

Are SSDs the Way for Me??

Chris Brown and Donny Bouressa - St. Norbert College

Points to discuss

1. Hardware description and compatibility
2. Conversion factors to consider
3. Processes to use
4. Demonstrate boot up times of unconverted and converted 8+ year old desktops and laptops
5. Success stories and Q+A



Hardware explanation

Connections

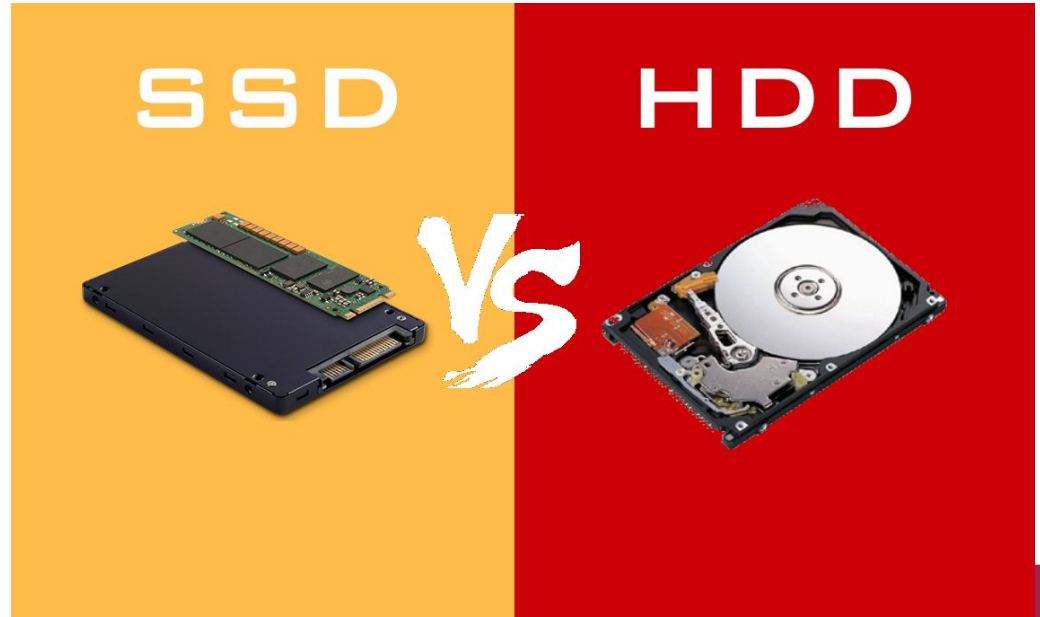
SATA + power

