

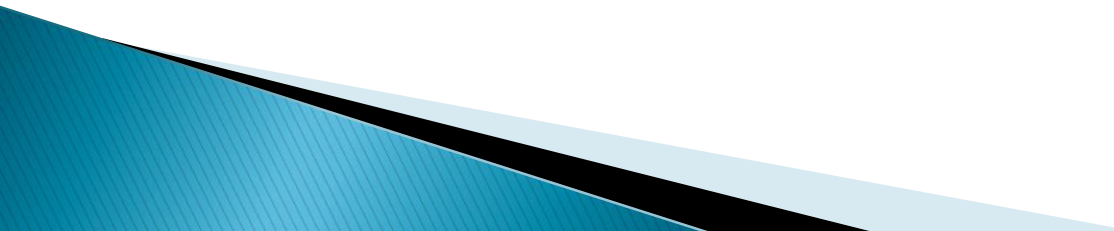
RAM Drives

By George Skarbek

Updated in June 2023



What is a RAM drive

- ▶ A RAM drive is a part of assigned memory that appears to the operating system as an amazingly fast hard drive.
 - ▶ It can be also called a RAM disk.
 - ▶ It is very, **very** fast.
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Why use a RAM drive – #1

- ▶ Unused memory can be used to improve productivity by creating a RAM drive which appears as a physical drive that is VASTLY faster than a conventional hard disk or a SSD.
- ▶ There is no latency so you do not have to wait for the drive's sector to move over the read/write head.
- ▶ There is no measurable seek time either.
- ▶ **With a solid state drive C, many benefits are reduced.**


Why use a RAM drive – #2

- ▶ On all computers with 4 GB RAM and over and running a 32 bit operating system, typically memory over about 3.3 GB is not used due to reserved memory for the BIOS. **The rest is wasted!**

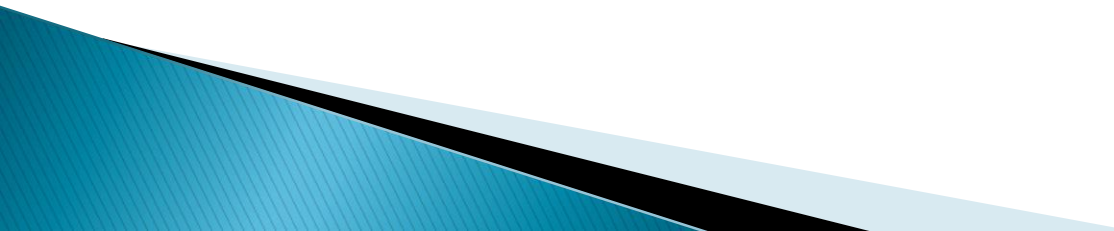
System

Rating:	5.0 Windows Experience Index	
Processor:	Intel(R) Core(TM) i7 CPU 860 @ 2.80GHz 2.80 GHz	
Installed memory (RAM):	4.00 GB (2.96 GB usable)	
System type:	32-bit Operating System	
Pen and Touch:	No Pen or Touch Input is available for this Display	

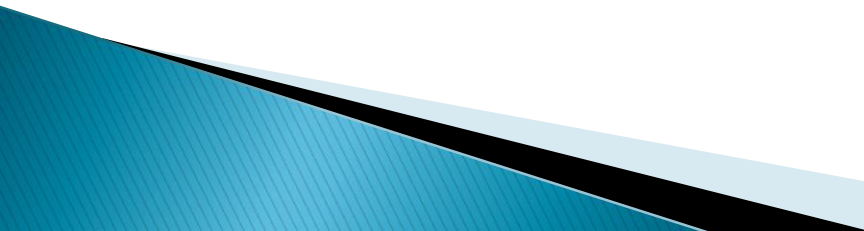
Why use a RAM drive – #3

- In all versions of Windows using RAM drive for the temp files gives the following benefits:
 - *Reducing the amount of data written is especially important in extending the life of an SSD.*
 - Saves space and wear on drive C and reduces noise if you still have a rotating hard drive.
 - There is no contention on the read/write heads when temp files are created, such as when opening Word.
 - Provide very much faster file access.
 - No cleaning up required of temp files as all contents are lost on a reboot.
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Why use a RAM drive – #4

