DS SOLIDWORKS

MAKE GREAT DESIGN HAPPEN

SOLIDWORKS Hardware Guide

2016 Update

S SOLIDSOLUTIONS
SUPPORTING EXCELLENCE

KEYWORDS: HARDWARE, CORE, PROCESSOR, GRAPHICS, DRIVER, RAM, STORAGE

SOLIDWORKS HARDWARE RECOMMENDATIONS

Below is a summary of key components of an ideal SOLIDWORKS PC, all of this document is important but if you only read one page make it this one! , for other use cases such as Simulation see page 3 onwards.

PROCESSOR (CPU)

This carries out the majority of calculations within SOLIDWORKS; the most common limiting factor is the speed in GHz of the CPU, the faster (GHz) the better. Not all tasks are multi-threaded however simulation and rendering tasks can benefit significantly from multi core CPUs. . The main advantage of Xeon CPU's is they support error correcting code (ECC) ram which are preferred for users running simulation tasks extensively. Some models have more cache which is also useful for such tasks that swap a lot of data in and out of RAM such as Simulation.

We recommend- High GHz Intel i5/ i7 Quad Core or Xeon Equivalent (usually 1 or 2 steps below the fastest is

MEMORY (RAM)

When a document is opened in SOLIDWORKS it is loaded into RAM, you need enough so that Windows does not resort to using the hard disc (virtual memory). RAM is rated in MHz for speed; each increase tends to yield marginal gains so cost is a key factor, often the prices for the latest faster RAM is much higher. When buying new go for at least 8-16GB as this is the current sweet point for cost. ECC ram is recommended for users who run long simulation runs / renders frequently.

We recommend a minimum of 8GB of DDR3 or DDR4 RAM

GRAPHICS CARD

The graphics card is fundamental to your productivity. It assists the processor accelerating operations such as zooming and rotating. Workstation class graphics cards, NVIDIA Quadro (Not NVS) or AMD Fire Pro are the only ones supported for use with SOLIDWORKS. Speed of rotation, zooming and stability are all improved. You can check for supported drivers on the SOLIDWORKS website at https://www.solidworks.com/sw/support/videocardtesting.html

We recommend- NVIDIA Quadro K620 or above Graphics Card

STORAGE (HARD DRIVE)

Solid State Drives (SSD) offer a significant performance upgrade, however due to their current expense you may need to compromise on the size. Although 10GB of free space is the bare minimum to install and use SOLIDWORKS, you also need space for your documents etc. Internally we use Samsung Pro SSD drives + a regular hard drive for bulk storage.

We recommend- One fast solid state drive (256GB +) for programs + 1 additional bulk storage 7200rpm drive (500GB +)

OPERATING SYSTEM (OS)

From SOLIDWORKS 2015 SOLIDWORKS is **64Bit Only**, also SOLIDWORKS 2014 onwards will **NOT** install on Vista or XP. We still recommend Windows 7 Pro 64bit as it is a tried and tested solution for many applications. Windows 8.1 Pro 64Bit is also supported from 2014 SP1 onwards and Windows 10 Pro 64bit is supported for SOLIDWORKS 2015 SP5 onwards.

We recommend- Windows 7 Pro 64bit

MONITOR

If buying a new monitor we recommend resolution of 1920x1080 at a minimum size of 21.5 inches. Please note that resolutions above 1920x1200 are only fully supported by SOLIDWORKS 2016 onwards. For Laptops we recommend at least 15.6 Inch 1920x1080. Lower resolutions mean less space for your work and the SOLIDWORKS interface.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **2** of 16

FAQ

IS SOLIDWORKS SUPPORTED ON MAC?

SOLIDWORKS will not install natively on Apple computers. However some customers run successfully on Mac OSX based systems, using emulation (parallels) or Boot Camp (installing windows on mac to dual boot). Please note that SOLIDWORKS may suffer from the lack of graphics acceleration on Apple Mac based machines, as pro level graphics along with certified graphics drivers are not available this is particularly noticeable on more complex data sets.

WHAT ABOUT VIRTUALISATION?

SOLIDWORKS have tested to confirm that the software will install on certain virtualisation platforms, however support in terms of performance and stability is down to the virtualisation provider and graphics card manufacturer.

See http://www.solidworks.com/sw/support/11168_ENU_HTML.htm However note that supported does not mean that performance will be up to scratch, graphics acceleration is lacking in many solutions. Those based on NVidia GRID or AMD Multi GPU technology allow full hardware acceleration of virtualised systems. We have not tested this setup however SOLIDWORKS have tested drivers for certain NVidia GRID cards on Citrix Xen platforms running the NVIDIA GRID setup.

RECOMMENDATIONS FOR DATA MANAGEMENT (PDM)

Ideally a dedicated Windows server/s should be used for either a SOLIDWORKS Workgroup PDM or SOLIDWORKS PDM Standard and Professional vaults. Besides giving maximum performance for the CAD users, using a dedicated server provides a location to store company standards and templates. For hardware specifications for a PDM system, please visit:

http://www.solidworks.com/sw/support/PDMSystemRequirements.html

DOES SOLIDWORKS USE MORE THAN ONE CORE?