Form factor

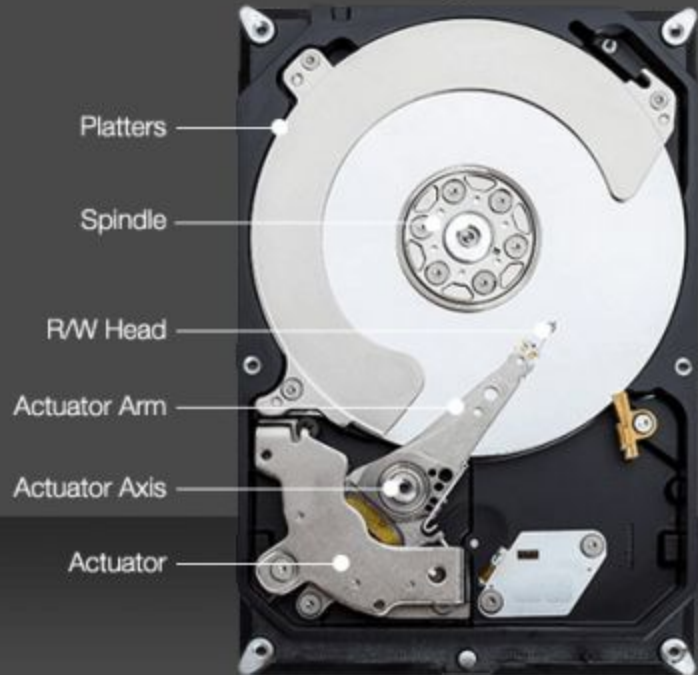
Only laptop 2.5" size

Adapting for use in a Desktop

Using bay converter bracket

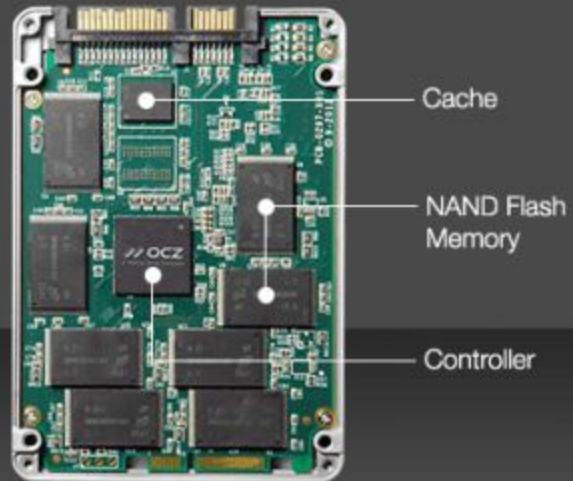


HDD 3.5"

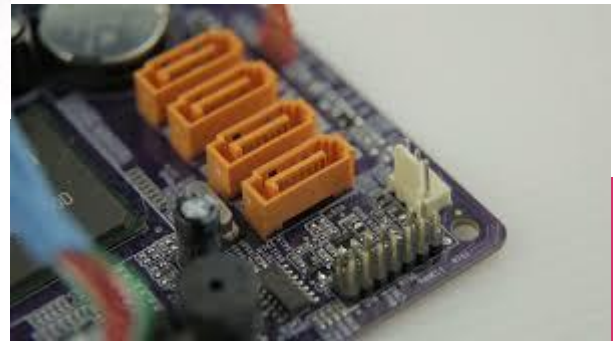
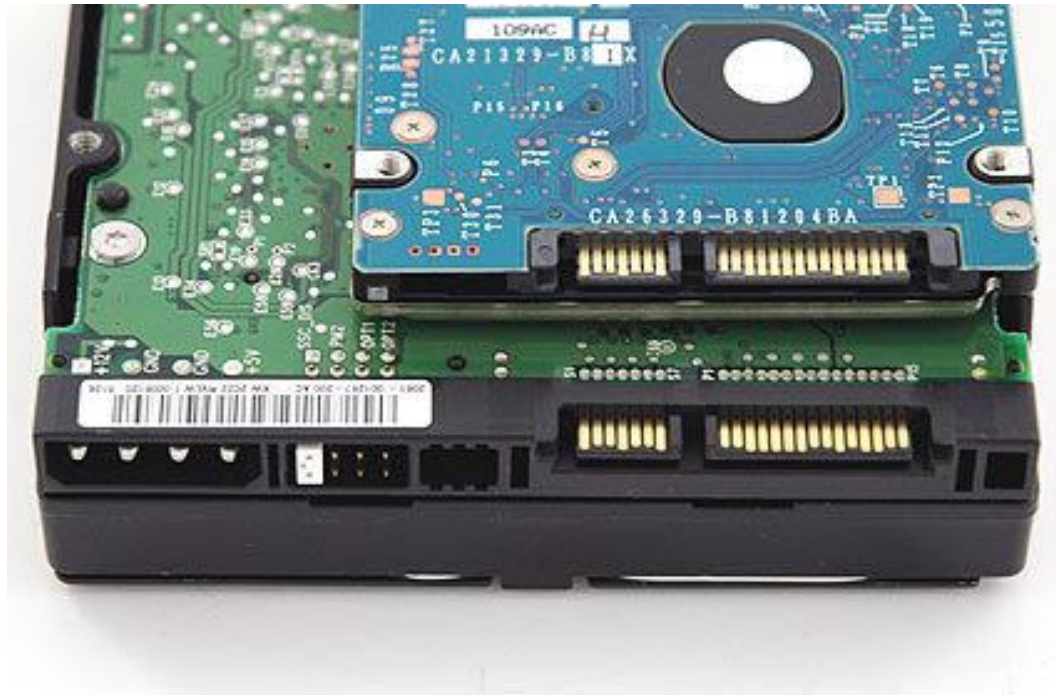


Shock resistant up to 350g/2ms

SSD 2.5"



Shock resistant up to 1500g/0.5ms





TYPES *of* *STORAGE* *DEVICES*

Why switch to SSDs?

