The science behind the report:

Speed your productivity applications by upgrading to a workstation with Windows 10 Pro for Workstations and Intel Xeon W processors

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 Speed your productivity applications by upgrading to a workstation with Windows 10 Pro for Workstations and Intel Xeon W processors.

We concluded our hands-on testing on July 7, 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 June 30, 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.

	Previous-generation PC w/ Windows 10 Pro	Current workstation w/ Windows 10 Pro for Workstations	Difference	Win w/ current workstation
Autodesk Revit with V-Ray Next				
Time to complete tasks (min:sec) (lower is better)				
Launch program	1:38	0:24	1:14	75.5% less time
Render model	15:25	9:16	6:09	39.8% less time
Adobe Premiere Pro				
Time to complete tasks (min:sec) (lower is better)				
Launch program	0:29	0:15	0:14	48.2% less time
Export a timeline	7:01	4:47	2:14	31.8% less time

	Previous-generation PC w/ Windows 10 Pro	Current workstation w/ Windows 10 Pro for Workstations	Difference	Win w/ current workstation
AIXPRT				
Images per second (higher is better)				
ResNet-50	150.70	642.90	492.20	4.2 times the images/sec
SSD-MobileNet	280.10	978.20	698.10	3.4 times the images/sec
Latency (ms) (lower is better)				
ResNet-50	8.44	3.35	5.09	60.3% less time
SSD-MobileNet v1	4.14	1.57	2.57	62.0% less time
SPECworkstation 3				
CPU scores (higher is better)				
Media and entertainment	1.61	2.31	0.70	43.4% higher score
Product development	1.32	2.30	0.98	74.2% higher score
Life sciences	1.41	2.43	1.02	72.3% higher score
Financial services	1.70	2.60	0.90	52.9% higher score
Energy	0.61	1.04	0.43	70.4% higher score
General operations	1.07	1.28	0.21	19.6% higher score

System configuration information

Table 2: Detailed information on the system we tested.

Server configuration information	Previous-generation PC w/ Windows 10 Pro (Lenovo ThinkStation P330)	Current workstation w/ Windows 10 Pro for Workstations (Lenovo ThinkStation P520)
Processor		
Vendor	Intel®	Intel
Name	Core™ i7	Xeon®
Model number	8700	W-2245
Core frequency (GHz)	3.20	3.90
Number of cores	12	16
Cache (MB)	12	16.5
Memory		
Amount (GB)	16	32
Type	PC4-21300	PC4-24000
Speed (MHz)	2,666	2,933
Graphics		
Vendor	Intel	NVIDIA
Model number	Integrated UHD 630 Graphics	Quadro P620
Storage #1		
Vendor	Seagate	Samsung®
Model number	ST1000DM003-1SB102	MZVLB512HBJQ-000L7
Amount	1TB	512GB
Type	SATA SSD	M.2 PCIe NVMe SSD
Storage #2		
Vendor	N/A	Samsung
Model number	N/A	MZVLB1T0HBLR-000L7
Amount	N/A	1TB
Type	N/A	M.2 PCIe NVMe SSD
Storage #3		
Vendor	N/A	Seagate
Model number	N/A	ST200DM008-2FR102
Amount	N/A	2TB
Type	N/A	SATA HDD
Connectivity/expansion		
Wired internet	Intel Ethernet Connection I219-LM	Intel Ethernet Connection I219-LM

Server configuration information	Previous-generation PC w/ Windows 10 Pro (Lenovo ThinkStation P330)	Current workstation w/ Windows 10 Pro for Workstations (Lenovo ThinkStation P520)
Operating system		
Vendor	Microsoft	Microsoft
Name	Windows 10 Pro x64	Windows 10 Pro for Workstations
Build number or version	1909	1909
BIOS		
BIOS name and version	LENOVO M1VKT51A	LENOVO S03KT37A

How we tested

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. To allow changes, click Yes.
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. To allow changes, click Yes.
4. Click I Agree.
5. Deselect 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. In a web browser, open autodesk.com.
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 on 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. In the top-left corner, click the back button.
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 on Quality: Draft, and select Very High.
8. Click on 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 that appears in the final line which reads Image ready in…

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. To allow changes, click Yes.
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, and close Adobe Premiere Pro.

Downloading the sample file
1. In a web browser, navigate to 4kmedia.org/sony-camping-in-nature-4k-demo/.
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 on 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.

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. To allow changes, click Yes.
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. To allow changes, click Yes.
3. Select all of the CPU benchmarks, except python36.
4. Select all of the Storage benchmarks
5. Under Options, enter 3 iterations.
6. Click Run SPECWorkstation.
7. Results will write to a dedicated results folder in the C:\SPEC\SPECWorkstation directory.

Read the report at http://facts.pt/lup3vtk ▶

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