

OPCUG

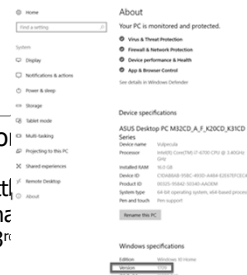
Windows Performance Tune-up

Chris Taylor

Users helping users

This deck: opcug.ca/WindowsTuneup


Agenda



- Major causes of performance problems in Windows computers
 - Find performance bottlenecks
 - Fix bottlenecks with network
 - Fix bottlenecks with storage
- Assumptions:
 - Latest version of Windows
 - Windows 10 Fall Creators Update v1709 (*Settings | System | About*)
 - Most techniques work with Windows 7/8 as well
 - Using latest version of browser
 - Edge, Internet Explorer, Google Chrome, or Mozilla Firefox (*Help | About | "... is up to date"*)


Caution

- Following instructions in this presentation **will** affect your computer. They can;
 - remove programs
 - remove data files
 - change behaviours
 - ... and hopefully improve performance
- Chris Taylor and the Ottawa PC Users' Group accept no responsibility for a negative outcome
- Back up your computer!
- You have been warned
- Now lets have some fun improving the performance of your computer!




Universal tune-up options

- More memory
 - If you have less than about 8 GB
 - May get performance boost with more memory
- Faster storage
 - In most circumstances, it helps to;
 - Move from a slow hard drive to a faster hard drive
 - Move from a hard drive to a solid state drive
- Faster video card
 - If you are a gamer, video editor, or (maybe) photo editor
- New computer
 - Sometimes, nothing beats just buying a new, faster computer




Major causes of performance problems

- CPU hogs
- Disk activity hogs
- Memory hogs
- Internet connectivity hogs
- Web browser plug-ins and caches
- Malware
- Disk clutter
- Auto starting programs
- Out-of-date drivers
- Disk indexing
- Crapware



Task Manager Resource Manager

- Measure resource utilization
- Right-click empty space on Taskbar or press Ctrl-Alt-Del
- Choose **Task Manager**
 - Click *More details* at bottom
 - Tabs for main categories
 - Processes – load on CPU, memory, disk, network and GPU by process
 - Performance – graphs of overall utilization for above
 - App History – details over time of load by CPU and network
 - Start-up – some of the programs set to auto-start
- Task Manager | **Performance** tab | **Open Resource Monitor**
 - Select **Disk** tab, then section **Disk Activity**
 - Shows files being accessed for read or write
 - Select **Network** tab, then section **Network Activity**
 - Shows what programs are using how much bandwidth



CPU Hogs
<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – A program can demand lots of processor time <ul style="list-style-type: none"> ■ Starve other programs so they get little processing time ■ The other processes slow down ■ Causes overall slowdowns ■ Solutions: <ul style="list-style-type: none"> – Track down the hogs and kill them (maybe) – Only run processor-intensive programs when not concerned about running other programs


CPU Hogs
<ul style="list-style-type: none"> ■ Task Manager <ul style="list-style-type: none"> – Click <i>Performance</i> tab <ul style="list-style-type: none"> ■ Click <i>CPU</i> on left (typical % Utilization under 20% when computer is idle) ■ Right-click chart - <i>Change Graph to</i> <i>Overall utilization or Logical processors</i> – Click <i>Processes</i> tab, then <i>CPU</i> column <ul style="list-style-type: none"> ■ Sorts by % utilization – What can you do? <ul style="list-style-type: none"> ■ Right-click a program and choose <i>End task</i> <ul style="list-style-type: none"> – Not on <i>Windows processes</i> (sort by <i>Name</i> or add <i>Type</i> column) ■ Uninstall programs you don't need ■ Right-click header and add <i>Command line, Publisher, Process name</i> to track down programs


Disk activity hogs
<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Disk operations among slowest functions – Program causing lots of disk activity causes overall slowdowns ■ Solutions: <ul style="list-style-type: none"> – Stop running those programs – Only run them when you are not concerned about running other programs – Change from a hard disk (HDD) to solid state drive (SSD)


