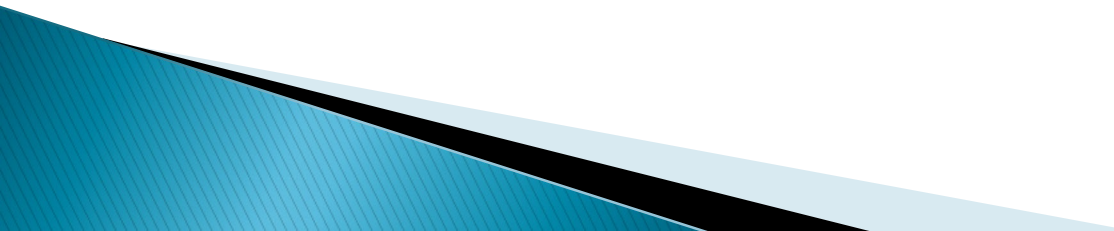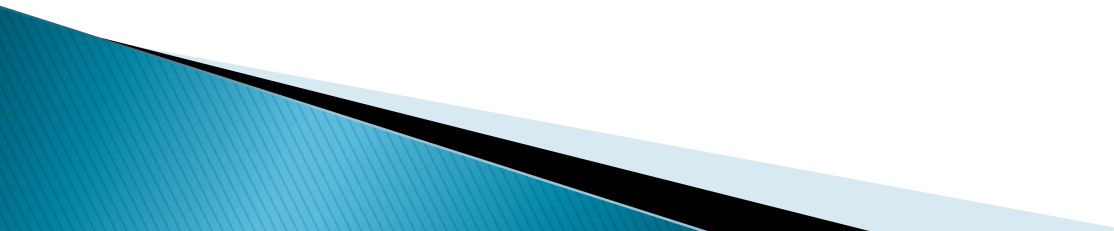# RAM Drives

By George Skarbek
Updated in April 2021

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.

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.

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

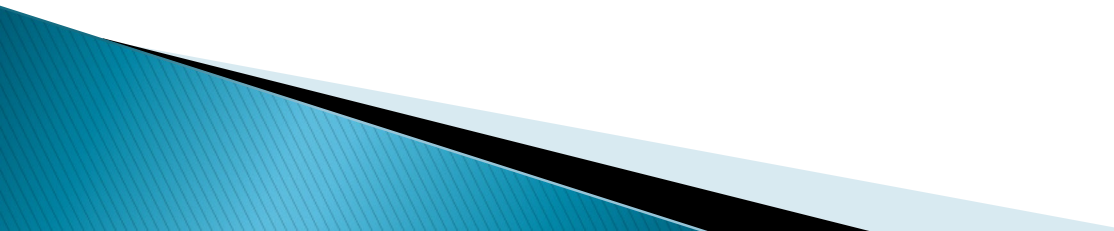|	
Rating:	**5.0** Windows Experience Index
Processor:	Intel(R) Core(TM) i7 CPU 860 @ 2.80GHz 2.80 GHz
Installed memory (RAM):	4.00 GB (2.96 GB usable)
System type:	32-bit Operating System
Pen and Touch:	No Pen or Touch Input is available for this Display

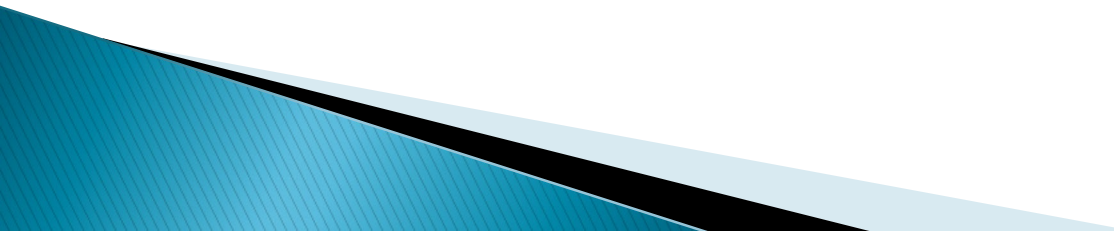NOTE **64 bit** operating systems can use all of your RAM

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.
  - 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.