- ▶ Reduces fragmentation on drive C.
 - ▶ Saves time and disk space when doing an image backup as junk files are not backed up. I have seen over 50,000+ files in Temp folders and thousands of folders (not the Temporary Internet folders).
 - ▶ These also should be placed on a RAM drive.
 - ▶ Use it for timing HD & USB performance.
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Why use a RAM drive – #5

- ▶ Memory prices fluctuate a lot and 8 GB costs about \$25 today.
 - ▶ Put not only the temp files on the RAM drive but also the cache files from IE, Firefox and Chrome (less junk to back up with Acronis).
 - ▶ You can use the RAM drive for testing software. No cleaning up afterwards.
 - ▶ When sharing folders, using a RAM drive is more secure. If a hacker gets in, drive C will not be accessible.
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How fast is it?

Insanely fast!

On mid-range Ryzen
7 5700G CPU the
Write speed is insane.

Read speed of over
10 GB/sec is not bad!

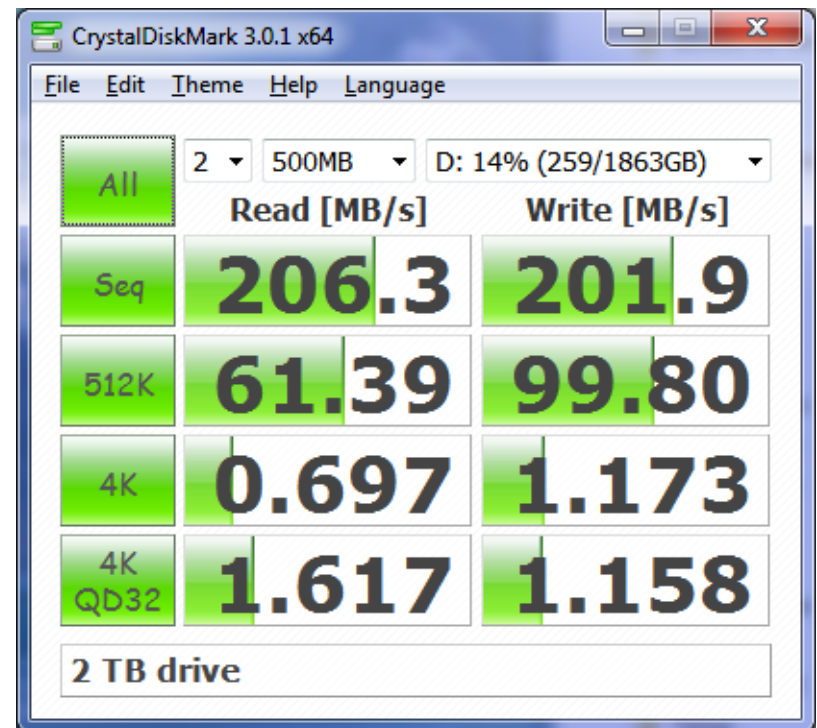
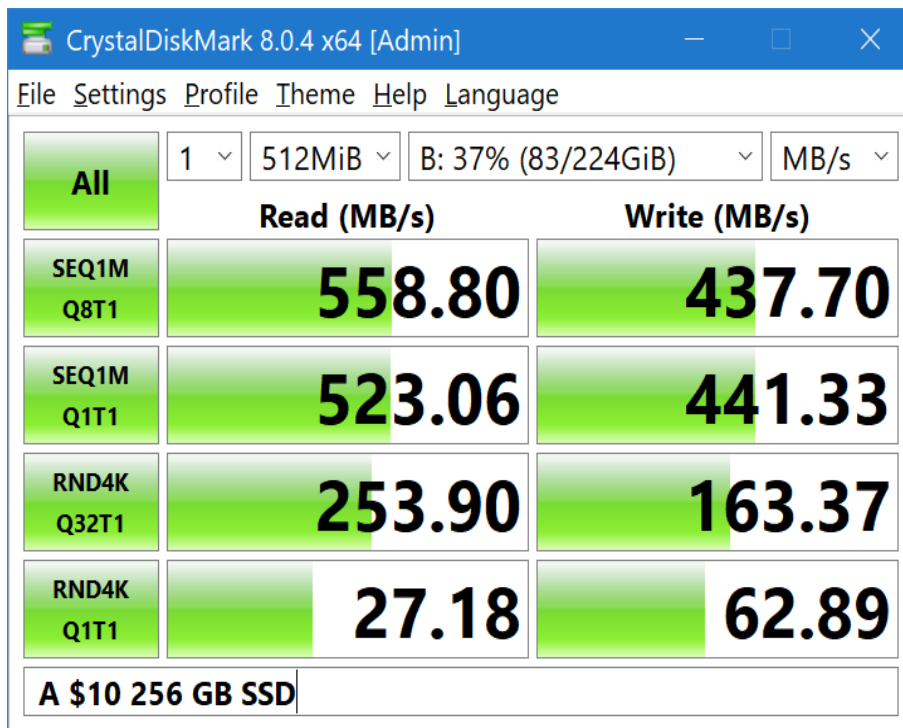
	Read (MB/s)	Write (MB/s)
All		
SEQ1M Q8T1	10969.63	26446.99
SEQ1M Q1T1	9684.91	20044.24
RND4K Q32T1	1309.88	1043.55
RND4K Q1T1	514.60	465.03

