



The science behind the report:

Dell workstations: Power your toughest workflows

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 [Dell workstations: Power your toughest workflows](#).

We concluded our hands-on testing on February 24, 2026. 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 January 21, 2026 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

To learn more about how we have calculated the wins in this report, go to <https://facts.pt/calculating-and-highlighting-wins>. Unless we state otherwise, we have followed the rules and principles we outline in that document.

Table 1: Results of our testing for the following systems: Dell Pro Max 16, HP ZBook 8 G1i, and Lenovo ThinkPad P16s Gen 4.

	Dell Pro Max 16	HP ZBook 8 G1i	Lenovo ThinkPad P16s Gen 4	Win % vs HP	Win % vs Lenovo
Cinebench 2026 (score, higher is better)					
GPU	38,230	GPU unsupported	35,950	N/A	6.34%
CPU (multi-threaded)	4,900	3,987	4,267	22.89%	14.83%
Cinebench 2024 — CPU multi-threaded (score, higher is better)					
CPU (multi-threaded)	1,173	1,002	1,042	17.06%	12.57%
SPECviewperf 15 (FPS, higher is better)					
blender-01	36.64	18.61	33.95	96.88%	7.92%
maya-07	110.91	81.84	106.59	35.52%	4.05%
creo-04	118.95	85.71	110.90	38.78%	7.25%
solidworks-08	59.36	46.17	53.70	28.56%	10.54%
energy-04	54.00	38.13	47.34	41.62%	14.06%
unreal_engine-01	54.84	26.43	51.41	107.49%	6.67%

	Dell Pro Max 16	HP ZBook 8 G1i	Lenovo ThinkPad P16s Gen 4	Win % vs HP	Win % vs Lenovo
SPECworkstation 4 (overall score, higher is better)					
AI & Machine Learning	1.68	1.63	1.66	3.06%	1.20%
Media & Entertainment	1.71	1.41	1.54	21.27%	11.03%
Energy	1.38	1.15	1.19	20.00%	15.96%
Product Design	1.51	1.18	1.26	27.96%	19.84%
Financial Services	1.36	1.01	1.00	34.65%	36.00%
Productivity & Development	1.10	1.07	1.04	2.80%	5.76%
AutoCAD (time, lower is better)					
Import IGES / cylinder head assembly	0:39	0:39	0:40	0.00%	2.50%
Render kitchen scene	17:12	30:25	24:46	43.45%	30.55%
SOLIDWORKS (time, lower is better)					
Calculate mass / high accuracy	0:20	0:21	0:21	4.76%	4.76%
Visualize / render assembly	3:59	7:16	4:25	45.18%	9.81%
Oracle Crystal Ball (seconds, lower is better)					
Portfolio allocation revisited	13.56	15.06	14.53	9.96%	6.67%
Sales projection	14.40	17.97	17.60	19.86%	18.18%
Inventory system	29.00	31.96	30.96	9.26%	6.33%

Table 1: Results of our testing for the following systems: Dell Pro Max 16, HP ZBook X G1i, and Lenovo ThinkPad P16v Gen 3.

	Dell Pro Max 16	HP ZBook X G1i	Lenovo ThinkPad P16v Gen 3	Win % vs HP	Win % vs Lenovo
Cinebench 2026 — CPU multi-threaded (score, higher is better)					
CPU (multi-threaded)	4,531	3,382	4,433	33.97%	2.21%
SPECviewperf 15 (FPS, higher is better)					
enscape-01	30.23	29.50	28.91	2.47%	4.56%
solidworks-08	68.83	68.07	65.41	1.11%	5.22%
snx-05	98.45	100.15	91.30	-1.69%	7.83%

	Dell Pro Max 16	HP ZBook X G1i	Lenovo ThinkPad P16v Gen 3	Win % vs HP	Win % vs Lenovo
SPECworkstation 4 (overall score, higher is better)					
Financial Services	1.07	0.98	1.03	9.18%	3.88%
Product Design	1.38	1.25	1.31	10.40%	5.34%
Productivity & Development	1.13	1.09	1.07	3.66%	5.60%
AutoCAD (time, lower is better)					
Orthographic section plane	0:36	0:36	0:40	0.00%	10.00%
Render kitchen scene	22:01	30:09	22:49	26.97%	3.50%
SOLIDWORKS (time, lower is better)					
Import IGES / engine	1:06	1:07	1:12	1.49%	8.33%

Table 2: Results of our testing for the following systems: Dell Pro Max 16 Plus, HP ZBook Fury G1i, and Lenovo ThinkPad P16 Gen 3.

	Dell Pro Max 16 Plus	HP ZBook Fury G1i	Lenovo ThinkPad P16 Gen 3	Win % vs HP	Win % vs Lenovo
Cinebench 2026 (score, higher is better)					
GPU	101,900	89,341	88,491	14.05%	15.15%
CPU (multi-threaded)	7,424	6,996	6,462	6.11%	14.88%
Cinebench 2024 — CPU multi-threaded (score, higher is better)					
CPU (multi-threaded)	1,825	1,726	1,620	5.73%	12.65%
SPECviewperf 15 (FPS, higher is better)					
3dsmax-08	98.73	83.38	80.68	18.40%	22.37%
blender-01	114.82	104.74	95.25	9.62%	20.54%
catia-07	106.34	104.11	98.87	2.14%	7.55%
enscape-01	84.65	71.88	66.90	17.76%	26.53%
medical-04	210.49	203.24	185.28	3.56%	13.60%
solidworks-08	144.42	145.69	121.47	-0.87%	18.89%
creo-04	227.19	234.15	210.44	-2.97%	7.95%
energy-04	166.12	147.46	131.28	12.65%	26.53%
unreal_engine-01	84.10	78.82	66.48	6.69%	26.50%

	Dell Pro Max 16 Plus	HP ZBook Fury G1i	Lenovo ThinkPad P16 Gen 3	Win % vs HP	Win % vs Lenovo
SPECworkstation 4 (overall score, higher is better)					
AI & Machine Learning	2.42	2.20	2.16	9.99%	12.03%
Media & Entertainment	2.42	2.29	2.24	5.67%	8.03%
Energy	2.00	1.87	1.91	6.95%	4.71%
Product Design	2.10	2.04	1.89	2.94%	11.11%
Financial Services	1.58	1.57	1.39	0.63%	13.66%
Productivity & Development	1.29	1.30	1.22	-0.76%	5.73%
Life Sciences	2.51	2.23	2.35	12.55%	6.80%
SOLIDWORKS (time, lower is better)					
Visualize / render assembly	1:41	1:51	2:13	9.00%	24.06%
Ansys Fluent (seconds, lower is better)					
GPU solver, 1× CPU process (single precision)	9.38	11.03	11.57	14.95%	18.92%
GPU solver, 1× CPU process (double precision)	20.91	28.40	28.86	26.37%	27.54%
CPU solver, 16× CPU process (double precision)	52.77	81.04	81.84	34.88%	35.52%
CATIA — render engine model, GPU (higher is better)					
Total samples	115,418	101,188	100,031	14.06%	15.38%
Samples per second	32.06	28.11	27.79	14.05%	15.36%

Table 3: Results of our testing for the following systems: Dell Pro Max 18 Plus and HP ZBook Fury G1i.

	Dell Pro Max 18 Plus	HP ZBook Fury G1i	Win % vs HP
Cinebench 2026 (score, higher is better)			
GPU	102,036	96,816	5.39%
CPU (multi-threaded)	7,643	6,983	9.45%
Cinebench 2024 (score, higher is better)			
CPU (multi-threaded)	1,818	1,652	10.04%
CPU (single-core)	125	123	1.62%

	Dell Pro Max 18 Plus	HP ZBook Fury G1i	Win % vs HP
SPECviewperf 15 (FPS, higher is better)			
3dsmax-08	93.90	85.98	9.21%
enscape-01	85.83	74.18	15.70%
blender-01	120.80	77.29	56.29%
medical-04	221.87	202.79	9.40%
catia-07	114.18	100.63	13.46%
snx-05	109.13	107.73	1.29%
creo-04	244.46	228.83	6.83%
solidworks-08	146.62	136.95	7.06%
energy-04	174.21	157.37	10.70%
unreal_engine-01	84.37	75.76	11.36%
SPECworkstation 4 (overall score, higher is better)			
AI & Machine Learning	2.35	2.06	14.07%
Media & Entertainment	2.43	2.14	13.55%
Energy	2.24	1.95	14.87%
Product Design	2.23	1.87	19.25%
Financial Services	1.56	1.39	12.23%
Productivity & Development	1.29	1.21	6.61%
Life Sciences	2.63	2.09	25.83%
SOLIDWORKS (time, lower is better)			
Import IGES / engine	2:10	2:16	4.41%
Calculate mass / high accuracy	2:12	2:13	0.75%
Calculate interference	5:19	5:26	2.14%
Visualize / render assembly	1:41	1:45	3.80%
CATIA (mixed metrics)			
Import IGES file (time, lower is better)	11:44	12:31	6.25%
Render engine model, GPU — total samples (higher is better)	108,335	106,384	1.83%
Render engine model, GPU — samples per second (higher is better)	30.09	29.55	1.82%
Ansys Fluent (seconds, lower is better)			
GPU solver, 1× CPU process (single precision)	10.02	10.95	8.49%
CPU solver, 16× CPU process (double precision)	59.08	83.73	29.43%
GPU solver, 1× CPU process (double precision)	21.40	28.49	24.88%

Table 4: Results of our testing for the following systems: Dell Pro Max 16 Premium and Lenovo P1 Gen 8.