Weight - no motor present to spin platters at 5400 or 7200 rpm

Power consumption - uses less power

More rugged - no moving parts

Speed - approximately 5x the speed of a traditional hard drive

Fragmentation - not a factor on SSD drives



Price!

Samsung 860 EVO 500GB 2.5 Inch SATA III Internal SSD (MZ-76E500B/AM)

<http://camelcamelcamel.com/product/B0781Z7Y35>



2018

Pricetype

Lowest

Highest

Amazon

\$68.99 (Feb 22, 2019)

\$169.99 (Feb 17, 2018)

2019



SanDisk SSD PLUS 1TB Internal SSD - SATA III 6 Gb/s, 2.5"/7mm - SDSSDA-1T00-G26

<http://camelcamelcamel.com/product/B07D998212>



Pricetype	Lowest	Highest
Amazon	\$99.99 (Feb 27, 2019)	\$249.99 (Jul 17, 2018)

Samsung 970 EVO 500GB - NVMe PCIe M.2 2280 SSD (MZ-V7E500BW)

<http://camelcamelcamel.com/product/B07BN4NJ2>



2018

2019

Pricetype	Lowest	Highest
■ 3rd party new	\$114.99 (Nov 18, 2018)	\$289.95 (May 8, 2018)

It's not all roses.....



Personally ran into issue with Intel NVMe SSDs in brand new 8th gen. HP laptops.

Microsoft released a patch (2+ weeks later) that resolved the issue

No real public acknowledgement until fix was released

Adapters for newest style drives only now becoming common



So you want to convert - now what?

Several important steps to consider during this process:

1. Clone over or start fresh? (Imaging is faster too!)
2. Software programs that make the process go smoothly
 - a. EaseUS TODO Backup - clone from a booted drive!
 - b. Laplink
 - c. Others?
3. Hardware to streamline the process - external cables, hard drive docks



Remember power cable for a 3.5" drive!



Laptop and desktop demos

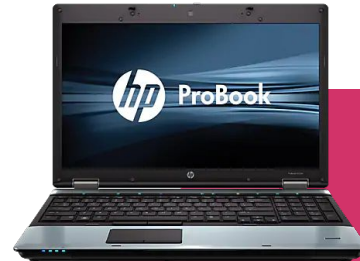
Desktop model - HP rp5700 w/ 3GB memory and Intel Core 2 Duo processor

Approximately 9.5 years old



Laptop model - HP ProBook 6550b w/ 4GB memory and 1st gen i5 processor

Approximately 8 years old (obvious battery issues)



Results - booting to the login screen

Desktop w/ standard 7200rpm desktop hard drive - varies between 1:01, 55 seconds, 28 seconds

Laptop w/ standard 7200rpm laptop hard drive - varies between 33 seconds and 22 seconds