This is common misconception in some operations SOLIDWORKS is multi-threaded. Many of the activities such as dialogue box interaction; drawings etc take advantage of this technology. Even a cut extrude with many profiles is multi-threaded, however, the solving process (rebuilding) used for parametric modelling is by nature very linear i.e. one feature must be rebuilt before the next therefore SOLIDWORKS will not always use all the available cores the full use of 1-2 cores is more typical during a rebuild so less faster cores are better than more slower cores.

However drawings with multiple views, most simulation and photo rendering tasks also benefit significantly from multiple cores, more detail on this follows below.

SLOWDOWNS-SHOULD I ADD MORE RAM?

Adding more RAM will not solve performance issues unless you are running out, tools such as the windows performance monitor or even at a basic level the task manager. Run your normal tasks and see if you are running low (the SOLIDWORKS performance Monitor should also alert you) you only need enough so that you don't run out this would start using virtual memory on your hard disc which is many times slower. Often using best practices in the software can speed things up otherwise you have to identify where the bottlenecks are before upgrading hardware.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | 3 of 16

PHOTOVIEW 360 - HOW CAN I SPEED UP MY RENDERS

Photoview 360 only uses CPU for rendering and the scaling for is this pretty much linear, i.e. if you go from 4 cores to 8 cores you would expect the render to take around half the time. However some tasks such as lighting calculations are less multithreaded so this is only a rough guide. Despite not using the graphics card for rendering a certified card is still recommended.

Network rendering is also supported so long as the machine running the render is on subscription. Other PC's can install the free network render client. A benefit is typically seen when a single render takes more than 5 minutes. More info can be seen on [MySolidSolutions](#).

Note that the clients Pc's should be reasonably modern in order to be of benefit and have an Open GL capable graphics card we have seen issues with on board graphics e.g. servers. If unsure a low end Quadro or Fire Pro card would be the safest bet.

SOLIDWORKS VISUALISE - WHAT IS REQUIRED AND HOW CAN I SPEED UP MY RENDERS?

SOLIDWORKS Visualize Standard is a new standalone product which it is currently estimated will be available as a standalone product around Q1 2016 to all SOLIDWORKS Professional and Premium users and can be installed either on the SOLIDWORKS users system or on another users system. This can leverage either CPU cores, NVIDIA GPU (graphics card) CUDA cores or a hybrid that users both run solely on the GPU/multiple GPUs. AMD graphics cards will not accelerate this process however the software will still run in CPU only mode on such setups.

When working in GPU mode a mid-high end NVIDIA card (Quadro 2200 +) will seem significant acceleration with some testing to ascertain whether it is best run in hybrid, or pure GPU mode. This will depend on the strength of the CPU and Graphics card. However keep in mind that running In GPU modes means that the maximum scene size is constrained by the dedicated graphics memory on the card. My contacts tell me 4GB will be enough in most cases but large assemblies may demand more. I will be testing as soon as I get my hands on the software!

Note there is also SOLIDWORKS Visualize professional available at extra cost including animation and many other functions

WHICH SIMULATION TYPES BENEFIT MOST FROM MULTI CORE PROCESSORS?

Most simulation types see some benefit from multiple cores; simulations using the direct sparse solver see the most benefit.

Keep in mind that if you have capacity to spare in terms of available cores and RAM you should be able to continue working productively in SOLDIWORKS while carrying out simulations. In general if running a single study, performance improvements tend to diminish with more than 4 cores available to the study.

For that reason 4-8 cores seems to be the sweet point as you should then have resources to continue to work in SOLIDWORKS and other programs without affecting the solve time significantly.

Over the page you can find data based on some testing by SOLIDWORKS which is an indication only, there is no guarantee of how well a particular simulation study will take advantage of multiple cores.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **4** of 16

SOLIDWORKS SIMULATION

MESHING

From SOLIDWORKS 2011 the curvature based mesher can take advantage of multiple cores where as the standard mesher is mostly single threaded.

STATIC SIMULATION - ASSEMBLIES AND PARTS

A static simulation of an assembly with bolt connectors sees a 75% improvement in solve time using the direct sparse solver when going from 1 to 4 cores. Using the FFEPlus Solver this benefit may only be 15%

Below is a table produced by SOLIDWORKS showing the performance increase for static simulation of more cores on the various solvers; Direct Sparse, FFEPlus and Large Problem Direct Spare Solvers.