	Dell Pro Max 16 Premium	Lenovo P1 Gen 8	Win % vs Lenovo
Cinebench 2026 — GPU (score, higher is better)			
GPU	56,498	40,817	38.41%
SPECviewperf 15 (FPS, higher is better)			
3dsmax-08	63.16	32.34	95.29%
maya-07	155.09	109.61	41.49%
blender-01	68.10	44.31	53.68%
medical-04	139.42	87.78	58.82%
catia-07	68.21	43.82	55.65%
snx-05	102.93	84.57	21.70%
creo-04	169.35	112.00	51.20%
solidworks-08	85.75	53.69	59.71%
energy-04	87.64	47.51	84.46%
unreal_engine-01	67.82	44.74	51.58%
enscape-01	40.96	24.92	64.36%
Adobe Premiere (seconds, lower is better)			
Encode 4K video	283.8	296.9	4.41%
Generate proxies	58.5	63.4	7.72%
Encode 1080p video	192.6	201.0	4.17%

Table 5: Results of our testing for the following systems: Dell Pro Max 14 Premium and HP ZBook Ultra G1a.

	Dell Pro Max 14 Premium	HP ZBook Ultra G1a	Win % vs HP
Cinebench 2026 (score, higher is better)			
GPU	37,912	N/A — system crashed	N/A
CPU (single-core)	485	450	7.77%
Cinebench 2024 — CPU single-core (score, higher is better)			
CPU (single-core)	120	110	9.09%
SPECviewperf 15 (FPS, higher is better)			
catia-07	46.31	41.26	12.23%
maya-07	109.15	109.11	0.03%
creo-04	118.33	89.07	32.85%
snx-05	90.25	39.16	130.46%
enscape-01	29.18	14.65	99.18%
solidworks-08	62.56	43.70	43.15%

	Dell Pro Max 14 Premium	HP ZBook Ultra G1a	Win % vs HP
Adobe Premiere (seconds, lower is better)			
Generate proxies	53.6	105.8	49.33%
DaVinci Resolve (seconds, lower is better)			
Encode 4K video	73.8	90.9	18.81%
Encode 1080p video	63.8	67.9	6.03%

Table 6: Results of our testing for the following systems: Dell Pro Max 14, HP ZBook 8 G1as, and Lenovo ThinkPad P14s Gen 6.

	Dell Pro Max 14	HP ZBook 8 G1as	Lenovo ThinkPad P14s Gen 6	Win % vs HP	Win % vs Lenovo
Cinebench 2026 — CPU multi-threaded (score, higher is better)					
CPU (multi-threaded)	4,615	4,448	4,034	3.75%	14.40%
Cinebench 2024 — CPU multi-core (score, higher is better)					
CPU (multi-core)	1,115	1,088	977	2.48%	14.12%
SPECviewperf 15 (FPS, higher is better)					
blender-01	22.00	14.99	18.75	46.76%	17.33%
maya-07	60.33	42.91	47.81	40.59%	26.18%
catia-07	20.78	15.65	16.54	32.77%	25.63%
medical-04	72.92	59.67	64.61	22.20%	12.86%
creo-04	44.65	31.38	37.51	42.28%	19.03%
snx-05	65.84	49.73	43.72	32.39%	50.59%
energy-04	29.03	22.20	25.47	30.76%	13.97%
solidworks-08	36.22	25.59	21.71	41.53%	66.83%
enscape-01	8.08	N/A — system crashed	7.34	N/A	10.08%
unreal_engine-01	28.68	20.38	26.06	40.72%	10.05%
SPECworkstation 4 (overall score, higher is better)					
AI & Machine Learning	1.44	1.38	1.37	4.34%	5.10%
Media & Entertainment	1.42	1.23	1.24	15.44%	14.51%
Energy	1.23	1.18	1.14	4.23%	7.89%
Product Design	1.32	1.26	1.29	4.76%	2.32%
Financial Services	1.22	1.02	0.90	19.60%	35.55%
Productivity & Development	1.08	1.04	1.05	3.84%	2.85%
Life Sciences	1.39	1.20	1.28	15.83%	8.59%

	Dell Pro Max 14	HP ZBook 8 G1as	Lenovo ThinkPad P14s Gen 6	Win % vs HP	Win % vs Lenovo
C++ compilation (time, lower is better)					
Building Unreal Engine 5 from source	1:10:50	1:15:04	1:18:33	5.63%	9.82%

Table 7: Results of our testing for the following systems: Dell Pro Max 16 and Lenovo ThinkPad P16s Gen 4.

	Dell Pro Max 16	Lenovo ThinkPad P16s Gen 4	Win % vs Lenovo
Cinebench 2026 — CPU multi-threaded (score, higher is better)			
CPU (multi-threaded)	4,886	4,311	13.33%
Cinebench 2024 — CPU multi-core (score, higher is better)			
CPU (multi-core)	1,179	1,029	14.57%
SPECviewperf 15 (FPS, higher is better)			
blender-01	22.18	19.70	12.58%
maya-07	61.72	51.92	18.87%
catia-07	21.04	18.49	13.79%
medical-04	74.91	67.43	11.09%
creo-04	45.04	41.30	9.05%
snx-05	65.78	55.33	18.88%
energy-04	31.39	26.91	16.64%
solidworks-08	35.73	33.14	7.81%
enscape-01	8.28	7.74	6.97%
unreal_engine-01	29.23	27.33	6.95%
SPECworkstation 4 (overall score, higher is better)			
Energy	1.27	1.22	4.09%
Life Sciences	1.41	1.37	2.91%
Financial Services	1.38	1.03	33.98%
Media & Entertainment	1.44	1.34	7.46%
C++ compilation (time, lower is better)			
Building Unreal Engine 5 from source	1:09:37	1:15:39	7.97%

Table 8: Results of our testing for the following systems: Dell Pro Max 14, HP ZBook 8 G1i, and Lenovo ThinkPad P14s Gen 6.

	Dell Pro Max 14	HP ZBook 8 G1i	Lenovo ThinkPad P14s Gen 6	Win % vs HP	Win % vs Lenovo
SPECviewperf 15 (FPS, higher is better)					
enscape-01	9.37	8.63	4.27	8.57%	119.43%
medical-04	39.83	39.12	15.97	1.81%	149.40%
SPECworkstation 4 (overall score, higher is better)					
Product Design	1.11	1.09	0.92	1.83%	20.65%
Productivity & Development	1.06	0.89	0.85	19.10%	24.70%
SQL — HammerDB TPROC-H, 1 user (lower is better)					
Geometric mean (seconds)	0.35562	0.38677	0.37642	8.05%	5.52%
Total query time (seconds)	12	13	13	7.69%	7.69%

System configuration information

Table 9: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 16 AMD	HP ZBook 8 G1i 16"	Lenovo P16s Gen 4
Processor			
Vendor	AMD	Intel	Intel
Model number	Ryzen™ AI 9 HX PRO 370 w/ Radeon™ 890M	Intel® Core™ Ultra 9 285H	Intel Core Ultra 7 265H
Core frequency (GHz)	2	2.9	2.2
Total number of cores	12	16	16
Number of Performance-cores	N/A	6	6
Number of Efficient-cores	N/A	8	8
Number of Low Power Efficient-cores	N/A	2	2
Number of threads	24	16	16
Cache (MB)	36	24	24
Memory			
Amount (GB)	64	64	64
Type	LPDDR5X	SODIMM DDR5	SODIMM DDR5
Speed	8,000 MT/s	5,600 MT/s	6,400 MT/s
Graphics			
Vendor	NVIDIA®	NVIDIA	NVIDIA
Model number	RTX PRO 1000 Blackwell Generation Laptop GPU (8GB)	RTX 500 Ada Generation Laptop GPU (4GB)	RTX PRO 1000 Blackwell Generation Laptop GPU (8GB)
Driver	32.0.15.7376	32.0.15.8216	32.0.15.7357
Storage			
Amount (TB)	2	1	1
Type	PC811 SED SK hynix	PC801 SK hynix	SAMSUNG MZVL81T0HFLB-00BLL

