

FREE UP SPACE ON YOUR C: DRIVE IN "WINDOWS.."

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Notes**”

SUMMARY

The manufacturers of computers have been replacing the internal hard drives with smaller and faster SSDs (= "Solid State Drives). While this provides the end user with a faster-running computer, it results in a C: hard drive partition that fills up faster than in past years. Here is a rigorous procedure for freeing up space on a crammed C: drive.

TOPICS

- Big Steps for Freeing Up The C: Drive
- Explanations for the Big Steps
- Small Steps (for Freeing Up the C: Drive With the Actual Detailed Steps That You Have to Do)

BIG STEPS FOR FREEING UP THE C: DRIVE

- Big Step 100: Run "System Restore" to back up the Windows "Registry"
- Big Step 200: Attach an external USB 3 (or eSATA) hard drive (temporarily) to your computer, then use "Macrium Reflect Free" or "Acronis True Image" to make an image of the entire internal hard drive. Then disconnect the external USB or eSATA hard drive.

BIG STEPS FOR FREEING UP THE C: DRIVE

- Big Step 300: Make "file extensions", "hidden files, folders, and drives" AND "protected operating system files.." all visible
- Big Step 400: Run "Disk Cleanup" on the "System Files"

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 500: Run "Disk Cleanup" on the non-system files
- Big Step 600: Attach an external mechanical hard drive to your computer (via SATA, eSATA, or USB 3)

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 700: Move data files from the C: drive (to the hard drive that you attached in "Step 600")
- Big Step 800: Restore the check mark for "Hide protected operating system files.."

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 900 (optional): Set "Known Folders" to redirect from the hard drive where the C: drive partition resides to another permanently-attached hard drive

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 1000 (optional): Relocate "Desktop Apps" from the hard drive where the C: drive partition resides to another permanently-attached hard drive

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 1100 (optional): Relocate "UWP" apps ("Universal Windows Platform" apps) from the hard drive where the C: drive partition resides to another permanently-attached hard drive
- Big Step 1200 (Optional): Compress the C:\Windows folder to gain about 3 Gigabites of space

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 1300 (Optional): Compress the C:\Users folder
- Big Step 1400 (Optional): Turn on "Storage Sense" in "Windows 10.."

BIG STEPS FOR FREEING UP THE C: DRIVE (continued)

- Big Step 1500 (Optional): Delete the "Recovery Partition" or "..Utilities" partition if your "Windows 10.." computer has one. Then expand the C: partition to take up the space in the deleted partition.

EXPLANATIONS FOR THE BIG STEPS

- Big Step 100: Run "System Restore" to back up the Windows "Registry" **(in case you inadvertently hurt the Windows "Registry" with the other big steps).**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 200: Attach an external USB 3 (or eSATA) hard drive (temporarily) to your computer, then use "Macrium Reflect Free" or "Acronis True Image" to make an image of the entire internal hard drive. Then disconnect the external USB or eSATA hard drive.

(So that you have an offline image backup of the hard drive where the C: partition resides that you can restore from.)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 300: Make "file extensions", & "hidden files, folders, and drives" visible, **(It is hard to tell the real name of a file if extensions for files are hidden from view in "File Explorer". It is hard to use an empty hard drive that is hidden from view in "File Explorer". "Protected operating system" files often take up a lot of room on a C: hard drive partition.)**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 400: Run "Disk Cleanup" on the "System Files". (**"System Files" often take up a lot of unnecessary space on a C: hard drive partition.**)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 500: Run "Disk Cleanup" on the non-system files. **(When you install a "desktop app", either from Microsoft or from a "third-party", the "desktop app" will often leave temporary files and installation files that take up space and are not needed by the "desktop app".)**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 600: Attach an additional mechanical hard drive to your computer (via SATA, eSATA, or USB 3). **(You will probably need extra storage space for program files and data files, that currently reside on the C: drive partition, that you do not wish to delete. Data files that you do not wish to delete usually include photo files, spreadsheet files, presentation files, work processing document files, etc.)**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 700: Move data files from the C: drive from the hard drive that you attached in "Step 600".

