

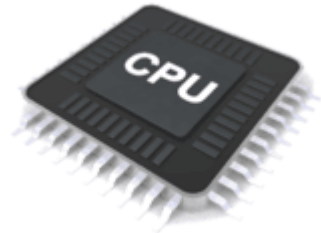


Windows 10/11

“Why is my PC so slow?!?!”

May 16, 2022

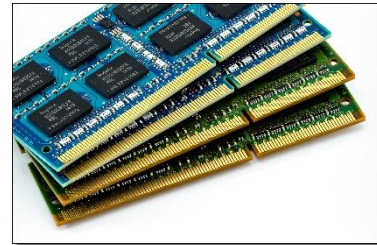
The Three Central Components of a Computer



Processor

Does all the computing.

Speed measured in gigahertz
2 GHz = .5 nanoseconds
(Cache =
Memory of CPU)



Memory (RAM)

Holds **active** programs and data for use by the Processor.

Size is measured in gigabytes,
Takes about 10 nanoseconds to get something to the processor.



Storage

The permanent home of all your programs and data.

HD takes about 10,000 nanoseconds to get something to the memory.
SSD takes about 100 nanoseconds

Task Manager tells you what is physically going on:

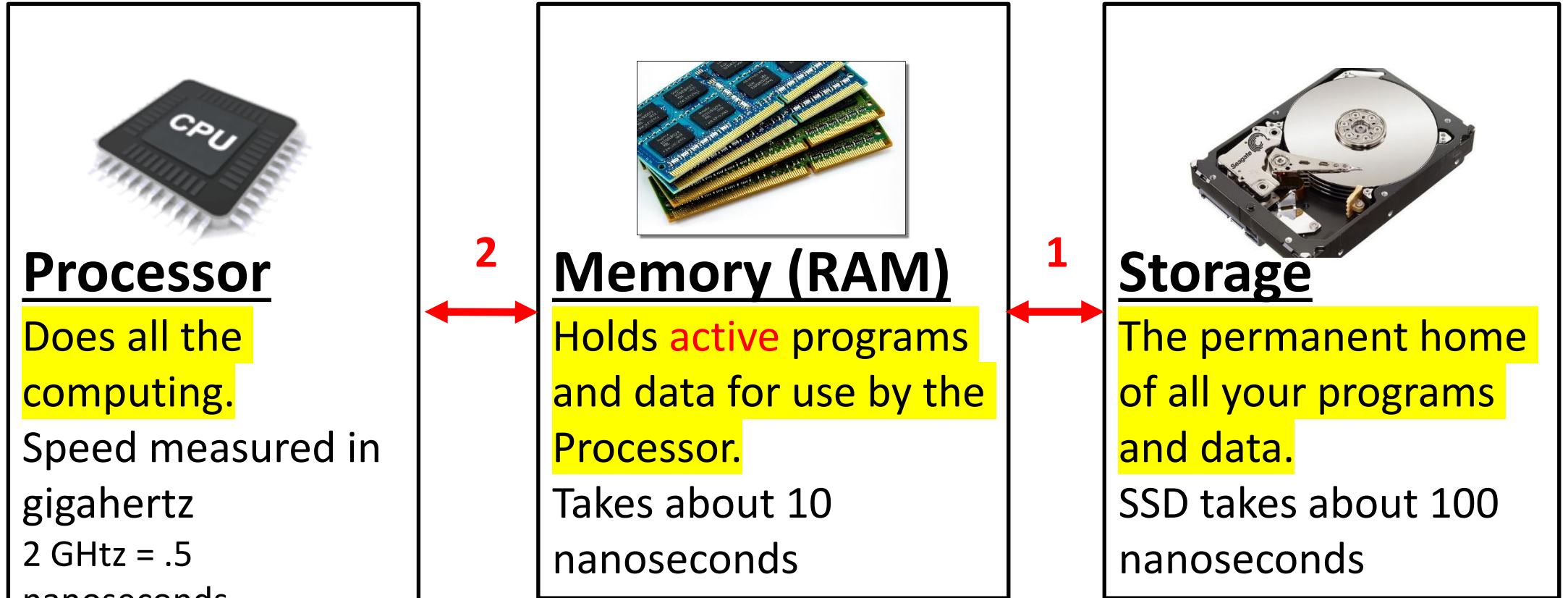
1. What program (process) is using most of the CPU cycles
2. What program is taking up most of the memory and how much memory is available
3. How much information is coming from the disks and the network

Get to Task Manager by “right clicking” on the Start Button

The screenshot shows the Windows Task Manager application window. The 'Processes' tab is selected, displaying a list of running processes with columns for Name, Status, CPU usage, Memory usage, Disk usage, Network usage, GPU usage, and GPU engine. The 'Task Manager' process is highlighted in blue, indicating it is the active window. The 'Performance' tab is also visible, showing system-wide metrics: CPU at 31%, Memory at 71%, Disk at 2%, Network at 0%, and GPU at 3%.