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.
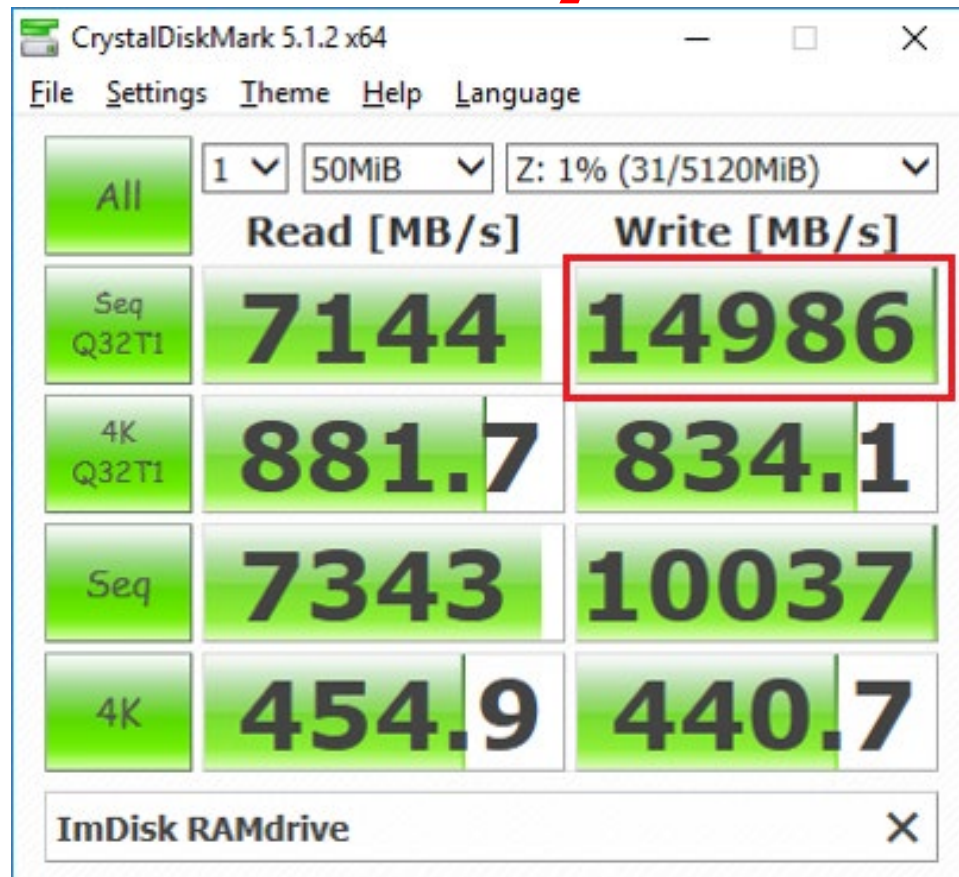- Use it for timing HD & USB performance.

Why use a RAM drive – #5

▸ Memory prices fluctuate a lot and 8 GB costs about $65 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.

How fast is it?

Insanely fast!

On a 2 year old Ryzen 1700X CPU the speed is insane.

CrystalDiskMark 5.1.2 x64		
File Settings Theme Help Language		
All	1 ✓ 50MiB ✓ Z: 1% (31/5120MiB) ✓	
	Read [MB/s]	**Write [MB/s]**
Seq Q32T1	7144	14986
4K Q32T1	881.7	834.1
Seq	7343	10037
4K	454.9	440.7
ImDisk RAMdrive		✕

Compared to

A good SSD   A 2TB drive

CrystalDiskMark 3.0.1 x64		
File Edit Theme Help Language		
All	2 ▼ 100MB ▼ C: 52% (58/112GB) ▼	
	Read [MB/s]	Write [MB/s]
Seq	499.4	148.5
512K	438.8	153.0
4K	34.03	54.31
4K QD32	249.7	93.82
Intel SSD		