(For most Windows.. computers, moving data files to another hard drive probably can probably free up more room on the C: drive than any other step.)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 800 (optional): Set "Known Folders" to redirect from the hard drive where the C: drive partition resides to the hard drive that you attached in "Step 600".
(If you set "Known Folders" to redirect from the C: drive to another hard drive, then, by default, when you do a "Save.." or "Save As.." for a new data file, it will default to a location on a non-C: drive so that the C: drive will not fill up again.)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 900 (optional): Relocate "Desktop Apps" from the hard drive where the C: drive partition resides to the hard drive that you attached in "Step 600. **(By default, "Desktop apps" take up significant amounts of space on your C: drive so relocating them to a non-C: drive is a great way to free up space on the C: drive. Unfortunately, the process for relocating them involves a removal followed by a re-installation.)**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 1000 (optional): Relocate "UWP" apps ("Universal Windows Platform" apps) from the hard drive where the C: drive partition resides to the hard drive that you attached in "Step 600". **(You can easily re-locate "UWP" apps from the C: drive to another drive from inside "Settings" in "Windows 10..". However, you can only free up 1 to 4 Gigabytes of space on the C: drive by doing so.)**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 1100 (Optional): Compress the C:\Windows folder. **(Compressing the C:\Windows folder slows down your computer but it only gains about 3 Gigabytes of space on the C: drive. Computer technicians often compress the C:\Windows folder when they encounter a C: drive partition that is so stuffed that Windows.. keeps locking up as a temporary way to get Windows.. to run well enough so that other repairs can be made.)**

EXPLANATIONS FOR THE BIG STEPS

(continued)

- (Big Step 1100 (Optional): Compress the C:\Windows folder (continued).

(This slows down your computer and should be done only as a temporary measure to to get Windows.. to run well enough so that other repairs can be made. When you no longer need the 3 to 6 Gigabytes of gained space, you can uncompress the C:\windows folder to speed back up the computer.)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 1200 (Optional): Compress the C:\Users folder. (This also slows down your computer and should be done only as a temporary measure to **to get Windows.. to run well enough so that other repairs can be made.**)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 1300 (Optional): Turn on "Storage Sense" in "Windows 10..".
(This is a new feature in the version 1809 "Feature Update" of "Windows 10.." that most Windows 10.. computers do not have yet. Based on the rules that you tell it, it will delete "unwanted"/"unneeded" files from the C: drive at regularly-scheduled intervals of time.)

EXPLANATIONS FOR THE BIG STEPS

(continued)

- Big Step 1400 (Optional): Delete the "Recovery Partition" in "Windows 10..". **(If you C: drive partition or your "EFI System Partition" subsequently fails, you will be unable to recover it from the "Recovery Partition" so you would then have to recover the failed partition from the image backup that you made in "Big Step 200" instead.)**

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"

- Small Step 101: Right click on the Start button
- Small Step 102: Click on "Run"
- Small Step 103: Type in **control**
- Small Step 104: Click on "OK"
- Small Step 105: The "Control Panel" will be displayed

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"(continued)

- Small Step 106: Double-click on "System". (You might have to locate "System" inside "System and Security")

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"(continued)

- Small Step 107: A "System" window will be displayed

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS

"REGISTRY"(continued)

- Small Step 108: Click on "System protection" inside the "System" window
- Small Step 109: A "System Properties" window will be displayed
- Small Step 110: Click on the "Create..." button
- Small Step 111: A "System Protection" box will be displayed

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"(continued)

- Small Step 112: Enter an appropriate name in the "System Protection" box. A good name would be
<yyyy-mm-dd> <24-hour time> <am or pm>
such as
2019-01-06 1300pm

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"(continued)

- Small Step 113: Click on the "Create" button of the "System Protection" box
- Small Step 114: Click on the "Close" button of the "System Protection" box
- Small Step 115: The "System Protection" box will disappear