System configuration information	Dell Pro Max 16 AMD	HP ZBook 8 G1i 16"	Lenovo P16s Gen 4
Connectivity/expansion			
Wireless internet	MediaTek Wi-Fi 7 MT7925 Wireless LAN Card	Intel Wi-Fi 7 BE201 320MHz	Intel Wi-Fi 7 BE201 320MHz
Bluetooth	5.4	5.4	5.4
USB	2x Thunderbolt™ 4 (40 Gbps) ports with Power Delivery and DisplayPort 1x USB 3.2 Gen 1 Type-A (5 Gbps) port with PowerShare 1x USB 3.2 Gen 1 Type-A (5 Gbps) port	2x Thunderbolt™ 4 with USB Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 2.1) 1x USB Type-A 5Gbps signaling rate (powered) 1x USB Type-C® 20Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)	2 x USB-C® (Thunderbolt™ 4, USB 40Gbps) with power delivery 3.0 & DisplayPort™ 1.4 2 x USB-A (USB 5Gbps), one always on
Video	1x HDMI 2.1	1x HDMI 2.1	1x HDMI 2.1
Battery			
Type	N/A	Li-ion	Li-Ion
Rated capacity (Wh)	96	77	57
Cells	6	8	3
Display			
Size (inches)	16"	16"	16"
Type	AUO Internal Display 15.9"	AUO70B3	LEN4230
Resolution	1,920 x 1,200	1,920 x 1,200	1,920 x 1,200
Touchscreen	No	No	No
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit
Build number or version	10.0.26100.7462	10.0.26200.7462	10.0.26200.7462
BIOS			
BIOS name and version	Dell Inc. 1.6.2	X70 Ver. 01.02.05	LENOVO R2WET36W (1.18)
Power supply			
Power rating (W)	130	140	100

Table 10: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 16 Intel	HP ZBook X G1i 16"	Lenovo P16v Gen 3
Processor			
Vendor	Intel	Intel	Intel
Model number	Intel Core Ultra 9 285H	Intel Core Ultra 9 285H	Intel Core Ultra 9 285H
Core frequency (GHz)	2.9	2.9	2.9
Total number of cores	16	16	16
Number of Performance-cores	6	6	6
Number of Efficient-cores	8	8	8
Number of Low Power Efficient-cores	2	2	2
Number of threads	16	16	16
Cache (MB)	24	24	24
Memory			
Amount (GB)	64	64	64
Type	CSODIMM DDR5	SODIMM DDR5	CSODIMM DDR5
Speed	6,400 MT/s	5,600 MT/s	6,400 MT/s
Graphics			
Vendor	NVIDIA	NVIDIA	NVIDIA
Model number	RTX PRO 2000 Blackwell Generation Laptop GPU (8GB)	RTX PRO 2000 Blackwell Generation Laptop GPU (8GB)	RTX PRO 2000 Blackwell Generation Laptop GPU (8GB)
Driver	32.0.15.7376	32.0.15.7366	32.0.15.7357
Storage			
Amount (TB)	1	1	1
Type	Hynix® PC811 SED SK M.2 2280 Gen4 PCIe NVMe	SK hynix PC801 HFS001TEJ9X101N	SAMSUNG MZVL81T0HFLB-00BLL
Connectivity/expansion			
Wireless internet	Intel Wi-Fi 6E AX211 160MHz	Intel Wi-Fi 7 BE201 320MHz	Intel Wi-Fi 7 BE201 320MHz
Bluetooth	5.3	5.4	5.4
USB	2x Thunderbolt™ 4 (40 Gbps) 2x USB 3.2 Gen 1	1x USB Type-A 5Gbps signaling rate (charging) 1x USB Type-A 5Gbps signaling rate	2 x USB-C® (Thunderbolt™ 4, USB 40Gbps) with DisplayPort™ 2.1 2 x USB-A (USB 10Gbps), one always on
Video	1x HDMI 2.1	1x HDMI 2.1	1x HDMI 2.1
Battery			
Type	Lithium-ion Polymer	N/A	N/A
Rated capacity (Wh)	96	83	90
Cells	6	6	N/A

System configuration information	Dell Pro Max 16 Intel	HP ZBook X G1i 16"	Lenovo P16v Gen 3
Display			
Size (inches)	16	16	16
Type	FHD+ (1,920 x 1,200) 60Hz, WVA, Anti-Glare, 300 nit, 45% NTSC	LG Philips LGD07B3]	Lenovo LEN4230
Resolution	1,920 x 1,200	2,560 x 1600	1,920 x 1,200
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit
Build number or version	10.0.26200.7462	26200.7462	10.0.26200.7462
BIOS			
BIOS name and version	Dell Inc. 1.9.1	HP X97 Ver. 01.03.02	LENOVO N4GET33W (1.13)
Dimensions			
Height (inches)	1.01	0.9	0.77
Width (inches)	14.09	14.15	14.23
Depth (inches)	10.08	9.88	9.79
Weight (pounds)	4.65	4.5	4.6
Power supply			
Power rating (W)	130	150	140

Table 11: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 16 Plus MB16250	HP Fury G1i 16"	Lenovo Thinkpad P16 Gen 3
Processor			
Vendor	Intel	Intel	Intel
Model number	Intel Core Ultra 9 285HX	Intel Core Ultra 9 285HX	Intel Core Ultra 9 285HX
Core frequency (GHz)	2.8-5.5	2.8-5.5	2.8-5.5
Total number of cores	24	24	24
Number of Performance-cores	8	8	8
Number of Efficient-cores	16	16	16
Number of Low Power Efficient-cores	0	0	0
Number of threads	24	24	24
Cache (MB)	36	36	36

System configuration information	Dell Pro Max 16 Plus MB16250	HP Fury G1i 16"	Lenovo Thinkpad P16 Gen 3
Memory			
Amount (GB)	128	128	128
Type	CAMM Dual channel	SODIMM DDR5	SODIMM DDR5
Speed	6,400 MT/s	5,600 MT/s (Running at 4,000 MT/s)	5,600 MT/s (Running at 4,000 MT/s)
Graphics			
Vendor	NVIDIA	NVIDIA	NVIDIA
Model number	RTX PRO 5000 Blackwell Generation Laptop GPU (24GB)	RTX PRO 5000 Blackwell Generation Laptop GPU (24GB)	RTX PRO 5000 Blackwell Generation Laptop GPU (24GB)
Driver	32.0.15.8183	32.0.15.8180	32.0.15.8183
Storage			
Amount (TB)	8	1	1.5
Type	(2x) SanDisk PC_SN08000S SED	SK hynix PC801 HFS001TEJ9X101N	UMIS RPETJ512MMW1MDQ UMIS RPETJ1T24MMW1QDQ
Connectivity/expansion			
Wireless internet	Intel Wi-Fi 7 BE200 320MHz	Intel Wi-Fi 7 BE200 320MHz	Intel Wi-Fi 7 BE200 320MHz
Bluetooth	5.4	5.4	5.4
USB	2x Thunderbolt 5 (80Gbps) 1x Thunderbolt 4 (40Gbps) 2x USB 3.2 Gen 1	2x Thunderbolt 5 with USB Type-C 80 Gbps signaling rate (USB Power Delivery, DisplayPort™ 2.1) 1x USB Type-A 10Gbps signaling rate	2 x USB-C (Thunderbolt 5, USB 80Gbps) with power delivery 3.1 & DisplayPort™ 2.1 1x USB-C (Thunderbolt™ 4, USB 40Gbps) with power delivery 3.1 & DisplayPort™ 2.1 2 x USB-A (USB 10Gbps), one always on
Video	1x HDMI 2.1	1x HDMI 2.1	1x HDMI 2.1
Battery			
Type	Lithium-ion	Lithium Polymer	N/A
Rated capacity (Wh)	96	99	99.9
Cells	6	8	N/A
Display			
Size (inches)	16"	16"	16"
Type	UHD+ (3,840 x 2,400) 120Hz, OLED, 100% DCI-P3, 500 nits, Low Blue Light, VESA HDR TrueBlack 1000	CHIMEI INNOLUX CORPORATION Internal Display 15.9"	LENOVO GROUP LIMITED Internal Display LEN41B5
Resolution	3,840 x 2,400	1,920 x 1,200	1,920 x 1,200