Ryzen 7 5700G

Compared to

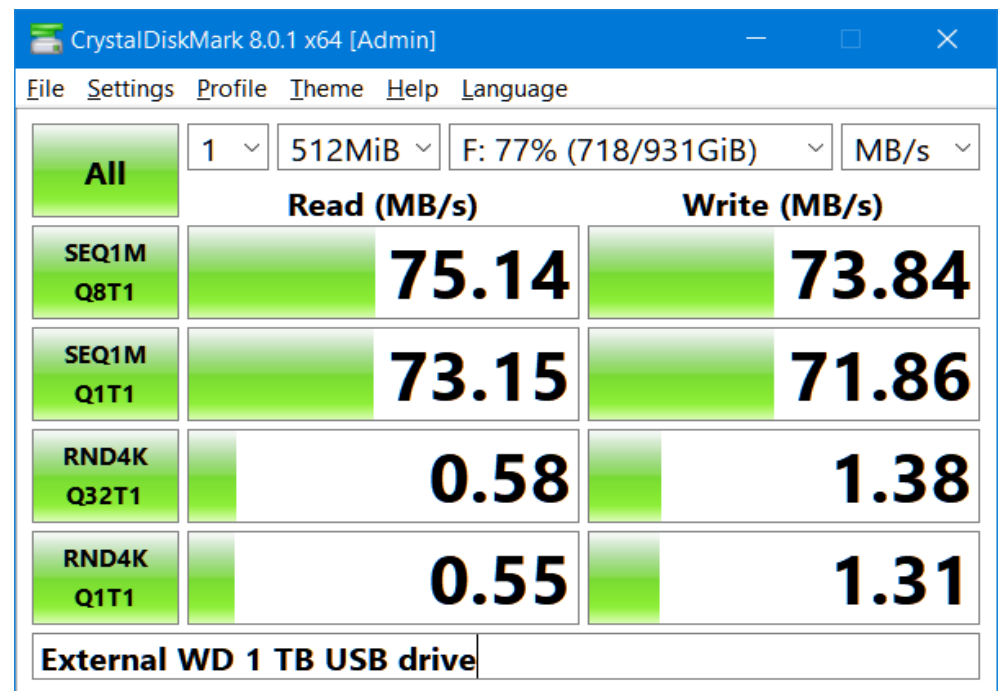
A normal SSD

A 2TB rotating drive



Cpmated to

- ▶ A typical 1 TB USB drive.
- ▶ The read/write speed when having 32 tiny files in the queue is very slow because for every file that is written, both the directory and the FAT (File Allocation Table) must be updated.