Name	Status	CPU	Memory	Disk	Network	GPU	GPU engine
Microsoft Edge (52)		4.5%	1,122.2 MB	0.1 MB/s	0 Mbps	0%	GPU 0 - 3D
Google Chrome (36)		8.1%	799.5 MB	0 MB/s	0 Mbps	0.1%	GPU 0 - 3D
Desktop Window Manager		2.1%	279.2 MB	0.1 MB/s	0 Mbps	2.2%	GPU 0 - 3D
Antimalware Service Executable		1.6%	270.8 MB	0 MB/s	0 Mbps	0%	
Microsoft PowerPoint (2)		0%	104.3 MB	0.1 MB/s	0 Mbps	0%	
Google Chrome		0.5%	100.2 MB	0 MB/s	0 Mbps	0%	
Google Chrome		0%	89.7 MB	0 MB/s	0 Mbps	0%	
SmartByte Network Service		0.2%	87.6 MB	0 MB/s	0 Mbps	0%	
Google Chrome		0.6%	76.0 MB	0 MB/s	0.2 Mbps	0%	
Windows Explorer		2.0%	53.0 MB	0.4 MB/s	0 Mbps	0%	
Google Chrome		3.6%	51.3 MB	0 MB/s	0 Mbps	0%	
Microsoft OneDrive		0%	40.7 MB	0 MB/s	0 Mbps	0%	
Intel(R) System Usage Report		0.6%	39.4 MB	0.1 MB/s	0 Mbps	0%	
Task Manager		0.7%	35.3 MB	0.1 MB/s	0 Mbps	0%	
Google Chrome		0%	34.8 MB	0 MB/s	0 Mbps	0%	
Secure System		0%	31.6 MB	0 MB/s	0 Mbps	0%	
Google Chrome		0.2%	31.0 MB	0 MB/s	0 Mbps	0%	
Service Host: DCOM Server Proc...		0.1%	28.2 MB	0.1 MB/s	0 Mbps	0%	
Google Chrome		0.1%	26.4 MB	0 MB/s	0 Mbps	0%	
Windows Widgets (7)		0%	23.4 MB	0 MB/s	0 Mbps	0%	

The Speed impacts of the Components



1. How often info from storage is accessed (size of RAM)
2. How often Memory is accessed (size of Cache)
3. How many programs the Processor can run (cores)

Accessing Storage is the #1 reason for a slow down!



Storage

The permanent home of all your programs and data.

HD takes about 10,000 nanoseconds to get something to the memory.

SSD takes about 100 nanoseconds

Getting information from a Hard Drive is **100 times slower** than getting it from a Solid State Drive!

Hard Drive storage is less expensive than Solid State storage.

Solid State Storage has become more affordable.

If your C: drive is a hard drive, your PC will be slow!