System configuration information	Dell Pro Max 16 Plus MB16250	HP Fury G1i 16"	Lenovo Thinkpad P16 Gen 3
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit
Build number or version	10.0.26200.7462 (Release 2009)	10.0.26200.7462 (Release 2009)	10.0.26200.7462 (Release 2009)
BIOS			
BIOS name and version	Dell Inc. 2.2.2	HP X96 Ver. 01.01.10	LENOVO - N4FET30W (1.11)
Dimensions			
Height (inches)	1.01	1.09	0.82
Width (inches)	14.09	14.16	14.25
Depth (inches)	10.08	9.81	9.92
Weight (pounds)	4.65	5.36	5.6
Power supply			
Power rating (W)	280	280	180

Table 12: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 18 Plus	HP Fury G1i 18"
Processor		
Vendor	Intel	Intel
Model number	Intel Core Ultra 9 285HX	Intel Core Ultra 9 285HX
Core frequency (GHz)	2.8-5.5	2.8-5.5
Total number of cores	24	24
Number of Performance-cores	8	8
Number of Efficient-cores	16	16
Number of Low Power Efficient-cores	0	0
Number of threads	24	24
Cache (MB)	36	36
Memory		
Amount (GB)	128	128
Type	CAMM Dual channel	SODIMM DDR5
Speed	6,400 MT/s	5,600 MT/s (Running at 4,000 MT/s)
Graphics		
Vendor	NVIDIA	NVIDIA
Model number	RTX PRO 5000 Blackwell Generation Laptop GPU (24GB)	RTX PRO 5000 Blackwell Generation Laptop GPU (24GB)
Driver	32.0.15.8183	32.0.15.7366

System configuration information	Dell Pro Max 18 Plus	HP Fury G1i 18"
Storage		
Amount (TB)	8	1
Type	2x PC_SN8000S SED SanDisk 4096GB	SK hynix PC801 HFS001TEJ9X101N
Connectivity/expansion		
Wireless internet	Intel Wi-Fi 7 BE200 320MHz	Intel Wi-Fi 7 BE200 320MHz
Bluetooth	5.4	5.4
USB	1x Thunderbolt 4 (40 Gbps) port with Power Delivery and DisplayPort 1x USB 3.2 Gen 1 (5 Gbps) port with PowerShare 1x USB 3.2 Gen 1 (5 Gbps) port 2x Thunderbolt 5 (80 Gbps) ports with Power Delivery and DisplayPort	2x Thunderbolt 5 with USB Type-C 80 Gbps signaling rate (USB Power Delivery, DisplayPort 2.1) 1x USB Type-A 10Gbps signaling rate 1x Thunderbolt 4 with USB Type-C 40Gbps signaling rate (USB Power Delivery, DisplayPort 2.1)
Video	1x HDMI 2.1	1x HDMI 2.1
Battery		
Type	N/A	Lithium Polymer
Rated capacity (Wh)	96	99
Cells	6	8
Display		
Size (inches)	18"	18"
Type	AUO B180QAN	AUO Internal Display 18.0"
Resolution	2,560 x 1,600	2,560 x 1,600
Operating system		
Vendor	Microsoft	Microsoft
Name	Windows 11 Pro 64-bit	Windows 11 Pro 64-bit
Build number or version	10.0.26200.7462 (Release 2009)	10.0.26100.7462 (Release 2009)
BIOS		
BIOS name and version	Dell Inc. 2.2.2	HP X96 Ver. 01.01.10
Dimensions		
Height (inches)	1.19	1.1
Width (inches)	15.83	15.88
Depth (inches)	11.02	11.41
Weight (pounds)	7.17	7.78
Power supply		
Power rating (W)	280	330

Table 13: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 16 Premium	Lenovo ThinkPad P1 Gen 8
Processor		
Vendor	Intel	Intel
Model number	Core Ultra 9 285H	Core Ultra 9 285H
Core frequency (GHz)	2.7-5.4	2.7-5.4 GHz
Total number of cores	16	16
Number of Performance-cores	6	6
Number of Efficient-cores	8	8
Number of Low Power Efficient-cores	2	2
Number of threads	16	16
Cache (MB)	24	24
Memory		
Amount (GB)	64	64
Type	LPDDR5x	LPDDR5x CAMM2
Speed	8400 MT/s	7467 MT/s
Integrated graphics		
Vendor	Intel	Intel
Model number	Arc Pro 140T	Arc 140T
Discrete graphics		
Vendor	NVIDIA	NVIDIA
Model number	RTX PRO 3000 Blackwell	RTX PRO 2000 Blackwell
VRAM	12GB GDDR7	8GB GDDR6
Storage		
Amount (TB)	8	2
Type	NVMe SSD	NVMe SSD
Connectivity/expansion		
Wireless internet	Intel Wi-Fi 7 BE201, 801.11be	Intel Wi-Fi 7 BE201, 802.11be
Bluetooth	5.4	5.4
USB	N/A	1x USB 3.2 Gen 2 Type-A
Thunderbolt	2x Thunderbolt 5 (USB Type-C) 1x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 5 (USB Type-C) 1x Thunderbolt 4 (USB Type-C)
Video	1x HDMI	1x HDMI 2.1
Battery		
Type	Lithium-ion	Lithium-ion
Rated capacity (Wh)	Integrated	Integrated
Cells	96Wh	90Wh

System configuration information	Dell Pro Max 16 Premium	Lenovo ThinkPad P1 Gen 8
Display		
Size (inches)	16"	16"
Type	OLED	OLED
Resolution	3840 x 2400	3200 x 2000
Touchscreen	Yes	Yes
Operating system		
Vendor	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro
Build number or version	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)
BIOS		
BIOS name and version	Dell Inc. 1.6.1, 11/7/2025	N4EET19W (1.05) 9/12/2025
Dimensions		
Height (inches)	0.83"	0.62"
Width (inches)	13.93"	13.95"
Depth (inches)	9.46"	9.49"
Weight	4.82 lb	4.06 lb

Table 14: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 14 Premium	HP ZBook Ultra G1a 14
Processor		
Vendor	Intel	AMD
Model number	Core Ultra 9 285H	Ryzen AI Max+ PRO 395
Core frequency (GHz)	2.7-5.4	3.0-5.1
Total number of cores	16	16
Number of Performance-cores	6	N/A
Number of Efficient-cores	8	N/A
Number of Low Power Efficient-cores	2	N/A
Number of threads	16	32
Cache (MB)	24	64
Memory		
Amount (GB)	64	128
Type	LPDDR5x	LPDDR5x
Speed	8400 MT/s	8000 MT/s

System configuration information	Dell Pro Max 14 Premium	HP ZBook Ultra G1a 14
Integrated graphics		
Vendor	Intel	AMD
Model number	Arc Pro 140T	Radeon 8060S
Discrete graphics		
Vendor	NVIDIA	N/A
Model number	RTX PRO 2000 Blackwell	N/A
VRAM	8GB GDDR7	N/A
Storage		
Amount (TB)	1	2
Type	NVMe SSD	NVMe SSD
Connectivity/expansion		
Wireless internet	Intel Wi-Fi 7 BE201, 801.11be	MediaTek Wi-Fi 7 MT7925, 801.11be
Bluetooth	5.4	5.4
USB	N/A	1x USB Type-C 10Gbps 1x USB Type-A 10Gbps
Thunderbolt	2x Thunderbolt 5 (USB Type-C) 2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)
Video	N/A	1x HDMI 2.1
Battery		
Type	Lithium-ion	Lithium-ion
Rated capacity (Wh)	Integrated	Integrated
Cells	72Wh	74.5Wh
Display		
Size (inches)	14"	14"
Type	OLED	OLED
Resolution	2880 x 1800	2880 x 1800
Touchscreen	Yes	Yes
Operating system		
Vendor	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro
Build number or version	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)
BIOS		
BIOS name and version	Dell Inc. 1.6.1, 11/7/2025	HP X89 01.04.03, 12/3/2025

System configuration information	Dell Pro Max 14 Premium	HP ZBook Ultra G1a 14
Dimensions		
Height (inches)	0.78"	0.71"
Width (inches)	12.23"	12.29"
Depth (inches)	8.36"	8.45"
Weight	3.55 lb	3.46 lb