Finding RAM Drive software

▶ 12 Free RAMDisk vs SSD

- ▶ Reviewed in April 2022
- ▶ <https://www.geckoandfly.com/21507/ramdisk-virtual-disk-memory/>
- ▶ This site also lists commercial software as well. In late October 2022 I evaluated five free RAMDRIVES. Both for their read/write speeds and for ease of use and installation.
- ▶ There were relatively minor difference in performance. They are so fast the 10% either way will not make a measurable difference in any result during normal use.

▶ My recommendation is the free iMDisk (unlimited size) from:

<https://sourceforge.net/projects/imdisk-toolkit/>

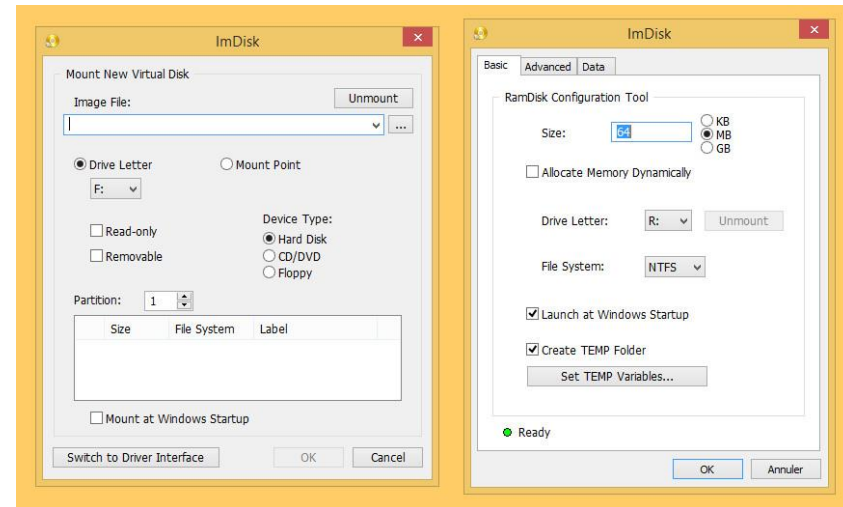
How do you create one?

- ▶ This all-in-one package includes the ImDisk Virtual Disk Driver the DiscUtils library that extends the number of supported image file formats, and adds several GUIs and features.

64-bit:

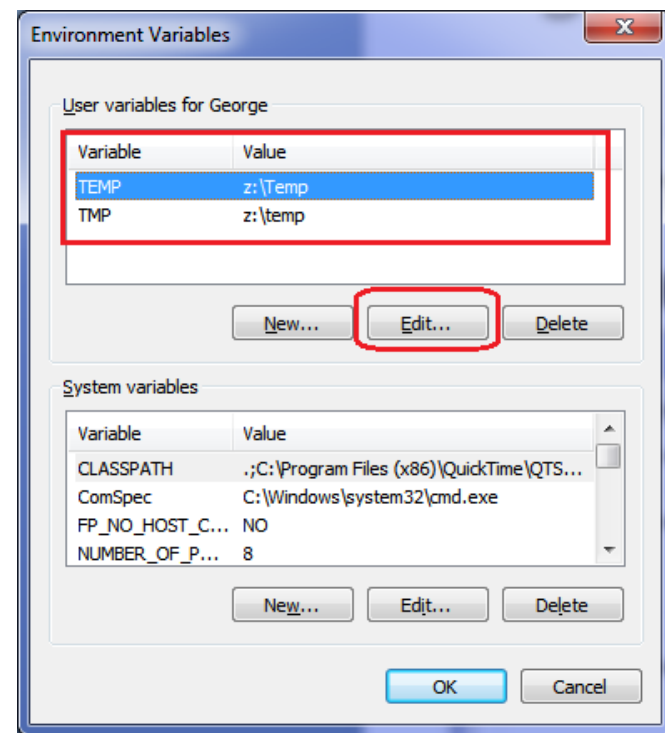
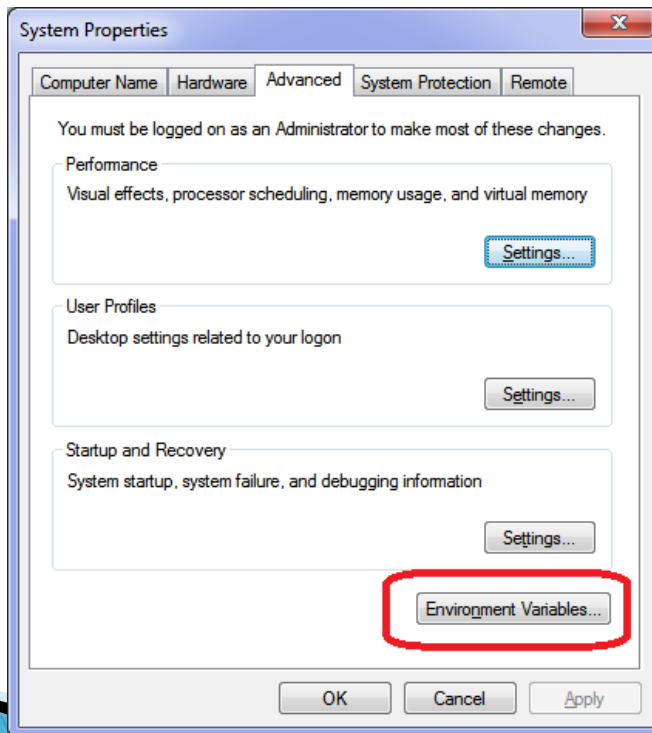
<https://sourceforge.net/projects/imdisk-toolkit/files/20220826/ImDiskTk-x64.zip>

This software, as well as the AMD will create a \Temp folder on the RAMDrive and set the environment variable for you.

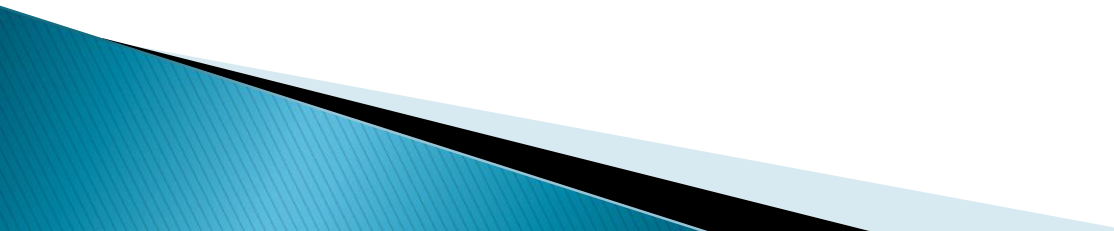


Setting the environmental variables

- ▶ From Control Panel, System, click on **Advanced system settings** then alter as shown. *Note that ImDisk will do this automatically for you.*



Possible operational problems

- ▶ Only possible drawback is the temp folder filling if the computer is never re-booted or if installing some massive program such as Full Adobe suite with all options.
 - ▶ Fix by temporarily using a hard drive for temp files.
 - ▶ But with a 4 GB RAM drive this is not likely to be a problem as the Temp folder should not fill.
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The Swapfile location

- ▶ Do **NOT** put the Swapfile onto the RAM drive if you use a 64 bit operating system.
- ▶ With a 32 bit operating system and 8+ GB of RAM the swapfile can be placed on the RAM drive.

Any Questions?