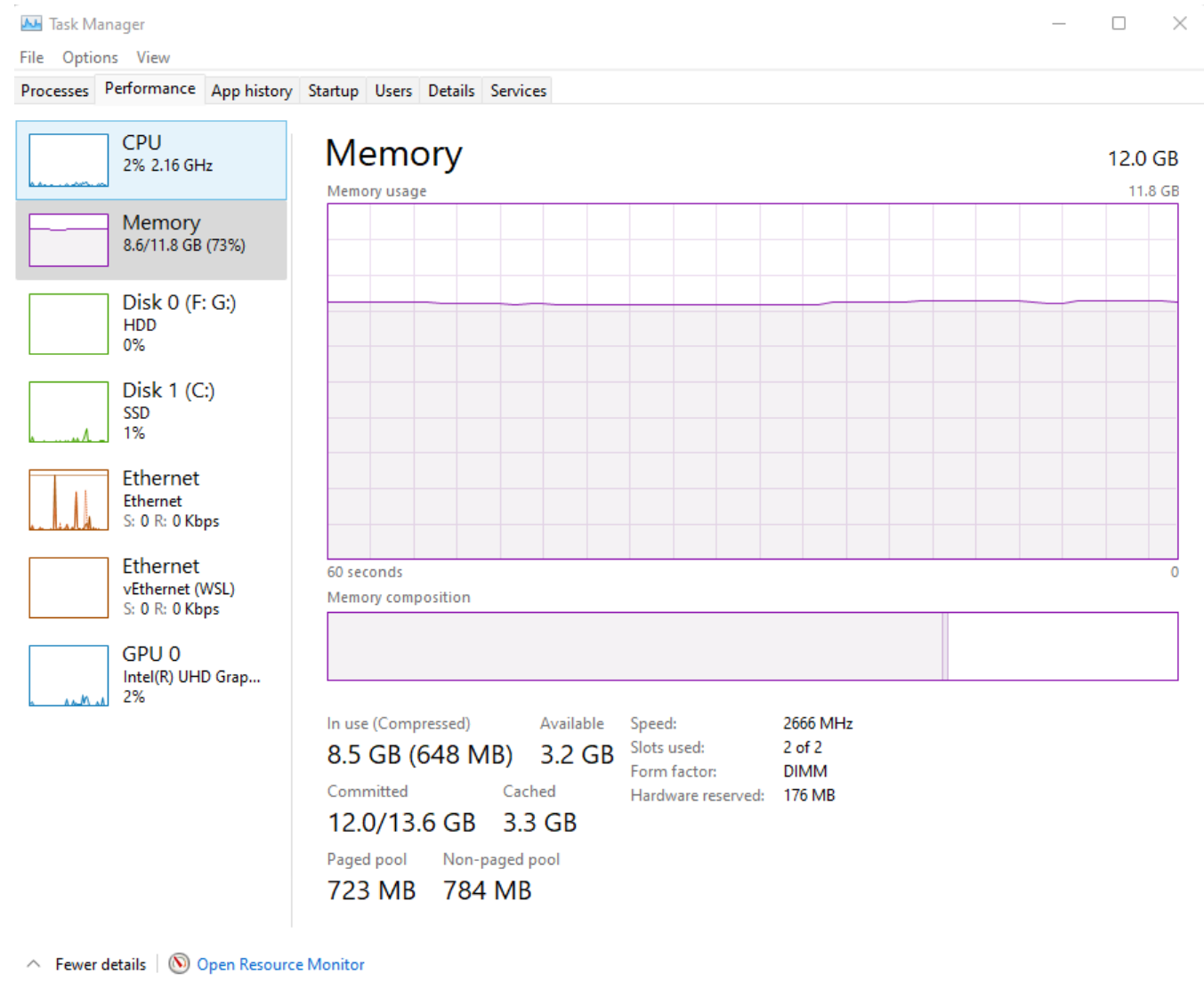
Hard Drives can be replaced by Solid State Drives – We don't suggest you do it yourself

If you are buying a new PC, make sure the C: drive is an SSD. Having a second drive that is a Hard Drive can be useful

Memory Usage is the #2 reason for a slow down!

Memory usage is affected by the number of programs running. Note that each program can have a number of “sub programs” – Browser Tabs and Pages

As Memory usage increases, the access to Storage increases exponentially. High memory usage will cause the PC to be VERY SLOOOOW!



Improve Memory Usage

1. Install more memory (8 GB should be minimum for Windows)
2. Reduce the number of “Startup” Programs
3. Browsers (Chrome, Edge, Safari) are the biggest Memory hogs:
 1. Close tabs you are not using
 2. Don't open multiple occurrences of your browser
 3. Don't open multiple tabs by default
4. Close programs you are not using

(note, these all may be inconvenient – that's why memory size may be the most important spec when buying a new PC)

Reduce the Number of Running Programs

1. Eliminate any extra “helping” programs
 1. Anti virus
 2. Anti malware
 3. Speed up programs
2. Eliminate any unneeded startup programs
3. Check Task Manager for Background Programs you may not want

