Technical white paper

HP and SOLIDWORKS 2018

HP Workstations

Table of contents

SOLIDWORKS 2018

SOLIDWORKS is a 3D CAD design solution for rapid creation of parts, assemblies, and 2D drawings. Additional SOLIDWORKS solutions include Product Data Management, Photorealistic Rendering, Sustainable Design, Simulation & Design Validation toolsets and SOLIDWORKS Visualize. SOLIDWORKS 2018 is supported on Windows 7 and Windows 10 (64-bit only).

SOLIDWORKS is certified on HP Z Workstations and professional graphics
SOLIDWORKS tests and certifies graphics card drivers for each version of SOLIDWORKS and supported operating systems. The results are displayed on the solidworks.com/sw/support/videocardtesting.html web site.

HP Performance Advisor can be used to install graphics drivers certified for SOLIDWORKS.

SOLIDWORKS requires professional graphics cards with OpenGL capabilities.

Recommendations for running SOLIDWORKS on HP Workstations

SOLIDWORKS modeling features are typically serial (executed on a single core/thread) but some modeling tasks can leverage up to 4 CPU cores.

SOLIDWORKS PhotoView 360 uses the Luxology rendering engine for lifelike rendering. The rendering engine runs in parallel and can utilize all available CPU cores.

SOLIDWORKS Simulation and Design Validation tools can run in parallel and utilize 4–8 CPU cores.

SOLIDWORKS Visualize provides a suite of standalone software tools that combine industry-leading rendering capabilities.

SOLIDWORKS add-in programs may run in parallel (executed on multiple CPU cores/threads). For this reason, consider the add-in program processor requirements.

Processor (CPU) selection:
- CPU clock frequency (GHz) is a top priority as it impacts all program operations; select the highest frequency possible
- Four or six cores in a single CPU typically provides the highest CPU clock frequency
- Consider dual Processor (CPU) configuration when using PhotoView 360, Visualize or add-in programs that run in parallel; the dual CPUs will provide more CPU cores

Memory (RAM) selection:
- 16 GB system main memory is the minimum recommendation for product design
- 32 GB system main memory is recommended for more complex design
- HP Performance Advisor can be used to monitor SLDWORKS.exe memory usage with design loaded
- Use identical memory (size, fastest speed, rank) DIMMs in all locations
- Use all available memory channels and balance across multiple CPU sockets
- Consider more system main memory for add-in programs and other applications

Graphics (GPU card) device selection:
- SOLIDWORKS Visualize can utilize NVIDIA® GPU acceleration
- Graphics device frame buffer size should be large enough for your component count and detail
  - 2 GB frame buffer for 100–300 components with transparency
  - 4 GB frame buffer for 500–2,000 components with transparency
  - >4 GB frame buffer for > 2,000 components with transparency

HP Performance Advisor can be used to monitor the GPU utilization.

Storage (SSD, HDD) device selection:
- Use a dedicated NVMe PCIe SSD for the SOLIDWORKS data set for optimal performance
- Use a dedicated SSD for the Operating System and SOLIDWORKS application install
- Move/archive previous s=data sets to a larger storage drive if required

Table 1. Recommended HP Workstation configurations for SOLIDWORKS

Workflow		Mainstream Desktop	Thin & Light Mobile	Performance Desktop	Performance Mobile
SOLIDWORKS		**HP Z2 Mini**	**HP ZBook Studio G4**	**HP Z240**	**HP ZBook 17 G4**
	Processor[1]	Intel® Core™ i7-7700 (4 Cores)	Intel® Core™ i7-7820HQ (4 Cores)	Intel® Core™ i7-7700K (4 Cores)	Intel® Core™ i7-7820HQ (4 Cores)
	Memory	16 GB	16 GB	32 GB	32 GB
	Storage[2]	512 GB NVMe SSD	512 GB NVMe SSD	512 GB NVMe SSD	512 GB NVMe SSD
	Graphics	NVIDIA® Quadro® M620	NVIDIA® Quadro® M1200	NVIDIA® Quadro® P2000 or AMD Radeon™ Pro WX 4100	NVIDIA® Quadro® P3000 or AMD Radeon™ Pro WX 4170
SOLIDWORKS Simulation		**HP Z240**	**HP ZBook Studio G4**	**HP Z240**	**HP ZBook 17 G4**
	Processor[1]	Intel® Core™ i7-7700K (4 Cores)	Intel® Core™ i7-7820HQ (4 Cores)	Intel® Core™ i7-7700K (4 Cores)	Intel® Core™ i7-7820HQ (4 Cores)
	Memory	32 GB	16 GB	32 GB	32 GB
	Storage[2]	512 GB NVMe SSD	512 GB NVMe SSD	512 GB NVMe SSD	512 GB NVMe SSD
	Graphics	NVIDIA® Quadro® P1000 or AMD Radeon™ Pro WX 4100	NVIDIA® Quadro® M1200	NVIDIA® Quadro® P2000 or AMD Radeon™ Pro WX 4100	NVIDIA® Quadro® P3000 or AMD Radeon™ Pro WX 4170
SOLIDWORKS Visualize		**HP Z4 G4**	**HP ZBook Studio G4**	**HP Z8 G4**	**HP ZBook 17 G4**
	Processor[1]	Intel® Xeon® W-2133 (6 Cores)	Intel® Core™ i7-7820HQ (4 Cores)	(2) Intel® Xeon® 6136 (12 Cores)	Intel® Core™ i7-7820HQ (4 Cores)
	Memory	64 GB	16 GB	96 GB	32 GB
	Storage[2]	512 GB NVMe SSD	512 GB NVMe SSD	512 GB NVMe SSD	512 GB NVMe SSD
	Graphics	NVIDIA® Quadro® P5000	NVIDIA® Quadro® M1200	NVIDIA® Quadro® P6000	NVIDIA® Quadro® P5000

Table 2. Recommended HP Workstation settings for SOLIDWORKS

	Default	Recommend
Operating System		Windows 10 v1709
Operating System Power & Sleep	Balanced	High Performance
BIOS Power/OS Power Management/Runtime Power Management	Enable	Enable
BIOS Power/OS Power Management/Idle Power Savings	Extended	Normal
BIOS Advanced/System Options/Turbo Mode	Enable	Enable
BIOS Advanced/System Options/Hyper-Threading	Enable	Enable
BIOS Advanced/System Options/NUMA	Enable	Enable
BIOS Advanced/System Options/Workload Configuration	Balanced	Balanced

HP Performance Advisor

HP Performance Advisor can be used to install graphics drivers certified for SOLIDWORKS, select recommended system BIOS settings and help characterize SOLIDWORKS memory usage. Download from: hp.com/go/hpperformanceadvisor.

Learn more about the HP Workstations family at

hp.com/go/whitepapers
hp.com/go/solidworks
hp.com/go/workstations

[1] Muti-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.

[2] For hard drives and solid state drives, 1 GB = 1 billion bytes, TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB of system disk (for Windows 7) is reserved for system recovery software.

[3] Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com.

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