



Upgrade to a mobile workstation with Windows 10 Pro for Workstations and an Intel Xeon E processor and save time on compute-intensive activities

A newer workstation performed better in our testing vs. a previous-generation workstation.

If you're constantly on the go and use compute-intensive applications in your daily routine, chances are that you already have a powerful mobile workstation. But an older system might be making you wait longer than you need to—by too both your time and productivity—whether you even realize it.

At the request of Microsoft, we performed hands-on testing to quantify the improvements users could enjoy by upgrading from a previous-generation system to a current mobile workstation with Windows 10 Pro for Workstations and an Intel® Xeon® E processor. We carried out a series of tests in Adobe® Premiere® Pro and Autodesk® Revit and also tested all-around CPU performance. With Windows 10 Pro for Workstations and an Intel Xeon E processor, the current workstation reduced the time it took to complete common compute-intensive activities.

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The science behind the report:

Upgrade to a mobile workstation with Windows 10 Pro for Workstations and an Intel Xeon E processor and save time on compute-intensive activities

This document describes what we tested, how we tested, and what we found. To learn how these facts translate into real-world benefits, read the report [Upgrade to a mobile workstation with Windows 10 Pro for Workstations and an Intel Xeon E processor and save time on compute-intensive activities](#).

We concluded our hands-on testing on August 3, 2020. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on July 23, 2020 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Results of timed task testing

Table 1: Time (min:sec) required to complete each task on the workstations under test. Lower is better.

	HP ZBook Studio G5 (previous-generation workstation)	HP ZBook 15 G6 (current workstation)	Difference	Win with current workstation
Adobe® Premiere® Pro				
Time to complete tasks (min:sec) (lower is better)				
Launch program	1:05	0:21	0:44	67% less time
Open a project	0:06	0:02	0:04	66% less time
Export a timeline	11:09	7:11	3:58	35% less time
Autodesk® Revit with V-Ray Next				
Time to complete tasks (min:sec) (lower is better)				
Launch program	1:41	0:32	1:09	68% less time
Open a project	0:20	0:09	0:11	55% less time
Render model	19:17	13:11	6:06	31% less time

	HP ZBook Studio G5 (previous-generation workstation)	HP ZBook 15 G6 (current workstation)	Difference	Win with current workstation
AIXPRT				
Images per second (higher is better)				
ResNet-50	128.1	172.4	44.3	34% more images/sec
SSD-MobileNet	258.1	353.2	95.1	36% more images/sec
Latency (ms) (lower is better)				
ResNet-50	9.11	7.67	1.44	15% less time
SSD-MobileNet v1	4.14	3.06	1.08	26% less time
SPECworkstation 3				
CPU scores (higher is better)				
Media and entertainment	1.37	1.90	0.13	38% higher score
Product development	1.13	1.43	0.14	26% higher score
Life sciences	0.91	1.50	0.78	64% higher score
Financial services	1.28	2.06	0.59	60% higher score
Energy	0.52	0.66	0.30	26% higher score
General operations	1.05	1.18	0.53	12% higher score

System configuration information

Table 2: Detailed information on the systems we tested.

System configuration information	HP ZBook Studio G5 (previous-generation workstation)	HP ZBook 15 G6 (current workstation)
Processor		
Vendor	Intel®	Intel
Name	Core™	Xeon®
Model number	i7- 9750H	E-2286M
Core frequency (GHz)	2.60	2.40
Number of cores	6	8
Cache (MB)	12	16
Memory		
Amount (GB)	8	16
Type	PC4-21300	PC4-19200
Speed (MHz)	2,667	2,400
Graphics		
Vendor	NVIDIA®	NVIDIA
Model number	Quadro® P600	Quadro T2000
Storage		
Vendor	Western Digital	Western Digital
Model number	WD10SPZX-80Z10T2	PC SN720 SDAPNTW-512G-1006
Amount	1TB	512GB
Type	5.4k RPM HDD	M.2 PCIe NVMe SSD
Connectivity/expansion		
Wired internet	Intel Ethernet Connection I219-LM	Intel Ethernet Connection I219-LM
Operating system		
Vendor	Microsoft	Microsoft
Name	Windows 10 Pro	Windows 10 Pro for Workstations
Build number or version	1909	1909
BIOS		
BIOS name and version	Insyde F.23	HP R92 v01.05.04

How we tested

Adobe Premiere Pro

Installing Adobe Premiere Pro

1. Sign up for a free trial of Adobe Premiere Pro at adobe.com/products/premiere.html
2. Download and run the Adobe Premiere Pro trial setup.
3. Click Yes to allow changes.
4. Click Continue.
5. On the browser that is opened, sign in with the account used to download the trial.
6. Close the browser.
7. At My skill level with Premiere Pro is, enter Advanced.
8. At I am a, enter Video Professional.
9. At I am downloading Premiere Pro for, enter Myself only.
10. Click Continue.
11. Click Start Installing.
12. Close the Get more screen, then close Adobe Premiere Pro.