To “eliminate” a program

1. Settings/Apps/Uninstall

To disable a start up program

1. Task Manager/Startup/disable

Task Manager

File Options View

Processes Performance Users Details Services

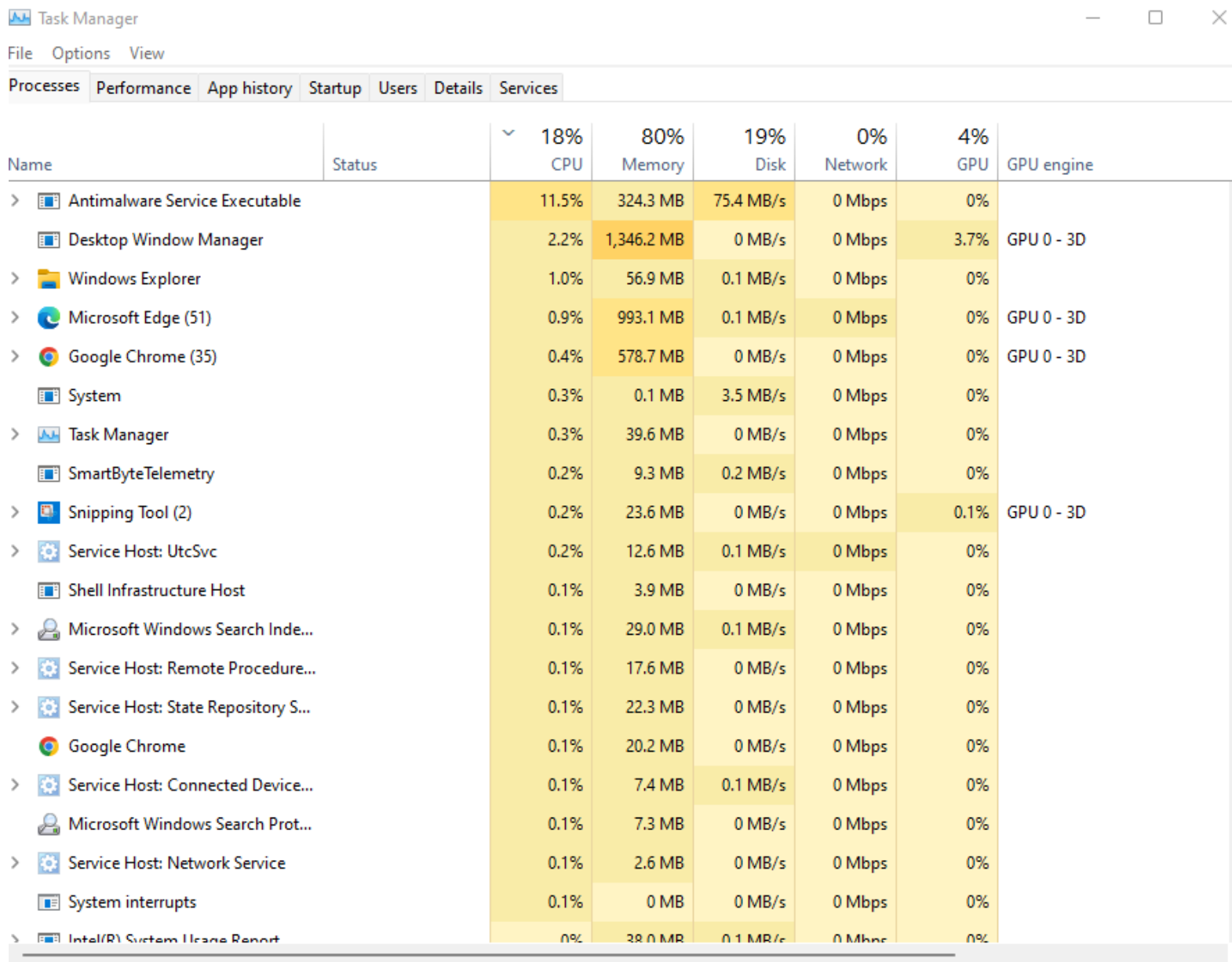
Refresh now
Update speed >
Group by type
Expand all
Collapse all