Direct sparse solver performance

FFEPlus solver performance

LPDS Solver performance vs number of cores
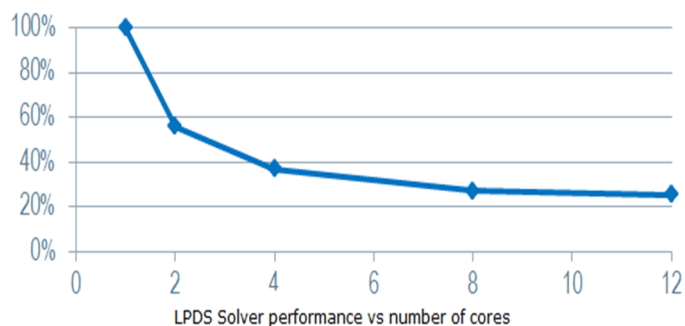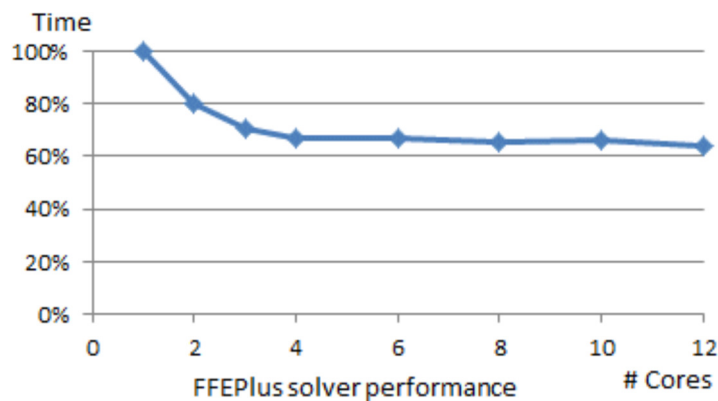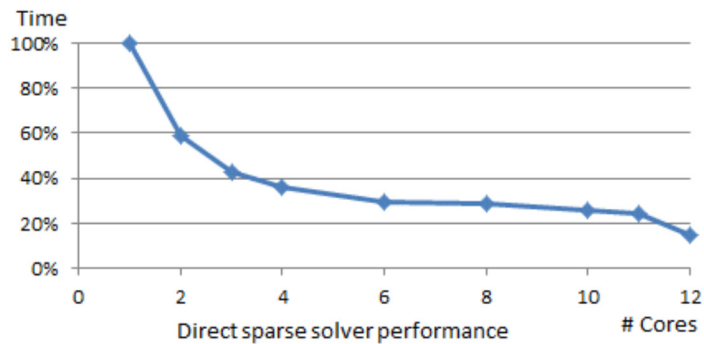
The most computationally intensive stages of the analysis using a sparse solver are generally decomposition of stiffness matrix and solving contact constraints. These are the stages which support multi-core, hence making them less time consuming.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | 5 of 16

OTHER SOLIDWORKS SIMULATION TYPES

NON LINEAR SIMULATION

A similar setup as a non-linear simulation on a single part yields a 58% improvement using the direct spare solver but no improvement when using the FFEplus.

THERMAL SIMULATION

Thermal simulation sees an 82% improvement using the direct sparse solver, again no improvement when using FFEPlus.

OTHER SIMULATION TYPES

Simulation types which are mostly single threaded are:

FATIGUE

The fatigue solver itself uses only one core in testing but preparing to run a fatigue study involves running one or more static studies which do benefit from multiple cores, overall there is an improvement.

FREQUENCY

Frequency saw less improvement in testing than most simulation types, contrary to the other simulation types direct sparse solver saw 0% improvement whereas the FFEPlus Solver saw a 25% improvement.

OPTIMIZATION

Most of the time spent solving an optimization analysis is taken up by running loops of design iterations of the studies defined for constraints. The benefit would depend on the type of study optimised.

LINEAR DYNAMIC

The actual post dynamic analysis and stress calculations use special solvers which used only one core in testing. However, performing a linear dynamic analysis involves first finding resonant frequencies, which did show usage of more than one core when using the FFEPlus solver.

PRESSURE VESSEL DESIGN

The majority of the time taken to complete a pressure vessel analysis is running static studies that you wish to combine. The actual calculations for combination of results used only one core during testing but as this made up a small percentage of the total time to perform the analysis there was a significant performance improvement.