Downloading the sample file

1. Open 4kmedia.org/sony-camping-in-nature-4k-demo/ in a web browser.
2. Scroll down, and click Download File.
3. After the download finishes, extract the contents of the zip file.

Running Adobe Premiere Pro

1. Open Adobe Premiere Pro.
2. Click New Project, and click OK.
3. Click File → Import.
4. Select the sample video file, and click Open.
5. Drag the sample video file from the Project browser to the timeline.
6. Click File → Export → Media.
7. Under Export Settings, change Format to HEVC (H.265).
8. Change Preset to 4K UHD.
9. Collapse Export Settings.
10. Click the Video tab.
11. Under Encoding Settings, change Performance to Software Encoding.
12. Click Export, and start the timer.
13. When the progress bar window closes, stop the timer.

Autodesk Revit with V-Ray

Installing Autodesk Revit

1. Download the free trial of Autodesk Revit from autodesk.com/products/revit/free-trial.
2. Open the Revit webinstall.
3. Click Yes to allow changes.
4. Click Install.
5. Select I Agree, and click Next.
6. Click Install.
7. After the installation is complete, click Launch Now.
8. Close Autodesk Revit.

Installing V-Ray for Revit 2021

1. Download the free trial of V-Ray for Revit v21 from chaosgroup.com/trial/vray-revit.
2. Open the V-Ray installer.
3. Click Yes to allow changes.
4. Click I Agree.
5. Unselect V-Ray Swarm and Chaos Cloud client, and click Next.

6. Click Next.
7. Click Install Now.
8. At the Chaos License Server screen, click I Agree.
9. Click Install Now.
10. Click Finish.
11. Uncheck Help us improve v-Ray and Open the release notes, and click Finish.

Downloading the sample file

1. Open Autodesk.com in a web browser.
2. On the Autodesk website, click Menu → Support & learning → By product.
3. In the search field, type revit sample project files, and press enter.
4. Click Revit Sample Project Files.
5. Under Architecture, download rac_advanced_sample_project.rvt

Running Autodesk Revit 2021 with V-Ray

1. Open Autodesk Revit 2021.
2. Close the trial notification.
3. Click the back button in the top left.
4. Click File → Open → Sample Files
5. Browse to the downloaded sample file.
6. Once the project is opened, click V-Ray → Enable V-Ray.
7. Click Quality: Draft, and select Very High.
8. Click Resolution.
9. Change the Aspect Ratio to Custom.
10. Change the Pixels to 5993 and 2160.
11. Change the DPI to 600.
12. Close the V-Ray Resolution window.
13. Click Render Production.
14. Expand Messages and Warnings.
15. Record the time from the final line Image ready in...

AIXPRT

Installing AIXPRT

1. Download AIXPRT with OpenVINO toolkit from <http://principledtechnologies.com/benchmarkxprt/aixprt/download.php>
2. Extract the zip file to a directory on the C drive.
3. Open a command prompt, and navigate to the install folder in the AIXPRT directory.
4. Type `setup_AIXPRT.bat`, and press Enter.
5. Once setup is complete, press any key.

Running AIXPRT

1. Open a command prompt, and navigate to the Harness folder in the AIXPRT directory.
2. Type `python3 index.py`, and press Enter.
3. Results are written to the Results folder in the AIXPRT directory.

SPECworkstation 3

Installing SPECworkstation 3

1. Download SPECworkstation 3 from spec.org/gwpg/wpc.static/workstation3-info.html
2. Extract the zip file to a temporary directory.
3. Open SPECworkstation_304.exe.
4. Click Yes to allow changes.
5. Click Next.
6. Click Next.
7. Click Install.
8. Click Finish.

Running SPECworkstation 3

1. Navigate to C:\SPEC\SPECworkstation, and run runSPEC.exe.
2. Click Yes to allow changes.
3. Select all of the CPU benchmarks, except python36.
4. Under Options, enter 3 iterations.
5. Click Run SPECWorkstation.
6. Results are written to a dedicated results folder in the C:\SPEC\SPECWorkstation directory.

Read the report at <http://facts.pt/v1bednB> ►

This project was commissioned by Microsoft.



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