Name	CPU	Memory	Disk	Network	GPU	GPU engine
Apps (4)						
Malwarebytes Tray Application (...)	0%	12.1 MB	0 MB/s	0 Mbps	0%	
Malwarebytes Tray Application						
Microsoft PowerPoint	0%	170.2 MB	0 MB/s	0 Mbps	0%	
Speeding up a PC.pptx - Po...						
Snipping Tool (2)	0%	3.8 MB	0.1 MB/s	0 Mbps	0%	GPU 0 - 3D
Task Manager	0.3%	28.8 MB	0.1 MB/s	0 Mbps	0%	
Task Manager						
Background processes (83)						
AcroTray (32 bit)	0%	2.7 MB	0 MB/s	0 Mbps	0%	
Adobe Acrobat Update Service (...)	0%	0.9 MB	0 MB/s	0 Mbps	0%	
Adobe Acrobat Update Service						
Adobe Collaboration Synchroni...	0%	2.0 MB	0 MB/s	0 Mbps	0%	
Adobe Collaboration Synchroni...	0%	4.5 MB	0 MB/s	0 Mbps	0%	
Adobe IPC Broker (32 bit)	0%	1.5 MB	0 MB/s	0 Mbps	0%	
Adobe Update Service (32 bit)	0%	1.0 MB	0 MB/s	0 Mbps	0%	
AdobeUpdateService						
AggregatorHost.exe	0%	1.0 MB	0 MB/s	0 Mbps	0%	
Antimalware Service Executable	0.1%	441.5 MB	0.4 MB/s	0 Mbps	0%	
Microsoft Defender Antivirus...						

^ Fewer details

End task

CPU and Disk Utilization can be a cause of “temporary” slowdowns – especially when starting up



The screenshot shows the Windows Task Manager Performance tab. The top bar indicates overall system usage: 18% CPU, 80% Memory, 19% Disk, 0% Network, and 4% GPU. Below this, a table lists individual processes and their resource usage.

Name	Status	18% CPU	80% Memory	19% Disk	0% Network	4% GPU	GPU engine
> Antimalware Service Executable		11.5%	324.3 MB	75.4 MB/s	0 Mbps	0%	
Desktop Window Manager		2.2%	1,346.2 MB	0 MB/s	0 Mbps	3.7%	GPU 0 - 3D
> Windows Explorer		1.0%	56.9 MB	0.1 MB/s	0 Mbps	0%	
> Microsoft Edge (51)		0.9%	993.1 MB	0.1 MB/s	0 Mbps	0%	GPU 0 - 3D
> Google Chrome (35)		0.4%	578.7 MB	0 MB/s	0 Mbps	0%	GPU 0 - 3D
System		0.3%	0.1 MB	3.5 MB/s	0 Mbps	0%	
> Task Manager		0.3%	39.6 MB	0 MB/s	0 Mbps	0%	
SmartByteTelemetry		0.2%	9.3 MB	0.2 MB/s	0 Mbps	0%	
> Snipping Tool (2)		0.2%	23.6 MB	0 MB/s	0 Mbps	0.1%	GPU 0 - 3D
> Service Host: UtcSvc		0.2%	12.6 MB	0.1 MB/s	0 Mbps	0%	
Shell Infrastructure Host		0.1%	3.9 MB	0 MB/s	0 Mbps	0%	
> Microsoft Windows Search Inde...		0.1%	29.0 MB	0.1 MB/s	0 Mbps	0%	
> Service Host: Remote Procedure...		0.1%	17.6 MB	0 MB/s	0 Mbps	0%	
> Service Host: State Repository S...		0.1%	22.3 MB	0 MB/s	0 Mbps	0%	
Google Chrome		0.1%	20.2 MB	0 MB/s	0 Mbps	0%	
> Service Host: Connected Device...		0.1%	7.4 MB	0.1 MB/s	0 Mbps	0%	
Microsoft Windows Search Prot...		0.1%	7.3 MB	0 MB/s	0 Mbps	0%	
> Service Host: Network Service		0.1%	2.6 MB	0 MB/s	0 Mbps	0%	
System interrupts		0.1%	0 MB	0 MB/s	0 Mbps	0%	
> Intel(R) System Usage Report		0%	38.0 MB	0.1 MB/s	0 Mbps	0%	

Improve CPU and Disk Utilization

1. Running “VERY SLOW” for 2 or 3 minutes or more when starting up is often caused by scheduling of system maintenance tasks. Being sure you “restart” at least once a week can help. Sometimes these can be hard to find – bring your PC to the club!
2. Limiting background programs (check system tray & task manager)
 1. Anti Virus (Windows Anti Virus can be “good enough”)
 2. Performance “enhancement programs” like CC Cleaner
 3. “Helper” programs like printer monitors
3. Eliminate any malware – Malwarebytes free is a great tool to run occasionally.