Disk activity hogs
<ul style="list-style-type: none"> ■ Task Manager <ul style="list-style-type: none"> – Click <i>Performance</i> tab <ul style="list-style-type: none"> ■ Click <i>Disk #</i> on left (where # is your main partition where Windows is running) ■ If <i>Active time</i> (chart) is frequently over about 25% - 50% it is worth investigating – Click <i>Processes</i> tab, then column <i>Disk</i> <ul style="list-style-type: none"> ■ Sorts by overall disk utilization ■ Use Resource Monitor to dig deeper <ul style="list-style-type: none"> – Select <i>Disk</i> tab and collapse all sections except <i>Disk Activity</i> – Click on columns <i>Read, Write</i> and <i>Total</i> to sort and identify processes with highest disk activity ■ What can you do? <ul style="list-style-type: none"> – Uninstall unneeded programs that have high disk activity – Only run them when not concerned about running other programs – Install a higher performance disk drive or solid state drive (SSD)


Disk activity hogs Special case: low memory
<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Windows' memory manager swaps out programs to disk to make room for other things <ul style="list-style-type: none"> ■ Very time consuming activity – If very high memory utilization (Task Manager, <i>Performance</i> tab, <i>Memory</i> section), computer may be swapping a lot ■ Solutions: <ul style="list-style-type: none"> – Add physical memory in the computer – Don't run so many programs simultaneously



Memory hogs
<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Some programs just use a lot of memory <ul style="list-style-type: none"> ■ Browsers with many tabs open – Some programs may have memory leaks <ul style="list-style-type: none"> ■ Keep requesting more memory <ul style="list-style-type: none"> – Google Chrome? ■ Solutions: <ul style="list-style-type: none"> – Find a program that uses less memory – Restart the program – Don't run so many programs simultaneously – Add physical memory



	<h2>Memory hogs</h2>
	<ul style="list-style-type: none"> ■ Task Manager <ul style="list-style-type: none"> – Click <i>Performance</i> tab <ul style="list-style-type: none"> ■ Click <i>Memory</i> on left (typically 50-75%) ■ Don't worry about anything under about 75% – Click <i>Processes</i> tab, then <i>Memory</i> column <ul style="list-style-type: none"> ■ Sorts by <i>MB of RAM used</i> per process ■ To track down processes, right-click header, add <ul style="list-style-type: none"> – <i>Command line</i> – <i>Publisher</i> – <i>Process name</i>
	

	<h2>Internet connectivity hogs</h2>
	<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Programs taking large amount of bandwidth on Internet connection can slow down other programs requiring bandwidth ■ Solutions: <ul style="list-style-type: none"> – Stop running those programs – Only run them when you are not concerned about other Internet activity – Close unneeded tabs in browser
	


	<h2>Internet connectivity hogs</h2>
	<ul style="list-style-type: none"> ■ Resource Monitor <ul style="list-style-type: none"> – Click <i>Network</i> tab – Collapse all but <i>Network Activity</i> tab – Sort by <i>Send, Receive</i> or <i>Total</i> ■ Can stop programs that are hogging bandwidth <ul style="list-style-type: none"> – Use Task Manager to help track down a program
	

	<h2>Web browser plug-ins / extensions</h2>
	<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Performance lost from badly written web browser plug-ins – Even well-written plug-ins can impact performance if you have too many ■ Solution: <ul style="list-style-type: none"> – Disable/remove plug-ins
	

	<h2>Microsoft Edge plug-ins</h2>
	<ul style="list-style-type: none"> ■ "Extensions" <ul style="list-style-type: none"> – Select  to open the menu – Select <i>Extensions</i> – select the extension and turn it off or click the <i>Uninstall</i> button.
	


	<h2>Google Chrome plug-ins</h2>
	<ul style="list-style-type: none"> ■ "Extensions" <ul style="list-style-type: none"> – Click  <i>More tools</i> <i>Extensions</i> – Uncheck the <i>Enabled</i> box or click the trash can icon to delete any you don't need
	

Microsoft Internet Explorer plug-ins

- "Toolbars" and "Extensions"
 - Click  *Manage add-ons | toolbars and extensions*
 - Under *Show*, select *All add-ons*
 - select any add-on you don't need, click *Disable*



Mozilla Firefox plug-ins

- "Add-ons" and "Extensions"
 - Click  *Add-ons | Extensions*
 - Click *Disable* button or *Remove* button




Web browser cache

- Problem:
 - Can clutter disk with gigabytes of files
 - Can slow down computer
- Solutions:
 - Empty cache
 - Set cache to a reasonable maximum size




Browser cache – Edge

- Clearing cache
 - Click  *Options*
 - *Clear browsing data | select Cached data and files | Clear*
- Setting maximum cache size
 - You can't




Browser cache – Internet Explorer

- Clearing the cache
 - Click  *Internet Options*
 - *General* tab | *Browsing history* | *Delete | Temporary Internet Files and website data*
- Setting maximum cache size
 - *General* tab | *Browsing history* | *Settings*
 - *Disk space to use*