Table 15: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 14 MC14255	HP ZBook 8 G1as 14	Lenovo ThinkPad P14s Gen 6
Processor			
Vendor	AMD	AMD	AMD
Model number	Ryzen AI 9 HX PRO 370	Ryzen AI HX PRO 375	Ryzen AI 9 HX PRO 370
Core frequency (GHz)	2-5.1	2-5.1	2-5.1
Total number of cores	12	12	12
Number of Performance-cores	4 (Zen 5)	4 (Zen 5)	4 (Zen 5)
Number of Efficient-cores	8 (Zen5c)	8 (Zen5c)	8 (Zen5c)
Number of threads	24	24	24
Cache (MB)	24	24	24
Memory			
Amount (GB)	64	64	64
Type	LPDDR5x	DDR5	DDR5
Speed	8,000 MT/s	5,600 MT/s	5,600 MT/s
Graphics			
Vendor	AMD	AMD	AMD
Model number	Radeon 890M	Radeon 890M	Radeon 890M
Storage			
Amount (TB)	2	1	1
Type	NVMe SSD	NVMe SSD	NVMe SSD
Connectivity/expansion			
Wired internet	1x RJ45 (1 Gbps) Ethernet	1x RJ-45 (1 Gbps) Ethernet	1x RJ-45 (1 Gbps) Ethernet
Wireless internet	802.11be MediaTek Wi-Fi 7 MT7925	802.11be MediaTek Wi-Fi 7 MT7925	802.11be MediaTek Wi-Fi 7 MT7925
Bluetooth	5.4	5.4	5.4
USB	2x USB 3.2 Gen 1 Type-A	1x USB 3.2 Gen 1 Type-A	2x USB 3.2 Gen 1 Type-A
Thunderbolt	2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)
Video	1x HDMI 2.1	1x HDMI 2.1	1x HDMI 2.1

System configuration information	Dell Pro Max 14 MC14255	HP ZBook 8 G1as 14	Lenovo ThinkPad P14s Gen 6
Battery			
Type	Lithium-ion	Lithium-ion polymer	Lithium-ion
Size	Integrated	Integrated	Integrated
Rated capacity (Wh)	72	62	57
Display			
Size (inches)	14	14	14
Type	LCD	LCD	LCD
Resolution	2,560 x 1,600	2,560 x 1,600	1,920 x 1,200
Touchscreen	No	No	No
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro	Windows 11 Pro
Build number or version	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)
BIOS			
BIOS name and version	Dell 1.7.2, 12/11/2025	HP X84 Ver. 01.04.01, 11/17/2025	Lenovo R2XET37W (1.17), 11/7/2025
Dimensions			
Height (inches)	0.97	0.74	0.64
Width (inches)	12.32	12.43	12.44
Depth (inches)	8.95	8.74	8.81
Weight (pounds)	3.95	3.18	3.06

Table 16: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 14 MC14255	HP ZBook 8 G1as 14	Lenovo ThinkPad P14s Gen 6
Processor			
Vendor	AMD	AMD	AMD
Model number	Ryzen AI 9 HX PRO 370	Ryzen AI HX PRO 375	Ryzen AI 9 HX PRO 370
Core frequency (GHz)	2-5.1	2-5.1	2-5.1
Total number of cores	12	12	12
Number of Performance-cores	4 (Zen 5)	4 (Zen 5)	4 (Zen 5)
Number of Efficient-cores	8 (Zen5c)	8 (Zen5c)	8 (Zen5c)
Number of threads	24	24	24
Cache (MB)	24	24	24

System configuration information	Dell Pro Max 14 MC14255	HP ZBook 8 G1as 14	Lenovo ThinkPad P14s Gen 6
Memory			
Amount (GB)	64	64	64
Type	LPDDR5x	DDR5	DDR5
Speed	8,000 MT/s	5,600 MT/s	5,600 MT/s
Graphics			
Vendor	AMD	AMD	AMD
Model number	Radeon 890M	Radeon 890M	Radeon 890M
Storage			
Amount (TB)	2	1	1
Type	NVMe SSD	NVMe SSD	NVMe SSD
Connectivity/expansion			
Wired internet	1x RJ45 (1 Gbps) Ethernet	1x RJ-45 (1 Gbps) Ethernet	1x RJ-45 (1 Gbps) Ethernet
Wireless internet	802.11be MediaTek Wi-Fi 7 MT7925	802.11be MediaTek Wi-Fi 7 MT7925	802.11be MediaTek Wi-Fi 7 MT7925
Bluetooth	5.4	5.4	5.4
USB	2x USB 3.2 Gen 1 Type-A	1x USB 3.2 Gen 1 Type-A	2x USB 3.2 Gen 1 Type-A
Thunderbolt	2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)
Video	1x HDMI 2.1	1x HDMI 2.1	1x HDMI 2.1
Battery			
Type	Lithium-ion	Lithium-ion polymer	Lithium-ion
Size	Integrated	Integrated	Integrated
Rated capacity (Wh)	72	62	57
Display			
Size (inches)	14	14	14
Type	LCD	LCD	LCD
Resolution	2,560 x 1,600	2,560 x 1,600	1,920 x 1,200
Touchscreen	No	No	No
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro	Windows 11 Pro
Build number or version	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)
BIOS			
BIOS name and version	Dell 1.7.2, 12/11/2025	HP X84 Ver. 01.04.01, 11/17/2025	Lenovo R2XET37W (1.17), 11/7/2025

System configuration information	Dell Pro Max 14 MC14255	HP ZBook 8 G1as 14	Lenovo ThinkPad P14s Gen 6
Dimensions			
Height (inches)	0.97	0.74	0.64
Width (inches)	12.32	12.43	12.44
Depth (inches)	8.95	8.74	8.81
Weight (pounds)	3.95	3.18	3.06

Table 17: Detailed information on the systems we tested.

System configuration information	Dell Pro Max 14 MC14250	HP ZBook 8 G1i 14"	Lenovo P14s Gen6
Processor			
Vendor	Intel	Intel	Intel
Model number	Core Ultra 7 265H	Core Ultra 7 265H	Core Ultra 7 265H
Core frequency (GHz)	1.7-5.3	1.7-5.3	1.7-5.3
Total number of cores	16	16	16
Number of Performance-cores	6	6	6
Number of Efficient-cores	8	8	8
Number of Efficient-cores	2	2	2
Number of threads	16	16	16
Cache (MB)	24	24	24
Memory			
Amount (GB)	32	32	32
Type	DDR5	DDR5	DDR5
Speed	7467 MT/s	6400 MT/s	5600 MT/s
Graphics			
Vendor	Intel	Intel	Intel
Model number	Arc Pro 140T	Arc Pro 140T	Arc 140V
Storage			
Amount	1TB	1TB	500GB
Type	NVMe SSD	NVMe SSD	NVMe SSD
Connectivity/expansion			
Wired internet	1x RJ45 (1 Gbps) Ethernet	1x RJ45 (1 Gbps) Ethernet	1x RJ45 (1 Gbps) Ethernet
Wireless internet	802.11ax Intel Wi-Fi 6E AX211	802.11be Intel Wi-Fi 7 BE201	802.11be Intel Wi-Fi 7 BE201
Bluetooth	5.4	5.4	5.4
USB	2x USB 3.2 Gen 1 Type-A	1x USB 3.2 Gen 1 Type-A	2x USB 3.2 Gen 1 Type-A
Thunderbolt	2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)	2x Thunderbolt 4 (USB Type-C)
Video	1x HDMI 2.1	1x HDMI 2.1	1x HDMI 2.1

System configuration information	Dell Pro Max 14 MC14250	HP ZBook 8 G1i 14"	Lenovo P14s Gen6
Battery			
Type	Lithium-ion	Lithion-ion polymer	Lithium-ion
Size	Integrated	Integrated	Integrated
Rated capacity (Wh)	72Wh	77Wh	57Wh
Display			
Size (inches)	14"	14"	14"
Type	LCD	LCD	LCD
Resolution	1,920 x 1,200	1,920 x 1,200	1,920 x 1,200
Touchscreen	No	No	No
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro	Windows 11 Pro
Build number or version	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)	25H2 (10.0.26200 Build 26200)
BIOS			
BIOS name and version	Dell, Inc. 1.9.1, 12/10/2025	HP X70 Ver. 01.03.02, 1/9/2026	Lenovo R2WET36W (1.18), 8/6/2025
Dimensions			
Height (inches)	0.97"	0.95"	0.85"
Width (inches)	12.32"	12.29"	12.81"
Depth (inches)	8.95"	8.74"	8.96"
Weight (pounds)	3.95 lb	3.66 lb	3.61 lb

How we tested

Setting up the system (Windows)

Setting up and updating the OEM image

1. Boot the system.
2. Follow the on-screen instructions to complete installation, using the default selections when appropriate.
3. On the privacy settings screen, uncheck everything.
4. Set the Windows (plugged in) Power Mode to Best Performance.
5. Set Screen and Sleep options to Never:
 - a. Right-click the desktop, and select Display settings.
 - b. Select System from the left column.
 - c. Click Power & Battery.
 - d. For all power options listed under Screen and Sleep, select Never.
6. Disable User Account Control notifications:
 - a. Select Windows Start, type UAC, and press the Enter key.
 - b. Move the slider control to Never notify, and click OK.
7. Run Windows Update, and install all updates available.
8. Run the HP/Dell/Lenovo Support Assistant utilities, and install all recommended BIOS and driver updates available.
9. Verify the date and time are correct and synchronize the system clock with the time server.
10. Pause Automatic Windows Updates:
 - a. Click the Windows Start button.
 - b. Type Windows Update settings and press the Enter key.
 - c. From the Pause updates drop-down menu, select Pause for 5 weeks.
11. Set the desktop resolution to 1,920 x 1,080.