Results - booting to the login screen

Desktop w/ Sandisk Ultra 3D SSD 256GB - **15.5 seconds**



Results - booting to the login screen

Laptop w/ Sandisk Ultra 3D SSD 256GB - **15.4 seconds**

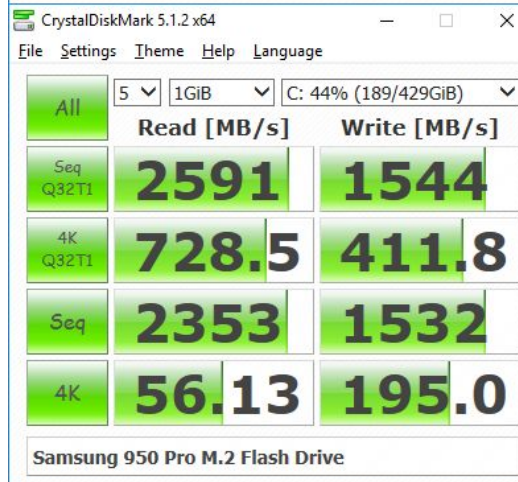
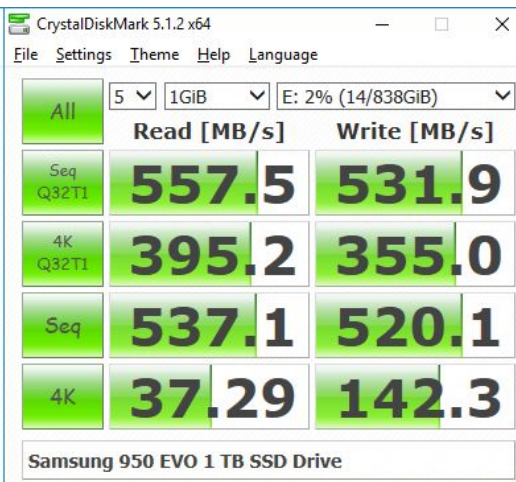
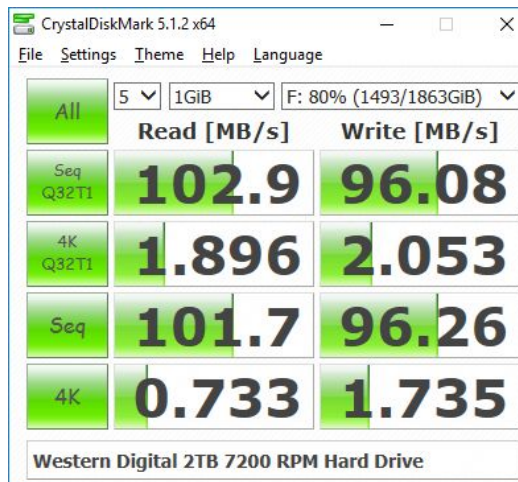


Factors

Once logged in on both laptops and desktops, responsiveness was almost immediate with SSDs. Computers with standard drives still needed “extra time” after login to be ready to operate.

For comparison: New HP Prodesk G4 with 8th gen i5 processor and NVMe 256GB drive boot time 9.2 seconds





Performance Summary:

Hard Drive: 103 MB/sec read, 96 MB/sec write speed

SSD Drive: 558 MB/sec read, 532 MB/sec write speed

M.2 Drive: 2591 MB/sec read, 1544 MB/sec write speed

In Read Performance:
SSD is 5x Faster than HDD
M.2 is 5x Faster than SSD
M.2 is 25x Faster than HDD



SanDisk Ultra 3D NAND 250GB Internal SSD - SATA III 6 Gb/s, 2.5"/7mm - SDSSDH3-250G-G25

by SanDisk



664 customer reviews | 231 answered questions

Amazon's Choice for "sandisk 240gb ssd"

List Price: \$109.99

Price: **\$49.99** ✓prime

You Save: **\$60.00 (55%)**

Get \$60 off instantly: Pay \$0.00 upon approval for the Amazon Prime Store Card.