DROP TEST

Only one solver type available, the test model used only one core.
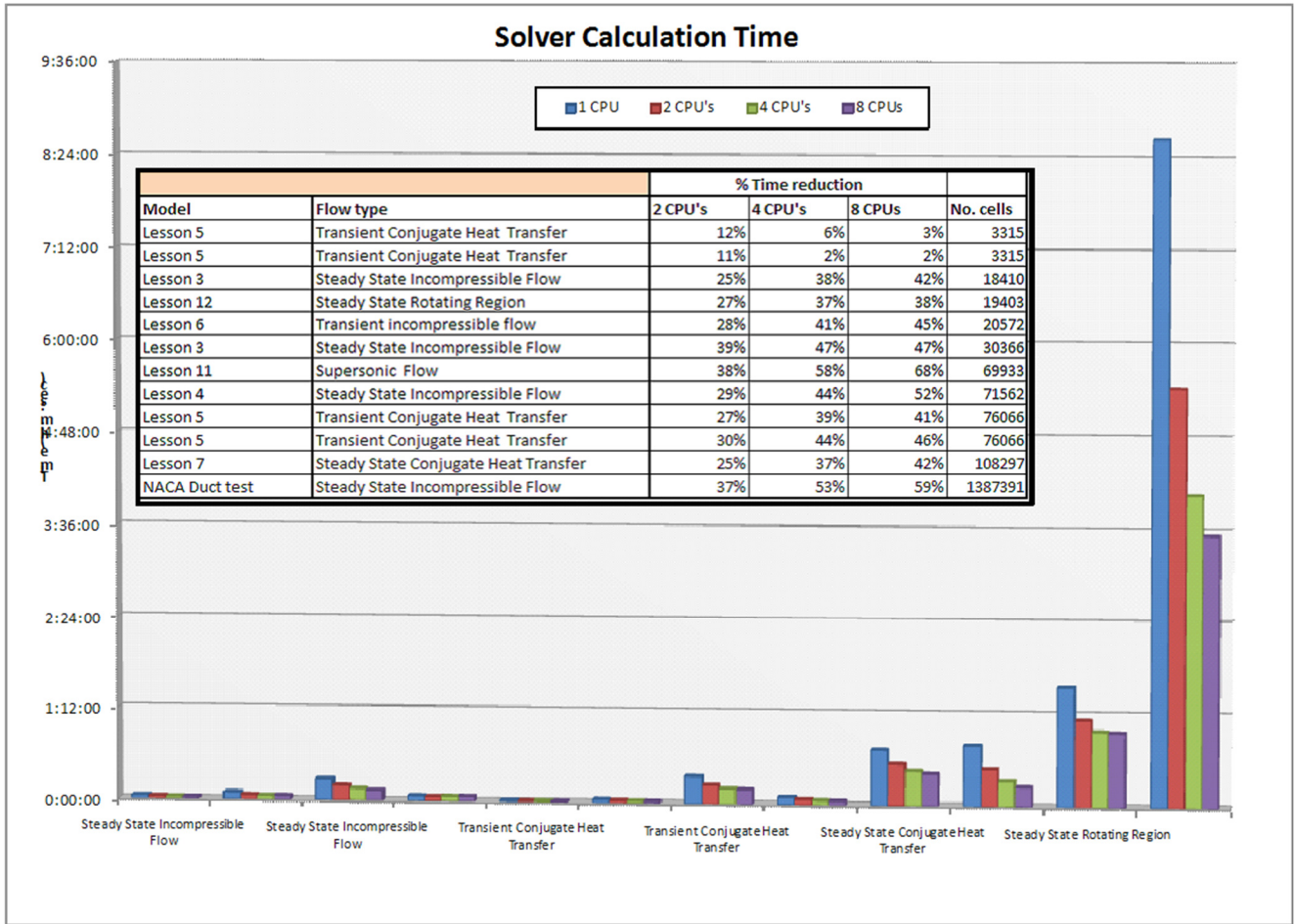
SOLIDWORKS PLASTICS

SOLDIWORKS Plastics is multi-threaded although we do not currently have any data on the performance improvements yet to determine the optimum number of cores.

FLOW SIMULATION

In SOLIDWORKS Flow Simulation, great improvements were made in SOLIDWORKS 2012 and above to take advantage of more than 4 cores, larger cell count models see the most benefit. As with most Simulation returns for a single study diminish after 4 cores. There is also the possibility to continue working in SOLIDWORKS while solving 2 studies at once using the batch run function. This would be a good reason to justify the purchase of s PC with more than 6 cores.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **6** of 16

HARDWARE

SOLIDWORKS

FLOW SIMULATION SPEED VS NUMBER OF CORES

Solver Calculation Time

Model	Flow type	% Time reduction			No. cells
		2 CPU's	4 CPU's	8 CPUs	
Lesson 5	Transient Conjugate Heat Transfer	12%	6%	3%	3315
Lesson 5	Transient Conjugate Heat Transfer	11%	2%	2%	3315
Lesson 3	Steady State Incompressible Flow	25%	38%	42%	18410
Lesson 12	Steady State Rotating Region	27%	37%	38%	19403
Lesson 6	Transient incompressible flow	28%	41%	45%	20572
Lesson 3	Steady State Incompressible Flow	39%	47%	47%	30366
Lesson 11	Supersonic Flow	38%	58%	68%	69933
Lesson 4	Steady State Incompressible Flow	29%	44%	52%	71562
Lesson 5	Transient Conjugate Heat Transfer	27%	39%	41%	76066
Lesson 5	Transient Conjugate Heat Transfer	30%	44%	46%	76066
Lesson 7	Steady State Conjugate Heat Transfer	25%	37%	42%	108297
NACA Duct test	Steady State Incompressible Flow	37%	53%	59%	1387391

. FROM SOLIDWORKS 2014 ONWARDS MESHING IS MULTITHREADED, WITH THE LARGEST GAINS BEING FOR LARGE MESHES

▶ Larger meshes see the highest gain

▶ For a single core, meshing is 30% faster on average compared to 2013

HARDWARE

SOLIDWORKS

HARWARE OPTIMISATION- Some of the below require edits to your system or bios, do so at <u>your own risk</u>