CrystalDiskMark 3.0.1 x64		
File Edit Theme Help Language		
All	2 ▼ 500MB ▼ D: 14% (259/1863GB) ▼	
	Read [MB/s]	Write [MB/s]
Seq	206.3	201.9
512K	61.39	99.80
4K	0.697	1.173
4K QD32	1.617	1.158
2 TB drive		
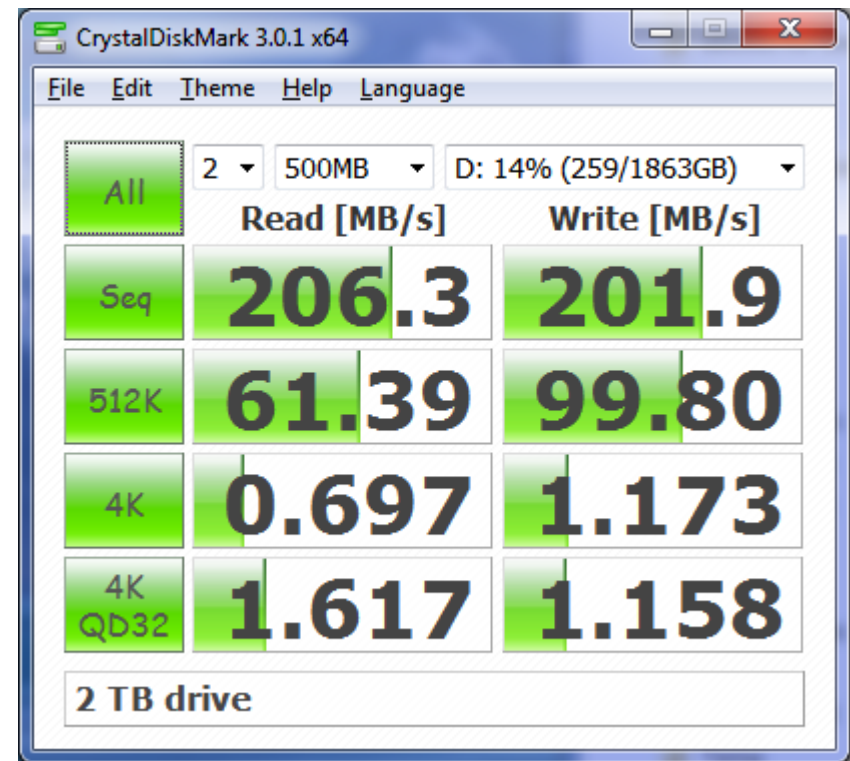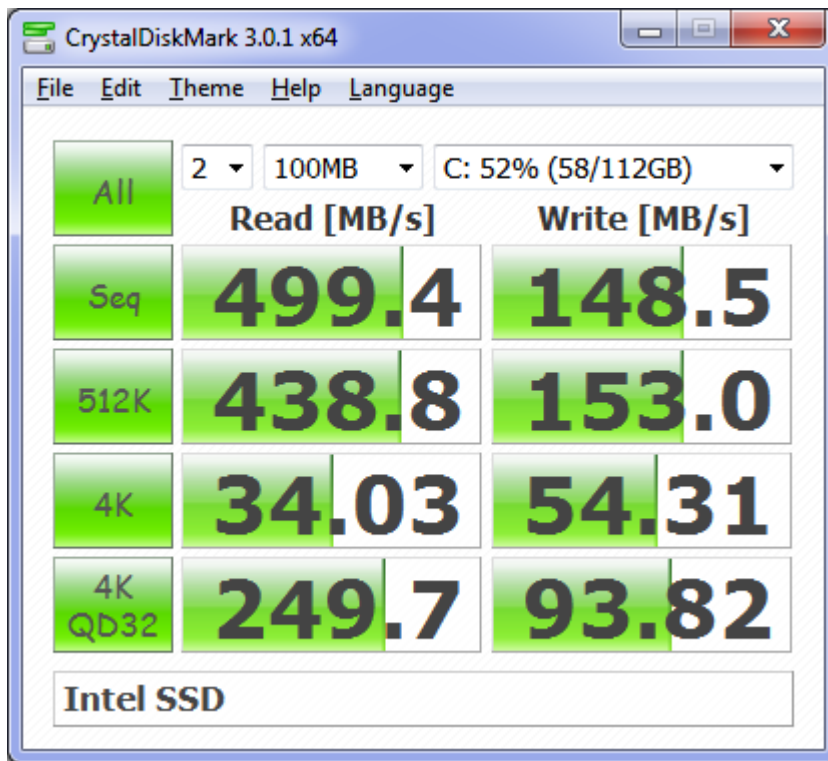
Finding RAM Drive software