Bad Stuff



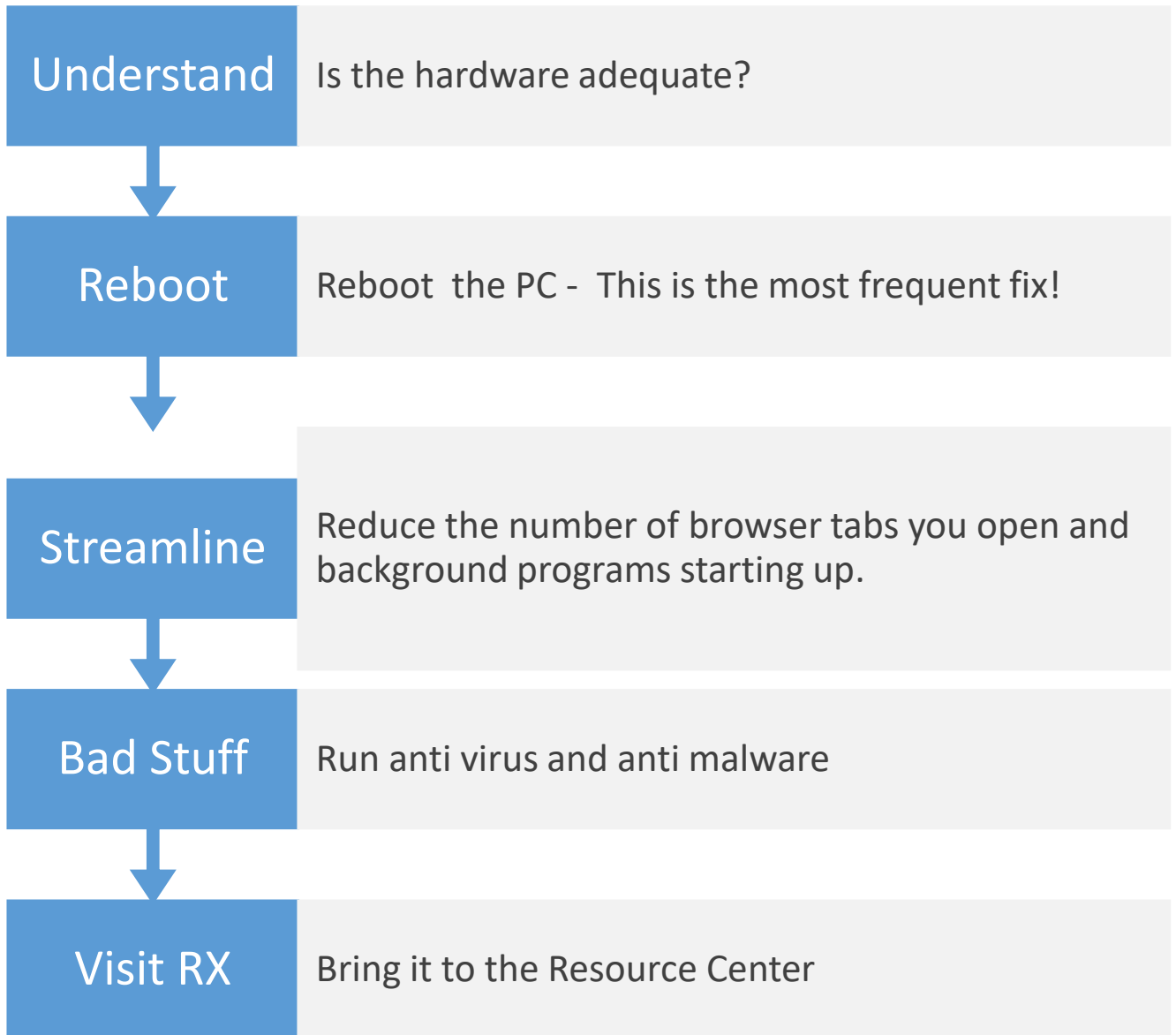
Malware Will Make Web Browsing SLOOOW!

- Install and run Malwarebytes free version

<https://www.malwarebytes.com/>

- In Malwarebytes settings, Account Details - Decline Premium Upgrade
- Run Defender scan

“Why is my PC running so slow?!?!”



Is Your Hardware Adequate?

Current Browsers and Programs use many more resources than those from 2010 and before. Better hardware is needed.