Hard drive Clean-up	Go to Properties dialog, select 'Disk Clean-up'. Under tools select Defrag. However **Do Not Defrag** Solid State Drives (SSD). Note that both hard drives and SSD drives perform better with plenty of free space.
Power Mode	In Windows Control Panel under power options make sure your system is set to High Performance,
Visual map of what's stored on your hard drive to aid clean up	http://www.fosshub.com/WinDirStat.html
Update Drivers	Use SOLIDWORKS RX from the start menu click on the diagnostics page to check your graphics card driver
See what is happening on your system	Use 'Process Explorer' to find out what else is running https://technet.microsoft.com/en-gb/sysinternals/bb896653
Free up RAM	From the run command open MSCONFIG and disable apps you recognise and don't need at Start-up <u>with caution!</u>
Turn Off Hibernation	If you don't use the hibernate function in windows turn it off and you free up hard disc space equivalent to 75% your RAM. See http://tinyurl.com/TurnOffHibernate
BIOS settings	Make sure Intel® TurboBoost™ is enabled to achieve highest performance in single threaded applications. You can try disabling Intel® SpeedStep™ and turning off 'C states' to improve responsiveness this makes your CPU run at maximum speed all the time. Disable 'Switchable Graphics' (laptops only)
Hyperthreading	There is no significant benefit for SOLIDWORKS using hyperthreading. In fact it has been known to cause issues in Simulation and Flow simulation so you may wish to disable this. Photoview 360 however shows small gains with it enabled (5-15%)
GDI Objects	*If* you find the SOLIDWORKS resource monitor reports you are low on resources check to see if this is GDI (graphics) Objects or RAM. The GDI limit in windows can be modified, see S-057497 on the SOLIDWORKS Knowledgebase
Set Affinity	When running SOLIDWORKS with CFD assign one core for SOLIDWORKS http://tinyurl.com/SetAffinity
Remove Malware	Remove unwanted programs installed by "free" software or malicious online adverts e.g.http://malwarebytes.org

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **8** of 16

SOLID SOLUTIONS RECOMMENDED SPECS

Below is a guide of what we recommend for most users. We use and supply Dell Precision hardware after many years of using it successfully internally and great feedback from our customers. These are only guidelines for the majority of users, if you have a question please contact support or your account manager for advice. Specifications are correct as of June 2016 see https://www.solidsolutions.co.uk/solidworks-support/hardware-advice.aspx for latest details.

Laptop- Entry Level - Dell Precision™ 7510

Smaller 15.6inch laptop, aimed at users who don't produce large assemblies or very complex parts but still a very capable machine for key functions of SOLIDWORKS parts, assemblies & drawings.

Processor: Intel Core i7-6820HQ Quad Core (2.70GHz Turbo Boost up to 3.6GHz)

Display: 15.6inch Ultra Sharp FHD 1920x1080 Wide View Anti-Glare LED-backlit
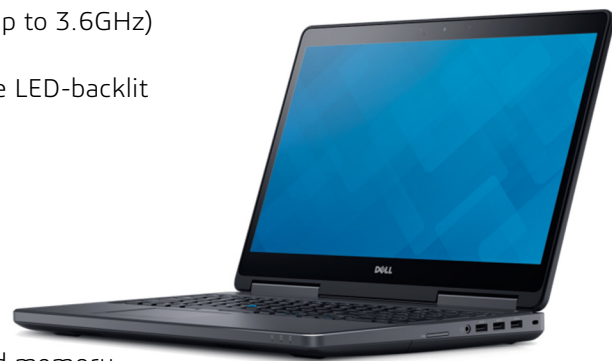
Memory: 8GB (1x 8GB) 2133MHz DDR4 Dual Channel

OS/Boot Drive: 1TB 2.5" 7200 RPM drive

Optical Drive: No internal optical drive available

Graphics Card: NVIDIA Quadro M1000M with 2GB GDDR5 dedicated memory

Operating System: Windows 7 Pro 64bit (Windows 10 64bit license included)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Laptop- Mid Level - Dell Precision™ 7510

15.6inch laptop including a faster CPU more ram, higher spec graphics card and larger hard drive to better support larger datasets, a very capable machine for key functions of SOLIDWORKS parts, assemblies & drawings and occasional renders/ simulation.