Testing AutoCAD 2026

We downloaded and installed AutoCAD 2026 via the Autodesk website with default settings unless otherwise noted. For the architectural render test, we downloaded an example scene from the Autodesk website. For the mechanical assembly tests, we downloaded a complex engine assembly in Initial Graphics Exchange Specification (IGES) format from GrabCAD.

Rendering an architectural scene

1. In a browser, navigate to <https://www.autodesk.com/support/technical/article/caas/tsarticles/ts/6XGQkIp3ZcBFqjLPjrnQ9.html>, and download the drawing Visualization - Condominium with skylight.
2. Launch AutoCAD 2026.
3. Click Open...
4. Browse to the downloaded file, select it, and click Open.
5. In the top-left of the viewport, click Custom View → Custom Model Views → Render View_330pm.
6. Right-click in a blank spot in the application menu bar, and click Show Tabs → Visualize.
7. Select the Visualize tab.
8. In the Render panel, click the drop-down menu under Render to Size, and select 5,100 x 3,300px.
9. Change the render preset from Medium to High.
10. Click the Render to Size button.
 - a. If a window appears prompting to install Medium Resolution textures, select yes.
 - b. Close the explanation page opened in a browser.
 - c. Let the render finish, and wait for notification that the automatic texture download has completed.
 - d. Close AutoCAD, let the installer complete the texture configuration, then restart the procedure at step 2.
11. After the new Render window opens, expand the bottom pane of the Render window.
12. When the render is complete, record the Render Time value.
13. Close AutoCAD.
14. Wait 10 minutes before re-running.
15. Repeat steps 2 through 14 twice more and record the median result.

Importing an IGES assembly

1. In a browser, navigate to <https://grabcad.com>, and download a complex assembly in IGES format.
2. Extract the IGES file from the zip archive.
3. Launch AutoCAD 2026.
4. Click New.
5. Click the AutoCAD menu button in the top left.
6. Click Import → Other Formats.
7. From the Files of type: drop-down menu, select IGES.
8. Browse to the extracted file, and select it.
9. Click Open, while simultaneously starting the timer.
10. When the Import File Processing Complete notification appears in the bottom-right of the window, stop the timer, and record the value.

Placing an imported assembly

1. Hover over the viewcube, and, when the Home icon appears, click it to set the viewport angle.
2. In the top left corner, change the view type from 2D Wireframe to Realistic.
3. Simultaneously start the timer and click the link in the Import File Processing Complete notification.
4. When the viewport refreshes and displays the model, stop the timer and record the value.

Creating an orthographic section plane

1. Click Home to go to the updated camera location.
2. In the command pane, type `SECTIONPLANE` o Simultaneously start the timer and press Enter.
3. Stop the timer and record the value when the viewport refreshes with the sectioned model view.
4. Close AutoCAD, and return to Importing an IGES assembly, Step 3.

Testing Ansys Fluent 2025 R2

We downloaded and installed the Ansys suite via the Ansys licensing portal with default settings unless otherwise noted. We used a simplified simulation configuration provided by our vendor to keep the calculation time within a reasonable threshold.

Running a CFD simulation

1. Launch ANSYS Fluent.
2. Set the Fluent Launcher to the correct application modes:
 - Solution
 - Capability Level: CFD Enterprise
 - Dimension: 3D
3. Set the solver options based on scenario:
 - Native GPU Solver, 1 Solver Process (Single Precision GPU)
 - Native GPU Solver, Double Precision, 1 Solver Process (Double Precision GPU)
 - Double Precision, 16 Solver Processes (CPU only)
4. Set a working directory.
5. Click Start.
6. Select File → Read → Case.
7. Browse to the test case file, and click OK.
8. When the console indicates the case is done loading, double-click Solution → Initialization in the left side tree.
9. Leave the defaults as set, and click Initialize.
10. When initialization is complete, click at the bottom of the Console pane, type the following, and press Enter:(benchmark '(iterate 100))
 - This will perform an initial setup and load all graphing modules before solving.
11. When the test is done, run Initialize again, and click OK to acknowledge the previous results will be deleted.
12. Wait 10 minutes, and perform steps 10 and 12 again three times, and record the elapsed-time value.
13. When a scenario is complete, exit Fluent, and start it again, changing the solver parameters as appropriate for the next scenario.

Testing Dassault Systèmes SOLIDWORKS 2025

We downloaded and installed SOLIDWORKS via the 3DEXPERIENCE support portal with default settings unless otherwise noted. For all tests, we downloaded a complex engine assembly in IGES format from GrabCAD. (We used two different complexity assemblies for the Pro Max 16 comparison and the Pro Max 16 Plus comparison to match relative performance levels.)

Importing an IGES assembly

1. In a browser, navigate to <https://grabcad.com>, and download a complex assembly in IGES format.
2. Extract the IGES file from the zip archive.
3. Start SOLIDWORKS.
4. Select File → Open.
5. Change the file type filter to IGES.
6. Select the extracted file, and click Open while simultaneously starting the timer.
7. Stop the timer and record the value when the loading dialog disappears.

Calculating part interference

1. Click the Evaluate tab.
2. Click Interference Detection.
3. In the Selected Components box, ensure the component is highlighted.
4. Simultaneously start the timer and click Calculate.
5. Stop the timer, and when the results pane populates, record the value.
6. To exit the Interference Detection panel, click the red X.

Calculating assembly mass

1. On the Evaluate tab, click Mass Properties.
2. Click Options...
3. Drag the Accuracy level slider to Higher (slower).
4. Simultaneously start the timer and click OK.
5. When the Mass properties details are updated in the window, stop the timer and record the value.
6. Close SOLIDWORKS, and return to Importing an IGES assembly, Step 3.

Rendering assembly in Visualize

1. Launch SOLIDWORKS Visualize.
2. Select File → Open.
3. Browse to the assembly to render.
4. Click Open.
5. Accept default import settings if prompted.
6. Select Tools → Render.
7. Select Image.
8. Set the Image Preset to 4K High Quality.
9. Click Next.
10. Select Include Alpha, and ensure the format is set to PNG.
11. Leave the Size page at defaults.
12. Set Renderer Selection to Accurate (orange circle).
13. Set Termination Mode to Quality.
14. Ensure render passes is set to 1500 and Enable Denoiser is set to On.
15. Click Next.
16. Click Render.
17. Expand the details in the left pane of the Output Viewer.
18. The Render Device should indicate GPU if a qualified GPU is present.
19. When the render completes, record the Elapsed Time.
20. Close Visualize, wait 10 minutes, and repeat from Step 1.

Testing Dassault Systèmes CATIA R2025

We downloaded and installed CATIA via the 3DEXPERIENCE support portal with default settings unless otherwise noted. For all tests, we downloaded a complex engine assembly in IGES format from GrabCAD.

Importing an IGES assembly

1. Launch CATIA Part Design.
2. Click the plus sign icon in the upper-right corner of the UI.
3. Select Import...
4. Change the Format to IGES3D (*.igs).
5. In the Filename, click the folder icon.
6. Browse to the engine assembly file, select it, and click Open.
7. Uncheck the Save Report box.
8. Simultaneously start the timer and click OK.
9. When the display updates after the Operation Report window appears, stop the timer and record the value.

Rendering an assembly

1. Open the assembly to be rendered.
2. In the bottom toolbar, click the View tab.
3. Click the Iso view button.
4. Click the drop-down menu next to the hexagonal iris icon, and select Stellar Rendering Log.
5. Click the drop-down menu again, and select Stellar (GPU) to render the scene with the GPU renderer.
6. The render process will run for 60 minutes. When it is complete, record the number of samples.
7. To determine the samples-per-second rate, divide the total samples by 3,600 seconds.

Testing Oracle Crystal Ball

Setting up the test

1. Download Oracle Crystal Ball:
2. Install the 64-bit version: crystalballsetup-x64.exe
3. Accept default options and click Next repeatedly.
4. To begin the installation, press Install.
5. After the installation is complete, press Finish.