Free Amazon tech support included ▾

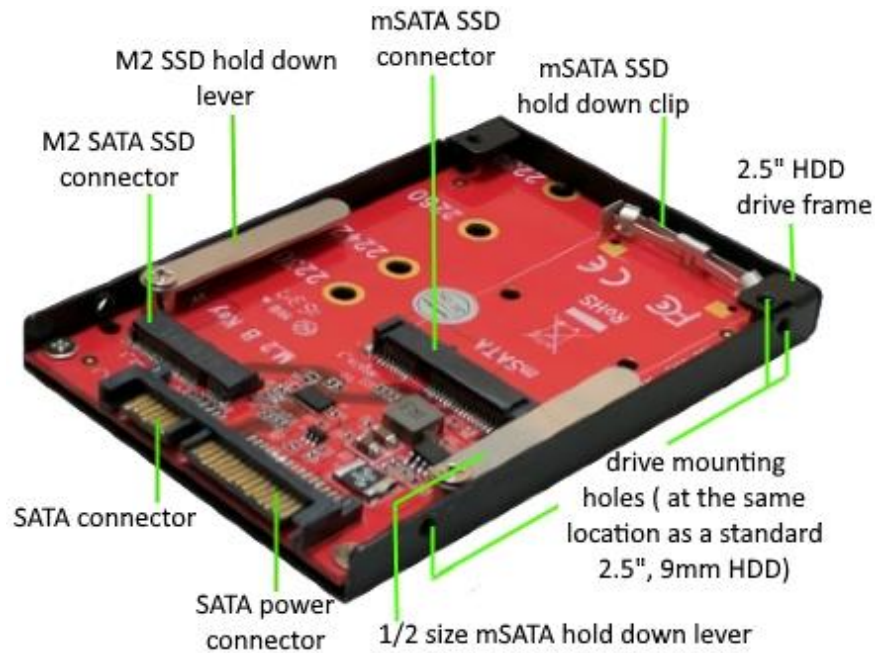
Capacity: **250GB**

1TB	2TB	250GB	500GB
\$129.99	\$249.99	\$49.99	\$67.99
✓prime	✓prime	✓prime	✓prime

Style: **3D NAND SSD**

- Accelerate your PC for faster boot-up and blazing-fast gaming and graphics
- Ultra-fast: sequential read speeds of up to 550MB/s; sequential write speeds of up to 525MB/s
- 3D NAND provides greater endurance so your drive lasts longer and uses less power
- nCache 2.0 technology delivers blazing-fast speeds
- Limited 5-year manufacturer warranty or 100TBW, whichever is sooner

[Compare with similar items](#)



Adding an M.2 drive into a converter like this will still run into the SATA bottleneck and will not provide the full speed available to that type of drive!

School district and college campus benefits...

Might be an easier pitch to make to management to purchase and clone / image SSDs at \$50 each vs. buying new computer at \$500-\$1000 - even if just for the short term

These drives can be moved to another machine later - they are not permanently soldered to motherboard (this process cannot be done on certain models)

This allows you to get most use out of long-lasting warranty as possible



SSD > NEWS

SSD Prices Could Drop Over 50 Percent In 2019 - Report

12
COMMENTSby [Lucian Armasu](#) October 25, 2018 at 2:06 PM - Source: [DigiTimes](#)

According to a [DigiTimes](#) report citing "industry sources" this week, NAND flash prices are expected to continue to drop in 2019 after already seeing a 50 percent drop this year. Earlier reports said that SSD prices could fall to as low as \$0.08 per GB in 2019.

SSD Prices In Freefall

The DigiTimes report noted that the continued drop in prices seems to be primarily due to SSD manufacturers expanding their production capacity to increase profitability, as well as the adoption of 96-layer NAND technology. The technology allows for denser SSDs and, therefore, cheaper storage.



Credit: Adata



SHARE



Jon Martindale

[@jonwhoopy](#)

POSTED ON

08.6.18 - 10:13AM PST

COMPUTING

New laptops may see more storage as SSD prices expected to fall through 2019



Positive feedback

Numerous instances of positive feedback across our campus.

We find 256GB SSD adequate for most needs due to unlimited Google Drive storage space - majority of users not using over 100GB

Love letters say it all.....



Testimonials

Statement of SSD installation into older computers:

Chris Brown recently installed SSD drives into two old computers (a laptop and desktop) of mine. Both machines at the time were old and very slow. After the installations of the SSD drives these computer performances were significantly improved. In both cases the speed and software functions very greatly improved/corrected at a small fraction of the cost of the purchase of a new computers. I was very impressed with the method and recommend it to others in salvaging older machines.

James R. Hodgson, Ph.D.