Processor: Intel Core i7-6820HQ Quad Core (2.70GHz Turbo Boost up to 3.6GHz)

Display: 15.6inch Ultra Sharp FHD 1920x1080 Wide View Anti-Glare LED-backlit

Memory: 16GB (2 x 8GB) 2133MHz DDR4 Dual Channel
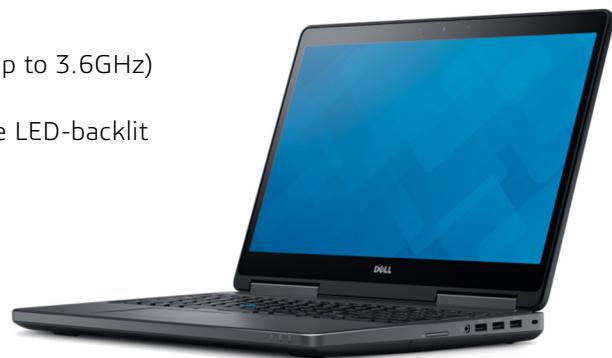
OS/Boot Drive: 256GB M.2 PCIe Solid State Drive

Additional Storage Drive: 1TB 7200 Rpm Hard Drive

Optical Drive: No internal optical drive available

Graphics Card: NVIDIA Quadro M2000M with 4GB GDDR5 dedicated memory

Operating System: Windows 7 Pro 64bit (Windows 10 64bit license included)
Support: 3 Year ProSupport and Next Business Day On-Site Service

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **9** of 16

Laptop All Rounder - Dell Precision™ 7710

A mobile desktop replacement system designed to be an all-rounder, the best balance between price and performance. Aimed at all users designing complex parts and assemblies and occasional Simulation and Rendering tasks. This includes a solid state hard drive, 4GB Graphics card and 16GB of Ram.

Processor: Intel Core i7-6920HQ Quad Core 2.90GHz,(Turbo boost up to 3.80GHz)

Display: 17.3" Ultra Sharp FHD 1920x1080 Wide View Anti-Glare LED-backlit

Memory: 16GB (2 x 8GB) 2133MHz DDR4 Dual Channel

OS/ Boot Drive: *512GB M.2 PCIe NVMe Solid State Drive.*

Additional Hard Drive: 1TB 2.5" 7,200Rpm additional storage Drive

Optical Drive: No internal optical drive available

Graphics Card: NVIDIA Quadro M3000M w/4GB GDDR5 dedicated memory

Operating System: Windows 7 Pro 64bit (Windows 10 64bit license included)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Laptop High End Simulation & Rendering - Dell Precision™ 7710

Aimed at all users designing complex parts and assemblies along with large simulation and rendering tasks. This includes a Solid State Hard Drive, High End Quadro M4000M Graphics 4GB graphics card plus 32GB of error correcting Ram for reliability running complex long simulation tasks. The uprated graphics card will also give SOLIDWORKS Visualize renders a significant boost.

Processor: Intel Core Xeon E3-1535M v5 Quad Core Xeon 2.90GHz, (Turbo boost up to 3.80GHz)

Display: 17.3" Ultra Sharp FHD 1920x1080 Wide View Anti-Glare LED-backlit

Memory: 32GB (4 x 8GB) 2133MHz ECC DDR4 Dual Channel

OS/Boot Drive: *512GB M.2 PCIe NVMe Solid State Drive*

Additional Hard Drive: 1TB 7200prm additional storage drive.

Optical Drive: No internal optical drive available

Graphics Card: NVIDIA Quadro M4000M w/4GB GDDR5 dedicated memory

Operating System: Windows 7 Pro 64bit (Windows 10 64bit license included)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **10** of 16

Laptop – Ultra Portable – Occasional Use- Dell Precision™ 5510

The sleekest model in the range at just 17mm maximum thickness and starting at just 1.8kg this still packs in a quad core CPU and 2GB NVIDIA Quadro professional graphics, this system is specified for more occasional users of SOLIDWORKS

Processor: Intel Core i7-6820HQ Quad Core 2.70GHz, (Turbo Boost up to 3.60GHz)

Display: 15.6" Ultra Sharp FHD 1920x1080 Wide View Anti-Glare LED-backlit

Memory: 8GB (1 x 8GB) 1600MHz DDR3 Dual Channel

OS/Boot Drive: 500 GB 7200 RPM Hard Drive

Optical Drive: No internal optical drive available

Graphics Card: NVIDIA Quadro M1000M w/2GB GDDR5 dedicated memory

Operating System: Windows 7 Pro 64bit (Windows 10 64bit license included)

Support: 3 Year ProSupport and Next Business Day On-Site Service
Desktops

Laptop – Ultra Portable – Dedicated Use- Dell Precision™ 5510

The sleekest model in the range at just 17mm maximum thickness and starting at just 1.8kg this still packs in a quad core CPU and 2GB NVIDIA Quadro professional graphics and has been specified for a user who is dedicated to using SOLIDWORKs but for whom portability is key. Users of complex assemblies, simulation etc. may wish to look at the 7510/7710 in order to specify more powerful graphics.

Processor: Intel Core i7-6820HQ Quad Core 2.70GHz, (Turbo Boost up to 3.60GHz)

Display: 15.6" Ultra Sharp FHD 1920x1080 Wide View Anti-Glare LED-backlit

Memory: 16GB (2 x 8GB) 1600MHz DDR3 Dual Channel

Boot/OS Drive: 512GB M.2 PCIe NVMe Solid State Drive Boot Drive

Additional Hard Drive: 1TB 7200prm hard drive additional storage drive.