Browser cache - Chrome

- Clearing the cache
 - Click 
 - *More tools | Clear browsing data...*
 - *Time range*: choose *All time*
 - Select box *Cached images and files*
 - Click *Clear data*
- Setting maximum cache size
 - You can't



Browser cache – Firefox

- Clearing the cache
 - Click  *Options*
 - Click *Privacy & Security*
 - *Cached Web Content* | *Clear Now*
- Setting maximum cache size
 - Click three lines in top-right | *Options*
 - Click *Privacy & Security*
 - *Cached Web Content* | *Limit cache to:*



Malware

- Problem:
 - Malware can impact performance ... and much more!
- Solution:
 - Get rid of it!



Malware

- Make sure you are running
 - Anti-virus
 - pick one – *any one* – and keep it up-to-date
 - Anti-spyware
 - ideally “on-access”
 - at least periodic “on-demand”
 - Patch management software
 - Firewall



Free on-access anti-virus

- Microsoft Windows Defender
 - Built into Windows 8.1 / 10
- Avast Home Edition
 - www.avast.com/free-antivirus-download
- AVG
 - free.avg.com
- Bitdefender Free Edition
 - <https://www.bitdefender.com/solutions/free.html>
- Comodo
 - www.comodo.com/home/free
- Avira
 - www.avira.com/en/avira-free-antivirus



Free on-demand anti-virus

- Many free *on demand* virus scanners in case you think your *on-access* scanner is missing something. Just some...
 - ESET
 - www.eset.com/us/online-scanner/
 - Trend Micro HouseCall
 - housecall.trendmicro.com/
 - Panda Cloud Cleaner
 - pandacloudcleaner.pandasecurity.com/facebook/
 - Kaspersky
 - usa.kaspersky.com/free-antivirus
 - Bitdefender
 - www.bitdefender.com/scanner/online/free.html
 - F-Secure
 - www.f-secure.com/en/web/labs_global/removal/online-scanner
 - HerdProtect (not currently available)
 - www.herdprotect.com



Free anti-spyware

- Windows Defender
 - Built into Windows 8.1 / 10
 - Will run periodically (“on-demand”) even if you have another program as your main anti-virus
- Malwarebytes
 - www.malwarebytes.org
- Spybot Search & Destroy
 - www.safer-networking.org/en/index.html
- Ad-Aware
 - www.lavasoftusa.com/software/adaware/
- Reason Company Software’s Unchecky
 - unchecky.com



Free patch management
<ul style="list-style-type: none"> ■ Everything from Microsoft <ul style="list-style-type: none"> – Windows update <ul style="list-style-type: none"> ■ In Windows 10 you can't turn it off ■ ... well, you <i>can</i>, but don't ... ■ For other programs <ul style="list-style-type: none"> – KC Softwares <ul style="list-style-type: none"> ■ Software Update Monitor (SUMo) <ul style="list-style-type: none"> – http://www.kcsoftwares.com/?sumo ■ Driver Update Monitor (DUMo) <ul style="list-style-type: none"> – http://www.kcsoftwares.com/?dumo



Free firewalls
<ul style="list-style-type: none"> ■ Inbound only <ul style="list-style-type: none"> – Native Windows since Windows XP SP2 ■ 2-way firewalls <ul style="list-style-type: none"> – Zone Alarm <ul style="list-style-type: none"> ■ www.zonealarm.com/software/free-firewall/ – Comodo <ul style="list-style-type: none"> ■ personalfirewall.comodo.com – GlassWire Free (in addition to firewall) <ul style="list-style-type: none"> ■ www.glasswire.com



Disk clutter
<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – If the disk fills too much, performance can suffer ■ Solution: <ul style="list-style-type: none"> – Get rid of clutter



Disk Clean-up tool
<ul style="list-style-type: none"> ■ <i>Start Windows Administrative Tools Disk Clean-up</i> ■ Choose option <i>Clean up system files</i> (Disk Clean-up will reload) ■ Big candidates <ul style="list-style-type: none"> ■ Previous Windows Installation(s) ■ Windows Update Clean-up ■ Windows upgrade log files ■ Temporary Internet Files ■ Recycle Bin ■ Temporary files