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"(continued)

- Small Step 116: Click on the "OK" button of the "System Properties" box
- Small Step 117: The "System Properties" box will disappear
- Small Step 118: The "System Properties" box will disappear

BIG STEP 100: RUN "SYSTEM RESTORE" TO BACK UP THE WINDOWS "REGISTRY"(continued)

- Small Step 119: Click on the "x" button of the "Control Panel" window to close the "Control Panel" window
- Small Step 120: The "Control Panel" window will disappear

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES

- Use "Macrium Reflect Free" and/or "Acronis True Image" to make a backup image of the hard drive where the C: hard drive partition resides.

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- The "backup image" will be a set of one or more files and this "backup image" should be stored on an external hard drive that is not normally attached to your computer so that malware cannot get to the "backup image".

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- To download a copy of "Macrium Reflect Free",
go to
<https://www.macrium.com/reflectfree>

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- Screen shots to show you how to install "Macrium Reflect Free" into a "Windows.." computer are available at http://aztcs.org/meeting_notes/winhard sig/software/utils/zip/MacriumInstall-intoWin.zip

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- Screen shots to show you how to use "Macrium Reflect Free" to create a bootable Rescue Media CD or DVD are available at http://aztcs.org/meeting_notes/winhardsig/software/utils/zip/MacriumCreateRescueDVDinWin.zip

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES

(continued)

- To test the bootable "Macrium Reflect Free" "Recue Media" DVD or CD, you can access the UEFI configuration screens of your computer either with the manufacturer-provided key sequence during the power-on boot up or you can use "Settings" in "Windows 10.." as described in http://aztcs.org/meeting_notes/winhardsi/g/hardware/UEFIviaWin10.pdf

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- Screen shots to show you how to use the Windows desktop "Graphical User Interface" of "Macrium Reflect Free" to make a backup image of the hard drive was C: resides are available at http://aztcs.org/meeting_notes/winhardsig/software/utils/zip/MacriumBackupViaWinGUI.zip

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- The backup image that you create for the hard drive where C: resides should be stored on a hard drive that is off-line in a safe place. It should not be attached to your computer because it should be away from malware and other bad things that might happen to your computer.

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- Having a backup image of the hard drive where C: resides lets you recover from any problems that might arise from the remain steps in this procedure for freeing up space on the C: drive partition of your computer.

BIG STEP 200: CREATE A BACKUP IMAGE OF THE HARD DRIVE WHERE C: RESIDES (continued)

- Having a backup image of the hard drive where C: resides makes it safe for you to perform **Big Step 1400 (Optional) (=Delete the "Recovery Partition")** if your "Windows 10.." computer has a manufacturer-specific "Recovery Partition".

BIG STEP 300: MAKE "FILE EXTENSIONS" & "HIDDEN FILES, FOLDERS, AND DRIVES" & "..PROTECTED OPERATING SYSTEM FILES" ALL VISIBLE

- Small Step 301: Right click on the Start button
- Small Step 302: Click on "Run"
- Small Step 303: Type in **control**
- Small Step 304: Click on "OK"

BIG STEP 300: MAKE "FILE EXTENSIONS" & "HIDDEN FILES, FOLDERS, AND DRIVES" & "..PROTECTED OPERATING SYSTEM FILES" ALL VISIBLE (continued)

- Small Step 305: The "Control Panel" will be displayed
- Small Step 306: Double-click on "File Explorer Options". (You might have to locate "File Explorer Options" inside "Appearance and Personalization")

BIG STEP 300: MAKE "FILE EXTENSIONS" & "HIDDEN FILES, FOLDERS, AND DRIVES" & "..PROTECTED OPERATING SYSTEM FILES" ALL VISIBLE (continued)

- **Small Step 307: Get into the "View" tab of "File Explorer Options" by clicking on it**

BIG STEP 300: MAKE "FILE EXTENSIONS" & "HIDDEN FILES, FOLDERS, AND DRIVES" & "..PROTECTED OPERATING SYSTEM FILES" ALL VISIBLE (continued)+