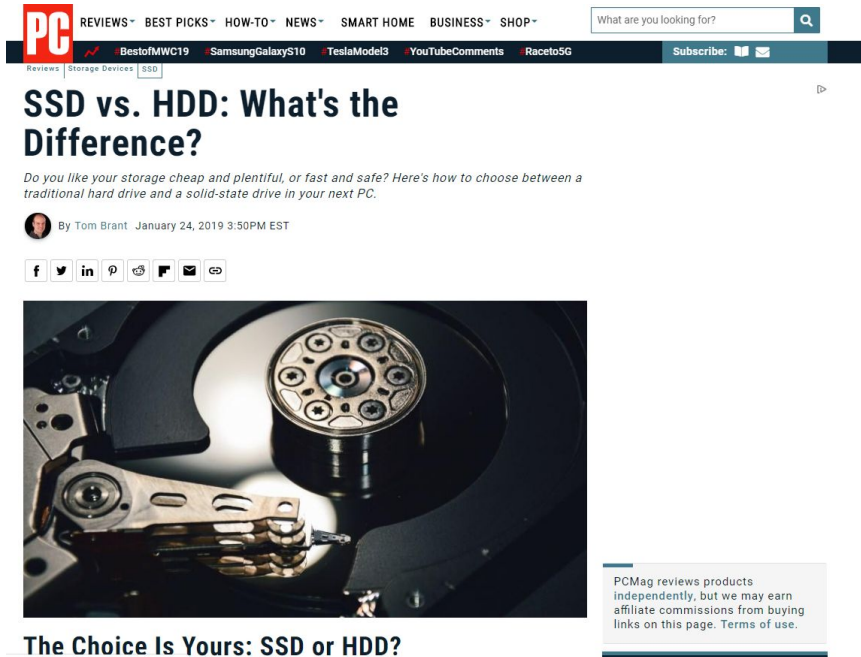
Emeritus Professor of Biology and Environmental Science

St. Norbert College



In the news.....

<https://www.pcmag.com/article/297758/ssd-vs-hdd-whats-the-difference>



The image is a screenshot of a PCMag article. At the top, there is a navigation bar with the PCMag logo and links for 'REVIEWS', 'BEST PICKS', 'HOW-TO', 'NEWS', 'SMART HOME', 'BUSINESS', and 'SHOP'. A search bar is located on the right side of the navigation bar. Below the navigation bar, there is a secondary navigation bar with links for 'Best of MWC19', 'Samsung Galaxy S10', 'Tesla Model 3', 'YouTube Comments', and 'Raceto5G'. A 'Subscribe' button is also present. The main content area features the article title 'SSD vs. HDD: What's the Difference?' in a large, bold font. Below the title is a sub-headline: 'Do you like your storage cheap and plentiful, or fast and safe? Here's how to choose between a traditional hard drive and a solid-state drive in your next PC.' The author's name 'By Tom Brant' and the date 'January 24, 2019 3:50PM EST' are listed below the sub-headline. A row of social media sharing icons (Facebook, Twitter, LinkedIn, Pinterest, Reddit, Print, Email, and Print) is located below the author information. The main image of the article is a close-up photograph of a hard drive's internal mechanism, showing the platters and the read/write head. Below the image is the text 'The Choice Is Yours: SSD or HDD?'. At the bottom right of the article, there is a small text box that reads: 'PCMag reviews products independently, but we may earn affiliate commissions from buying links on this page. Terms of use.'

Other resources

<https://www.crucial.com/usa/en/store-ssd-10-reasons-to-buy>

<https://www.pcmag.com/article/358283/why-your-next-pc-should-have-an-ssd>




Article from 2011 - cnet.com

Using an SSD as the primary storage device for a computer increases the system's performance a great deal.

Dong Ngo/CNET

Why SSDs could make the most affordable upgrade for your computer

Now you probably don't want to spend thousands of dollars on a 500GB SSD. However, spending around \$500 for a 240GB SSD might make the most economical upgrade in many cases. This is because it can easily be the single component in your computer that most significantly increases the system's overall performance.



Questions?



Thank you so much
for attending our
session!!