Optical Drive: No internal optical drive available

Graphics Card: NVIDIA Quadro M1000M w/2GB GDDR5 dedicated memory

Operating System: Windows 7 Pro 64bit (Windows 10 64bit license included)

Support: 3 Year ProSupport and Next Business Day On-Site Service

If you are unsure of your requirements please contact support@solidsolutions.co.uk for help. Desktops follow on the next page

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **11** of 16

Desktop Entry Level- Dell Precision™ 3420 SFF

Small Form Factor PC, aimed at everyday users of SOLIDWORKS, but with more powerful graphics and more RAM to handle more complex data sets.

Processor: Intel i5-6600 Quad Core 3.30GHz 4 Cores (Turbo Boost up to 3.9 GHz)

Memory: 16GB (2 x 8GB) 2133MHz DDR4 Dual Channel Non ECC

OS/Boot Drive: 256GB 2.5" Solid State Hard Drive

Additional Hard Drive: 1TB 3.5 Inch 7200 RPM Hard Drive

Optical Drive: 8x DVD+/-RW Drive

Graphics Card: 4 GB NVIDIA Quadro K1200

Mouse: Dell Optical (Not Wireless) Scroll USB (3 Button Scroll) Black Mouse

Keyboard: QuietKey USB Keyboard Black

Operating System: Windows 7 Professional 64Bit (Windows 10 64bit License)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Desktop All Rounder- Dell Precision™ 3620MT

The Best balance between price and performance for general SOLIDWORKS use. This including a fast 4.0 GHz CPU, 5126GB solid state drive, 4GB Mid-Range Quadro Graphics and is also well suited more occasional users of Simulation & Visualize.

Processor: Intel® Core™ i7-6700K 4.0GHz (Turbo Boost up to 4.2 GHz)

Memory: 16GB (2 x 8GB) 2133MHz DDR4 Dual Channel Non ECC

Hard Drive: 512GB Solid State 2.5" Serial Hard Drive boot drive

Additional Hard Drive: 1TB 2.5 Inch 7200 RPM Hard Drive.

Optical Drive: 16x DVD+/-RW Drive

Graphics Card: 4 GB NVIDIA Quadro K2200

Mouse: Dell Optical (Not Wireless) Scroll USB (3 Button Scroll) Black Mouse

Keyboard: QuietKey USB Keyboard Black

Operating System: Windows 7 Professional 64Bit (Windows 10 64bit License)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **12** of 16

HARDWARE

Desktop High End - Dell Precision™ 3620MT

Dell 3620 Mini Tower with the high end NVIDIA Quadro graphics, 512GB Solid State Drive and 32GB of Ram. Great for those with demandingly complex data sets and ideal for users of SOLIDWORKS Visualize

Processor: Intel® Core™ i7-6700K 4.0GHz (Turbo Boost up to 4.2 GHz)

Memory: 32GB (4x8GB) 2133MHz DDR4 Non ECC

Hard Drive: 512GB Solid State 2.5" Serial Hard Drive

Additional Hard Drive: 1TB 2.5" Serial ATA (7,200Rpm) Hard Drive

Optical Drive: 16x DVD+/-RW Drive

Graphics Card: 8 GB NVIDIA Quadro M4000

Mouse: Dell Optical (Not Wireless) Scroll USB (3 Button Scroll) Black Mouse

Keyboard: QuietKey USB Keyboard Black

Operating System: Windows 7 Professional 64Bit (Windows 10 64bit License)

Support: 3 Year ProSupport and Next Business Day On-Site Service

MORE CORES?

Although a quad core machine is the best balance between cost and performance for most SOLIDWORKS only users if you use Simulation and/ or Photoview 360 extensively you may see a benefit from a system with more cores. Also note that 2D Drawings with many views benefit from an increase in cores.

EXPECTED IMPROVEMENT

This will vary between different aspects of the software for instance with Photoview 360 if you double the amount of cores the render time can be as much as halved. With Simulation and Flow Simulation it is not so clear cut but is often still very beneficial. Please see page 6-7 for more information on types of simulation and how benefits vary between different tasks.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **13** of 16

Desktop Hi-End Simulation & Photoview 360 1- Dell Precision™ T5810

Aimed at users who deal those who use Simulation and Photoview 360 extensively. For most simulations 6 cores is the best balance between cost and performance and Error Correcting Code (ECC) RAM for long simulation runs. Not that the benefits of more cores varies between simulations types.

Processor: Intel Xeon E5-1650 v4 6 Cores 3.6GHz, (Turbo boost up to 4.0GHz)

Memory: 32GB (4x8GB) 2400MHz DDR4 ECC RDIMM

Hard Drive: 512GB 2.5" Serial ATA Solid State Boot Drive

Additional Hard Drive: 1TB 2.5" Serial ATA (7,200Rpm) Hard Drive

Optical Drive: 16x DVD+/-RW Drive

Graphics: 8GB Quadro M4000

Mouse: Dell Optical (Not Wireless) Scroll USB Black Mouse

Keyboard: QuietKey USB Keyboard Black

Operating System: Windows 7 Professional 64Bit (Windows 8.1 64bit License)

Support: 3 Year ProSupport and Next Business Day On-Site Service

EVEN MORE CORES?