- The best free RAM Disk programs for Windows Reviewed 27 Feb 2021

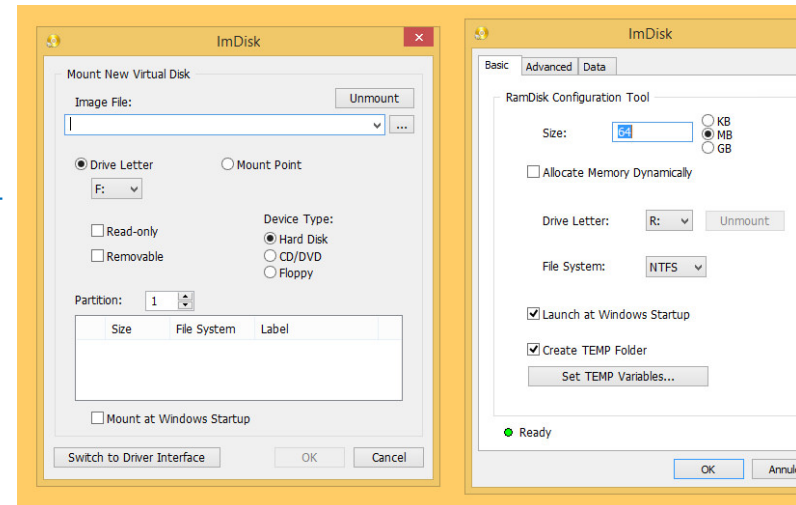- See: https://www.geckoandfly.com/21507/ramdisk-virtual-disk-memory/

How do you create one?

- There are many free RAM drive programs. The free versions are generally limited to a maximum of 4 GB. ImDisk is umlimited.
- 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.
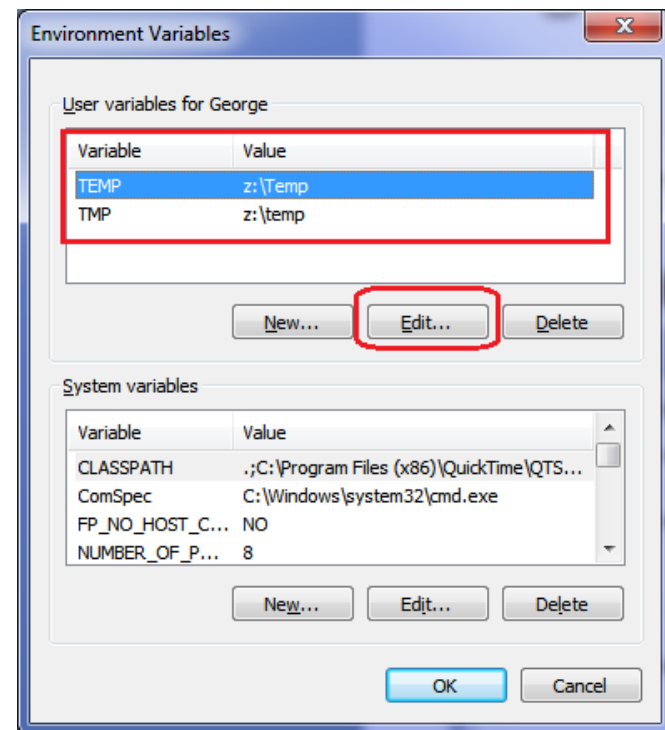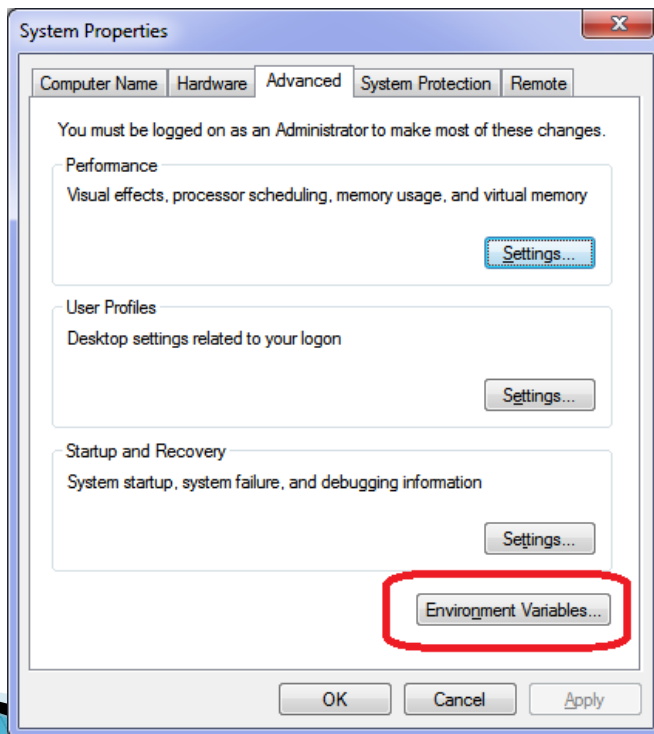
64-bit:
https://sourceforge.net/projects/imdisk-toolkit/files/20210125/ImDiskTk-x64.zip