Preparing testing

1. On the Welcome to Oracle Crystal Ball screen, click "Open Examples"
2. Click File → Options.
3. Select Formulas.
4. Check the box next to "Enable iterative calculations"
5. Click OK.
6. Click the "Crystal Ball" tab on the navigation bar in excel.
7. Click "Run Preferences"
8. In the "Number of trials to run" field, enter 100000 and click OK to save.
9. If you get any prompts about Compatibility issues, just respond "This Program Ran Correctly"

Running testing

1. From the "Crystal Ball Example Models Guide", open the example model by clicking the name from the list.
2. On the "Crystal Ball" tab, click the green start arrow button "Start Simulation" to begin the simulation.
3. Click the blue down arrow button to "Show more".
4. Save the "Total running time (seconds)" result.
5. Click the two green backwards arrows to reset the simulation.
6. If prompted, click Yes to "Reset the simulation and clear all results". You may also check the box to keep this prompt from showing again in the future.
7. Repeat 4 more times (for a total of 5 runs)
8. After you have finished, reset the simulation and close the example.

9. Repeat these steps for the following 5 examples:
10. Portfolio Revisited
11. Sales Projection
12. Inventory System
13. Multi-Zone Reserves
14. Workforce with Queuing

Testing Cinebench 2024

Setting up the test

1. Download and install Cinebench 2024 from <https://www.maxon.net/en/downloads/cinebench-2024-downloads>
2. Launch Cinebench 2024.
3. Select File → Advanced benchmark.
4. From the Minimum Test Duration drop-down menu, ensure it is set to 10 minutes (Test throttling).

Running the test

1. Launch Cinebench 2024.
2. Run each available test individually (subject to compatibility)
 - GPU
 - CPU (Multi core)
 - CPU (Single core)
3. Record the results.
4. Wait 10 minutes before re-running each test.
5. Repeat steps 1 through 4 two more times.
6. Record the median result.

Testing Cinebench 2026

Setting up the test

1. Download and install Cinebench 2026 from <https://www.maxon.net/en/downloads/cinebench-2026-downloads>
2. Launch Cinebench 2026.
3. Select File → Advanced benchmark.
4. From the Minimum Test Duration drop-down menu, ensure it is set to 10 minutes (Test throttling).

Running the test

1. Launch Cinebench 2026.
2. Run each available test individually (subject to compatibility)
 - GPU
 - CPU (Multiple Threads)
 - CPU (Single Core)
 - CPU (Single Thread)
3. Record the result.
4. Wait 10 minutes before re-running each test.
5. Repeat steps 1 through 4 two more times.
6. Record the median result.

Measuring performance with SPECviewperf® 15.0.1

Setting up the test

1. Navigate to https://www.spec.org/benchmarks/benchmark/specviewperf-15_0_1/, and purchase and download the vendor license of the benchmark.
2. Download and unzip SPECviewperf® 15.0.1.
3. Navigate to the extracted SPECviewperf® 15.0.1 directory, and click the .exe file to install.

Running the test

1. Launch SPECviewperf®.
2. Change the iterations to 1.
3. Click Run.
4. When the test is complete, record the results.
5. Repeat steps 2 through 5 twice more.

Testing SPECworkstation 4.0

Setting up the test

1. Go to https://www.spec.org/benchmarks/benchmark/specworkstation-4_0/ purchase, and download the vendor license of the benchmark.
2. To install, click the SPECworkstation-Setup-4.0.0.exe.

Running the test

1. Launch SPECworkstation.
2. Click Run.
3. Record results and reboot the system
4. Repeat steps 1 through 3 two more times.
5. Report the median result.

Testing Adobe Premiere 2025

We downloaded and installed Adobe Premiere Pro via the Adobe Creative Cloud app with default settings unless otherwise noted. For the render/encoding tests we used a 5-minute sample timeline comprised of clips from various 4K video source files with effects and transitions added. For the proxy media generation test, we used a folder of 10 4K stock footage clips totaling 14.6 GB in size.

Rendering a 5-minute 4K video sequence

1. Launch Premiere Pro.
2. Click File → Open Project, and open the sample project.
3. Click Export.
4. Select the High Quality 2160p 4K preset.
5. Select H.264 for Format.
6. Start the timer, and click Export.
7. When the video has fully exported, stop the timer, and record the result.
8. Click File → Close Project.
9. Click Edit → Preferences → Media Cache, then click Delete next to Remove Media Cache Files. Select Delete all media cache files (requires restart), and click OK.
10. Wait for Premiere Pro to relaunch, then close the application, wait at least 10 minutes, and repeat steps 1 through 9 two more times.

Encoding/exporting a 5-minute 1080p video sequence

1. Launch Premiere Pro.
2. Click File → Open Project, and open the sample project.
3. Click Export.
4. Select the High Quality 1080p HD preset.
5. Select H.264 for Format.
6. Start the timer, and click Export.

7. When the video has fully exported, stop the timer, and record the result.
8. Click File → Close Project.
9. Click Edit → Preferences → Media Cache, then click the “Delete” button next to the “Remove Media Cache Files” label. Select Delete all media cache files (requires restart), and click OK.
10. Wait for Premiere Pro to relaunch, then close the application, wait at least 10 minutes, and repeat steps 1 through 9 two more times.

Generating proxy media from video source files

1. Launch Premiere Pro.
2. Click File → New Project, input a new project name and location, and click Create.
3. Navigate to the folder containing the 10 source media files, select the entire folder, and click Import.
4. Ensure all source files are selected in the project media browser, then right-click them, and select Proxy → Create Proxies.
5. Set Frame Size to Half, Preset to H.264 MP4 Proxy, and set a location for the proxy files.
6. Start the timer, and click OK.
7. When Adobe Media Encoder has processed all 10 source files and finished generating proxies, stop the timer, and record the result.
8. Navigate to C:/Users/Username/AppData/Roaming/Adobe/Common, and delete the Media Cache, Media Cache Files, and Peak Files folders to clear the Media Encoder cache.
9. Delete the project and associated files in the folder specified in step 2 and the generated proxy files from the folder specified in step 5. Empty the Recycle Bin.
10. In Premiere Pro, click File → Close Project.
11. In Premiere Pro, click Edit → Preferences → Media Cache, and click “Delete Media Cache Files”. Select Delete all media cache files (requires restart), and click OK.
12. In Adobe Media Encoder, click Edit → Preferences, click the Media tab, and click Clean.

Testing DaVinci Resolve Studio 20

We downloaded DaVinci Resolve Studio 20 from the Blackmagic Design website and installed it with default settings unless otherwise noted. For the render/encoding tests we used a 5-minute sample timeline comprising clips from various 4K video source files with effects and transitions added. For the optimized media generation test, we used a folder of 10 4K stock footage clips totaling 14.6 GB in size.

Encoding/exporting a 5 minute long 4K video sequence

1. Open DaVinci Resolve Studio.
2. Double-click the sample project from the project browser.
3. Click the Deliver tab icon at the bottom right of the screen (spaceship icon).
4. Click H.264 Master, and set the resolution to 3,840 x 2,160 Ultra HD.
5. Click Add to Render Queue.
6. Start the timer, and click Render All.
7. When the render job completes, stop the timer.
8. Clear the completed job from the render queue, and click Playback → Delete Render Cache → All to clear the render cache.
9. Navigate to the user Videos folder in File Explorer, delete the CacheClip folder and the rendered output video file, and empty the Recycle Bin.
10. Close DaVinci Resolve Studio, restart the system under test, wait at least 10 minutes, and repeat steps 1 through 9 two more times.

Encoding/exporting a 5-minute 1080p video sequence

1. Open DaVinci Resolve Studio.
2. Double-click the sample project from the project browser.
3. Click the Deliver tab icon at the bottom right of the screen (spaceship icon).
4. Click H.264 Master, and set the resolution to 1920 x 1080p HD.
5. Click Add to Render Queue.
6. Start the timer, and click Render All.
7. When the render job completes, stop the timer.
8. Clear the completed job from the render queue, and click Playback → Delete Render Cache → All to clear the render cache.
9. Navigate to the user Videos folder in File Explorer, delete the CacheClip folder and the rendered output video file, and empty the Recycle Bin.
10. Close DaVinci Resolve Studio, restart the system under test, wait at least 10 minutes, and repeat steps 1 through 9 two more times.

Generating optimized media

1. Open DaVinci Resolve Studio.
2. Click File → New Project, and input a project name.
3. Click File → Import → Media, select the 10 4K stock footage clips, and click Change when prompted.
4. Select all 10 imported media files.
5. Right-click the selected media, and simultaneously start the timer and click Generate Optimized Media.
6. Stop the timer when the progress bar disappears and indicates the optimized media has been fully generated.
7. Click Playback → Delete Render Cache → All.
8. Navigate to the user Videos folder in File Explorer, delete the CacheClip folder to delete the previously generated optimized media, and empty the Recycle Bin.
9. Close DaVinci Resolve Studio, restart the system under test, wait at least 10 minutes, and repeat steps 1 through 8 two more times.