- **Small Step 308: Inside the "Advanced settings" field, make sure that the "Show hidden files, folders, and drives" radio button is selected.**

BIG STEP 300: MAKE "FILE EXTENSIONS" & "HIDDEN FILES, FOLDERS, AND DRIVES" & "..PROTECTED OPERATING SYSTEM FILES" ALL VISIBLE (continued)

- **Small Step 309: Inside the "Advanced settings" field, make sure that there is no check mark for "Hide extensions for known file types"**

BIG STEP 300: MAKE "FILE EXTENSIONS" & "HIDDEN FILES, FOLDERS, AND DRIVES" & "..PROTECTED OPERATING SYSTEM FILES" ALL VISIBLE (continued)

- Small Step 310: Inside the "Advanced settings" field, remove the check mark from "Hide protected operating system files (Recommended)" if you find a check mark there. When you do so, you will get an "Are you sure.." warning. When you get this warning, click on the "Yes" button of the warning box.

BIG STEP 300: RUN "SYSTEM RESTORE TO BACK UP THE WINDOWS "REGISTRY (continued)

- Small Step 311: Click on the "Apply" button of the "File Explorer Options" box, if the "Apply" button is not grayed out
- Small Step 312: Click on the "OK" button of the "File Explorer Options" box and the "File Explorer Options" box will disappear.

BIG STEP 300: RUN "SYSTEM RESTORE TO BACK UP THE WINDOWS "REGISTRY (continued)

- Small Step 313: Click on the "X" button in the upper-right corner of the "Control Panel" window to close the "Control Panel" window.

BIG STEP 400: RUN "DISK CLEANUP" ON THE "SYSTEM FILES"

- Small Step 401: Start "File Explorer" (usually by right-clicking on the folder icon on the Taskbar)
- Small Step 402: Locate the C: drive inside "File Explorer". It is usually inside "This PC".
- Small Step 403: Right-click on the C: drive

BIG STEP 400: RUN "DISK CLEANUP" ON THE "SYSTEM FILES" (continued)

- Small Step 404: A pop-up context menu will be displayed
- Small Step 405: Click on "Properties" in the pop-up context menu
- Small Step 406: A "..Properties" box will be displayed
- Small Step 407: Click on the "Disk Cleanup" button

BIG STEP 400: RUN "DISK CLEANUP" ON THE "SYSTEM FILES" (continued)

- Small Step 408: A "Disk Cleanup for.." box will be displayed
- Small Step 409: Click on the "Clean up system files" button
- Small Step 410: "Disk Cleanup" will run by itself for a while
- Small Step 411: Place a check mark next to any items that you wish to remove

BIG STEP 400: RUN "DISK CLEANUP" ON THE "SYSTEM FILES" (continued)

- Small Step 412: Click on the "OK" button of the "Disk Cleanup for.." box
- Small Step 413: Click on the "Delete Files" button of the "Are you sure.." warning box
- Small Step 414: "Disk Cleanup" will run by itself for a while

BIG STEP 400: RUN "DISK CLEANUP" ON THE "SYSTEM FILES" (continued)

- Small Step 415: Click on the "OK" button of the "..Properties" box to close the "..Properties" box

BIG STEP 500: RUN "DISK CLEANUP" ON THE NON-SYSTEM FILES

- Small Step 501: Start "File Explorer" (usually by right-clicking on the folder icon on the Taskbar)
- Small Step 502: Locate the C: drive inside "File Explorer". It is usually inside "This PC".
- Small Step 503: Right-click on the C: drive

BIG STEP 500: RUN "DISK CLEANUP" ON THE NON-SYSTEM FILES (continued)

- Small Step 504: A pop-up context menu will be displayed
- Small Step 505: Click on "Properties" in the pop-up context menu
- Small Step 506: A "..Properties" box will be displayed
- Small Step 507: Click on the "Disk Cleanup" button