"Storage"
<ul style="list-style-type: none"> ■ Drill down into storage on each drive ■ <i>Settings System Storage</i> <ul style="list-style-type: none"> – Double click a drive entry ■ Interesting categories <ul style="list-style-type: none"> – Other <ul style="list-style-type: none"> ■ stuff not in named categories – System & reserved <ul style="list-style-type: none"> ■ things like virtual memory and system restore – Other people <ul style="list-style-type: none"> ■ profiles for other accounts





Storage Sense
<ul style="list-style-type: none"> ■ Automatically delete temp files, empty recycle bin, empty downloads folder <ul style="list-style-type: none"> – Windows 10 only – Most options in Fall Creators Update ■ <i>Settings System Storage Storage sense Change how we free up space</i> ■ Choose the categories you want under <i>Temporary Files</i> ■ Turn on Storage sense




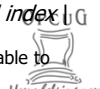
	Auto starting programs
	<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Programs set to auto start can impact: <ul style="list-style-type: none"> ■ Startup speed of your computer ■ Ongoing performance ■ Solution: <ul style="list-style-type: none"> – Stop programs from auto starting
	

	Auto starting programs
	<ul style="list-style-type: none"> ■ Windows can stop auto-starting of many programs ■ Task Manager <ul style="list-style-type: none"> – Start-up tab – Select item, click Disable button
	

	Out of date drivers
	<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Drivers are software that allows your computer to communicate with hardware devices <ul style="list-style-type: none"> ■ Can have a big impact on performance ■ Particularly video drivers ■ Solution: <ul style="list-style-type: none"> – Keep drivers updated
	


	Out of date drivers
	<ul style="list-style-type: none"> ■ Vendors often update drivers to fix bugs and improve performance ■ Windows Update will sometimes update drivers (including third-party) ■ Vendors sometimes have updated drivers not made available through Windows Update <ul style="list-style-type: none"> – Visit the vendor's web site and search under <i>Support</i> for updated drivers – Find the vendor through Device Manager <ul style="list-style-type: none"> ■ Right-click <i>Start</i>, choose <i>Device Manager</i>
	

	Disk indexing
	<ul style="list-style-type: none"> ■ Problem: <ul style="list-style-type: none"> – Windows' built-in disk indexing can use up a lot of disk space – Note: disk indexing has no significant impact on performance ■ Solution: <ul style="list-style-type: none"> – If you don't want to search on contents of files, consider disabling disk indexing to save disk space
	

	Disk indexing
	<ul style="list-style-type: none"> ■ Right click <i>Start</i> <i>Computer Management</i> ■ Expand <i>Services and Applications</i> and choose <i>Services</i> ■ Double-click <i>Windows Search</i> <ul style="list-style-type: none"> – Click <i>Stop</i> – Set <i>Startup type:</i> to <i>Disabled</i> ■ Delete existing index <ul style="list-style-type: none"> – <i>Settings</i> search on <i>Indexing Options</i> – <i>Advanced</i> button <i>Delete and rebuild index</i> <ul style="list-style-type: none"> ■ (Windows Search service is disabled - unable to rebuild the index)
	


Crapware

- **Problem:**
 - Many computer vendors add tons of performance-sucking crapware
- **Solution:**
 - Uninstall any you don't want or need
 - *Settings | Apps | Apps & features*



Free advanced utilities


- Sysinternals from Microsoft's Mark Russinovich
 - Autoruns
 - Ferrets out all programs autostarting and allows you to turn any off
 - docs.microsoft.com/en-us/sysinternals/downloads/autoruns
 - Process Monitor
 - Shows real-time file system, registry and process activity
 - docs.microsoft.com/en-us/sysinternals/downloads/procmon
 - Process Explorer
 - Displays all processes running with CPU and memory usage for each
 - docs.microsoft.com/en-us/sysinternals/downloads/process-explorer
 - TCPView
 - Shows network connections
 - docs.microsoft.com/en-us/sysinternals/downloads/tcpview
- NirSoft Utilities
 - CurrPorts
 - Monitors network connections
 - www.nirsoft.net/utills/cports.html



Free advanced utilities


- Entropy6
 - XMeters
 - Displays CPU, storage, network, & memory metrics on task bar
 - entropy6.com/xmeters/
- Piriform
 - CCleaner
 - Improve performance and more
 - Remove unnecessary files
 - Remove errors in registry
 - "registry cleaners don't fix problems" *
 - Uninstall programs Windows can't
 - Remove browser plug-ins
 - Find duplicate files
 - www.piriform.com/ccleaner

