested yet)

Multi threading for controllers and NCQ tests

Test read by 1 character and stream

Test read by chunk useful for server disk drivers specially if test with multi threading (no implemented yet)

Read files are being validated with sha512 hash sum after read test in order to check if we read what we supposed to read

Nanoseconds precision

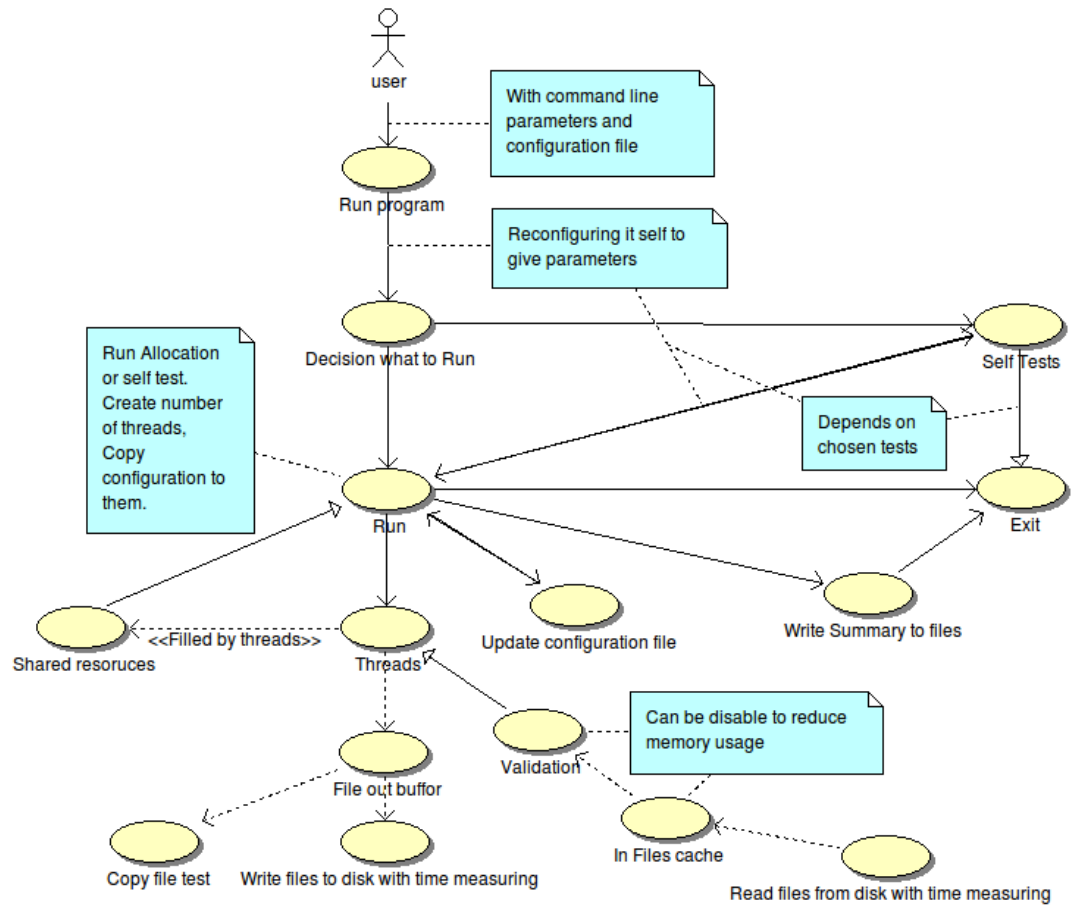
Human readable output (style of log, formatted text, or xml(N/A) file)

Easy and fully customizable by command line or configuration file

Tests designed for hybrid drives

Free of charge but don't forget to appreciate my job by [donation](#)

## 4 How does it work



Simplified use case diagram

## 5 Installation

### 5.1 Package

Binaries and source can be downloaded from:

Git

SVN Not uploaded yet

### 5.2 Linux

#### 5.2.1 From Repository(not uploaded yet)

Open terminal and copy content:

```
sudo add-apt-repository ppa:buskol-waw-pl/littlebenchmark-hdd
sudo apt-get update
sudo apt-get install littlebenchmark-hdd
```

#### 5.2.2 From source

Open terminal:

```
$ cd .../Littel.Benchmark/HDD
$ ./configure
$ make && make test && sudo make install && make clean
```

### 5.3 Windows

Can be run from any location

#### 5.3.1 From source

What is needed to compile from source: (Working on it with Visual Studio 2008 which at least links boost libraries...)