BIG STEP 500: RUN "DISK CLEANUP" ON THE NON-SYSTEM FILES (continued)

- Small Step 508: A "Disk Cleanup for.." box will be displayed
- Small Step 509: Place a check mark next to any items that you wish to remove

BIG STEP 500: RUN "DISK CLEANUP" ON THE "SYSTEM FILES" (continued)

- Small Step 510: Click on the "OK" button of the "Disk Cleanup for.." box
- Small Step 511: Click on the "Delete Files" button of the "Are you sure.." warning box
- Small Step 512: "Disk Cleanup" will run by itself for a while

BIG STEP 500: RUN "DISK CLEANUP" ON THE "SYSTEM FILES" (continued)

- Small Step 513: Click on the "OK" button of the "..Properties" box to close the "..Properties" box

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER

- If you procure an internal hard drive to install into a desktop computer:
Connect a SATA data cable between a SATA port on your motherboard and the SATA data port on the internal hard drive.

Then connect an existing spare SATA power cable that is part of your computer's power supply to the SATA power port on the internal hard drive

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- You can purchase or build an external hard drive to connect to your computer, if your computer has an available USB 3.x port, an available SATA port, an available eSATA port or an available Thunderbolt port

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER

(continued)

- If you build an external USB 3.x hard drive to connect to your computer, you will usually save money over buying one that is already built and you will end up with one that lasts longer than one that is already built. See http://aztcs.org/meeting_notes/winhard_sig/harddrives/external/external-hard-drives.pdf

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- Adding an internal hard drive to a laptop computer is more difficult than adding an internal hard drive to a desktop computer:
Check the owners manual for your laptop to see if there is a space for a second hard drive inside your laptop computer.

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- Adding an internal hard drive to a laptop computer is more difficult than adding an internal hard drive to a desktop computer (continued):

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- For some laptops, you can remove the DVD drive and then install a "hard drive caddy tray" adapter that lets you insert an SSD or a 2.5-in. hard drive into the space where the DVD drive used to reside.

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- The 12.7 millimeter (tall) "hard drive caddy" trays have a "Slim" (= "Slimline") SATA power & data connector. They fit into the DVD slots of laptops that are manufactured by Lenovo, Asus, HP, Dell, and Acer:

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- See
[https://www.amazon.com/dp/B00KBO
N2BO/ref=psdc_160354011_t2_B01M
RI8YFN?th=1](https://www.amazon.com/dp/B00KBO
N2BO/ref=psdc_160354011_t2_B01M
RI8YFN?th=1)

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- The 7 to 9.5 millimeter (tall) "hard drive caddy" trays also have a "Slim" (= "Slimline") SATA power & data connector. They fit into the DVD slots of laptops that are manufactured by Dell, HP, MacBook, ASUS, Acer, and Benq

BIG STEP 600: ATTACH A MECHANICAL HARD DRIVE TO YOUR COMPUTER (continued)

- See
https://www.amazon.com/dp/B010CRVKUO/ref=psdc_160354011_t2_B01MRI8YFN?th=1

BIG STEP 700: MOVE DATA FILES FROM THE C: DRIVE..

- Open two "file explorer" Windows..
- Place them side-by-side so that they do not overlap each other
- Use the right mouse button to drag data files and folders from the C: drive to the non-C: drive resides on the hard drive that you installed in "Big Step 600"

BIG STEP 700: MOVE DATA FILES FROM THE C: DRIVE.. (continued)

- At the end of each drag of files or folders with the left mouse button, you have to decide whether you want to "Copy" or "Move" the files:

To avoid problems caused by bad sectors either on the C: drive or the non-C: drive, select "Copy".

Delete the original files or folders from the C: drive only when you have copied them to at least two non-C: drives

BIG STEP 700: MOVE DATA FILES FROM THE C: DRIVE.. (continued)

- To make sure that you are dragging from the actual location a data file where it is really located on your C: drive, go to C:\Users\<<your user name>\ instead of the "Known Folder" in "This PC":