1. Settings/System/About

Memory – 8 GB or more

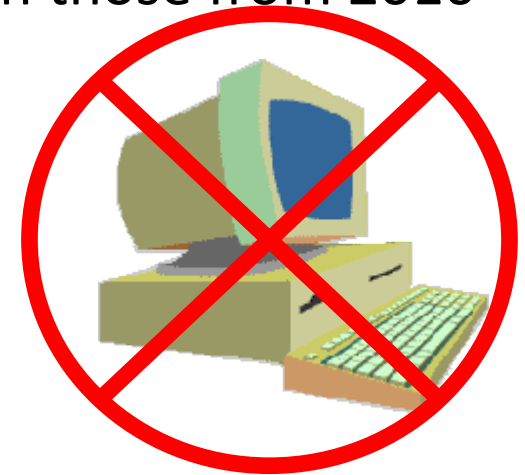
Processor – Intel I3, I5, I7 Generation 6 or higher
AMD Ryzen 3, 5 or 7 3000 or higher

2. Open File Explorer and click on This PC

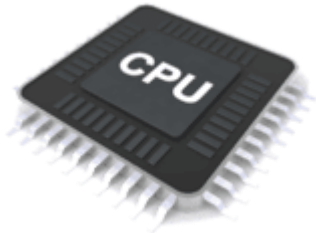
Insure 20 GB free space on C: Drive

If C: is a hard drive your start up will be slow

Not much can be done if these conditions are not met. Time for a new PC



Compute Processing Unit



Processor

Does all the
computing.

Speed measured in
gigahertz

2 GHz = .5

nanoseconds

Core = The circuits that actually execute instructions.

Speed in GHz is how many billions of instructions the core can execute in 1 second.

The faster the core is running, the more heat it produces.

The speed of light limits how fast a core can run due to the distance the signal must travel.

Newer chips have smaller circuits and can run faster with less heat.

A CPU can have more than 1 core – it can then execute more than one program at a time.

Cache = Memory that is built into the CPU. It is used to preload information from memory (this is called buffering).

Example CPU's

Manufacturer	Model Name	Common Speed	Number of Cores	Amount of Cache
Intel	i3-1220PE	3.1 GHz	8	12 mb
Intel	i7-12650HX	4.7 to 3.3 GHz	14	24 mb
AMD	Ryzen 3 4100	3.8 GHz	4	4 mb
AMD	Ryzen 7 5750G	4.6 to 3.8 GHz	8 Processor 8 Graphics	16 mb

Buying a NEW PC

1. Have Enough Memory
 - 8 GB minimum, 16 GB good, 32 GB great!
2. Get a Solid State Drive at least 256 GB, 512 GB great!
3. Processor speed and cache sizes
 - I3 is fine for standard home use
(I3 has 12 mb smart cache, Celeron had 2 mb smart cache)
 - I7 is best for compute intensive stuff like video editing
 - Ryzen 7 5000 is very good and cheaper

Home User: email plus web plus some home office work

Processor = Intel I3, AMD Ryzen 3 or 5, Memory = 8GB, SSD 256 GB

Heavy User: multiple email accounts, heavy office work, photo or video

Processor = Intel I7, AMD Ryzen 7, Memory = 16 GB, SSD = 512 GB

Example Laptops from Bestbuy – May 15, 2022





Lenovo - IdeaPad 3 15" HD Touch Screen Laptop - Intel Core i3-1115G4 - Intel UHD Graphics - 8GB Memory - 256GB SSD - Almond

Model: 81X800KLUS SKU: 6497829

★★★★★ (37 reviews)


Get it today nearby

 **Pickup:** Order now for pickup on Wed, May 25 at Bluffton
Available today at a location 21 miles away
[See all pickup locations](#)

 **FREE Shipping:** Get it by Tue, May 17
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\$499.99

Free 6-month security software
A \$29.99 value

 **Add to Cart**

Open-Box: from \$439.99




Amazon Alexa built in


Dell - Inspiron 7000 2-in-1 14" Touch-Screen Laptop - AMD Ryzen 7 - 16GB Memory - 512GB Solid State Drive - Blue

Model: i7415-A920BLU-PUS SKU: 6458906

★★★★★ (411 reviews)

Get it in 3 days


 **Pickup:** Unavailable within 250 miles of Bluffton
[Update location](#)

 **FREE Shipping:** Get it by Wed, May 18
[See all shipping options for 29928](#)

\$849.99

Save \$150 Was \$999.99

Free 6-month security software
A \$29.99 value

 **Add to Cart**

Open-Box: from \$483.99

Demonstrations

- System/About
- Task Manager
 - Start up programs
 - Background Tasks
 - Effect of Tabs in browser
- Apps
 - Uninstall