32-bit:
https://sourceforge.net/projects/imdisk-toolkit/files/20210125/ImDiskTk.zip

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.*

Putting browser temp files there

- For IE click on Tools, Internet Options, Browsing History and Move etc.

- For Firefox type *about:config* into the Firefox navigation bar and hit enter. Next find the *browser.cache.disk.parent_directory*. If it doesn't exist right click anywhere and select New, String. Enter **browser.cache.disk.parent_directory** in the first popup box and then the location in the 2nd popup box e.g. **Z:\temp.** If the entry already existed simply right click and modify it.
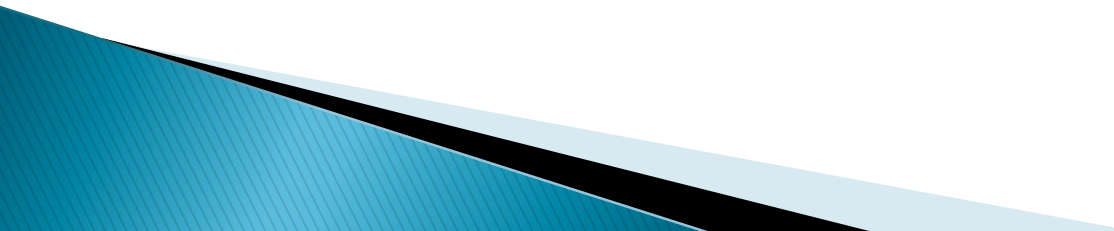
Putting Chrome temp files there

- For Google Chrome, create a directory symbolic link from the DOS box with admin rights.

- cd
  "C:\Users\George\AppData\Local\Google\Chrome\User Data\Profile 1\Cache"

- Dir   (This command is to confirm the folder)

- del *.*   (Delete everything)

- cd..   (Go up one level)

- rd cache   (Remove the folder)

- All of the above can be done using Windows Explorer. The next step can **only** be done from the admin DOS box.

- mklink /d
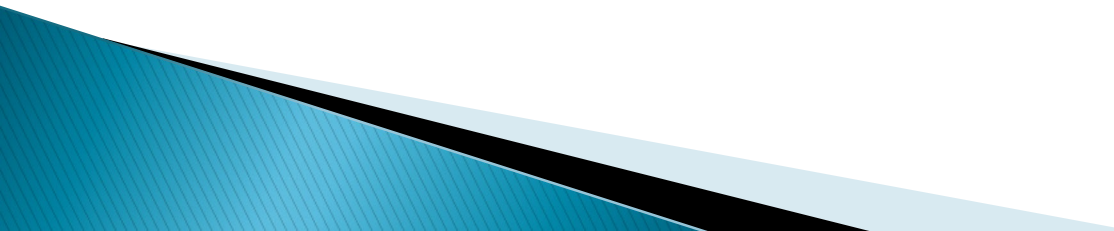 "C:\Users\George\AppData\Local\Google\Chrome\User Data\Profile 1\Cache" z:\Temp

Putting Edge temp files there

- This is very difficult to do as Microsoft made some fundamental steps to make the operating system (Windows) use the symbolic link method which is not easily achievable for that folder.

- A lot of in-depth knowledge of defeating Windows security is required.

  - May not be worth the effort.

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 going to be a problem as the Temp folder will not fill.**

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.
- Do **NOT** set Readyboost to the RAM drive as this will not be active until Windows starts, defeating is purpose.

Any Questions?