The number of cores can be increased still further and remember photo rendering for instance will benefit from this is in a linear fashion, i.e. 8 cores of the same speed/ generation will around twice as fast as a 4 core machine. This is not the case for all simulations however.

6 **fast** cores is currently the sweet point for price vs cost when it comes to specifying a machine for SOLIDWORKS Simulation, Flow Simulation and Photoview 360. Returns typically diminish for simulation beyond 6-8 cores however having more cores allows multiple simulations to be solved in parallel and other tasks be performed while a simulation is running. Refer to the FAQ on page 9 for more details on Simulation and the benefits of multiple cores.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **14** of 16

Desktop High End-Visualize- Dell Precision™ T5810.

Aimed at users who want to use SOLIDWORKS Visualize extensively, with dual NVIDIA Quadro M4000 graphics cards you can either use both to speed up your render times or dedicate 1 graphics card to rendering while you continue working in SOLIDWORKS and other programs utilising the other graphics card.

Processor: Intel® Xeon® Processor E5-1630 v4 4 Cores 3.7GHz (Turbo Boost up to 4.0GHz)

Memory: 32GB (4x8GB) 2400MHz DDR4 ECC RDIMM

Hard Drive: 512GB 2.5" Serial ATA Solid State Boot Drive

Additional Hard Drive: 1TB 3.5" Serial ATA (7,200Rpm) Hard Drive

Optical Drive: 8x DVD+/-RW Drive

Graphics: 2x 8GB Quadro M4000

Operating System: Windows 7 Professional (windows 10 64bit license included)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Desktop Ultimate Simulation & Photoview 360 1- Dell Precision™ T5810.

Aimed at users who carry out extremely large simulation tasks particularly users who want to run multiple tasks at once with 8 cores available and 64GB of RAM or extensive photoview 360 users.

Processor: 1 x Intel Xeon E5-1660 v4 (3.2GHz, Turbo boost up to 3.8 GHz, (8 cores)

Memory: 64GB (8x8GB) 2133MHz DDR4 ECC RDIMM

Hard Drive: 512GB 2.5" Serial ATA Solid State Boot Drive

Additional Hard Drive: 1TB 3.5" Serial ATA (7,200Rpm) Hard Drive

Optical Drive: 8x DVD+/-RW Drive

Graphics: 8GB Quadro M4000

Mouse: Dell Optical (Not Wireless) USB Black Mouse

Keyboard: QuietKey USB Keyboard Black

Operating System: Windows 7 Professional (64Bit OS)

Support: 3 Year ProSupport and Next Business Day On-Site Service

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **15** of 16

Desktop Ultimate Simulation & Photo rendering 2- Dell Precision™ 7910

Primarily aimed at Photoview users who need the best available to process large images quickly, however could be suited to large flow simulations or users wanting to run multiple simulation tasks at simultaneously.

Processor: 2 x Intel Xeon E5-2687W (3.1GHz, Turbo boost up to 3.8 GHz, (10 cores per CPU 20 Cores total)

Memory: 64GB (4x16GB) 2133MHz DDR4 ECC RDIMM

Hard Drive: 512GB 2.5" Serial ATA Solid State Boot Drive

Additional Hard Drive: 1TB 3.5" Serial ATA (7,200Rpm) Hard Drive

Optical Drive: 8x DVD+/-RW Drive

Graphics: 8GB Quadro M4000

Mouse: Dell Optical (Not Wireless) USB Black Mouse

Keyboard: QuietKey USB Keyboard Black

Operating System: Windows 7 Professional (64Bit OS)

Support: 3 Year ProSupport and Next Business Day On-Site Service

THE MORE CORES THE BETTER?

It can also be tempting to specify more cores/ processors at a lower speed; this can be counterproductive in some cases. Notice on our specs the speed rating in GHz stays high.

A quick sanity check is speed in GHz x number of cores. **More** slower cores are not necessarily better than **less** faster cores, especially when cost is an issue also remember that returns typically diminish as you add more cores with the exception of Photoview 360.

Having said that a system with more cores than you need day to day isn't necessarily a disadvantage these days, Intel i7 and equivalent Xeon CPU's have a technology called "turbo boost" which allow cores to be switched off when not being used while the remaining cores can run faster.

For this reason we have also included the maximum turbo boost speed each CPU can reach for a single core. For more details see http://www.solidsolutions.co.uk/solidworks-support/resources/hardware-advice-and-system-requirements.aspx or email support@solidsolutions.co.uk for advice on what is best suited to your situation.

Solid Solutions Management Ltd
Olympus House, Olympus Avenue
Europa Way
Leamington Spa
CV34 6RJ

www.solidsolutions.co.uk
01926 333777
training@solidsolutions.co.uk
support@solidsolutions.co.uk
sales@solidsolutions.co.uk

P a g e | **16** of 16