**Boost library** This Library takes care about porting issues between Linux and Windows.

**Crypto++** Cryptographic library for file validation.

**Notepad++** To edit a file without damaging the coding.

**Visual Studio** Compiling from source required MSVC.

Set up boost:  
open command line  
ctrl + r type cmd

```
cd boost_dir/
bootstrap.bat
```

```
bjam --tool-set=msvc --build-dir=boost-build --build-type=complete stage release --without-
bjam --build-dir=boost-build --toolset=msvc install --without-python
```

## 6 Configuration

Please Run binary with -M option to set max string and char size in order to avoid memory allocation error.

To get information what options can be specified run program with -h option.

### 6.1 Linux

Configuration file is going to be created in \$HOME/.littlebenchmark/hdd

### 6.2 Windows

Configuration file is going to be created in:

Windows 7 / Vista: ROOT FILE SYSTEM/USER/APPData/Local/.littlebenchmark/hdd

XP: ROOT FILE SYSTEM/USER/Local Settings/Application Data/.littlebenchmark/hdd

## 7 About Port

There are few important differences between Linux and windows:

	Linux	Windows	
char size	2	1	byte
string size	8	2	byte

Linux provides by default wide characters and utf-8 support which windows does not.

**Windows:** Conversion from string.find to int64 have to be done with middle conversion to int in order to not lose -1 if occurred...

**Windows:** Console closed by x had to be handled in dedicated way.

**Windows:** New line character had to be replaced with enter in configuration module.

**Windows:** Lack of linkable libcryptopp.

**Windows:** mode\_t variables are unused but present and redefined as int.

## 8 Known Limitations

**Option parser** Before every probe and directory have to be input argument marker.

Exmaple -x 1k -x 2m -x3g -w path1 -w path2... (Change forced for Windows compatibility)

**Out File Data buffer** Is created at thread start and expanding to new data sizes

Buffer is being freed after last test.

**Memory hungry** Benchmark was design in way to simulate multiple file reading situations.

This means that data is being cached in list and wait for verification. After verification memory is going to be freed.

### Windows port

Until I solved Visual studio 2008 problems with linking libcryptopp there won't be fully functional port.

## 9 Known issues

Before appalling any solution in Linux run terminal session `ctrl+alt+F1` and login with root privilege, in order to avoid any sort of problems! After applying solution check if you can login in other terminal session and unlock lock screen.

Before applying any solution on WinCrap pray and backup important data.

**Memory leak** 32 records lost when running with -M  
Solution unknown: Lost is in static allocated memory.

**Strange Log Output** Example:

```
Min:1e+09s
Max:[Failed to measure: time difference to small]
Avg:-nans
```

Memory allocation failed or your hard drive for given data is immeasurable fast :-)

**Linux** Memory leak caused by bug in *pwd.h* library

```
#include <pwd.h> /*12 records lost*/
struct passwd *pw;
```

**Solution:** line 7-9 word "*compat*" have to be replaced with "*files*"

```
lukasz@lukasz-compal:~$ cat -n /etc/nsswitch.conf
1 # /etc/nsswitch.conf
2 #
3 # Example configuration of GNU Name Service Switch functionality.
4 # If you have the 'glibc-doc-reference' and 'info' packages installed, try:
5 # 'info libc "Name Service Switch"' for information about this file.
6
7 passwd:          compat
8 group:           compat
9 shadow:          compat
10
11 hosts:           files mdns4_minimal [NOTFOUND=return] dns mdns4
12 networks:        files
13
14 protocols:       db files
15 services:        db files
16 ethers:          db files
17 rpc:             db files
18
19 netgroup:         nis
```

12 records in worst case scenario can take max 8192 bytes, libc-freeres won't do the job so please apply solution