Testing Maxon ZBrush 2026

We downloaded and installed Maxon ZBrush via the Maxon App with default settings unless otherwise noted. For this testing, we used a very high polygon sample model.

Open project file

1. Open Maxon ZBrush.
2. In the LightBox project navigation pane, Click Open File, and select the sample project ZPR file.
3. Click Open.
4. Record the elapsed time in seconds for the project to open displayed in the top left status bar.
5. Close ZBrush, then repeat the test two more times.

Generating Best Preview Render

1. Open Maxon ZBrush.
2. In the LightBox project navigation pane, Click Open File, and select the sample project ZPR file.
3. Click Open.
4. Start the timer, and press Shift+R to initiate a Best Preview Render (BPR).
5. When the progress bar in the status area in the top left indicates that the BPR is complete, stop the timer, and record the result.
6. Close ZBrush, then repeat the test two more times.

Running Decimation Master pre-process

1. Open Maxon ZBrush.
2. In the LightBox project navigation pane, Click Open File, and select the sample project ZPR file.
3. Click Open.
4. In the top menu bar, Click Zplugin, and click Decimation Master to open its options.
5. Click Pre-process Current.
6. When the progress bar in the status area in the top left indicates that the process is complete, record the elapsed Decimation Master processing time indicated in the status bar.
7. Close ZBrush, then repeat the test two more times.

Running ZRemesher

1. Open Maxon ZBrush.
2. In the LightBox project navigation pane, Click Open File, and select the sample project ZPR file.
3. Click Open.
4. Prepare the timer, expand the Geometry menu in the Tools pane, and click the ZRemesher heading. In the expanded options under Target Polygons Count, click Double.
5. Start the timer, and click the ZRemesher button.
6. When the progress bar in the status area in the top left indicates that the ZRemesher process is complete, stop the timer, and record the result.
7. Close ZBrush, then repeat the test two more times.

Testing C++ compilation

Building Unreal Engine 5 release branch from source

1. Download the Microsoft Visual Studio 2022 Community Edition installer from <https://visualstudio.microsoft.com/vs/community/> and install it:
2. Under the installer's Workloads tab, ensure the following components are selected:
 - .NET Multi-platform App UI development
 - .NET desktop development
 - Desktop development with C++
 - Game development with C++
3. In the Installation Details panel on the right, ensure the following components are selected:
 - C++ profiling tools
 - C++ AddressSanitizer
 - Windows 11 SDK
 - Unreal Engine installer
4. Launch Visual Studio 2022, navigate to Tools → Options → Projects and Solutions → Build And Run, set MSBuild project build output verbosity to Detailed, and click OK.
5. Request access to the GitHub repository for the latest Unreal Engine 5 using the steps outlined on https://dev.epicgames.com/documentation/en-us/unreal-engine/downloading-source-code-in-unreal-engine?application_version=5.5.
6. Download the latest Unreal Engine 5 release branch source code ZIP file. Extract the downloaded source archive.
7. Navigate to the base directory of the extracted source files, and run Setup.bat.
8. In the same directory, run GenerateProjectFiles.bat.
9. Double-click the newly created UE5.sln file to open it in Visual Studio 2022.
10. In the drop-down menus below the main toolbar, set the solution configuration to Development Editor and the solution platform to Win64.
11. To open the Solution Explorer pane, click View → Solution Explorer.
12. If a warning appears at the top of the Solution Explorer saying "Based on your solution, you might need to install extra components for a full development experience" or similar, click Install, and click Install again.
13. If a warning appears at the top of the Solution Explorer saying "This solution contains packages with vulnerabilities" or similar, click Manage NuGet Packages, and check the Show only vulnerable box.
14. For each listed vulnerable package, select the package, and in the right pane, check the box next to every project in the list with that package installed.
15. In the Version drop-down menu, select the latest stable release that isn't listed as vulnerable, and click Install, accepting any subsequent confirmation prompts.
16. Right-click the UE5 target under Solution 'UE5' → Engine, and click Build.
17. Wait for the build to complete, and record the total build time from the Output window.
18. For subsequent runs, delete the entire source folder, then repeat steps 4 through 12.

Testing SQL query performance

For this testing, we ran the HammerDB TPROC-H workload locally on each system to simulate heavy-duty SQL query performance, using the HammerDB test harness (scale factor 30, or an approximately 30GB database) to generate the database, and run the workload's standard set of 22 complex analytics queries to simulate a typical online retailer's online analytical processing (OLAP) workload.

Installing and configuring SQL Server 2022 on the system under test

1. In a browser, navigate to <https://www.microsoft.com/en-us/sql-server/sql-server-downloads>, download the SQL Server 2022 installer, and run it.
2. Click Custom.
3. Click Install.
4. When the download completes and the SQL Server Installation Center opens, click Installation in the left pane.
5. Click New SQL Server standalone installation or add features to an existing installation.
6. Select Evaluation, and click Next.
7. Click the check box to accept the license terms, and click Next.
8. Click Use Microsoft Update to check for updates, and click Next.
9. On the Install Rules page, click Next.
10. On the Azure Extension for SQL Server page, click the Azure Extension for SQL Server checkbox to unselect this feature, and click Next.

11. Check the boxes for the following features, and click Next:
 - Database Engine Services
 - Full-Text and Semantic Extractions for Search
12. Leave the Default instance option selected, and click Next.
13. Leave the default service accounts, and click Next.
14. On the Server Configuration tab, choose Mixed Mode, and enter and confirm a password for the SQL Server system administrator account.
15. Under Specify the SQL Server administrators, click Add Current User.
16. Click Next.
17. Click Install.
18. Click Close.
19. In a browser, navigate to <https://learn.microsoft.com/en-us/ssms/install/install>, download SQL Server Management Studio, and install it.

Installing Microsoft ODBC Driver 18 for SQL Server

1. In a browser, navigate to <https://learn.microsoft.com/en-us/sql/connect/odbc/download-odbc-driver-for-sql-server?view=sql-server-ver17>, and download the latest Microsoft ODBC Driver 18 for SQL Server.
2. Double-click the exe file, and click Next.
3. Check the box to accept the terms, and click Next.
4. Click Next.
5. Click Install.
6. Click Finish.

Creating the test database

1. Open SQL Server Management Studio.
2. Click Connect.
3. Right-click Databases, and select New Database.
4. Name the database. We named ours tpch.

Installing HammerDB on the system under test

1. In a browser, navigate to <https://www.hammerdb.com/download.html>, and download the latest version of HammerDB. We used version 5.0.
2. Double-click the .exe file, and click Next.
3. Click I accept the agreement to agree to the license terms, and click Next.
4. Choose a destination location to install HammerDB, and click Next.
5. Click Next.
6. Click Finish.

Populating the database

1. Open HammerDB, and click Options → Benchmark.
2. Choose SQL Server and TPROC-H.
3. Expand SQL Server → TPROC-H → Schema.
4. Double-click Options.
5. On the Settings tab, choose a scale factor of 30, and set the number of virtual users to 4.
6. Check the box for Clustered Columnstore, and click OK.
7. Double-click Build, then click Yes.

Backing up the database

1. Open SQL Server Management Studio, and connect.
2. Right-click the TPCH database, and click Tasks → Back up...
3. Choose a location to store the backup, and click OK.

Running HammerDB TPROC-H

1. Open the HammerDB GUI on the system under test.
2. Double-click SQL Server, select TPROC-H, and click OK. Click OK again to confirm.
3. Expand the TPROC-H options menu.

4. Expand the Schema submenu.
5. Double-click Options.
6. Change Authentication to SQL Server.
7. Leave SQL User ID as sa, and input the SQL Server User Password you set during SQL Server setup.
8. Click the Settings tab.
9. Set MAXDOP to 0.
10. Set Scale to 30.
11. Click OK.
12. Expand Driver Script, and double-click Load.
13. Expand Virtual User, and double-click Options.
14. Set Virtual Users to 1.
15. Enable Log Output to Temp, Use Unique Log Name, and Log Timestamps, and click OK.
16. Double-click Create, and click OK.
17. Double-click Run.
18. When the run completes, record the geometric mean query time.
19. Before any subsequent test runs, restart the SQL Server service by right-clicking on the MS-SQL instance in SQL Server Management Studio and clicking Restart.

This project was commissioned by Dell Technologies.

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How we created this report

A PT team, which includes the contributors we've listed and others, created this report and performed the technical work behind it. We used AI for some organization tasks such as generating tables from data across spreadsheets.



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