* <https://decentsecurity.com/registry-cleaners/>




CCleaner settings

- **Caution:**
 - CCleaner can remove more than you want!
- **Recommended settings**
 - *Cleaner* section | *Windows* tab
 - Microsoft Edge
 - Internet cache
 - Internet Explorer
 - Temporary Internet Files
 - Index.dat files
 - System
 - Memory Dumps
 - Chkdsk File Fragments




CCleaner settings

- **Recommended settings**
 - *Cleaner* section | *Applications* tab
 - Firefox
 - Internet cache
 - Compact databases
 - Thunderbird
 - Internet Cache
 - Compact Databases
 - Google Chrome
 - Internet Cache
 - Compact Databases



CCleaner removing apps

- *Settings | Apps*
 - Can't remove many built-in apps
 - Photos, Calculator, Mixed Reality Viewer, Mail and Calendar, Films and TV, People, Alarms & Clock, Groove Music, Xbox, Camera, Maps, etc.
- **CCleaner to the rescue!**
 - *Tools* section | *Uninstall*
 - Don't use *Delete*
 - Can reinstall from Store if needed
 - Uninstalled program will probably come back twice a year



Free advanced utilities

- Disk space usage programs
 - TreeSize Free
 - www.jam-software.com/treesize_free/
 - WinDirStat
 - windirstat.net/
 - WizTree
 - antibody-software.com/web/
- Duplicate file finder programs
 - CCleaner
 - www.piriform.com/ccleaner
 - SearchMyFiles
 - www.nirsoft.net/articles/find_duplicate_files.html
 - VisiPics
 - Duplicate image finder (can find similar images)
 - www.visipics.info



Removing duplicates

SearchMyFiles - c:\ (Duplicates Search)

Stop

Filename	Folder	Size	Modified Time
ibEGU.dll	c:\Program Files\AMD\PRW\translations	11,776	2016-08-21 9:55:58 AM
ibGLESV2.dll	c:\Program Files\AMD\CIM\Bin64	2,011,696	2017-07-20 7:43:34 PM
ibGLESV2.dll	c:\Program Files\AMD\CNext\CNext	2,011,696	2016-09-13 12:42:48 AM
ibGLESV2.dll	c:\Program Files\AMD\PRW\translations	11,776	2016-08-21 9:55:58 AM
mfc120u.dll	c:\Program Files\AMD\CIM\Bin64	6,634,720	2015-10-04 3:28:24 PM
mfc120u.dll	c:\Program Files\AMD\PRW	5,634,720	2015-10-04 2:28:24 PM
mfc120u.dll	c:\Windows\System32	5,634,720	2015-10-05 12:58:24 PM
msvcp120.dll	c:\Program Files\AMD\CIM\Bin64	660,128	2015-10-04 3:28:24 PM
msvcp120.dll	c:\Program Files\AMD\CNext\CNext	660,128	2015-10-04 3:28:24 PM
msvcp120.dll	c:\Program Files\AMD\PRW	660,128	2015-10-04 2:28:24 PM
msvcp120.dll	c:\Program Files\ON1\ON1 Photo RAW 2018	660,128	2017-11-08 2:15:20 PM
msvcp120.dll	c:\Program Files\ON1\ON1 Photo RAW 2018	660,128	2016-03-04 4:03:50 PM
msvcp120.dll	c:\Users\CTaylor\AppData\Local\Microsoft\Windows\Backup\101D...Backup-461bb\bin	660,128	2015-11-21 4:14:11 PM
msvcp120.dll	c:\Windows\System32	660,128	2015-10-05 12:58:24 PM
msvcp140.dll	c:\Program Files\AMD\CIM\Bin64	633,152	2016-06-09 2:23:14 PM
msvcp140.dll	c:\Program Files\AMD\CNext\CNext	633,152	2017-11-15 12:58:24 PM
msvcp120.dll	c:\Program Files\AMD\CIM\Bin64	963,232	2015-10-04 3:28:24 PM
msvcp120.dll	c:\Program Files\AMD\PRW	963,232	2015-10-04 2:28:24 PM
msvcp120.dll	c:\Program Files\ON1\ON1 Photo RAW 2018	963,232	2017-11-08 2:15:20 PM
msvcp120.dll	c:\Program Files\ON1\ON1 Photo RAW 2018	963,232	2016-03-04 4:03:50 PM
msvcp120.dll	c:\Users\CTaylor\AppData\Local\Microsoft\OneDrive\173.5892.0620.amd64	963,232	2015-11-21 4:14:19 PM
msvcp120.dll	c:\Windows\System32	963,232	2015-10-05 12:58:24 PM

Be careful! Do not be safe to delete any of these dups

Questions

